FINAL

ENVIRONMENTAL ASSESSMENT FOR INTEGRATED FIXED TOWERS IN THE U.S. BORDER PATROL'S DOUGLAS STATION AREA OF RESPONSIBILITY TUCSON SECTOR, ARIZONA

U.S. CUSTOMS AND BORDER PROTECTION
DEPARTMENT OF HOMELAND SECURITY
WASHINGTON, DC

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

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EXECUTIVE SUMMARY

INTRODUCTION: U.S. Customs and Border Protection (CBP) is the law enforcement component of the Department of Homeland Security (DHS) responsible for securing the border and facilitating lawful international trade and travel. U.S. Border Patrol (USBP) is the mobile uniformed arm within CBP responsible for securing the Nation's borders against the illegal entry of people and goods between Ports of Entry.

USBP developed a detailed technology deployment plan for each sector in Arizona based on current and anticipated operational activity. One of the technology-based approaches in the plan is the integrated fixed tower (IFT) system. This system provides long-range, persistent surveillance, enabling USBP personnel to detect, track, identify and classify illegal entries through a series of integrated sensors and tower-based surveillance equipment. The proposed IFT project in USBP's Douglas Station Area of Operation (AOR) represents the best technology solution for the distinct terrain within USBP's Douglas Station AOR.

STUDY LOCATION: The proposed IFT sites are located in the USBP Tucson Sector, Arizona. More specifically, the IFT sites are located in the USBP's Douglas Station AOR in Cochise County, Arizona.

PURPOSE AND NEED: The purpose of the proposed project is to provide persistent surveillance capability; command and control (C2); and sustainment of support capability along approximately 42 miles of United States border within USBP's Tucson Sector, Douglas Station AOR.

The proposed IFT project in the USBP's Douglas Station AOR is needed to:

1) provide visual and sensor detection for the apprehension of cross-border violators (CBVs) along the United States/Mexico border
2) enhance surveillance of the United States/Mexico border within the USBP's Douglas Station AOR
3) provide rapid detection and accurate characterization of potential threats (e.g., CBVs)
4) provide coordinated deployment of resources in the apprehension of CBVs
5) enhance surveillance and interdiction efficiency

PROPOSED ACTION AND ALTERNATIVES CONSIDERED: The Proposed Action includes the construction, operation and maintenance of 10 preferred IFT tower sites and the retrofit of two existing towers to provide long-term/permanent surveillance in the

USBP's Douglas Station AOR (Table ES-1). The IFT system transfers situational awareness data to the C2 facility at the USBP Douglas Station. The C2 facility integrates and displays data from all IFT units deployed within the USBP's Douglas Station AOR. Each IFT consists of a tower equipped with a suite of sensors and/or communications equipment. Tower retrofits include installing or replacing sensor suites and/or communications equipment on existing towers.

Table ES-1. Proposed Action and Alternative 1 Tower Sites

Tower ID	Proposed Action	Alternative 1
TCA-DGL-0076		A
TCA-DGL-0078		A
TCA-DGL-0081		A
TCA-DGL-0156	E	E
TCA-DGL-0258		A
TCA-DGL-0362		A
TCA-DGL-0364	P	
TCA-DGL-0366	P	
TCA-DGL-0368	P	
TCA-DGL-0372	P	
TCA-DGL-0374	P	P
TCA-DGL-0380	E	E
TCA-DGL-0384	P	
TCA-DGL-0386		A
TCA-DGL-0388	P	P
TCA-DGL-0390	P	
TCA-DGL-0396	P	P
TCA-DGL-0400		A
TCA-DGL-0402		A
TCA-DGL-0426		A
TCA-DGL-0428	P	

P=Preferred A=Alternate E=Existing

The Proposed Action also includes the construction of 10 access roads, totaling 0.22 mile and improvement of eight approach roads, totaling 4.9 miles, as well as the future maintenance of these roads.

Alternative 1 includes the construction, operation and maintenance of three preferred and nine alternate towers, as well as the retrofit of two existing towers. The IFTs are equipped with the same suite of sensor and communications equipment as described in the Proposed Action. Alternative 1 also includes the construction of 11 access roads,

totaling 0.42 mile, and improvement of eight approach roads, totaling 4.3 miles, as well as the maintenance of these roads.

Under the No Action Alternative, the proposed IFTs would not be constructed in USBP's Douglas Station AOR. USBP's ability to detect and interdict CBVs would not be enhanced. The No Action Alternative does not meet the purpose and need for this project.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES:

The Proposed Action would have permanent, negligible impacts on land use. Approximately 7.5 acres would be permanently converted from undeveloped rangeland to law enforcement facilities and associated roads. Minor impacts would occur on soils, vegetative habitat and wildlife as a result of disturbing 7.5 acres for the construction of IFTs, access road construction, road improvements and road maintenance. Areas with highly erodible soils will be given special consideration when designing the proposed project to ensure incorporation of various best management practices (BMP), such as straw bales, aggregate materials and wetting compounds to decrease erosion. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to construction activities.

Temporary and minor increases in air emissions and noise levels would occur during construction of the IFTs, access road construction, road improvements and road maintenance. Noise level increases associated with tower operations would be negligible.

Temporary, minor impacts would be expected on surface water quality during construction. The Proposed Action would have a negligible impact on waters of the United States and floodplains. The withdrawal of water for construction purposes could have a temporary, minor impact on groundwater resources. Negligible impacts on hydrology and hydraulics could also occur as a result of implementing the Proposed Action. BMPs and standard construction procedures will be implemented to minimize the potential for erosion and sedimentation during construction.

The Proposed Action may affect, but is not likely to adversely affect, the jaguar (*Panthera onca*), ocelot (*Leopardus pardalis*), lesser long-nosed bat (*Leptonycteris yerbabuenae*), Chiricahua leopard frog (*Lithobates chiricahuensis*), Huachuca water umbel (*Lilaeopsis schaffneriana* spp. *recurva*), beautiful shiner (*Cyprinella formosa*), Yaqui catfish (*Ictalurus pricei*), Yaqui chub (*Gila purpurea*), Yaqui topminnow (*Poeciliopsis occidentalis sonoriensis*). The Proposed Action would not adversely affect designated Critical Habitat for the beautiful shiner, Yaqui catfish and Yaqui chub and would not likely adversely modify proposed Critical Habitat for the jaguar. A small

swale that provides potential Chiricahua leopard frog habitat, located approximately 180 feet southeast of TCA-DGL-0374, will be avoided during tower construction and biological monitors will be present during construction of this tower. Endangered Species Act, Section 7 informal consultation with U.S. Fish and Wildlife Service (USFWS) was completed for this project. Concurrence on all determinations was received from USFWS on November 7, 2012.

During National Historic Preservation Act, Section 106 consultation, the Arizona State Historic Preservation Officer concurred with CBP's determinations of effects of the project. Based on the archaeological survey, archival research results and Native American Tribal consultation to date, CBP has determined that there would be no effects on any National Register of Historic Places (NRHP) eligible architectural or aboveground resources, NRHP-eligible archaeological resources, Traditional Cultural Property or sacred sites, as none are located within the area of potential effect for the project. However, an archaeological site recommended as NRHP-eligible is located adjacent to the approach road to a tower site. Vehicle access to this tower would be restricted to the current road footprint in the vicinity of the known archaeological site to avoid impacts on this resource.

Negligible demands on utilities would be required as a result of the Proposed Action. Communications equipment on the proposed towers would emit electromagnetic radiation (i.e., radio waves and microwaves) and a potential for impacts could occur depending on the location of antennas. Any adverse effects on human health and/or wildlife would be negligible due to the minimal exposure risk and the elevated locations in which the antennas would be positioned.

Construction and staging for towers and access roads would create a temporary, minor impact on roadways and traffic within the region. The increase of vehicular traffic would occur to supply materials and work crews at each IFT site for a short period of time. Tower maintenance would also require vehicle travel to each IFT site for fuel delivery, maintenance and operation of the proposed towers. A total of approximately 340 vehicle trips per year is anticipated for tower maintenance and refueling under the Proposed Action, and these trips would have a long-term, negligible impact on roadways and traffic. Construction vehicles and equipment would use established roads with proper flagging and safety precautions. The Proposed Action would not result in exposure of the environment or public to any hazardous materials.

The Proposed Action would have a long-term, moderate impact on aesthetic qualities within 3 to 5 miles or less of each preferred IFT.

Depending on the location and elevation of a viewer and due to the flat nature of the landscape throughout most of the San Bernardino Valley, it is possible that some IFTs could be visible from up to 15 miles away.

The Proposed Action would not cause any changes to local employment rates, poverty levels or local incomes. Short-term beneficial economic impacts may be realized by retail stores, restaurants and hotels, and from the purchase of fuel and supplies during the construction period.

No direct impacts on minority or low-income populations or children are anticipated to occur as a result of the implementation of the Proposed Action.

FINDINGS AND CONCLUSIONS:

Based upon the analyses of the Environmental Assessment and the BMPs to be implemented, the Proposed Action would not have a significant adverse effect on the environment. Therefore, no further analysis or documentation (i.e., Environmental Impact Statement) is warranted. CBP, in implementing this decision, would employ all practical means to minimize the potential for adverse impacts on the human and natural environment.

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SECTION 1.0
INTRODUCTION

1.0 INTRODUCTION

1.1 BACKGROUND

The Department of Homeland Security (DHS) is charged with managing, securing and controlling the Nation's borders with a priority mission focus of preventing terrorists and terrorist weapons from entering the United States. U.S. Customs and Border Protection (CBP), a component of DHS, represents the front line in defending the United States against terrorists and instruments of terror and protects the economic security of the United States by regulating and facilitating the lawful movement of goods and people across the United States' borders. The U.S. Border Patrol (USBP) is the mobile uniformed arm of CBP, and is tasked with the responsibility of securing the Nation's borders against the illegal entry of people, weapons, drugs and contraband between Ports of Entry (POE). The 2012-2016 Border Patrol Strategic Plan outlines goals to combat the greatest risks through enhanced situational awareness and intelligence (Information); coordinated operations with Federal, state, local, tribal and international partners (Integration); and the ability to respond quickly to changing threats (Rapid Response) (CBP 2012a).

USBP manages its requirements for existing and emerging technology at the Headquarters level, based on input from agents in the field. USBP assesses technological needs of the mission and capability gaps, then works with CBP partners, such as the Office of Technology Innovation and Acquisition (OTIA) (CBP 2012a). OTIA is the component of CBP charged with ensuring that all of CBP's technology efforts help execute its mission and are properly integrated across CBP, as well as strengthening CBP's expertise and effectiveness in acquisition and program management of contract delivered products and services (CBP 2012b). The mission of OTIA is to facilitate the effective identification, acquisition and life cycle support of products and services while driving innovation to improve CBP's mission performance in securing the border and facilitating the lawful movement of goods and people. OTIA is the proponent of the Integrated Fixed Tower (IFT) project in the USBP's Douglas Station Area of Responsibility (AOR).

In 2005, DHS initiated a technology-based border surveillance program known as the Secure Border Initiative-Network (SBI*net*). The SBI*net* program, as conceived in 2005, was intended to cover the entire southwest border with a highly integrated set of fixed sensor towers. Since its inception, SBI*net* had technical problems, cost overruns and schedule delays, raising serious questions about the system's ability to meet the needs for technology along the border (DHS 2011). Two IFT projects, the Tucson West and Ajo-1 tower projects, were initiated under SBI*net*. Currently, 15 of the 54 towers in the Tucson West Tower project have been constructed, and construction of the Ajo-1 Tower project is complete.

Soon after becoming Secretary of DHS, Secretary Napolitano asked CBP for an analysis of the SBI*net* program. Based on the finding from this analysis, in January 2010, Secretary Napolitano ordered a Department-wide reassessment of the SBI*net* program that incorporated an "Analysis of Alternatives" (AoA) to determine if SBI*net* is the most efficient, effective and economical way to meet the Nation's border security needs (DHS 2011).

The results of the analysis showed that the selection of technology for a given area of the border is highly dependent on the nature of that area. The heart of the SBI*net* concept, a one-size-fits-all, uniform technology strategy, is not applicable across the entire border. In fact, the AoA suggested that the optimal technology deployment strategy involve a mix of technology options tailored to each area of the border and be based on the operational judgment of the USBP agents in the area (DHS 2011).

Based on the AoA, DHS concluded that the SBI*net* program, as originally proposed, does not meet current standards for viability and cost-effectiveness. While it has generated some advances in technology that have improved USBP agents' ability to detect, identify, deter and respond to threats along the border, SBI*net* does not and cannot provide a single technological solution to border security. As a result, Secretary Napolitano directed CBP to end SBI*net* as originally conceived and instead utilize existing, proven technology solutions tailored to the distinct terrain and population density of each border region (DHS 2011).

After completion of the AoA, USBP used the results to develop a detailed technology deployment plan for each sector in Arizona based on current and anticipated operational activity. Accordingly, the new plan incorporates both the quantitative analysis of science and engineering experts and the real-world operational assessment of USBP agents in the field (DHS 2011).

USBP will utilize existing, proven technology tailored to the distinct terrain and population density of each border region, including commercially available mobile surveillance systems, unmanned aircraft systems, thermal imaging devices and tower-based remote video surveillance systems (RVSS). Where appropriate, USBP will also include elements of the former SBI*net* that were proven successful, such as stationary radar and infrared and optical sensor towers (DHS 2011). One of the technology approaches is the IFT system. This system provides long-range, persistent surveillance, enabling USBP personnel to detect, track, identify and classify illegal entries through a series of integrated sensors and tower-based surveillance equipment. The proposed IFT project incorporates technological solutions (e.g., radar) proven successful under the former SBI*net* program.

1.2 STUDY LOCATION

The tower sites proposed as part of the USBP's Douglas Station AOR IFT project are located in the USBP Tucson Sector, Arizona (Figure 1-1). More specifically, the IFT sites are located on Federal, state and private lands in Cochise County, Arizona.

1.3 PURPOSE AND NEED

The purpose of the USBP's Douglas Station AOR IFT project is to provide persistent surveillance capability; command and control (C2); and sustainment of support capability along approximately 42 miles of United States border within the USBP's Douglas Station AOR.

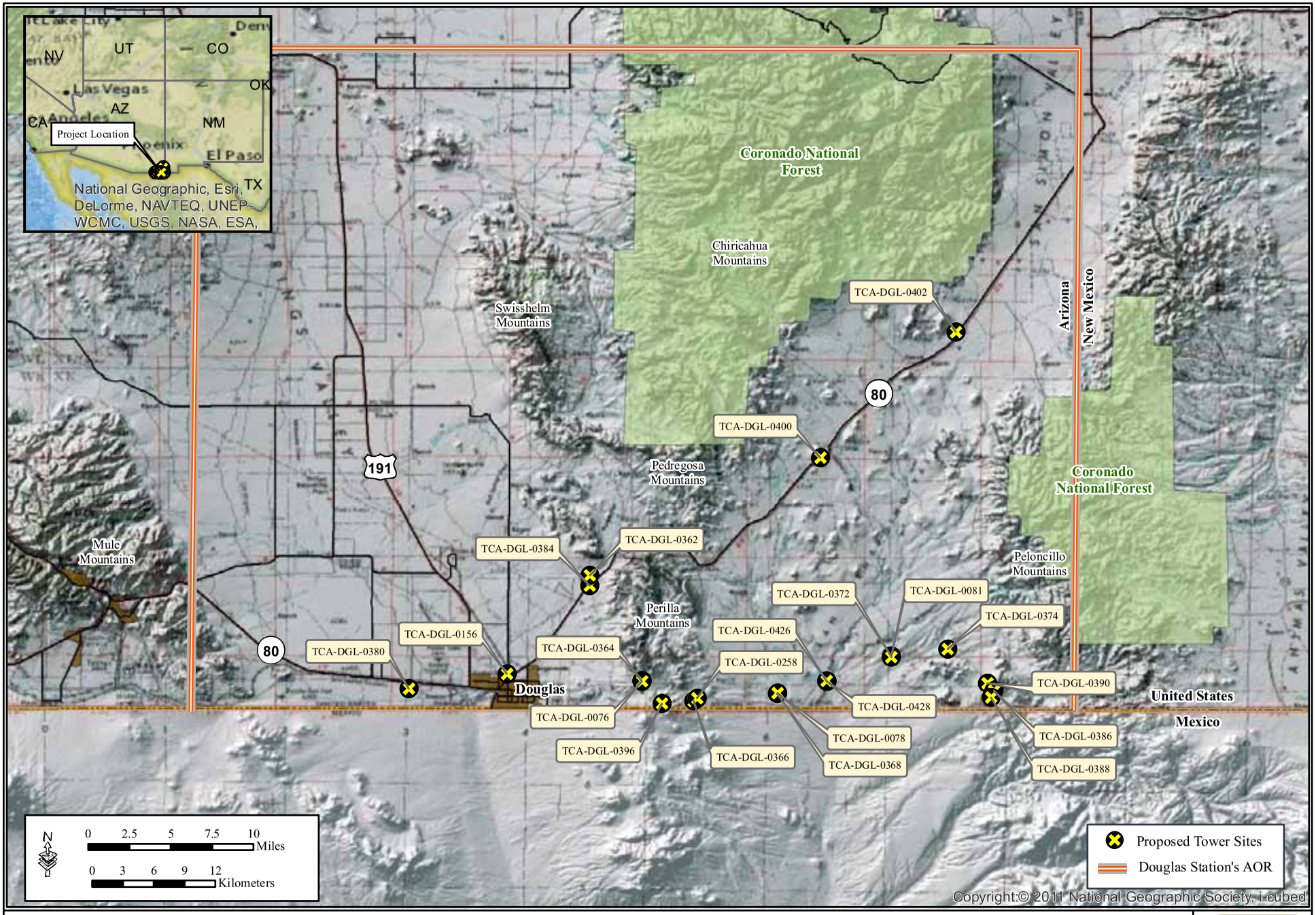

Figure 1-1. Project Vicinity Map

GSRC

July 2012

The implementation of this proposed USBP's Douglas Station AOR IFT project supports CBP's mission and activities of detecting, identifying, monitoring and responding to illegal cross-border activities at and between POEs and within the Tucson Sector (CBP 2012a). The proposed project provides necessary decision support information to assist CBP officers and agents in the resolution of border incursions. Information gathered from IFT technology further contributes to the comprehensive operability of the C2 facility. The C2 facility also provides mechanisms to communicate comprehensive situational awareness, including information to incorporate intelligence-driven capabilities at all operational levels and locations.

The frequency and nature of illegal cross-border activities and the geographic area over which these activities occur, create a need for a technology-based solution to gain situational awareness to effectively collect, resolve and distribute the information among CBP agents and officers. Based on the nature of the terrain in the project area combined with the distance from the Douglas Station and the illegal traffic patterns in the project area, the IFT system was identified as the most effective technology-based solution for the USBP's Douglas Station AOR. The IFT system provides long-range persistent surveillance capability in the project area. The IFT system is expected to allow CBP agents to spend less time locating cross-border violators (CBVs) and focus efforts on interdiction of those involved in illegal cross-border activities.

The proposed IFT project in the USBP's Douglas Station AOR is needed to:

1) provide visual and sensor detection for the apprehension of CBVs along the United States/Mexico border
2) enhance surveillance of the United States/Mexico border within the USBP's Douglas Station AOR
3) provide rapid detection and accurate characterization of potential threats (e.g., CBVs)
4) provide coordinated deployment of resources in the apprehension of CBVs
5) enhance surveillance and interdiction efficiency

1.4 SCOPE OF THE ANALYSIS

The scope of this Environmental Assessment (EA) includes the analysis of effects resulting from the lease of tower sites and the construction, installation, operation and maintenance of new IFTs and the retrofit of two existing IFTs in the USBP's Douglas Station AOR. The analysis also includes the potential effects associated with the construction, repair and improvement of roads, as well as the future maintenance of the roads. This analysis does not include an assessment of current operations conducted in the field by CBP agents.

1.5 APPLICABLE ENVIRONMENTAL GUIDANCE, STATUTES AND REGULATIONS

This analysis was prepared by CBP in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] 4321-4347), the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [C.F.R.] 1500-1508), DHS *Directive 023-01* (previously numbered 5100.1) and other pertinent environmental statutes, regulations and compliance requirements (Table 1-1). This EA will be

Table 1-1. Summary of Guidance, Statutes and Relevant Regulations Including Compliance Requirements*

Issue	Acts Requiring Permit, Approval or Review	Agency	Permit, License, Compliance or Review/Status
Hazardous Waste	Resource Conservation and Recovery Act of 1976, 42 U.S.C. §6901 et seq., as amended	EPA	CBP will ensure proper management of hazardous and solid wastes and underground storage tanks.
	Comprehensive, Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. §9601 et seq., as amended	EPA	CBP will develop emergency response plans, notification and cleanup procedure prior to construction.
Soils	Farmland Protection Policy Act of 1981, 7 U.S.C. §4201 et seq. 7 C.F.R. 657-658 Prime and unique farmlands	Natural Resources Conservation Service (NRCS)	NRCS determination via Form AD-1006, if prime or unique farmlands are present
Natural Resources	Endangered Species Act of 1973, 16 U.S.C. §1531 et seq., as amended	USFWS	Compliance by lead agency and/or consultation to assess impacts and, if necessary, develop mitigation measures
	Migratory Bird Treaty Act of 1918, 16 U.S.C. §703 et seq.	USFWS	Compliance by lead agency and/or consultation to assess impacts and, if necessary, develop mitigation measures
Land Use	Federal Land Policy Management Act, Public Law (P.L.) 94-579	BLM	Issuance of a special use permit by the land-managing agency
Cultural/ Archaeological	National Historic Preservation Act of 1966, 16 U.S.C. §470 et seq.	Advisory Council on Historic Preservation (ACHP) through the SHPO	CBP completed Section 106 Consultation.
	Archaeological Resources Protection Act of 1979 (16 U.S.C §470aa et seq.)	Affected land-managing agency	Permits to survey and excavate/remove archaeological resources on Federal lands; Native American tribes with interests in resources must be consulted prior to issue of permits
	Native American Graves Protection and Repatriation Act of 1990, P.L. 101-601	Affected land-managing agency	Compliance by lead agency
	Indian Sacred Sites of 1996 (Executive Order [EO] 13007)	Affected land-managing agency and affected Native American tribe	Compliance by lead agency
	Consultation and Coordination with Indian Tribal Governments of 2000 (EO 13175)	Affected land-managing agency and affected Native American tribe	Compliance by lead agency
	Government-to-Government Relations with Native American Tribal Governments of 1994 (Presidential Memorandum)	Affected land-managing agency and affected Native American tribe	Compliance by lead agency

Table 1-1, continued

Issue	Acts Requiring Permit, Approval or Review	Agency	Permit, License, Compliance or Review/Status
Air	Clean Air Act, and amendments of 1990 (U.S.C. §7401 et seq.)	EPA and ADEQ	Compliance with National Ambient Air Quality Standards (NAAQS) and emission limits and/or reduction measures; Conformity to *de minimis* thresholds; preparation of a Record of Non-Applicability
Water	Federal Water Pollution Control Act of 1977 (also known as the Clean Water Act [CWA]) (33 U.S.C. §1251 et seq.)	EPA	Section 402(b) National Pollutant Discharge Elimination System General Permit for Stormwater Discharges for Construction Activities-Stormwater Pollution Prevention Plan (SWPPP) will be obtained prior to construction.
	Floodplain Management, EO 11988, 42 Federal Register (FR) 26,951 (May 24, 1997), as amended.	Water Resources Council, Federal Emergency Management Agency (FEMA), CEQ	Compliance
	Protection of Wetlands, EO 11990, 42 FR 26,691 (May 24, 1977), as amended	U.S. Army Corps of Engineers (USACE) and USFWS	Compliance
	CWA of 1977, 33 U.S.C. §1341 et seq.	USACE and Arizona Department of Water Resources (ADWR)	Section 401/404 Permit will be obtained prior to construction.
Social/ Economic	Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, EO 12898 of 1994, 59 FR 7629 (February 11, 1994)	EPA	Compliance
Sound/Noise	Noise Control Act of 1972, 42 U.S.C. §4901 et seq., as amended	EPA	Compliance with surface carrier noise emissions
Telecommuni-cations	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations, 47 C.F.R. Part 2 §2.1	NTIA	Approval from NTIA will be obtained prior to project implementation.
Health and Safety	Occupational Health and Safety Act of 1970, 29 U.S.C. §651 et seq.	Occupational Safety and Health Administration (OSHA)	Compliance with guidelines including Material Safety Data Sheets
	14 C.F.R. Part 77, §77.9 , FAA Form 7460-1, Notice of Proposed Construction or Alteration on Airports	FAA	Notification required for construction or alteration of structures exceeding 200 feet above ground level

*Not all-inclusive.

the vehicle for compliance with all applicable environmental statutes such as the Endangered Species Act (ESA) of 1973, 16 U.S.C. Part §1531 et seq., as amended, and the National Historic Preservation Act (NHPA) of 1966, 16 U.S.C. §470a et seq., as amended.

1.6 PUBLIC INVOLVEMENT

Consultation and coordination with Federal, state and local agencies and Federally recognized tribes began with site selection activities in April 2011, and coordination letters were distributed October 13, 2011. Consultation and coordination continued throughout the development of this EA. Coordination was conducted with the following agencies and tribes.

- U.S. Department of the Interior (DOI)
  - Bureau of Land Management (BLM)
  - U.S. Fish and Wildlife Service (USFWS), Arizona Ecological Services Field Office (AESFO) and San Bernardino National Wildlife Refuge (SBNWR)
- U.S. Department of Agriculture (USDA)
  - U.S. Forest Service (USFS)
- U.S. Section, International Boundary and Water Commission
- U.S. Environmental Protection Agency (EPA)
- Federal Aviation Administration (FAA)
- National Telecommunications and Information Administration (NTIA)
- Arizona Game and Fish Department (AGFD)
- Arizona State Historic Preservation Officer (SHPO)
- Arizona Department of Environmental Quality (ADEQ)
- Arizona State Trust Lands (ASTL)
- Cochise County
- Private landowners
- Tohono O'odham Nation
- Fort Sill Apache Tribe of Oklahoma
- White Mountain Apache Tribe
- Hopi Tribe
- Mescalero Apache Tribe

The draft EA was available for public review for 30 days after the Notice of Availability (NOA) was published in the *Douglas Dispatch* and the *Arizona Daily Star* on July 11, 2012. The affidavits of publication are included in Appendix A. The draft EA was also available electronically at http://www.cbp.gov/xp/cgov/border_securityh/otia/sbi_news/sbi_ enviro_ docs/nepa and at the Douglas Public Library, 560 Tenth Street, Douglas, Arizona and Joel D. Valdez Main Library, 101 N. Stone Avenue, Tucson, Arizona from July 11, 2012 to August 10, 2012.

All correspondence sent or received during the preparation of this document is included in Appendix A. CBP provided copies of the draft EA to all coordinating state and Federal agencies and Native American Tribes for review and comment.

One comment letter was received during the 30-day public comment period. The White Mountain Apache Tribe (see Appendix A, July 30, 2012) determined that the Douglas Station IFT project "will not have an adverse effect" on the Tribe's historic properties or traditional cultural resources. However, the Tribe recommended that all ground-disturbing activities be monitored if there are reasons to believe that there are human remains and/or funerary objects present. If such remains and/or items are encountered, the Tribe requests that all project activities should cease and the proper authorities and affiliated tribes be notified. This measure is included as a best management practice (BMP) and is listed in sections 3.8.3.1, 3.8.3.2 and 5.5 of this EA.

The final EA and signed Finding of No Significant Impact will be available to the public after an NOA is published in the *Douglas Dispatch* and the *Arizona Daily Star* on January 10, 2013 Exhibit 1-1. The documents will be available electronically at http://www.cbp.gov/xp/cgov/ border_securityh/otia/sbi_news/sbi_ enviro_docs/nepa and at the Douglas Public Library, 560 Tenth Street, Douglas, Arizona and Joel D. Valdez Main Library, 101 N. Stone Avenue, Tucson, Arizona.

Exhibit 1-1

NOTICE OF AVAILABILITY

FINAL ENVIRONMENTAL ASSESSMENT FOR INTEGRATED FIXED TOWERS IN THE U.S. BORDER PATROL'S DOUGLAS STATION AREA OF RESPONSIBILITY TUCSON SECTOR, ARIZONA U.S. CUSTOMS AND BORDER PROTECTION DEPARTMENT OF HOMELAND SECURITY WASHINGTON, DC

The public is hereby notified of the availability of the final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the construction, operation and maintenance of 10 new integrated fixed towers (IFT) sites and the retrofit of two existing towers to provide long-term/permanent surveillance in the U.S. Border Patrol's (USBP) Douglas Station Area of Responsibility (AOR). The Proposed Action also includes the construction of 10 access roads (approximately 0.22 mile) and improvement of eight approach roads (approximately 4.9 miles). The tower sites proposed as part of the USBP's Douglas Station AOR IFT project are located on Federal, state and private lands in the USBP's Douglas Station AOR within Cochise County, Arizona. The Proposed Action described in this EA represents CBP's plan to develop technology and supporting infrastructure to provide a persistent surveillance capability along approximately 42 miles of border in the Tucson Sector. The final EA and FONSI will be available at the Douglas Public Library, 560 Tenth Street, Douglas, Arizona, and the Joel D. Valdez Main Library, 101 N. Stone Avenue, Tucson, Arizona. It is also available for download from the CBP's internet web page at the following URL address: http://www.cbp.gov/xp/cgov/border_security/otia/sbi_news/sbi_enviro_docs/nepa.

1.7 REPORT ORGANIZATION

This EA is organized into eight major sections including this introduction. Section 2.0 describes all alternatives considered for the project. Section 3.0 discusses the environmental resources potentially affected by the project and the environmental consequences for each of the viable alternatives. Section 4.0 discusses cumulative impacts, and BMPs are discussed in Section 5.0. The irretrievable and irreversible commitment of resources is discussed in Section 6.0. Sections 7.0, 8.0 and 9.0 present a list of the references cited in the document, a list of acronyms and abbreviations used in the document and a list of the persons involved in the preparation of this document, respectively. Correspondence (40 C.F.R. §1501.7) generated during the preparation of this EA is found in Appendix A. Appendix B contains USBP's Douglas Station AOR IFT project site maps. Soil maps of all sites are in Appendix C. The Arizona Natural Heritage Program (ANHP) Special Status Species List is provided in Appendix D. Air quality calculations used in this analysis are in Appendix E.

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SECTION 2.0
PROPOSED ACTION AND ALTERNATIVES

2.0 PROPOSED ACTION AND ALTERNATIVES

The Proposed Action and two alternatives (Alternative 1 and the No Action Alternative) were identified and considered during the planning stages of the proposed project. The Proposed Action consists of the construction of 10 towers at preferred sites and the retrofit of two existing tower sites. Alternative 1 consists of the construction of three towers at preferred sites and nine towers at alternate sites, as well as the retrofit of two existing tower sites. Under the No Action Alternative, no IFTs would be constructed. The following paragraphs describe the tower site selection process that determines whether, and the extent to which, a particular location is suitable as a tower site, as well as how alternative tower sites were selected.

2.1 ALTERNATIVES AND ALTERNATE SITE SELECTION

As the proponent agency of the USBP's Douglas Station AOR IFT project, CBP developed a range of action alternatives and tower site alternatives considering how each would best meet the purpose and need of the project, including potential effects on the environment. Alternatives that did not fully meet the purpose of this project were eliminated from further analysis and are discussed in Section 2.6 below. First, CBP considered various types of surveillance systems and approaches to border surveillance, including a review of the use of different types of border surveillance equipment capable of providing spatially and temporally continuous surveillance across the entire 42-mile border region of this project. Each of these alternatives was fully evaluated in its ability to meet the project's purpose and need, operability, potential impacts on the environment and costs in terms of time and human resources needed to achieve interdictions of CBVs.

The Proposed Action described in Section 2.3 meets the purpose and need of this project within the constraints of environmental and operational considerations. Alternative 1, which is described in Section 2.4, does not fully meet the purpose and need of this project within the described considerations, but is still considered a viable alternative. The No Action Alternative, described in Section 2.5, is assessed as required by NEPA and its implementing regulations (40 C.F.R. §1502.14) and serves as a basis of comparison of the relative effectiveness and potential impacts of the Proposed Action and Alternative 1.

The proposed IFT project comprises a surveillance and communications system designed to enhance CBP's detection and deterrence of CBVs in the USBP's Douglas Station AOR. The IFT system was identified as the best surveillance technology for the USBP's Douglas Station AOR and its characteristic terrain. IFT systems contribute to situational preparedness, violator awareness and agent safety. These systems are a preferred solution in certain rural and remote areas that are difficult to access or prone to persistent cross-border threats. The IFT system enhances surveillance and C2 capabilities required by USBP agents to respond to the evolving threats posed by illegal intrusions.

2.2 CRITERIA FOR IFT SITE SELECTION

The IFT site selection process identifies potentially suitable tower site locations and their alternate sites. Key tower site evaluation considerations take into account constructability,

operability and environmental factors. The site selection process began with identification of proposed candidate tower sites based on an initial operational needs assessment by USBP agents in the Douglas Station AOR. This initial set of proposed candidate sites was assessed for the sites' abilities to meet access, construction, operational and environmental requirements using mapping programs and modeling and analysis. This review process resulted in multiple conceptual field laydowns, where optimal surveillance capability could be achieved with a minimum number of tower sites. A total of 29 sites was included as part of the initial field laydown.

Preliminary site surveys were conducted in May and July 2011 at the 29 initial field laydown sites, following the analyses with mapping programs, modeling and simulation of terrain types and achievable surveillance coverage requirements with CBP and DHS personnel. These 29 sites were evaluated by additional team personnel for both sensor and communication efficiencies and overall compatibility with IFT network design and connectivity. Operationally preferred site locations were then selected by CBP personnel based on their knowledge of the terrain, environment, land ownership and operational needs. This selection process was iterated until optimal surveillance and communications capabilities were deemed achievable.

After a conceptual field laydown of prospective tower sites was agreed upon by CBP, the project's environmental, construction and operational team personnel, including DOI and USDA representatives, conducted site visits and completed site visit reports with site-ranking matrices for each site. During site visits, project team personnel used site-ranking criteria to establish whether sites exhibited exclusionary, restrictive and/or selective characteristics from accessibility, constructability, operability and/or environmental criteria perspectives. Exclusionary sites are those candidate sites that were eliminated from further consideration because of terrain, operational and/or environmental issues that would have rendered an IFT inaccessible, unconstructable or non-operational. Restrictive tower sites require some alterations to tower design, location or construction or otherwise require minor mitigations to prevent adverse impacts on the environment. Selective sites were those that presented no constraints from an operational, constructability, design, engineering or environmental perspective.

Of the sites surveyed, eight sites were eliminated as unsuitable due to terrain or access considerations, the presence of cultural and/or sensitive resources, technical requirements or real estate issues (Table 2-1). A total of 21 IFT sites (10 preferred, nine alternate and two existing sites) is carried forward for analysis in this EA.

Table 2-1. Alternate Sites Proposed but Eliminated

Tower ID	Reason for Elimination
TCA-DGL-084	Operational and Technical
TCA-DGL-157	Real Estate
TCA-DGL-165	Operational and Real Estate
TCA-DGL-225	Environmental
TCA-DGL-370	Real Estate
TCA-DGL-376	Operational and Technical
TCA-DGL-392	Real Estate
TCA-DGL-394	Real Estate

2.3 PROPOSED ACTION

The Proposed Action described in this EA represents CBP's plan to develop border surveillance and communications technology and supporting infrastructure to provide a persistent surveillance capability along approximately 42 miles of border in the Tucson Sector. Technology to be considered in the design includes sensors, other surveillance assets, communications and C2 systems along the border. Infrastructure to be considered within CBP's plan includes roadways to/from IFTs and support utilities. The 12 towers would communicate with the C2 facility at the Douglas Station, and provide an overall network system of communications and surveillance along the 42 miles of border.

Tower Sites

The Proposed Action includes the construction, operation and maintenance of 10 preferred IFT sites and the retrofit of two existing towers (TCA-DGL-0156 and -380) to provide long-term/permanent surveillance in the USBP's Douglas Station AOR (Figure 2-1 and Table 2-2). The IFT system transfers situational awareness data to the C2 facility at the USBP Douglas Station that integrates and displays data from all IFT units deployed within the USBP's Douglas Station AOR. Each IFT consists of a tower equipped with a suite of sensors and/or communications equipment. Tower retrofits include installing or replacing sensor suites and/or communications equipment on existing towers.

Table 2-2. Proposed Action and Alternative 1 Tower Sites

Tower ID	Proposed Action	Alternative 1
TCA-DGL-0076		A
TCA-DGL-0078		A
TCA-DGL-0081		A
TCA-DGL-0156	E	E
TCA-DGL-0258		A
TCA-DGL-0362		A
TCA-DGL-0364	P	
TCA-DGL-0366	P	
TCA-DGL-0368	P	
TCA-DGL-0372	P	
TCA-DGL-0374	P	P
TCA-DGL-0380	E	E
TCA-DGL-0384	P	
TCA-DGL-0386		A
TCA-DGL-0388	P	P
TCA-DGL-0390	P	
TCA-DGL-0396	P	P
TCA-DGL-0400		A
TCA-DGL-0402		A
TCA-DGL-0426		A
TCA-DGL-0428	P	

P=Preferred A=Alternate E=Existing

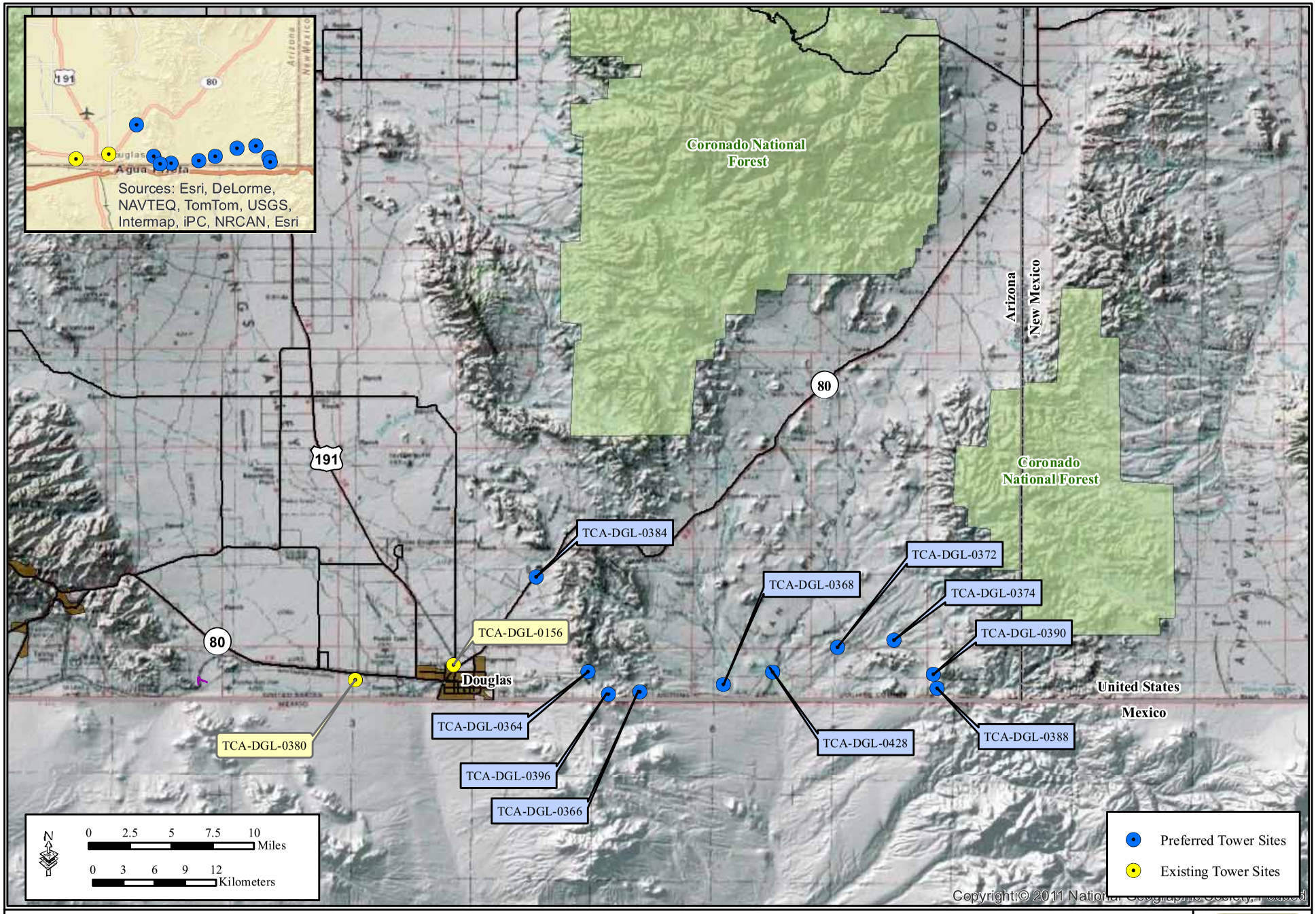


Figure 2-1. Proposed Action

GSRC

September 2012

Access and Approach Roads
Approach roads are existing private or public roads used to travel to an IFT site. Access roads are short road segments from an approach road into an IFT site. The Proposed Action includes the construction of 10 access roads (total length of 0.22 mile) and improvement of eight approach roads (approximately 4.9 miles). The new access roads would be constructed to provide a 12-foot-wide driving surface with 2-foot shoulders on each side (16 feet total). Road construction consists of blading native material; road improvements include reconstruction, widening or straightening of the existing road, as well as installation of drainage structures; and road repair includes minor grading, leveling and installation of drainage structures, such as low-water crossings.

2.3.1 Tower Characteristics

Two types of tower structures are included as part of the Proposed Action: self-standing towers (SST) and monopole towers. None of the proposed tower types require guy wires. SSTs are steel, lattice-style structures, with a base of three circular concrete piers, each approximately 4 to 6 feet in diameter (Figure 2-2). Other foundation types may be used depending on the site-specific geotechnical characteristics. Depth of the piers is dependent on tower height and geotechnical characteristics at each tower site but is expected to be less than 60 feet below ground surface (bgs). SSTs would typically be up to 140 feet high.

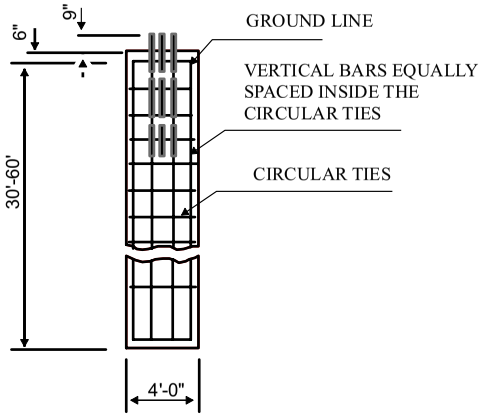
Monopole towers are metal, single-pole towers with reinforced steel concrete foundations (Figure 2-3). The depth of each tower foundation is dependent on tower height and geotechnical characteristics at each tower site but is expected to range from 10 to 40 feet bgs. Monopole towers would range in height from 40 feet to 140 feet.

Each tower has the subsequent design, power requirements and site and fence enclosure footprint described below, unless otherwise noted in the detailed proposed tower site discussions outlined below.

Tower Footprint
Construction of SSTs or monopole tower sites results in ground disturbance confined to a 200-foot x 200-foot area (40,000 square feet). All staging of construction equipment and materials, as necessary, would occur within this footprint during construction. Each permanent tower site footprint is expected to be up to a 100-foot x 100-foot (10,000 square feet) square shape or non-square shape depending on site-specific conditions for both tower types, and would include a permanent parking area for vehicles.

Each tower footprint is confined to the dimensions mentioned above. Regardless of each tower site's configuration, the total area of temporary construction disturbance for each site would not exceed 30,000 square feet (40,000 square feet – 10,000 square feet), and the total area of permanent disturbance would not exceed 10,000 square feet.

Tower Perimeter Fence Enclosure
Each tower site meets the minimum security requirements as outlined in CBP's Memorandum for Record titled *Minimum Physical Security Requirements for CBP/OTIA Fixed Tower Sites* and dated December 8, 2011 (DeNayer 2011). The perimeter fence footprint includes an area up to



SIDE VIEW OF FOUNDATION
(ONE PIER ONLY)

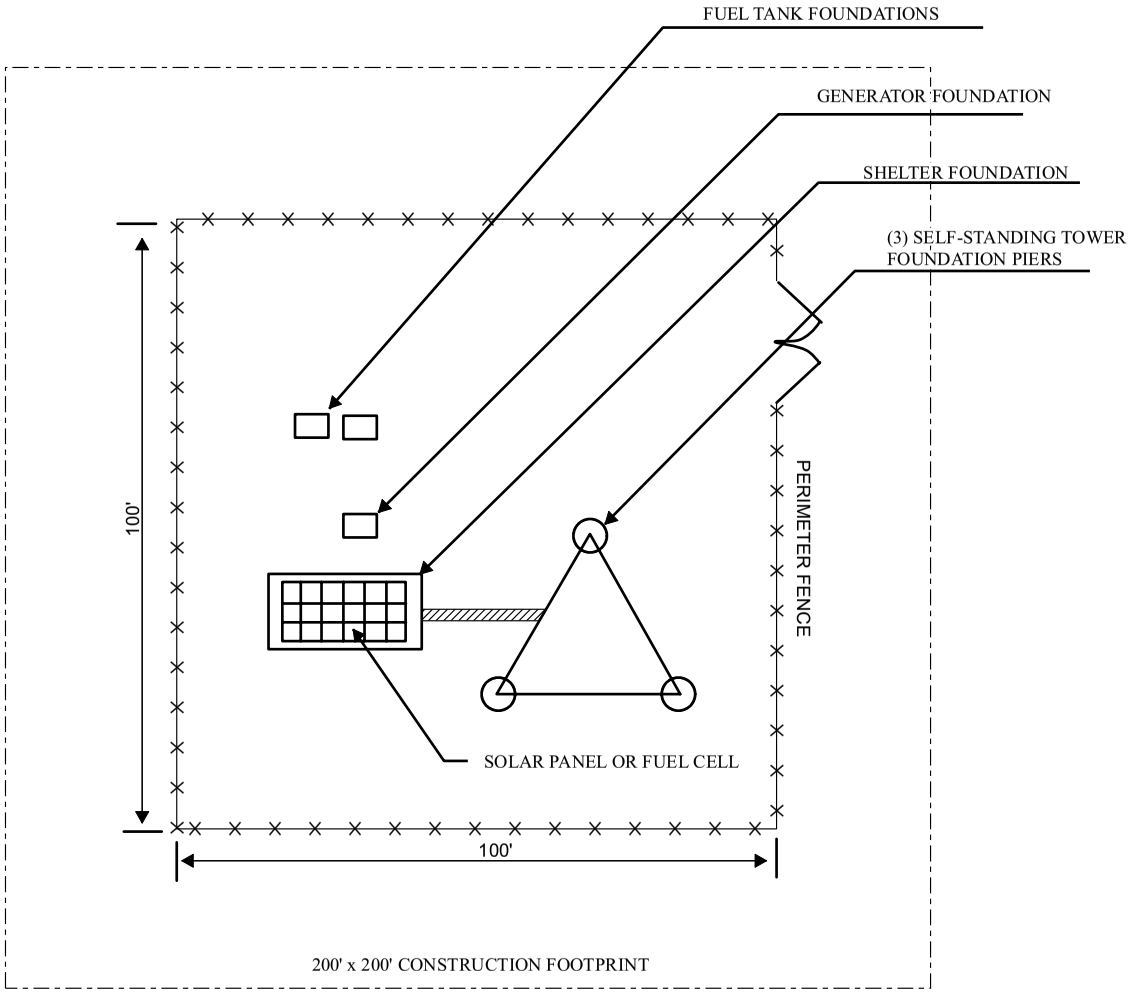
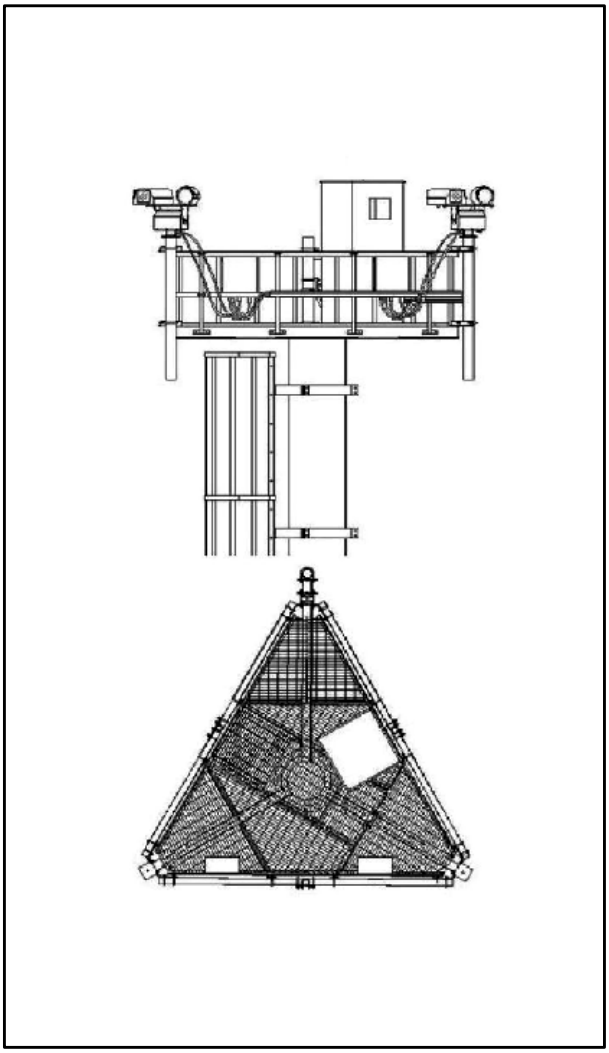


Figure 2-2. Proposed Self-Standing Tower (SST) Elements



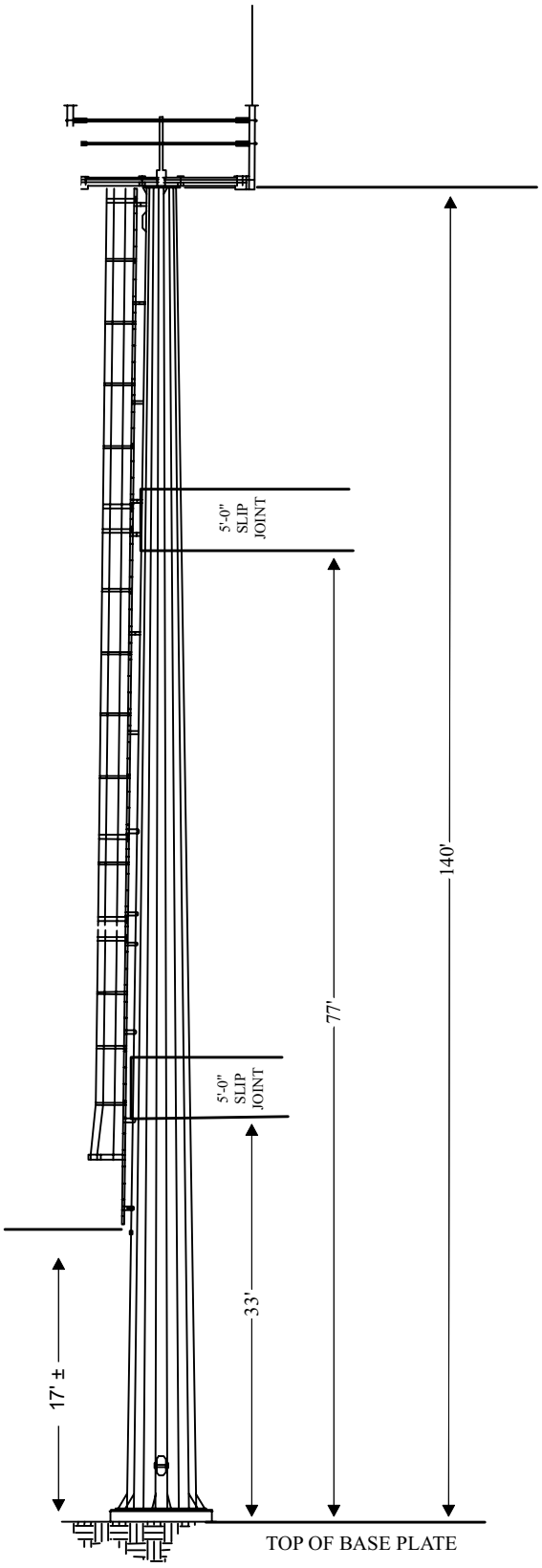


Figure 2-3. Typical Monopole Tower Profile

10,000 square feet at each tower site, regardless of tower site configuration. At minimum, an 8-foot-high perimeter fence, consisting of a 7-foot-high chain-link fence and a 1-foot barbed wire outrigger, would be erected around the site perimeter to prevent unauthorized access.

Tower Equipment Shelter

An equipment shelter would be within the perimeter fencing of each proposed tower site. The shelter is air conditioned to maintain proper equipment operating temperatures. The equipment shelters may also be equipped with an air blower that forces filtered ambient air through the shelter for electronics cooling during normal tower operation.

Tower Power Sources

Each IFT would be powered by either commercial grid power (where available) or a dual power system consisting of a generator/alternate power source charged batteries. Alternate power sources could include solar panels or hydrogen fuel cells. A 1,000-gallon generator fuel tank would be installed at the tower site. During daylight hours, mission equipment loads are serviced directly from a combination of solar panel and battery where an IFT is equipped with solar power. During periods without available solar power generation, equipment loads are serviced by generator alone. The backup generator supports high-rate battery charging when battery charging is required.

Commercial Grid Power

All power lines would be installed either overhead or in buried cables from the main trunk line to the tower site shelter. Where commercial power is utilized, the installation of overhead or buried lines would be placed within surveyed road construction buffer areas, all of which would be verified to identify potential impacts on biological and cultural resources along access roads.

Fiber Optics

Fiber optics may be installed at TCA-DGL-0384. Fiber-optic cables would be buried from the main line to the tower site shelter. The fiber-optic cable would be placed within surveyed road construction buffer areas, all of which would be verified to identify potential impacts on biological and cultural resources along access roads.

Sensor and Communications Equipment

Typical designs for the sensor and communications towers consist of the following components:

Sensor Towers

- Multiple cameras (electro-optical/infrared sensors, video cameras)
- Radio-frequency radar
- Data-receiving antennas
- Spotlights
- Laser illuminators

Communications Towers

- Parabolic dishes
- Microwave relays; and/or
- Data-receiving antennas

Combination sensor and communications towers include equipment associated with both sensor and communications towers. The exact number and type of equipment depend on the number and types of cameras used, the area to be monitored and other design variables. Components would be mounted on each tower between 20 and 140 feet above ground level, depending on the local terrain. Cameras, antennas and parabolic antennas would be installed at heights that would ensure satisfactory line-of-sight and provide clear pathways for transmission of information to communications towers and the USBP Douglas Station. Towers generally require line-of-sight to ensure unobstructed microwave transmission signals from tower to tower. All transmit frequencies used as part of the Proposed Action would be coordinated with NTIA. As part of the overall spectrum management process, the NTIA and the Federal Communications Commission (FCC) have developed radio regulations to help ensure that the various radio services operate compatibly in the same environment without unacceptable levels of radio frequency interference and emissions. While the communications systems and the frequencies in which they are operated are considered law enforcement sensitive and cannot be provided to the public, compliance with FCC and NTIA regulations is required and ensures that recognized safety guidelines are not exceeded.

Camera systems on the IFT towers may incorporate an eye safe laser illuminator. The eye safe laser illuminator can be used to direct agents in the field and in the air to items of interest (IoI) being viewed by the sensor operator. Agents equipped with night vision goggles (NVG) are able to readily locate the beam and locate IoIs without alerting them. The laser is eye safe at any distance and is an agent safety device that enhances visibility and the ability to locate IoIs.
The proposed tower sites may be lighted for security purposes. Security lighting may consist of a "porch light" on the tower shelter and would be controlled by a motion detector. When so equipped, the light would be shielded to avoid illumination outside the footprint of the tower site. The proposed IFTs may have infrared lighting installed for aviation safety, and if installed, any such lighting would be compatible with NVG usage. USFWS (2000) *Service Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers* would be implemented to reduce nighttime atmospheric lighting and the potential adverse effects of nighttime lighting on migratory bird and nocturnal flying species.

The following discussion is a summary description of each of the 10 preferred IFT sites and two existing tower sites. Maps for each of the proposed IFT sites are provided in Appendix B.

Tower ID:	**TCA-DGL-0156**
Tower Function:	Communications
Tower Type:	SST (existing)
Tower Height:	100 feet
Land Ownership/ Management:	CBP

Location Description:	Proposed tower site TCA-DGL-0156 is an existing communications tower at the old USBP Douglas Station (Appendix B, Figure 1).
Tower Access:	Access to this tower site is via existing roads and parking lots (Appendix B, Figure 1).
Planned Power System(s):	Grid power (existing)

Tower ID:	**TCA-DGL-0364**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	ASTL
Location Description:	Proposed tower site TCA-DGL-0364 is located approximately 6.5 miles east of Douglas, Arizona, north of Geronimo Trail and 1.6 miles north of the United States/Mexico border (Appendix B, Figure 2).
Tower Access:	Access to the proposed tower site is via Geronimo Trail and a 0.56-mile-long unnamed road from Geronimo Trail to the site. Approximately 70 feet of new access road construction and approximately 0.54 mile of approach road improvements are needed to facilitate tower installation and maintenance (Appendix B, Figure 2).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0366**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	BLM
Location Description:	Proposed tower site TCA-DGL-0366 is located on BLM land, 9.6 miles east of Douglas, Arizona, south of Geronimo Trail and west of North Rocker M Ranch Road. The site is approximately 0.4 mile north of the United States/Mexico border (Appendix B, Figure 3).
Tower Access:	Access to the proposed site is via Geronimo Trail and a 0.45-mile-long unnamed road from Geronimo Trail to the site. Approximately 38 feet of new access road construction and approximately 0.42 mile of approach road improvements are needed to facilitate tower installation and maintenance (Appendix B, Figure 3).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0368**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	Private
Location Description:	Proposed tower site TCA-DGL-0368 is located on private property approximately 13.9 miles east of Douglas, Arizona, north of Geronimo Trail and approximately 0.85 mile north of the United States/Mexico border (Appendix B, Figure 4).
Tower Access:	Access to the site is via Geronimo Trail and a 1.5-mile-long unnamed road from Geronimo Trail to the tower site. Approximately 36 feet of new access road construction and 1.4 miles of approach road improvements are needed to facilitate tower installation and maintenance (Appendix B, Figure 4).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0372**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	ASTL
Location Description:	Proposed tower site TCA-DGL-0372 is located along Geronimo Trail approximately 20.2 miles northeast of Douglas, Arizona, approximately 9.4 miles west of the Arizona/New Mexico border and approximately 3.1 miles north of the United States/Mexico border (Appendix B, Figure 5).
Tower Access:	Access to the site is via Geronimo Trail and an approximately 175-foot-long unnamed road from Geronimo Trail. Approximately 26 feet of new access road construction and approximately 143 feet of approach road improvements are needed to facilitate tower installation and maintenance (Appendix B, Figure 5).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0374**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	ASTL
Location Description:	Proposed tower site TCA-DGL-0374 is located along Geronimo Trail approximately 23.2 miles northeast of Douglas, Arizona, approximately 6.5 miles west of the Arizona/New Mexico border and

	approximately 3.6 miles north of the United States/Mexico border (Appendix B, Figure 6).
Tower Access:	Access to the site is via Guadalupe Canyon Road from Geronimo Trail and a 0.44-mile-long unnamed road from Guadalupe Canyon Road. Approximately 299 feet of new access road is proposed for construction from the unnamed road to the proposed tower site and approximately 0.41 mile of approach road improvements are needed to facilitate tower installation and improvements. Approach road improvements include improving a low-water crossing at one wash (Appendix B, Figure 6).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0380**
Tower Function:	Communications
Tower Type:	SST (existing)
Tower Height:	180 feet
Land Ownership/ Management:	CBP
Location Description:	Proposed tower site TCA-DGL-0380 is an existing communications tower at the USBP Douglas Station (Appendix B, Figure 7).
Tower Access:	Access to the proposed site is via existing roads and parking lots (Appendix B, Figure 7).
Planned Power System (s):	Grid power (existing)

Tower ID:	**TCA-DGL-0384**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	ASTL
Location Description:	Proposed tower site TCA-DGL-0384 is located approximately 8 miles north-northeast of Douglas, Arizona, along Arizona Highway 80 (Appendix B, Figure 8).
Tower Access:	Access to the tower site is via a 0.17-mile-long unnamed road from Arizona Highway 80. Approximately 24 feet of new access road construction and approximately 594 feet of approach road improvements are needed to facilitate tower installation and maintenance (Appendix B, Figure 8).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries. There is a potential for commercial grid power at this IFT site.

Tower ID:	**TCA-DGL-0388**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	ASTL
Location Description:	Proposed tower site TCA-DGL-0388 is located south of Guadalupe Canyon Road approximately 25 miles east of Douglas, Arizona, approximately 4.4 miles west of the Arizona/New Mexico border and approximately 0.7 mile north of the United States/Mexico border (Appendix B, Figure 9).
Tower Access:	Access to the site is via Geronimo Trail to Guadalupe Road, then 0.44 mile south along Mafioso Trail. Approximately 70 feet of new access road construction are needed to facilitate tower installation and maintenance (Appendix B, Figure 9).
Design Exception:	Riprap is proposed for installation to protect the IFT site from off-site drainage. Riprap would be installed as part of rerouting the existing drainage ditch along the new access road and around the IFT site.
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0390**
Tower Function:	Communications
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	ASTL
Location Description:	Proposed tower site TCA-DGL-0390 is located northeast of Guadalupe Canyon Road approximately 25 miles east of Douglas, Arizona, approximately 4.5 miles west of the Arizona/New Mexico border and approximately 1.5 miles north of the United States/Mexico border (Appendix B, Figure 10).
Tower Access:	Access to the site is via Guadalupe Canyon Road from Geronimo Trail. Approximately 86 feet of new access road is proposed for construction to facilitate tower installation and maintenance (Appendix B, Figure 10).
Design Exception:	Riprap is proposed for installation to protect the IFT site from off-site drainage.
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

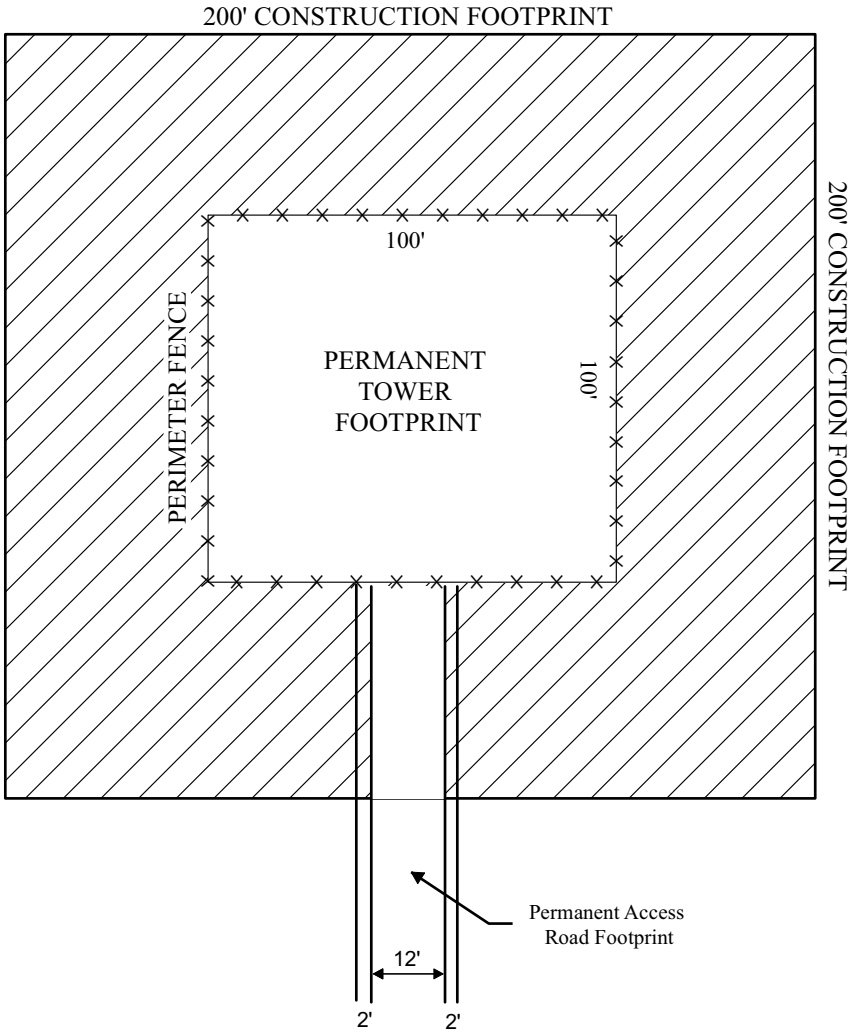
Tower ID:	**TCA-DGL-0396**
Tower Function:	Communications
Tower Type:	SST
Tower Height:	Up to 140 feet

Land Ownership/ Management:	BLM
Location Description:	Proposed tower site TCA-DGL-0396 is located south of Geronimo Trail approximately 8.2 miles northeast of Douglas, Arizona, approximately 21.3 miles west of the Arizona/New Mexico border and approximately 0.26 mile north of the United States/Mexico border (Appendix B, Figure 11).
Tower Access:	Access to the site is via Geronimo Trail to an unnamed road located approximately at mile marker 9.15 to the Border Road and then an unnamed road. Approximately 292 feet of new access road construction and approximately 1.5 miles of approach road improvements are needed along the Border Road and the unnamed road to the site (Appendix B, Figure 11). Improvements include road clearing, widening, grading and straightening a turn on the unnamed approach road to the site.
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0428**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	Private land
Location Description:	Proposed tower site TCA-DGL-0428 is located south of Geronimo Trail approximately 16.6 miles east-northeast of Douglas, Arizona, approximately 12.8 miles west of the Arizona/New Mexico border and approximately 1.6 miles north of the United States/Mexico border (Appendix B, Figure 12).
Tower Access:	Access to the site is via Geronimo Trail and an approximately 0.44-mile-long unnamed road from Geronimo Trail to the tower site. Approximately 205 feet of new access road construction and approximately 0.54 mile of approach road improvements are needed to facilitate tower installation and maintenance (Appendix B, Figure 12).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries. There is a potential for commercial grid power at this IFT site.

2.3.2 Construction of Communication and Sensor Towers

The permanent tower site footprints of 10,000 square feet or less would be mechanically cleared of vegetation and graded for the construction of IFT sites, regardless of tower type. Precast concrete pads would be installed as foundations for the equipment shelter, 1,000-gallon generator fuel tank and generator (see Figure 2-2). A 30,000-square-foot (40,000 square feet – 10,000 square feet) temporary construction area around the permanent tower footprint would be used to stage construction equipment and materials during construction activities (Figure 2-4). Parking



NOT TO SCALE

Figure 2-4. Tower Construction Footprint Schematic

for construction vehicles and equipment would be within the 30,000-square-foot temporary construction area during construction. The temporary construction area may be cleared but would not be graded. Following construction activities, the temporary construction area would be restored.

The following is a list of heavy equipment and vehicles expected to be used during each phase of IFT site construction:

- Front-end loader or equivalent
- Drill rig
- Excavator
- Post hole digger
- Water truck
- Crane
- Bulldozer
- Concrete trucks (up to two)
- Dump trucks (up to two)
- Flatbed delivery truck
- Crew trucks (up to six)

Based on past tower construction experience, the total time for construction, including inspections and operational testing of equipment, for each proposed tower site is expected to be approximately 26 to 80 days. The actual duration will depend on tower type. All construction would be restricted to daylight hours to the greatest extent practicable. Generally, monopole towers require up to 40 days for construction, and SSTs require up to 80 days (this includes a 28-day concrete set). Construction activities are anticipated to begin in late 2012 to mid-year 2013. The installation of the sensor payload requires approximately 2 days per tower site and includes up to 12 people, including delivery truck and personnel vehicles.

Following the completion of the sensor payload installation, equipment testing and system acceptance testing is conducted as part of construction activities to check the operability of the systems. The exact details of the system acceptance testing plan are not currently known. However, based on past equipment testing and acceptance testing experience, it is anticipated that system acceptance testing may require personnel walking multiple routes near different IFTs for a 2- to 3-hour period. Sensor and radar equipment need to be tested. Testing personnel walk individually and as a group. System acceptance testing occurs during an approximately 28-day period for all sites. Testing personnel travel by vehicles on existing roads to the test walk routes identified by CBP.

2.3.3 Operation and Maintenance of Communication and Sensor Towers

The generator may be expected to operate a total of 4 to 8 hours per day to bulk charge system batteries. Run times are shorter on sunny days, when the solar array provides more of the system operating power. Generator run times for systems connected to the commercial power grid are limited to 1 to 5 hours twice per month for maintenance purposes. System conditioning would occur during off-grid operational schedules or if grid power is interrupted, and the generator would be operated temporarily, as needed, until grid power is again available.

Tower site maintenance includes scheduled and unscheduled maintenance. Unscheduled maintenance includes removing and replacing failed tower sensor systems or shelter components. Scheduled maintenance includes any planned preventive maintenance, including refueling generator tanks (i.e., propane), changing oil, filters and other required lubricants and any shelf-life item of the system. Both scheduled and unscheduled tower maintenance require maintenance vehicles to travel to and from the IFT sites. The number of maintenance trips and refueling trips varies depending on tower function (i.e., sensor) and power type (i.e., commercial grid power). Sensor towers require more maintenance and fuel than communication towers, as do towers powered by solar or fuel generators (Table 2-3). Based on past tower operation and maintenance experience, it is anticipated that one vehicle trip to and from each of the proposed tower sites is required per maintenance visit. The estimates provided in Table 2-3 are the maximum number of annual maintenance and refueling trips required per tower. Tower sites connected to commercial grid power require maintenance 6 to 13 times a year depending on tower function (Table 2-3). Tanker trucks with dual rear tires and/or rear dual axles with a gross vehicle weight of up to 30,000 pounds are used to deliver fuel to each applicable tower. A total of approximately 340 vehicle trips per year is anticipated for tower maintenance and refueling (Table 2-3).

Table 2-3. Summary of Annual Vehicle Trips Required for Tower Maintenance and Refueling for the Proposed Action

Tower	Function	Power Source	Maintenance Trips	Refueling Trips	Total
TCA-DGL-0156	Comms	Grid Power	13	1	14
TCA-DGL-0364	Sensor	Dual Power System	24	12	36
TCA-DGL-0366	Sensor	Dual Power System	24	12	36
TCA-DGL-0368	Sensor	Dual Power System	24	12	36
TCA-DGL-0372	Sensor	Dual Power System	24	12	36
TCA-DGL-0374	Sensor	Dual Power System	24	12	36
TCA-DGL-0380	Comms	Grid Power	13	1	14
TCA-DGL-0384*	Sensor	Dual Power System	24	12	36
TCA-DGL-0388	Sensor	Dual Power System	24	12	36
TCA-DGL-0390	Comms	Dual Power System	6	6	12
TCA-DGL-0396	Comms	Dual Power System	6	6	12
TCA-DGL-0428*	Sensor	Dual Power System	24	12	36
TOTAL			**230**	**110**	**340**

Comms = Communications
* Tower may be connected to commercial grid power; however, maintenance requirements are based on a dual power system.

2.3.4 Road Construction, Repair, Improvement and Maintenance

New access road construction and road improvements are required to move construction equipment, materials and personnel to and from the proposed tower sites during construction. Access road construction is required to provide access from public or private roads to the proposed tower sites. Maps depicting approach road improvements and new access roads at each proposed tower site are provided in Appendix B. Arizona Department of Transportation

(ADOT) guidelines, standards and details for road construction would be adhered to for improvements on public roads.

Road Improvements
Eight approach roads to proposed IFT sites require approximately 4.9 miles of improvements (Appendix B). Road improvements are associated with proposed IFT sites TCA-DGL-0364, -0366, -0368, -0372, -0374, -0384, -0396 and -0428. Road improvements include reconstruction, widening and straightening of approach roads. All improved roads would have a maximum driving surface of 12 feet and include a 2-foot shoulder on each side of road. A 56-foot temporary construction easement is required for road improvements. A 56-foot temporary construction easement would be delineated prior to construction. Following construction activities, any temporary impact areas would be revegetated with a mixture of native plant seeds or nursery plantings (or both).

Road Construction
A total of 10 access roads totaling, 0.22 mile in length, is proposed for construction to provide access to IFT sites from approach roads. The access roads are associated with proposed IFT sites TCA-DGL-0364, -0366, -0368, -0372, -0374, -0384, -0388, -0390, -0396 and -0428 and provide a 12-foot-wide driving surface with 2-foot shoulders on each side (Appendix B). The total width of new access roads is 16 feet. Access roads are constructed by mechanically removing vegetation and grading native soils. Drainage structures may include but are not limited to ditches, culverts and low-water crossings. Following construction activities, any temporary impact areas would be revegetated with a mixture of native plant seeds or nursery plantings (or both).

Road Maintenance
Road maintenance would be performed as part of CBP's Comprehensive Tactical Infrastructure (TI) Maintenance and Repair program for roads associated with CBP TI and OTIA projects to ensure full-time access to the towers and other TI. It is anticipated that road maintenance may occur up to six times per year, as necessary.

2.4 ALTERNATIVE 1

Under Alternative 1, 12 new towers are proposed for construction, including nine at alternate sites and three at preferred sites, and two existing towers are proposed for retrofit (Figure 2-5 and see Table 2-2). The same suite of sensor and communications equipment as described in the Proposed Action would be mounted on these IFTs. Alternative 1 also includes the construction of 11 access roads (0.42 mile) and improvements to eight approach roads (4.3 miles). Maps for each of the proposed IFT sites are provided in Appendix B. The following discussion is a summary description of each of the nine alternate tower sites not included in the Proposed Action.

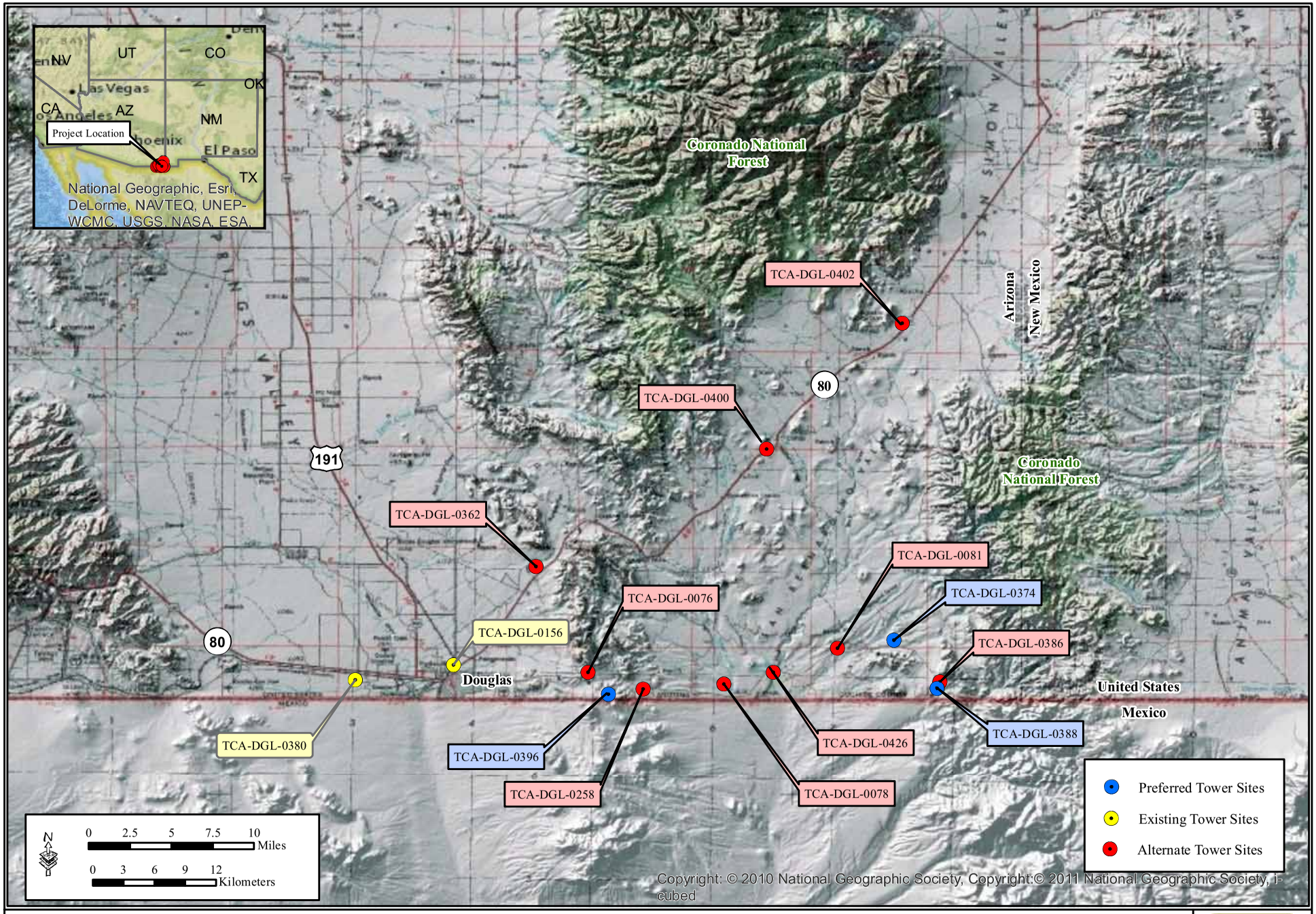


Figure 2-5. Alternative 1

GSRC

September 2012

Tower ID:	**TCA-DGL-0076**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	ASTL
Location Description:	Proposed alternate tower site TCA-DGL-0076 is located on ASTL, approximately 6.5 miles east of Douglas, Arizona, north of Geronimo Trail and 1.6 miles north of the United States/Mexico border (Appendix B, Figure 2).
Tower Access:	Access to the proposed tower site is via Geronimo Trail and a 0.56-mile-long unnamed road from Geronimo Trail to the site. Approximately 650 feet of approach road improvements are needed to facilitate tower installation and maintenance (Appendix B, Figure 2).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0078**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	Private land
Location Description:	Proposed alternate tower site TCA-DGL-0078 is located on private property approximately 13.9 miles east of Douglas, Arizona, north of Geronimo Trail and approximately 0.85 mile north of the United States/Mexico border (Appendix B, Figure 4).
Tower Access:	Access to the site is via Geronimo Trail and a 1.5-mile-long unnamed road from Geronimo Trail to the tower site. Approximately 74 feet of new access road construction and approximately 1.4 miles of approach road improvements are needed to facilitate tower installation and maintenance (Appendix B, Figure 4).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0081**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	Private

Location Description:	Proposed alternate tower site TCA-DGL-0081 is located along Geronimo Trail approximately 20.2 miles northeast of Douglas, Arizona, approximately 9.4 miles west of the Arizona/New Mexico border and approximately 3.1 miles north of the United States/Mexico border (Appendix B, Figure 5).
Tower Access:	Access to the site is via Geronimo Trail and an approximately 426-foot-long unnamed road from Geronimo Trail. Approximately 194 feet of new access road construction and approximately 426 feet of road improvements are needed to facilitate tower installation and maintenance (Appendix B, Figure 5).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0258**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	ASTL
Location Description:	Proposed alternate tower site TCA-DGL-0258 is located on ASTL, 9.6 miles east of Douglas, Arizona, south of Geronimo Trail and west of North Rocker M Ranch Road. The site is approximately 0.4 mile north of the United States/Mexico border (Appendix B, Figure 3).
Tower Access:	Access to the proposed site is via Geronimo Trail and an approximately 0.15-mile-long unnamed road from Geronimo Trail to the site. Approximately 74 feet of new access road construction and approximately 792 feet of road improvements are needed to facilitate tower installation and maintenance (Appendix B, Figure 3).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0362**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	BLM
Location Description:	Proposed alternate tower site TCA-DGL-0362 is located approximately 8 miles north-northeast of Douglas, Arizona, along State Route (SR) 80 (Appendix B, Figure 13).
Tower Access:	Access to the tower site is via a 0.17-mile-long unnamed road from SR 80. Approximately 600 feet of new access road construction and approximately 898 feet of road improvements are needed to facilitate tower installation and maintenance (Appendix B, Figure 13).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0386**
Tower Function:	Communications
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	ASTL
Location Description:	Proposed alternate tower site TCA-DGL-0386 is located northeast of Guadalupe Canyon Road approximately 25 miles east of Douglas, Arizona, approximately 4.5 miles west of the Arizona/New Mexico border and approximately 1.5 miles north of the United States/Mexico border (Appendix B, Figure 9).
Tower Access:	Access to the site is via Guadalupe Canyon Road from Geronimo Trail. Approximately 90 feet of new access road is proposed for construction to facilitate tower installation and maintenance (Appendix B, Figure 9).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0400**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	ASTL
Location Description:	Proposed alternate tower site TCA-DGL-0400 is located west of SR 80 approximately 21 miles northeast of Douglas, Arizona, approximately 13 miles west of the Arizona/New Mexico border and approximately 14 miles north of the United States/Mexico border (Appendix B, Figure 14).
Tower Access:	Access to the site is via an unnamed approach road from SR 80. Approximately 49 feet of new access road is proposed for construction to facilitate tower installation and maintenance (Appendix B, Figure 14).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0402**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	Private
Location Description:	Proposed alternate tower site TCA-DGL-0402 is located west of SR 80 approximately 31 miles northeast of Douglas, Arizona, approximately 6 miles west of the Arizona/New Mexico border and approximately 22 miles north of the United States/Mexico border (Appendix B, Figure 15).

Tower Access:	Access to the site is via SR 80. Approximately 335 feet of new access road is proposed for construction to facilitate tower installation and maintenance (Appendix B, Figure 15).
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

Tower ID:	**TCA-DGL-0426**
Tower Function:	Sensor
Tower Type:	SST
Tower Height:	Up to 140 feet
Land Ownership/ Management:	Private land
Location Description:	Proposed alternate tower site TCA-DGL-0426 is located south of Geronimo Trail approximately 16.6 miles east-northeast of Douglas, Arizona, approximately 12.8 miles west of the Arizona/New Mexico border and approximately 1.6 miles north of the United States/Mexico border (Appendix B, Figure 12).
Tower Access:	Access to the site is via Geronimo Trail and an approximately 0.44-mile-long unnamed road from Geronimo Trail to the tower site (Appendix B, Figure 12). Approximately 299 feet of new access road construction and approximately 0.41 mile of road improvements are needed to facilitate tower installation and maintenance.
Planned Power System(s):	Dual power system, generator/alternate power source (e.g., solar) charged batteries.

2.5 NO ACTION ALTERNATIVE

The No Action Alternative serves as a basis of comparison to the anticipated effects of the other action alternatives, and its inclusion in this EA is required by NEPA regulations (40 C.F.R. 1502.14(d)). Under the No Action Alternative, the installation of proposed communications and sensor towers would not take place. In the absence of the proposed IFTs and their technological capabilities, USBP agents would continue to rely solely on traditional detection methodology that includes traditional sign detection, which requires both patrolling and dragging of roads. Road dragging involves pulling tires or other implements behind a patrol vehicle to smooth the soil surface. The smoothed soil surface enhances USBP agents' ability to detect tracks (i.e., footprints). Currently, identification, classification, response and resolution actions require that USBP agents respond to evidence of illegal entry gained through the previously mentioned tools and techniques, as well as through direct observation. USBP agents, in most cases, follow physical evidence and indicators of the presence of IoIs. Under the No Action Alternative, USBP's ability to detect and interdict CBVs would not be enhanced; thus, operational efficiency and effectiveness would not be improved within the area covered by the proposed towers.

2.6 ALTERNATIVES EVALUATED BUT ELIMINATED FROM FURTHER CONSIDERATION

Other border surveillance approaches, strategies and technologies, such as the use of unmanned aircraft systems and imaging satellites were considered as alternatives, but were eliminated from further review. Although these alternatives or a combination of these alternatives can be valuable tools that CBP may employ in other areas or circumstances of border incursion, they were eliminated because of logistical restrictions, environmental considerations and/or functional deficiencies that fail to meet the purpose and need for this project. These alternatives and reasons for their exclusion from further analysis are discussed below (see Section 2.1).

2.6.1 Unmanned Aircraft Systems Alternative

As a stand-alone alternative, the use of unmanned aircraft systems in lieu of towers was not further evaluated for feasibility or potential impacts because these systems are not operable in all weather conditions and do not provide the persistent surveillance capability provided by IFTs. This alternative fails to achieve the goals of the IFT project and enhanced surveillance and protection along the United States/Mexico border within the USBP's Douglas Station AOR.

2.6.2 Remote Sensing Satellites Alternative

Use of remote sensing satellites was not further evaluated for feasibility or potential impacts because satellite systems cannot provide real-time data delivery for the border areas in question. They are also unreliable in certain weather conditions, and do not meet USBP requirements for expedient interdictions of CBVs. Cloud cover and other atmospheric conditions can limit the remote sensing satellites' views of the earth, and satellites do not provide full-time coverage or acceptable visual resolution of the border areas under consideration for this project. Therefore, a remote sensing satellite system fails to meet this project's purpose and need for enhanced surveillance.

2.6.3 Unattended Ground Sensors Alternative

Another alternative that was considered but eliminated from further evaluation was the use of remote sensor fields alone. The expanse of area required for unattended ground sensor fields to effectively cover an area similar to that of a single tower surveillance system is too vast. The number of unattended ground sensors needed would generate an unacceptably large number of used batteries over the life cycles of the sensors and requires an extensive number of man-hours to place, remove, replace and maintain unattended ground sensors in accordance with current sensor life-cycle schedules and use strategies. USBP agents have to deploy to an area when a sensor is activated. If the cause for activation is something other than CBVs, undue environmental disturbances may occur as a result of this deployment.

2.6.4 Increased CBP Workforce Alternative

Another alternative considered during the preparation of this EA was to have no new IFTs and instead to simply increase the number of USBP agents patrolling (via vehicles) the targeted border areas. The targeted areas experience a high level of illegal entries. Due to local topography, elevations and vegetative cover, individually located agents at discrete border locations in USBP's Douglas Station AOR would not achieve the same level of detection capabilities as provided by the Proposed Action. Consequently, additional observation points

would have to be established to provide the same coverage as the proposed tower systems, which would disturb additional areas along the border. Such efforts require an unacceptably large deployment of agents in the field at all times and require a significant increase in agents to obtain a level of effective border surveillance coverage to match a single tower's persistent surveillance capabilities. Funding and staffing requirements could affect the number of agents available to perform monitoring efforts in the future; therefore, this alternative does not provide a long-term or permanent solution to illegal cross-border activities. This alternative does not meet this project's purpose and need, and does not provide the same level of enhanced detection as the Proposed Action.

2.6.5 Increased Aerial Reconnaissance/Operations Alternative

Under this alternative, increased aerial reconnaissance would be used for surveillance to support USBP station operations. CBP would use fixed-wing aircraft and helicopters to perform reconnaissance and detection operations and to support ground patrols.

This alternative was eliminated from further consideration because it does not satisfy the purpose and need of the project. The purpose and need calls for a more efficient and effective means of assessing all border activities. Aerial reconnaissance/operations cannot be used on a 24-hours-per-day basis and cannot operate under all weather conditions. Aerial reconnaissance/operations have limited detection capabilities in areas such as deep ravines, at nighttime and in dense vegetation.

In certain remote regions of the southern border, aerial reconnaissance/operations can be an effective border enforcement tool. For example, aerial operations have proven highly effective in areas where the open terrain, low-growing vegetation and sandy soils allow CBVs and signs of other illegal border traffic to be easily recognized from aircraft. Aerial reconnaissance/ operations have become invaluable to USBP agents when performing search and rescue missions and during vehicle pursuits. Due to their effectiveness in certain situations and specific areas of the border, increasing aerial reconnaissance/operations may be an effective solution in other areas or to meet the purpose and need of other DHS activities. However, aerial reconnaissance as a stand-alone alternative does not satisfy this project's purpose and need, and thus, for this assessment, it was eliminated from further consideration.

2.7 ALTERNATIVES SUMMARY

The three alternatives selected for further analysis are the Proposed Action, Alternative 1 and the No Action Alternative. The Proposed Action is CBP's preferred alternative for the proposed project. It fully meets the purpose and need of the project, and the preferred tower sites selected offer the best combination of towers based on the four criteria (accessibility, operability, constructability and environmental constraints) used to assess tower site suitability. The alternate tower sites presented in Alternative 1 have associated constraints from an accessibility, operability, constructability and environmental perspective but could still be constructed (Table 2-4). Although the alternate tower sites could be constructed, Alternative 1 provides less surveillance coverage compared to the Proposed Action. An evaluation of how the Proposed Action and Alternative 1 meet the project's purpose and need is provided in Table 2-5.

Table 2-4. Alternate Tower Site Constraint Summary

Tower Site	Site Selection Constraint	Rationale
TCA-DGL-0076	Operability	Surveillance coverage is less compared to the preferred tower site (TCA-DGL-0364).
TCA-DGL-0078	Operability	Surveillance coverage is less compared to the preferred tower site (TCA-DGL-0368).
TCA-DGL-0081	Operability	Surveillance coverage is less compared to the preferred tower site (TCA-DGL-0372).
TCA-DGL-0258	Operability	Surveillance coverage is less compared to the preferred tower site (TCA-DGL-0366).
TCA-DGL-0362	Constructability	Access road construction is more costly compared to the preferred tower site (TCA-DGL-0384).
TCA-DGL-0386	Operability	Surveillance coverage is less compared to the preferred tower site (TCA-DGL-0390).
TCA-DGL-0400	Real Estate	Landowner did not approve of the site.
TCA-DGL-0402	Environmental	Potential cultural resources issues.
TCA-DGL-0426	Operability	Surveillance coverage is less compared to the preferred tower site (TCA-DGL-0428).

Table 2-5. Alternatives Matrix of Purpose and Need for Alternatives

Purpose and Need	Proposed Action	Alternative 1	No Action Alternative
Provide visual and sensor detection for the apprehension of CBVs along the United States/Mexico border	Yes	Partially	No
Enhance surveillance of the United States/Mexico border within the USBP's Douglas Station AOR	Yes	Partially	No
Provide rapid detection and accurate characterization of potential threats	Yes	Partially	No
Provide coordinated deployment of resources in the apprehension of CBVs	Yes	Yes	No
Increase surveillance and interdiction efficiency	Yes	Partially	No

SECTION 3.0
AFFECTED ENVIRONMENT AND CONSEQUENCES

3.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

3.1 PRELIMINARY IMPACT SCOPING

This section of the EA describes the natural and human environment that exists within the region of influence (ROI) and the potential impacts of the Proposed Action, Alternative 1 and No Action Alternative outlined in Section 2.0 of this document. The ROI for this project is the USBP's Douglas Station AOR in Arizona. Only those parameters that have the potential to be affected by any of the alternatives are described, per CEQ guidance (40 C.F.R. 1501.7 [3]).

Some topics are limited in scope due to the lack of direct effect from the proposed project on the resource or because that particular resource is not located within the project corridor (Table 3-1).

Table 3-1. Resources Analyzed in the Environmental Impact Analysis Process

Resource	Potentially Affected by Implementation of Proposed Action	Analyzed in This EA	Rationale for Elimination
Wild and Scenic Rivers	No	No*	No rivers designated as Wild and Scenic Rivers (16 U.S.C. 551, 1278[c], 1281[d]) are located within or near the project corridor.
Land Use	Yes	Yes	Not Applicable
Geology and Soils	Yes	Yes	Not Applicable
Prime Farmlands	No	No*	No soils designated as Prime Farmlands (7 U.S.C. §4201 et seq.) would be affected by the Proposed Action.
Water Resources	Yes	Yes	Not Applicable
Vegetative Habitat	Yes	Yes	Not Applicable
Wildlife Resources	Yes	Yes	Not Applicable
Protected Species and Critical Habitat	Yes	Yes	Not Applicable
Cultural, Historical and Archaeological Resources	Yes	Yes	Not Applicable
Air Quality	Yes	Yes	Not Applicable
Noise	Yes	Yes	Not Applicable
Utilities and Infrastructure	Yes	Yes	Not Applicable
Radio Frequency Environment	Yes	Yes	Not Applicable
Roadways and Traffic	Yes	Yes	Not Applicable
Aesthetic and Visual Resources	Yes	Yes	Not Applicable
Hazardous Materials	Yes	Yes	Not Applicable
Unique and Sensitive Areas	No	No*	No lands classified as unique or sensitive (i.e., Wilderness Area [16 U.S.C. 1131-1136, 78 Stat. 890]) are located within the project area.
Socioeconomics	Yes	Yes	Not Applicable
Environmental Justice and Protection of Children	Yes	Yes	Not Applicable

*CBP assessed numerous resources that, in accordance with CEQ regulations, warrant no further examination in this EA.

Impacts (consequence or effect) can be either beneficial or adverse and can be either directly related to the action or indirectly caused by the action. Direct impacts are those effects that are caused by the action and occur at the same time and place (40 C.F.R. 1508.8[a]). Indirect impacts are those effects that are caused by the action and are later in time or further removed in distance but that are still reasonably foreseeable (40 C.F.R. 1508.8[b]). As discussed in this section, the alternatives may create temporary (lasting the duration of the project), short-term (up to 3 years), long-term (3 to 10 years following construction) or permanent effects. Whether an impact is significant depends on the context in which the impact occurs and the intensity of the impact.

Impacts on each resource can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. For the purpose of this analysis, the intensity of impacts will be classified as negligible, minor, moderate or major. The intensity thresholds are defined as follows:

- Negligible: A resource would not be affected or the effects would be at or below the level of detection, and changes would not be of any measurable or perceptible consequence.
- Minor: Effects on a resource would be detectable, although the effects would be localized, small and of little consequence to the sustainability of the resource. Mitigation measures, if needed to offset adverse effects, would be simple and achievable.
- Moderate: Effects on a resource would be readily detectable, long-term, localized and measurable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely achievable.
- Major: Effects on a resource would be obvious and long-term, and would have substantial consequences on a regional scale. Mitigation measures to offset the adverse effects would be required and extensive, and success of the mitigation measures would not be guaranteed.

The following discussions describe and, where possible, quantify the potential effects of each alternative on the resources within or near the project area. All impacts described below are considered to be adverse unless stated otherwise. Table 3-2 presents the permanent and temporary (construction) impacts for the construction of the proposed IFTs and new access roads, approach road improvements and road maintenance.

Table 3-2. Temporary and Permanent Impacts Resulting from the Proposed Action

Tower Site/Action	Permanent Impact (acres)		Temporary Impact (acres)	
	Site	Roads	Site	Roads
TCA-DGL-0156 (existing)	0	0	0	0
TCA-DGL-0364	0.23	0.56	0.68	2.66
TCA-DGL-0366	0.23	0.42	0.68	2.03
TCA-DGL-0368	0.23	1.35	0.68	6.73
TCA-DGL-0372	0.23	0.04	0.68	0.15
TCA-DGL-0374	0.23	0.50	0.68	2.27

Table 3-2, continued

Tower Site/Action	Permanent Impact (acres)		Temporary Impact (acres)	
	Site	Roads	Site	Roads
TCA-DGL-0380 (existing)	0	0	0	0
TCA-DGL-0384	0.23	0.12	0.68	0.57
TCA-DGL-0388	0.23	0.03	0.68	0.06
TCA-DGL-0390	0.23	0.03	0.68	0.08
TCA-DGL-0396	0.23	1.54	0.68	7.27
TCA-DGL-0428	0.23	0.60	0.68	2.79
TOTAL	**2.3**	**5.2**	**6.8**	**24.6**
Alternate Towers				
TCA-DGL-0076	0.23	0.12	0.68	0.59
TCA-DGL-0078	0.23	1.4	0.68	6.9
TCA-DGL-0081	0.23	0.15	0.68	0.57
TCA-DGL-0258	0.23	0.17	0.68	0.8
TCA-DGL-0362	0.23	0.22	0.68	1.4
TCA-DGL-0386	0.23	0.03	0.68	0.08
TCA-DGL-0400	0.23	0.02	0.68	0.04
TCA-DGL-0402	0.23	0.12	0.68	0.31
TCA-DGL-0426	0.23	0.58	0.68	2.8
TOTAL	**2.1**	**2.8**	**6.1**	**13.5**

3.2 LAND USE

3.2.1 Affected Environment

Cochise County is situated in the southeastern corner of Arizona and encompasses 3.98 million acres (6,218.77 square miles) (U.S. Census Bureau [USCB] 2000). Mexico is adjacent to the southern border of the county, and the State of New Mexico forms the county's eastern border. Cochise County contains a rich diversity of landscapes ranging from semi-desertscrub to mesquite plains to mountain sky islands (Esparza and Carruthers 2000). The county features numerous scenic vistas and a rustic environment. Land use is dependent upon soil characteristics and water availability since the majority of Cochise County is desert.

Approximately 60 percent of the county falls within the jurisdiction of some level of government (USFS, BLM or ASTL). Approximately 40 percent (1.6 million acres) of the county is privately owned and represents one of the largest contiguous spans of privately owned land in the state (Esparza and Carruthers 2000).

Rural culture and a lifestyle largely influenced by traditional land uses, such as livestock production, farming and mining, are prevalent in Cochise County. Preservation of open space is a particularly important land use issue among planners and property owners in Cochise County,

and a high priority is placed on the preservation of open space for the purpose of protecting and sustaining traditional farming and ranching land uses (Cochise County 2002).

All of the unincorporated areas of Cochise County have been zoned (Cochise County 2003). The purpose of zoning is to guide the development of land in accordance with the county's comprehensive plan and to promote the public health, safety and general welfare of the county's residents. Zoning districts specify permitted land uses, minimum lot sizes and certain site development standards such as setbacks and screening. The majority of zoning districts in Cochise County can be classified into three broad groupings: rural, residential and commercial/industrial. Approximately 90 percent of the unincorporated areas of Cochise County is zoned as rural.

Currently, land uses within the project area are directly and indirectly affected by CBV pedestrian and vehicle traffic and consequent law enforcement activities. CBV activities often destroy fences, resulting in escaping livestock, which results in damage to natural resources.

Six of the preferred IFT sites are on ASTL, two are on BLM lands, and two are on private land, and the two existing IFT sites are located on CBP-leased land (Table 3-3). Four of the Alternative 1 IFT sites are located on ASTL and three are on private lands, and one alternate IFT site is located on BLM-owned land (Table 3-3).

Table 3-3. Tower Site Land Ownership

Tower ID	Preferred or Alternate	Landowner	Land Use
TCA-DGL-0156*	Preferred	CBP	Law enforcement facility
TCA-DGL-0364	Preferred	ASTL	Undeveloped Range
TCA-DGL-0366	Preferred	BLM	Undeveloped Range
TCA-DGL-0368	Preferred	Private	Undeveloped Range
TCA-DGL-0372	Preferred	ASTL	Undeveloped Range
TCA-DGL-0374	Preferred	ASTL	Undeveloped Range
TCA-DGL-0380*	Preferred	CBP	Law enforcement facility
TCA-DGL-0384	Preferred	ASTL	Undeveloped Range
TCA-DGL-0388	Preferred	ASTL	Undeveloped Range
TCA-DGL-0390	Preferred	ASTL	Undeveloped Range
TCA-DGL-0396	Preferred	BLM	Undeveloped Range
TCA-DGL-0428	Preferred	Private	Undeveloped Range
TCA-DGL-0076	Alternate	ASTL	Undeveloped Range
TCA-DGL-0078	Alternate	Private	Undeveloped Range
TCA-DGL-0258	Alternate	ASTL	Undeveloped Range
TCA-DGL-0362	Alternate	BLM	Undeveloped Range
TCA-DGL-0386	Alternate	ASTL	Undeveloped Range
TCA-DGL-0400	Alternate	ASTL	Undeveloped Range
TCA-DGL-0402	Alternate	Private	Undeveloped Range
TCA-DGL-0426	Alternate	Private	Undeveloped Range

*Existing tower

Land characteristics of the majority of the preferred and alternate IFT sites are undeveloped scrub and brush rangeland. General land use in the vicinity of the IFT sites is predominantly undeveloped range. The land in the vicinity of the preferred IFT sites along SR 80 west of Douglas, Geronimo Trail and Guadalupe Canyon Road is zoned as rural, and the primary land use is undeveloped range (Cochise County 2003).

3.2.2 Environmental Consequences

3.2.2.1 Proposed Action

The Proposed Action would have a permanent, negligible impact on land use. Under the Proposed Action, approximately 2.3 acres of undeveloped, scrub and brush rangeland would be converted to a developed land use at the new IFT sites and approximately 5.2 acres would be disturbed as a result of access road construction and improvements to approach roads. The conversion of approximately 7.5 acres of undeveloped land to law enforcement infrastructure would be negligible due to the small size of the project footprint relative to the size of the ROI.

The Proposed Action could result in indirect and long-term beneficial impacts on land use by reducing the adverse impacts of CBV activities in the project area. The proposed IFTs would enhance CBP's detection and threat classification capabilities and increase the efficiency of operational activities within the area of tower coverage. Over time the enhancement of detection capabilities and an increase in operational efficiency could increase the deterrence of CBV activity within the area of tower coverage.

3.2.2.2 Alternative 1

Under Alternative 1, impacts on land use would be similar to those described for the Proposed Action. However, approximately 2.8 acres of undeveloped, scrub and brush rangeland would be permanently converted to a developed land use at the IFT sites, and 4.9 acres would be disturbed as a result of access road construction and improvements to approach roads (total 7.7 acres).

3.2.2.3 No Action Alternative

Under the No Action Alternative, no direct impacts on land use would occur. However, USBP's detection and threat classification capabilities would not be enhanced and operational efficiency would not be improved within the area of tower coverage. CBV activities would continue to impact land use in the project area.

3.3 GEOLOGY AND SOILS

3.3.1 Affected Environment

3.3.1.1 Geology

Geologic resources include physical surface and subsurface features of the earth, such as geological formations and the seismic activity of the area. All the Proposed Action and Alternative 1 IFT sites are located within the San Bernardino Valley in extreme southeast Cochise County, Arizona, and are part of the Basin and Range Physiographic Province as delineated by the U.S. Geological Survey (USGS and California Geologic Survey 2000). This province stretches from southeastern Oregon southward through Nevada and terminates south of the project area in Sonora, Mexico. Most landforms within this province are the result of tectonic and alluvial processes, and the province is characterized by low mountains and deep

valleys filled with alluvium (USGS and California Geologic Survey 2000). On-site geotechnical surveys would determine the necessary depth of the proposed tower foundations.

3.3.1.2 Soils

There are 10 soil complexes associated with the proposed IFT sites (NRCS 2003; NRCS 2011). A description of each soil type is presented in Table 3-4, and soil maps depicting the soil association at the proposed IFT locations are provided in Appendix C. Erosion hazards for each soil complex estimate the potential for soil loss or erosion due to water or wind (Table 3-4). These hazards are based on undisturbed soils. To prevent soil loss, especially at those IFT sites with high erosion hazards, BMPs would be implemented during construction activities to avoid significant soil loss, as described in the SWPPP and in Section 5.0 of this document.

3.3.2 Environmental Consequences

3.3.2.1 Proposed Action

Impacts on geologic resources are not expected as a result of implementing the Proposed Action. The Proposed Action would not disturb the underlying geologic resources of the area, since only near-surface modifications would be implemented. None of the proposed IFT sites are located in an area subject to seismic activity, landslides or flooding.

The Proposed Action would have a permanent, minor impact on approximately 7.5 acres of soils. Under the Proposed Action, approximately 7.5 acres of soil would be permanently removed from biological production, and an additional 31.4 acres of soil would be temporarily disturbed during tower construction. All impacted soils are common in the ROI, and the Proposed Action would not result in the loss of any soils classified as unique.

BMPs would be implemented to prevent soil erosion off-site due to wind or rain, and a National Pollutant Discharge Elimination System (NPDES) permit for development would be obtained. A SWPPP would be prepared in partial fulfillment of the NPDES permit. Following construction activities, any temporary impact areas would be revegetated with a mixture of native plant seeds or nursery plantings (or both).

Indirect beneficial impacts on soils could occur as a result of implementing the Proposed Action. The Proposed Action would enhance USBP's detection and threat classification capabilities and, thus, improve operational efficiency within the area of tower coverage. Over time, it is anticipated that these enhanced capabilities would increase the deterrence of CBV activity within the area of tower coverage.

3.3.2.2 Alternative 1

Alternative 1 would have a permanent, minor impact on approximately 7.7 acres of soils. Approximately 31.2 acres of soils would be temporarily disturbed. Impacts on geology are not anticipated under Alternative 1.

3.3.2.3 No Action Alternative

Under the No Action Alternative, there would be no direct impacts on underlying geologic resources or modification of soils since the proposed IFTs would not be constructed. Potential indirect benefits associated with the Proposed Action would not be realized under the No Action Alternative.

Table 3-4. Characteristics of Soils at the Tower Sites

Soils	Tower ID	Slope (percent)	Permeability	Runoff Rate	Erosion Hazard Wind/Water for Undisturbed Soils	Limitations for Development	Prime Farmlands
Mabray-Chiricahua-Rock Outcrop Complex	TCA-DGL-0364 TCA-DGL-0384 TCA-DGL-0388 TCA-DGL-0366 TCA-DGL-0396 TCA-DGL-0076 TCA-DGL-0258 TCA-DGL-0362	3-45	Slow	Low to very high	Severe by water very slight by wind	High concentrations of calcium carbonate, steep slopes and shallow depth to bedrock interferes with excavation	No
Kahn-Zapolote Complex	TCA-DGL-0372 TCA-DGL-0374 TCA-DGL-0081	1-15	Moderately to very slow	Medium or high	Moderate or severe by water and moderate hazard by wind	Care should be taken to prevent excessive dust and soil loss	No
Sutherland-Mule Complex	TCA-DGL-0390 TCA-DGL-0386	3-15	Moderate to moderately rapid	Low to high	Slight by water and wind	Difficult excavation due to restrictive hardpan; droughtiness, steep slopes and a high content of calcium carbonate	No
Blakeney-Luckyhills Complex	TCA-DGL-0362	3-15	Moderately rapid	Medium	Slight by water moderately high by wind	Difficult excavation due to restrictive hardpan and care should be taken to prevent excessive dust and soil loss	No
Libby-Gulch Complex	TCA-DGL-0380 TCA-DGL-0156	0-10	Moderately slow	Low or medium	Slight by water and wind	High content of clay restricts water infiltration and permeability, high shrink-swell potential, high content of gypsum and high potential for settling	No
Luckyhills-McNeal Complex	TCA-DGL-0258	3-15	Moderate	Low or medium	Slight by water and wind	None	No
Boss, Krentz and Paramore Soils and Rock Outcrop	TCA-DGL-0368 TCA-DGL-0078	5-55	Slow	Very high	Moderate or severe by water	High shrink-swell potential, soil cracking, clayey textures, steep slopes, high content of cinders, soil cracking and shallow to moderate depths to bedrock	No
Chorro-Guest Complex	TCA-DGL-0426	0-3	Slow	Low	Severe by water slight by wind	Special consideration should be given to water management, care should be taken to prevent excessive dust and soil loss, soil has electrochemical action that corrodes concrete and high gypsum content	No
Outlaw-Epitaph-Paramore Complex	TCA-DGL-0428 TCA-DGL-0400	0-15	Very slow	Medium or high	Slight or moderate by water and moderate by wind	Very high shrink-swell potential, limited depth to bedrock or a hardpan that interferes with excavation, shallow soil depths that are not adequate for septic tank absorption fields, piping and a high clay content	No
Sasabe Complex	TCA-DGL-0402	0-3	Slow	Low	Slight or moderate by water and slight or moderately high by wind	High clay content, high shrink-swell potential and care should be taken to prevent excessive dust and soil loss	No

Source: NRCS 2003 and NRCS 2011

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3.4 WATER RESOURCES

3.4.1 Affected Environment

3.4.1.1 Surface Water

The project area is located within the San Bernardino Valley Basin. This basin occupies approximately 247,680 acres (387 square miles) and is characterized as a valley flanked by 2 mountain ranges. It is located in the southeastern corner of Cochise County and extends from the United States/Mexico border northward past the Chiricahua Mountains. It is bounded to the west by the Perilla Mountains and to the east by the Arizona/New Mexico state line and the Peloncillo Mountains (ADWR 2009).

No permanent surface waters are located at any of the proposed IFT sites. No surface waters in the vicinity of the IFT sites have state-approved designated uses, and none are listed on the state CWA Section 303(d) impaired waters list (EPA 2008).

3.4.1.2 Hydrology and Hydraulics

Average annual runoff varies within the basin from 0.2 inch per year (10.6 acre-feet per square mile) in the middle half of the basin to 2 inches per year (106.6 acre-feet per square mile) at the northern boundary of the basin (ADWR 2009). There is one perennial stream, Black Draw, located within the basin and near TCA-DGL-0428. Surface water from the proposed IFT sites ultimately flows into Black Draw.

3.4.1.3 Wetlands and Waters of the United States

Wetlands are a subset of the waters of the United States that may be subject to regulation under Section 404 of the CWA. One key feature of wetlands is that, under normal circumstances, they support vegetation typically adapted for life in saturated soil conditions. Many waters of the United States are unvegetated and thus are excluded from the USACE/EPA definition of wetlands, although they may still be subject to CWA regulation. Other potential waters of the United States in the arid west include but are not limited to desert playas, mud and salt flats and intermittent and ephemeral stream channels (Photograph 3-1).

Photograph 3-1. Example of a Waters of the United States in the Southwest

No wetlands were observed within the project area. Three potential waters of the United States were identified within the project area. Two cross the existing approach road south of TCA-DGL-0368, and one potential waters of the United States crosses the existing approach road south of TCA-DGL-0074 (Figures 3-1 and 3-2). Each of these potential waters of the United States indicates evidence of a hydrologic connection to larger drainages within the watershed that flow south of the United States/Mexico border, which characterizes them as jurisdictional under the CWA. Approximately 0.026 acre of waters of the United States was identified in the project footprint during the surveys (Table 3-5).

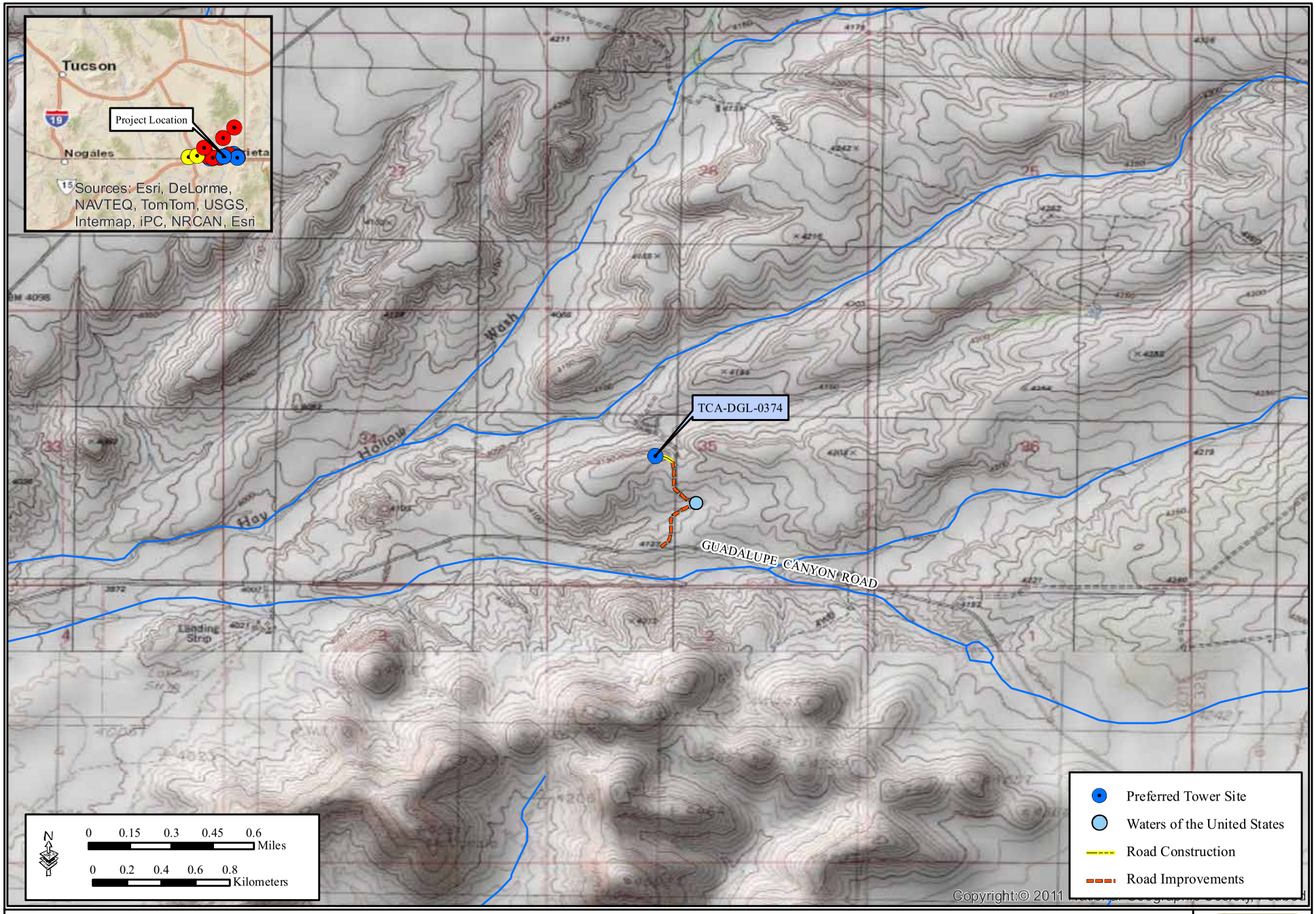

Figure 3-1. Waters of the United States

GSRC

September 2012

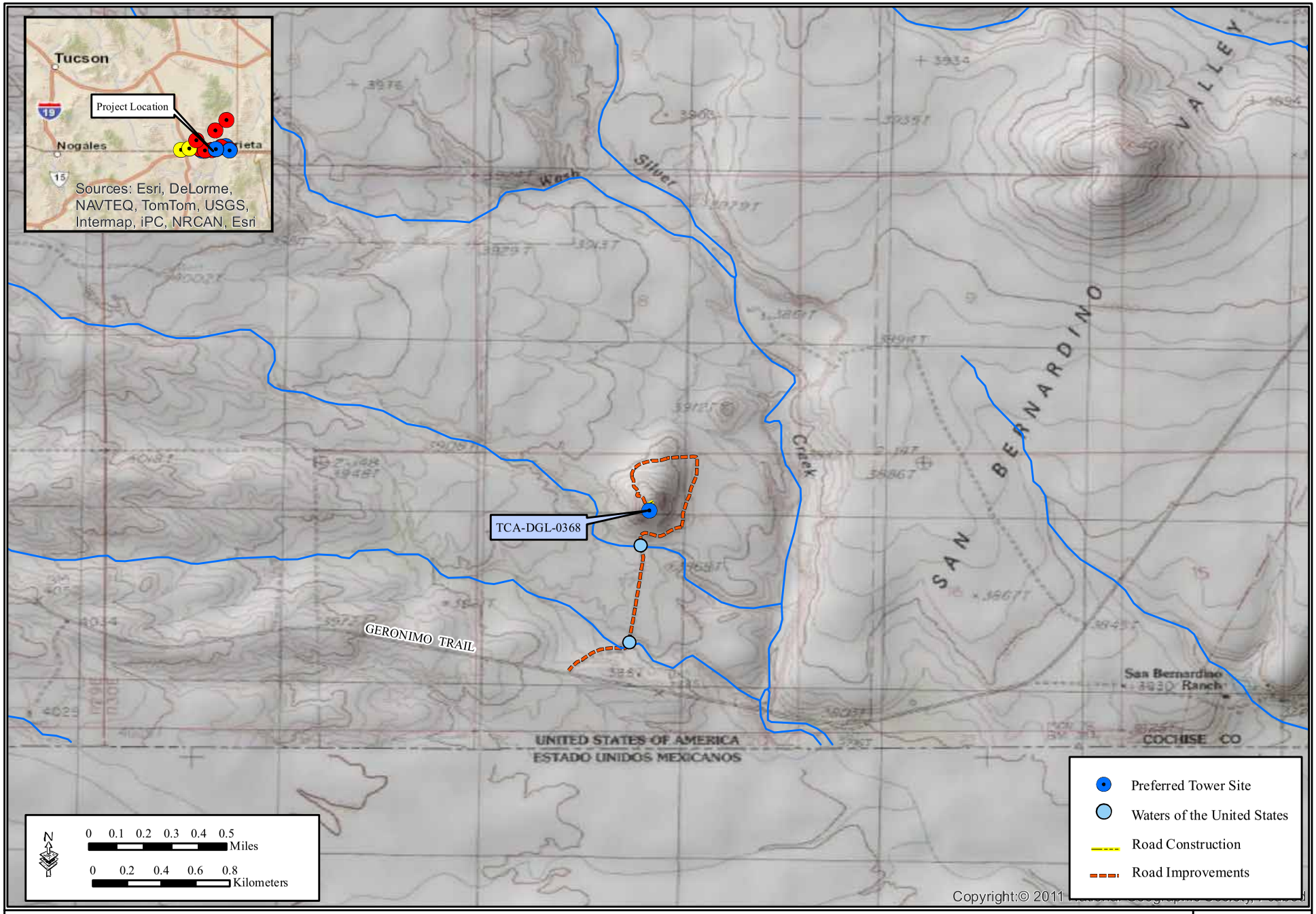

Figure 3-2. Waters of the United States

GSRC

September 2012

Table 3-5. Potential Waters of the United States

Tower ID	Potential Waters of the United States	Acres
TCA-DGL-0368	crosses existing access road	0.007
TCA-DGL-0368	crosses existing access road	0.011
TCA-DGL-0374	crosses existing access road	0.008
Total		**0.026**

3.4.1.4 Groundwater

The major aquifers in the San Bernardino Valley Basin in the vicinity of the IFT sites consist of recent stream alluvium and volcanic rock, and flow direction is generally from the north to the south. Artesian wells and springs support wetlands in this basin near the United States/Mexico border on the SBNWR. Recharge in the San Bernardino Valley Basin is relatively high due to greater rainfall amounts in the bordering mountains and recharge of the aquifers by mountain-front runoff. The natural recharge estimate for this basin is estimated at 9,000 acre-feet per year (2.9 billion gallons per year) (ADWR 2009). Depth to water varies from 612 feet below the surface in the north-central portion of the basin to 30 feet below the surface along the border with Mexico (ADWR 2009). As of 2005, there were 164 registered wells in the basin with a pumping capacity of less than or equal to 35 gallons per minute, and there are 12 wells in the basin with a pumping capacity of more than 35 gallons per minute (ADWR 2009).

3.4.1.5 Floodplains

Pursuant to the National Flood Insurance Act of 1968, as amended (42 U.S.C. 4001, et seq.), the Flood Disaster Protection Act of 1973 (P.L. 93-234, 87 Statute 975) and EO 11988, Floodplain Management, each Federal agency is required to take actions to reduce the risk of flood loss, minimize the impact of floods on human safety, health and welfare and preserve the beneficial values that floodplains serve. EO 11988 requires that agencies evaluate the potential effects of actions within a floodplain and avoid floodplains unless the agency determines that there is no practicable alternative. Where the only practicable alternative is to site in a floodplain, a planning process is followed to ensure compliance with EO 11988. In summary, this process includes the following steps:

- Determine whether or not the action is in the regulatory floodplain.
- Conduct early public notice.
- Identify and evaluate practicable alternatives, if any.
- Identify impacts of the action.
- Minimize the impacts.
- Reevaluate alternatives.
- Present the findings and a public explanation.
- Implement the action.

This process is further outlined on FEMA's Environmental Planning and Historic Preservation Program website (FEMA 2011). As a planning tool, the NEPA process incorporates floodplain management through analysis and public coordination, ensuring that the floodplain management

planning process is followed. Floodplains are managed at the local municipal level with the assistance and guidance of FEMA. Therefore, any action within these areas would require appropriate coordination and evaluation of the potential effects.

Existing tower TCA-DGL-0156 is located within a FEMA Flood Hazard Zone X; however, none of the other proposed IFT sites are located within a FEMA Flood Hazard Zone (FEMA 2008). A FEMA Flood Hazard Zone X is an area of moderate flood hazard, between the limits of the 100-year and 500-year floods (FEMA 2008).

3.4.2 Environmental Consequences

3.4.2.1 Proposed Action

The Proposed Action would have a temporary, minor impact on surface waters as a result of increased erosion and sedimentation during construction activities. No construction of IFTs or access roads would occur within a FEMA Flood Hazard Zone. Thus, negligible impacts on hydrology, hydraulics and floodplains would occur as a result of the Proposed Action.

The Proposed Action would impact approximately 0.026 acre of waters of the United States at TCA-DGL-0368 and TCA-DGL-0374. The potential impacts would be authorized under a Nationwide Permit 14, and CBP would coordinate the use of a Nationwide Permit 14 with the USACE Los Angeles District. No wetlands would be impacted as a result of the Proposed Action. CBP would also implement BMPs that would ensure that IFT and road construction, would not result in more than a minimal degradation of water quality at or near the project sites.

Implementation of the Proposed Action would permanently impact 7.5 acres and temporarily disturb 31.4 acres of soil that would be cleared of vegetation and would be susceptible to erosion during construction activities. The new IFT sites would be expected to slightly increase the amount of impervious surfaces in the project area. The construction contractor's Spill Prevention, Control and Countermeasure Plan (SPCCP) would also be in place prior to the start of construction. BMPs outlined in the SPCCP plan would reduce potential migration of fuel, oil and grease and construction debris into local watersheds.

An NPDES Stormwater Discharge permit would be required prior to construction. This permit would require that a SWPPP be prepared and a Notice of Intent (NOI) be filed with the ADEQ. Implementation of specific erosion and sedimentation controls and other BMPs, such as the strategic placement of hay bales and silt fence, would limit the amount of erosion that occurs on-site and restrict potential impacts on surrounding properties during construction. Therefore, no major impacts on groundwater or surface waters would occur as a result of an increase of impervious surfaces.

The Proposed Action would have a temporary, minor impact on groundwater resources. The Proposed Action would slightly increase demands on water supplies during the construction period. Water would be needed for a variety of construction activities, including, but not limited to, drinking water supply for construction crews, wetting construction sites for dust suppression and concrete mixing. The water used during construction activities to control dust would equal approximately 1 acre-foot (approximately 325,851 gallons) per year and the natural recharge estimate for this basin is over 2 billion gallons per year (ADWR 2009).

3.4.2.2 Alternative 1

Under Alternative 1, impacts on water resources would be similar to those described under the Proposed Action.

3.4.2.3 No Action Alternative

Under the No Action Alternative, no additional impacts on water resources would occur as a result of constructing the proposed IFTs, constructing access roads or improving approach roads.

3.5 VEGETATIVE HABITAT

3.5.1 Affected Environment

Most sites are located in the San Bernardino Valley and occur within semidesert grassland and Chihuahuan desertscrub, at elevations ranging between approximately 3,988 and 4,814 feet above mean sea level (amsl) (Brown and Lowe 1994). The project area is within the Basin and Range Physiographic Province covering southeast Arizona (Hendricks 1985), a region characterized by isolated mountain ranges (Photograph 3-2) separated by broad alluvial valleys (Photograph 3-3).

Photograph 3-2. Overview of Project Area

Photograph 3-3. Overview of Project Area

Gulf South Research Corporation (GSRC) completed a biological resources survey at each of the proposed IFT sites on October 13 and 14, 2011, and February 8 and 9, 2012 (CBP 2012c). Each IFT site, proposed access road routes and existing approach roads were surveyed. Pedestrian surveys consisted of a series of parallel transects that provided 100 percent visual coverage over an area approximately 200 feet by 200 feet at each site. The biologists searched for listed and sensitive species, signs of their presence and unique biological features (e.g., rocky outcrops, burrows, rock shelters, bird nests) at and within the vicinity of each of the proposed IFT sites. Observations of vegetative habitat and floral communities were recorded, along with species diversity and any wildlife species or signs of wildlife observed. Frequent pauses were made during the survey to watch and listen for wildlife. Locations of sensitive natural resources were recorded using a Trimble Geo XT Global Positioning System unit with sub-meter accuracy.

Common woody-perennial vegetation observed in upland areas at most proposed IFT sites include: creosote bush (*Larrea tridentata*), tar bush (*Flourensia cernua*), viscid acacia (*Acacia neovernicosa*), mariola (*Parthenium incanum*), oreganillo (*Aloysia wrightii*), honey mesquite (*Prosopsis glandulosa* var. *torreyana*), Mexican bluewood (*Condalia mexicana*), wait-a-minute

bush (*Mimosa aculeatacarpa*), sotol (*Dasylirion wheeleri*) and ocotillo (*Fouquieria splendens*). Numerous annual and perennial grasses were also abundant.

3.5.1.1 Proposed Action

A total of 45 Palmer's agaves (*Agave palmeri*) was recorded at seven of the preferred IFT sites. Agaves are a primary food source for lesser long-nosed bat *(Leptonycteris curasoae yerbabuenae*), a Federally endangered species. One state-listed plant species, night-blooming cereus (*Peniocereus greggii*), was observed at TCA-DGL-0372. A description of the vegetative habitat at each of the preferred IFT sites is provided in Table 3-6.

Table 3-6. Vegetative Habitat at each Preferred IFT Site

Tower ID	Vegetative Habitat Type	Number of Agave Observed
TCA-DGL-0156*	None	0
TCA-DGL-0364	Chihuahuan desertscrub	6
TCA-DGL-0366	Chihuahuan desertscrub	6
TCA-DGL-0368	Chihuahuan desertscrub	0
TCA-DGL-0372	Chihuahuan desertscrub	0
TCA-DGL-0374	Chihuahuan desertscrub	1
TCA-DGL-0380*	None	0
TCA-DGL-0384	Chihuahuan desertscrub	16
TCA-DGL-0388	Chihuahuan desertscrub	3
TCA-DGL-0390	Chihuahuan desertscrub	7
TCA-DGL-0396	Chihuahuan desertscrub	6
TCA-DGL-0428	Semidesert grassland	0

*Existing tower

3.5.1.2 Alternative 1

A total of four Palmer's agaves was recorded at the Alternative 1 IFT sites. A description of the vegetative habitat at each of the alternate IFT sites is provided in Table 3-7.

Table 3-7. Vegetative Habitat at each Alternate IFT Site

Tower ID	Vegetative Habitat Type	Number of Agave Observed
TCA-DGL-0076	Chihuahuan desertscrub	2
TCA-DGL-0078	Chihuahuan desertscrub	0
TCA-DGL-0081	Chihuahuan desertscrub	0
TCA-DGL-0258	Chihuahuan desertscrub	2
TCA-DGL-0362	Chihuahuan desertscrub	0
TCA-DGL-0400	Semidesert grassland	0
TCA-DGL-0402	Semidesert grassland	0
TCA-DGL-0426	Semidesert grassland	0

3.5.2 Environmental Consequences

3.5.2.1 Proposed Action

The Proposed Action would have a permanent, minor impact on vegetation in the project area. Under the Proposed Action, a total of approximately 7.5 acres of desertscrub habitat would be permanently removed as a result of tower construction, access road construction and approach road improvements. The plant community associated with the IFT sites is both locally and regionally common, and the permanent loss of approximately 7.5 acres of vegetation would not adversely affect the population viability of any plant species in the region. Disturbance of up to approximately 31.4 acres of vegetation could result in conditions suitable for the establishment of nonnative plant species. The potential loss of 45 agave plants during tower and access road construction and road improvements would occur at seven proposed IFT sites (see Table 3-6).

In order to ensure that the Proposed Action does not actively promote the establishment of nonnative and invasive species in the area, BMPs (described in Section 5.0) would be implemented to minimize the spread and reestablishment of nonnative vegetation. Vegetation removed from IFT sites would be disposed of properly. Upon completion of construction, all temporary disturbance areas would be restored with native plantings, landscaped or allowed to revegetate naturally. These BMPs, as well as measures protecting vegetation in general, would reduce potential impacts from nonnative invasive species to a negligible amount.

3.5.2.2 Alternative 1

Under Alternative 1, approximately 7.7 acres of desertscrub habitat would be permanently removed as a result of tower construction, access road construction and approach road improvements. An additional 31.2 acres of vegetation would be temporarily disturbed as a result of implementing Alternative 1. The potential loss of 14 agave plants during tower construction would occur at two alternate IFT sites (see Table 3-7) and at three of the preferred sites, TCA-DGL-0374, -0388 and -0396 (see Table 3-6).

3.5.2.3 No Action Alternative

Under the No Action Alternative, no vegetative habitat would be disturbed or removed since the proposed IFTs and associated road construction and improvements would not occur in the USBP's Douglas Station AOR. However, long-term direct and indirect impacts on vegetation communities would continue as a result of CBV activities that create unauthorized roads and trails, damage vegetation and promote the dispersal and establishment of nonnative invasive species. Under the No Action Alternative, USBP's detection and threat characterization capabilities would not be enhanced, and operational efficiency within the area covered by the towers would not be improved.

3.6 WILDLIFE RESOURCES

3.6.1 Affected Environment

As described in Section 3.5, the project area is located within the Chihuahuan Desert biome. Chihuahuan desertscrub (Brown and Lowe 1994) communities occupy the majority of the regional habitat. Several mammals, birds and reptiles were observed at the proposed IFT sites during the biological surveys (CBP 2012c). Mammal species included black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), coyote (*Canis latrans*) and mule

deer (*Odocoileus hemionus*). A variety of reptiles were seen at the proposed IFT sites, including Clark's spiny lizard (*Sceloporus clarkii*), coachwhip (*Masticophis falgellum*), desert grassland whiptail (*Aspidoscelis uniparens*), ornate tree lizard (*Urosaurus ornatus*) and Sonoran whiptail (*Aspidoscelis sonorae*). No amphibians were observed during the surveys.

The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712) prohibits the pursuit, hunt, take, kill, attempt to take, capture or kill, possession, offer for sale, sale, offer to purchase, purchase, delivery for shipment, shipping, cause to be shipped, or export, at any time, or in any manner, any migratory bird, bird part, nest or egg, unless permitted by USFWS or other regulations. Over 1,000 species of bird are protected by the Migratory Bird Treaty Act in the United States, Canada, Mexico, Japan, United Kingdom, and Russia. For this project, many of the common birds resident in the project area are protected by the Migratory Bird Treaty Act and must be protected, especially during the nesting season (February 1 through September 1). Common birds observed in the project area included American kestrel (*Falco sparverius*), black-tailed gnatcatcher (*Polioptila melanura*), black-throated sparrow (*Aimophila quinquestriata*), cactus wren (*Campylorhynchus brunneicapillus*), canyon towhee (*Pipilo fuscus*), common raven (*Corvus corax*), curve-billed thrasher (*Toxostoma curvirostre*), Gambel's quail (*Callipepla gambelii*), greater roadrunner (*Geococcyx californianus*), hooded oriole (*Icterus cucullatus*), house finch (*Carpodacus mexicanus*), ladder-backed woodpecker (*Picoides scalaris*), loggerhead shrike *(Lanius ludovicianus*), mourning dove (*Zenaida macroura*), northern flicker (*Colaptes auratus*), red-tailed hawk (*Buteo jamaicensis*), scaled quail (*Callipepla squamata*) and Say's phoebe (*Sayornis saya*).

3.6.2 Environmental Consequences

3.6.2.1 Proposed Action

The permanent loss of approximately 7.5 acres and temporary degradation of approximately 31.4 acres of desertscrub and grassland habitat would have a short-term, minor impact on wildlife. Soil disturbance and operation of heavy equipment could result in the direct loss of less mobile individuals such as lizards, snakes and ground-dwelling species such as mice and rats. However, most wildlife would avoid any direct harm by escaping to surrounding habitat. The direct degradation and loss of habitat could also impact burrows and nests, as well as cover, forage and other important wildlife resources. The loss of these resources would result in the displacement of individuals that would then be forced to compete with other wildlife for the remaining resources. Although this competition for resources could result in a reduction of total population size, such a reduction would be extremely minimal in relation to total population size and would not result in long-term effects on the sustainability of any wildlife species. The wildlife habitat present in the project area is both locally and regionally common, and the permanent loss of approximately 7.5 acres of wildlife habitat would not adversely affect the population viability or fecundity of any wildlife species in the region.

All IFTs may have infrared lighting installed for aviation safety, and, if installed, any such lighting would be compatible with NVG usage. All proposed IFT sites may be lighted for security purposes. If installed, such lighting would consist of a "porch light" on the tower shelter and would be controlled by a motion detector. When installed, the light would be shielded to avoid illumination outside the footprint of the IFT site, and low-pressure sodium bulbs would be used. USFWS (2000) *Service Guidance on the Siting, Construction, Operation and*

Decommissioning of Communications Towers would be implemented to reduce nighttime atmospheric lighting and the potential adverse effects of nighttime lighting on migratory bird and nocturnal flying species.

Noise associated with tower and road construction and road improvements and maintenance would result in temporary, minor impacts on wildlife. Elevated noise levels associated with construction and maintenance activities would only occur during these activities. The effects of this disturbance would include temporary avoidance of work areas and competition for unaffected resources. BMPs as outlined in Section 5.0 would reduce noise associated with operation of heavy equipment.

Noise levels associated with the operation and maintenance of the towers would have a permanent, minor impact on wildlife species. The permanent increase in noise levels associated with operation of the proposed tower sites (i.e., generators) would be sporadic, only occurring when this equipment is operating. It is anticipated that wildlife would become accustomed to these intermittent and minimal increases in noise and that subsequent avoidance of tower sites and any adjacent habitats would be minor.

The Proposed Action would have a long-term, negligible adverse effect on migratory birds. There is a possibility that the proposed communications towers could pose hazards to migratory birds and even cause bird mortality; however, since the tower would not use guy wires, the potential for adverse impacts is greatly reduced. The communications towers could provide raptor perch and nesting locations. If necessary, BMPs, including anti-perching devices, would be used to discourage this activity.

The Migratory Bird Treaty Act also requires that Federal agencies coordinate with USFWS if a construction activity would result in the take of a migratory bird. Therefore, if tower construction and road construction or improvements occur during migratory bird nesting season (February 1 through September 1), a trained biologist will perform a pre-construction migratory bird survey to determine if birds are nesting in the proposed construction area.

3.6.2.2 Alternative 1

Alternative 1 would result in impacts on wildlife and wildlife habitat similar to those described for the Proposed Action. Approximately 7.7 acres of desertscrub and grassland habitat would be permanently impacted.

3.6.2.3 No Action Alternative

Under the No Action Alternative, no direct impacts on wildlife or wildlife habitats would occur. However, off-road CBV activity and required CBV interdiction actions would continue to degrade wildlife habitat. This degradation of vegetation communities has resulted in wildlife habitat degradation through a loss of cover, forage, nesting or other opportunities and potentially a loss of suitable habitat over large areas.

3.7 PROTECTED SPECIES AND CRITICAL HABITATS

3.7.1 Affected Environment

The ESA of 1973 (16 U.S.C. §1531 et seq., as amended) defines an endangered species as a species in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those that have been formally submitted to USFWS for official listing as threatened or endangered. Species may be considered endangered or threatened when any of the five following criteria occurs: (1) current/imminent destruction; modification or curtailment of their habitat or range; (2) overuse of the species for commercial, recreational, scientific or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; and (5) other natural or human-induced factors affecting continued existence. USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate designation includes those species for which USFWS has sufficient information to support proposals to list as endangered or threatened under the ESA.

3.7.1.1 Federally Listed Species

There are 21 Federally listed endangered and threatened species and seven candidate species with the potential to occur in Cochise County, Arizona (USFWS 2012). Of these 28 species, nine have the potential to occur within the project area: jaguar (*Panthera onca*), ocelot (*Leopardus pardalis*), lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), Chiricahua leopard frog (*Lithobates chiricahuensis*), Huachuca water umbel (*Lilaeopsis schaffneriana* ssp. *recurva*), Yaqui chub (*Gila purpurea*), Yaqui catfish (*Ictalurus pricei*), beautiful shiner (*Cyprinella formosa*) and Yaqui topminnow (*Poeciliopsis occidentalis sonoriensis*) (Table 3-8). Twelve Federally listed species have designated Critical Habitat in Cochise County: Designated Critical Habitat for three species (beautiful shiner, Yaqui catfish and Yaqui chub) is located within the range of potential effects of the Proposed Action. Proposed Critical Habitat for the jaguar also occurs within the range of potential effects of the Proposed Action. A brief description of the nine species and proposed and designated Critical Habitats with the potential to occur near the range of potential effects is presented in the following paragraphs.

Jaguar

The southwestern United States and Sonora, Mexico, are the extreme northern limits of the jaguar's range, which extends through southern Mexico, into Central and South America to northern Argentina (Hatten et al. 2002). The jaguar's home range is highly variable and is dependent on topography, prey abundance and the population density of resident jaguars (Brown and Gonzalez 2001). Jaguar distribution patterns over the last 50 years and recent observations of individuals suggest that southeast Arizona is the most likely area for jaguar occurrence in the United States (Hatten et al. 2002). In 2001, the Borderlands Jaguar Detection Project was initiated to systematically survey for jaguars in southeastern Arizona. During this project, Childs and Childs (2008) reported that two male jaguars and a possible third were documented in southeastern Arizona between April 2001 and July 2007. There have been at least five confirmed jaguar sightings in Cochise County from 1944 to 1994 (Girmendonk 1994). Most recently, an adult male jaguar was observed in an undisclosed mountain range in Cochise County in November 2011 (AGFD 2011a).

Table 3-8. Federally Listed and Proposed Species Potentially Occurring within Cochise County, Arizona

Common (Scientific Name)	Federal Status*	Habitat	Potential to Occur Within the Project Area
PLANTS			
Canelo Hills ladies'-tresses (*Spiranthes delitescens*)	E	Inhabits finely grained, highly organic, saturated soils of cienegas.	No – No IFT sites are located within cienegas.
Cochise pincushion cactus (*Coryphantha robbinsorum*)	T	Occurs on Permian limestone hills in semidesert grassland.	No – Although the species is known to occur in proximity, specific habitat components do not occur within the project area.
Huachuca water umbel (*Lilaeopsis schaffneriana* spp. *recurva*)	E, CH	Inhabits saturated soils and shallow waters associated with cienegas or marshy wetlands within Sonoran desertscrub, grassland or oak woodland and conifer forest.	Yes –Suitable habitat occurs adjacent to tower site TCA-DGL-0428.
Lemmon fleabane (*Erigeron lemmonii*)	C	Inhabits rocky ledges and crevices in canyons within pine-oak woodland. Known from one site on Fort Huachuca.	No – No suitable habitat is present within the project area.
INVERTEBRATES			
Huachuca springsnail (*Pyrgulopsis thomsoni*)	C	Inhabits aquatic areas, including small springs with ample vegetation and slow to moderate flow at Fort Huachuca.	No – No suitable habitat is present.
San Bernardino springsnail (*Pyrgulopsis bernardina*)	E, CH	Inhabits springs with substrates composed of cobbles, gravel, woody debris and aquatic vegetation.	No – No suitable habitat is present.
BIRDS			
Yellow-billed cuckoo (*Coccyzus americanus*)	C	Inhabits large blocks of riparian woodlands (cottonwood, willow or tamarisk galleries).	No – No suitable habitat is present.
Northern aplomado falcon (*Falco femoralis spetentrionalis*)	E, EXP NE	Typically found in grassland and savannah communities.	No – No suitable habitat is present.
Mexican spotted owl (*Strix occidentalis lucida*)	T, CH	Nests in canyons and dense forests with multilayered foliage structure.	No – No suitable habitat is present within the project area.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	E, CH and Proposed CH	Inhabits dense riparian cottonwood/willow and tamarisk vegetation communities along rivers and streams.	No – No suitable habitat is present.
Sprague's pipit (*Anthus spragueii*)	C	Prefers native grasslands lacking woody shrubs.	No – No suitable habitat is present.

Table 3-8, continued

Common (Scientific Name)	Federal Status*	Habitat	Potential to Occur Within the Project Area
AMPHIBIANS			
Chiricahua leopard frog (*Lithobates chiricahuensis*)	T, CH	Inhabits streams, rivers, backwaters, ponds and stock tanks that are mostly free from introduced fish, crayfish and bullfrogs.	Yes -- Suitable habitat is present within the project area approximately 425 feet north of TCA-DGL-0374.
Sonoran tiger salamander (*Ambystoma tigrinum stebbinsi*)	E	Inhabits stock tanks and impounded cienegas.	No – Species occurs in the San Rafael Valley which is located west of the project area.
Arizona treefrog (*Hyla wrightorum*)	C	Inhabits aquatic habitats including stock tanks, cienegas and small streams.	No - No suitable habitat within the project area.
REPTILES			
New Mexico ridge-nosed rattlesnake (*Crotalus willardi obscurus*)	T	Rocky hillsides and canyons in pine-oak woodland.	No – The project area is not located within the range of this subspecies.
Northern Mexican gartersnake (*Thamnophis eques megalops*)	C	Inhabits cienegas, stock tanks, large river woodlands and streamside gallery forest.	No - No suitable habitat within the project area.
Sonoran desert tortoise *(Gopherus agassizii)*	C	Inhabits rocky, steep slopes and bajadas associated with Sonoran desertscrub and Mojave desertscrub at elevations between 904 and 4,198 feet amsl.	No – This species is not known to occur within the project area.
MAMMALS			
Jaguar (*Panthera onca*)	E Proposed CH	Known to inhabit a variety of biotic communities, from Sonoran desertscrub through subalpine coniferous forests.	Yes – Suitable habitat present within the project area, and sightings have been documented within Cochise County.
Lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*)	E	Inhabits Sonoran desertscrub, semi-desert grassland and Madrean oak woodland habitats with agave and columnar cacti present as foraging resources.	Yes – Potential foraging habitat, but no suitable roosting habitat, present within the project area.
Ocelot (*Leopardus pardalis*)	E	Inhabits humid tropical and subtropical forests, savannahs and semi-arid thornscrub.	Yes – Suitable habitat present within the project area and species has recently been observed in Cochise County.
FISHES			
Beautiful shiner (*Cyprinella formosa*)	T, CH	Streams and ponds with sand, gravel and rocky substrate.	Yes - No habitat is present within the project area. However, the species does occur within less than 0.5 mile east of the project area on the SBNWR, where there is also designated Critical Habitat for the species.
Desert pupfish (*Cyprinodon macularius*)	E CH	Inhabits shallow springs, small streams and marshes.	No - No suitable habitat present within the project area.

Table 3-8, continued

Common (Scientific Name)	Federal Status*	Habitat	Potential to Occur Within the Project Area
Gila chub (*Gila intermedia*)	E, CH	Inhabits pools, springs, cienegas and streams.	No – No suitable habitat present within the project area.
Gila topminnow (*Poeciliopsis occidentalis occidentalis*)	E	Inhabits small streams, springs, cienegas and vegetated shallows.	No – No suitable habitat present within the project area.
Loach minnow (*Tiaroga cobitis*)	E CH	Inhabits swift riffles with cobble and gravel substrate.	No – The project area is not located in known habitat.
Spikedace (*Meda fulgida*)	E CH	Inhabits moderate to large streams in moderate to swift currents.	No – No suitable habitat present within the project area.
Yaqui catfish (*Ictalurus pricei*)	T, CH	Inhabits slow-moving waters in moderate to large streams with sand and rock substrate.	Yes – Critical habitat is located adjacent to tower site TCA-DGL-0428.
Yaqui chub (*Gila purpurea*)	E, CH	Inhabits deep pools of small streams near undercut banks and debris, pools associated with springheads and artificial ponds.	Yes – Critical habitat is located adjacent to tower site TCA-DGL-0428.
Yaqui topminnow (*Poeciliopsis occidentalis sonoriensis*)	E	Inhabits shallow areas of small to moderate streams, springs and cienegas; often in areas with debris and aquatic vegetation.	Yes – Suitable habitat is located adjacent to tower site TCA-DGL-0428.

Sources: AGFD 2011b; USFWS 2012; *Federal Status: E = endangered; T = threatened; C = candidate; EXP = experimental population; NE = non-essential, CH = Critical Habitat

In August 2012, the USFWS proposed to designate 838,232 acres of Critical Habitat for the jaguar, including areas along and near the international border in the Baboquivari, Tumacacori, Atascosa, Pajarito, Santa Rita, Patagonia, Huachuca, Whetstone, Peloncillo Mountains and Canelo Hills in Arizona and the Peloncillos and San Luis Mountains in New Mexico (77 FR 50214) (Figure 3-3). The USFWS has determined that the following physical or biological features are essential to the conservation of the jaguar: expansive open spaces in the southwestern United States with adequate connectivity to Mexico that contains a sufficient native prey base and available surface water, have suitable vegetative cover and rugged topography to provide sites for resting and have minimal human impact.

Ocelot

The ocelot's range historically included the southern United States and northern Mexico (USFWS 1990, AGFD 2004). The ocelot is more adaptable than the jaguar and may persist in partly cleared forests, dense cover near large towns, second growth woodland and abandoned cultivation, which have gone back to shrubland. Ocelots are usually active during twilight or nighttime hours and spend the day in heavy brush. Their prey consists of small to medium-sized mammals and birds, but may also include reptiles, fish and invertebrates. Decline of this species has historically been attributed to overhunting and habitat loss. However, population decline is now due predominantly to collisions with vehicles, harmful genetic effects related to inbreeding and habitat loss (USFWS 2010). In April 2012, an ocelot was struck and killed by a vehicle near Globe, Arizona, and in February 2011, an ocelot was photographed in the Huachuca Mountains of southern Arizona. It was the third confirmed ocelot sighting in Arizona in the last 50 years (USFWS 2011b).

Lesser Long-nosed Bat

The lesser long-nosed bat's range extends from southern Arizona and extreme southwestern New Mexico, through western Mexico and south to El Salvador (USFWS 1997). Lesser long-nosed bats primarily utilize natural caves and abandoned mines for roosting but can transiently roost among overhanging rocks and other shelters. Occupied roosts have been documented from eastern portions of the Cabeza Prieta National Wildlife Refuge, north as far as Phoenix and east as far as the Animas Valley in New Mexico (Cockrum and Petryszyn 1991). Use of roosting sites may vary depending upon seasonal fluctuations in the timing of available forage. Thus, some roosts may be occupied or unoccupied through parts or all of a breeding season. Female lesser long-nosed bats arrive at known maternity roosts in southwest Arizona as early as April and continuing through mid-July (USFWS 1997). These maternity colonies begin to disband by September. Both males and females can be found in transient roosts or at maternity roosts from September to as late as early November.

Lesser long-nosed bats feed on nectar and fruits of columnar cacti and nectar of paniculate agaves; as such, they are considered to be an important dispersal and pollination vector for these species (AGFD 2003). Lesser long-nosed bats are known to travel 30 miles to reach suitable concentrations of forage. No columnar cacti were observed within the project area. Only one species of paniculate agave, Palmer's agave, was noted at low densities throughout the project area (see Tables 3-6 and 3-7). The presence of this agave indicates potential foraging habitat for lesser long-nosed bats. Although no potential roosts were observed within or adjacent to the project area during the survey effort, at least one roost is known to occur approximately 2.5 miles north of TCA-DGL-0362 (Figure 3-4).

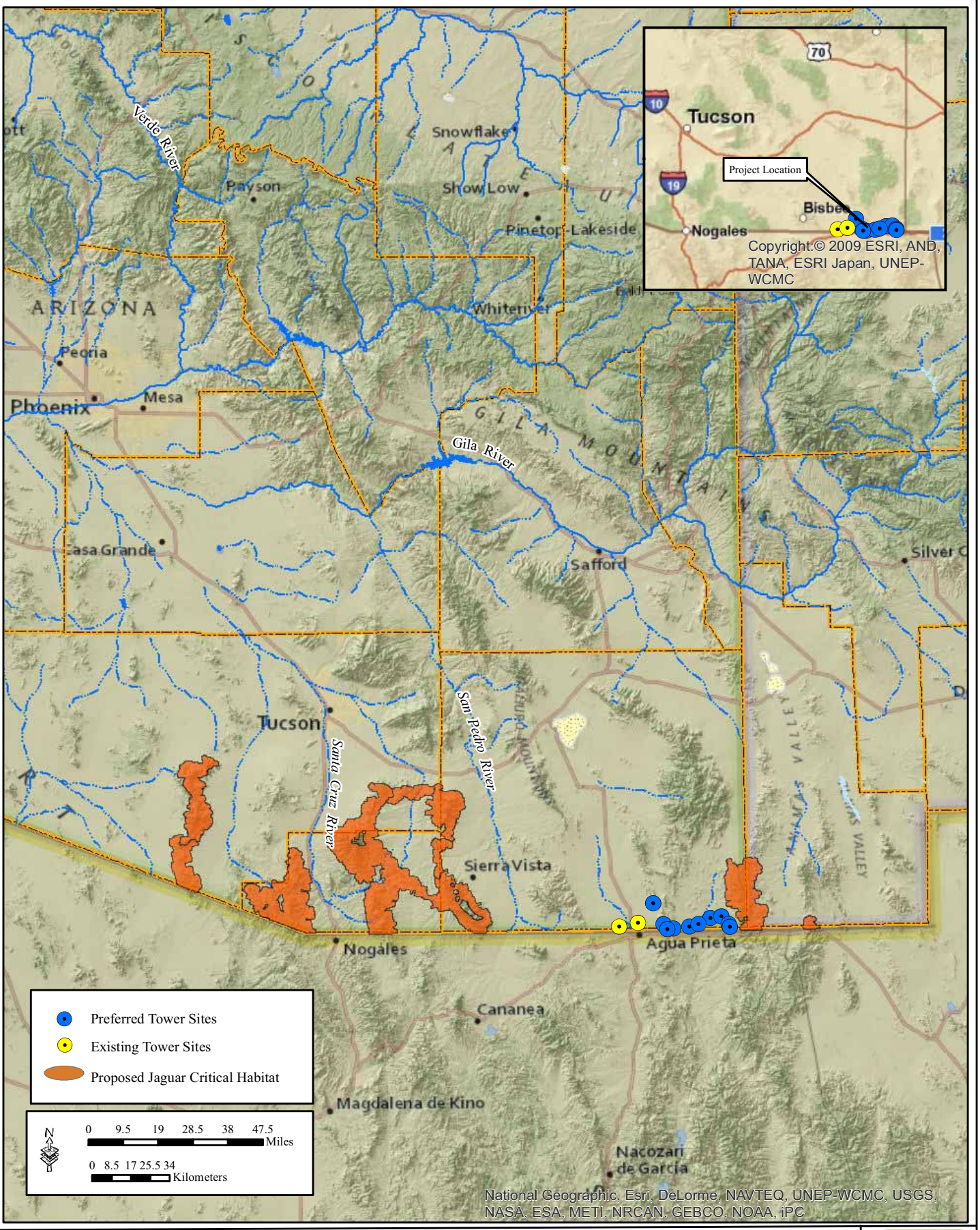

Figure 3-3. Proposed Critical Habitat of the Jaguar

GSRC

September 2012

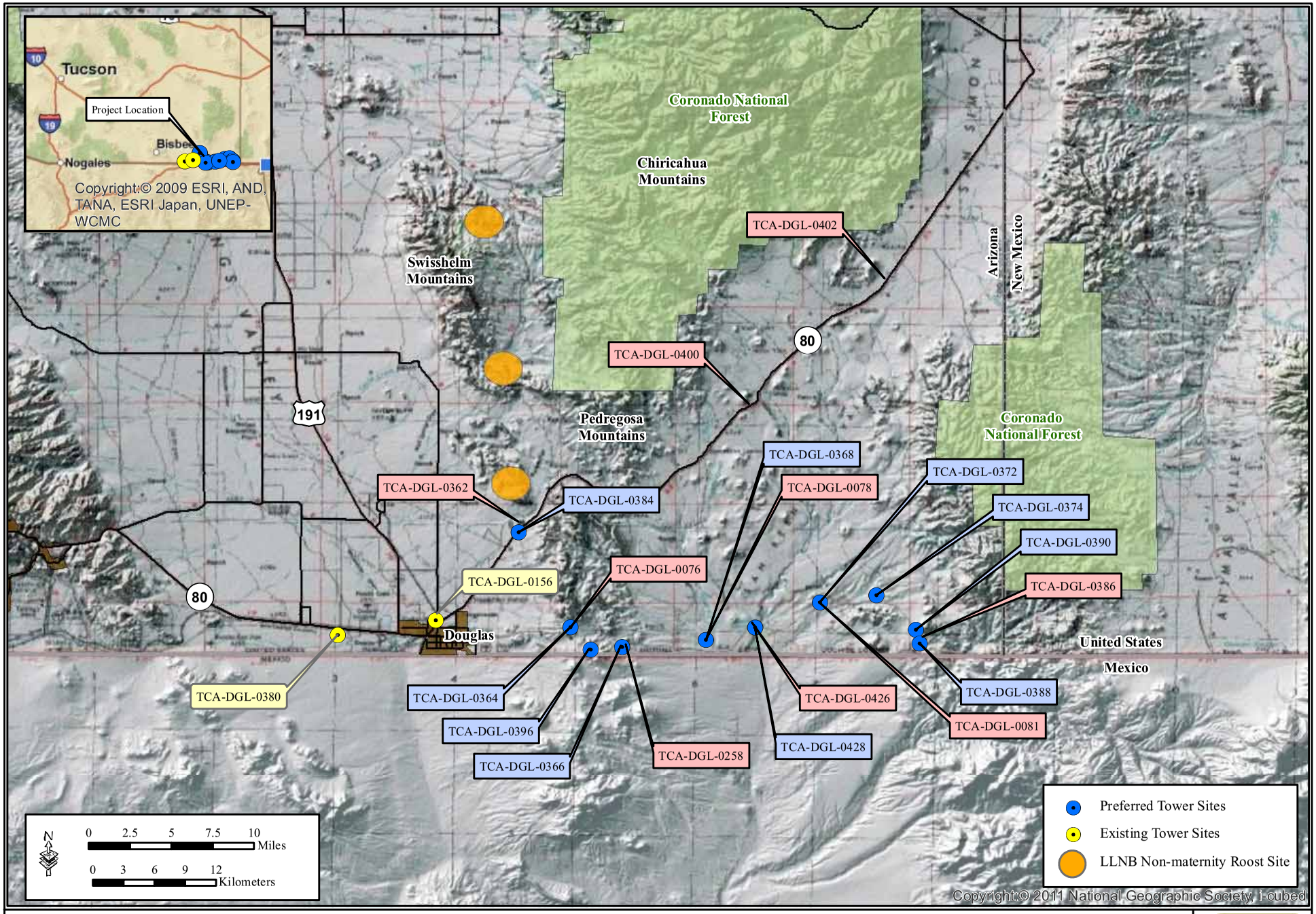

Figure 3-4. Lesser Long-nosed Bat Roost Locations

GSRC

September 2012

Chiricahua Leopard Frog

The Chiricahua leopard frog was listed as a threatened species in 2002 (67 FR 40790). A Recovery Plan for the Chiricahua leopard frog was published in 2007 (72 FR 30820). Over 10,000 acres of lands in Arizona and New Mexico were designated as Critical Habitat for the Chiricahua leopard frog in 2012 (77 FR 16324). Chiricahua leopard frog requires permanent or nearly permanent water sources. The frog was once widespread throughout the wetlands of southeast Arizona. Today, it inhabits streams, rivers, backwaters, ponds and stock tanks that are mostly free from introduced fish, crayfish and bullfrogs (USFWS 2011a). Major threats to Chiricahua leopard frog include habitat degradation, predation by nonnative bullfrogs and exposure to a lethal fungal skin infection (chytridiomycosis). No Critical Habitat for Chiricahua leopard frog exists within any of the IFT sites; however, these frogs have been documented at North Tank which is located approximately 0.08 mile (approximately 425 feet) north of tower site TCA-DGL-0374. A small swale dominated by tobosa grass (*Pleuraphis mutica*) is located approximately 180 feet southeast of tower site TCA-DGL-0374. This swale may provide an important source of protective cover for Chiricahua leopard frogs moving overland between suitable habitats during seasonal dispersal events (Alanen 2011).

Huachuca Water Umbel

Huachuca water umbel is found in mid-elevation wetland communities in southern Arizona and northern Sonora, Mexico (64 FR 37441). This aquatic plant has an opportunistic strategy that ensures its survival in healthy riverine systems, cienegas, and springs. In upper watersheds that generally do not experience scouring floods, the species occurs in microsites (small isolated sites) where competition among different plant species is low. At these sites, it occurs on wetted soils interspersed with other plants at low density, along the periphery of the wetted channel, or in small openings in the understory.

Huachuca water umbel has been documented from 26 sites in Santa Cruz, Cochise, and Pima counties, Arizona, and in adjacent Sonora, Mexico, west of the continental divide (64 FR 37441). The plant has been extirpated from six of the sites. The 20 extant sites occur in four major watersheds: San Pedro River, Santa Cruz River, Rio Yaqui, and Rio Sonora. All sites are between 3,500 and 6,500 feet in elevation. Wetland habitats are rare and declining in the southwest.

Critical Habitat for the Huachuca water umbel was designated at seven locations in Santa Cruz and Cochise counties, Arizona (64 FR 37441). Critical Habitat units in Santa Cruz County are located along Sonoita Creek east of State Highway 82, along the Santa Cruz River and an adjacent tributary in the San Rafael Valley, and in Scotia, Sunnyside, Gardner, and Bear canyons in the Huachuca Mountains (Figure 3-5). None of the proposed tower sites are located with designated Critical Habitat for the Huachuca water umbel.

Rio Yaqui Fishes

While no aquatic habitat for protected fish species is present within the 21 sites surveyed, four Federally listed fish, the beautiful shiner, Yaqui catfish, Yaqui chub and Yaqui topminnow, have the potential to occur within 0.5 mile of the project area (TCA-DGL-0426 and TCA-DGL-0428; Figure 3-6) on the SBNWR. On August 31, 1984, a notice was published (49 FR 34490) indicating that all aquatic habitats of the SBNWR are designated as Critical Habitat for the beautiful shiner, Yaqui catfish and Yaqui chub (USFWS 1984). The primary constituent

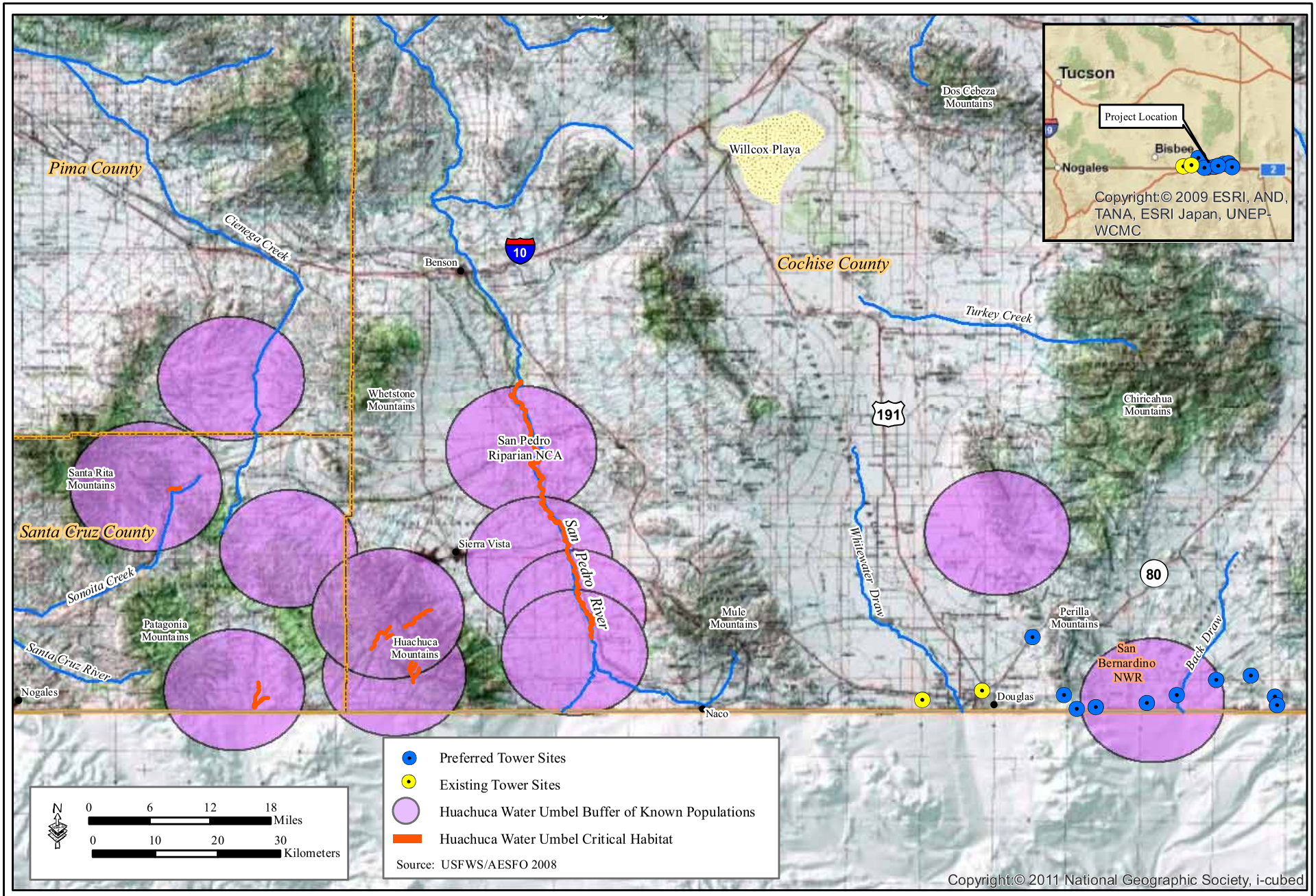

Figure 3-5. General Range of the Huachuca Water Umbel and Critical Habitat

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September 2012

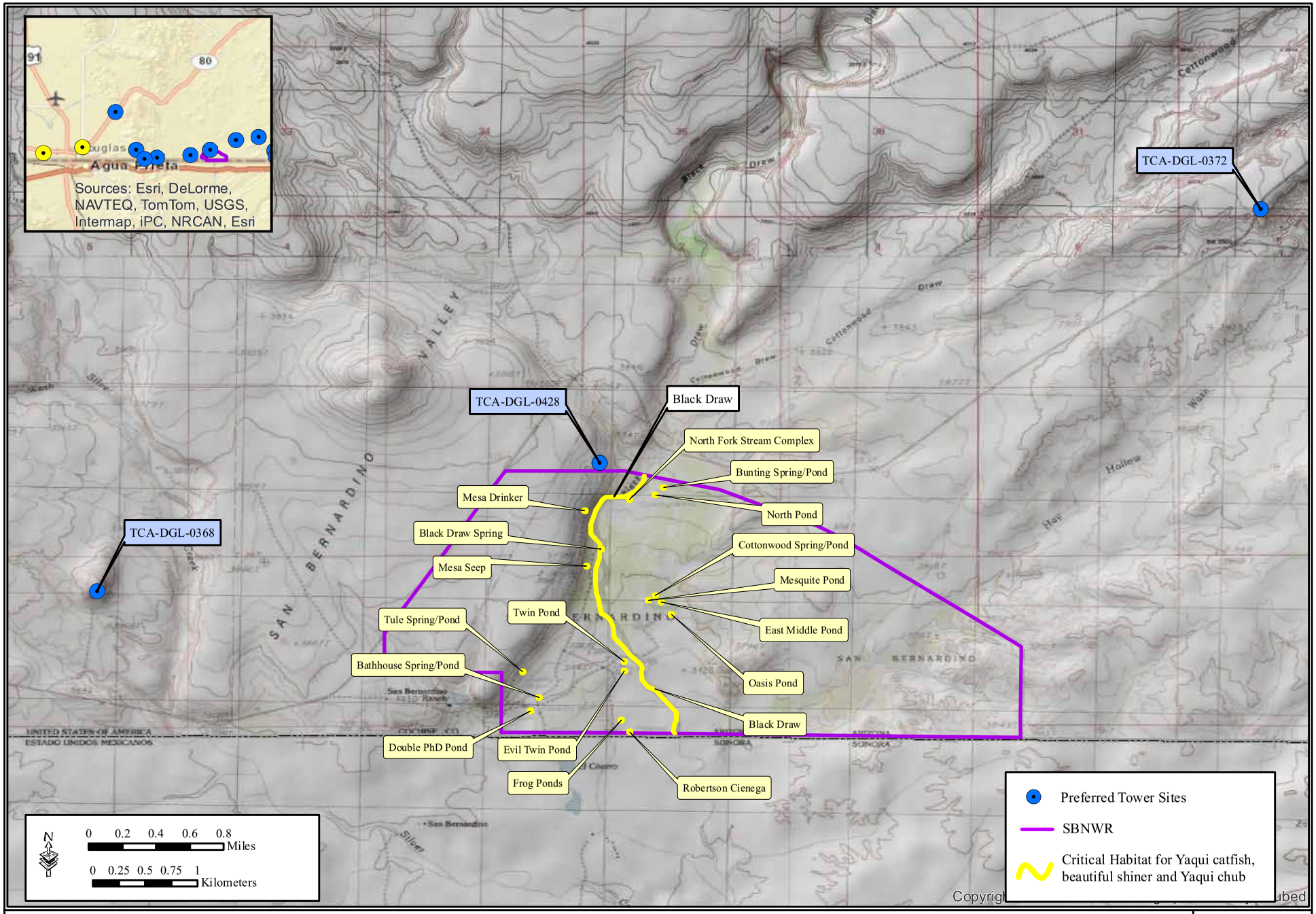

Figure 3-6. Critical Habitat for Yaqui Catfish, Beautiful Shiner and Yaqui Chub

GSRC

September 2012

elements outlined for these species include clean, small, permanent streams and pools without any exotic fish. The streams should be deep pool areas separated by riffles and flow areas with moderate currents. Backwater areas of stream and springs with overgrown cut banks and accumulation of detritus are necessary for feeding and shelter. USFWS determined that these physical and biological features are essential to the conservation of these fish species.

Any activity that would lower the groundwater level to the extent that the water flow from springs on SBNWR would be reduced or alter the spring's water chemistry could adversely impact Critical Habitat. Such activities include, but are not limited to, pumping of groundwater for agricultural purposes and drilling activities associated with geothermal exploration. Activities that could affect water chemistry include, but are not limited to, the release of chemical or biological pollutants into surface or underground waters at a point source or by dispersal release. Another activity that could adversely impact Critical Habitat is the release of exotic or nonnative fish. Predation and competition from exotic or introduced species could reduce or eliminate populations of the endangered and threatened fish.

3.7.1.2 State-Listed Species

The ANHP maintains a list of species with special status in Arizona. The ANHP list includes flora and fauna whose occurrence in Arizona is or may be in jeopardy or has known or perceived threats or population declines (AGFD 2011b). The ANHP list is provided in Appendix D. These species are not necessarily the same as those protected under the ESA of 1973, as amended.

The project area could be considered suitable habitat for various state-sensitive bird, mammal and plant species. However, the night-blooming cereus was the only state-listed species for Cochise County observed during the pedestrian surveys. A single night-blooming cereus was observed at TCA-DGL-0372 during the survey effort.

3.7.1.3 San Bernardino National Wildlife Refuge

The SBNWR is located approximately 200 feet south of tower site TCA-DGL-0428. The refuge was established on April 1, 1982, under authority of the ESA and the Fish and Wildlife Act of 1956, in order to conserve plants and wildlife species, including fish, which are listed as endangered or threatened. These species include the beautiful shiner, Yaqui catfish, Yaqui chub, Yaqui topminnow, Chiricahua leopard frog, San Bernardino springsnail and Huachuca water umbel (USFWS 2011b). As described above, Critical Habitat is established on the refuge for the beautiful shiner, Yaqui catfish and Yaqui chub and includes all aquatic habitats on the SBNWR (USFWS 2011b). Tule Spring Pond is also designated as Critical Habitat for the San Bernardino springsnail.

3.7.2 Environmental Consequences

3.7.2.1 Proposed Action

Nine Federally listed species, jaguar, ocelot, lesser long-nosed bat, Chiricahua leopard frog, Huachuca water umbel, beautiful shiner, Yaqui catfish, Yaqui chub, and Yaqui topminnow, have the potential to occur within the project area; however, it is unlikely that these species would be adversely affected by the Proposed Action. Similarly, the Proposed Action would not adversely affect Critical Habitat for three Federally listed fishes, beautiful shiner, Yaqui catfish and Yaqui chub.

The potential loss of agave plants during tower construction would occur at seven IFT sites. The impacts on individual agave plants would be limited to less than 45 individual agave plants (see Table 3-6). Loss of agave plants would be long-term and negligible and would not likely adversely affect lesser long-nosed bat populations. One state-listed plant species, night-blooming cereus, was observed within the project area at TCA-DGL-0372 and would be avoided during tower construction or transplanted prior to construction.

Based on the information outlined below, the Proposed Action may affect, but is not likely to adversely affect, the jaguar, ocelot, lesser long-nosed bat, Chiricahua leopard frog, Huachuca water umbel, beautiful shiner, Yaqui catfish, Yaqui chub and Yaqui topminnow. Similarly, the Proposed Action would not adversely affect Critical Habitat for the beautiful shiner, Yaqui catfish or Yaqui chub, and would not likely adversely modify proposed Critical Habitat for the jaguar. Informal Section 7 consultation with USFWS was completed for this project. Concurrence on all determinations was received from USFWS on November 7, 2012.

Jaguar

The Proposed Action may affect, but is not likely to adversely affect, the jaguar. The proposed IFT sites, new roads, improvement to approach roads and road maintenance would occur within habitat potentially occupied by the jaguar. None of the proposed IFT sites are located within proposed Critical Habitat for the jaguar. Given the rarity and elusive nature of the jaguar, it is highly unlikely that a jaguar would be disturbed as a direct result of the Proposed Action. There has only been one documented jaguar sighting within Cochise County in recent years (AGFD 2011a). This one sighting, combined with limited human presence and disturbance (i.e., noise) during construction and operation (i.e., generators and maintenance), limited construction (0.22 mile) of new roads, and no substantial increase in recreational access, makes effects on jaguars highly unlikely. Construction activities and tower presence would not have a substantial effect on the jaguar's behavior.

Ocelot

The Proposed Action may affect, but is not likely to adversely affect, the ocelot. The proposed IFT sites, new roads, improvement to approach roads and road maintenance would occur within habitat potentially occupied by the ocelot. However, given the rarity and elusive nature of the ocelot, it is highly unlikely that an ocelot would be disturbed as a direct result of the Proposed Action. A majority of the region would remain unaffected and largely undeveloped; thus, avoidance of any activity by the ocelot would require minimal effort and would not result in restriction of the ocelot from equally suitable habitats within its range. Construction activities and tower presence would not have a substantial effect on the ocelot's behavior.

Lesser Long-nosed Bat

The Proposed Action may affect, but is not likely to adversely affect, the lesser long-nosed bat. Only proposed tower site TCA-DGL-0384 and its associated access and approach roads are located within 5 miles of a known lesser long-nosed bat roost. All 12 of the preferred and alternate IFT sites and associated roads occur within the range of foraging lesser long-nosed bats. Implementation of BMPs will be required at each tower to minimize the effects of lighting on bats, if a tower is equipped with lighting. Palmer's agave was observed in low densities within the proposed IFT site footprints or associated access and approach road alignments. Palmer's agave was not found to be a dominant component of the vegetation association, and no dense

stands of agave plants would be impacted by the Proposed Action. Individual agave plants located within the construction limits of IFT sites and new and improved roads will be avoided to the extent practicable. Only 0.22 mile of new road construction and 4.9 miles of road improvements would occur within 30 miles of known roosts. Implementation of BMPs would minimize potential impacts on forage plants and would reduce the potential for catastrophic wildfires due to the spread of invasive plant species.

A small number of bats could potentially be harmed by collisions with a tower or by avoidance of the area due to light and electromagnetic (EM) frequency radiation. However, bat collisions with the IFTs are unlikely. During 2010 and 2011, CBP conducted bat carcass surveys of 13 existing CBP communications and sensor towers in the Ajo and Tucson stations' AORs in an effort to document bat fatalities associated with CBP towers (GSRC 2011 and 2012). The 13 existing towers were monitored twice per week on consecutive days from June 1 to September 30 during 2010 and 2011. No bat carcasses have been documented during the 2 years of monitoring. The potential for bats to collide with the towers would be unlikely, and potential effects would be discountable.

The EM field produced by radio and radar equipment could affect lesser long-nosed bats by causing increased surface and deep body temperatures, if exposed for prolonged periods, or by causing bats to avoid foraging habitat. Lesser long-nosed bats would be particularly susceptible to EM field strengths greater than 2 volts/meter (Nicholls and Racey 2007). Current monitoring conducted by CBP at existing sensor towers equipped with radar has not shown that bats avoid the tower sites or adjacent area.

Chiricahua Leopard Frog

The Proposed Action may affect, but is not likely to adversely affect, the Chiricahua leopard frog. Construction of tower site TCA-DGL-0374 and its associated access road construction and approach improvements would result in 0.73 acre of permanent impacts and 2.95 acres of temporary disturbance to vegetation and soils. Due to the proximity of tower site TCA-DGL-0374 and its associated roads to North Tank, there is a potential for a dispersing leopard frog to enter the site. To prevent the presence of Chiricahua leopard frog within the construction area, frog exclusion fences will be erected and maintained around the temporary impact area of tower site TCA-DGL-0374 and the access road to the tower site during construction. If possible, tower site TCA-DGL-0374 and its associated roads will be constructed and improved during the Chiricahua leopard frog dormant season, from November through January. Biological monitors will be present during construction and road improvement activities. The construction area will be monitored prior to and during construction activities. A swale located south of tower site TCA-DGL-0374 will be avoided during construction to minimize impacts on potentially suitable cover habitat for the Chiricahua leopard frog (Alanen 2011). The potential for construction activities to affect the Chiricahua leopard frog would be discountable with implementation of the BMPs to exclude dispersing individual from these activities. The Proposed Action would have a beneficial effect on Chiricahua leopard frog as a result of reducing illegal foot and vehicle traffic in occupied Chiricahua leopard frog habitat. The proposed tower site would reduce habitat degradation and potential direct physical impacts on individual frogs.

Potential indirect impacts on Chiricahua leopard frog include increased sedimentation as a result of soil disturbance related to construction of the tower site, access road construction, road

improvements and the installation of a low-water crossing. Soil disturbance, if left unattended, can result in erosion and subsequent sedimentation of aquatic habitats. Excessive erosion and sedimentation could alter the suitability of occupied habitat at North Tank and dispersal habitats. However, it is unlikely that surface runoff from TCA-DGL-0374 and its associated roads would enter North Tank because of the elevated berm that surrounds North Tank. BMPs would be implemented to reduce sedimentation and runoff from the tower site and access and approach roads. A site-specific SWPPP will be prepared and implemented to protect North Tank. This will include, but is not limited to, placing straw bale type sediment traps at the inlet of North Tank. Although road repairs would be temporary, with the implementation of BMPs, any erosion occurring 3 years post-construction would be remediated.

Huachuca Water Umbel

The Proposed Action may affect, but is not likely to adversely affect, the Huachuca water umbel. Construction of tower site TCA-DGL-0428 and its associated access road would occur near or adjacent to the riparian area surrounding Black Draw, where Huachuca water umbel is known to occur. However, no low-water crossings would occur within Black Draw. Thus the Proposed Action would not have a direct effect on Huachuca water umbel. There is a potential for sedimentation from the tower site and approach road to enter Black Draw. However, with the implementation of BMPs, such as the development of a SWPPP and post-construction monitoring, the potential for sedimentation to enter Black Draw is discountable and any potential effects on the Huachuca water umbel would be negligible.

Rio Yaqui Fishes

The Proposed Action may affect, but is not likely to adversely affect, the Yaqui catfish, Yaqui topminnow, Yaqui chub and beautiful shiner. Designated Critical Habitat (i.e., Black Draw) for the beautiful shiner, Yaqui catfish and Yaqui chub is located less than 0.5 mile from TCA-DGL-0428. Construction of this IFT site and associated access road would occur within 0.05 mile (264 feet) of the riparian habitat surrounding SBNWR, and surface water from the proposed IFT site ultimately flows into Black Draw. Stormwater from TCA-DGL-0428 and the associated approach road could reach Black Draw. Through the implementation of BMPs, including the use of erosion control, biological monitoring and water use minimization procedures, potential effects associated with sedimentation would be negligible.

3.7.2.2 Alternative 1

Under Alternative 1, impacts on protected species and Critical Habitats would be similar to those discussed for the Proposed Action. There is a potential for loss of 14 agaves during tower construction at the alternate IFT sites (see Table 3-7). Loss of agaves would be long-term and negligible and would not likely adversely affect lesser long-nosed bat populations.

3.7.2.3 No Action Alternative

Under the No Action Alternative, there would be no direct impacts on threatened or endangered species or their habitats as no construction activities would occur. However, the direct and long-term impacts of CBVs throughout the project area and surrounding areas would continue to disturb threatened or endangered species and their habitats. CBV activities create trails, damage vegetation, promote the dispersal and establishment of invasive species and can result in catastrophic wildfires. These actions have an indirect adverse impact on threatened and

endangered species by causing harm to individuals and degrading habitats occupied by these species.

3.8 CULTURAL, HISTORICAL AND ARCHAEOLOGICAL RESOURCES

3.8.1 Affected Environment

The NHPA establishes the Federal government's policy to provide leadership in the preservation of historic properties and to administer Federally owned or controlled historic properties in a spirit of stewardship. The NHPA established the ACHP to advocate full consideration of historic values in Federal decision making; review Federal programs and policies to promote effectiveness, coordination and consistency with National preservation policies; and recommend administrative and legislative improvements for protecting our Nation's heritage with due recognition of other National needs and priorities. The NHPA also established SHPO to administer National historic preservation programs on the state level and Tribal Historic Preservation Officer programs on tribal lands, where appropriate. The NHPA also establishes the National Register of Historic Places (NRHP). The NRHP is the Nation's official list of cultural resources worthy of preservation and protection. Properties listed in the NRHP include districts, sites, buildings, structures and objects that are significant in U.S. history, architecture, archaeology, engineering and culture. The National Park Service administers the NRHP (16 U.S.C. 470).

Section 106 of the NHPA requires USBP to identify and assess the effects of its actions on cultural resources. USBP must consult with appropriate state and local officials, Native American tribes and members of the public and consider their views and concerns about historic preservation issues when making final project decisions. The historic preservation review process mandated by Section 106 is outlined in regulations issued by the ACHP. Revised regulations, "Protection of Historic Properties" (36 C.F.R. Part 800), became effective January 11, 2001.

3.8.1.1 Cultural History

The cultural overview of the project area is described in detail in the survey report (Hart 2011) and is incorporated herein by reference. Briefly, the cultural history of southeastern Arizona is usually discussed in periods: Paleoindian (*circa* 11,500 to 10,000 years before present), Archaic (*circa* 9,000 to 1,950 years before present), which is generally divided into the Early, Middle and Late Archaic periods, Pre-Classic period (1,950 to 850 years before present), Classic period (850 to 550 years before present), Protohistoric period (A.D. 1450 to 1700), Historic period (A.D. 1700 to 1912) and Statehood period (A.D. 1912 to Present).

3.8.1.2 Previous Investigations

The archaeological site records on the Arizona State Museum's (ASM) AZSITE Cultural Resource Inventory were examined prior to the initiation of the field surveys of the 21 IFT sites (10 preferred, nine alternate and two existing IFT sites). Both maps and patent records from the General Land Office, BLM records and GSRC's archives were examined in order to identify potential cultural resources located within the vicinity of the 21 IFT sites. Table 3-9 contains a numerical summary by IFT site of previous investigations and recorded sites at each tower location. It should be noted that some towers, due to their proximity to one another, may share previous investigations and recorded archaeological sites in the table. A total of 35

archaeological surveys was previously conducted within 1 mile of the proposed IFT sites. These surveys were conducted in support of various construction, utility installation, road maintenance and improvements, research and other initiatives. A total of 49 archaeological sites was previously recorded within 1 mile of the 21 IFT sites. These sites include prehistoric and historic artifact scatters, prehistoric habitation sites, Historic-period trails, railroad segments, utility corridors and mining and ranching sites either located adjacent to or intersecting the area of potential effect (APE) of the access and approach approved roads.

Table 3-9. Summary of Previous Research within a 1-mile Radius

Tower ID	Previous Investigations	Recorded Sites
TCA-DGL-0380*	7	5
TCA-DGL-0156*	9	2
TCA-DGL-0362	3	2
TCA-DGL-0384	3	2
TCA-DGL-0364	None	None
TCA-DGL-0076	None	None
TCA-DGL-0396	2	1
TCA-DGL-0366	1	1
TCA-DGL-0258	1	1 (in APE)
TCA-DGL-0078	2	5
TCA-DGL-0368	2	5 (1 in APE)
TCA-DGL-0428	2	24
TCA-DGL-0426	2	24
TCA-DGL-0400	4	1
TCA-DGL-0402	2	2
TCA-DGL-0372	1	None
TCA-DGL-0081	1	None
TCA-DGL-0374	None	1
TCA-DGL-0390	2	5
TCA-DGL-0386	2	5
TCA-DGL-0388	2	5

Source: Hart 2011
*Existing tower

3.8.2 Current Investigations

Archaeological surveys were conducted at the 21 IFT sites and their associated roads on October 13 and 14, 2011 and February 8 and 9, 2012 (Hart 2011). A 209-foot by 209-foot area was surveyed around the center point of each proposed IFT site to cover the permanent footprint and temporary construction easement. A 66-foot-wide survey was performed for construction of 10 access roads and improvements of 8 approach roads for a total of approximately 5.0 miles. Therefore, a total of 49 acres was surveyed as part of this effort.

Two previously recorded sites (Table 3-10) are located within the proposed temporary and permanent construction easements at TCA-DGL-0258 and TCA-DGL-0368, but neither site is considered eligible for the NRHP. Two sites are located along roads that would potentially be used to access IFTs. An NRHP-eligible railroad alignment may be crossed by the access road to

TCA-DGL-0402. An NRHP-eligible site consisting of a prehistoric artifact scatter is located along the existing road that would be used to access TCA-DGL-0426 and TCA-DGL-0428.

No new sites were identified as a result of the pedestrian survey; however, 41 isolated occurrences (IOs) were identified and recorded (Table 3-10). IOs typically consisted of flakes or mining-related features. IOs by their nature are not considered sites and are not eligible for listing on the NRHP. No Traditional Cultural Properties (TCP) or sacred sites were identified in the APE of the Proposed Action.

Table 3-10. IOs and Sites by Tower

Tower ID	IOs	Site or Artifact/ feature type(s)	Comments
TCA-DGL-0380*		None	
TCA-DGL-0156*		None	
TCA-DGL-0364		None	
TCA-DGL-0076		None	
TCA-DGL-0396	1	Linear prospect	
	2	Tailings pile	
	3	Prospect	
	4	Prospect	
	5	Prospect	
	6	Prospect	Outside survey area
	7	Tailings	Outside survey area
	40+	Prospect	Historic or modern
	41+	Prospect	Historic or modern
TCA-DGL-0366	8	Prospect	
	9	Tailings pile	
TCA-DGL-0258		Previous site, AZ FF:10:58(ASM)	Not NRHP-eligible
TCA-DGL-0078	10	Hammerstone	
	39+	Rhyolite angular debris	
TCA-DGL-0368		Previous site, AZ FF:10:59(ASM)	Not NRHP-eligible
TCA-DGL-0428	11	Memorial/plaque	
	12	Secondary white quartizite flake	
	13	Memorial/plaque	
TCA-DGL-0426	14	White ceramic dinnerware fragment	
	15	Brick and scatters of brick fragments	
	16	Secondary tan jasper flake	Retouched edge
TCA-DGL-0400		None	
TCA-DGL-0402	17	Rock alignment	
	18	3 shards of sun-colored amethyst glass	
TCA-DGL-0372	19	Secondary clear chalcedony flake	
	20	Secondary tan jasper flake	
	21	2 tertiary tan jasper flakes	
	22	Red jasper shatter	
	23	4 red chalcedony flakes, 1 gray rhyolite projectile point	
	24	Tertiary tan jasper flake	
	25	Red jasper core fragment	
	26	Secondary tan jasper flake	
	27	Tertiary red chalcedony flake	
	28	2 tertiary red and clear chalcedony flakes	

Table 3-10, continued

Tower ID	IOs	Site or Artifact/ feature type(s)	Comments
TCA-DGL-0081	38+	Red jasper flake	
TCA-DGL-0374		None	
TCA-DGL-0362		None	
TCA-DGL-0384		None	
TCA-DGL-0390	29	Rock alignment	Historic or modern
TCA-DGL-0386	30	Tertiary white chert flake	
	31	Gray chert shatter	
	32	Tertiary gray chert flake	
TCA-DGL-0388	33	Chipping station: 13 red and gray chert flakes	
	34	Secondary brown jasper flake	
	35	Tabular tool/agave scraper	
	36	Gray chert core fragment	
	37	Tertiary white chert	

Source: Hart 2011
*Existing tower
+IOs are not in sequential order due to surveys required at later dates.

3.8.3 Environmental Consequences

3.8.3.1 Proposed Action

Section 106 consultation with the Arizona SHPO is complete for this project (Appendix A). Based on the archaeological survey, archival research results and Native American Tribal consultation to date (Appendix A), CBP has determined that there would be no effects from the Proposed Action on any NRHP-eligible architectural or aboveground resources, NRHP-eligible archaeological resources, TCPs or sacred sites.

Of the 46 previously recorded archaeological sites located within a 1-mile radius of the 12 IFT sites considered under the Proposed Action, only one site is located within the proposed temporary and permanent construction easements at location TCA-DGL-0368. There are no TCPs or sacred sites located within the APE.

One site assessed is a Historic period cinder quarry, but the site is not considered NRHP-eligible. One site is located along a road that would be used to access TCA-DGL-0428. This site consists of a prehistoric/historic artifact scatter with associated bedrock mortars. The site is recommended as NRHP-eligible by the original site recorder (Hart 2011). At TCA-DGL-0428 on the Glenn Ranch, two metal plaques (memorials) mark an area where the Glenns' parents and a family friend had their ashes spread. This area is north of the project area's permanent impact footprint, but within the temporary construction easement. Construction activities would need to avoid the memorials out of respect for the Glenn family. As none of the remaining previously recorded archaeological sites are located within the proposed temporary and permanent construction easements, no impacts on these sites are anticipated due to the implementation of the Proposed Action. No further archaeological work is recommended for these sites.

Mitigation measures to avoid and minimize impacts on cultural resources are outlined in Section 5.0. If previously unidentified cultural resources are encountered during tower construction and related activities, all ground-disturbing actions in the vicinity of the discovery will cease until an

archaeologist is notified and the nature and significance of the find is evaluated. If historic properties are discovered or unanticipated adverse effects on historic properties located within an individual activity or project's area of potential effect occur after the construction has commenced, CBP will implement the following procedures in accordance with 36 C.F.R. 800.13. CBP will immediately cease all operations for the portion of the activity with the potential to adversely affect a historic property and secure the impacted area. CBP OTIA shall notify CBP Environmental and Energy Division of the discovery within 24 hours. CBP Environmental and Energy Division shall notify the appropriate State Historic Preservation Office/Tribal Historic Preservation Office, Indian Tribe(s), and any other consulting parties in writing of the discovery within two business days.

Beneficial impacts in the form of increased knowledge of the past, including site density and distribution, are realized as a result of surveys conducted as part of this EA. Previously recorded and unidentified cultural resource sites located within the project area could receive increased protection from disturbance through the anticipated deterrence of CBV foot and vehicle traffic moving through the area covered by the towers.

3.8.3.2 Alternative 1

Of the 41 previously recorded archaeological sites located within a 1-mile radius of the nine alternate IFT sites considered under Alternative 1, only one site is located within the proposed temporary and permanent construction easements at TCA-DGL-0258. A historic mining claim with two rock cairns is not considered eligible for the NRHP. Two sites are located along roads that would potentially be used to access TCA-DGL-0402 and TCA-DGL-0426, respectively. Impacts on these sites would be avoided if construction vehicles are restricted to the existing road footprint. Similar mitigation measures and indirect beneficial impacts as described for the Proposed Action would occur under Alternative 1.

3.8.3.3 No Action Alternative

The No Action Alternative would have no effect, either beneficial or adverse, on cultural resources since construction activities associated with the proposed IFT project would not occur. Under the No Action Alternative USBP detection and threat classification capabilities would not be enhanced and operational efficiency would not be improved. Thus, the anticipated deterrence of CBV traffic in the project area would not occur.

3.9 AIR QUALITY

3.9.1 Affected Environment

The EPA established NAAQS for specific pollutants determined to be of concern with respect to the health and welfare of the general public. Ambient air quality standards are classified as either "primary" or "secondary." The major pollutants of concern, or criteria pollutants, are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulate matter less than 10 microns (PM-10), particulate matter less than 2.5 microns (PM-2.5) and lead. NAAQS represent the maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect the public health and welfare.

Areas that do not meet these NAAQS standards are called non-attainment areas; areas that meet both primary and secondary standards are known as attainment areas. The Federal Conformity Final Rule (40 C.F.R. Parts 51 and 93) specifies criteria or requirements for conformity determinations for Federal projects. The Federal Conformity Rule was first promulgated in 1993 by the EPA, following the passage of Amendments to the Clean Air Act in 1990. The rule mandates that a conformity analysis must be performed when a Federal action generates air emissions in a region designated as a non-attainment or maintenance area for one or more NAAQS.

A conformity analysis is the process used to determine whether a Federal action meets the requirements of the Federal Conformity Rule. It requires the responsible Federal agency to evaluate the nature of a proposed action and associated air pollutant emissions, and calculate emissions as a result of the proposed action. If the emissions exceed established limits, known as *de minimis* thresholds, the proponent is required to implement appropriate mitigation measures.

Cochise County is designated by EPA as a moderate non-attainment area for PM-10 (EPA 2010). The *de minimis* threshold for moderate non-attainment for PM-10 is 100 tons per year (40 C.F.R. 51.853).

3.9.1.1 Greenhouse Gases and Climate Change

Global climate change refers to a change in the average weather on the earth. Greenhouse gases (GHG) are gases that trap heat in the atmosphere. They include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), fluorinated gases including chlorofluorocarbons and hydrochlorofluorocarbons (HFC) and halons, as well as ground-level O_3 (California Energy Commission 2007). The major GHG-producing sectors in society include transportation, utilities (e.g., coal and gas power plants), industry/manufacturing, agriculture and residential. End-use sector sources of GHG emissions include transportation (40.7 percent), electricity generation (22.2 percent), industry (20.5 percent), agriculture and forestry (8.3 percent) and other (8.3 percent) (California Energy Commission 2007). The main sources of increased concentrations of GHG due to human activity include the combustion of fossil fuels and deforestation (CO_2), livestock and rice farming, land use and wetland depletions, landfill emissions (CH_4), refrigeration system and fire suppression system use and manufacturing (chlorofluorocarbons) and agricultural activities, including the use of fertilizers (California Energy Commission 2007).

Final Mandatory GHG Inventory Rule

In response to the Consolidation Appropriations Act (House Resolution 2764; P.L. 110–161), EPA has issued the Final Mandatory Reporting of Greenhouse Gases Rule. The rule requires large sources that emit 25,000 metric tons (27,557 U.S. tons) or more per year of GHG emissions to report GHG emissions in the United States, collect accurate and timely emissions data to inform future policy decisions and submit annual GHG reports to the EPA. The final rule was signed by the Administrator on September 22, 2009, published on October 30, 2009 and made effective December 29, 2009.

GHG Decision Threshold

CEQ drafted guidelines for determining meaningful GHG decision-making analysis. The CEQ guidance states that if a project would be reasonably anticipated to cause direct emissions of 27,557 U.S. tons or more of CO_2 GHG emissions on an annual basis, agencies should consider this a threshold for decision makers and the public. CEQ proposes this as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHG (CEQ 2010).

The GHG covered by EO 13514 are CO_2, CH_4, N_2O, HFC, perfluorocarbons and sulfur hexafluoride. These GHG have varying heat-trapping abilities and atmospheric lifetimes. CO_2 equivalency is a measuring methodology used to compare the heat-trapping impact from various GHG relative to CO_2. Some gases have a greater global warming potential than others. Nitrogen oxides (NOx), for instance, have a global warming potential that is 310 times greater than an equivalent amount of CO_2, and CH_4 is 21 times greater than an equivalent amount of CO_2.

3.9.2 Environmental Consequences

3.9.2.1 Proposed Action

Temporary and minor increases in air emissions would occur from the use of construction equipment (combustion emissions) and the disturbance of soils (fugitive dust) during construction of the towers and access roads. The following paragraphs describe the air calculation methodologies utilized to estimate air emissions produced by the construction of the towers and access roads.

Fugitive dust emissions were calculated using the emission factor of 0.19 ton per acre per month (Midwest Research Institute 1996), which is a more current standard than the 1985 PM-10 emission factor of 1.2 tons per acre-month presented in AP-42 Section 13 Miscellaneous Sources 13.2.3.3 (EPA 2001).

EPA's NONROAD Model (EPA 2005a) was used, as recommended by EPA's *Procedures Document for National Emission Inventory, Criteria Air Pollutants, 1985-1999* (EPA 2001), to calculate emissions from construction equipment. Combustion emission calculations were made for standard construction equipment, such as front-end loaders, backhoes, cranes and cement trucks. Assumptions were made regarding the total number of days each piece of equipment would be used and the number of hours per day each type of equipment would be used.

Construction workers would temporarily increase the combustion emissions in the airshed during their commute to and from the project area. Emissions from delivery trucks would also contribute to the overall air emissions budget. Emissions from delivery trucks and construction workers traveling to the job site were calculated using the EPA MOBILE 6.2 Model (EPA 2005b, 2005c and 2005d).

The total air quality emissions were calculated for the construction activities to compare to the Federal Conformity Rule. Summaries of the total emissions for the Proposed Action are presented in Table 3-11. Details of the analyses are presented in Appendix E.

Table 3-11. Total Air Emissions (tons/year) from the Proposed Action Construction versus the *de minimis* Threshold Levels[1]

Pollutant	Total	*de minimis* Thresholds
CO	11.42	100
Volatile Organic Compounds	2.20	100
NOx	16.54	100
PM-10	4.85	100
PM-2.5	1.68	100
SO_2	1.93	100
CO_2 and CO_2 equivalents	6,738	27,557

Source: 40 C.F.R. 51.853 and GSRC model projections.
[1] Note that Cochise County is in non-attainment for PM-10 (EPA 2010).

Several sources of air pollutants would contribute to the overall air impacts of the construction project. The air results in Table 3-11 included emissions from the following sources.

- Combustion engines of construction equipment
- Construction workers commuting to and from work
- Supply trucks delivering materials to construction site
- Fugitive dust from job-site ground disturbances

Operational Air Emissions

Operational air emissions refer to air emissions that may occur after the towers have been installed, such as maintenance trips and the use of generators. Generator run times for systems connected to the commercial power grid would be limited to 1 to 5 hours twice per month for maintenance purposes. System conditioning would occur during off-grid operational schedules or if grid power is interrupted, and generators would temporarily be operated, as needed, until grid power is again available. The air emissions from generators and bimonthly maintenance commutes are presented in Appendix E and are summarized in Table 3-12.

Table 3-12. Total Air Emissions (tons/year) from Propane Generators versus *de minimis* Levels for the Proposed Action[1]

Pollutant	Total	*de minimis* Thresholds
CO	16.89	100
Volatile Organic Compounds	1.09	100
NOx	5.17	100
PM-10	0.03	100
PM-2.5	0.03	100
SO_2	0.01	100
CO_2 and CO_2 equivalents	1,985	27,557

Source: 40 C.F.R. 51.853 and GSRC model projections (Appendix E).
[1] Note that Cochise County is in non-attainment for PM-10 (EPA 2010).

As can be seen from the previous tables, the proposed construction and operational activities do not exceed Federal *de minimis* thresholds for NAAQS and GHG and, thus, would not require a Conformity Determination. As there are no violations of air quality standards and no conflicts with the state implementation plans, the impacts on air quality from the implementation of the Proposed Action would be negligible.

BMPs to be incorporated to ensure that fugitive dust and other air quality constituent emission levels do not rise above the minimum threshold as required per 40 C.F.R. 51.853(b)(1) are listed below.

- Standard construction BMPs such as routine watering of the construction site, as well as access roads to the site, will be used to control fugitive dust and thereby assist in limiting potential PM-10 excursions during the construction phase of the proposed project.
- All construction equipment and vehicles would be required to be maintained in good operating condition to minimize exhaust emissions.

3.9.2.2 Alternative 1

Under Alternative 1, impacts on air quality would be similar to those described for the Proposed Action. However, slightly increased levels are expected from construction of two additional towers and the operation of these two towers and associated generators.

3.9.2.3 No Action Alternative

The No Action Alternative would not result in any direct impacts on air quality because there would be no construction activities. However, fugitive dust emissions created by illegal off-road vehicle traffic and resulting law enforcement actions, as well as vehicle traffic on authorized roads, would continue.

3.10 NOISE

3.10.1 Affected Environment

Noise is generally described as unwanted sound, which can be based either on objective effects (i.e., hearing loss, damage to structures) or subjective judgments (e.g., community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB. The A-weighted decibel (dBA) is a measure of sound pressure scale adjusted (weighted) to conform with the frequency response of the human ear.

Noise levels occurring at night generally produce a greater annoyance than do the same levels occurring during the day. It is generally agreed that people perceive intrusive noise at night as being 10 dBA louder than the same level of intrusive noise during the day, at least in terms of its potential for causing community annoyance. This perception is largely because background environmental sound levels at night in most areas are also about 10 dBA lower than those during the day.

Acceptable noise levels have been established by the U.S. Department of Housing and Urban Development (HUD) for construction activities in residential areas (HUD 1984):

> **Acceptable** (not exceeding 65 dBA) – The noise exposure may be of some concern, but common building construction will make the indoor environment acceptable, and the outdoor environment will be reasonably pleasant for recreation and play.
>
> **Normally Unacceptable** (above 65 but not greater than 75 dBA) – The noise exposure is more severe; barriers may be necessary between the site and prominent noise sources to make the outdoor environment acceptable; special building construction may be necessary to ensure that people indoors are sufficiently protected from outdoor noise.
>
> **Unacceptable** (greater than 75 dBA) – The noise exposure at the site is so severe that the construction costs to make the indoor noise environment acceptable may be prohibitive, and the outdoor environment would still be unacceptable.

3.10.1.1 Residential Homes

All of the preferred and alternate IFT sites and associated roads are located on rural, undeveloped lands. One of the preferred IFT sites (TCA-DGL-0380) and one of the alternate sites (TCA-DGL-0156) are located near residential neighborhoods. They are both located on CBP land in Douglas, Arizona. The closest residential home is 0.34 mile (1,772 feet) away from TCA-DGL-0380 and 0.41 mile (2,183 feet) from TCA-DGL-0156.

3.10.1.2 National Wildlife Refuge

The SBNWR is considered a sensitive noise receptor. Noise emission criteria for construction activities were published by the Federal Highway Administration (FHWA), which has established a construction noise abatement criterion of 57 dBA for lands, such as National Parks, in which serenity and quiet are of extraordinary significance (23 C.F.R. 722 Table 1). The 57 dBA criterion threshold is used to measure the impacts from short-term noise emissions associated with constructing the proposed towers and access roads, improving access roads and road maintenance. For long-term noise emission, the EPA (1978) notes that noise emissions of 55 dB or less are suitable for areas in which quiet is a basis for use. This 55 dBA criterion threshold is used to measure the impacts from noise emissions associated with tower operations.

Most of the preferred and alternate IFT sites are located 1 mile or more from SBNWR, with the exception of preferred tower site TCA-DGL-0428 and alternate tower site TCA-DGL-0426, which are located approximately 200 and 100 feet north of SBNWR, respectively.

3.10.1.3 National Forests

The Coronado National Forest (CNF) is located in the project region. FHWA noise abatement criteria specify different noise levels for different land use categories. For areas where outdoor recreation is of importance (Activity Category B), the noise criterion is 67 dBA (23 C.F.R. 722 Table 1).

Table 3-13 presents a list of the preferred and alternate IFT sites and the distance to the nearest sensitive noise receptors.

Table 3-13. Preferred and Alternate IFT sites and Distance to Sensitive Noise Receptors

Tower ID	Preferred or Alternate	Nearest Sensitive Noise Receptor	Distance to Nearest Sensitive Noise Receptor	
			Miles	Feet
TCA-DGL-0076	Alternate	residence in Douglas	5.02	26,667
TCA-DGL-0078	Alternate	SBNWR	1.48	7,807
TCA-DGL-0081	Alternate	SBNWR	2.73	14,440
TCA-DGL-0156*	Preferred	residential	0.41	2,183
TCA-DGL-0258	Alternate	SBNWR	5.63	29,724
TCA-DGL-0362	Alternate	CNF	7.50	39,580
TCA-DGL-0386	Alternate	CNF	4.80	25,550
TCA-DGL-0388	Preferred	CNF	5.21	27,504
TCA-DGL-0364	Preferred	residence on East Gregory Road	3.76	19,870
TCA-DGL-0366	Preferred	residence on East Gregory Road	6.50	34,320
TCA-DGL-0368	Preferred	SBNWR	1.47	7,744
TCA-DGL-0372	Preferred	SBNWR	2.78	14,670
TCA-DGL-0374	Preferred	SBNWR	5.10	26,939
TCA-DGL-0380*	Preferred	residential	0.34	1,772
TCA-DGL-0384	Preferred	golf course	5.66	29,892
TCA-DGL-0390	Preferred	CNF	4.49	26,068
TCA-DGL-0396	Preferred	residence in Douglas	6.00	31,795
TCA-DGL-0426	Alternate	SBNWR	0.02	100
TCA-DGL-0428	Preferred	SBNWR	0.03	163

*Existing tower

Noise Attenuation

As a general rule, noise generated by a stationary noise source, or "point source," will decrease by approximately 6 dB over hard surfaces and 9 dB over soft surfaces for each doubling of the distance. For example, if a noise source produces a noise level of 85 dBA at a reference distance of 50 feet over a hard surface, then the noise level would be 79 dBA at a distance of 100 feet from the noise source, 73 dBA at a distance of 200 feet. To estimate the attenuation of the noise over a given distance the following relationship is utilized:

$$\text{Equation 1: } dBA_2 = dBA_1 - 20 \log (d_2/d_1)$$

Where:

dBA_2 = dBA at distance 2 from source (predicted)
dBA_1 = dBA at distance 1 from source (measured)
d_2 = Distance to location 2 from the source
d_1 = Distance to location 1 from the source

Source: California Department of Transportation 1998.

3.10.2 Environmental Consequences

3.10.2.1 Proposed Action

Construction Noise Emissions

The construction of the towers and access roads would require the use of common construction equipment. Table 3-14 describes noise emission levels for construction equipment that range from 79 dBA to 85 dBA at a distance of 50 feet (FHWA 2007 and Thalheimer 2000).

Table 3-14. A-Weighted (dBA) Sound Levels of Construction Equipment and Modeled Attenuation at Various Distances[1]

Noise Source	50 feet	100 feet[2]	200 feet	500 feet	1,000 feet
Crane	81	75	69	61	55
Dump truck*	84	78	72	64	58
Excavator	81	75	69	61	55
Front-end loader	79	73	67	59	53
Concrete mixer truck*	85	79	73	65	59
Drill rig*	85	79	73	65	59
Bulldozer	82	76	70	62	56
Generator	81	75	69	61	55

Source: FHWA 2007 and GSRC
*Source: Thalheimer 2000
[1]The dBA at 50 feet is a measured noise emission (FHWA 2007).
[2]The 100 to 1,000 foot results are GSRC modeled estimates.

Assuming the worst-case scenario of 85 dBA, the noise model projected that noise levels of 85 dBA from a point source (i.e., bulldozer) would have to travel 500 feet before the noise would be attenuated to a noise level of 65 dBA. There are no residential receptors within 500 feet of any of the IFT sites. The 85 dBA noise level must travel 1,200 feet before attenuating to 57 dBA, the criterion for construction activities near National Parks, which was used for SBNWR. TCA-DGL-0428 is located within 200 feet of SBNWR, and noise generated by the construction activities would temporarily impact refuge lands for up to 6 weeks. Tower and access road construction and approach road improvements associated with TCA-DGL-0428 would impact 43 acres for 8 weeks, after which noise levels would return to ambient levels. Therefore, the noise impacts from construction activities would be temporary and minor.

Long-term Noise Emission from Propane Generator

Long-term noise emissions refer to noise emissions that would occur after the new towers have been installed. Noise emissions from a representative generator (25-kilowatt [kW]) were obtained from the manufacturer's specifications and were found to be 66 dBA at 23 feet from the enclosure under standard test conditions (Cummins 2010). The generator noise would have to travel 80 feet before attenuating to 55 dBA. There are no sensitive noise receptors within 80 feet of any of the preferred IFT sites; therefore, impacts on the environment from operational noise emissions would be negligible.

3.10.2.2 Alternative 1

Noise emissions associated with construction and operational activities would be similar to those described for the Proposed Action. However, some of the towers and associated roads are

located in different areas. TCA-DGL-0426 is located adjacent to the SBNWR, and noise generated by the construction activities would temporarily impact refuge lands for up to 6 weeks. Construction of tower and access roads associated with TCA-DGL-0426 would impact 52 acres for 8 weeks, after which noise levels would return to ambient levels. The SBNWR is approximately 100 feet from TCA-DGL-0426. Noise from the generators would be attenuated to 55 dBA at 80 feet; therefore, impacts on the environment and human health from construction and operational noise emissions of the alternate tower sites would be minor and negligible, respectively.

3.10.2.3 No Action Alternative

Under the No Action Alternative, the sensitive noise receptors and wildlife near the proposed IFT sites and associated roads would not experience construction or operational noise associated with the towers.

3.11 UTILITIES AND INFRASTRUCTURE

3.11.1 Affected Environment

3.11.1.1 Utility Commercial Grid Power

Several commercial utility power companies service the cities and counties in southeastern Arizona. Those that service the City of Douglas and rural Cochise County are shown in Table 3-15. Commercial grid power is potentially available at two proposed IFT sites (TCA-DGL-0384 and -0428). The remaining proposed IFTs are located in remote areas where commercial grid power is not readily accessible.

Table 3-15. Power Company Service Areas

City and/or County	Power Company
City of Douglas	Arizona Public Service Company (APS)
Cochise County	Sulphur Springs Valley Electric Cooperative, Incorporated

Source: APS 2011 and Arizona's Touchstone Energy Cooperatives 2011

3.11.1.2 Ambient and Artificial Lighting

Ambient or atmospheric light is of concern to many, including, most notably, astronomical observatories (International Dark Sky Association 2008). The reduction of man-made or artificial light sources is generally desired by astronomers in the southwest, and there are light ordinances in place in some cities and counties in the southwest United States to minimize sky brightness in large population centers. The Cochise County Light Pollution code was adopted in 1983, with a major update in 2005. The purpose of the Light Pollution Code is to preserve the dark night sky for astronomers and the general public, while achieving safe, efficient lighting practices (Cochise County 2005).

The main features of the Cochise County Light Pollution Code include (Cochise County 2005):

- Light trespass and off-site glare are not allowed.
- All lights must be fully shielded except:
  - low voltage or solar landscape lighting rated at 10 watts or less,

  - a limited number of lights with less than 1,000-lumen output (such as a 60-watt, incandescent or quartz halogen or a 13-watt compact fluorescent fixture) and
  - one flagpole light (2,000 lumens or less).
- All lights within 25 feet of a residential property must be fully shielded.
- Lumen caps are established by zoning and use.
- Floodlights (incandescent or those with photosynthetically active radiation not exceeding 2,000 lumens) are exempt from lumen caps, provided they are aimed no higher than 45 degrees (halfway between straight down and straight to the side) and are controlled by a motion sensor device, not to remain on over 10 minutes.
- Lighted outdoor recreation facilities and waivers from the Light Pollution Code standards require a Special Use Permit.
- Temporary exemptions for emergencies exceeding 48 hours require Planning Department approval.

Currently, it is not anticipated that nighttime construction would occur; however, if nighttime construction becomes necessary, use of lights would conform to the Cochise County Code.

3.11.2 Environmental Consequences

3.11.2.1 Proposed Action

The Proposed Action would result in negligible effects on the availability of utilities, including an upgrade of electrical service and connection to existing hardline communications service. Only two of the new IFTs (TCA-DGL-0384 and -0428) would potentially be connected to commercial grid power, and existing utility service is located adjacent to both IFT sites. The proposed tower sites may be lighted for security purposes. When so equipped, the light would be shielded to avoid illumination outside the footprint of the tower site and would have a negligible impact on ambient or atmospheric light.

3.11.2.2 Alternative 1

Under Alternative 1, impacts would be similar to those described for the Proposed Action. Two IFTs (TCA-DGL-0384 and -0426) would potentially be connected to commercial grid power, and existing utility service is located adjacent to both IFT sites.

3.11.2.3 No Action Alternative

Under the No Action Alternative, the proposed IFTs would not be constructed within USBP's Douglas Station AOR. The No Action Alternative would not affect the availability of utilities or require construction of additional facilities.

3.12 RADIO FREQUENCY ENVIRONMENT

3.12.1 Affected Environment

The radio frequency (RF) environment refers to the presence of EM radiation emitted by radio waves and microwaves on the human and biological environment. EM radiations are self-propagating waves of electric and magnetic energy that move through space via radio waves and microwaves emitted by transmitting antennas. RF is a frequency or rate of oscillation within the range of about 3 hertz (Hz) and 300 gigahertz. This range corresponds to frequency of alternating current and electrical signals used to produce and detect radio waves. The EM

radiation produced by radio waves and microwaves carry energy and momentum and can interact with matter.

The FCC is responsible for licensing frequencies and ensuring that the approved uses would not interfere with television or radio broadcasts or substantially affect the natural or human environment. The FCC adopted recognized safety guidelines for evaluating RF exposure in the mid-1980s (Office of Engineering and Technology [OET] 1999). Specifically, in 1985, the FCC adopted the 1982 American National Standards Institute (ANSI) guidelines to evaluate exposure due to RF transmitters that are licensed and authorized by the FCC (OET 1999). In 1992, ANSI adopted the 1991 Institute of Electrical and Electronics Engineers (IEEE) standard as an American National Standard (a revision of its 1982 standard) and designated it as ANSI/IEEE C95.1-1992 (OET 1999). The FCC proposed to update its rules and adopt the new ANSI/IEEE guidelines in 1993, and in 1996 the FCC adopted a modified version of the original proposal.

The FCC's guidelines are also based on the National Council of Radiation Protection and Measurements exposure guidelines. The NRCP and ANSI/IEEE exposure criteria identify the same threshold levels at which harmful biological effects may occur. The whole-body human absorption of RF energy varies with the frequency of the RF signal. The most restrictive limits on exposure are in the frequency range of 30 to 300 megahertz where the human body absorbs RF energy most efficiently when exposed in the air field of an RF transmitting source (ANSI/IEEE C95.1-1992).

There are two tiers or exposure limits: occupational or "controlled" and general or "uncontrolled." Operational exposure is when people are exposed to RF fields as a part of their employment and they have been made fully aware of the potential exposure and can exercise control over their exposure. Uncontrolled exposure is when the general public is exposed or when persons employed are not made fully aware of the potential for exposure or cannot exercise control over their exposure.

In order for a transmitting facility or operation to be out of compliance with the FCC's RF guidelines in an area where levels exceed Maximum Permissible Exposure (MPE) limits, it must first be accessible to the public. The MPE limits indicate levels above which people may not be safely exposed regardless of the location where those levels occur.

Adverse biological effects associated with RF energy are typically related to the heating of tissue by RF energy. This is typically referred to as a "thermal" effect, where the EM radiation emitted by an RF antenna passes through and rapidly heats biological tissue, similar to the way a microwave oven cooks food. The Health Physics Society indicates that numerous studies have shown that environmental levels of RF energy routinely encountered by the general public are typically far below levels necessary to produce significant heating and increased body temperature and are generally only associated with workplace environments near high-powered RF sources used for molding plastics or processing food products. In such cases, exposure of human beings to RF energy could be exceeded, thus requiring restrictive measures or actions to ensure their safety (Kelly 2007).

There is also some concern that signals from some RF devices could interfere with pacemakers or other implanted medical devices. However, it has never been demonstrated that signals from a microwave oven are strong enough to cause such interference (OET 1999). Furthermore, EM shielding was incorporated into the design of modern pacemakers to prevent RF signals from interfering with the electronic circuitry in the pacemaker (OET 1999).

Other non-thermal adverse effects such as disorientation of passing birds by RF waves are also of concern. Past studies on effects of communications towers were noted by Beason (1999) during the 1999 Workshop on Avian Mortality at Communication Towers (Evans and Manville 2000). During this workshop, Beason (1999) noted that most research on RF signals produced by communications towers have no general disorientation effects on migratory birds. However, more research is needed to better understand the effects of RF energy on the avian brain.

Currently, CBP, USFWS, CNF, BLM and local law enforcement agencies use 2-way radios as part of their daily operations in the project area. Further, several of these agencies operate and maintain radio repeaters within the ROI.

3.12.2 Environmental Consequences

3.12.2.1 Proposed Action

With the implementation of the Proposed Action, IFTs equipped with radio and microwave communications systems, as well as radar systems, would be installed for use by CBP. As with any RF transmitter, all of these systems would emit RF energy and EM radiation; therefore, a potential for adverse effects could occur. However, any adverse effects on human health and wildlife would likely be negligible due to the minimal exposure limits associated with both the type of equipment used and the height at which they would be positioned on the towers. The IFT sites would also be fenced for security, making human and terrestrial wildlife exposure to RF emitting equipment even less likely.

Communication and radar systems on the proposed IFTs would be installed a minimum of 20 feet above the ground and would exceed the minimum safe operating distance for these systems (i.e., 17 feet). Thus, maintenance and operational personnel working within the secure IFT site would not be exposed to any RF energy that exceeds MPE limits set by the FCC.

Though greater research is required to have a better understanding of the effects of RF energy on the avian brain, the potential effects on passing birds is expected to be negligible as well. Any disorientating effect, if experienced, would be temporary and would occur only at close distances to the antennas.

All frequencies used by CBP would be coordinated through the FCC and NTIA as required by NTIA regulations. Therefore, the RF environment created by the installation, operation and maintenance of the communications and radar systems on IFTs would have a long-term, negligible adverse impact on observatories, human health and wildlife.

3.12.2.2 Alternative 1

Under Alternative 1, impacts on the radio frequency environment would be similar to those discussed under the Proposed Action.

3.12.2.3 No Action Alternative
Under the No Action Alternative, the IFT sites would not be installed or operated. Daily radio operations by CBP, USFWS, CNF, BLM, local law enforcement and the military would continue within the ROI. There would be no impacts on the existing RF environment or effects on the human or natural environment.

3.13 ROADWAYS AND TRAFFIC

3.13.1 Affected Environment
SR 80, Geronimo Trail and Guadalupe Canyon Road are the main routes for vehicular access through the San Bernardino Valley. Geronimo Trail and Guadalupe Canyon Road are both maintained by Cochise County. There are also several existing unimproved access roads that traverse the valley.

The annual average daily traffic count (AADT) of SR 80 east of Douglas in the vicinity of TCA-DGL-0362, TCA-DGL-0384, TCA-DGL-0400 and TCA-DGL-0402 is approximately 350 vehicles (ADOT 2009). Near TCA-DGL-0380 and TCA-DGL-0156, the AADT along SR 80 is approximately 4,600 vehicles (ADOT 2009).

The American Association of State Highway Transportation Officials (AASHTO) classifies Geronimo Trail as a major access, low-volume road. A low-volume road is defined as having an AADT of less than 400 vehicles (AASHTO 1993). According to Cochise County, there are approximately 133 vehicles per day that travel along Geronimo Trail (based on the 2010 AADT between Mile Post 8 and Mile Post 14; Cochise County 2011). Approximately 68 percent of this traffic is directly attributed to USBP enforcement activities (Cochise County 2011).

3.13.2 Environmental Consequences
3.13.2.1 Proposed Action
With the implementation of the Proposed Action, construction activities at IFT sites would have a temporary, minor impact on roadways and traffic within the project area. An increase of vehicular traffic along SR 80, Geronimo Trail and Guadalupe Canyon Road would occur to supply materials and work crews to the IFT sites during the construction period and also during tower maintenance and refueling trips.

Tower maintenance requires vehicle travel to each of the proposed tower sites for fuel delivery, maintenance and operations of the proposed IFTs. The number of maintenance trips and refueling trips varies depending on tower function (i.e., sensor) and power type (i.e., commercial grid power). A total of approximately 340 vehicle trips per year is anticipated for tower maintenance and refueling under the Proposed Action (see Table 2-3). Impacts associated with tower maintenance would be long-term and negligible.

3.13.2.2 Alternative 1
Alternative 1 would result in traffic impacts similar to those described for the Proposed Action, but would be slightly greater due to the two additional towers.

3.13.2.3 No Action Alternative
Under the No Action Alternative, there would be no impacts on roadways and traffic.

3.14 AESTHETIC AND VISUAL RESOURCES

3.14.1 Affected Environment

The San Bernardino Valley is a sparsely populated, scenic area along the border between Arizona and Sonora, Mexico. Few roads cross the region. Some previously roadless areas of the landscape along the United States/Mexico border now contain CBP TI, but the landscape looks generally as it did 100 years ago, and it is still dominated by native vegetation.

The aesthetic resources within Cochise County in the vicinity of the proposed IFT sites include the characteristic open grasslands and natural desertscrub vegetation of the Chihuahuan Desert Biome (Brown and Lowe 1994). The low diversity and simple appearance of Chihuahuan Desert vegetation within the relatively flat valley creates a landscape that changes little in appearance from horizon to horizon. Distant mountain views exist in all cardinal directions from the majority of the IFT sites. Isolated, rural, agricultural communities contribute to the aesthetic quality of the region.

Lands controlled by BLM are assigned visual resource inventory classes. BLM also subdivides landscapes into three distance zones based on relative visibility from observation points. The three zones are: foreground-middleground, background and seldom-seen. The foreground-middleground zone includes areas seen from highways, rivers or other viewing locations that are less than 3 to 5 miles away and where management activities might be viewed in detail. This zone is more visible to the public and changes are more noticeable. The background zone includes areas beyond the foreground-middleground zone but usually less than 15 miles away. This does not include areas in the background that are so far distant that the only thing discernible is the form or outline. Areas that are not visible within the foreground-middleground zone or background zone are in the seldom-seen zone (BLM 2009). The BLM visual zones were used as a means to quantify the visual impacts of each IFT analyzed in this EA.

3.14.2 Environmental Consequences

3.14.2.1 Proposed Action

The Proposed Action would have a long-term, moderate impact on aesthetic qualities within the project region. Depending on the location and elevation of a viewer, and due to the flat nature of the landscape throughout most of the San Bernardino Valley, it is possible that most of the proposed IFTs would be visible from 3 to 5 miles away and some towers may be visible from up to 15 miles. As such, the visual impact of the IFTs would be readily apparent in the region. The IFTs would be visible from the main vehicular access routes through the San Bernardino Valley (e.g., SR 80, Geronimo Trail, Guadalupe Canyon Road). Likewise, the IFTs would be visible from nearby ranches and, in some instances, SBNWR headquarters. However, the impacts on the region's aesthetic quality from the IFTs would be negligible beyond an observation point of 15 miles because the IFTs would be within the seldom-seen zone and would not be visibly apparent. No TCPs or sacred sites were identified within the visual APE of the IFTs.

Temporary aesthetic impacts during the construction phase of the project would occur at the IFT sites, and these impacts would include the visual impacts of construction equipment. Areas that would be temporarily disturbed during construction of the IFTs would be revegetated using native plant species.

3.14.2.2 Alternative 1

Alternative 1 would result in visual impacts similar to those described for the Proposed Action, but would be slightly greater due to the two additional towers. These two additional towers are not located near sensitive areas, such as SBNWR.

3.14.2.3 No Action Alternative

Under the No Action Alternative, the aesthetics of the project area would not be directly affected because no towers would be constructed. However, trash, illegal roads, graffiti and general vandalism resulting from CBVs would be expected to continue and to detract from the visual quality of the project area.

3.15 HAZARDOUS MATERIALS

3.15.1 Affected Environment

Several Federal agencies regulate hazardous material and substances in consumer, commercial and industrial chemical products through key regulations that identify individual hazardous substances or the product into which its ingredients are placed. Hazardous waste in Arizona is regulated under the Resource Conservation and Recovery Act, and Arizona state statutes and codes that are modeled on Federal law. ADEQ has the authority to monitor and direct businesses that may generate, transport or dispose of hazardous waste in Arizona, and ADEQ's Waste Programs Division implements state and Federal hazardous waste laws pursuant to delegation from the EPA (ADEQ 2012).

A Transaction Screen Site Assessment was conducted for each preferred IFT site in accordance with the American Society for Testing and Materials International standard E1528-06. These assessments were performed to evaluate any potential environmental risk associated with the lease of the property by CBP for construction and operation of the proposed IFTs. Each assessment included a search of Federal and state records of known hazardous waste sites, potential hazardous waste sites and remedial activities and included sites that are either on the National Priorities List or being considered for the list. No evidence of hazardous materials or recognized environmental conditions was detected at any of the IFT sites during the site inspections conducted on May 10 and 11 and on October 14, 2011, or during the review of state and Federal records.

3.15.2 Environmental Consequences

3.15.2.1 Proposed Action

All hazardous and regulated wastes and substances generated during construction of the proposed IFTs would be collected, characterized, labeled, stored, transported and disposed of in accordance with all Federal, state and local regulations, including proper waste manifesting procedures. All other hazardous and regulated materials would be handled according to materials safety data sheet instructions and would not affect water, soils, vegetation, wildlife or human safety. BMPs, as provided in Section 5.0, would be implemented such that hazardous and regulated materials and substances would not impact the public, groundwater or the general environment.

Operation of the IFTs would not use hazardous materials or generate hazardous wastes. If equipped, generators are anticipated to utilize propane fuel, which does not have the potential for contamination if spilled.

3.15.2.2 Alternative 1
Under Alternative 1, impacts would be the same as those described for the Proposed Action.

3.15.2.3 No Action Alternative
Under the No Action Alternative, no impacts associated with the use of hazardous materials would be expected.

3.16 SOCIOECONOMICS

3.16.1 Affected Environment
This socioeconomics section outlines the basic attributes of population and economic activity within Cochise County.

Population and Demographics
The population of Cochise County grew by more than 13,000 from 2000 to 2010, from 117,755 in 2000 to 131,345 in 2010, an increase of 11.5 percent, as shown in Table 3-16. During the same time period, the state of Arizona experienced a much higher growth rate of 24.6 percent. The United States as a whole experienced a growth rate of 9.7 percent from 2000 to 2010.

Table 3-16. Population and Growth

Year	Cochise County		State of Arizona	
	Population	Growth Rate	Population	Growth Rate
2010	131,344	11.5%	6,392,017	24.6%
2000	117,755		5,130,607	

Source: U.S. Census Bureau 2000 and USCB 2010a

According to the 2010 Census, approximately 58 percent of Cochise County's population is white and 32 percent is of Hispanic or Latino origin. Approximately 5 percent of the population is black, 2 percent is Asian, and 1 percent is American Indian or Alaska Native. Approximately 12 percent of the population of Cochise County is foreign born, and about 27 percent of persons age 5 and above report speaking a language other than English at home.

An estimated 83.6 percent of Cochise County residents are high school graduates, about the same as the Arizona rate of 83.9 percent. In Cochise County, approximately 22 percent of persons age 25 years or older have a Bachelor's degree or higher, compared to 25.7 percent for Arizona. The National average is 84.6 percent high school graduates and 27.5 percent with a Bachelor's degree or higher (USCB 2010a).

Income and Poverty
Poverty and income data are shown in Table 3-17. The poverty rate for Cochise County was estimated to be 15.3 percent, below the State of Arizona's poverty rate of 16.3 percent and above

the Nation's poverty rate of 14.4 percent (USCB 2010b). Per capita income for Cochise County and Arizona are below the National average, about 86 percent and 84 percent, respectively. Median household incomes are also below the National average.

Table 3-17. Income and Poverty

Income	Cochise County	State of Arizona	United States
Per capita personal income (dollars), 2009	$34,243	$33,207	$39,635
Per capita income as a percent of the national, 2009	86.4%	83.8%	
Median Household Income (2008-2010)	$45,737	$49,214	$51,222
Persons of all ages below poverty level, percent, 2008-2010	15.3%	16.3%	14.4%

Sources: U.S. Bureau of Economic Analysis 2009 and USCB 2010b

Housing

The 2010 Census reports that Cochise County has 59,041 housing units, with 8,176 of those units vacant (Table 3-18). The county has a homeowner vacancy rate of 3.2 percent, which is below Arizona's rate of 3.9 percent and above the homeowner vacancy rate for the United States of 2.4 percent. The rental vacancy rate for Cochise County is 10.6 percent, compared to Arizona's rate of 12.9 percent and the National rate of 9.2 percent (USCB 2010a).

Table 3-18. Housing Units

Geographic Region	Total Housing Units	Status		
		Occupied		Vacant
		Owned	Rented	
Cochise County	59,041	34,711	16,154	8,176
State of Arizona	2,844,526	1,571,687	809,303	463,536

Source: USCB 2010a

Employment

Cochise County employment is concentrated in the retail trade; healthcare and social assistance; professional, scientific and technical services; and accommodation and food services sectors, as shown in Table 3-19. Together they account for approximately 69 percent of employment in the county.

Table 3-19. Employment by Industry Sector Percent of Total

Industry Sector	Cochise County	State of Arizona	United States
Forestry, fishing, hunting and agriculture support	<1%	<1%	<1%
Mining, quarrying and oil and gas extraction	<1%	1%	1%
Utilities	2%	1%	1%
Construction	6%	7%	5%
Manufacturing	2%	7%	10%
Wholesale trade	1%	4%	5%

Table 3-19, continued

Industry Sector	Cochise County	State of Arizona	United States
Retail trade	20%	15%	13%
Transportation and warehousing	2%	4%	4%
Information	1%	2%	3%
Finance and insurance	2%	6%	5%
Real estate and rental and leasing	2%	2%	2%
Professional, scientific and technical services	16%	6%	7%
Management of companies and enterprises	<1%	2%	2%
Administration and support and waste management and remediation services	7%	10%	8%
Educational services	2%	2%	3%
Healthcare and social assistance	18%	14%	15%
Arts, entertainment and recreation	1%	2%	2%
Accommodation and food services	15%	11%	10%
Other services (except public administration)	4%	4%	5%
Industries not classified	<1%	<1%	<1%

Source: USCB 2009

The data show that the percentage of employees in the "professional, scientific and technical services" category in Cochise County (16 percent) is more than double the percentage in Arizona (6 percent) and the United States (7 percent). Examination of a list of top employers in the county indicates that this primarily includes employees at the U.S. Army Intelligence Center and the U.S. Army Network Enterprise Technology Command located at Fort Huachuca and Northrop Grumman Corporation.

The percentages of employment in the retail, healthcare and social assistance and accommodation and food services sectors are also somewhat higher than the state and the country as a whole. Employment in the manufacturing and finance and insurance sectors is relatively lower than the state and the Nation.

The Army Intelligence Center, Fort Huachuca is the largest employer in the county, with more than 13,000 employees. The second and third largest employers, Cochise County and Sierra Vista Public Schools, each employ approximately 1,100. The largest private sector employers are Eurofresh, Inc., Sierra Vista Regional Health Center, Northrop Grumman Corporation and Aegis Communications Group, Inc.

3.16.2 Environmental Consequences

3.16.2.1 Proposed Action

The Proposed Action would have no adverse effects on socioeconomic conditions in the region, as there are no people living immediately around the preferred IFT sites. Short-term beneficial impacts would be realized by retail stores, restaurants, hotels and the purchase of fuel during construction.

3.16.2.2 Alternative 1
Under Alternative 1, impacts on socioeconomic conditions in the region would be similar to those described for the Proposed Action but would be slightly greater due to the two additional towers.

3.16.2.3 No Action Alternative
Under the No Action Alternative, no socioeconomic impacts would be expected.

3.17 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

3.17.1 Affected Environment
3.17.1.1 Executive Order 12898, Environmental Justice
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was issued by President Clinton on February 11, 1994. It was intended to ensure that proposed Federal actions will not have disproportionately high and adverse human health and environmental effects on minority and low-income populations and to ensure greater public participation by minority and low-income populations. It required each agency to develop an agency-wide environmental justice strategy. A Presidential Transmittal Memorandum issued with the EO states that "each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by NEPA 42 U.S.C. section 4321, et seq."

Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native or Pacific Islander. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. Low-income populations as of 2010 are those whose income is $22,050 or less for a family of four and are identified using USCB's statistical poverty threshold. The USCB defines a "poverty area" as a Census tract with 20 percent or more of its residents below the poverty threshold and an "extreme poverty area" as one with 40 percent or more below the poverty level. This is significant because the social and economic welfare of minority and low-income populations may be positively or disproportionately impacted by a proposed action and because of public concerns about the fair and equitable treatment (fair treatment and meaningful involvement) of all people with respect to environmental and human health consequences of Federal laws, regulations, policies and actions. A potential disproportionate impact may occur when the percent minority in a study area exceeds 50 percent and/or the percent low-income exceeds 20 percent of the population. A disproportionate impact may occur when the percent minority and/or low-income in a study area are meaningfully greater than those in the reference community.

As shown in Table 3-20, Cochise County has less than 20 percent of the population below the poverty level and less than 50 percent of the population is minority.

Table 3-20. Minority Population and Poverty Data

Location	Minority Population	All Ages in Poverty
Arizona	42.2%	16.3%
Cochise County	41.5%	15.3%

Source: USCB 2010a

3.17.1.2 Executive Order 13045, Protection of Children

EO 13045 requires each Federal agency "to identify and assess environmental health risks and safety risks that may disproportionately affect children" and "ensure that its policies, programs, activities and standards address disproportionate risks to children that result from environmental health risks or safety risks." This EO was prompted by the recognition that children, still undergoing physiological growth and development, are more sensitive to adverse environmental health and safety risks than adults. In Cochise County, about 7 percent of the population is 5 years old or less and approximately 27 percent is younger than 18 years (USCB 2010a). The potential for impacts on the health and safety of children would be greater where projects are located near residential areas.

3.17.2 Environmental Consequences

3.17.2.1 Proposed Action

Under the Proposed Action, there would be no disproportionate impacts on people, including children, regardless of race or income levels. This conclusion is based on the fact that neither Cochise County nor the State of Arizona has a high minority or high poverty population, and the IFT sites are located in remote areas.

3.17.2.2 Alternative 1

Under Alternative 1, impacts on minority and low-income persons, as well as children, in the region would be similar to those described for the Proposed Action.

3.17.2.3 No Action Alternative

Under the No Action Alternative, there would be no disproportionately high or adverse environmental health or safety impacts on minority or low-income populations or children.

3.18 SUMMARY OF IMPACTS

Table 3-21 is provided to summarize the impacts of the Proposed Action, Alternative 1 and the No Action Alternative on each of the elements discussed in this section (Affected Environment).

Table 3-21. Summary Matrix of Potential Impacts

Affected Environment	Proposed Action	Alternative 1	No Action Alternative
Land Use	The Proposed Action would have a permanent, negligible impact on land use. Approximately 7.5 acres of undeveloped scrub and brush rangeland would be converted to a developed land use. The Proposed Action would be consistent with zoning for the area and surrounding land use.	Under Alternative 1, impacts on land use would be similar to those described for the Proposed Action. Approximately 7.7 acres of undeveloped scrub and brush rangeland would be permanently converted to a developed land use.	No direct impacts would occur.
Soils	The Proposed Action would have a permanent, minor impact on soils. Direct impacts on approximately 7.5 acres of soil would occur through the conversion of undeveloped land to use as IFT sites. An additional 31.4 acres of soil would be temporarily disturbed during tower construction, access road construction and approach road improvements.	Under Alternative 1, impacts on soils would be similar to those described for the Proposed Action. Approximately 7.7 acres soils would be permanently removed from biological production and an additional 31.2 acres would be temporarily disturbed.	No direct impacts would occur.
Water Resources	The Proposed Action could have a temporary, minor impact on surface water quality. Surface water quality could be temporarily impacted during construction as a result of erosion and sedimentation. Impacts on floodplains and waters of the U.S. would be negligible. The withdrawal of water could have a temporary, minor impact on groundwater resources.	Under Alternative 1, impacts on water resources would be similar to those described under the Proposed Action.	No direct impacts would occur.
Vegetative Habitat	The Proposed Action would permanently alter a total of approximately 7.5 acres of desertscrub habitat, including tower footprints and roads. The plant community associated with the IFT sites is both locally and regionally common, and the permanent loss of approximately 7.5 acres of vegetation would not adversely affect the population viability of any plant species in the region.	Alternative 1 would result in minor impacts similar to those described for the Proposed Action, but at different locations. The potential loss of agave during tower construction would occur at two alternate IFT sites (TCA-DGL-0076 and -0258) and three preferred sites (TCA-DGL-0374, -0388 and -0396).	No direct impacts would occur.

Table 3-21, continued

Affected Environment	Proposed Action	Alternative 1	No Action Alternative
Wildlife Resources	The Proposed Action would have a short-term, minor impact on wildlife resources. The Proposed Action would permanently remove approximately 7.5 acres of desertscrub habitat. The wildlife habitat present at the project area is both locally and regionally common, and the permanent loss of 7.5 acres of wildlife habitat would not adversely affect the population viability or fecundity of any wildlife species in the region. There is a possibility that the proposed communications towers could pose hazards to migratory birds and even bird mortality; however, since the towers would not use guy wires, the potential for adverse impacts is greatly reduced. The communications towers could provide raptor perch and nesting locations, but BMPs, including anti-perching devices, could be used to discourage this activity. The Proposed Action would, however, have a permanent, negligible adverse effect on migratory birds.	Alternative 1 would result in impacts on wildlife and wildlife habitat similar to those described for the Proposed Action. Approximately 7.7 acres of acres of desertscrub and grassland habitat would be permanently impacted.	No direct impacts would occur.
Protected Species and Critical Habitats	The Proposed Action may affect, but is not likely to adversely affect, the jaguar, ocelot, lesser long-nosed bat, Chiricahua leopard frog, Huachuca water umbel, beautiful shiner, Yaqui catfish, Yaqui chub or Yaqui topminnow. Similarly, the Proposed Action would not adversely affect Critical Habitat for the beautiful shiner, Yaqui catfish and Yaqui chub and would not likely adversely modify proposed Critical Habitat for the jaguar.	Under Alternative 1, impacts on protected species and Critical Habitat would be similar to those discussed for the Proposed Action.	No direct impacts would occur.

Table 3-21, continued

Affected Environment	Proposed Action	Alternative 1	No Action Alternative
Cultural Resources	Based on the archaeological survey, archival research results, and Native American Tribal consultation to date, CBP has determined that there would be no effects on any NRHP-eligible architectural or aboveground resources, TCPs or sacred sites. One archaeological site recommended as NRHP-eligible is located adjacent to the approach road to TCA-DGL-0428. Impacts on this site would be avoided through the implementation of BMPs. Indirect beneficial impacts in the form of increased knowledge of the past, including site density and distribution, are realized as a result of surveys conducted as part of this EA. Previously recorded and unidentified cultural resource sites located within the project area and regionally would receive increased protection from disturbance as a result of enhanced surveillance capabilities and improved operational efficiency.	Impacts would be similar to those described for the Proposed Action. However, one NRHP-eligible site is crossed by the approach road to TCA-DGL-0400 and -0402. Impacts on this site would be avoided through the implementation of BMPs.	No direct impacts would occur.
Air Quality	Temporary and minor increases in air pollution would occur from the use of construction equipment (combustion emissions) and the disturbance of soils (fugitive dust) during construction of IFTs and access roads. Negligible impacts would result from the operation of the towers.	Under Alternative 1, impacts on air quality would be similar to those described for the Proposed Action. However, increased levels are expected from construction of two additional towers and the operation of these two towers and associated generators at the tower sites.	No direct impacts would occur.

Table 3-21, continued

Affected Environment	Proposed Action	Alternative 1	No Action Alternative
Noise	Temporary and minor increases in noise would occur during construction of IFTs and road improvements. Permanent noise level increases associated with tower operations would be negligible.	Noise emissions associated with construction and operational activities would be similar to those described under the Proposed Action.	Under the No Action Alternative, the sensitive noise receptors and wildlife near the proposed IFT sites and associated access roads would not experience construction and tower operational noise events. Noise emissions associated with CBV off-road travel and consequent law enforcement actions would be long-term and minor, and would continue under the No Action Alternative.
Utilities and Infrastructure	Negligible demands on power utilities would be required as a result of the Proposed Action.	Under Alternative 1, impacts would be similar to those described for the Proposed Action.	No direct impacts would occur.
Radio Frequency Environment	The proposed towers would emit radio frequency energy and EM radiation; therefore, some minor potential for adverse effects could occur. However, any adverse effects on human safety and wildlife would be negligible due to the minimal exposure risk and the elevated locations in which the antennas would be positioned. Increases in radio and microwave transmissions associated with the Proposed Action would have a long-term, negligible impact.	Under Alternative 1, impacts on the radio frequency environment would be similar to those discussed under the Proposed Action.	No direct impacts would occur.

Table 3-21, continued

Affected Environment	Proposed Action	Alternative 1	No Action Alternative
Roadways and Traffic	Construction and staging for towers and access roads would have a temporary, minor impact on roadways and traffic within the region. The increase of vehicular traffic would occur to supply materials and work crews at each tower IFT site during construction. Tower maintenance would also require vehicle travel to each IFT site for propane delivery, maintenance and operations of the proposed towers. A total of approximately 340 vehicle trips per year is anticipated for tower maintenance and refueling under the Proposed Action, and these trips would have a long-term, negligible impact on roadways and traffic.	Alternative 1 would result in traffic impacts similar to those described for the Proposed Action, but would be slightly greater due to the two additional towers.	No direct impacts would occur.
Aesthetics and Visual Resources	The Proposed Action would have a long-term, moderate impact on aesthetic qualities within the project region. Most towers would be visible 3 to 5 miles away from the tower. Depending on the location and elevation of a viewer, it is possible that an IFT could be visible from up to 15 miles away. Temporary aesthetic impacts during the construction phase of the project would occur at the IFT sites, and these impacts would include the visual impacts of construction equipment.	Impacts would be similar to those described for the Proposed Action.	No direct impacts would occur.
Hazardous Material	The Proposed Action would not result in the exposures of the environment or public to any hazardous materials. The potential exists for minor releases of petroleum, oil and lubricant during construction or operational activities. BMPs will be implemented to minimize any potential contamination at the IFT sites during construction activities and tower operation.	Impacts would be similar to those described for the Proposed Action.	No direct impacts would occur.

Table 3-21, continued

Affected Environment	Proposed Action	Alternative 1	No Action Alternative
Socioeconomics	The Proposed Action would not cause any changes to local employment rates, poverty levels or local incomes. The purchase of materials and use of local labor during the construction of the proposed IFTs would provide a short-term benefit for the local economy in the region.	Impacts would be the same as those described for the Proposed Action.	No direct impacts would occur.
Environmental Justice and Protection of Children	No direct impacts on minority or low-income populations or children are anticipated to occur as a result of the Proposed Action.	Impacts would be similar to those described for the Proposed Action.	No direct impacts would occur.

SECTION 4.0
CUMULATIVE IMPACTS

4.0 CUMULATIVE IMPACTS

This section of the EA defines cumulative impacts, identifies past, present and reasonably foreseeable projects relevant to cumulative impacts and analyzes the potential cumulative impacts associated with the implementation of the Proposed Action and other projects/programs planned within the ROI, which is the USBP's Douglas Station AOR.

4.1 DEFINITION OF CUMULATIVE IMPACTS

The CEQ defines cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 C.F.R. 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time by various agencies (Federal, state and local) or individuals. CEQ guidance on cumulative effects requires the definition of the scope of the other actions and their interrelationship with the Proposed Action (CEQ 1997). The scope must consider geographic and temporal overlaps with the Proposed Action and all other actions occurring within the ROI. Informed decision making is served by consideration of cumulative impacts resulting from activities that are proposed, under construction, recently completed or anticipated to be implemented in the reasonably foreseeable future.

This cumulative impacts analysis summarizes expected environmental effects from the combined impacts of past, current and reasonably foreseeable future activities which affected any part of the human or natural environment impacted by the Proposed Action. Activities were identified for this analysis by reviewing CBP and USBP documents, news/press releases and published media reports and through consultation with planning and engineering departments of local governments and state and Federal agencies.

4.2 PAST IMPACTS WITHIN THE ROI

The ecosystems within the ROI have been significantly impacted by historical and ongoing activities such as ranching, livestock grazing, mining, agricultural and urban development; Federal land use including management for recreation and wildlife; CBV activity and resulting law enforcement actions; and climate change. All of these actions have, to a greater or lesser extent, contributed to several ongoing threats to the ecosystem including loss and degradation of habitat for both common and rare wildlife and plants and the proliferation of roads and trails. The most substantial impacts of these activities were not or are not regulated by NEPA and did not include efforts to minimize impacts.

4.3 CURRENT AND REASONABLY FORESEEABLE CBP PROJECTS WITHIN AND NEAR THE ROI

USBP has conducted law enforcement actions along the border since its inception in 1924, and has continuously transformed its methods as new missions, modes of operations of CBVs, agent needs and National enforcement strategies have evolved. Development and maintenance of

training ranges, station and sector facilities, detention facilities, roads and fences have impacted thousands of acres, with synergistic and cumulative impacts on soil, wildlife habitats, water quality and noise. Beneficial effects, too, have resulted from the construction and use of these roads and fences, including, but not limited to, increased employment and income for border regions and its surrounding communities; protection and enhancement of sensitive resources north of the border; reduction in crime within urban areas near the border; increased land value in areas where border security has increased; and increased knowledge of the biological communities and prehistory of the region through numerous biological and cultural resources surveys and studies.

With continued funding and implementation of CBP's environmental conservation measures, including use of biological monitors, wildlife water systems and restoration activities, adverse impacts due to future and ongoing projects would be avoided or minimized. However, recent, ongoing and reasonably foreseeable proposed projects will result in cumulative impacts. CBP is currently planning, conducting or has completed several projects in the USBP's Douglas Station AOR. These projects are depicted on Figure 4-1 and include:

- **Construction, operation and maintenance of a Forward Operating Base (FOB).** The new Douglas Station FOB at Floyds Pocket was evaluated in a separate Supplemental EA (CBP 2012d).
- **Replacement of legacy fence.** The fence replacement was evaluated under NEPA by an individual Categorical Exclusion.
- **Upgrade of existing RVSS towers.** All upgrades were evaluated under NEPA by individual Categorical Exclusions. A total of 14 existing RVSS towers would be upgraded in the USBP's Douglas Station AOR.
- **Construction, operation and maintenance of new RVSS towers.** The new RVSS towers in the USBP's Douglas Station AOR were evaluated in a separate EA (CBP 2012e). RVSS towers have similar capabilities to IFTs; however, there are no communication links between RVSS towers. The RVSS are used for surveillance and detection only. RVSS are generally located in populated areas, and IFTs are best suited for use in remote areas. A total of four new RVSS towers would be constructed in the USBP's Douglas Station AOR.
- **Installation of new radio repeaters or modernization of existing equipment through the TacCom Land Mobilization Radio (LMR) Project.** All improvements were evaluated under NEPA by individual Categorical Exclusions.

Projects are currently being planned by state and local entities in the Douglas metropolitan area, but no known projects are proposed for the San Bernardino Valley.

A summary of the anticipated cumulative impacts relative to the Proposed Action is presented below. The discussion is presented for each of the resources described previously.

4.4 ANALYSIS OF CUMULATIVE IMPACTS

Impacts on each resource were analyzed according to how other actions and projects within the ROI might be affected by the Proposed Action and Alternative 1. Impacts can vary in degree or

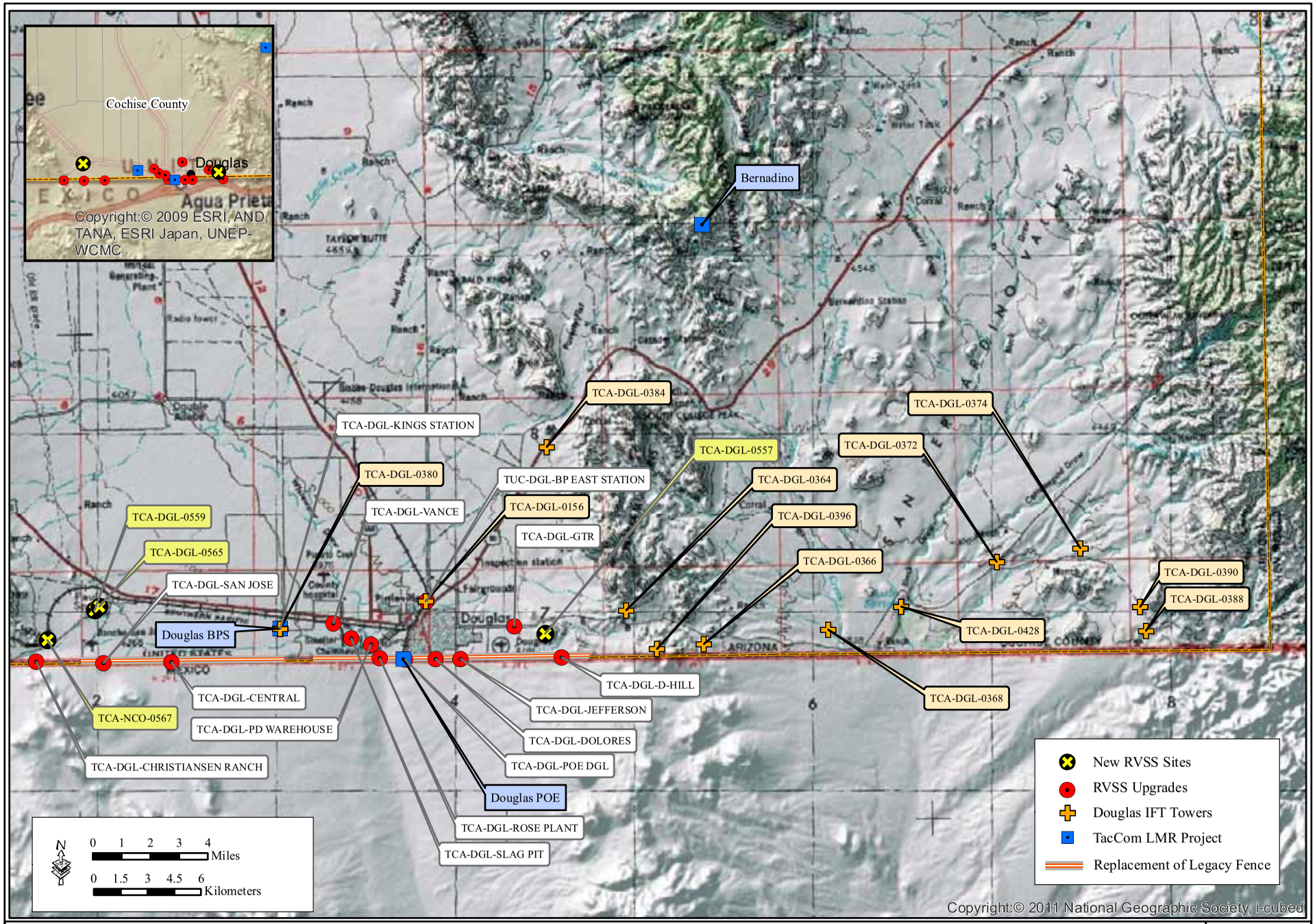

Figure 4-1. Current and Reasonably Foreseeable CBP Projects in the USBP's Douglas Station AOR

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magnitude from a slightly noticeable change to a total change in the environment. For the purpose of this analysis the intensity of impacts will be classified as negligible, minor, moderate or major. These intensity thresholds were previously defined in Section 3.1. Due to the similarity of the action alternatives for this project when analyzed for cumulative impacts, the impacts would be similar for the two action alternatives. A summary of the anticipated cumulative impacts on each resource is presented below.

4.4.1 Land Use

A major impact would occur if any action is inconsistent with adopted land use plans or if an action would substantially alter those resources required for, supporting or benefiting the current use. The vast majority of project area is currently undeveloped scrub and brush rangeland located in a rural area. The new Douglas Station FOB would convert approximately 7.5 acres of undeveloped land to a developed use as USBP facilities and associated roads within the southern portion of the San Bernardino Valley in Cochise County. The replacement of 16.58 miles of existing landing mat and picket border fence with a new pedestrian fence in the same location within the USBP's Douglas Station AOR would create no impacts outside the existing fence footprint and would not alter land use. The construction, operation and maintenance of the proposed IFTs, and construction, improvement and maintenance of roads would occur in an undeveloped area, but would not initiate an increase of development in the immediate vicinity. Therefore, the Proposed Action, when combined with past and proposed projects in the region, would not be expected to result in a major cumulative adverse effect.

4.4.2 Geology and Soils

A major impact on geologic resources would occur if the action occurred on a geologic unit that is unstable or would cause the unit to become unstable, exposed people or structures to the risk of loss, injury or death or entirely removed a geologic resource. Proposed projects would not create any dangerous or unstable conditions within any geologic unit. The proposed projects within the USBP's Douglas Station AOR would not expose people or structures to potential substantial adverse effects. Further, no geologic resource is located exclusively within the fence corridor, FOB footprint or any of the proposed IFT sites. Therefore, the impact of the Proposed Action, when combined with past and proposed projects in the region, would not be considered a major cumulative adverse impact on geological resources.

A major impact on soils would occur if the action exacerbates or promotes long-term erosion, if the soils are inappropriate for the proposed construction and would create a risk to life or property, or if there would be a substantial reduction in agricultural production or loss of Prime Farmland soils. The Proposed Action and other CBP actions have not reduced Prime Farmland soils or agricultural production regionally, as much of the land developed by CBP has not been used for agricultural production. Pre- and post-construction SWPPP measures would be implemented to control soil erosion. The impact from the Proposed Action, when combined with past and proposed projects in the region, would not be considered a major cumulative adverse effect.

4.4.3 Water Resources

Groundwater recharge in the San Bernardino Valley Basin is relatively high due to greater rainfall amounts in the bordering mountains and recharge of the aquifers by mountain-front

runoff. Withdrawals from the aquifers are below the maximum recharge capacity, and drainage patterns of surface water sources would not be impacted by the project proposed within the USBP's Douglas Station AOR. Water quality in the San Bernardino Valley would remain unchanged under the Proposed Action. As mentioned previously, specific erosion and sedimentation controls and other BMPs would be in place during construction as standard operating procedures. Therefore, the Proposed Action, in conjunction with other past, ongoing and proposed regional projects, would not create a major cumulative effect on water resources in the region.

4.4.4 Vegetative Habitat

Over 3 million acres of desertscrub rangeland occur in the region, even with the proposed IFTs and other planned development projects. Therefore, due to the relatively small impact footprint of the Proposed Action, in conjunction with other past, ongoing and proposed regional projects, the Proposed Action would not create a major cumulative effect on vegetative habitat in the region.

4.4.5 Wildlife Resources

Over 3 million acres of desertscrub habitat occur in the region that provides habitat for wildlife, even with the proposed IFTs and other planned development projects. Therefore, due to the relatively small impact footprint of the Proposed Action, in conjunction with other past, ongoing and proposed regional projects, the amount of habitat potentially removed would be minor on a regional scale. Thus, the Proposed Action would not create a major cumulative effect on wildlife populations in the region.

4.4.6 Protected Species and Critical Habitats

A major impact on protected species would occur if any action resulted in a jeopardy opinion for any endangered, threatened or rare species. Although potential habitat for the jaguar, ocelot, lesser long-nosed bat and Chiricahua leopard frog exists in the vicinity of the proposed IFT sites, FOB site and fence replacement footprint, the construction, operation and maintenance activities associated with the IFTs and road improvements, construction and maintenance would not adversely affect the jaguar, ocelot, lesser long-nosed bat or Chiricahua leopard frog. Likewise, BMPs, which limit potential impacts on these species, will be in place during the construction of the proposed projects and will continue to be in place once the IFTs and FOB are operational.

Although some potential for Federally protected fish and their Critical Habitat to be affected by runoff and eroded sediment downstream from individual IFT sites and the FOB exists, several BMPs would be in place to limit erosion and downstream sedimentation. Construction, operation and maintenance would result in a negligible demand on groundwater supplies during construction; however, it is very unlikely that groundwater would be lowered to the extent that the water flow from springs on SBNWR would be reduced. No major decreases in overall water quality of aquatic habitats at or downstream from any of the proposed projects are expected.

Thus, when combined with other existing and proposed projects in the region, the Proposed Action would not result in major cumulative impacts on protected species or designated Critical Habitats. Any indirect, cumulative impacts on protected species and their Critical Habitats would be negligible to minor.

4.4.7 Cultural Resources

The Proposed Action would not affect cultural resources or historic properties. Therefore, the Proposed Action, when combined with other existing and proposed projects in the region, would not result in major cumulative impacts on cultural resources or historic properties.

4.4.8 Air Quality

The emissions generated during the construction of the IFT sites, the FOB, fence replacement, and all associated road construction, repair and improvement would be short-term and minor, and generator emissions would be intermittent. There would be no long-term increase in vehicular traffic in the region's airshed. Therefore, the Proposed Action, when combined with other past, ongoing and proposed projects in the region, would not result in major or long-term adverse cumulative impacts.

4.4.9 Noise

Actions would be considered to cause major impacts if they permanently increase ambient noise levels over 65 dBA. Most of the noise generated by the Proposed Action would occur during IFT construction, road construction, road improvement and road maintenance. These activities would be temporary and would not contribute to cumulative impacts on ambient noise levels. Thus, the noise generated by the Proposed Action, when considered with the other existing and proposed projects in the region, would be considered a moderate (less than major) cumulative adverse effect.

4.4.10 Utilities and Infrastructure

Actions would be considered to cause major impacts if they require greater utilities or infrastructure use than can be provided. Only two new IFT sites would potentially connect to existing commercial grid power infrastructure. The Douglas Station FOB would also connect to the existing power grids. The use of commercial grid power would not require greater utilities or infrastructure than can be provided since the IFT sites and FOB are located near existing commercial grid power infrastructure. The remainder of the IFT sites would be powered by self-contained power systems (i.e., dual power systems as described in the Proposed Action) and would have no effect on existing utilities. Therefore, when combined with past, ongoing or proposed projects in the region, no major cumulative adverse effect on utilities or infrastructure would occur as a result of the Proposed Action.

Previous USBP lighting projects in the region have required mitigation such as shielding to prevent light trespass. Potential lighting associated with the Proposed Action would be equipped with shields to prevent light trespass. Therefore, when combined with past, ongoing, or proposed projects in the region, no major cumulative adverse effects on ambient or atmospheric light is anticipated.

4.4.11 Radio Frequency (RF) Environment

The communications and sensor equipment proposed as part of the IFT project would emit EM and RF; however, the equipment proposed by CBP was certified to be safe for humans and wildlife at normal exposure levels. No other known actions would affect the EM and RF environment within the project area; thus, the Proposed Action would have a negligible cumulative effect.

4.4.12 Roadways and Traffic

Impacts on traffic or roadways would be considered to cause major impacts if the increase of average daily traffic exceeded the ability of the surface streets to offer a suitable level of service for the area. The roads in the vicinity of the IFT sites are very lightly travelled, construction activities would be limited in duration, and maintenance trips would be minimal. Therefore, when combined with past, ongoing or proposed projects in the region, no major cumulative adverse effect on roadways and traffic would occur as a result of the Proposed Action.

4.4.13 Aesthetics and Visual Resources

Actions that cause the permanent loss of the characteristics that make an area visually unique or sensitive would be considered to cause a major impact. No major impacts on visual resources would occur from construction of the proposed IFT sites and road construction, repair or improvements. However, the proposed IFTs would be readily visible from 3 to 5 miles depending on the location and elevation of an observer. The Proposed Action, in conjunction with other past, ongoing and proposed projects in the region, would result in moderate adverse cumulative impacts on the region's visual resources.

4.4.14 Hazardous Materials

Major impacts would occur if an action creates a public hazard, if the project area is considered a hazardous waste site that poses health risks, or if the action would impair the implementation of an adopted emergency response or evacuation plan. Only minor increases in the use of hazardous substances would occur as a result of the Proposed Action. BMPs would be implemented to minimize the risk from hazardous materials during construction and daily operations at the IFT sites. No health or safety risks would be created by the Proposed Action. The effects of the Proposed Action, when combined with other past, ongoing and proposed projects in the region, would not be considered a major cumulative effect.

4.4.15 Socioeconomics

Major impacts on socioeconomic conditions include displacement or relocation of residences or commercial buildings; increases in long-term demands to public services in excess of existing and projected capacities; and disproportionate impacts on minority and low-income families. The Proposed Action would have no adverse effects on socioeconomic conditions in the USBP's Douglas Station AOR, and there would be no disproportionate impacts on people, regardless of race or income levels. Thus, the effects of the Proposed Action, when combined with other past, ongoing and proposed projects in the region, would not be considered a major cumulative effect.

4.4.16 Environmental Justice and Protection of Children

The Proposed Action project area is located on remote, BLM, ASTL and private property, and there would be no displacement of persons (minority, low-income, children or otherwise) as a result of implementing the Proposed Action. Therefore, the effects of the Proposed Action on environmental justice and the protection of children, when combined with other past, ongoing and proposed projects in the region, would not be considered a major cumulative effect.

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SECTION 5.0
BEST MANAGEMENT PRACTICES

5.0 BEST MANAGAMENT PRACTICES

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

It is Federal policy to reduce 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 USFWS and other appropriate Federal and state resource agencies.

5.1 GENERAL PROJECT PLANNING CONSIDERATIONS

If security lights are necessary on tower equipment shelters, only low-sodium bulbs that are both shielded and motion-activated would be used.

If required, night-vision-friendly strobe lights necessary for CBP operational needs will use the minimum wattage and number of flashes per minute necessary to ensure operational safety.

Avoid lighting impacts during the night by conducting maintenance activities during daylight hours only. If night lighting is unavoidable: 1) use special bulbs designed to ensure no increase in ambient light conditions, 2) minimize the number of lights used, 3) place lights on poles pointed down toward the ground, with shields on lights to prevent light from going up into sky, or out laterally into landscape and 4) selectively place lights so they are directed away from all native vegetative communities.

Recommendations of the Avian Power Line Interaction Committee and USFWS (2005) for any required aboveground lines, transformers, or conductors will be implemented.

Towers no longer in use or determined to be obsolete will be removed within a reasonable time period following cessation of use.

5.2 SOILS

All areas where ground disturbance will occur will be demarcated using flagging or construction fencing, and all activities will remain within flagged boundaries.

Areas that will be disturbed later in the construction period will be used for staging, parking and equipment storage.

The area of disturbance will be minimized by limiting deliveries of materials and equipment to only those needed for effective project implementation.

Within the designated disturbance area, grading or topsoil removal will be limited to areas where this activity is needed to provide the ground conditions necessary for construction or maintenance activities.

Only those roads necessary for construction of tower sites will be constructed or repaired.

Road repairs shall avoid making windrows with the soils once grading activities are completed, and any excess soils will be used on-site to raise and shape the tower site and/or road surface.

Properly design and locate roads such that the widening of existing or created roadbed beyond the design parameters due to grading and use will be avoided or minimized.

Properly design and locate roads such that the potential for roadbed erosion into Federally listed species habitat will be avoided or minimized.

Rehabilitation will include revegetating or the distribution of organic and geological materials (i.e., boulders and rocks) over the disturbed area to reduce erosion while allowing the area to naturally vegetate.

Vehicular traffic associated with the construction activities and operational support activities will remain on established roads to the maximum extent practicable.

5.3 BIOLOGICAL RESOURCES

The removal of roadside vegetation will be limited to only those portions of plants necessary to allow the passage of vehicles, material and equipment.

Materials used for on-site erosion control will be free of nonnative plant seeds and other plant parts to limit potential for infestation.

Native seeds or plants, which are compatible with the enhancement of protected species, will be used, as required under Section 7(a)(1) of the ESA, to revegetate temporarily disturbed areas.

Vegetation targeted for retention will be flagged for avoidance to reduce the likelihood of being removed.

Removal of nonnative plants will be done in ways that eliminate the entire plant and remove all plant parts to a disposal area. Herbicides can be used according to label directions if they are not toxic to Federally listed species that may be in the area.

Obtain materials such as gravel, topsoil or fill from existing developed or previously used sources that are compatible with the project area and are from legally permitted sites. Do not use materials from undisturbed areas adjacent to the project area.

Only apply soil-binding agents during the late summer/early fall months to avoid impacts on Federally listed species. Do not apply soil-binding agents in or near (within 100 feet) surface

waters (e.g., wetlands, perennial streams, intermittent streams or washes). Only apply soil-binding agents to areas that lack any vegetation.

The number of vehicles traveling to and from the project site and the number of trips per day will be minimized to reduce the likelihood of disturbing animals in the area or injuring an animal on the road.

Construction speed limits will not exceed 35 miles per hour (mph) on major unpaved roads (i.e., graded with ditches on both sides) and 25 mph on all other unpaved roads. Nighttime travel speeds will not exceed 25 mph, and may be less based on visibility and other safety considerations.

Initial mechanical and chemical vegetation clearing and subsequent mechanical vegetation control should be time to avoid the migration, breeding and nesting timeframe of migratory birds (February 1 through September 1). When initial mechanical and chemical vegetation control must be implemented during February 1 through September 1, a survey for nesting migratory birds will be conducted immediately prior to the start of activities. If an active nest is found, a buffer zone will be established around the nest and no activities will occur within than zone until nestlings have fledged and abandoned the nest.

To prevent entrapment of wildlife species, ensure excavated, steep-walled holes or trenches are either completely covered by plywood or metal caps at the closed of each work day or provided with one or more escape ramps (at no greater than 1,000-foot intervals and sloped less than 45 degrees) constructed of earth fill or wooden planks.

Each morning before the start of construction or maintenance activities and before such holes or trenches are filled, ensure they are thoroughly inspected for trapped animals. Ensure that any animals discovered are allowed to escape voluntarily (by escape ramps or temporary structures), without harassment, before construction activities resume; or are removed from the trench or hole by a qualified person and allowed to escape unimpeded.

If hollow bollards are necessary, cover hollow bollards, such as those that will be filled with a reinforcing material such as concrete, to prevent wildlife from entrapment. Deploy covers (and ensure they remain fully functioning) when the posts or hollow bollards arrive on the site and are unloaded, until they are filled with reinforcing material or are permanently capped.

A survey for migratory birds will also be conducted prior to all maintenance activities to be implemented during the nesting period in areas where migratory birds might be nesting.

If construction or maintenance is scheduled during the migratory bird-nesting season, take steps to prevent migratory birds from establishing nests in the potential impact area. These steps could include covering equipment and structures, and use of various excluders (e.g., noise). Birds can be harassed to prevent them from nesting on the site. Once a nest is established, they cannot be harassed until all young have fledged and left the nest site. If nesting birds are found during the supplemental survey, defer intrusive maintenance activities until the birds have left the nest. Confirmation that all young have fledged should be made by qualified personnel.

Do not permit pets owned or under the care of the contractor or sector personnel would not be permitted inside the project boundaries, adjacent native habitats, or other associated work areas. This BMP does not apply to law enforcement working animals, such as USBP working dogs and horses.

A Fire Management Plan will be developed as part of tower construction and in coordination with landowner or land management agency. Clearing of vegetation within each tower site using herbicides will be considered as an option to reduce fire potential. The type of herbicide(s) and application will be approved by the land managers or property owners prior to use. The area cleared would be the minimal area necessary to achieve an adequate reduction of fire potential. Clearing may be restricted to the area around the equipment shed or the site perimeter.

Recommendations from the Avian Power Line Interaction Committee and USFWS (2005) for any required aboveground lines, transformers or conductors will be implemented.

Towers no longer in use or determined to be obsolete will be removed within a reasonable time period following cessation of use.

5.4 PROTECTED SPECIES

All contractors, work crews (including military personnel) and CBP personnel in the field performing construction and maintenance activities will receive training. At a minimum, training will provide the following information: maps indicating occurrence of potentially affected and Federally listed species; the general ecology, habitat requirements and behavior of potentially affected Federally listed species, the BMPs listed here and their intent; reporting requirements; and the penalties for violations of the ESA. It will be the responsibility of the project manager(s) to ensure that their personnel are familiar with general BMPs, the specific BMPs presented here and other limitations and constraints. Photographs of potentially affected Federally listed species will be incorporated into the training and posted in the contractor and resident engineer's office where they will remain through the duration of the project, and copies will be made available that can be carried while conducting proposed activities. In addition, training in identification of nonnative invasive plants and animals will be provided for contracted personnel engaged in follow-up monitoring of construction sites.

Biological monitors will be present during all construction activities with the potential to disturb Federally listed species or damage their habitats (Table 5-1). Biological monitors will be able to communicate the purpose of all BMPs and will be able to consult project managers on appropriate actions.

At least one biological monitor will be present at each area of activity where there is potential for Federally listed species to be affected.

Biological monitors will survey habitats potentially occupied by Federally listed species prior to the arrival of construction equipment or vehicles. Following this initial survey, the biological monitor would be in sight of all construction equipment, vehicles, and personnel during all construction activities.

Table 5-1. Towers Requiring Biological Monitors

Species	Tower Sites
Chiricahua leopard frog	TCA-DGL-0374
Beautiful shiner, Yaqui catfish, Yaqui chub and Yaqui topminnow	TCA-DGL-0428
Jaguar	TCA-DGL-0364 TCA-DGL-0366 TCA-DGL-0368 TCA-DGL-0372 TCA-DGL-0374 TCA-DGL-0384 TCA-DGL-0388 TCA-DGL-0390 TCA-DGL-0396 TCA-DGL-0428
Lessor long-nosed bat	TCA-DGL-0364 TCA-DGL-0366 TCA-DGL-0374 TCA-DGL-0384 TCA-DGL-0388 TCA-DGL-0390 TCA-DGL-0396
Ocelot	TCA-DGL-0364 TCA-DGL-0366 TCA-DGL-0368 TCA-DGL-0372 TCA-DGL-0374 TCA-DGL-0384 TCA-DGL-0388 TCA-DGL-0390 TCA-DGL-0396 TCA-DGL-0428
Huachuca water umbel	TCA-DGL-0428

Duties of the biological monitor will include ensuring that activities stay within designated project footprints, evaluating the response of Federally listed species that come near the project site, and implementing appropriate response actions.

Biological monitors will also check visible space underneath all vehicles and heavy equipment for listed species and other wildlife prior to moving vehicles and equipment at the beginning of each workday and after vehicles have idled for more than 15 minutes.

Biological monitors will notify the construction manager of any activities that may harm or harass an individual of a Federally listed species. Upon such notification, the construction manager shall temporarily suspend all project activities and notify the Contracting Officer, the Administrative Contracting Officer, and the Contracting Officer's Representative of the suspense so that the key personnel may be notified and apprised of the situation and the potential conflict resolved.

Individual animals found in the project area will be relocated by a qualified specialist (an individual or agency personnel with permits to handle the species) to a nearby safe location in

accordance with accepted species handling protocols. Information on the appropriate protocols will be coordinated with USFWS.

Biological monitors will document the use of BMPs, any actions not compliant with BMPs and any incidence of harm or harassment of Federally listed species.

Reports from the biological monitor will be used for development of the post-construction report.

If security lights are necessary, only low-sodium bulbs that are both shielded and motion-activated would be used.

General BMPs for Federally Listed Aquatic Species

Surface water from aquatic or marsh habitats will not be used for construction purposes at tower sites TCA-DGL-0374 and -0428.

Surface water from aquatic or marsh habitats will not be used for construction purposes if that site supports aquatic Federally listed species, contains non-native invasive species or contains disease vectors and there is any opportunity to contaminate a Federally listed species' habitat through use of the water at the project site.

Surface water from untreated sources, including water used for irrigation purposes, will not be used for construction or maintenance projects located within 1 mile of aquatic habitat for Federally listed aquatic species.

Groundwater or surface water from a treated municipal source will be used when within 1 mile of aquatic habitat for Federally listed aquatic species.

Water tankers that convey untreated surface water will not discard unused water within 2 miles of any aquatic or marsh habitat.

Storage tanks containing untreated water will be of a size that if a rainfall event were to occur, the tank (assuming open) would not be overtopped and cause a release of water into the adjacent drainages.

Water storage on the project area will be in on-ground containers located on upland areas and not in washes.

To ensure that downstream, sensitive habitats are not affected, post-construction monitoring will be conducted annually for a period of 3 years at proposed tower sites TCA-DGL-0374 and TCA-DGL-0428.

Chiricahua Leopard Frog

The small, grassy swale (comprised primarily of tobosa grass), located approximately 180 feet southeast of proposed tower site TCA-DGL-0374, will be avoided during the construction of the tower site and access road.

Install and maintain frog exclusion fencing around the temporary impact area of tower site TCA-DGL-0374 and associated access road during construction.

Tower site TCA-DGL-0374 will be constructed during the Chiricahua leopard frog dormant season (November through January) to the extent practicable.

If construction cannot be completed during the dormant season, a qualified biologist will monitor ground-disturbing activities and use of heavy equipment immediately prior to and during construction at tower site TCA-DGL-0374. If a Chiricahua leopard frog is found in the project area and is in danger of being harmed (e.g., in the path of vehicles or foot traffic), work will cease in the area of the frog until either the qualified biological monitor can safely move the individual to a nearby location in accordance with USFWS Endangered Species Permit requirements or it moves away on its own.

To prevent the spread of amphibian diseases among drainages via water or mud on construction and maintenance vehicles and equipment, all construction or maintenance work at tower site TCA-DGL-0374 and its associated roads shall conform to amphibian disease prevention protocols as described in the Recovery Plan for the Chiricahua leopard frog. Equipment would either be disinfected between uses at different sites or rinsed and air dried.

A site-specific SWPPP and a spill protection plan will be prepared and regulatory approval will be sought, as required by regulations, for construction and maintenance activities that could result in sedimentation at tower site TCA-DGL-0374. This will include, but is not limited to, placing straw bale type sediment traps at the inlet of North Tank.

Routine road maintenance practices will be implemented to avoid prolonged establishment of road and tire ruts on the access and approach roads to tower site TCA-DGL-0374.
Chemicals and fuels will not be stored at tower site TCA-DGL-0374.

Herbicides will not be used at tower site TCA-DGL-0374 or along its access and approach roads, unless approved by the USFWS.

<u>Lesser Long-nosed Bat</u>
Removal of agave will be limited to the minimum necessary to minimize effects on lesser long-nosed bats. Prior to the initiation of construction within the range of this species, a qualified biologist will conduct a survey to identify and flag all agave to be avoided.

<u>Rio Yaqui Fishes</u>
Clearing of riparian vegetation will not occur within 100 feet of aquatic habitats to provide a buffer area to protect habitat from sedimentation.

5.5 CULTURAL RESOURCES

Vehicle access to TCA-DGL-0428 will be restricted to the current road footprint in the vicinity of the known archaeological site to avoid impacts on the sites. If historic properties are discovered or unanticipated adverse effects on historic properties located within an individual

activity or project's area of potential effect occur after the construction has commenced, CBP will implement the following procedures in accordance with 36 Code of Federal Regulations 800.13. CBP will immediately cease all operations for the portion of the activity with the potential to adversely affect a historic property and secure the impacted area. CBP OTIA shall notify CBP Environmental and Energy Division of the discovery within 24 hours. CBP Environmental and Energy Division shall notify the appropriate State Historic Preservation Office/Tribal Historic Preservation Office, Indian Tribe(s), and any other consulting parties in writing of the discovery within two business days.

5.6 AIR QUALITY

BMPs will include the placement of flagging and construction fencing to restrict traffic within the construction limits in order to reduce soil disturbance. Soil watering will be utilized to minimize airborne particulate matter created during construction activities. Bare ground may be covered with hay or straw to lessen wind erosion during the time between tower construction and the revegetation of temporary impact areas with a mixture of native plant seeds or nursery plantings (or both). All construction equipment and vehicles will be kept in good operating condition to minimize exhaust emissions.

5.7 WATER RESOURCES

Properly design and locate roads such that the potential for entrapment of surface flows within the roadbed due to grading will be avoided or minimized.

Treated water from outside the San Bernardino Basin will be used for construction of proposed tower site TCA-DGL-0428.

Wastewater is to be stored in closed containers on-site until removed for disposal. Wastewater is water used for project purposes that is contaminated with construction materials or from cleaning equipment and thus carries oils or other toxic materials or other contaminants as defined by Federal or state regulation.

Uncured concrete should not be allowed to enter surface waterbodies.

Avoid contamination of ground and surface waters by collecting concrete wash water in open containers and disposing it off-site. At tower sites TCA-DGL-0388 and -0390, concrete wash water will be disposed of on-site by application as a binder to riprap areas.

Avoid contaminating natural and aquatic and wetland systems with runoff by limiting all equipment maintenance, staging, laydown and dispensing hazardous liquids, such as fuel and oil, to designated upland areas.

Cease work during heavy rains and do not resume work until conditions are suitable for the movement of equipment and materials.

Erosion control measures and appropriate BMPs, as required and promulgated through a site-specific Stormwater Pollution Prevention Plan and engineering designs, will be implemented before, during and after soil-disturbing activities.

Areas with highly erodible soils will be given special consideration when preparing the SWPPP to ensure incorporation of various erosion control techniques, such as straw bales, silt fencing, aggregate materials, wetting compounds and rehabilitation, where possible, to decrease erosion.

All construction and maintenance contractors and personnel will review the CBP-approved spill protection plan and implement it during construction and maintenance activities.

Except for emergency repairs required to protect human life, limit work within drainages to dry periods to reduce effects on downstream water quality.

Prevent runoff from entering drainages by placing fabric filters, sand bag enclosures or other capture devices around the work area. Empty or clean out the capture device at the end of each day and properly dispose of the water.

Wastewater from pressure washing must be collected. A ground pit or sump can be used to collect the wastewater. Wastewater from pressure washing must not be discharged into any surface water.

If soaps or detergents are used, the wastewater and solids must be pumped/cleaned out and disposed of in an approved facility. If no soaps or detergents are used, the wastewater must first be filtered or screened to remove solids before being allowed to flow off-site. Detergents and cleaning solutions must not be sprayed over or discharged into surface waters.

Road maintenance will be designed and implemented so that the hydrology of streams, ponds and other habitat is not altered.

5.8 NOISE

All generators will have an attached muffler or use other noise-abatement methods in accordance with industry standards.

Avoid noise impacts during the night by conducting construction and maintenance activities during daylight hours only. If construction or maintenance must occur during non-daylight hours, minimize the duration and frequency of these activities to the greatest extent possible.

All OSHA requirements will be followed. To lessen noise impacts on the local wildlife communities, construction will only occur during daylight hours, whenever possible. All motor vehicles will be properly maintained to reduce the potential for vehicle-related noise.

5.9 SOLID AND HAZARDOUS WASTES

Where handling of hazardous and regulated materials is required, all fuels, waste oils, and solvents will be collected and stored in clearly labeled tanks or drums within a secondary

containment system that consists of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein.

The refueling of machinery will be completed following accepted industry guidelines, and all vehicles will have drip pans during storage to contain minor spills and drips.

Nonhazardous waste materials and other discarded materials, such as construction waste, will be contained until removed from the construction and maintenance sites.

The contractor will minimize site disturbance and avoid attracting predators by promptly removing waste materials, wrappers and debris from construction site. Any waste that must remain on-site more than 12 hours should be properly stored in closed containers until disposal. All food-related trash items such as wrappers, cans, bottles and food scraps will be disposed of in closed containers and removed daily from the project site.

Herbicide and pesticide applications must be made under the supervision of a licensed applicator. A log of the chemical used, amount used and specific location must be maintained.

Any spill of a reportable quantity will be contained immediately within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock) will be used to absorb and contain the spill. Any reportable spill of a hazardous or regulated substance will be reported immediately to on-site environmental personnel, who would notify appropriate Federal and state agencies. An SPCCP will be in place prior to the start of construction, and all personnel will be briefed on the implementation and responsibilities of this plan.

Although accidental spills could occur as a result of daily maintenance procedures to construction equipment, the amount of fuel, lubricants and oil will be limited, and the equipment necessary to quickly contain any spills will be present during refueling. Spills will be cleaned and all waste generated during construction, operation and maintenance will be disposed of properly.

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

Use water-based paints instead of oil-based paints. Look for the words “Latex” or “Cleanup with water” on the label. Do not rinse into natural drainages (e.g., intermittent streams, wetlands).

All paints and cleaning materials should be approved by the appropriate land manager.

Use a ground cloth or an oversized tub for paint mixing and tool cleaning, and properly dispose of the wastes.

Do not clean brushes or tools covered with water-based paints in a natural drainage.

Brushes and tools covered with non-water-based paints should be cleaned in a portable container that can be dumped into a sanitary sewer drain. Never clean such tools in a natural drainage or over a storm drain.

5.10 ROADWAYS AND TRAFFIC

Construction vehicles will travel and equipment will be transported on established roads with proper flagging and safety precautions.

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SECTION 6.0
IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

6.0 IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

NEPA requires a detailed statement on any irretrievable and irreversible commitments of resources involved in the Proposed Action should it be implemented. Irreversible and irretrievable resource commitments are related to the use of non-renewable resources and the effects that the use of those resources have on future generations. Irreversible commitments of resources are those that cannot be reversed except over an extremely long period of time. These irreversible effects primarily result from destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

An irreversible commitment of resources is the commitment of Federal funds to the Proposed Action, and would include any construction, operation and maintenance associated with the IFTs, such as labor, energy/fuel, and building materials. An irretrievable commitment of resources would include the commitment of land and natural resources, such as the soils and vegetation that are located within the project area. CBP proposes to purchase or lease the land necessary for the implementation of the Proposed Action. All other resources (e.g., fuel, energy, materials, tools) for construction, operation and long-term maintenance would be committed by CBP, Tucson Sector, USBP Douglas Station or private contractors to the government.

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SECTION 7.0
REFERENCES

7.0 REFERENCES

23 Code of Federal Regulations (C.F.R.). C.F.R. Title 23 Part 722 Table 1 "Noise Abatement Criteria".

Alanen, Marit. 2011. Personal communication between Ms. Sherry Ethell (GSRC) and Ms. Marit Alanen (USFWS) during a field visit at tower site TCA-DGL-0374. May 11, 2011.

American Association of State Highway and Transportation Officials (AASHTO). 1993. *AASHTO Guide for Design of Pavement Structures*. Washington, D.C.

Arizona Department of Environmental Quality. 2012. "Waste Programs Division: Compliance." Internet URL: http://www.azdeq.gov/environ/waste/compliance/index.html. Last accessed: March 29, 2012.

Arizona Department of Transportation (ADOT). 2009. "Arizona State Highway Log (2007 to 2009 AADTs)." Internet URL: http://www.azdot.gov/mpd/data/Reports/PDF/CurrentAADT.pdf.

Arizona Department of Water Resources (ADWR). 2009. *Arizona Water Atlas Volume 3, Southeastern Arizona Planning Area*. June 2009.

Arizona Game and Fish Department (AGFD). 2011a. "Game and Fish confirms report of jaguar in southern Arizona." Internet URL: http://azgfd.net/artman/publish/NewsMedia/Game-and-Fish-confirms-report-of-jaguar-in-southern-Arizona.shtml. Last accessed January 11, 2012.

AGFD. 2011b. "Arizona State Listed Species compiled and edited by the Heritage Data Management System (HDMS), Arizona Game and Fish Department, Phoenix, AZ." 4 pp. Internet URL: http://www.azgfd.gov/w_c/edits/documents/allspecies_bycounty_001.pdf.

AGFD. 2004. *Leopardis pardalis*. Unpublished abstract compiled and edited by the Heritage Data Management System, AGFD, Phoenix, AZ. 5pp.

AGFD. 2003. *Leptonycteris curasoae yerbabuenae*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 8pp. Internet URL: http://www.gf.state.az.us/w_c/edits/documents/Leptcuye.fi.pdf. Last accessed April 03, 2009.

Arizona Public Service Company (APS). 2011. "APS 2011 Service Area Map." Internet URL: http://www.aps.com/images/pdf/AZ_Map.pdf.

Arizona's Touchstone Energy Cooperatives. 2011. "Arizona's Touchstone Energy Cooperatives 2011 Service Map." Internet URL: http://www.aztouchstoneenergy.coop/metadot/index.pl.

Beason, Robert. 1999. *The Bird Brain: Magnetic Cues, Visual Cues, and Radio Frequency (RF) Effects*. Robert C. Beason, Ph.D., Biology Department, State University of New York, Geneseo, NY 14454. Ph. 716/ 245-5310. Internet URL: http://www.fws.gov/ migratorybirds/issues/towers/beason.html.

Brown, D.E. and C.A. Lopez Gonzalez. 2001. *Borderland Jaguars*. University of Utah Press, Salt Lake City, UT.

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

Bureau of Land Management (BLM). 2009. *U.S. Department of the Interior—BLM Manual H-8410-1-Visual Resources Inventory*. Internet URL: http://www.blm.gov/nstc/ VRM/8410.html.

California Energy Commission. 2007. *2007 Integrated Energy Policy Report, CEC-100-2007-008-CMF*.

California Department of Transportation. 1998. *Technical Noise Supplement*. California Department of Transportation Environmental Program Environmental Engineering-Noise, Air Quality, and Hazardous Waste Management Office. October 1998.

Childs, J.L. and A. M. Childs. 2008. *Ambushed on the jaguar trail: hidden cameras on the Mexican border*. Rio Nuevo Publishers, Tucson, AZ.

Cockrum, E.L., and Y. Petryszyn. 1991. "The Long-nosed Bat, Leptonycteris: An endangered species in the Southwest?" *Occasional Papers the Museum Texas Tech University* No. 142. 32 pp.

Cochise County. 2002. *Cochise County Comprehensive Plan*. Amended and adopted by the Cochise County Board of Supervisors September 9, 2003. Resolution number 02-79.

Cochise County. 2003. "Zoning Base Maps and Summary of Zoning Districts." Cochise County Planning and Zoning. Internet URL: http://cochise.az.gov/cochise_planning_ zoning.aspx?id=340&ekmensel=c580fa7b_182_358_340.

Cochise County. 2005. *Cochise County Light Pollution Code*. Resolution number: 05-58, adopted by the Cochise Board of Supervisors on November 1, 2005, effective December 1, 2005. Internet URL: http://cochise.az.gov/cochise_planning_zoning.aspx?id=1638.

Cochise County. 2011. Letter from Cochise County, County Administrator, Mr. Michael J. Ortega, P.E. to U.S. CBP, Environmental Protection Specialist, Mr. Joseph Zidron concerning Cochise County comments on the EA for the construction and operation of the proposed new FOB in USBP Douglas Station's AOR, Tucson Sector. September 13, 2011.

Council on Environmental Quality (CEQ). 2010. Memorandum for Heads of Federal Departments and Agencies. Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. Nancy H. Sutley. February 18, 2010.

CEQ. 1997. *Considering Cumulative Effects: Under the National Environmental Policy Act.* January 1997. Internet URL: http://ceq.hss.doe.gov/nepa/ccenepa/exec.pdf.

Cummins. 2010. *Low-emissions technologies*. Manufacturer's Data. Cummins Power Generation.

DeNayer, Larry. 2011. Memorandum for Record: Minimum Physical Security Requirements for CBP/OTIA Fixed Tower Sites. Office of Technology Innovation and Acquisition Systems Security Engineering Branch. December 8, 2011.

Department of Homeland Security (DHS). 2011. *Report on the Assessment of the Secure Border Initiative-Network (SBInet) Program*. Office of the Secretary, Washington D.C.

Esparza, Adrian X. and John I. Carruthers. 2000. "Land Use Planning and Exurbanization in the Rural Mountain West." *Journal of Planning Education and Research* 20:23-36. September 2000.

Evans, W. R., and A. M. Manville, II (eds.). 2000. "Avian mortality at communication towers." *Transcripts of Proceedings of the Workshop on Avian Mortality at Communication Towers*. August 11, 1999, Cornell University, Ithaca, NY. Internet URL: http:// migratorybirds.fws.gov/issues/towers/agenda.html.

Federal Highway Administration (FHWA). 2007. "Special Report: Highway construction Noise: Measurement, Prediction, and Mitigation, Appendix A Construction Equipment Noise Levels and Ranges." Internet URL: www.fhwa.dot.gov/environment/noise/ highway/hcn06.htm.

Federal Emergency Management Agency (FEMA). 2011. "Environmental Planning and Historic Preservation Program (HEP) Overview." Internet URL: http://www.fema.gov/ plan/ehp/#0. Last modified May 19, 2011.

FEMA. 2008. *National Flood Insurance Program (NFIP) Flood Insurance Rate Map (FIRM) for Cochise County and Incorporated Areas*. Map Number: 04003C2975F. Effective Date August 28, 2008.

Girmendonk, A.L. 1994. *Ocelot, jaguar, and jaguar sighting reports: Arizona and Sonora, Mexico*. Nongame and Endangered Wildlife Program technical Report 35. Arizona Game and Fish Department, Phoenix, Arizona.

Gulf South Research Corporation (GSRC). 2012. *Final Annual Bat Carcass Survey Report (2010) for the SBInet Ajo-1 Tower Project*. Baton Rouge, Louisiana.

GSRC. 2011. *Final Annual Bat Carcass Survey Report (2011) for the SBInet Ajo-1 Tower Project*. Baton Rouge, Louisiana.

Hart, David R. 2011. *Draft Cultural Resources Survey in Support of Office of Technology Innovation and Acquisition Focus Area 3 Integrated Fixed Tower Project, U.S. Customs and Border Protection, U.S. Border Patrol, Douglas Station, Cochise County, Arizona*. Gulf South Research Corporation, Baton Rouge.

Hatten, J.R., A. Averill-Murray, and W.E. Van Pelt. 2002. *Characterizing and mapping potential jaguar habitat in Arizona*. Nongame and Endangered Wildlife Program Technical Report 203. Arizona Game and Fish Department, Phoenix, Arizona.

Hendricks, David M. 1985. Arizona Soils by David M. Hendricks. University of Arizona, College of Agriculture. 244 pp.

International Dark Sky Association. 2008. Internet URL: http://www.darksky.org /mc/page.do?sitePageId=58823. Last accessed July 2008.

Kelly, C. 2007. "Health Physics Society, Radiofrequency (RF) Radiation." Internet URL: http://hps.org/hpspublications/articles/rfradiation.html.

Midwest Research Institute. 1996. *Improvement of Specific Emission Factors* (BACM Project No. 1). Prepared for South Coast Air Quality Management District. SCAQMD Contract 95040, Diamond Bar, CA. April 1996.

Natural Resources Conservation Service (NRCS). 2011. "Web Soil Survey." Custom Soil Resource Reports for Preferred and Alternative TCA-DGL Tower Sites in Cochise County, Arizona. Internet URL: http://websoilsurvey.nrcs.usda.gov/app/ WebSoilSurvey.aspx .

NRCS. 2003. *Soil Survey for Cochise County Arizona, Douglas-Tombstone Part*. USDA and NRCS in cooperation with the Hereford, San Pedro, Willcox-San Simon, and Whitewater Draw Natural Resource Conservation Districts and the Arizona Agricultural Experiment Station.

Nicholls, Barry and PA Racey. 2007. "Bats avoid radar installations: could electromagnetic fields deter bats from colliding with wind turbines?" *PLoS ONE* 2(3): e297. doi:10.1371/journal.pone.0000297.

Office of Engineering and Technology (OET). 1999. *Questions and Answers about Biological Effects Potential Hazards of Radiofrequency Electromagnetic Fields*. OET, Federal Communications Commission Bulletin Number 56, Fourth Edition, August 1999. Internet URL: http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/ bulletins/oet56/oet56e4.pdf.

Thalheimer, E. 2000. "Construction noise control program and mitigation strategy at the Central Artery/Tunnel Project." *Noise Control Engineering Journal* 48(5):157–165.

U.S. Bureau of Economic Analysis. 2009. "GDP and Personal Income Data." Internet URL: http://www.bea.gov/iTable/iTable.cfm?ReqID=70&step=1&isuri=1&acrdn=5.

U.S. Census Bureau (USCB). 2010a. "2010 U.S. Census Data." Internet URL: http://factfinder2.census.gov/.

USCB. 2010b. "American Community Survey, 3-Year Estimates, 2008-2010." Internet URL: http://factfinder2.census.gov/.

USCB. 2009. "County Business Pattern Data." Internet URL: http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl.

USCB. 2000. "U.S. Census, U.S. Gazetteer Files: Counties." Internet URL: http://www.census.gov/tiger/tms/gazetteer/county2k.txt.

U.S. Customs and Border Protection (CBP). 2012a. *2012-2016 Border Patrol Strategic Plan*. CBP Office of Border Patrol. Washington, DC 20229. Internet URL: http://www.cbp.gov/linkhandler/cgov/border_security/border_patrol/bp_strat_plan/bp_strat_plan.ctt/bp_strat_plan.pdf.

CBP. 2012b. "Office of Technology Innovation and Acquisition (OTIA) Responsibilities (Acquisition Policy, Process and Documentation)." Internet URL: http:/www.cbp.gov/xp/cgov/border_security/otia/otia_resp.xml. Last accessed July 2, 2012.

CBP. 2012c. *Final Biological Field Survey Report for Integrated Fixed Towers in the Douglas Station's Area of Responsibility, U.S. Border Patrol Tucson Sector, Arizona, U.S. Customs and Border Protection, Department of Homeland Security, Washington, DC*. Prepared by Gulf South Research Corporation, Baton Rouge, Louisiana.

CBP. 2012d. *Final Supplemental Environmental Assessment for the Proposed Forward Operating Base at the Floyd Pocket Project Area, Douglas Station's Area of Responsibility, U.S. Border Patrol, Tucson Sector*. March 2012.

CBP. 2012e. *Final Environmental Assessment for Remote Video Surveillance Systems Upgrade Program (New Towers), U.S. Border Patrol, Tucson and Yuma Sectors, Arizona, U.S. Customs and Border Protection, Department of Homeland Security, Washington, D.C*. June 2012.

U.S. Environmental Protection Agency (EPA). 2010. "Welcome to the Green Book Nonattainment Areas for Criteria Pollutants." Internet URL: http://www.epa.gov/oar/oaqps/greenbk.

EPA. 2008. "Arizona's 2006/2008 Impaired Waters." Internet URL: http://azdeq.gov/environ/water/assessment/download/2006_2008.pdf.

EPA. 2005a. *User's Guide for the Final NONROAD2005 Model*. EPA420-R-05-013. December 2005.

EPA. 2005b. *Emission Facts: Average In-Use Emissions from Heavy Duty Trucks*. EPA 420-F-05-0yy. May 2005.

EPA. 2005c. *Emission Facts: Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks*. EPA 420-F-05-022.

EPA. 2005d. *EPA Emission Facts: Average In-Use Emission Factors for Urban Buses and School Buses*. Office of Transportation and Air Quality. EPA420-F-05-024. August 2005.

EPA. 2001. *Procedures Document for National Emission Inventory, Criteria Air Pollutants 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards Research Triangle Park NC 27711.

EPA. 1978. "Noise Control Act, as amended by the Quiet Communities Act (42 U.S.C. 4901 et seq.)." Internet URL: http://www.gpo.gov/fdsys/browse/collectiontab.action.

U.S. Fish and Wildlife Service (USFWS). 2012. "Species by County Report." Internet URL: http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=04023.

USFWS. 2011a. "Endangered and Threatened Wildlife and Plants; Listing and Designation of Critical Habitat for the Chiricahua Leopard Frog; Proposed Rule." *Federal Register* 76(50): 14126.

USFWS. 2011b. "Endangered and Threatened Wildlife and Plants; Listing and Designation of Critical Habitat for the Chiricahua Leopard Frog; Proposed Rule; Reopening of Comment Period." *Federal Register* 76(183): 58441.

USFWS. 2010. *The Ocelot (Leopardus pardalis)*. Internet URL: http://www.fws.gov/endangered/esa-library/pdf/ocelot.pdf Last accessed: February 8, 2012.

USFWS. 2000. "Service Guidance on the Siting, Construction, Operation, and Decommissioning of Communications Towers." Memorandum to Regional Directors from Director Jamie Rappaport Clark. 14 September 2000.

USFWS. 1997. *Lesser Long-Nosed Bat Recovery Plan*. Albuquerque, New Mexico. 49pp.

USFWS. 1990. *Listed Cats of Texas and Arizona Recovery Plan (With Emphasis on the Ocelot)*. USFWS, Albuquerque, New Mexico. 131pp.

USFWS. 1984. "Endangered and Threatened Wildlife and Plants; Final Rule to Determine the Yaqui Chub to be an Endangered Species with Critical Habitat, and to Determine the Beautiful Shiner and the Yaqui Catfish to be Threatened Species with Critical Habitat." *Federal Register* 49(171): 34490.

U.S. Geological Survey and California Geologic Survey. 2000. "Geology in the Parks." Internet URL: http://www2.nature.nps.gov/geology/usgsnps/province/basinrange.html.

U.S. Housing and Urban Development. 1984. "24 C.F.R. Part 51 - Environmental Criteria and Standards." *Federal Register* 44: 40861, July 12, 1979, as amended *Federal Register* 49: 12214, Mar. 29, 1984.

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SECTION 8.0
ACRONYMS/ABBREVIATIONS

8.0 ACRONYMS/ABBREVIATIONS

annual average daily traffic count	AADT
American Association of State Highway Transportation Officials	AASHTO
Advisory Council on Historic Preservation	ACHP
Arizona Department of Environmental Quality	ADEQ
Arizona Department of Transportation	ADOT
Arizona Department of Water Resources	ADWR
Arizona Ecological Services Field Office	AESFO
Arizona Game and Fish Department	AGFD
above mean sea level	amsl
Arizona Natural Heritage Program	ANHP
American National Standards Institute	ANSI
Analysis of Alternatives	AoA
area of responsibility	AOR
area of potential effect	APE
Arizona Public Service	APS
Arizona State Museum	ASM
Arizona State Trust Lands	ASTL
below ground surface	bgs
Bureau of Land Management	BLM
best management practice	BMP
command and control	C2
U.S. Customs and Border Protection	CBP
cross-border violator	CBV
Council on Environmental Quality	CEQ
Code of Federal Regulations	C.F.R.
methane	CH_4
Coronado National Forest	CNF
carbon monoxide	CO
carbon dioxide	CO_2
Clean Water Act	CWA
decibel	dB
A-weighted decibel	dBA
U.S. Department of Interior	DOI
Department of Homeland Security	DHS
Environmental Assessment	EA
electromagnetic	EM
Executive Order	EO
U.S. Environmental Protection Agency	EPA
Endangered Species Act	ESA

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Federal Aviation Administration	FAA
Federal Communications Commission	FCC
Federal Emergency Management Agency	FEMA
Federal Highway Administration	FHWA
forward operating base	FOB
Federal Register	FR
greenhouse gases	GHG
Gulf South Research Corporation	GSRC
hydrochlorofluorocarbons	HFC
U.S. Department of Housing and Urban Development	HUD
Hertz	Hz
Institute of Electrical and Electronics Engineers	IEEE
integrated fixed tower	IFT
isolated occurrence	IO
items of interest	IoI
kilowatt	kW
Land Mobilization Radio	LMR
maximum permissible exposure	MPE
National Ambient Air Quality Standards	NAAQS
National Environmental Policy Act	NEPA
National Historic Preservation Act	NHPA
nitrogen dioxide	NO_2
nitrous oxide	N_2O
Notice of Availability	NOA
Notice of Intent	NOI
nitrogen oxides	NO_x
National Pollutant Discharge Elimination System	NPDES
Natural Resources Conservation Service	NRCS
National Register of Historic Places	NRHP
National Telecommunications and Information Administration	NTIA
night vision goggles	NVG
ozone	O_3
Office of Engineering and Technology	OET

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Occupational Safety and Health Administration	OSHA
Office of Technology Innovation and Acquisition	OTIA
Public Law	P.L.
particulate matter < 2.5 micrometers	PM-2.5
particulate matter <10 micrometers	PM-10
Ports of Entry	POE
radio frequency	RF
region of influence	ROI
remote video surveillance systems	RVSS
Secure Border Initiative-network	SBI*net*
San Bernardino National Wildlife Refuge	SBNWR
State Historic Preservation Officer	SHPO
sulfur dioxide	SO_2
Spill Prevention, Control and Countermeasures Plan	SPCCP
State Road	SR
self-standing tower	SST
Stormwater Pollution Prevention Plan	SWPPP
Traditional Cultural Properties	TCP
United States	U.S.
U.S. Army Corps of Engineers	USACE
U.S. Border Patrol	USBP
U.S. Code	U.S.C.
U.S. Census Bureau	USCB
U.S. Department of Agriculture	USDA
U.S. Forest Service	USFS
U.S. Fish and Wildlife Service	USFWS
U.S. Geological Survey	USGS

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SECTION 9.0
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9.0 LIST OF PREPARERS

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