

FINAL

**ENVIRONMENTAL ASSESSMENT FOR
INTEGRATED FIXED TOWERS ON THE
TOHONO O'ODHAM NATION IN THE
AJO AND CASA GRANDE STATIONS'
AREAS OF RESPONSIBILITY
U.S. BORDER PATROL TUCSON SECTOR, ARIZONA
U.S. CUSTOMS AND BORDER PROTECTION
DEPARTMENT OF HOMELAND SECURITY
WASHINGTON D.C.**



March 2017

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FINAL

**FINDING OF NO SIGNIFICANT IMPACT
FOR
INTEGRATED FIXED TOWERS ON THE TOHONO O'ODHAM NATION
IN THE AJO AND CASA GRANDE STATIONS'
AREAS OF RESPONSIBILITY
U.S. BORDER PATROL TUCSON SECTOR, ARIZONA
U.S. CUSTOMS AND BORDER PROTECTION
DEPARTMENT OF HOMELAND SECURITY
WASHINGTON, D.C.**

NAME OF PROPOSED ACTION

Integrated Fixed Towers (IFT) on the Tohono O'odham Nation in the U.S. Border Patrol's (USBP) Ajo and Casa Grande Stations' Areas of Responsibility (AOR), Tucson Sector, Arizona

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

U.S. Customs and Border Protection (CBP) proposes to implement an IFT system in the USBP's Ajo and Casa Grande Stations' AOR. 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 IFT system would primarily be deployed on lands within the Tohono O'odham Nation in order to provide long-term/permanent surveillance in USBP's Ajo and Casa Grande Stations' AORs.

CBP analyzed the following three alternatives in the *Environmental Assessment for Integrated Fixed Towers on the Tohono O'odham Nation in the Ajo and Casa Grande Stations' Areas of Responsibility, U.S. Border Patrol Tucson Sector, Arizona* (hereinafter the EA). This Finding of No Significant Impact (FONSI) incorporates the descriptions, evaluations, and analyses in the EA.

Alternative 1: Alternative 1 is the No Action Alternative. Under the No Action Alternative, the new IFTs would not be constructed and current border surveillance practices and procedures would continue. USBP's ability to detect and interdict cross-border violators would not be enhanced; thus, operational effectiveness would not be improved in the project area. The No Action Alternative does not meet the purpose of and need for this project.

Alternative 2: Alternative 2 is the Proposed Action. The Proposed Action includes the construction, operation and maintenance of 15 new IFTs at preferred sites and the retrofit of 2 existing communication towers to provide long-term, permanent surveillance in USBP's Ajo and Casa Grande Stations' AORs. The IFT system transfers situational awareness data to the command and control facilities at San Miguel Law Enforcement Center and USBP Ajo Station, which integrate and display data from all IFTs deployed within these AORs. 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. The Proposed

Action also includes the construction of 14 new access roads (up to 0.24 miles total) and improvement of existing approach roads (up to 70.90 miles total) as well as the future maintenance and repair of these roads. Approach roads are existing private or public roads used to travel to a tower site. Access roads are short road segments from an approach road into a tower site. Roadwork may include reconstructing, widening, or straightening the existing road, and installing drainage structures. Roadwork would also include performing road maintenance and repair within 270 ephemeral washes. CBP estimates that approximately 195 of these washes would need to be improved with either a new low water crossing or culvert. Staging of equipment and materials would occur at two existing staging areas and within the temporary construction areas for the tower sites and access roads. The Proposed Action also includes obtaining Right-of-Ways from the Bureau of Indian Affairs (BIA) to perform these activities. Best Management Practices (BMPs) to avoid, reduce, or minimize potential environmental impacts as described in Section 5.0 of the EA are incorporated by reference to this Finding of No Significant Impact as part of the Proposed Action. The Proposed Action meets the purpose of and need for this project

Alternative 3: Alternative 3 consists of the construction, operation, and maintenance of 14 new IFTs at preferred sites and 1 IFT at an alternate site as well as the retrofit of 2 existing communication towers. The new and existing towers are proposed with the same suite of sensor and communications equipment as described in the Proposed Action. Alternative 3 also includes the construction of access roads (up to 0.23 miles total) and improvement of approach roads (up to 68.26 miles total) as well as the future maintenance and repair of these roads. Roadwork would be similar to that of the Proposed Action and would include performing maintenance and repair within 250 ephemeral washes, 187 of which would be improved with either a new low water crossing or culvert. Alternative 3 meets the purpose of and need for this project.

PUBLIC INVOLVEMENT

Consultation and coordination with Federal, state, and local agencies and Federally recognized tribes began with site selection activities in July 2012. The Tohono O'odham Nation and the BIA were invited and agreed to participate as cooperating agencies in the development of the EA in May 2013.

A Draft EA was available for public review from April 15 to May 16, 2016, at <http://www.cbp.gov/about/environmental-cultural-stewardship/nepa-documents/docs-review> and at the Tohono O'odham Community College Library and the Venito Garcia Library and Archives in Sells and the Pima County Public Library in Tucson, Arizona. In addition, cooperating agencies and coordinating agencies received hard copies of the Draft EA during this period. Notices of Availability for the Draft EA were published in the Tohono O'odham Nation's *The Runner*, *Ajo Copper News*, and *Arizona Daily Star* newspapers.

The Final EA will be available on the CBP website at <https://www.cbp.gov/about/environmental-cultural-stewardship/current-ongoing-projects>. The EA will also be available at the Tohono O'odham Community College Library, the Venito Garcia Library and Archives, and the Pima County Public Library for a period of thirty days. Notices of Availability for the Final EA will

be published in the Tohono O'odham Nation's *The Runner*, *Ajo Copper News*, and *Arizona Daily Star* newspapers.

ENVIRONMENTAL CONSEQUENCES

CBP has identified Alternative 2 (the Proposed Action) as the Preferred Alternative and incorporates the descriptions, evaluations, and analyses in the attached EA. No mitigation measures beyond the routine BMPs described in Section 5.0 in the EA are needed to prevent significant direct, indirect, or cumulative impacts from implementation of the Proposed Action.

Physical Environment: The Proposed Action would have a permanent, direct impact on up to 8.23 acres and a temporary impact on up to 6.06 acres of undisturbed land for new tower sites and access roads. In addition, improvements to approach roads would permanently impact up to 214.20 acres of previously undisturbed land, assuming an existing road width of 20 feet. Standard erosion control and soil stabilization BMPs would be implemented during and following construction.

The Proposed Action would have a minor impact on air quality and a negligible impact on noise levels. Temporary increases in air emissions, fugitive dust, and noise levels are anticipated during the construction of the towers and related roadwork. However, air emissions associated with the construction of the towers and associated roads and operation of the towers would not exceed Federal and state criteria. Surface water quality could be temporarily impacted during construction as a result of increased erosion and sedimentation; however, these impacts would be minor. The Proposed Action would have no impact on floodplains or wetlands and a negligible impact on waters of the United States. The withdrawal of water for construction purposes could have a temporary, minor impact on groundwater resources. CBP will obtain Clean Water Act Section 401 certification and Section 404 permits prior to implementing this action.

Natural Environment: Construction activities for the proposed IFTs and roads would not adversely impact wildlife nor would the loss of habitat adversely affect the population viability of any plant or animal species in the region. Temporary, negligible increases in noise levels would be expected during the construction of towers and access roads, as well as approach road maintenance and repair. Permanent noise level increases associated with tower operations would be negligible. Based on the current knowledge of microwave emissions and the type of system deployed by CBP, impacts on wildlife are anticipated to be minor. There is a possibility that the proposed IFTs could pose hazards to migratory birds and cause bird mortality; however, since the towers would not use guy-wires and are less than 200 feet tall, the potential for adverse impacts is greatly reduced.

CBP determined that the Proposed Action may affect, but is not likely to adversely affect, the following Federally listed species: Sonoran pronghorn (*Antilocapra americana sonoriensis*), jaguar (*Panthera onca*), lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*), and yellow-billed cuckoo (*Coccyzus americanus*). CBP has also determined that the Proposed Action would not adversely modify designated critical habitat for the jaguar or the yellow-billed cuckoo. The U.S. Fish and Wildlife Service concurred with these determinations in accordance with Section 7 of the Endangered Species Act.

Cultural Resources: CBP determined that the Proposed Action would not adversely affect any National Register of Historic Places (NRHP) listed or eligible architectural or aboveground resource, NRHP listed or eligible archaeological resource, traditional cultural property, or sacred site. The Tohono O'odham Nation Tribal Historic Preservation Officer concurred with this determination in accordance with Section 106 of the National Historic Preservation Act.

In the event that unanticipated archaeological resources are discovered during construction or any other project-related activities, or should known archaeological resources be inadvertently affected in a manner that was not anticipated, CBP would implement the procedures detailed in the BMPs located at measure 14 under Section 5.5 of the EA. This procedure was developed in coordination with BIA and the Tohono O'odham Nation Tribal Historic Preservation Officer to handle sensitive archaeological resources.

Human Environment: The Proposed Action would have a long-term, negligible impact on utilities. During construction, the Proposed Action would have a temporary minor impact on roadways and traffic within the project area. Impacts associated with tower maintenance would be long-term and negligible. Depending on the location and elevation of an observer, most towers would be visible up to 5 miles away, and some towers may be visible up to 15 miles; therefore, some towers would have a long-term, moderate impact on the aesthetic qualities of the region. There would be no exposure of the environment or public to any hazardous materials. Further, any adverse effects on human health would be negligible due to the minimal exposure risk and the elevated locations in which the communications equipment would be positioned on the towers.

FINDING

On the basis of the analysis in the EA, which is incorporated by reference, and which has been conducted in accordance with the National Environmental Policy Act, the Council on Environmental Quality regulations, and Department of Homeland Security Directive 023-01 (October 2014) and Instruction 023-01-001-01, Rev. 01 (November 2014) both "Implementation of the National Environmental Policy Act", and after careful review of the potential environmental impacts, we find the Preferred Alternative would not have a significant impact on the quality of the human or natural environment, either individually or cumulatively and an Environmental Impact Statement is not required. Further, in implementing the Preferred Alternative, we are committed to incorporating the BMPs and environmental design measures identified in the EA and supporting documents.



 Ruynard Singleton

Acting Executive Director, Program Management Office
 U.S. Border Patrol Headquarters
 U.S. Customs and Border Protection

3/22/17


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MAR 23 2017



Benjamin C. Huffman
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MAR 28 2017

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DEPARTMENT OF HOMELAND SECURITY
WASHINGTON, D.C.

March 2017

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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 uniformed law enforcement component 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 USBP 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. The IFT 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 represents a technology solution for the distinct terrain within USBP Tucson Sector.
- STUDY LOCATION:** The Proposed Action would take place in Pima County, Arizona, in USBP Ajo and Casa Grande Station's Areas of Responsibility (AORs), Tucson Sector. The Proposed Action would occur on the Tohono O'odham Nation, within the Chukut Kuk and Gu-Vo Districts, as well as at existing CBP facilities in USBP Tucson Sector.
- PURPOSE AND NEED:** The purpose of the Proposed Action is to provide improved surveillance and detection capabilities that facilitate rapid responses to areas of greatest risk for illegal cross-border threats along approximately 63 miles of the U.S. border in the USBP Ajo and Casa Grande Stations' AORs.
- The project is needed to
- 1) provide more efficient and effective means of assessing cross-border activities
 - 2) provide rapid detection and accurate characterization of potential threat
 - 3) provide coordinated deployment of resources in the apprehension of cross-border violators
 - 4) increase surveillance and interdiction efficiency
 - 5) enhance the deterrence of illegal cross-border activity
 - 6) enhance agent safety
 - 7) enhance safety to border communities

**PROPOSED ACTION
AND ALTERNATIVES
CONSIDERED:**

CBP analyzed three alternatives in this Environmental Assessment (EA). **Alternative 1** is the No Action Alternative. The No Action Alternative reflects conditions within the project area should the Proposed Action not be implemented. Under this alternative, CBP would not construct the proposed IFTs in USBP's Ajo and Casa Grande Stations' AORs or improve existing approach roads to these tower sites. USBP's ability to detect and interdict cross-border violators would not be enhanced; thus, operational efficiency and effectiveness would not be improved within the area covered by the proposed towers. USBP would continue to rely solely on traditional detection methodology that includes traditional sign detection, which requires both patrolling and dragging of roads. The No Action Alternative does not meet the purpose of and need for this project.

Alternative 2 is the Proposed Action. The Proposed Action would include the following activities:

- Construction, operation, and maintenance of 15 new IFT sites (see Table ES-1);
- Collocation, operation, and maintenance of equipment on two existing, CBP-operated communication towers;
- Installation of IFT workstations at command and control (C2) facilities at the San Miguel Law Enforcement Center (LEC) and at USBP Ajo Station;
- Construction of 14 new access roads, up to 0.24 miles totals, and improvement of up to 70.90 miles of existing approach roads, as well as maintenance and repair of these roads;
- Use of two existing staging areas for the temporary storage of materials and equipment; and
- Obtaining rights-of-way (ROWs) from the Bureau of Indian Affairs (BIA) to perform these activities.

Each IFT site consists of a tower equipped with a suite of sensors and communications equipment. The IFT system would provide radar and video data feeds to the C2 modular facilities at USBP Ajo Station and at the San Miguel LEC, which would be retrofitted to integrate and display data from the IFT units. Approach roads are existing private or public roads used to travel to a tower site. Access roads are short road segments from an approach road into a tower site. Approach road improvements would include reconstructing, widening, or straightening of existing roads, and installing drainage structures. Roadwork also includes performing maintenance and repair within approximately 270 ephemeral washes and installing either a low water crossing or culvert at approximately 195 of these washes.

Table ES-1. Proposed Tower Sites

Tower ID	Alternative 1 No Action Alternative	Alternative 2 Proposed Action	Alternative 3
TCA-AJO-0216	--	Existing	Existing
TCA-AJO-0305	--	Existing	Existing
TCA-AJO-0446	--	New	New
TCA-AJO-0448	--	New	New
TCA-AJO-0450	--	New	New
TCA-AJO-0452	--	New	New
TCA-AJO-0454	--	New	New
TCA-AJO-0458	--	New	New
TCA-AJO-0460	--	New	New
TCA-AJO-0462	--	New	New
TCA-CAG-0430	--	New	New
TCA-CAG-0432	--	New	New
TCA-CAG-0434	--	New	New
TCA-CAG-0436	--	New	--
TCA-CAG-0438	--	New	New
TCA-CAG-0440	--	New	New
TCA-CAG-0442	--	New	New
TCA-CAG-0444	--	--	New

Alternative 3 is similar to Alternative 2 except that Alternative 3 includes alternate IFT site TCA-CAG-0444 instead of TCA-CAG-0436 (see Table ES-1). Alternative 3 has the same number of tower sites and similar miles of access roads as the Proposed Action; however, Alternative 3 would include improving up to 68.26 miles of approach roads, which is approximately 2.64 miles less than the Proposed Action. The towers and C2 facilities would be equipped with the same suite of sensor and communications equipment as the Proposed Action. Roadwork would be similar to that of the Proposed Action and would include performing maintenance and repair within approximately 250 ephemeral washes and installing either a low water crossing or culvert within approximately 187 of these washes. Alternative 3 would also include obtaining ROWs from the BIA.

Alternatives considered but eliminated from consideration included unmanned aircraft systems, remote sensing satellites, unattended ground sensors, increased CBP workforce, and increased aerial reconnaissance/operations. Although these alternatives or a combination of these alternatives could be valuable tools that CBP may employ in other areas or circumstances of border incursion, they were eliminated because of logistical restrictions, environmental

considerations, or functional deficiencies that fail to meet the purpose for this project.

AFFECTED
ENVIRONMENT AND
ENVIRONMENTAL
CONSEQUENCES:

The Proposed Action would have permanent, negligible impacts on land use. Up to 8.23 acres of the 2.7 million acres that encompass the Tohono O’odham Nation would be converted from undeveloped rangeland to law enforcement facilities. In addition, up to 0.57 acres would be permanently converted for the construction of access roads and up to 214.20 acres would be permanently converted for improving existing approach roads.

CBP is committed to implementing best management practices (BMPs) in Section 5.0 of the EA that would avoid or minimize adverse effects on the environment. Contractors would be required to implement these measures, which would be strictly enforced.

Temporary, minor impacts would be expected on surface water quality during construction. No impacts on floodplains or wetlands are anticipated. Although there would be minor impacts to potential waters of the United States, BMPs and standard construction procedures would be implemented to minimize the potential for erosion and sedimentation during construction. The impact area for any one of the ephemeral washes would be less than 0.5 acres and would be authorized under Nationwide Permit 14 for Linear Transportation Crossings. CBP has obtained approval from the International Boundary Water Commission for the Proposed Action. CBP will consult with the Environmental Protection Agency and U.S. Army Corps of Engineers under Sections 401 and 404 of the Clean Water Act for this action. In addition, the withdrawal of water for construction purposes could have a temporary, minor impact on groundwater resources.

The Proposed Action would have minor impacts on soils, vegetative habitat, and wildlife. Areas with highly erodible soils would be given special consideration when designing the Proposed Action to ensure incorporation of various BMPs, such as straw bales, aggregate materials, and wetting compounds to decrease erosion. Site-specific Stormwater Pollution Prevention Plans would be prepared prior to construction activities and would include pre- and post-construction measures.

CBP determined that the Proposed Action may affect, but is not likely to adversely affect, the Sonoran pronghorn (*Antilocapra americana sonoriensis*), jaguar (*Panthera onca*), lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*), and yellow-billed cuckoo (*Coccyzus americanus*). The Proposed Action would not adversely

affect any designated or proposed critical habitat. CBP consulted with the Tohono O'odham Nation and U.S. Fish and Wildlife Service in accordance with Section 7 of the Endangered Species Act (ESA) and consultation is complete for this action.

Based on the archaeological surveys, archival research results, Native American Tribal consultation to date, and the implementation of BMPs, CBP has determined that there would be no adverse effect on any National Register of Historic Places (NRHP) eligible or listed architectural or aboveground resources, NRHP-eligible or listed archaeological resources, traditional cultural properties, or sacred sites. The Tohono O'odham Nation THPO concurred with CBP's no adverse effect determination, and consultation under Section 106 of the National Historic Preservation Act is complete for this action.

Temporary and minor increases in air emissions would occur during construction of the IFTs, access road construction, and approach road improvement and maintenance and repair. In addition, there would be long-term air emissions during maintenance and operation of the tower sites. Air emissions are estimated to be below the Federal *de minimis* thresholds.

Noise level increases associated with construction of TCA-AJO-0450 and TCA-AJO-0462 could temporarily impact residences in the area. In addition, construction at TCA-AJO-0460 and TCA-AJO-216 would impact Organ Pipe Cactus National Monument. However, these impacts would be temporary and would be minimized by restricting activities to daylight hours and weekdays. Operational noise at TCA-AJO-0460 and TCA-AJO-216 would not impact Organ Pipe Cactus National Monument. The backup propane generators are designed with sound insulation to decrease noise emissions.

Negligible demands on utilities would be required. 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. Any adverse effects on human health would be negligible due to the minimal exposure risk and the elevated locations in which the sensors and communications equipment would be positioned. CBP would obtain authorization to use specific frequencies and power levels from the National Telecommunications and Information Administration prior to operating communications equipment.

Construction and staging for towers, access roads, and approach roads would create a temporary, minor impact on roadways and traffic within the region for the purposes of transporting materials and work

crews. Tower maintenance would also require that vehicles travel to each IFT site for fuel delivery and maintenance and operation of the proposed towers. Approximately 416 vehicle trips per year are anticipated for tower maintenance and refueling, 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.

Depending on the location and elevation of an observer, most towers could be visible up to 5 miles away, and some towers may be visible up to 15 miles; therefore, the Proposed Action would have a long-term, moderate impact on the aesthetic and visual qualities of the region. The Proposed Action would not result in exposure of the environment or the public to any hazardous materials.

**FINDINGS AND
CONCLUSIONS:**

Based upon the analyses of the EA 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 required under the National Environmental Policy Act (42 U.S.C. §§ 4321-4347) and its implementing regulations (40 C.F.R. Parts 1500-1508). CBP, in implementing this decision, would employ all practical means to minimize or avoid the potential for adverse impacts on the human and natural environment, which would include committing to the BMPs found in Section 5.0 of the EA.

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SECTION 1.0
INTRODUCTION



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1.0 INTRODUCTION

1.1 BACKGROUND

The Department of Homeland Security's (DHS) U.S. Customs and Border Protection (CBP) is preparing this Environmental Assessment (EA) to document the analysis of the proposed construction of Integrated Fixed Towers (IFTs) within U.S. Border Patrol (USBP) Ajo and Casa Grande Stations' Areas of Responsibility (AORs).

CBP is the law enforcement component of the DHS responsible for securing the border and facilitating lawful international trade and travel. USBP is the uniformed law enforcement subcomponent of CBP responsible for patrolling and securing the border between the land ports of entry. USBP has developed a detailed technology deployment plan for each USBP sector in Arizona based on current and anticipated operational activity (DHS 2011). CBP's Arizona Border Surveillance Technology Plan (ABSTP) for Tucson Sector includes the utilization of IFTs to provide 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.

CBP is the lead agency and proponent for the Proposed Action. The Bureau of Indian Affairs (BIA) and the Tohono O'odham Nation are cooperating agencies in this effort and have assisted with the preparation of this EA.

1.2 PROJECT LOCATION

The project is located in USBP Tucson Sector's Ajo and Casa Grande Stations' AORs within Pima County, Arizona (Figure 1-1). The proposed new IFT sites and roadwork would be located within the Chukut Kuk and Gu-Vo Districts of the Tohono O'odham Nation. Activities would also occur at the San Miguel Law Enforcement Center (LEC), at USBP Ajo Station, and at an existing tower site on Bureau of Land Management (BLM) land off State Route (SR) 85.

1.3 PURPOSE AND NEED

The purpose of the Proposed Action is to provide persistent surveillance capability, command and control (C2); and sustainment of support capabilities along approximately 63 miles of the U.S./Mexico border within the Tohono O'odham Nation, in USBP Ajo and Casa Grande Stations' AORs.

This proposal is consistent with the 2012-2016 Border Patrol Strategic Plan, which is a risk-based approach to countering threats through information, integration, and rapid response (CBP 2012a). The Border Patrol Strategic Plan is intended to advance mission functions such as predicting illicit activity, detecting and tracking border crossings, identifying and classifying detections, and responding to and resolving suspect border crossings as threats through intelligence efforts and prioritized responses and targeted enforcement.

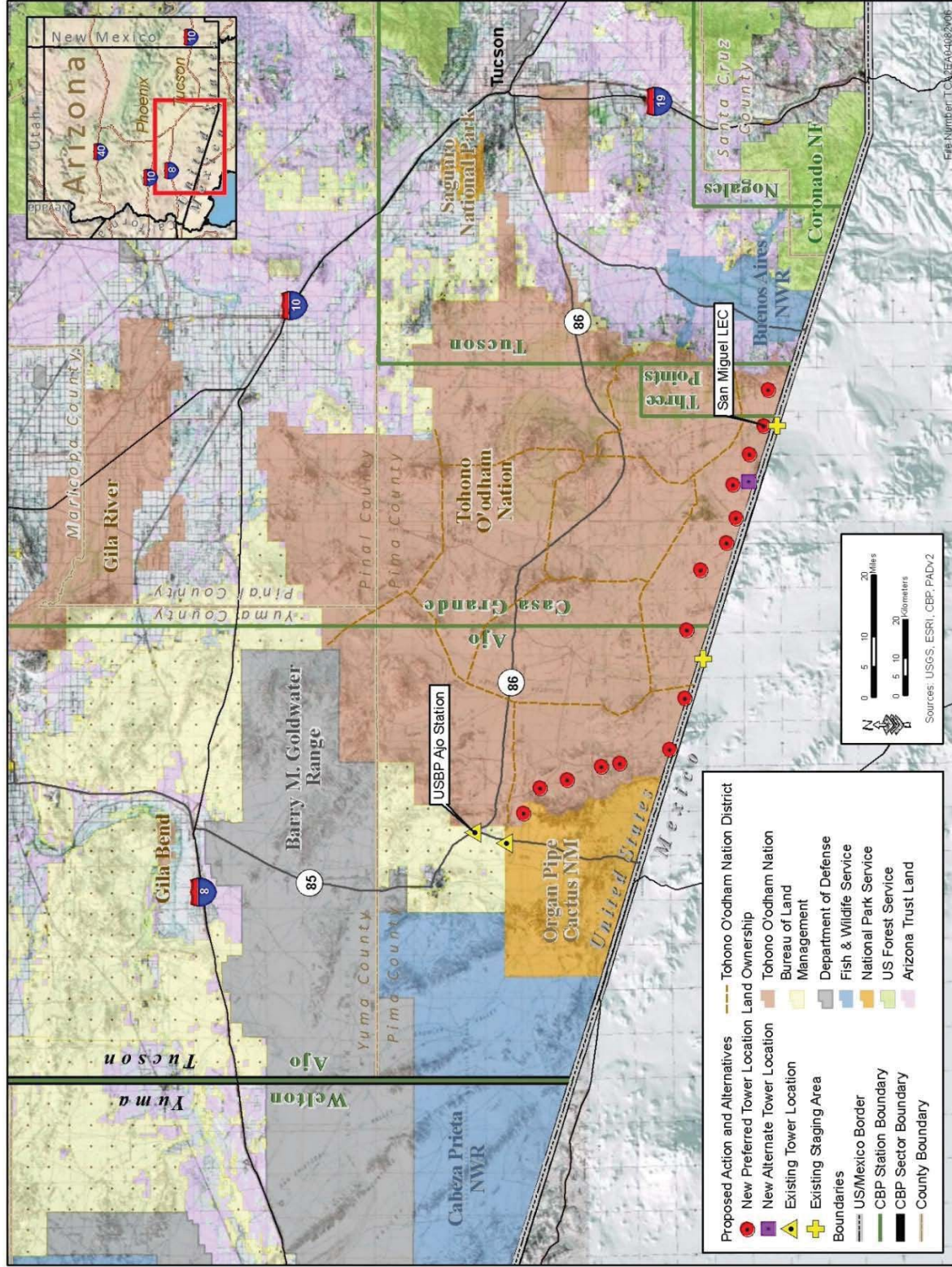


Figure 1-1. Project Vicinity Map

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The Proposed Action is needed to improve USBP response time and law enforcement operations within the Tohono O’odham Nation. The difficult terrain and a lack of infrastructure within the Tohono O’odham Nation create a need for a year-round, persistent, technology-based surveillance capability that could effectively collect, process, and distribute information among USBP agents. A surveillance system is needed that would allow USBP agents to maintain surveillance over large areas, contributing to agent safety and increasing operational effectiveness as they detect, identify, and classify incursions/illegal entry at the border and resolve the incursions with the appropriate level of response.

Specifically, the Proposed Action is needed to

- 1) provide more efficient and effective means of assessing cross-border activities
- 2) provide rapid detection and accurate characterization of potential threats
- 3) provide coordinated deployment of resources in the apprehension of cross-border violators
- 4) increase surveillance and interdiction efficiency
- 5) enhance the deterrence of illegal cross-border activity
- 6) enhance USBP agent safety
- 7) enhance the safety of border communities.

1.4 PUBLIC INVOLVEMENT AND AGENCY COORDINATION

In accordance with 40 C.F.R. Parts 1501.7, 1503, and 1506.6, CBP initiated public involvement and agency scoping to identify significant issues related to the Proposed Action. CBP invited the Tohono O’odham Nation and the BIA to participate as cooperating agencies in the development of the EA to ensure that the analysis meets their needs. Under the Proposed Action, the BIA would issue rights-of-way (ROWs) to CBP for proposed activities on Tohono O’odham Nation land after the Tohono O’odham Nation has consented to the ROWs.

CBP has consulted with appropriate Federal, state, and local government agencies and the Tohono O’odham Nation throughout the EA process. CBP would continue to coordinate with the following agencies, if it implemented the proposed action:

- U.S. Department of the Interior (DOI)
 - U.S. Fish and Wildlife Service (USFWS)
 - BIA
 - BLM
- U.S. Environmental Protection Agency (EPA)
- U.S. Section, International Boundary and Water Commission (USIBWC)
- U.S. Army Corps of Engineers (USACE)
- Federal Aviation Administration (FAA)
- National Telecommunications and Information Administration (NTIA)
- State of Arizona
 - Arizona Game and Fish Department (AGFD)
 - Arizona State Historic Preservation Officer (SHPO)
 - Arizona Department of Environmental Quality (ADEQ)
- Tohono O’odham Nation

- Tohono O’odham Nation Department of Natural Resources
- Tohono O’odham Nation Tribal Historic Preservation Office (THPO)
- Pima County

CBP has completed consultation with USFWS under Section 7 of the Endangered Species Act (ESA) of 1973, 16 U.S.C. § 1536, and with the Tohono O’odham Nation’s THPO under Section 106 of the National Historic Preservation Act (NHPA) of 1966 (54 U.S.C § 306108). CBP also submitted an application to USIBWC for proposed roadwork and received their concurrence to proceed with the Proposed Action on August 29, 2016. CBP will consult with the EPA and USACE under Sections 401 and 404 of the Clean Water Act as necessary prior to implementing the Proposed Action.

The Draft EA and Draft Finding of No Significant Impact (FONSI) was available for public review from April 15 to May 16, 2016, at the Tohono O’odham Community College Library and the Venito Garcia Library and Archives in Sells, and the Pima County Public Library in Tucson and electronically at <http://www.cbp.gov/about/environmental-cultural-stewardship/nepa-documents/docs-review>. CBP also provided hard copies of the Draft EA to all coordinating Federal and state agencies for review and comment. Appendix A includes public comments and interagency correspondence that was sent or received during the preparation of this EA.

The Final EA and FONSI will be available at <https://www.cbp.gov/about/environmental-cultural-stewardship/current-ongoing-projects>.

This EA was prepared as follows:

1. Conduct Interagency and Intergovernmental Coordination for Environmental Planning. The first step in this National Environmental Policy Act (NEPA) process was to solicit comments about the Proposed Action from Federal, state, and local agencies and Federally recognized tribes to ensure that their concerns are included in the analysis.
2. Prepare a Preliminary Draft EA. CBP examined the environmental impacts of the three alternatives and prepared a Preliminary Draft EA in 2014, which was available for the Tohono O’odham Nation and the BIA to review for 30 days, and a revised Preliminary Draft EA in 2015, which was available for the Tohono O’odham Nation and the BIA to review for 45 days.
3. Prepare a Draft EA. CBP incorporated relevant comments and concerns received from the Tohono O’odham Nation and the BIA and prepared a Draft EA for public review.
4. Announce that the Draft EA has been Prepared. A Notice of Availability (NOA) was published in the Tohono O’odham Nation’s *The Runner*, *Ajo Copper News*, and *Arizona Daily Star* newspapers to announce the public comment period and the availability of the Draft EA and Draft FONSI (See Appendix A).
5. Provide a Public Comment Period. A public comment period allows interested parties to review the analysis presented in the Draft EA and provide feedback. The Draft EA was available to the public from April 15 to May 16, 2016, at the Tohono O’odham

Community College Library in Sells, the Venito Garcia Library and Archives in Sells, Arizona, and the Pima County Public Library in Tucson, Arizona; as well as electronically at <http://www.cbp.gov/about/environmental-cultural-stewardship/nepa-documents/docs-review>.

6. Prepare a Final EA. This Final EA was prepared following the public comment period. The Final EA incorporated relevant comments and concerns received from all interested parties during the public comment period. The Final EA will be available online at <https://www.cbp.gov/about/environmental-cultural-stewardship/current-ongoing-projects>.
7. Issue a FONSI. The final step in the NEPA process is the signature of a FONSI, if the environmental analysis supports the conclusion that impacts on the quality of the human and natural environments from implementing the Proposed Action would not be significant. If the environmental impacts could be considered significant, a Notice of Intent for the preparation of an Environmental Impact Statement (EIS) would be published. CBP and the BIA are preparing FONSIs for the Proposed Action, which has been selected as the agencies' Preferred Alternative.

1.5 FRAMEWORK FOR ANALYSIS

The scope of this EA includes the direct, indirect, and cumulative effects on the natural, social, economic, and physical environments resulting from the three alternative carried forward for analysis (referred to collectively as the "action alternatives"). This EA analyzes the deployment of technology but does not include an assessment of normal, day-to-day operations conducted in the field by CBP agents. The information provided in this EA will assist CBP in determining whether the Proposed Action has a significant impact and achieves the objectives of the purpose of and need for the Proposed Action. The process for developing this EA also allows for input and comments on the Proposed Action from the concerned public and interested government agencies, which informs agency decision making.

CBP would follow all applicable Federal, state, local, and tribal government laws and regulations when implementing the Proposed Action. This EA has been developed in accordance with the requirements of the NEPA of 1969 (42 U.S.C. §§ 4321-4347); regulations issued by the Council on Environmental Quality (CEQ) (40 C.F.R. Parts 1500-1508); DHS Directive 023-01, *Implementation of the National Environmental Policy Act* (31 October 2014); DHS Instruction 023-01-001-01, Revision 01, *Implementation of the National Environmental Policy Act (NEPA)* (6 November 2014); and other pertinent environmental statutes, regulations, and compliance requirements. This EA also provides the status of compliance with all applicable environmental statutes, such as the ESA and the NHPA.

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SECTION 2.0
PROPOSED ACTION AND ALTERNATIVES



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2.0 PROPOSED ACTION AND ALTERNATIVES

Three alternatives were identified and considered during the planning stages of the Proposed Action. Alternative 1 is the No Action Alternative. Under this alternative, CBP would not construct IFTs or improve or construct road segments within the Tohono O'odham Nation. Alternative 2 is the Proposed Action. The Proposed Action includes constructing 15 new IFTs, collocating equipment on 2 existing communication towers, constructing up to 0.24 miles of new access roads, and improving up to 70.90 miles of existing approach roads. Similar to the Proposed Action, Alternative 3 consists of constructing 15 new IFTs, collocating equipment on 2 existing communication towers, constructing approximately 0.23 miles of new access roads, and improving up to 68.26 miles of existing approach roads. The primary difference between the Proposed Action and Alternative 3 is that Alternative 3 includes constructing, operating, and maintaining alternate tower site TCA-CAG-0444 instead of preferred tower site TCA-CAG-0436.

USBP agents from Ajo and Casa Grande Stations identified proposed IFT site locations based on operational requirements. Operationally preferred site locations were then further selected based on knowledge of the terrain, environment, land ownership, and operational requirements. This review process resulted in multiple conceptual field laydowns. Mapping programs and modeling and analysis processes were also utilized to develop a laydown that achieved both optimal surveillance and communications capabilities with the minimum number of IFT sites. Over time, operational requirements change in order to mitigate emerging threats or strengthen areas of vulnerabilities. To adapt to changes in operational requirements, the site selection process was repeated in December 2009, January and February 2010, June 2011, and finally in July 2012. A list of IFT sites considered during the conceptual field laydowns is provided in Appendix B. This list was narrowed down to sixteen sites that were visited as part of the conceptual field laydown in July 2012 (Figure 2-1).

During the site visits, CBP project team personnel and representatives from the Tohono O'odham Nation's Cultural Affairs Office and Department of Natural Resources evaluated each of the locations based on accessibility, constructability, operability, and environmental considerations. In addition to meeting the purpose of and need for the Proposed Action, CBP used the following screening factors for selecting tower sites:

- Proximity to existing roads and the potential need for new access roads or improving existing roads, as well as proximity to a power source;
- Basic site conditions such as the terrain, soil type, drainage, available space and slope of the site;
- IFT viewsheds and line of sight available at varying IFT heights;
- Proximity to sensitive biological and cultural resources, waters of the United States, floodplains, wetlands, or wilderness areas; and
- Impacts on the surrounding viewshed or visual resources.

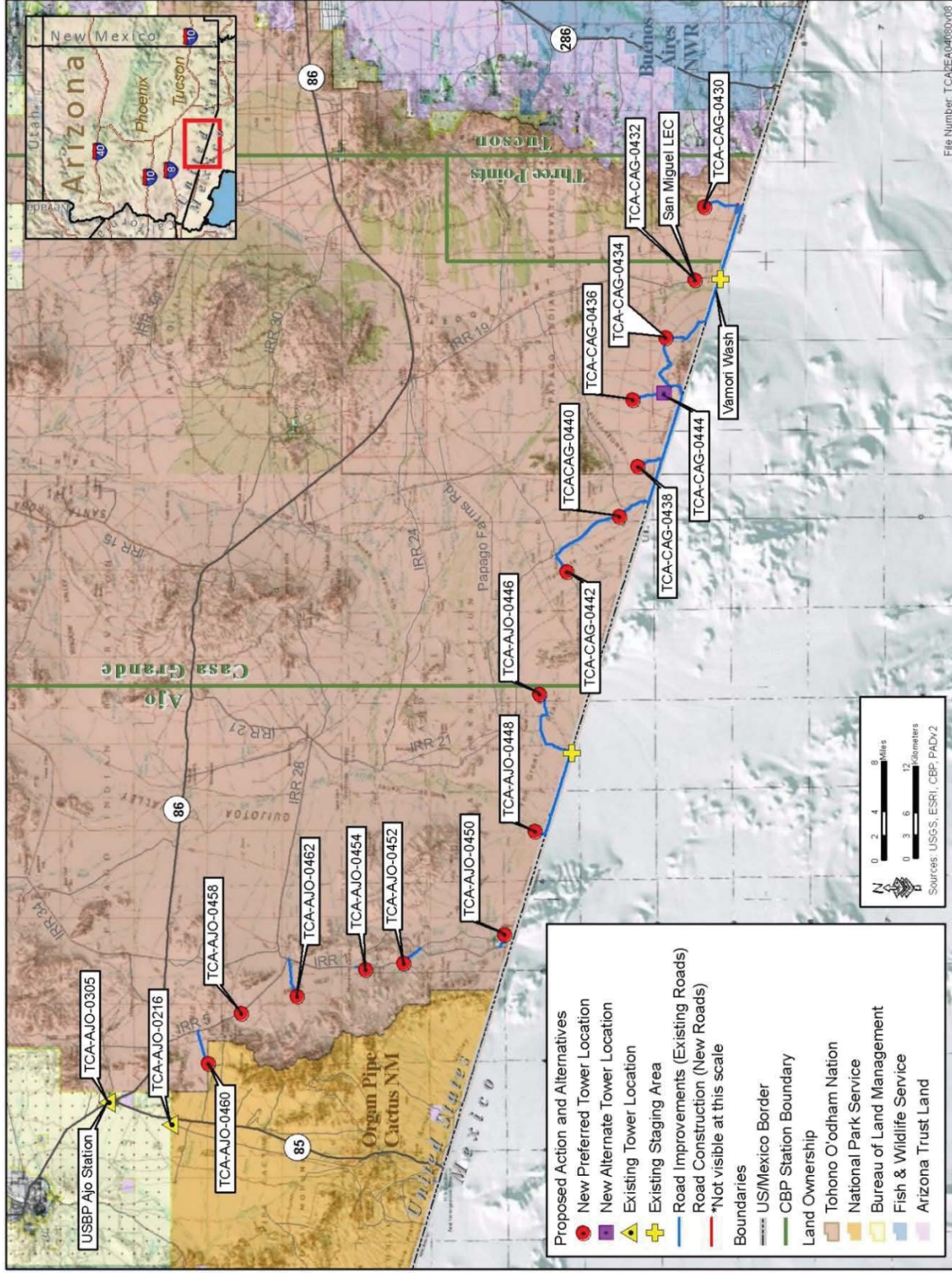


Figure 2-1. IFT Locations

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Sixteen sites were evaluated for sensor and communications efficiencies and overall compatibility with IFT network design and connectivity. Eleven sites were relocated or shifted slightly during the site visit due to terrain or access considerations or the presence of cultural and/or sensitive resources or technical requirements. Some sites were shifted multiple times in order to maximize the surveillance and communications capabilities while limiting IFTs to the lowest practical height.

The Proposed Action would not be implemented without the consent of the Tohono O'odham Nation. CBP invited the Tohono O'odham Nation Gu-Vo and Chukut Kuk Districts to visit the proposed IFT sites within those Districts and to solicit feedback on the proposed locations. In September 2012, council members representing the Gu-Vo District visited the proposed IFT site locations with CBP. The Gu-Vo council members requested the relocation of TCA-AJO-0456 due to its proximity to a culturally sensitive area. A new location was selected during the visit (TCA-AJO-0462), and TCA-AJO-0456 was removed from consideration. Council members representing the Chukut Kuk District visited the proposed IFT sites with CBP in October 2012. The Chukut Kuk council members did not object to the proposed site locations. TCA-CAG-0436 was shifted slightly and the proposed route to TCA-CAG-0442 was altered due to sensitive resources identified during the biological and cultural resources surveys.

Ultimately, 15 new IFT sites and 1 alternate IFT site were selected for further assessment (Figure 2-1). Table 2-1 summarizes the permanent and temporary (construction) impacts acreage for the three assessed alternatives.

Table 2-1. Temporary and Permanent Impacts Resulting from the Action Alternatives*

Alternatives	Permanent Impact (NTE Acres)				Temporary/Construction Impact (NTE Acres)			
	Tower Sites	New Access Roads	Existing Approach Roads	Total	Tower Sites	New Access Roads	Existing Approach Roads	Total
Alternative 1 (No Action)	0	0	0	0	0	0	0	0
Alternative 2 (Proposed Action)	8.23	0.57	214.20	223.00	4.63	1.43	0	6.06
Alternative 3	8.23	0.57	204.36	213.15	4.63	1.41	0	6.04

* Actual impacts are not to exceed (NTE) those described here. Temporary/construction impact acres for tower sites and access roads do not include permanent impact areas. For approach roads, estimates assume an existing road width of 20 feet that is previously disturbed, which is not included in this estimate.

2.1 ALTERNATIVE 1: NO ACTION ALTERNATIVE

Alternative 1 is the 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 the EA is required by NEPA and CEQ 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 and improvements to existing approach roads would not be performed. 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 items of interest (IoIs). Under the No Action Alternative, USBP's ability to detect and interdict cross-border violators would not be enhanced; thus, operational efficiency and effectiveness would not be improved within the Ajo or Casa Grande AORs.

2.2 ALTERNATIVE 2: PROPOSED ACTION

Alternative 2 is the Proposed Action. This alternative would include the following activities:

- Construction, operation, and maintenance of 15 new IFT sites;
- Collocation (sometimes spelled colocation or co-location), operation, and maintenance of equipment on two existing, CBP-operated communication towers;
- Installation of IFT workstations at command and control (C2) facilities at San Miguel Law Enforcement Center (LEC) and at USBP Ajo Station;
- Construction of 14 new access roads, up to 0.24 miles totals, and improvement of up to 70.90 miles of existing approach roads, as well as maintenance and repair of these roads;
- Use of two existing staging areas for the temporary storage of materials and equipment; and
- Obtaining rights-of-way (ROWs) from the Bureau of Indian Affairs (BIA) to perform these activities.

The IFT system would provide radar and video data feeds to the IFT workstations at the respective C2 facility from all IFT units deployed within USBP Ajo or Casa Grande Stations' AORs. Each IFT would be equipped with a suite of sensors, communications equipment, or a combination of both sensor and communications equipment. Collocation, installation, or replacement of sensor suites, communications equipment, or both sensor suites and communications equipment may occur at the existing towers. This may require structural upgrades to the existing towers, which include but are not limited to cutting, grinding, welding, and bolting of metal reinforcements.

The two staging areas are located in disturbed areas previously used as staging areas for other projects, including the U.S./Mexico border fence construction project. The eastern staging area is located along the Traditional Northern Road, adjacent to the San Miguel Gate. The western staging area is located at the junction of Papago Farms Road and the Traditional Northern Road. The Traditional Northern Road is the existing border road on the Tohono O'odham Nation, which USBP uses and maintains for routine patrolling and operations. For more information, see Figure 2-1 and Table 2-3. Appendix C includes maps for each tower site.

2.2.1 Tower Characteristics

The tower structure is a self-standing tower (SST) that would not require guy-wires. An SST is a steel, lattice-style structure, with a base of three circular concrete piers, each approximately 4 to 6 feet in diameter (Figure 2-2 and Figure 2-3). SSTs would not extend greater than 180 feet above ground level and would be silver colored and galvanized. IFTs typically use either a belowground foundation (up to 20 feet belowground surface [bgs]), aboveground foundation, or rock anchor foundation (approximately 2-inch hole, up to 50 feet bgs), depending on the site-specific geotechnical characteristics.

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

Tower Footprint

Tower site dimensions would be subject to some adjustment to address site-specific constraints, such as topographical conditions, drainage/run-off issues, and environmental or cultural resource constraints. The typical permanent tower site is anticipated to be 50 feet wide by 50 feet long, but would not exceed 160 feet wide by 160 feet long. Each permanent tower site footprint would include a permanent parking area for vehicles and may include a fire buffer beyond the perimeter fence (Figure 2-2). The fire buffer would not exceed 30 feet wide on any perimeter side and would depend on topographic, environmental, and operational conditions. Temporary construction areas for the tower sites would be typically 100 feet wide by 100 feet long, surrounding the permanent tower site, but would not exceed 200 feet wide by 200 feet long. Staging of construction equipment and materials, as necessary, would occur within the temporary construction area. Both permanent impact areas and temporary construction areas may be the shape of a square or some other polygon depending on site-specific conditions. Tower footprints would be confined to the dimensions mentioned above.

Regardless of each tower site's configuration, the total area of permanent disturbance for each tower site would not exceed 0.59 acres or 25,600 square feet (100-foot-x-100-foot plus a 30-foot fire buffer); and the temporary construction disturbance for each site would not exceed 0.33 acres or 14,400 square feet (40,000 square feet minus 25,600 square feet). The total permanent and temporary disturbance areas for all tower sites are estimated to be up to 8.23 acres and 4.63 acres respectively. TCA-AJO-216, TCA-AJO-305, and TCA-CAG-0432 are not included in this estimate because their disturbance areas would be confined to the footprint of existing CBP-operated facilities.

Tower Perimeter Fence Enclosure

Each tower site would meet the minimum-security requirements for CBP tower sites, including the installation of a perimeter fence. The perimeter fence footprint would encompass an area up to 10,000 square feet at each tower site, depending on tower site configuration. Typically, 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. It is anticipated that the fence would be galvanized and silver colored. A temporary fence may also be erected around the tower site's temporary construction area during construction of the tower sites.

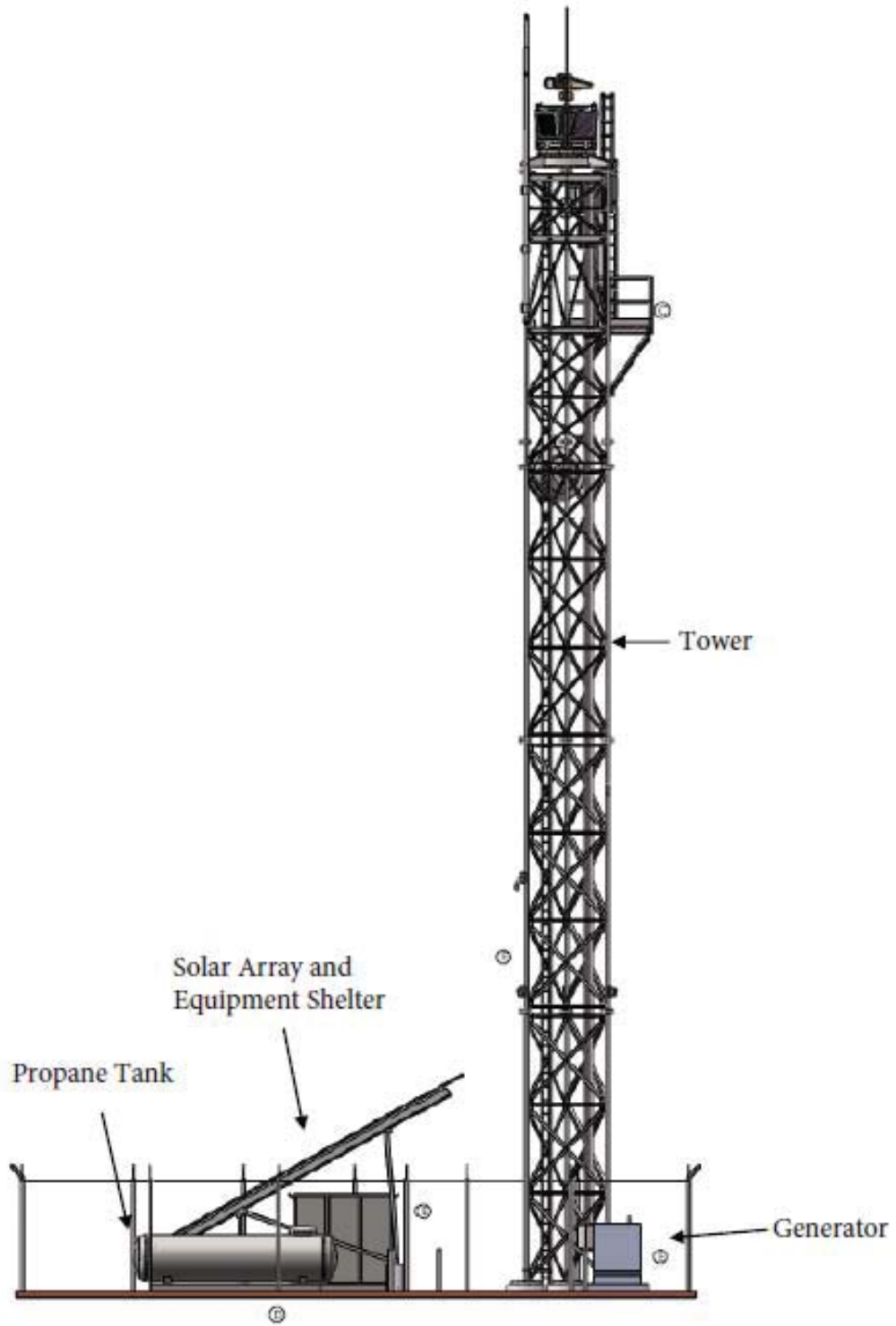
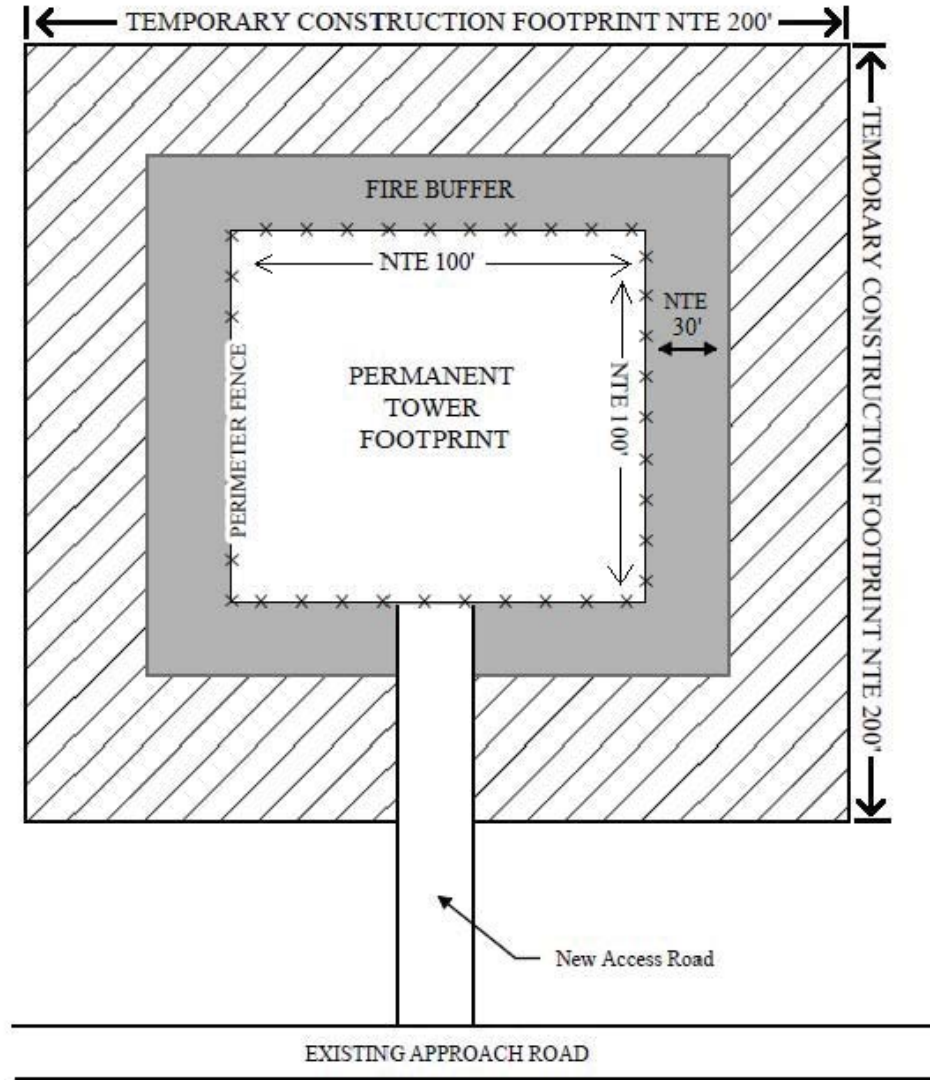


Figure 2-2. Typical IFT Site Portfolio

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NOT TO SCALE

Figure 2-3. Tower Construction Footprint Schematic

March 2017

Tower Equipment Shelter

An equipment shelter would be located within the perimeter fencing of each proposed tower site. The shelters may be 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 to cool electronics during normal tower operations.

Tower Power Sources

Each IFT would be powered by either commercial grid power (where available) with a backup propane generator or a dual power system consisting of a propane generator and alternate power source with charged batteries. Alternate power sources could include solar panels or hydrogen fuel cells. A 1,000-gallon propane fuel tank would be installed at each tower site to serve the generators. For towers not powered by commercial grid power, mission equipment loads would be serviced directly from a combination of solar panel and battery during daylight hours. During periods without available alternate power generation, equipment loads would be serviced by the generator alone. The generator would support high-rate battery charging when charging is required.

The following new towers may utilize grid power: TCA-CAG-0432, TCA-CAG-0442, TCA-AJO-0452, TCA-AJO-0454, and TCA-AJO-0458. 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 field verified to identify potential impacts on biological and cultural resources along approach and access roads prior to construction. For more information, see Table 2-3.

Fiber Optics

Fiber-optic communication services may be installed within the C2 facilities and at IFTs TCA-CAG-0432, TCA-AJO-0452, and TCA-AJO-0454. Fiber-optic cables would be buried from the main line to the tower site shelter. The fiber-optic cables would be placed within surveyed road construction buffer areas, all of which would be field verified to identify potential impacts on biological and cultural resources prior to construction.

Sensor and Communications Equipment

Combination sensor and communication towers include equipment associated with both sensor and communication towers. The exact number and type of equipment depends on the number and types of cameras used, the area to be monitored, and other design variables. Typical designs for the sensor and communication towers consist of the following components:

Communication Towers:

- Parabolic dishes
- Microwave relays; and/or
- Data-receiving communications equipment

Sensor and Communication Towers would also include:

- Multiple cameras (electro-optical/infrared sensors, video cameras)
- Radio-frequency radar

- Data-receiving communications equipment
- Spotlights
- Laser illuminators/range finders

Towers generally require line-of-sight to ensure unobstructed microwave transmission signals from tower to tower. Components would be mounted on each tower between 20 and 180 feet above ground level, depending on the local terrain. Cameras and communications equipment would be installed at heights that would ensure satisfactory line-of-sight and provide clear pathways for transmission of information to communication towers at USBP Ajo or Casa Grande Stations. Camera systems on the IFT towers may be equipped with an eye-safe laser illuminator. The eye-safe laser illuminator would be used to direct agents in the field and in the air to items of interest (IoIs) 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 the ability to locate IoIs, by illuminating them with a beam only visible with NVGs.

As part of the overall spectrum management process, the National Telecommunications and Information Administration (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 compromised. All transmit frequencies used as part of the Proposed Action would be coordinated with the NTIA.

USFWS's *Service Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers and Recommendations for Design and Construction of Cell Phone and Other Towers* would be implemented to include actions to reduce nighttime atmospheric lighting and the potential adverse effects of nighttime lighting on migratory bird and nocturnal flying species (USFWS 2000, 2015b). The proposed tower sites may be lighted for security purposes. Security lighting may consist of a "porch light" on the tower shelter 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.

2.2.2 Construction of Communications and Sensor Towers

The permanent tower site would be mechanically cleared of vegetation and graded for the construction of IFT sites. Precast concrete pads would be installed as foundations for the equipment shelter/solar array, generator, and generator fuel tank (see Figure 2-4). The shape of the permanent tower site footprint may vary depending on terrain and sensitive resources within the area. The temporary construction area, which would be around the permanent tower site footprint, may be cleared but would not be graded. The temporary construction area would be used for parking construction vehicles and staging construction equipment and materials during construction activities. Following construction activities, temporary impact areas would be revegetated with a mixture of native plant seeds, nursery plantings, and/or allowed to revegetate

naturally according to the site-specific plans. Two main staging areas, located in previously disturbed areas, would also be utilized for the storage of equipment and materials. The following is a list of heavy equipment and vehicles that may 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)

Activities are anticipated to begin on or about the fall/winter of 2017/2018. Preparation of the tower sites and roads is anticipated to be completed within 60 to 180 days after the start of construction; however, it may take up to 2 years to improve certain approach road segments. After the tower sites and roads are prepared, the tower construction would begin within 30 to 180 days. Tower construction, including technology installation and checkout procedures, would be completed within 10 to 16 months from the initiation of tower construction activities. The installation of the sensor payload would require approximately 2 days per tower site and includes up to 12 people, including delivery trucks and personnel vehicles. Following the completion of the sensor payload installation, equipment testing and system acceptance testing is conducted to check the operability of the systems. The exact details of this testing are not currently known. Based on past experience, it is anticipated that testing may require personnel to drive vehicles, ride horses, fly ultralight aircraft, and/or walk multiple routes near different IFTs for a 2- to 3-hour period either individually or as a group. CBP would identify these routes and coordinate with the Tohono O’odham Nation and other affected landowners and stakeholders as required prior to conducting these tests. All testing vehicles would travel on existing roads and testing personnel would travel by vehicles on existing roads to the walk routes. Testing would occur during an approximately 28-day period for all tower sites. 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 less than 24 months.

2.2.3 Operation and Maintenance of Communications 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 expected to be shorter on sunny days, when the solar array provides more of the system’s 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 checking 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. Scheduled maintenance would include any planned preventive maintenance, including refueling generator tanks, as well as changing oil, other required lubricants, filters, and any shelf-life item of the system. Tower maintenance would also include clearing vegetation within the permanent tower site footprint and clearing combustibles within the fire buffer. Unscheduled maintenance would include removing and replacing failed tower sensor systems or shelter components. Both scheduled and unscheduled tower maintenance would require maintenance vehicles to travel to and from the IFT sites. The Chukut Kuk and Gu-Vo Districts of the Tohono O’odham Nation would be given a 2-week advance notice of the non-emergency maintenance trips within their respective districts; however, the entire process for obtaining permission to access the tower sites may take approximately 60 days.

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

Tower	Power Source/Fiber	Maintenance Trips	Refueling Trips	Total
TCA-AJO-0446	Dual Power System	24	12	36
TCA-AJO-0448	Dual Power System	24	12	36
TCA-AJO-0450	Dual Power System	24	12	36
TCA-AJO-0452	Grid Power and Fiber Optics	13	1	14
TCA-AJO-0454	Grid Power and Fiber Optics	13	1	14
TCA-AJO-0458	Grid Power	13	1	14
TCA-AJO-0460	Dual Power System	24	12	36
TCA-AJO-0462	Dual Power System	24	12	36
TCA-CAG-0430	Dual Power System	24	12	36
TCA-CAG-0434	Dual Power System	24	12	36
TCA-CAG-0436	Dual Power System	24	12	36
TCA-CAG-0438	Dual Power System	24	12	36
TCA-CAG-0440	Dual Power System	24	12	36
TCA-CAG-0442	Grid Power	13	1	14

The number of maintenance trips and refueling trips would vary depending on tower function (e.g., sensor) and power type (e.g., commercial grid power) (Table 2-2). Generally, sensor towers require more maintenance and fuel than communication towers. Towers that are not serviced by grid power also require more maintenance and fuel. Based on past tower operation and maintenance experience, it is anticipated that one vehicle trip to and from each of the proposed tower sites would be required per maintenance visit. The estimates provided in Table 2-2 are the maximum number of annual maintenance and refueling trips required per tower. It is anticipated that tower sites connected to commercial grid or fiber optic would require maintenance 6 to 13 times a year depending on tower function. Approximately 416 vehicle trips per year would be anticipated for tower maintenance and refueling. It is anticipated that tanker trucks with dual rear tires or rear dual axles with a gross vehicle weight of up to 30,000 pounds would be used to deliver fuel to each applicable tower.

2.2.4 Roadwork

CBP would need to construct access roads and improve approach roads to move equipment, materials, and personnel to and from the tower sites during construction, maintenance, and operation of the tower sites. Approach roads are existing private or public roads used to travel to

a tower site. Access roads are short road segments from an approach road into a tower site. All approach and access roads requiring roadwork for this project would be located on the Tohono O'odham Nation.

CBP Border Patrol Facilities and Tactical Infrastructure guidelines, standards, and details for road construction would be adhered to for all proposed roadwork in coordination with the Tohono O'odham Nation. The Proposed Action would not include any roadwork on public roads. Should the contractor damage any public road during the course of this action, Arizona Department of Transportation (ADOT) guidelines, standards, and details for road construction would be followed for any required repairs.

Access Road Construction

Fourteen new access roads would be constructed prior to and during tower construction to provide access to IFT sites from approach roads. The average length for an access road would be approximately 0.02 miles (84 feet). The total length of all access roads combined would be less than 1 mile, currently estimated at up to 0.24 miles. The access roads would be constructed to provide a minimum width for safe vehicle passage. Each access road would have a 12- to 20-foot-wide driving surface depending on terrain. Construction equipment would stay within the temporary construction areas for the access roads and tower sites. CBP and CBP contractors would assess the need for road surfacing, including the need for aggregate or surface stabilizer and drainage structures, which could prevent adverse impacts on roads, drainages, and adjacent areas. Drainage structures include, but are not limited to, ditches, culverts, and low-water crossings. Construction areas that are currently being worked would be flagged in coordination with the Tohono O'odham Nation. Access roads would be constructed by mechanically removing vegetation and grading native soils. Construction of access roads would result in up to 0.57 acres of permanent impacts and up to 1.43 acres of temporary impacts total. In order to minimize potential erosion, temporary impact areas would be revegetated with a mixture of native plant seeds, nursery plantings, and/or allowed to revegetate naturally.

Approach Road Improvements

The Proposed Action requires improving up to 70.90 miles of existing approach roads prior to and during tower construction (Appendix C). All approach roads would be improved to have a driving surface of up to 12- to 16-foot wide with a 2-foot shoulder on each side of the road. Approach roads would be improved to the design standard for an all-weather road, a graded-earth road, or a hybrid of the two. Road resurfacing, including aggregate or surface stabilizers may be required to prevent adverse impacts on roads, drainages, and adjacent areas or resources.

Improvements may include reconstructing, widening, realigning, or straightening the existing road and/or installing ditches, turnouts, guardrails, or erosion protection, such as riprap and gabion headwalls. In addition, approach roadwork would include installing a low water crossing or culvert within approximately 195 ephemeral washes. Road improvements would require a permanent 30-, 50-, 70-, or 100-foot wide disturbance area depending on design and safety requirements. Assuming an existing road width of 20 feet wide, up to 178.33 acres of existing approach roads would be improved and up to 214.20 acres of previously undisturbed land outside the current width of the existing approach roads would be permanently disturbed for approach road improvements (392.53 acres total).

Road Maintenance and Repair

Road maintenance and repair would include minor grading, leveling, re-sheeting, or rebuilding of approach and access roads and installing drainage structures. Road maintenance and repair would occur within approximately 270 ephemeral washes subject to environmental and cultural resource constraints. At the request of the Tohono O’odham Nation, CBP would install flood gauges and signs warning vehicle traffic of floodwaters along existing approach roads at approximately 61 identified washes. It is anticipated that road maintenance and repair would occur up to six times per year, as necessary. In order to minimize potential erosion, any temporary impact areas would be revegetated with a mixture of native plant seeds, nursery plantings, and/or allowed to revegetate naturally.

2.2.5 Real Estate

CBP would seek long-term and temporary ROWs from the BIA after the Tohono O’odham Nation has consented to the issuance of the ROWs. CBP would acquire long-term ROWs for all new IFT sites and access roads, except for TCA-CAG-0432, which would be within an existing CBP-operated facility that has an active lease. CBP would also be acquiring temporary ROWs for all staging areas and temporary construction areas around the new tower sites and access roads. In addition, CBP would acquire long-term ROWs for all access and approach roads. This would include ROWs for the low water crossings along the Traditional Northern Road but would not include roads for which CBP already possesses a real estate interest or roads that are part of the Indian Reservation Road (IRR) System. The dimensions of both the long-term and temporary ROWs would be subject to some adjustment to address site-specific constraints. CBP has coordinated with BIA and will seek approval for long-term and/or short-term ROWs for the following:

- 0.85 acres of Tohono O’odham Nation land for the maintenance and operation of proposed IFT sites,
- 2.21 acres of Tohono O’odham Nation land for the construction of new IFT sites and access roads,
- 6.09 acres of Tohono O’odham Nation land for the installation, maintenance, and repair of low water crossing along the Traditional Northern Road, and
- 225.20 acres of Tohono O’odham Nation land for the improvement, maintenance, repair, and use of all other approach roads.

See Table 2-1 and Table 2-3 for more information.

TCA-AJO-0216 and TCA-AJO-305 are existing communication towers. TCA-AJO-216 is located on land managed by CBP. TCA-AJO-305 is located on BLM land. All proposed activities at these facilities would occur within the current footprints of these facilities and no additional real estate agreements would be required to perform the proposed activities at these facilities.

Table 2-3. Summary of the Proposed Action Tower Sites*

Tower ID	TCA-AJO-0216**	TCA-AJO-0305**	TCA-AJO-0446	TCA-AJO-0448	TCA-AJO-0450
Common Name	Existing Block 1	Ajo Station Tower	Secret Hill	San Simon Thicket	Managers
Status	Existing	Existing	New	New	New
Function	Communications	Communications	Sensor and Communications	Sensor and Communications	Sensor and Communications
Type	SST	SST	SST	SST	SST
Height	100 feet	140 feet	120 feet	120 feet	160 feet
New Tower Site Permanent Area	N/A	N/A	160 feet x 160 feet	160 feet x 160 feet	160 feet x 160 feet
New Tower Site Construction Area	N/A	N/A	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet
New Access Road Construction	No roadwork	No roadwork	<10 feet (20 feet wide)	25 feet (20 feet wide)	180 feet (20 feet wide)
Existing Approach Road Improvements	No roadwork	No roadwork	3.7 miles (50 feet wide for 3.6 miles and 70 feet wide for 0.1 mile)	10.8 miles (30 feet wide for 9.1 miles, 50 feet wide for 1.4 miles, and 100 feet wide for 0.3 miles)	1.2 miles (50 feet wide for 1.2 miles and 70 feet wide for 0.04 miles)
Power System	Existing Grid	Existing Grid	Dual Power System	Dual Power System	Dual Power System
Fuel Type and tank capacity, if required	Existing Propane 1,000 gallons	N/A	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons
Land Owner/Land Manager	BLM	CBP	Tohono O'odham Nation (Chukut Kuk District)	Tohono O'odham Nation (Gu-Vo District)	Tohono O'odham Nation (Gu-Vo District)

* All dimensions are not to exceed the dimensions stated; actual dimensions may be less but would not be greater.

** CBP assessed the construction of these towers in an EA for the Proposed Secured Border Initiative-Network (SBInet) Tower Project Ajo Station's AOR USBP Tucson Sector (CBP 2009). These towers are currently operational.

Table 2-3 (cont.)

Tower ID	TCA-AJO-0452	TCA-AJO-0454	TCA-AJO-0458	TCA-AJO-0460	TCA-AJO-0462
Common Name	7/13 South	7/13 North	Kuakatch	Gunsight	Dirt Tank
Status	New	New	New	New	New
Function	Sensor and Communications	Sensor and Communications	Sensor and Communications	Sensor and Communications	Sensor and Communications
Type	SST	SST	SST	SST	SST
Height	140 feet	140 feet	120 feet	180 feet	120 feet
New Tower Site Permanent Area	160 feet x 160 feet	160 feet x 160 feet	160 feet x 160 feet	160 feet x 160 feet	160 feet x 160 feet
New Tower Site Construction Area	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet
New Access Road Construction	270 feet (20 feet wide)	310 feet (20 feet wide)	110 feet (20 feet wide)	< 10 feet (20 feet wide)	65 feet (20 feet wide)
Existing Approach Road Improvements	1.8 miles (50 feet wide for 1.7 miles and 70 feet wide for 0.05 miles)	0.9 miles (50 feet wide for 0.8 miles and 70 feet wide for 0.08 miles)	0.03 miles (up to 70 feet wide)	2.6 miles (50 feet wide for 2.3 miles and 70 feet wide for 0.3 miles)	2.7 miles (50 feet wide for 2.6 miles, and 70 feet wide for 0.03 miles)
Power System	Grid Power/Generator	Grid Power/Generator	Grid Power/Generator	Dual Power System	Dual Power System
Fuel Type and tank capacity, if required	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons
Land Owner/Land Manager	Tohono O'odham Nation (Gu-Vo District)	Tohono O'odham Nation (Gu-Vo District)	Tohono O'odham Nation (Gu-Vo District)	Tohono O'odham Nation (Gu-Vo District)	Tohono O'odham Nation (Gu-Vo District)

Table 2-3 (cont.)

Tower ID	TCA-CAG-0430	TCA-CAG-0432*	TCA-CAG-0434	TCA-CAG-0436	TCA-CAG-0438
Common Name	Trading Post and 2 Mile Drag	San Miguel LEC	Ice Cream Truck	Dead Cow	Vamori and Itak Road
Status	New	New	New	New	New
Function	Sensor and Communications	Sensor and Communications	Sensor and Communications	Sensor and Communications	Sensor and Communications
Type	SST	SST	SST	SST	SST
Height	120 feet	120 feet	120 feet	160 feet	120 feet
New Tower Site Permanent Area	160 feet x 160 feet	N/A*	160 feet x 160 feet	160 feet x 160 feet	160 feet x 160 feet
New Tower Site Construction Area	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet
New Access Road Construction	70 feet long (20 feet wide)	No roadwork	85 feet long (20 feet wide)	35 feet (20 feet wide)	50 feet (20 feet wide)
Existing Approach Road Improvements	9.9 miles (30 feet wide for 5.2 miles, 50 feet wide for 4.4 miles, 70 feet wide for 0.1 miles, 100 feet wide for 0.3 miles, and 0.7 acres for two intersection realignments)	No roadwork	7.6 miles (30 feet wide for 3.3 miles, 50 feet wide for 4.1 miles, 100 feet wide for 0.2 miles, and 0.25 acres for installing slope stability structures)	2.6 miles (50 feet wide)	8.3 miles (30 feet wide for 3.3 miles, 50 feet wide for 3.7 miles, 70 feet wide for 0.02 mile, and 100 feet wide for 1.3 miles)
Power System	Dual Power System	Grid Power/Generator	Dual Power System	Dual Power System	Dual Power System
Fuel Type and tank capacity, if required	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons
Land Owner/Land Manager	Tohono O'odham Nation (Chukut Kuk District)	Tohono O'odham Nation (Chukut Kuk District)	Tohono O'odham Nation (Chukut Kuk District)	Tohono O'odham Nation (Chukut Kuk District)	Tohono O'odham Nation (Chukut Kuk District)

* The tower site would be located within an existing facility. CBP previously discussed the possible construction of a 100-foot IFT at the San Miguel LEC in a Categorical Exclusion Determination for the expansion of the San Miguel LEC and the Papago Farms Forward Operating Base (CBP 2013b).

Table 2-3 (cont.)

Tower ID	TCA-CAG-0440	TCA-CAG-0442
Common Name	Tecolote to Toro's Ranch Road	Serapo Road to Onion Stand
Status	New	New
Function	Sensor and Communications	Sensor and Communications
Type	SST	SST
Height	120 feet	120 feet
New Tower Site Permanent Area	160 feet x 160 feet	160 feet x 160 feet
New Tower Site Construction Area	200 feet x 200 feet	200 feet x 200 feet
New Access Road Construction	15 feet (20 feet wide)	< 10 feet (20 feet wide)
Existing Approach Road Improvements	6.2 miles (30 feet wide for 2.6 miles, 50 feet wide for 2.8 miles, and 100 feet wide for 0.07 miles)	7.4 miles (50 feet wide)
Power System	Dual Power System	Grid Power/Generator
Fuel Type and tank capacity, if required	Propane 1,000 gallons	Propane 1,000 gallons
Land Owner/Land Manager	Tohono O'odham Nation (Chukut Kuk District)	Tohono O'odham Nation (Chukut Kuk District)

2.3 ALTERNATIVE 3

Alternative 3 is similar to the Proposed Action. Alternative 3 would include the following activities:

- Construction, operation, and maintenance of 15 new IFT sites;
- Collocation, operation, and maintenance of equipment on two existing, CBP-operated communication towers;
- Installation of IFT workstations at C2 facilities at the San Miguel LEC and USBP Ajo Station;
- Construction of 14 new access roads, up to 0.23 miles totals, and improvement of up to 68.26 miles of existing approach roads, as well as maintenance and repair of these roads;
- Use of two existing staging areas for the temporary storage of materials and equipment; and
- Obtaining ROWs from the BIA to perform these activities.

The primary difference between the Proposed Action and Alternative 3 is that Alternative 3 would include alternate tower site TCA-CAG-0444 instead of preferred tower site TCA-CAG-0436. The same suite of sensor and communications equipment as described in the Proposed Action would be mounted on these IFTs. Approach road improvement would be similar to those of the Proposed Action and would include performing maintenance and repair of roads within 250 ephemeral washes and installing either a low water crossing or culvert in approximately 187 of these washes. Assuming an existing road width of 20 feet wide, up to 171.91 acres of existing approach roads would be improved and up to 204.36 acres of previously undisturbed land outside the current width of the existing approach roads would be permanently disturbed for approach road improvements. See Figure 2-1 and Table 2-4 for more information. Maps for each of the proposed IFT sites are provided in Appendix C.

Table 2-4. Summary of the Alternate 3 Tower Sites*

Tower ID	TCA-AJO-0216**	TCA-AJO-0305**	TCA-AJO-0446	TCA-AJO-0448	TCA-AJO-0450
Common Name	Existing Block 1	Ajo Station Tower	Secret Hill	San Simon Thicket	Managers
Status	Existing	Existing	New	New	New
Function	Communications	Communications	Sensor and Communications	Sensor and Communications	Sensor and Communications
Type	SST	SST	SST	SST	SST
Height	100 feet	140 feet	120 feet	120 feet	160 feet
New Tower Site Permanent Area	N/A	N/A	160 feet x 160 feet	160 feet x 160 feet	160 feet x 160 feet
New Tower Site Construction Area	N/A	N/A	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet
New Access Road Construction	No roadwork	No roadwork	<10 feet (20 feet wide)	25 feet (20 feet wide)	180 feet (20 feet wide)
Existing Approach Road Improvements	No roadwork	No roadwork	3.7 miles (50 feet wide for 3.6 miles and 70 feet wide for 0.1 mile)	10.8 miles (30 feet wide for 9.1 miles, 50 feet wide for 1.4 miles, and 100 feet for 0.3 miles)	1.2 miles (50 feet wide for 1.2 miles and 70 feet wide for 0.04 miles)
Power System	Existing Grid	Existing Grid	Dual Power System	Dual Power System	Dual Power System
Fuel Type and tank capacity, if required	Existing Propane 1,000 gallons	N/A	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons
Land Owner/Land Manager	BLM	CBP	Tohono O'odham Nation (Chukut Kuk District)	Tohono O'odham Nation (Gu-Vo District)	Tohono O'odham Nation (Gu-Vo District)

* All dimensions would not exceed the dimensions stated; actual dimensions may be less but would not be greater.

** CBP assessed the construction of these towers in an EA for the Proposed SBlnet Tower Project Ajo Station's AOR USBP Tucson Sector (CBP 2009). These towers are currently operational.

Table 2-4 (cont.)

Tower ID	TCA-AJO-0452	TCA-AJO-0454	TCA-AJO-0458	TCA-AJO-0460	TCA-AJO-0462
Common Name	7/13 South	7/13 North	Kuakatch	Gunsight	Dirt Tank
Status	New	New	New	New	New
Function	Sensor and Communications	Sensor and Communications	Sensor and Communications	Sensor and Communications	Sensor and Communications
Type	SST	SST	SST	SST	SST
Height	140 feet	140 feet	120 feet	180 feet	120 feet
New Tower Site Permanent Area	160 feet x 160 feet	160 feet x 160 feet	160 feet x 160 feet	160 feet x 160 feet	160 feet x 160 feet
New Tower Site Construction Area	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet
New Access Road Construction	270 feet (20 feet wide)	310 feet (20 feet wide)	110 feet (20 feet wide)	< 10 feet (20 feet wide)	65 feet (20 feet wide)
Existing Approach Road Improvements	1.8 miles (50 feet wide for 1.7 miles and 70 feet wide for 0.05 miles)	0.9 miles (50 feet wide for 0.8 miles and 70 feet wide for 0.08 miles)	0.03 miles (70 feet wide)	2.6 miles (50 feet wide for 2.3 miles and 70 feet wide for 0.3 miles)	2.7 miles (50 feet wide for 2.6 miles, and 70 feet wide for 0.03 miles)
Power System	Grid Power/Generator	Grid Power/Generator	Grid Power/Generator	Dual Power System	Dual Power System
Fuel Type and tank capacity, if required	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons
Land Owner/Land Manager	Tohono O'odham Nation (Gu-Vo District)	Tohono O'odham Nation (Gu-Vo District)	Tohono O'odham Nation (Gu-Vo District)	Tohono O'odham Nation (Gu-Vo District)	Tohono O'odham Nation (Gu-Vo District)

Table 2-4 (cont.)

Tower ID	TCA-CAG-0430	TCA-CAG-0432	TCA-CAG-0434	TCA-CAG-0444	TCA-CAG-0438
Common Name	Trading Post and 2 Mile Drag	San Miguel LEC	Ice Cream Truck	Wamul, North of Wraparound	Vamori and Itak Road
Status	New	Proposed	New	New	New
Function	Sensor and Communications	Sensor and Communications	Sensor and Communications	Sensor and Communications	Sensor and Communications
Type	SST	SST	SST	SST	SST
Height	120 feet	120 feet	120 feet	120 feet	120 feet
New Tower Site Permanent Area	160 feet x 160 feet	N/A*	160 feet x 160 feet	160 feet x 160 feet	160 feet x 160 feet
New Tower Site Construction Area	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet	200 feet x 200 feet
New Access Road Construction	70 feet long (20 feet wide)	No roadwork	85 feet long (20 feet wide)	35 feet (20 feet wide)	50 feet (20 feet wide)
Existing Approach Road Improvements	9.9 miles (30 feet wide for 5.2 miles, 50 feet wide for 4.4 miles, 70 feet wide for 0.1 miles, 100 feet wide for 0.3 miles, and 0.7 acres for two intersection realignments)	No roadwork	7.6 miles (30 feet wide for 3.3 miles, 50 feet wide for 4.1 miles, 100 feet wide for 0.2 miles, and 0.25 acres for installing slope stability structures)	5.4 miles (50 feet wide for 5.4 miles and 70 feet wide for 0.05 mile)	8.3 miles (30 feet wide for 3.3 miles, 50 feet wide for 3.7 miles, 70 feet wide for 0.02 mile, and 100 feet wide for 1.3 miles)
Power System	Dual Power System	Grid Power/Generator	Dual Power System	Dual Power System	Dual Power System
Fuel Type and tank capacity, if required	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons	Propane 1,000 gallons
Land Owner/Land Manager	Tohono O'odham Nation (Chukut Kuk District)	Tohono O'odham Nation (Chukut Kuk District)	Tohono O'odham Nation (Chukut Kuk District)	Tohono O'odham Nation (Chukut Kuk District)	Tohono O'odham Nation (Chukut Kuk District)

* The tower site is located at an existing facility. CBP previously discussed the possible construction of an IFT at the San Miguel LEC in a Categorical Exclusion Determination for the expansion of the San Miguel LEC and Papago Farms Forward Operating Base (CBP 2013b).

Table 2-4 (cont.)

Tower ID	TCA-CAG-0440	TCA-CAG-0442
Common Name	Tecolote to Toro's Ranch Road	Serapo Road to Onion Stand
Status	New	New
Function	Sensor and Communications	Sensor and Communications
Type	SST	SST
Height	120 feet	120 feet
New Tower Site Permanent Area	160 feet x 160 feet	160 feet x 160 feet
New Tower Site Construction Area	200 feet x 200 feet	200 feet x 200 feet
New Access Road Construction	15 feet (20 feet wide)	< 10 feet (20 feet wide)
Existing Approach Road Improvements	6.2 miles (30 feet wide for 2.6 miles, 50 feet wide for 2.8 miles, and 100 feet wide for 0.07 miles)	7.4 miles (50 feet wide)
Power System	Dual Power System	Grid Power/Generator
Fuel Type and tank capacity, if required	Propane 1,000 gallons	Propane 1,000 gallons
Land Owner/Land Manager	Tohono O'odham Nation (Chukut Kuk District)	Tohono O'odham Nation (Chukut Kuk District)

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION

Other border surveillance approaches, strategies and technologies, were considered as alternatives. These alternatives included unmanned aircraft systems, remote sensing satellites, additional unattended ground sensors, increased CBP workforce, and increased aerial reconnaissance/operations. 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 for this project (Table 2-5).

Table 2-5. Other Alternatives Considered But Eliminated

Other Alternatives Considered	Rationale for Elimination
Unmanned aircraft systems	Not operable in some weather conditions and not likely to provide persistent surveillance capability.
Remote sensing satellites	Cannot provide real-time data delivery and would be unreliable in certain weather conditions. Does not provide rapid detection and accurate characterization of potential threats.
Unattended ground sensors	The expanse of area required for additional unattended ground sensor fields to effectively cover an area similar to that of a single tower surveillance system is too vast. It would generate an unacceptably large number of used batteries that would require an extensive number of man-hours to maintain, and it would require the deployment of an agent whenever a sensor is activated which may result in undue environmental disturbances.
Increased CBP workforce	Due to the remoteness, local topography, and vegetative cover individually located agents at discrete border locations would 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.
Increased aerial reconnaissance/operations	Cannot be used on a 24-hours-per-day basis and cannot operate under all weather conditions. Has limited capabilities during nighttime and in areas such as deep ravines and dense vegetation. Does not provide a more efficient and effective means of assessing cross-border activities.

2.5 ALTERNATIVES SUMMARY

Alternative 1 (No Action Alternative), Alternative 2 (Proposed Action), and Alternative 3 have been selected for further analysis. The Proposed Action is CBP's Preferred Alternative. This alternative fully meets the purpose and need of the project, and the sites selected offer the best combination of towers based on the four criteria used to assess tower site suitability (accessibility, operability, constructability, and environmental constraints). The IFT system would provide long-range, persistent surveillance capability. It was identified in the ABSTP as the most effective technology-based solution for the USBP Ajo and Casa Grande Stations' AORs (DHS 2011). The IFT system is expected to allow USBP agents to spend less time locating cross-border violators and focus efforts on interdiction of those involved in illegal cross-border activities, thereby enhancing rapid response capability through a dynamic enforcement posture. Ultimately, the Proposed Action would provide more efficient and effective interdiction while reducing the potential for adverse impacts of illegal cross-border activities on the natural and cultural environments in the USBP Ajo and Casa Grande Stations' AORs.

The tower site configuration in Alternative 3 could be constructed, but it would provide less surveillance coverage compared to the Proposed Action. An evaluation of whether the action alternatives meet the project's purpose and need is provided in Table 2-6.

Table 2-6. Alternatives Matrix of Purpose and Need for Alternatives

Purpose and Need	Alternative 1 (No Action Alternative)	Alternative 2 (Proposed Action)	Alternative 3
Provide improved surveillance and detection capabilities that facilitate rapid response in USBP Ajo and CAG AORs	No	Yes	Yes
Provide more efficient and effective means of assessing cross-border activities	No	Yes	Yes
Provide rapid detection and accurate characterization of potential threats	No	Yes	Yes
Provide coordinated deployment of resources in the apprehension of cross-border violators	No	Yes	Yes
Increase surveillance and interdiction efficiency	No	Yes	Yes
Enhance the deterrence of illegal cross-border activity	No	Yes	Yes
Enhance USBP agent safety	No	Yes	Yes
Enhance the safety of border communities	No	Yes	Yes

SECTION 3.0
AFFECTED ENVIRONMENT AND CONSEQUENCES



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3.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

3.1 PRELIMINARY IMPACT SCOPING

This section of the EA describes the natural and human environments that exist within the region of influence (ROI) and the potential impacts of the alternatives outlined in Section 2.0. The ROI for the new IFT sites is the Chukut Kuk and Gu-Vo Districts of the Tohono O’odham Nation, including the existing San Miguel LEC. C2 facilities and existing towers that would be affected are located at the USBP Ajo Station and on BLM land.

Only those issues that have the potential to be affected by the action alternatives are described, per CEQ guidance (40 C.F.R. § 1501.7). Some topics are limited in scope due to the lack of direct effect from the Proposed Action 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	Potential Adverse Effect by Implementation of Proposed Action	Analyzed in This EA	Rationale for Elimination of Resource from Further Analysis
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	No	No	The Proposed Action would not disturb the regional geologic resources of the area, since only near-surface modifications would be implemented; and the geotechnical setting would support the Proposed Action.
Soils	Yes	Yes	Not Applicable
Prime and Unique Farmlands	No	No	No soils designated as prime or unique farmlands (7 U.S.C. § 4201 et seq.) occur within or near the project corridor.
Water Resources	Yes	Yes	Not Applicable
Floodplains	No	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 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

Table 3-1, continued

Resource	Potential Adverse Effect by Implementation of Proposed Action	Analyzed in This EA	Rationale for Elimination of Resource from Further Analysis
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	No	No	The Proposed Action would have no adverse effect on socioeconomic conditions in the region, as the project area is remotely located. A previous analysis of impacts on socioeconomic conditions on the Tohono O'odham Nation supports the no adverse effect determination (CBP 2012b). Minor beneficial impacts may occur through the use of tribal monitors.
Environmental Justice and Protection of Children	No	No	The Proposed Action would have no adverse effects on minority or low-income population or children. The project area is remote and would not otherwise impact valued resources used by such communities or individuals.

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 effects are caused by the action and occur at the same time and place (40 C.F.R. § 1508.8[a]). Indirect effects 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 (40 C.F.R. § 1508.27). The context refers to the setting in which the impact occurs and may include society as a whole, the affected region, the affected interests, and the locality. 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 are 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 adverse unless otherwise stated. Table 3-2 presents a summary of the permanent and temporary (construction) impacts for the three action alternatives.

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

Alternatives	Permanent Impact (NTE Acres)				Temporary/Construction Impact (NTE Acres)			
	Tower Sites	New Access Roads	Existing Approach Roads	Total	Tower Sites	New Access Roads	Existing Approach Roads	Total
Alternative 1 (No Action)	0	0	0	0	0	0	0	0
Alternative 2 (Proposed Action)	8.23	0.57	214.20	223.00	4.63	1.43	0	6.06
Alternative 3	8.23	0.57	204.36	213.15	4.63	1.41	0	6.04

*Actual impacts are NTE those described here. Temporary/construction impact acres for tower sites and access roads do not include permanent impact areas. For approach roads, estimates assume an existing road width of 20 feet that is previously disturbed, which is not included in this estimate.

3.2 LAND USE

Historically, the O'odham inhabited a large area of land in the southwestern United States, extending south to Sonora, Mexico, north to central Arizona, west to the Gulf of California, and east to the San Pedro River (Tohono O'odham Nation 2014b). In 1853, through the Gadsden Purchase or Treaty of La Mesilla, O'odham land was divided almost in half, between the United States and Mexico. According to the terms of the Gadsden Purchase, the United States agreed to honor all land rights of the area held by the O'odham. However, the demand for land for settlement escalated with the development of mining and the transcontinental railroad, and the demand resulted in the loss of O'odham land on both sides of the U.S./Mexico border. On the United States side of the border, the Gadsden Purchase had little effect on the O'odham initially because they were not informed that a purchase of their land had been made, and the new border between the United States and Mexico was not strictly enforced (Tohono O'odham Nation 2014b).

Table 3-3. Tower Site Land Ownership

Tower ID	Landowner	Land Use
TCA-AJO-0216*	BLM	Existing Communication Tower
TCA-AJO-0305*	CBP	Law Enforcement Facility
TCA-AJO-0446	Tohono O'odham Nation, Chukut Kuk District	Undeveloped Range
TCA-AJO-0448	Tohono O'odham Nation, Gu-Vo District	Undeveloped Range
TCA-AJO-0450	Tohono O'odham Nation, Gu-Vo District	Undeveloped Range
TCA-AJO-0452	Tohono O'odham Nation, Gu-Vo District	Undeveloped Range
TCA-AJO-0454	Tohono O'odham Nation, Gu-Vo District	Undeveloped Range
TCA-AJO-0458	Tohono O'odham Nation, Gu-Vo District	Undeveloped Range
TCA-AJO-0460	Tohono O'odham Nation, Gu-Vo District	Undeveloped Range
TCA-AJO-0462	Tohono O'odham Nation, Gu-Vo District	Undeveloped Range
TCA-CAG-0430	Tohono O'odham Nation, Chukut Kuk District	Undeveloped Range
TCA-CAG-0432	Tohono O'odham Nation, Chukut Kuk District	Law Enforcement Facility
TCA-CAG-0434	Tohono O'odham Nation, Chukut Kuk District	Undeveloped Range
TCA-CAG-0436	Tohono O'odham Nation, Chukut Kuk District	Undeveloped Range
TCA-CAG-0438	Tohono O'odham Nation, Chukut Kuk District	Undeveloped Range
TCA-CAG-0440	Tohono O'odham Nation, Chukut Kuk District	Undeveloped Range
TCA-CAG-0442	Tohono O'odham Nation, Chukut Kuk District	Undeveloped Range
TCA-CAG-0444	Tohono O'odham Nation, Chukut Kuk District	Undeveloped Range

* Collocation of equipment; no new construction

Today, O'odham who reside on reservation land live on one of the four separate pieces of land that comprise the Tohono O'odham Nation. These pieces of land are the "main" reservation, Florence Village, San Xavier, and San Lucy. The Tohono O'odham Nation is the second largest reservation in Arizona in both population and geographical size, with a land area of 2.8 million acres (Tohono O'odham Nation 2014a). The Tohono O'odham Nation is a Federally-recognized tribe and includes approximately 28,000 members occupying tribal land in Arizona.

The 15 preferred IFT sites and 1 alternate IFT site would all be located on the main reservation of the Tohono O'odham Nation within the Chukut Kuk and Gu-Vo Districts (see Figure 1-1 and Table 3-3). All 15 locations were visited and approved for use as an IFT site by the respective Districts in 2012. General land uses in the vicinity of the proposed new IFT sites include domestic (residences and ranches), grazing, farming, and ceremonial purposes. Equipment would also be collocated, maintained, and operated at two existing communication towers (TCA-AJO-0216 and TCA-AJO-0305). Land use surrounding these two existing communication towers is also open undeveloped rangeland. All proposed roadwork would occur on the main reservation of the Tohono O'odham Nation, including within the Roosevelt Reservation.*

* In 1907, President Roosevelt reserved from entry and set aside a public reservation of all public lands within 60 feet of the U.S./Mexico border. Known as the "Roosevelt Reservation," this land withdrawal was found "necessary for the public welfare ... as a protection against the smuggling of goods." 35 Stat. 2136. This reservation includes all public lands under Federal ownership in California, Arizona, and New Mexico at the time of the proclamation.

3.2.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no direct impacts on land use would occur. However, land uses within the vicinity of the proposed IFT sites are directly and indirectly affected by cross-border violator pedestrian and vehicle traffic and consequent law enforcement activities. Natural desert areas experience damage to native vegetation and soil compaction as a result of these activities. Under the No Action Alternative, USBP's detection and threat classification capabilities would not be enhanced and operational efficiency would not be improved within the area of tower coverage, so cross-border violator activities would continue to impact land use in the project area unmitigated.

3.2.2 Alternative 2: Proposed Action

The Proposed Action would have a permanent, negligible, direct impact on land use. There would be no change to the current land uses at TCA-AJO-216, TCA-AJO-305, and TCA-CAG-0432. Up to 223.00 acres of undeveloped land on the Tohono O'odham Nation would be permanently converted to a developed land use to support tower construction for the remaining towers (up to 8.23 acres for towers sites; 0.57 acres for access roads; and 214.20 acres for approach roads, assuming a 20-foot wide driving surface). In addition, up to 6.06 acres of undeveloped land would be temporarily converted to support tower construction (up to 4.63 acres for tower sites and 1.43 acres for access roads). The direct impact from the conversion 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. In addition, the Proposed Action could result in indirect and long-term beneficial impacts on land use by reducing the adverse impacts of cross-border violator activities in the project area.

3.2.3 Alternative 3

Under Alternative 3, impacts on land use would be similar to those described for the Proposed Action.

3.3 SOILS

There are 14 soil complexes associated with the proposed IFT sites (NRCS 1993; NRCS 1999). 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 D. Erosion hazards for each soil complex estimate the potential for soil loss or erosion due to water or wind and the limitations for development summarize potential issues with developing within a particular soil type (Table 3-4). These hazards and limitations are based on undisturbed soils.

3.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, there would be no modification of soils from construction activities because the proposed IFTs would not be constructed. However, soils within the vicinity of the IFT sites are directly and indirectly affected by cross-border violator pedestrian and vehicle traffic and consequent law enforcement activities. Natural desert areas experience soil disturbance and compaction because of these activities. Under the No Action Alternative, USBP's detection and threat classification capabilities would not be enhanced and operational efficiency would not be improved within the area of tower coverage, so cross-border violator

activities would continue to impact soils in the project area. Potential indirect benefits associated with the Proposed Action would not be realized under the No Action Alternative.

3.3.2 Alternative 2: Proposed Action

The Proposed Action would have a direct, minor impact on soils. The Proposed Action would permanently disturb up to 223.00 acres and temporarily disturb up to 6.06 acres of previously undisturbed soil. The Proposed Action would also disturb soil within the existing footprint of approach roads and at TCA-AJO-216, TCA-AJO-305, and TCA-CAG-0432 (up to 392.53 additional acres). All impacted soils are locally and regionally common. The Proposed Action would not result in the loss of any soils classified as unique.

Several of the tower sites include soil types that may cause difficulties during excavation of the tower foundation due to shallow hardpans over bedrock or large rocks (TCA-AJO-0446, -0450, and -0454). 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, and would be described in site-specific Stormwater Pollution Prevention Plans (SWPPPs) for construction activities. The BMPs are summarized in Section 5.0 of this document. In order to minimize potential erosion, temporary impact areas would be revegetated with a mixture of native plant seeds, nursery plantings, and/or allowed to revegetate naturally.

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 cross-border violator activity within the area of tower coverage and reduce soil disturbance and erosion.

3.3.3 Alternative 3

Alternative 3 would have similar impacts as the Proposed Action. The primary difference between the Proposed Action and Alternative 3 is that Alternative 3 would disturb approximately 10 less acres of previously undisturbed soil than the Proposed Action. All impacted soils would not be characterized as unique and are considered common in the ROI.

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
Bucklebar-Hayhook-Tubac Complex	TCA-CAG-0432 TCA-CAG-0438	0-3	Slow to moderate	Slow to medium	Slight by water and moderately high by wind	Care should be taken to prevent excessive dust and soil loss due to erosion; shrinking and swelling of the soils has potential to damage roads and foundations
Casa Grande-Kamatato Complex	TCA-AJO-0448	0-1	Slow	Slow	Slight to moderate by water and moderate hazard by wind	Care should be taken to prevent excessive soil loss and dust generation due to erosion; potential for flooding
Dateland-Denure Association	TCA-CAG-0442	1-3	Moderate to moderately rapid	Slow	Slight by water and moderately high by wind	Care should be taken to prevent excessive dust and soil loss due to erosion
Denure-Momoli Complex	TCA-AJO-0454	1-5	Moderately rapid	Slow to medium	Slight by water and very slight by wind	Shrinking and swelling of the soils has potential to damage roads and foundations
Gilman Very Fine Sandy Loam	TCA-AJO-0452	0-1	Moderate	Slow	Moderate by water and wind	Flooding hazard
Gunsight-Rillito Complex	TCA-AJO-0460	1-8	Moderate to moderately rapid	Slow to medium	Slight by water and very slight by wind	No limitations
Hyder-Rock Outcrop-Guvo Complex	TCA-AJO-0446	10-45	Moderate	Medium to very rapid	Slight to severe by water and very slight by wind	Difficulties due to steep slopes and depth to rock with cemented pan
Lajitas-Bosa-Rock Outcrop Complex	TCA-AJO-0450	15-50	Moderate to moderately rapid	Very rapid	Moderate to severe by water and very slight to slight by wind	Difficult excavation due to rock outcrops and shallow hardpans over bedrock
Mohall-Pahaka Complex	TCA-AJO-0452	1-3	Moderately slow to moderately rapid	Slow	Slight by water and moderately high by wind	Shrinking and swelling of the soils has potential to damage roads and foundations

Soils	Tower ID	Slope (percent)	Permeability	Runoff Rate	Erosion Hazard Wind/Water for Undisturbed Soils	Limitations for Development
Nahada-Stagecoach Complex	TCA-AJO-0458 TCA-AJO-0462 TCA-CAG-0440	1-15	Slow to moderately rapid	Slow to medium	Slight by water and very slight by wind	Difficult excavation due to restrictive lime-cemented hardpan; shrinking and swelling of the soils has potential to damage roads and foundations
Pajarita-Sahuarita Complex	TCA-CAG-0436	1-3	Moderately slow to moderately rapid	Slow	Slight by water and moderately high by wind	Care should be taken to prevent excessive dust and soil loss due to erosion
Pinamt-Momoli Complex	TCA-AJO-0454	1-10	Moderately slow to moderately rapid	Slow to medium	Slight by water and very slight by wind	Difficult excavation due to large rocks
Soledad-Topawa Complex	TCA-CAG-0430	1-5	Moderately slow to moderately rapid	Slow to medium	Slight by water and very slight by wind	Shrinking and swelling of the soils has potential to damage roads and foundations
Vado-Agustin Complex	TCA-CAG-0434 TCA-CAG-0444	1-8	Moderately rapid	Slow to medium	Slight by water and slight to very slight by wind	No limitations

Source: NRCS 1993 and NRCS 1999

3.4 VEGETATIVE HABITAT

All of the proposed IFT sites would be located in either the Arizona Upland or the Lower Colorado River subdivision of the Sonoran Desertscrub biotic community (Brown et al. 2007) (Table 3-5). The Lower Colorado River is considered larger and more arid than the Arizona Upland subdivision and is often characterized as having a somewhat reduced diversity of plant species at lower densities because of extreme arid conditions. In contrast, although still relatively arid, the Arizona Upland subdivision receives on average more annual precipitation and is capable of supporting a landscape with greater plant densities and increased species diversity (Brown and Lowe 1994). The proposed IFT sites would be distributed at elevations ranging between approximately 1,680 and 2,900 feet above mean sea level (amsl). The project area is within the Basin and Range Physiographic Province covering southern Arizona (Hendricks 1985), a region characterized by isolated mountain ranges (Photograph 3-1) separated by broad alluvial valleys (Photograph 3-2). A description of the vegetative habitat at each of the proposed IFT sites is provided in Table 3-5.

CBP contractors completed a biological resources survey of each proposed IFT site, proposed access roads, and existing approach roads, during daylight hours, on June 3 through 14, 2013, and on June 24 and 25, 2013 (CBP 2013a). CBP contractors conducted supplemental biological resource surveys in the Vamori Wash on April 29, 2014, and July 16, 2014 (Kramer 2014) and for several approach road segments and proposed low-water crossings along the Traditional Northern Road from June 18 through 23, 2015, and on October 14, 2015 (HDR 2015a).

Table 3-5. Vegetative Habitat at Each Proposed IFT Sites

Tower ID	Proposed Action (Alternative 2)	Alternative 3	Vegetative Habitat Type
TCA-AJO-0216*	X	X	None
TCA-AJO-0305*	X	X	None
TCA-AJO-0446	X	X	Lower Colorado River Valley Subdivision
TCA-AJO-0448	X	X	Lower Colorado River Valley Subdivision
TCA-AJO-0450	X	X	Arizona Upland Subdivision
TCA-AJO-0452	X	X	Lower Colorado River Valley Subdivision
TCA-AJO-0454	X	X	Arizona Upland Subdivision
TCA-AJO-0458	X	X	Lower Colorado River Valley Subdivision
TCA-AJO-0460	X	X	Arizona Upland Subdivision
TCA-AJO-0462	X	X	Lower Colorado River Valley Subdivision
TCA-CAG-0430	X	X	Arizona Upland Subdivision
TCA-CAG-0432	X	X	Arizona Upland Subdivision
TCA-CAG-0434	X	X	Arizona Upland Subdivision
TCA-CAG-0436	X		Arizona Upland Subdivision
TCA-CAG-0438	X	X	Arizona Upland Subdivision
TCA-CAG-0440	X	X	Arizona Upland Subdivision
TCA-CAG-0442	X	X	Arizona Upland Subdivision
TCA-CAG-0444		X	Arizona Upland Subdivision

* No new construction



Photograph 3-1. View of Isolated Mountain Ranges within the Project Area



Photograph 3-2. Example of Broad Alluvial Valley within the Project Area

Pedestrian surveys consisted of a series of parallel transects that provided 100 percent visual coverage within a 250-foot radius at each IFT site and along the widths of the approach roads and access roads designated for construction, maintenance, or repair. 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. Locations of sensitive natural resources were recorded using a Trimble Geo XT Global Positioning System unit with sub-meter accuracy.

Proposed IFT sites found at lower elevations in the western portion of the project area reflect the characteristic lower diversity and lower density spacing of woody plants typical of the Lower Colorado River Valley biotic community. This community type is completely dominated with stands of creosote bush (*Larrea tridentata*), four-wing saltbush (*Atriplex canescens*), littleleaf paloverde (*Parkinsonia microphylla*), and triangle-leaf bursage (*Ambrosia deltoidea*). At higher elevations in the western and eastern portions of the project area, the vegetation within the proposed IFT sites tended to display a somewhat greater diversity and increased density characteristic of the wetter Arizona Upland subdivision. The dominant species observed within the project area included brittlebush (*Encelia farinosa*), creosote bush, littleleaf paloverde, triangle-leaf bursage, and velvet mesquite (*Prosopis velutina*). Some of the proposed IFT sites are located in poorly demarcated transitional zones between these two Sonoran Desert subdivisions resulting in significant integration of defining characteristics. A variety of other cacti species, perennials, and grasses were also observed in relatively low densities (Table 3-6).

Table 3-6. Plant Species Observed During the Biological Surveys

Species Common Name	Species Scientific Name	Species Common Name	Species Scientific Name
Perennials		Cacti	
Apricot globemallow	<i>Sphaeralcea ambigua</i> <i>ssp. ambigua</i>	Arizona fishhook cactus	<i>Mammillaria grahamii</i> <i>var. grahamii</i>
Arizona jumping bean	<i>Pleradenophora</i> <i>bilocularis</i>	Arizona pencil cholla	<i>Cylindropuntia</i> <i>arbuscula^b</i>

Species Common Name	Species Scientific Name
Blue Palo Verde	<i>Parkinsonia florida</i>
Brittlebush	<i>Encelia farinosa</i>
Broom snakeweed	<i>Gutierrezia sarothrae</i>
Burroweed	<i>Isocoma tenuisecta</i>
Catclaw acacia	<i>Acacia greggii</i>
Cattle saltbush	<i>Atriplex polycarpa</i>
Coulter's globe mallow	<i>Sphaeralcea coulteri</i>
Creosote bush	<i>Larrea tridentata</i>
Crucifixion thorn	<i>Castela emoryi</i>
Desert hackberry	<i>Celtis pallida</i>
Desert limberbush	<i>Jatropha cuneata</i>
Desert marigold	<i>Baileya multiradiata</i>
Desert mistletoe	<i>Phoradendron californicum</i>
Desert seepweed	<i>Suaeda nigra</i>
Desert senna	<i>Senna covesii</i>
Desert tobacco	<i>Nicotiana obtusifolia</i>
Desert zinnia	<i>Zinnia acerosa</i>
Devil cholla	<i>Grusonia kunzei</i>
Devil's claw	<i>Proboscidea parviflora</i>
Emory indigo-bush	<i>Psoralea emoryi</i> var. <i>emoryi</i>
Fairyduster	<i>Calliandra eriophylla</i>
Fourwing saltbush	<i>Atriplex canescens</i>
Graythorn	<i>Ziziphus obtusifolia</i> var. <i>canescens</i>
Horseweed	<i>Conyza Canadensis</i>
Ironwood	<i>Olney tesota</i>
Jojoba	<i>Simmondsia chinensis</i>
Jumping bean	<i>Sapium biloculare</i>
Limberbush	<i>Jatropha cardiophylla</i>
Littleleaf Palo Verde	<i>Parkinsonia microphylla</i>
Mexican Palo Verde	<i>Parkinsonia aculeata</i>

Species Common Name	Species Scientific Name
Buckhorn cholla	<i>Cylindropuntia acanthocarpa</i>
Cane cholla	<i>Cylindropuntia spinosior</i>
Chain-fruit cholla	<i>Cylindropuntia fulgida</i>
Christmas cholla	<i>Cylindropuntia leptocaulis</i>
Club cholla	<i>Grusonia kunzei</i>
Counterclockwise nipple cactus	<i>Mammillaria mainiae</i>
Dahlia-rooted cereus	<i>Peniocereus striatus</i>
Emory barrel cactus	<i>Ferocactus emoryi</i>
Engelmann's hedgehog cactus	<i>Echinocereus engelmannii</i>
Golden hedgehog cactus	<i>Echinocereus nicholii</i>
Graham's nipple cactus	<i>Mammillaria grahamii</i>
Nichol's hedgehog cactus	<i>Echinocereus nicholii</i>
Night-blooming cereus	<i>Peniocereus greggii</i>
Organ pipe cactus	<i>Stenocereus thurberi</i>
Pencil cholla	<i>Cylindropuntia arbula</i>
Prickly pear cactus	<i>Opuntia spp.</i>
Saguaro	<i>Carnegiea gigantea</i>
Scarlet hedgehog cactus	<i>Echinocereus coccineus</i>
Teddy bear cholla	<i>Cylindropuntia bigelovii</i>
Thornber's fishhook cactus	<i>Mammillaria thornberi</i>
Grasses	
Alkali sacaton	<i>Sporobolus airoides</i>
Arizona cottontop	<i>Digitaria californica</i>
Arizona fluffweed	<i>Logfia arizonica</i>
Bearded cryptantha	<i>Cryptantha barbiger</i>
Bermudagrass	<i>Cynodon dactylon</i>
Black grama	<i>Bouteloua eriopoda</i>
Buffelgrass	<i>Pennisetum ciliare</i>
Bush muhly	<i>Muhlenbergia porteri</i>
Cane bluestem	<i>Bothriochloa barbinodis</i>

Species Common Name	Species Scientific Name
Mormon tea	<i>Ephedra aspera</i>
Netleaf hackberry	<i>Celtis laevigata</i> var. <i>reticulate</i>
Ocotillo	<i>Fouquieria splendens</i>
Paper-flower	<i>Psilostrophe cooperi</i>
Plantain	<i>Plantago patagonica</i>
Ratany	<i>Krameria erecta</i>
Rock hibiscus	<i>Hibiscus denudatus</i>
Rough menodora	<i>Menodora scabra</i>
Russian thistle	<i>Salsola tragus</i>
Sacred datura	<i>Datura wrightii</i>
Sand dock	<i>Rumex hymenosepalus</i>
Sand sagebrush	<i>Artemisia filifolia</i>
Saltbush	<i>Atriplex</i> sp.
Soaptree yucca	<i>Yucca elata</i>
Spreading fanpetals	<i>Sida abutilifolia</i>
Spreading fleabane	<i>Erigeron divergens</i>
Staghorn cholla	<i>Cylindropuntia versicolor</i>
Sweetbush	<i>Bebbia juncea</i>
Thurber's desert honeysuckle	<i>Anisacanthus thurberi</i>
Trailing windmills	<i>Allionia incarnate</i>
Triangleleaf bursage	<i>Ambrosia deltoidea</i>
Tumamoc globeberry	<i>Tumamoca macdouglia</i>
Velvet mesquite	<i>Prosopis velutina</i>
Weakleaf bur ragweed	<i>Ambrosia confertiflora</i>
White bursage	<i>Ambrosia dumosa</i>
Whitethorn acacia	<i>Acacia constricta</i>
Wolfberry	<i>Lycium</i> sp.
White bursage	<i>Ambrosia dumosa</i>
White-thorn acacia	<i>Acacia constricta</i>
Wolfberry	<i>Lycium berlandieri</i> var. <i>longistylum</i>
Woolly plantain	<i>Plantago ovata</i>

Species Common Name	Species Scientific Name
Desert broom	<i>Baccharis sarothroides</i>
Fluff grass	<i>Erioneuron pulchellum</i>
Gramma grass	<i>Bouteloua</i> spp.
Johnson grass	<i>Sorghum halepense</i>
Lehmann's lovegrass	<i>Eragrostis lehmanniana</i>
Low woollygrass	<i>Dasyochloa pulchella</i>
Needle grama	<i>Bouteloua aristidoides</i>
Poverty three-awn	<i>Aristida ternipes</i> var. <i>gentilis</i>
Purple three-awn	<i>Aristida purpurea</i>
Rabbitfoot grass	<i>Polypogon monspeliensis</i>
Shepard's purse	<i>Capsella bursa-pastoris</i>
Sideoats grama	<i>Bouteloua curtipendula</i>
Sixweeks fescue	<i>Vulpia macrostachys</i>
Sixweeks grama	<i>Bouteloua barbata</i>
Skeletonweed	<i>Eriogonum deflexum</i> var. <i>deflexum</i>
Streambed bristlegrass	<i>Setaria leucopila</i>
Poverty three-awn	<i>Aristida ternipes</i> var. <i>gentilis</i>
Threeawn grass	<i>Aristida</i> spp.

3.4.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no vegetative habitat would be disturbed or removed since the proposed IFTs and associated access road construction and approach road maintenance and repair would not occur on the Tohono O'odham Nation. However, long-term direct and indirect impacts on vegetation communities would continue as a result of cross-border violator 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.

3.4.2 Alternative 2: Proposed Action

The Proposed Action would have a permanent, minor, direct impact on vegetation in the project area. The Proposed Action would result in the permanent removal of up to 223.00 acres and the temporary removal of up to 6.06 acres of desertscrub and grassland habitat. CBP does not anticipate needing to remove vegetation habitat within existing roads, at the existing communication towers, or at the San Miguel LEC. The plant community associated with the IFT sites is both locally and regionally common, and the permanent loss of vegetation would not adversely affect the population viability of any plant species in the region.

The Proposed Action would avoid impacts on columnar cacti (e.g. saguaro cacti and organ pipe cacti) to the maximum extent practicable. If impacts would not be avoidable, columnar cacti 10 feet or less in height would be eligible for relocation or replacement with a nursery stock at a 3:1 ratio in an area proximate to the project area.

Temporary disturbance could result in conditions suitable for the establishment of nonnative plant species. 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. Removal of nonnative vegetation would be done in coordination with the Tohono O'odham Nation Wildlife and Vegetation Management Program (WVMP). All removed plants would be bagged and disposed of in construction-related debris bins. Per the direction of the Tohono O'odham Nation, CBP would salvage all removed mesquite with a diameter of 4 inches or more. Temporary impact areas would be revegetated with a mixture of native plant seeds, nursery plantings, and/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.

3.4.3 Alternative 3

Under Alternative 3, impacts on vegetation would be similar to those described under the Proposed Action.

3.5 WILDLIFE RESOURCES

As described in Section 3.4, the proposed IFT sites and associated approach roads are located within the Arizona Upland and the Lower Colorado River subdivision of the Sonoran Desertscrub biotic community (Brown and Lowe 1994). Several mammals, birds, and reptiles

generally associated with Sonoran Desertscrub habitats were observed at the proposed IFT sites and approach roads during the biological surveys (CBP 2013a; Kramer 2014; HDR 2015a). Frequent pauses were made during the survey to watch and listen for wildlife. Several bird nests were observed during the surveys, including one active red-tailed hawk (*Buteo jamaicensis*) nest outside the project area adjacent to tower TCA-CAG-0442 and one inactive gray hawk (*Buteo plagiatus*) nest adjacent to the Vamori Wash. Species observed during the biological survey are detailed in Table 3-7.

Table 3-7. Wildlife Species Observed During the Biological Surveys

Species Common Name	Species Scientific Name	Species Common Name	Species Scientific Name
Mammals		Birds (cont.)	
Antelope jackrabbit	<i>Lepus alleni</i>	Cactus wren	<i>Campylorhynchus brunneicapillus</i>
Black-tailed jackrabbit	<i>Lepus californicus</i>	Common nighthawk	<i>Chordeiles minor</i>
Cottontail rabbit	<i>Sylvilagus</i> sp.	Common raven	<i>Corvus corax</i>
Gray fox	<i>Urocyon cinereoargenteus</i>	Crested caracara	<i>Caracara cheriway</i>
Harris's antelope squirrel	<i>Ammospermophilus harrisi</i>	Gambel's quail	<i>Callipepla gambelii</i>
Round-tailed ground squirrel	<i>Spermophilus tereticaudus</i>	Gila woodpecker	<i>Melanerpes uropygialis</i>
Reptiles		Greater roadrunner	Gilded flicker
Common lesser earless lizard	<i>Holbrookia maculata</i>	Gray hawk	<i>Buteo plagiatus</i>
Common side-blotched lizard	<i>Uta stansburiana</i>	Greater roadrunner	<i>Geococcyx californianus</i>
Desert iguana	<i>Dipsosaurus dorsalis</i>	House finch	<i>Haemorhous mexicanus</i>
Greater earless lizard	<i>Cophosaurus texanus</i>	Killdeer	<i>Charadrius vociferous</i>
Leopard lizard	<i>Gambelia wislizenii</i>	Lesser nighthawk	<i>Chordeiles acutipennis</i>
Mojave rattlesnake	<i>Crotalus scutulatus</i>	Mourning dove	<i>Zenaida macroura</i>
Sonoran collared lizard	<i>Crotaphytus nebrius</i>	Northern cardinal	<i>Cardinalis</i>
Western diamondback rattlesnake	<i>Crotalus atrox</i>	Northern mockingbird	<i>Mimus polyglottos</i>
Western whiptail	<i>Cnemidophorus tigris</i>	Purple martin	<i>Progne subis</i>
Zebra-tailed lizard	<i>Callisaurus draconoides</i>	Pyrrhuloxia	<i>Cardinalis sinuatus</i>
Birds		Red-tailed hawk	<i>Buteo jamaicensis</i>
American kestrel	<i>Falco sparverius</i>	Turkey vulture	<i>Cathartes aura</i>
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>	Verdin	<i>Auriparus flavicepsa</i>
Bell's vireo	<i>Vireo bellii</i>	Western kingbird	<i>Tyrannus verticalis</i>
Black-tailed gnatcatcher	<i>Poliophtila melanura</i>	White-winged dove	<i>Zenaida asiatica</i>
Black-throated sparrow	<i>Amphispiza bilineata</i>	Yellow-billed cuckoo	<i>Coccyzus americanus</i>
Black vulture	<i>Coragyps atratus</i>		
Cactus ferruginous pygmy-owl	<i>Glaucidium brasilianum cactorum</i>		

3.5.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no direct impacts on wildlife or wildlife habitats would occur. However, cross-border violator activity and required 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.

3.5.2 Alternative 2: Proposed Action

The permanent loss of up to 223.00 acres of Sonoran desert scrub and grassland habitat would have a long-term, direct, minor impact on wildlife. In addition, the temporary degradation of up to 6.06 acres of habitat would have a short-term, negligible 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 up to 223.00 acres of wildlife habitat scattered over 2.8 million acres 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, which 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’s *Service Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers and Recommendations for Design and Construction of Cell Phone and Other Towers* would be implemented to reduce nighttime atmospheric lighting and the potential adverse effects of nighttime lighting on migratory bird and nocturnal flying species (USFWS 2000, 2015b).

Noise associated with IFT and access road construction, approach road maintenance and repair would result in temporary, negligible 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, negligible 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.

A small number of migratory birds may be injured or killed due to collisions with IFTs. It should be noted that the placement and construction of the IFTs would follow guidance from the USFWS for tower height and stabilization to reduce or avoid impacts on migratory birds. For example, the IFT designs do not call for guy-wires and the towers would not exceed 200 feet above ground level. These factors greatly reduce the potential for bird collisions with tower infrastructure because most tower collisions are associated with support wires and long distance migrations occur at higher altitudes. Because of the low number of birds expected to be impacted by IFTs and the IFT designs that incorporate measures designed to reduce tower and bird interactions, the impacts to migratory birds would be reduced to the maximum extent practicable. The number and extent of bird strikes in relation to the size of migratory bird populations and the extent of the migratory flyway would be minor and would not affect the sustainability of migratory bird populations in the region.

Electromagnetic (EM) radiation is a form of environmental disturbance that may affect wildlife in various ways depending on the species, type of radiation, power of the emission, duration of exposure, and proximity to the emitting source. Adverse biological effects associated with radiofrequency (RF) energy are typically related to the heating of tissue by RF energy (Kerlinger 2000 [citing Kleinhaus 1995]). For birds, EM effects could include reducing nesting success when within close proximity to the emitting source (Balmori 2009; Fernie & Reynolds 2005) and various behavioral and physiological responses to electromagnetic fields (Fernie & Bird 2000; Fernie & Bird 2001), such as disruption of normal sleep-wake cycles through interference with pineal gland and hormonal imbalance. Other non-thermal adverse effects such as disorientation of passing birds by RF waves are also of concern. Past studies on effects of communication 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 communication towers have no general disorientation effects on migratory birds. Although these waves are likely not strong enough to affect a bird's orientation (Kerlinger 2000), several recent studies have shown that EM fields may affect the magnetic compass of migrating birds (See, e.g., Engels et al. 2014 [robins (*Erithacus rubecula*)]; Kavokin et al. 2014 [garden warblers (*Sylvia borin*)]; Schwarze et al. 2016 [songbirds]). However, more research is needed to better understand the effects of RF energy on the avian brain.

In addition, Salford (2003) and Marks (1995) report various effects on mammals from EM radiation exposure, including changes in alarm and aversion behavior, deterioration of health, reproductive problems, and changes in normal sleep wake patterns. Notably, experiments and field observations in these studies were based on continual, long-duration exposure, within close proximity (a few meters) to the emitting source. As described in Section 3.6, CBP is currently conducting long-term studies of possible impacts of similar towers on lesser-long nosed bats.

Several insects, including butterflies, ants, bees, flies, and cockroaches, have a magnetic sense that is used to detect low levels of static magnetic fields (Wyskowska et al. 2016). However, there is little scientifically credible research on the impact EM fields could have on insects.

Favre (2011) found that mobile phone handsets in close vicinity to honeybee hives affect the worker piping signal. The piping signal is an alarm signal within the hive that either announces swarming or is a signal of disturbance. Favre observed these effects about 25 to 40 minutes after onset but no evidence of piping was observed from the laying queen and no swarming process was initiated after 20 hours of exposure. Wyszowska (2016) found that high levels of extremely low EM frequencies have the capacity to effect behavior and protein expression in desert locusts.

Based on the current knowledge of microwave emissions and the type of system deployed, EM emissions could have minor impacts on wildlife. However, neither nesting nor breeding activity would occur sufficiently close to the microwave emitters. In addition, the tower sites are located in areas with relatively low densities and abundance of animal populations, compared to those sites studied in the scientific literature. Moreover, wildlife transiting or migrating near the proposed tower sites would not be exposed to sufficient levels of EM radiation to exhibit effects generally seen in the scientific literature. CBP's current studies on lesser-long nosed bats may further support this determination or contribute additional information to revise this conclusion.

BMPs would be implemented to reduce disturbance and loss of wildlife habitats such as conducting biological surveys prior to construction activities scheduled during nesting seasons and covering or providing an escape ramp for all steep-walled holes or trenches left open at the end of the construction work day. The proposed IFTs could provide raptor perch and nesting sites, but BMPs would also be implemented to discourage this activity. The Tohono O'odham Nation WVMP would be notified of any bird mortality observed during construction activities.

3.5.3 Alternative 3

Alternative 3 would result in impacts on wildlife and wildlife habitat similar to those described for the Proposed Action.

3.6 THREATENED AND ENDANGERED SPECIES

Federally Listed and Candidate Species

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." Species may be considered endangered or threatened "because of any of the following factors: (1) the present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purpose; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms; and (5) other natural or human-induced factors affecting continued existence." Proposed species are those that have been proposed in the *Federal Register* (FR) to be listed under Section 4 of the ESA. USFWS has identified species that are candidates for listing because 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 (USFWS and NMFS, 1998).

There are 22 Federally listed endangered and threatened species with the potential to occur in Pima County, Arizona (USFWS 2016) (Table 3-8). Of these, the following four listed species have the potential to occur within the project area: Sonoran pronghorn (*Antilocapra americana sonoriensis*), jaguar (*Panthera onca*), lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*), and western distinct population segment (DPS) of the yellow-billed cuckoo (*Coccyzus americanus*). Seven of these species have designated critical habitat but not within the range of potential effects of the Proposed Action. A brief description of the four listed species with the potential to occur near the action area is presented in the following paragraphs.

Sonoran Pronghorn

The Sonoran pronghorn is an endangered species that inhabits broad intermountain alluvial valleys with creosote-bursage and palo-verde-mixed cacti associations. Although the proposed project is inside the historic range of this species, the pronghorn's current distribution is confined to the Pinacate and Quitovac Ranges in Mexico, and the Cabeza Prieta and Kofa Ranges in Arizona (USFWS 2015a). This species is not known to occur within the vicinity of the proposed action, and areas where the CBP conducted biological surveys are outside of the Sonoran pronghorn's known range (GSRC 2013; Kramer 2014; and HDR 2015a).

USFWS (2015b) has identified the eastern limit of the current range of Sonoran pronghorn as SR 85. TCA-AJO-216 and TCA-AJO-305 are existing communication towers located along SR 85. The closest proposed new IFT site (TCA-AJO-0460) is approximately 4 miles east of SR 85. However, infrequent occurrences of pronghorn have been reported on the Tohono O'odham Nation. There have been two verified Sonoran pronghorn observed on the Tohono O'odham Nation since approximately 1929 (D. Brown, pers. comm., 2013). In 2010, a pronghorn was observed on the Tohono O'odham Nation, approximately 45 miles northeast of tower TCA-AJO-0305. The Tohono O'odham Nation, a participating member of the Sonoran Pronghorn Recovery Team, identified the species as a possible Sonoran pronghorn, but the observation was not confirmed by USFWS or AGFD. It is believed that the pronghorn may have been a member of the Pinacate Range, southeast of the Tohono O'odham Nation. In May and June 2014, radio telemetry equipment detected one male pronghorn ranging in a heavily trafficked area approximately 30 miles east of Why, Arizona, along SR 86 near San Simon. This male was one of six collared pronghorn released within Organ Pipe Cactus National Monument (OPCNM) during the winter of 2013. Two females and one male were also observed ranging back and forth across SR 85 but did not wander far enough east to reach the Tohono O'odham Nation. The collared male that was identified on the Tohono O'odham Nation in 2014, returned west of SR 85 after a short period of time and has not returned (USFWS 2015a).

Section 10(j) of the ESA designates the Sonoran pronghorn as a non-essential experimental population when found on the Tohono O'odham Nation. A non-essential experimental population is a population that, based on the best available science, is not essential for the continued existence of the species and receives reduced regulatory protection. Because the proposed project would occur on the Tohono O'odham Nation, CBP is required to confer with the USFWS when an action is likely to jeopardize the continued existence of this species (USFWS 2011).

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

Common (Scientific Name)	Federal Status	Habitat	Effect Determination
PLANTS			
Acuña cactus (<i>Echinomastus erectocentrus</i> var. <i>acumensis</i>)	Endangered, Designated Critical Habitat*	Inhabits well-drained knolls and gravel ridges in Sonoran desertscrub at elevations of 1,198 – 3,773 feet.	No effect. No adverse modification of designated critical habitat.
Canelo Hills Ladies'-tresses (<i>Spiranthes delitescens</i>)	Endangered	Inhabits fine-grained, highly organic but well-drained moist soils near springs, seeps, wet meadows (cieneegas) and small streams. Known locations are at approximately 5,000 feet elevation.	No effect.
Huachuca water umbel (<i>Lilaeopsis schaffneriana</i> spp. <i>recurva</i>)	Endangered, Designated Critical Habitat	Inhabits saturated soils and shallow waters associated with cieneegas or marshy wetlands within Sonoran desertscrub, grassland, or oak woodland and conifer forest.	No effect. No adverse modification of designated critical habitat.
Kearney's blue star (<i>Amsonia kearneyana</i>)	Endangered	Inhabits west-facing drainages in the Baboquivari Mountains.	No effect.
Nichol Turk's head cactus (<i>Echinocactus</i> <i>horizonthalonius</i> var. <i>nicholii</i>)	Endangered	Inhabits unshaded microsites in Sonoran desertscrub on dissected alluvial fans at the foot of limestone mountains and on inclined terraces and saddles on limestone mountain sides.	No effect.
Pima pineapple cactus (<i>Coryphantha scheeri</i> var. <i>robustispina</i>)	Endangered	Inhabits Sonoran desertscrub or semi-desert grassland communities in alluvial valleys or on hillsides in rocky to sandy or silty soils.	No effect.
BIRDS			
California least tern (<i>Sterna antillarum brownii</i>)	Endangered	Inhabits open, bare, or sparsely vegetated sand, sandbars, gravel pits, or exposed flats along shorelines of inland rivers, lakes, reservoirs, or drainage systems.	No effect.
Masked bobwhite (<i>Colinus virginianus</i> <i>ridgwayi</i>)	Endangered	Inhabits desert grasslands with diversity of dense native grasses, forbs, and brush. The species is closely associated with prairie acacia (<i>Acacia angustissima</i>).	No effect.
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	Threatened, Designated Critical Habitat	Nests in canyons and dense forests with multilayered foliage structure.	No effect. No adverse modification of designated critical habitat.

Common (Scientific Name)	Federal Status	Habitat	Effect Determination
Southwestern willow flycatcher (<i>Empidonax traillii eximius</i>)	Endangered, Designated Critical Habitat	Inhabits dense riparian cottonwood/willow and tamarisk vegetation communities along rivers and streams.	No effect. No adverse modification of designated critical habitat.
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	Threatened, Proposed Critical Habitat	Inhabits large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries).	May affect, but not likely to adversely affect. No adverse modification of proposed critical habitat.
AMPHIBIANS			
Chiricahua leopard frog (<i>Lithobates chiricahuensis</i>)	Threatened, Designated Critical Habitat	Inhabits streams, rivers, backwaters, ponds, and stock tanks that are mostly free from introduced fish, crayfish, and bullfrogs.	No effect. No adverse modification of designated critical habitat.
REPTILES			
Northern Mexican gartersnake (<i>Thamnophis eques megalops</i>)	Threatened, Proposed Critical Habitat	Riparian obligate that inhabits cienegas, stock tanks, large river woodlands and streamside gallery forest.	No effect.
Sonoyta mud turtle* (<i>Kinosternon sonoriense longifemorale</i>)	Endangered	Inhabits ponds and streams. Found in Quitobaquito Springs in Organ Pipe Cactus National Monument (OPCNM) and may potentially inhabit Menagers Lake.	No effect.
MAMMALS			
Jaguar (<i>Panthera onca</i>)	Endangered, Designated Critical Habitat	Known to inhabit a variety of biotic communities, from Sonoran desertscrub to subalpine coniferous forests.	May affect, but not likely to adversely affect. No adverse modification of designated critical habitat.
Lesser long-nosed bat** (<i>Leptonycteris curasoae yerbabuena</i>)	Endangered/Proposed to Delist	Inhabits Sonoran desertscrub, semi-desert grassland, and Madrean oak woodland habitats with agave and columnar cacti present as foraging resources.	May affect, but not likely to adversely affect.

Common (Scientific Name)	Federal Status	Habitat	Effect Determination
Ocelot (<i>Leopardus pardalis</i>)	Endangered	Inhabits humid tropical and subtropical forests, savannahs, and semi-arid thornscrub.	No effect.
Sonoran pronghorn (<i>Antilocapra americana sonoriensis</i>)	Endangered/ Experimental	Inhabits broad intermountain alluvial valleys with creosote-bursage and palo verde-mixed cacti associations.	May affect, but not likely to adversely affect.
FISHES			
Desert pupfish (<i>Cyprinodon macularius</i>)	Endangered, Designated Critical Habitat	Inhabits shallow springs, small streams and marshes.	No effect. No adverse modification of designated critical habitat.
Gila chub (<i>Gila intermedia</i>)	Endangered, Designated Critical Habitat	Inhabits pools, springs, cienegas and streams.	No effect, no adverse modification.
Gila topminnow (<i>Poeciliopsis occidentalis occidentalis</i>)	Endangered	Inhabits small streams, springs, cienegas, and vegetated shallows.	No effect.
Sonora Chub (<i>Gila ditaenia</i>)	Threatened, Designated Critical Habitat	Known to occur in the Rio de la Concepcion drainage.	No effect. No adverse modification of designated critical habitat..

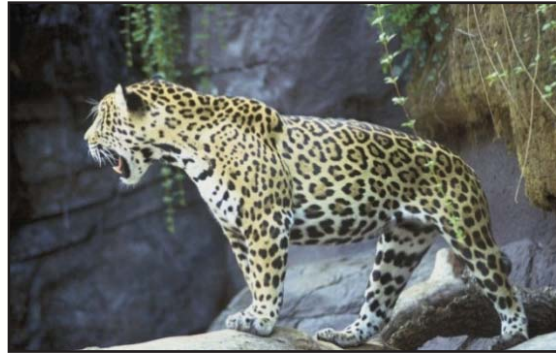
Sources: AGFD 2015; USFWS 2016

* Species was listed or critical habitat designated after publication of the Draft EA (See 81 Fed. Reg. 64829-64843)

** Species was proposed for delisting after publication of the Draft EA (See 82 Fed. Reg. 1665-1676)

Jaguar

The jaguar is the largest and most robust of the North American cats (Photograph 3-3). 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. 2005). 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). The jaguar's potential range in Arizona includes mountain ranges and rugged terrain along the southeast border. A



Photograph 3-3. Jaguar
(Source: USFWS)

closed vegetative structure is the major habitat requirement for the jaguar. The open, dry areas in the southwestern United States are considered marginal habitat in terms of water, cover, and prey densities. Jaguars usually avoid open country like grassland and Sonoran desertscrub (USFWS 2012).

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 March 2001 and July 2007. This third jaguar, subsequently referred to as "Macho B," was documented moving between the Atascosa Mountain complex and the Baboquivari Mountain complex, between 2004 and 2007 (McCain and Childs 2008). Macho B was euthanized in 2009. Most recently, an ongoing automatic wildlife camera study being conducted by the University of Arizona has revealed a single adult male jaguar, in the eastern Santa Rita Mountains, Pima County, Arizona, which is over 55 miles northeast of the Tohono O'odham Nation (Davis 2013). The adult male, nicknamed "El Jefe," has been photographed at least seven times since October 2012.

USFWS 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, have available surface water within 12.4 miles, have suitable vegetative cover and rugged topography below 6,562 feet amsl to provide sites for resting, and have minimal to no human population density. In March 2014, USFWS designated 764,207 acres of critical habitat for the jaguar, including areas along and near the international border in Pima, Santa Cruz, and Cochise Counties, Arizona, and Hidalgo County, New Mexico (79 FR 12571) (Figure 3-1). The Tohono O'odham Nation lands were excluded from the critical habitat designation.

Lesser Long-nosed Bat

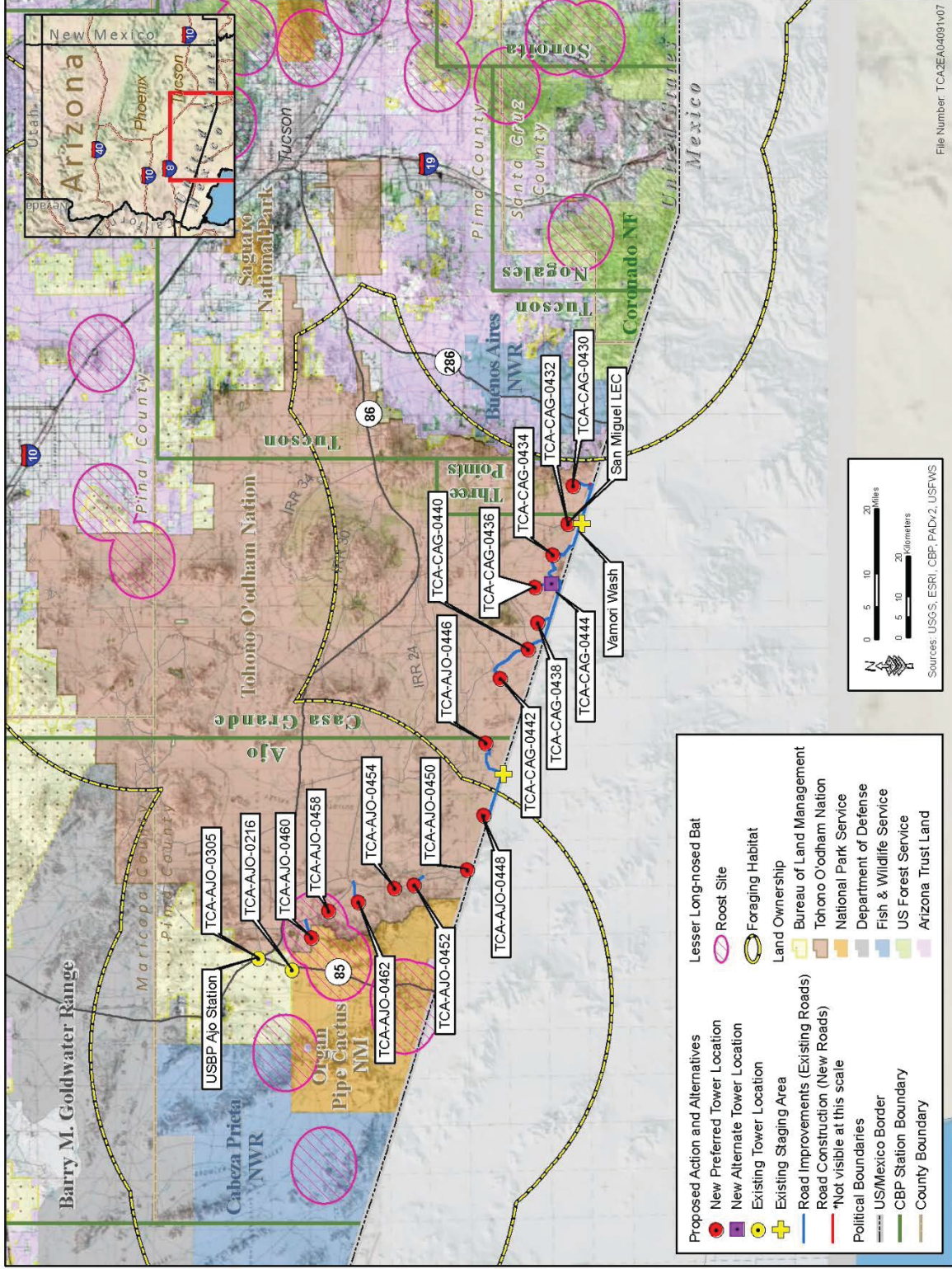
USFWS listed the lesser long-nosed bat as endangered in 1988 and published the most recent Recovery Plan in 1997 (USFWS 1997). USFWS completed a 5-year review of the species in

2007, recommending that the species be downlisted to threatened (USFWS 2007b). USFWS proposed to delist the species in January 2017 because of recovery.

The lesser long-nosed bat's range extends from southern Arizona and extreme southwestern New Mexico, through western Mexico and south to El Salvador (see Figure 3-2; 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 of paniculate agaves and nectar and fruits of columnar cacti; as such, they are considered an important dispersal and pollination vector for these plant species (AGFD 2003). Lesser long-nosed bats are known to travel 30 miles to reach suitable concentrations of forage. No agaves were observed within the project area; however, two species of columnar cacti, saguaro and organ pipe cacti, were observed at low densities throughout the project area (see Table 3-6).

Yellow-billed Cuckoo

USFWS lists the western DPS of the yellow-billed cuckoo (*Coccyzus americanus*) as threatened under the ESA, effective November 3, 2014 (79 FR 59992). The western population of this avian species is a secretive, insectivorous Neotropical migrant inhabiting North American riparian woodlands during the summer breeding season. Optimal habitat conditions include at least 200 acres of dense canopy riparian forest near a perennial river or stream, dominated by willow and cottonwood trees that provide prime feeding and nesting opportunities. Habitats dominated by mesquite and nonnative tamarisk are also known to support the yellow-billed cuckoo; however, the requirement for sufficient water and humidity levels in proximity to these habitats is crucial for nesting site selection (USFWS 2014b). Laymon (1998) notes that flooding in wet years reduces the survival of larvae of preferred prey that winter underground, katydids and sphinx moth, and that during these times the species requires upland foraging habitat away from the floodplain that contains adequate foraging opportunities. In the extreme southern portion of their range in the States of Sonora (southern quarter) and Sinaloa, Mexico, yellow-billed cuckoos also nest in upland thorn scrub and dry deciduous habitats away from the riparian zone (Russell and Monson 1988), though their densities are lower in these habitats than they are in adjacent riparian areas. During the regional period of northern migration, which begins in May in Arizona, the yellow-billed cuckoo is known to roam widely assessing the availability of food resources before selecting a nest site, and more than one nest site may be utilized during a single breeding season (15 May through 30 September). During these movements, the species may frequent strips of woodland habitat that may not otherwise provide sufficient conditions for nesting. The yellow-billed cuckoo's home range averages approximately 100 acres but has been documented at up to 500 acres. USFWS has proposed designating critical habitat for this species (79 FR 48548) (USFWS 2014a). At this time, no critical habitat is proposed within or near the project area (Figure 3-3).



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Figure 3-2. Lesser Long-nosed Bat Roost Sites in the Vicinity of the Action Area

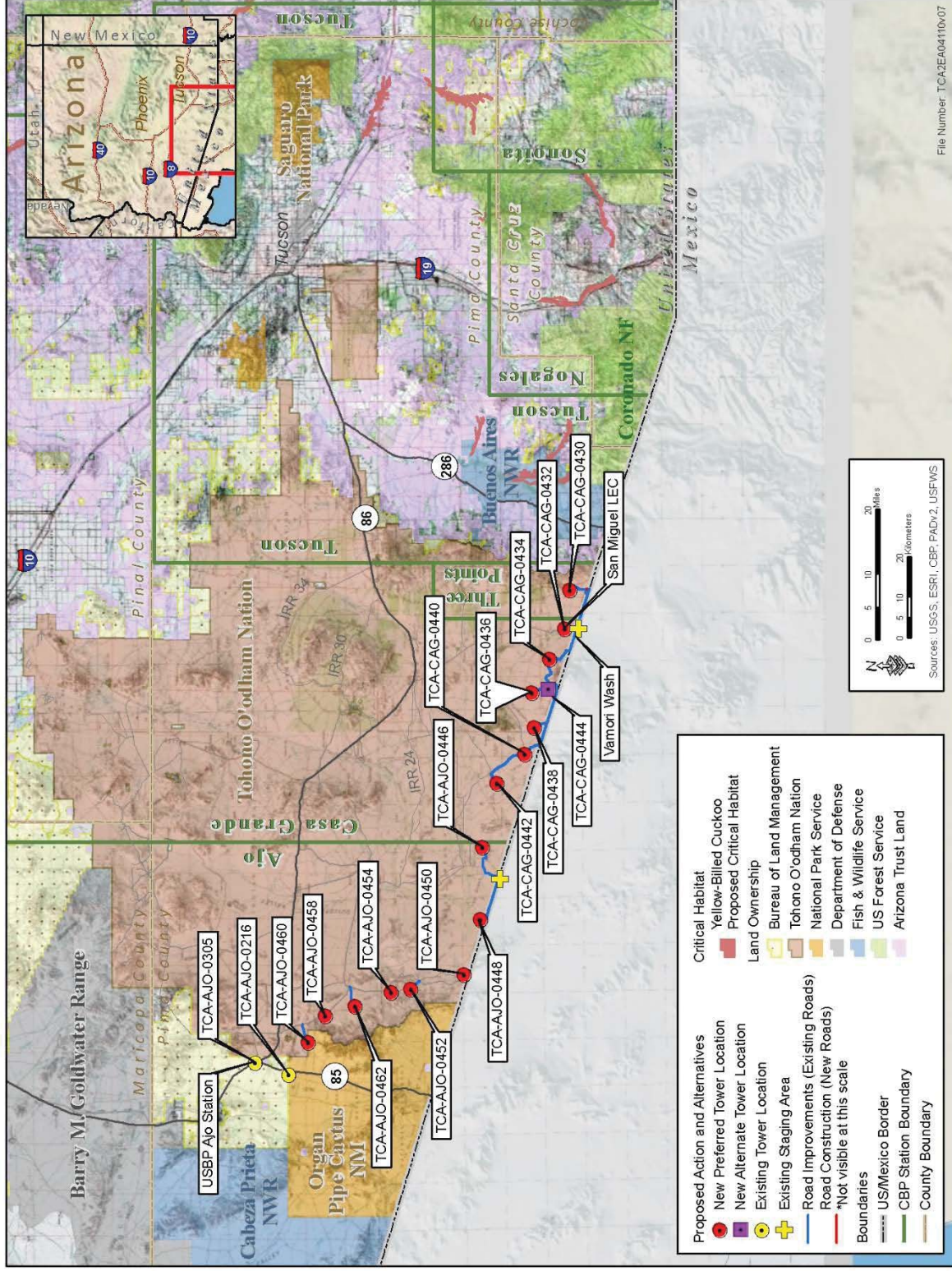


Figure 3-3. Proposed Critical Habitat for the Western Yellow-billed Cuckoo in the Vicinity of the Action Area

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State-Listed Species

The Arizona Natural Heritage Program (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 that have known or perceived threats or population declines (AGFD 2015). The ANHP list for Pima County is provided in Appendix F. These species are not necessarily the same as those protected under the ESA. Several state-listed special status species for Pima County were observed during the July 2012 site visits and the June 2013, April 2014, July 2014, June 2015, and October 2015 biological surveys (Table 3-9). The project area could be considered suitable habitat for various state-sensitive bird, mammal, and plant species.

Table 3-9. State-Listed Special Status Species Observed

Common Name	Scientific Name
Antelope Jackrabbit	<i>Lepus alleni</i>
Cactus Ferruginous Pygmy-owl	<i>Glaucidium brasilianum cactorum</i>
Counterclockwise Nipple Cactus	<i>Mammillaria mainiae</i>
Crested Caracara	<i>Caracara cheriway</i>
Dahlia-rooted Cereus	<i>Peniocereus striatus</i>
Emory's Barrel Cactus	<i>Ferocactus emoryi</i>
Night-blooming Cereus	<i>Peniocereus greggii</i>
Organ Pipe Cactus	<i>Stenocereus thurberi</i>
Sonoran Collared Lizard	<i>Crotaphytus nebrius</i>
Thornber's Fishhook Cactus	<i>Mammillaria thornberi</i>
Tumamoc Globeberry	<i>Tumamoca macdougalii</i>

Sources: AGFD 2015

Tohono O'odham Nation Sensitive Species

The Tohono O'odham Nation maintains a list of species that are considered endangered and culturally sensitive. Several of these species were observed during the site visits and biological surveys. A complete listing of the Tohono O'odham Nation Endangered and Culturally Sensitive Species is not included in this EA at the request of the Tohono O'odham Nation. The list of sensitive species may be obtained by contacting the Tohono O'odham Nation WVMP.

3.6.1 Alternative 1: 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 indirect and long-term impacts of illegal border activities throughout the project area and surrounding areas could continue to disturb threatened or endangered species and their habitats (USFWS 2015a). Cross-border violator activities create trails, damage vegetation, and promote the dispersal and establishment of invasive species. These actions have an indirect adverse impact on threatened and endangered species by causing harm to individuals and degrading habitats occupied by these species.

3.6.2 Alternative 2: Proposed Action

Based on the information outlined below, CBP has determined that the Proposed Action may affect, but is not likely to adversely affect, the Sonoran pronghorn, jaguar, lesser long-nosed bat, and yellow-billed cuckoo and is not anticipated to adversely modify proposed or designated

critical habitat. CBP has completed consultation with USFWS under ESA Section 7, who concurred that the project may affect, but is not likely to adversely affect, these species. Biological surveyors observed several state-listed and culturally-sensitive species within the project area. These species would be avoided during tower construction or transplanted prior to construction if the species is eligible for relocation. CBP has consulted with the Tohono O'odham Nation WVMP regarding impacts to these species and other sensitive species. Among other things, at the request of the Tohono O'odham Nation WVMP, CBP included BMPs for the Sonoran pronghorn and the unlisted Sonoran desert tortoise (*Gopherus morafkai*) in Section 5.0 of this EA should these species be encountered within or near the project area.

Sonoran Pronghorn

Sonoran pronghorn are highly sensitive to human activity and typically respond by avoidance. The intensity of impacts related to avoidance behavior would depend on many biotic and climatic factors. If an individual is startled during a period of drought and is already under physical stress, the disturbance would further increase the physical stress. A lack of alternative sources of cover and forage could compound these impacts.

Based on telemetry data and biological surveys of proposed tower sites and roads, Sonoran pronghorn are not likely to occur in the vicinity of proposed tower sites or approach roads. New individuals from captive breeding pens have recently been known to use the area east of SR 85, particularly on the Organ Pipe Cactus National Monument. With only two confirmed sightings on the Tohono O'odham Nation during the last 84 years, coupled with USFWS's identification of the range of the known population, suggests that Sonoran pronghorn have been extirpated from the Tohono O'odham Nation. Further, USFWS does not anticipate the establishment of a non-essential experimental population of Sonoran pronghorn in the vicinity of the Proposed Action before 2016. The occupancy of Tohono O'odham Nation lands by Sonoran pronghorn is sporadic and uncommon, and there is limited potential for this project to directly affect the Sonoran pronghorn. Any individuals found on the Tohono O'odham Nation would qualify as part of a non-essential experimental population under ESA Section 10(j). Increased interdictions within the immediate vicinity of the tower sites could potentially affect pronghorn that may become established in the 10(j) area. However, this population would not create any impediments to border security efforts; and, ultimately, the reduction in illegal activity in the immediate vicinity of the proposed tower sites could have a long-term, indirect benefit to Sonoran pronghorn. Therefore, impacts to the Sonoran pronghorn would be discountable (i.e., extremely unlikely to occur).

Jaguar

None of the proposed IFTs are located within designated critical habitat for the jaguar. The closest IFT site, TCA-CAG-0430, is located approximately 2 miles west of the boundary for Subunit 1b: Southern Baboquivari Subunit. Subunit 1b includes approximately 21,000 acres and was not considered occupied at the time of listing (79 FR 12572). As recently as 2007, a single male jaguar (Macho B) was confirmed in the area now identified as designated critical habitat Subunit 1a (Baboquivari-Coyote Subunit); however, Macho B was euthanized in 2009. The southern boundary of Subunit 1a is approximately 10 miles east from the nearest tower location (TCA-CAG-0430). The most recent confirmed jaguar sightings have occurred approximately 55 miles northeast of the Tohono O'odham Nation in the eastern Santa Rita Mountains, Pima

County, Arizona (Davis 2013). In addition, most of the recent confirmed jaguar observations in Arizona have been from Madrean oak woodland and semidesert grassland habitats (77 FR 50214). Proposed IFT site TCA-CAG-0430 occurs in Arizona upland Sonoran desertscrub. Although jaguars have been known to move through Sonoran desertscrub habitats, there is no evidence of jaguars occupying this habitat type. Additionally, implementation of BMPs would minimize removal of native vegetation and disturbance of soils.

Construction of tower sites and access roads and improvements to approach roads would result in a temporary increase of noise and human-related activity. Due to the limited duration and limited area over which these effects would occur relative to the assumed range of the jaguar, the potential for adverse effects to occur would be discountable. Construction-related noise effects would not extend more than 1,000 feet from construction activities. Due to the vast amount of equally suitable habitat and distance between tower sites, any noise-related effects are not likely to result in changes in behavior such that the health of individual jaguars would be affected and are thus considered discountable. Operation-related noise, any required maintenance, and post-construction monitoring would be limited in extent and duration and would be less in magnitude than construction-related noise effects, and it is highly unlikely that a jaguar would be present during these activities. Implementation of BMPs would further minimize the effects of noise, light, and human presence during construction and operation.

Given the distance of the most recent sightings, the marginal jaguar habitat in the Action Area, the relatively small area of impact, and the implementation of BMPs, impacts to the jaguar would be discountable (i.e., extremely unlikely to occur) and there would be no effect on jaguar critical habitat.

Lesser Long-nosed Bat

No roosts were observed within the project footprint. Two proposed tower sites, TCA-AJO-0458 and TCA-AJO-0460, and their associated access and approach roads are located within 5 miles of a known lesser long-nosed bat roost, and seven of the proposed IFT sites (TCA-AJO-0448, -0450, -0452, -0454, -0458, -0460, and -0462) and associated roads would be located within the 30-mile range of foraging lesser long-nosed bats (Figure 3-2). Since no agave were observed within the project footprint, saguaro and organ pipe cacti likely serve as the primary food source for foraging lesser long-nosed bats within the area.

Saguaro and organ pipe cacti were observed at varying densities within and near the project footprint (CBP 2013a). During the biological surveys, the locations of all saguaros and organ pipe cacti within the project footprint were documented to sub-meter accuracy using handheld Global Positioning System (GPS) devices. The data collected was utilized during the design phases for the tower sites and approach roads to avoid removal of or impacts on columnar cacti from the proposed project area. The construction footprint boundaries and all saguaro and organ pipe cacti within them would be flagged prior to the initiation of construction activities and avoided where practicable.

During the biological surveys, the heights of the columnar cacti were recorded. As per guidance from the Tohono O'odham Nation, columnar cacti that are 10 feet tall or shorter would be eligible for relocation outside the project footprint. Avoidance, relocation, or 3:1 ratio

replacement for columnar cacti would minimize potential impacts on lesser long-nosed bat foraging opportunities. Currently, CBP predicts only having to relocate and replace less than five columnar cacti throughout the entire project area.

From 2010 through 2014, CBP conducted bat carcass surveys at 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 2012, 2014). The existing towers were monitored during lesser long-nosed bat's peak activity periods. No bat carcasses have been observed during the 5 years completed for this ongoing study. The data collected to date show no potential for lesser long-nosed bats to be impacted by the proposed IFT sites. Bats would be able to avoid the physical structures at the IFT site. Therefore, the physical presence of 14 towers (seven within the lesser long-nosed bat Action Area) is not expected to have an adverse effect on lesser long-nosed bat and any potential effects would be discountable.

Nicholls and Racey (2007) suggest that the electromagnetic field (EMF) produced by radio equipment could affect lesser long-nosed bat by causing increased surface and deep body temperatures if exposed for prolonged periods or by causing bats to avoid foraging in the immediate area. However, current monitoring conducted by CBP at existing sensor towers equipped with radar has not shown that the lesser long-nosed bats avoid the tower sites or adjacent areas. Given the construction and design measures that would be implemented during construction of the towers and the data obtained from 4 years of monitoring operational towers, CBP has determined that the Proposed Action may affect, but is not likely to adversely affect, the lesser long-nosed bat. Implementation of BMPs would minimize any potential impacts on forage plants and would reduce the potential for catastrophic wildfires due to the spread of invasive plant species. USFWS has observed noticeably adverse impacts from the use and occupancy of roost sites by individuals involved in illegal border crossings. A beneficial impact may occur from the reduction in roost disturbance due to a law enforcement presence and the detection capabilities of illegal border crossings (USFWS 2007b). Therefore, impacts to the lesser long-nosed bat would be discountable (i.e., extremely unlikely to occur).

Yellow-billed Cuckoo

CBP contracted biological surveyors observed a yellow-billed cuckoo in the Vamori Wash in June 2014 (Kramer 2014). In coordination with the Tohono O'odham Nation, CBP conducted protocol surveys for the species using established protocols (Halterman et al. 2015) for the 2015 breeding season. Surveyors observed two yellow-billed cuckoo's near the project area, which were detected without the use of playback calls to solicit a counter call (HDR 2015b). It was not possible for the surveyors to conclusively determine breeding status or sex, due to the similarity in the vocalizations between male and female cuckoos. The survey results suggest, however, that those areas within the Vamori Wash with marginal levels of vegetation surrounding the wash's floodplain may support intermittent foraging and breeding activities. The results of the surveys have been shared with USFWS through the ESA Section 7 consultation process. No other washes qualify as suitable habitat within the vicinity of the project area. The species is known, however, to stop over and forage at riparian habitat of less than 10 acres that is otherwise unsuitable for nesting.

At 0.5 miles from Vamori Wash, TCA-CAG-0432 is the nearest IFT site to Vamori Wash. Construction of tower sites and access roads, and improvements to approach roads would result in a temporary increase of noise and human-related activity, with noise effects not extending more than 1,000 feet from construction activities. Maintenance and construction activities are unlikely to occur within the species' regional migration and breeding season (May to September) (USFWS 2014a) as this coincides with Arizona's monsoon season. Activities within Vamori Wash would be limited to maintenance and repair of the current Traditional Northern Road. BMPs would be implemented to further minimize impacts to the species. None of the 37 proposed critical habitat units for the yellow-billed cuckoo in Arizona (79 FR 48548) are in proximity to the project (see Figure 3-3). Due to the range and status of the species, and the implementation of BMPs identified in Section 5.0, CBP considers adverse effects on the yellow-billed cuckoo to be discountable. Therefore, CBP has determined that impacts to the yellow-billed cuckoo would be discountable and insignificant.

3.6.3 Alternative 3

Under Alternative 3, only tower 454 would be constructed within 30 miles of lesser long-nosed bat roosts in addition to the towers included in Alternative 2. Tower 430 (identified as being located in potential, but unoccupied jaguar habitat) and Towers 448, 450, 452, 458, 460, and 462 (identified as within 30 miles of lesser long-nosed bat roosts) are common to both Alternative 2 and Alternative 3. Therefore, impacts on protected species and critical habitats would be similar to those discussed for the Proposed Action.

3.7 GROUNDWATER

The major aquifer in the San Simon Wash Basin in the vicinity of the IFT sites consists of consolidated crystalline and sedimentary rocks and unconsolidated sediments, and flow direction is generally from the east and north to the south. Groundwater storage for the San Simon Wash Basin ranges from 6.7 million to 45 million acre-feet to a depth of 1,200 feet with a natural recharge estimated at over 11,000 acre-feet (approximately 4 billion gallons) per year (ADWR 2014). The water supply for the Tohono O'odham Nation comes from 73 groundwater wells within and around the Tohono O'odham communities. Water use is primarily related to municipal and domestic uses in the tribal communities and this usage is not causing an overdraft of the groundwater supplies within the basin (ADWR 2014).

3.7.1 Alternative 1: No Action Alternative

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

3.7.2 Alternative 2: Proposed Action

The Proposed Action would have a temporary, direct, 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, wetting construction sites for dust suppression, and concrete mixing. Water for construction activities would be obtained from an existing fire hydrant located in proximity to the border. CBP would contract with Tohono O'odham Utility Authority for the installation of a water meter

on the fire hydrant. The water used during construction activities to control dust would equal approximately 400 acre-feet (approximately 130 million gallons) and would not affect the water supply for the Tohono O’odham Nation.

3.7.3 Alternative 3

Under Alternative 3, impacts on water resources would be similar to those described under the Proposed Action.

3.8 SURFACE WATERS AND WATERS OF THE UNITED STATES

The project area is located within the San Simon Wash Basin. This basin occupies approximately 1.5 million acres (2,284 square miles) and is characterized by plains and valleys bordered by mountain ranges. It is located in the central portion of Pima County and extends from the U.S./Mexico border northward. It is bounded to the west by the Ajo Mountains and to the east by the Baboquivari Mountains (ADWR 2014).

The San Simon Wash Basin contains one large reservoir, Menagers Lake, with a maximum storage of 15,000 acre-feet and 12 small reservoirs with a total surface area of 144 acres. Three registered stock ponds are located within this basin. No permanent surface waters or reservoirs would be located at any of the proposed IFT sites or within the existing approach roads. No surface waters in the vicinity of the IFT sites have state-approved designated uses, and none are listed on the state Clean Water Act (CWA) Section 303(d) impaired waters list (ADEQ 2010).

Waters of the United States are defined within the CWA, and jurisdiction is addressed by the USACE and EPA. Wetlands are a subset of the waters of the United States that may be subject to regulation under Section 404 of the CWA (40 C.F.R. 230.3). A wetlands site must contain hydric soils, wetland hydrology, and a dominance of hydrophytic vegetation in order to be considered a wetland. 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 3-4). No wetlands were observed within the project area; however, there were 270 washes observed crossing either the approach roads or IFT sites (Appendix E). All washes observed are classified as ephemeral streams and are considered potential waters of the United States. A list of IFT sites, including the associated approach roads, and the number of potential waters of the United States observed during biological surveys is presented in Table 3-10.

Activities that result in the dredging and/or filling of waters of the United States, including wetlands, are regulated under Sections 404 and 401 of the CWA. The USACE established the Section 404 Nationwide Permit (NWP) 14 to efficiently authorize common linear transportation project activities that do not significantly impact waters of the United States, including wetlands. For “Linear Transportation Projects” (e.g., roads, highways, and road improvements such as those presented in the Proposed Action), the discharge cannot cause the loss of greater than 0.5 acres of waters of the United States (USACE 2012). In addition, the permittee must submit a pre-construction notification to the USACE district engineer prior to commencing the activity if

(1) the loss of waters of the United States exceeds 0.1 acres or (2) there is a discharge in a special aquatic site, including wetlands (USACE 2012). Each water of the United States is assessed individually.

Table 3-10. Number of Potential Waters of the United States Associated with IFT Sites and Approach Roads

IFT Sites and Associated Approach Roads	Number of Potential Waters of the United States Observed
TCA-AJO-0446	2
TCA-AJO-0448	10
TCA-AJO-0450	3
TCA-AJO-0452	4
TCA-AJO-0454	5
TCA-AJO-0460	15
TCA-AJO-0462	5
TCA-CAG-0430	32
TCA-CAG-0432	0
TCA-CAG-0434	35
TCA-CAG-0436	18
TCA-CAG-0438	53
TCA-CAG-0440	34
TCA-CAG-0442	18
TCA-CAG-0444	36
TOTAL	270

3.8.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no additional impacts on surface waters or waters of the United States would occur as a result of constructing the proposed IFTs, constructing access roads, or maintaining or repairing approach roads.

3.8.2 Alternative 2: Proposed Action

The Proposed Action may potentially have temporary, direct, minor impacts on surface waters as a result of increases in erosion and sedimentation during periods of construction. Disturbed soils and hazardous substances (i.e., anti-freeze, fuels, oils, and lubricants) could directly affect water quality during a rain event. These effects would be minimized through the use of BMPs. A Construction Stormwater General Permit would be obtained prior to construction, and this would require approval of a site-specific SWPPP. A site-specific spill response plan would also be in place prior to the start of construction. BMPs outlined in



Photograph 3-4. Example of a Waters of the United States in the Southwest

these plans would reduce potential migration of soils, oil and grease, and construction debris into local surface waters. Once the construction project is complete, the temporary construction footprints would be revegetated with native vegetation, as outlined in the SWPPPs, which would mitigate the potential of non-point source pollution to enter local surface waters. Therefore, there would be negligible to minor impacts on surface waters or waters of the United States caused by soil erosion or sedimentation.

Biological surveys identified 270 potential waters of the United States located within the current project's footprint. Maintenance and repair of existing approach roads could occur in all 270 crossings, subject to biological and cultural resource constraints. In addition, it is currently estimated that 195 of these crossings would be improved with a low water crossing or culvert. Proposed roadwork may affect potential waters of the United States by filling in existing washes or altering the path of their overland flow. However, the impact area for any one of the ephemeral washes would be less than 0.5 acres and would be authorized under NWP 14; therefore, impacts would be negligible.

An impact of greater than 0.1 acres and less than 0.5 acres requires that a preconstruction notification be submitted to the USACE and approved before the performance of any work. Maintenance and repair of the existing Traditional Northern Road through Vamori Wash has the potential to affect 0.13 acres. This is the only potential water of the United States in the project area where roadwork would impact greater than 0.1 acres. CBP would submit a preconstruction notification to the local USACE district before road improvements occur at the Vamori Wash, as appropriate.

CBP would implement BMPs that would ensure that the Proposed Action would not result in more than a minimal degradation of water quality at or near the project sites. A list of the 270 potential waters of the United States observed within the project footprint is presented in Appendix E. The list provides the location, stream area within the project footprint, whether or not modifications to the waters of the United States are covered under the NWP 14, and if a preconstruction notification is required.

3.8.3 Alternative 3

Under Alternative 3, impacts on water resources would be similar to those described under the Proposed Action. Maintenance and repair of existing approach roads could occur within 250 ephemeral washes that were identified as potential waters of the United States. Of these, 187 wash crossings would be further improved with a low water crossing or culvert.

3.9 FLOODPLAINS

Under the Flood Disaster Protection Act of 1973 (P.L. 93-234, 87 Statute 975), Executive Order (EO) 11988, *Floodplain Management*, and EO 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, 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 and EO 13690 require 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 and EO 13690. In summary, this process includes the following eight steps:

1. Determine whether or not the action is in the regulatory floodplain.
2. Conduct early public notice
3. Identify and evaluate practicable alternatives, if any
4. Identify impacts of the action
5. Minimize the impacts
6. Reevaluate alternatives
7. Present the findings and a public explanation
8. Implement the action

This process is further outlined on FEMA's Environmental Planning and Historic Preservation Program website (FEMA 2015). As a planning tool, the NEPA process incorporates floodplain management through analysis and public coordination.

Currently, Federal Emergency Management Agency (FEMA) floodplain data and maps are not available for Tohono O'odham Nation land. Available floodplain data from surrounding areas was extrapolated to estimate potential flood zones within the Tohono O'odham Nation based on proximity to washes, topography, and elevation. There are 270 ephemeral washes crossing near the IFT sites and existing approach roads. Although no IFT site would be located within potential flood zones, 10 of the sites (TCA-AJO-0448, TCA-AJO-0458, TCA-AJO-0460, TCA-CAG-0430, TCA-CAG-0432, TCA-CAG-0434, TCA-CAG-0436, TCA-CAG-0438, TCA-CAG-0440, and TCA-CAG-0442) would be located adjacent to potential flood zones.

3.9.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no impacts on floodplains would occur as a result of constructing the proposed IFTs, constructing access roads, or maintaining and repairing approach roads.

3.9.2 Alternative 2: Proposed Action

Neither FEMA nor the Tohono O'odham Nation have delineated floodplains or flood zones within the project area. No construction of tower sites or access roads would occur within a known potential flood zone, and no wetlands are present within the project footprint. Maintenance and repair of existing approach roads would occur within 270 ephemeral washes, 195 of which would be further improved with a low water crossing or culvert. All other proposed low-water crossings would be designed to withstand a 25-year storm event. No structures would impede the conveyance of floodwaters, decrease floodplain capacity, or increase flood elevations, frequencies, or durations. Therefore, the implementation of the Proposed Action would have no effect on floodplain management. CBP would install flood gauges and signs warning vehicle traffic of floodwaters along existing approach roads at approximately 61 washes.

3.9.3 Alternative 3

Under Alternative 3, impacts on floodplains would be similar to those described under the Proposed Action.

3.10 AIR QUALITY

EPA established National Ambient Air Quality Standards (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 (SO₂), nitrogen dioxide (NO₂), ozone (O₃), 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.

A conformity analysis is the process used to determine whether a Federal action meets the requirements of the General 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 to ensure that the proposed action does not interfere with a state's ability to meet national standards for air quality. If the emissions exceed established limits, known as *de minimis* thresholds, the proponent is required to implement appropriate mitigation measures. Pima County is designated by EPA as a moderate non-attainment area for PM-10 (EPA 2015). The *de minimis* threshold for moderate non-attainment for PM-10 is 100 tons per year (40 C.F.R. § 51.853).

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 and are the primary cause of climate change. They include water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), fluorinated gases including chlorofluorocarbons and hydrochlorofluorocarbons (HFC), and halons, as well as ground-level O₃ (AZ CCAG 2006). The major GHG-producing sectors in Arizona include transportation and utilities (e.g., coal and gas power plants) which account for nearly 80 percent of the state's gross GHG emissions. Industry/manufacturing, agriculture, and landfills and wastewater management facilities account for the remaining percentage of emissions (AZ CCAG 2006).

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 25,000 U.S. tons or more of CO₂ GHG emissions on an annual basis, agencies should consider this a threshold for decision makers and the public (CEQ 2010). 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). This CEQ released its final guidance after the publication of the Draft EA in August 2016 (CEQ 2016). Among other things, this guidance removes the 25,000 tons threshold.

The GHG covered by EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, are CO₂, CH₄, N₂O, HFC, perfluorocarbons, and sulfur hexafluoride. These GHG

have varying heat-trapping abilities and atmospheric lifetimes. CO₂ equivalency is a measuring methodology used to compare the heat-trapping impact from various GHG relative to CO₂. Some gases have a greater atmospheric warming potential than other gases. Nitrogen oxides (NO_x), for instance, have an atmospheric warming potential that is 310 times greater than an equivalent amount of CO₂, and CH₄ is 21 times greater than an equivalent amount of CO₂ (CEQ 2012). EO 13693, *Planning for Federal Sustainability in the Next Decade* revoked EO 13514. Among other things, EO 13693 added nitrogen trifluoride (NF₃) to the list of GHGs. NF₃ is predominantly used in the manufacturing of liquid-crystal displays and solar cells (CEQ 2015).

3.10.1 Alternative 1: 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 routine vehicle traffic on authorized roads, would continue.

3.10.2 Alternative 2: 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 and the maintenance and repair of approach roads. The following paragraphs describe the air calculation methodologies utilized to estimate air emissions produced by the construction of the towers and approach 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 NONROAD2008a model was used, as recommended by EPA's *Procedures Document for National Emission Inventory, Criteria Air Pollutants, 1985-1999* (EPA 2001), to calculate emissions from construction equipment. 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 emission budget. Emissions from delivery trucks and construction worker commuters traveling to the job site were calculated using EPA's preferred on-road vehicle emission model MOVES2010a (EPA 2009).

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

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 the construction site
- Fugitive dust from job-site ground disturbances

Table 3-11. Total Estimated Air Emissions from Construction Activities versus the *De Minimis* Threshold Levels*

Pollutant	Total (tons/year)	<i>De minimis</i> Thresholds (tons/year) ¹
CO	24.41	100
Volatile Organic Compounds (VOC)	11.11	100
Nitrous Oxides (NOx)	51.55	100
PM-10	52.71	100
PM-2.5	8.91	100
SO ₂	6.44	100
CO ₂ and CO ₂ equivalents	20,775	25,000

Source: 40 C.F.R. § 51.853 and Gulf South Research Corporation (GSRC) model projections (Appendix G).

*Note that portions of Pima County is in non-attainment for CO (EPA 2015).

Operational Air Emissions

Operational air emissions refer to air emissions that may occur after the IFTs have been installed, such as maintenance 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 G and are summarized in Table 3-12.

Table 3-12. Total Estimated Air Emissions from Generator and Commuter Activities versus the *De Minimis* Threshold Levels*

Pollutant	Total (tons/year)	<i>De minimis</i> Thresholds (tons/year) ¹
CO	26.56	100
VOC	2.08	100
NOx	8.50	100
PM-10	0.06	100
PM-2.5	0.06	100
SO ₂	0.01	100
CO ₂ and CO ₂ equivalents	3,181	27,557

Source: 40 C.F.R. § 51.853 and GSRC model projections (Appendix G).

*Note that portions of Pima County is in non-attainment for CO (EPA 2015).

As can be seen from Table 3-11 and Table 3-12, 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 and would not be expected to affect the climate.

The following BMPs would 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):

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

3.10.3 Alternative 3

Under Alternative 3, impacts on air quality would be similar to those described for the Proposed Action.

3.11 NOISE

Noise is generally described as unwanted sound, which can be based on either 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 perceived threshold of human hearing is 0 dB, and the threshold of discomfort or pain is around 120 dB (EPA 1974). The A-weighted decibel (dBA) is a measurement of sound pressure adjusted to conform to 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 about 10 dBA lower than during the day.

Long-term noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by EPA and has been adopted by most Federal agencies (EPA 1974).

Residential Homes

When noise affects humans, it can be based either on objective effects (i.e., hearing loss, damage to structures) or subjective judgments (e.g., community annoyance). A 65 dBA DNL is the impact threshold most commonly used for noise planning purposes near residents and represents a compromise between community impact and the need for activities like construction (HUD 1984).

All the tower sites and access roads/approach roads would be located in remote areas on the Tohono O'odham Nation, with the exception of TCA-AJO-0450 and TCA-AJO-0462 and their

associated approach roads. TCA-AJO-0450 would be greater than a mile from the nearest residential home and TCA-AJO-0462 tower would be over 4,600 feet from the nearest residential home. However, the associated approach roads to the towers would be within 500 feet of the Menagers community and a small community at the intersection of Well Road and Indian Route 1, respectively.

National Parks and Wildlife Refuges

The OPCNM and Buenos Aires National Wildlife Refuge (BANWR) are considered sensitive noise receptors. 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 and Wildlife Refuges, 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 and maintaining and repairing approach roads. For long-term noise emissions, 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.

The tower sites, access roads, and approach roads would be located across a wide geographical range within the Tohono O’odham Nation, which includes areas located adjacent to designated wilderness areas such as OPCNM and wildlife refuges such as BANWR. The TCA-AJO-0460 and TCA-AJO-0216 towers would be adjacent to OPCNM, and tower TCA-CAG-0430 would be approximately 6 miles west of BANWR.

Noise Attenuation

As a general rule, noise generated by a stationary noise source, or “point source,” will decrease by approximately 6 dBA over hard surfaces and 9 dBA 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 and 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: Caltrans 1998

3.11.1 Alternative 1: 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; however, noise emissions associated with cross-border violator off-road travel and consequent law enforcement actions would be long-term and minor, and would continue under the No Action Alternative.

3.11.2 Alternative 2: Proposed Action

Short-Term Construction Noise Emissions

The construction of the IFTs and access roads and maintenance and repairs to existing approach roads would require the use of common construction equipment. Table 3-13 describes noise emission levels for construction equipment that range from 63 dBA to 85 dBA at a distance of 50 feet (FHWA 2007).

Table 3-13. A-Weighted (dBA) Sound Levels of Construction Equipment and Modeled Attenuation at Various Distances*

Noise Source	50 feet	100 feet	200 feet	500 feet	1000 feet
Bulldozer	82	76	70	62	56
Concrete mixer truck	85	79	73	65	59
Crane	81	75	69	61	55
Drill rig	85	79	73	65	59
Dump truck	84	78	72	64	58
Excavator	81	75	69	61	55
Front-end loader	79	73	67	59	53
Generator	63	57	51	43	37

Source: FHWA 2007

* The dBA at 50 feet is a measured noise emission. The 100- to 1,000-foot results are GSRC modeled estimates.

Assuming the worst case scenario of 85 dBA from general construction equipment, the noise model predicts that noise emissions would have to travel 1,138 feet before they would be attenuated to acceptable levels equal to or below 57 dBA, which is the criterion for National Monument and Wildlife Refuges (23 C.F.R. § 722, Table 1), or 482 feet to attenuate to 65 dBA, which is the criterion for residential receptors.

The majority of the tower sites would be in remote areas, far from sensitive noise receptors such as residential homes or National Parks. BANWR is located on the east side of the Pozo Verde Mountains, approximately 6 miles from the closest IFT, TCA-CAG-0430, so noise emissions generated from construction activities would not reach the BANWR. Two of the tower sites (TCA-AJO-0460 and TCA-AJO-0216) would be within 100 feet of the boundary of OPCNM. During construction activities for tower TCA-AJO-0460, approximately 38 acres of OPCNM land would be subjected to noise emissions for 40 days while installing the tower. The TCA-AJO-0216 tower would be adjacent to OPCNM; however, no major construction would be at this site.

Depending upon the number of construction hours, and the number, type, and distribution of construction equipment being used, the noise levels near the road construction areas could temporarily exceed 65 dBA up to 482 feet from the construction activity. Geographic Information System (GIS) was used to determine that Menagers and a small residential community would be within 482 feet of the TCA-AJO-0450 and TCA-AJO-0462 approach roads. Some residential noise receptors in this community may experience temporary noise intrusion equal to or greater than 65 dBA from construction equipment. Noise generated by the construction activities would be intermittent and last for approximately 1 month, after which

noise levels would return to ambient levels. To minimize impacts, construction activity would be limited to daylight hours on Monday through Friday. Therefore, the noise impacts from construction activities would be considered temporary and negligible.

Long-term Operational Noise

Long-term noise emissions refer to noise emissions that would occur after the new towers have been installed. Four of the proposed new tower sites would be connected to commercial grid power with a backup power propane generator that would run 1 hour twice a month. The remaining 10 towers sites would be in remote areas and would be powered by a hybrid propane generator/solar system, not connected to the commercial grid. These generators would operate a maximum of 4 to 8 hours per day and would be equipped with sound insulation to decrease noise emissions. From the manufacturer's data sheet, the generator's noise emissions are estimated to be 67 dBA at 23 feet from the generator. It is estimated that the generator noise would have to travel approximately 75 feet before attenuation to noise levels equal to or below 57 dBA, which is the recommended criterion for national monuments and wildlife refuges (23 C.F.R. § 722). TCA-AJO-0460 and TCA-AJO-216 are each approximately 100 feet from the boundary of OPCNM. Therefore, the generator noise would not impact OPCNM. For these reasons, noise impacts from ongoing tower activities would be considered negligible.

3.11.3 Alternative 3

Noise emissions associated with the construction of Alternative 3 would be similar to those described for the Proposed Action.

3.12 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES

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 Advisory Council on Historic Preservation (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 the State Historic Preservation Office (SHPO) to administer national historic preservation programs on the state level and THPO programs on tribal lands, where appropriate. The NHPA also established 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.

Section 106 of the NHPA (54 U.S.C. § 306108) requires Federal agencies to identify and assess the effects of their actions on cultural resources. Federal agencies 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. ACHP issues regulations for the Section 106 process (36 C.F.R. § 800). In addition, CBP's activities are required to comply with DHS Directive 017-01 and Instruction 017-01-001,

Historic Preservation in Asset Management and Operations, which are supplemented by CBP Directive 5270-013, *Historic Preservation*. In September 2014, CBP entered into a Programmatic Agreement with the States of Arizona, California, New Mexico, and Texas as well as several Federal agencies and tribal governments regarding CBP's undertakings within these states (CBP 2014b). Among other things, this agreement includes stipulations that exempt certain activities from further Section 106 review. Although the Tohono O'odham Nation has been a consulting party to the agreement, it is not yet a signatory of the agreement.

Cultural History

The cultural history of southern Arizona is often discussed in the following periods: Preceramic (*circa* 10,000 B.C to A.D. 150), Ceramic (*circa* A.D. 150 to 1500), Early Historic (*circa* A.D. 1500 to 1848), and Late Historic (*circa* A.D. 1848 to 1945). Both the Preceramic and Ceramic periods can be further subdivided based on differing cultural traditions. The Preceramic period is typically subdivided into Paleoindian (10,000 B.C. to 7,500 B.C.) and Archaic (7,500 B.C. to A.D. 150) periods, while the Ceramic period is typically subdivided into three complexes that include the Hohokam (A.D. 150 to 1450), Patayan (A.D. 700 to 1850), and Trincheras (A.D. 150 to 1940). These complexes are based on varying ceramic traditions throughout the region that encompasses the project area.

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 16 proposed IFT sites (Proposed Action and Alternative 3) and associated road improvement areas. Both maps and patent records from the General Land Office, BLM records, and Gulf South Research Corporation's (GSRC) archives were examined in order to identify potential cultural resources located within the vicinity of the 16 proposed IFT sites and associated road improvement areas.

Table 3-14 contains a numerical summary by IFT site of previous investigations and recorded sites at each proposed 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. The records review indicates that 10 previous investigations have been conducted within a 1-mile radius of the proposed IFT tower locations and associated approach roads, resulting in the identification of 83 archaeological sites. These surveys were conducted in support of various construction, utility installation, road maintenance and improvements, research, and other initiatives. These sites include prehistoric and historic artifact scatters, prehistoric habitation sites, historic-period home sites, and ranching sites either located adjacent to or intersecting the area of potential effect (APE) of the proposed IFT tower locations (both permanent and temporary construction ground disturbance) or associated road corridors.

Table 3-14. Summary of Previous Investigations within a 1-mile Radius

Tower ID	Previous Investigations	Recorded Sites
TCA-AJO-0446	None	0
TCA-AJO-0448	3	9
TCA-AJO-0450	6	16
TCA-AJO-0452	None	0
TCA-AJO-0454	None	0
TCA-AJO-0458	None	0
TCA-AJO-0460	None	0
TCA-AJO-0462	3	0
TCA-CAG-0430	3	10
TCA-CAG-0432	None	0
TCA-CAG-0434	2	8
TCA-CAG-0436	2	5
TCA-CAG-0438	3	6
TCA-CAG-0440	3	6
TCA-CAG-0442	4	30
TCA-CAG-0444	2	2

Source: CBP 2013a

Current Investigations

CBP contractors conducted a Class III Cultural Resources Survey at the 16 proposed IFT sites and their associated roads on June 3 through 7, June 10 through 14, and June 21 through 25, 2013, in compliance with Section 106 of the NHPA for all proposed construction and related activities (Hart 2014). A 250-foot radius area was surveyed around the center point of each proposed IFT site to cover the permanent footprint and temporary construction easement. The contractor performed 30-, 50-, or 70-foot-wide surveys along approximately 86 miles of potential approach and access roads to the proposed IFT tower sites. In sum, the contractor surveyed approximately 500 acres for cultural resources during this initial survey effort. The 2013 pedestrian survey resulted in the identification of 15 new archaeological sites and the verification or update of 30 previously recorded sites, as well as 146 isolated occurrences (IOs) of cultural material, that would be within or adjacent to the current project area. IOs, by their nature, are not considered archaeological sites and are not eligible for listing on the NRHP. Of the 45 archaeological sites recorded during the 2013 survey efforts, 26 are recommended or determined eligible for inclusion in the NRHP and the remaining 19 sites have undetermined NRHP eligibility.

CBP contractors conducted a supplemental cultural resources survey of the Vamori Wash on April 12, 2014, and July 16, 2014 (Gage 2014). The survey area encompassed approximately 7 acres along the Vamori Wash, in the vicinity of the Traditional Northern Road. No NRHP sites, NRHP eligible sites, or sites with undetermined NRHP eligibility were identified in the survey area. However, there was one previously recorded site of undetermined eligibility immediately west of the survey area.

CBP contractors conducted another supplemental Class III Cultural Resources Survey on June 14 through 15, 2015, and on October 14, 2015 (Gabler and Mueller 2015). The additional surveys expanded the survey area along approximately eight non-contiguous miles of approach roads and

included surveying 100-foot wide swaths for 88 proposed low-water crossings and culverts along the Traditional Northern Road. The Contractor identified no new archaeological sites and 14 IOs during this survey effort.

CBP's contract archaeologist did not identify any traditional cultural properties (TCPs) or sacred sites in the archaeological APE of the Proposed Action or Alternative 3. However, many of the mountain areas near the project area hold a cultural significance for the Tohono O'odham people and are classified as TCPs or are eligible for classification as TCPs. As a matter of policy, CBP does not disclose the locations of culturally sensitive sites.

3.12.1 Alternative 1: No Action Alternative

Since construction activities associated with the proposed IFT project would not occur, the No Action Alternative would have no direct effect, either beneficial or adverse, on cultural resources. 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 cross-border violator traffic in the project area would not occur.

3.12.2 Alternative 2: Proposed Action

The archaeological APE for the Proposed Action is limited to the areas of permanent and temporary ground disturbance. In addition, a 0.5-mile radius visual APE was used for all tower sites per the Programmatic Agreement (See CBP 2014b). Of the new and previously recorded sites CBP identified within the project area, 26 are recommended or have been determined eligible for listing on the NRHP. Surface evidence alone was insufficient to accurately assess the NRHP eligibility of 18 sites. These sites would require additional investigation, including but not limited to subsurface archaeological testing to accurately assess eligibility. In addition, one assessed site, an artifact scatter from the Ceramic period, is not recommended NRHP eligible.

CBP and its contractors would avoid ground disturbance at all NRHP-eligible sites (recommended, determined, and undetermined) within the APE. In addition, archaeological monitors and Tohono O'odham tribal representatives be present during construction activities to ensure that no adverse effects result from the Proposed Action. CBP also would perform geophysical studies (i.e., ground-penetrating radar or a magnetometer) of a possible adobe mound near one of the tower sites and at four other tower sites prior to performing ground or vegetation disturbance at these sites.

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

Section 106 consultation with the Tohono O'odham Nation THPO has been completed and results from the consultation have been incorporated into this Final EA. Based on the archaeological surveys, archival research results, Native American Tribal consultation to date, and implementation of BMPs, CBP has determined that there would be no adverse effects from

the Proposed Action on any NRHP-eligible architectural or aboveground resources, NRHP-eligible archaeological resources, TCPs, or sacred sites.

CBP completed Section 106 consultation for the construction of TCA-AJO-216 and TCA-AJO-305 in 2007 (CBP 2009). The collocation and in-kind replacement of communications equipment at these towers and the modifications to interior space at the C2 facility at USBP Ajo Station is exempt from further Section 106 review under CBP's Programmatic Agreement (CBP 2014b).

3.12.3 Alternative 3

Under Alternative 3, impacts on cultural resources would be similar to those discussed for the Proposed Action, with one exception. TCA-CAG-0444 would be constructed as an alternate to TCA-CAG-0436; therefore, impacts associated with construction activities at TCA-CAG-0436 would not occur. No new archaeological sites were observed during the pedestrian survey at TCA-CAG-0444. Similar mitigation measures and indirect beneficial impacts as described for the Proposed Action would occur under Alternative 3.

3.13 UTILITIES AND INFRASTRUCTURE

Utility Commercial Grid Power and Fiber-Optic Communication Services

The Tohono O'odham Utility Authority provides commercial electrical and communication services to the main reservation. Commercial grid power is potentially available for five new IFT sites (Table 3-15). The remaining proposed IFTs would be located in remote areas where commercial grid power is not readily accessible. Fiber-optic communication services would be installed at the San Miguel LEC C2 facility and at towers TCA-AJO-0452, TCA-AJO-0454, TCA-CAG-0432. Fiber-optic cables would be buried from the main line to the tower site shelter. The fiber-optic cable would be placed within surveyed roadwork buffer areas, all of which were surveyed for potential impacts on biological and cultural resources and would be field verified prior to construction.

Table 3-15. Power Company Service Areas

Tower ID	Grid Power	Fiber-Optic Communication
TCA-AJO-0452	X	X
TCA-AJO-0454	X	X
TCA-AJO-0458	X	
TCA-CAG-0432	X	X
TCA-CAG-0442	X	

Ambient and Artificial Lighting

Ambient or atmospheric light is of concern to many, including, most notably, astronomical observatories (International Dark Sky Association 2013). 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 2012 Pima County Outdoor Lighting Code applies to the installation of outdoor lighting within Pima County. The purpose of the Outdoor Lighting Code is “to preserve the relationship of the residents of the City of Tucson, Arizona and Pima County, Arizona to their unique desert environment through protection of access to the dark night sky” (Pima County 2012).

The main features of the Pima County Outdoor Lighting Code include the following:

- Lumen caps are established by zoning and use and the total outdoor light output shall not exceed the lumen limits.
- Shielding on light fixtures will be installed so that it is effective and permanent.
- All lights within 25 feet of a residential property must be full cutoff.
- Flood and spot lamps will be aimed no higher than 45 degrees to the horizontal when visible from adjacent residential property.
- Unshielded fixtures or lighting sources shall not exceed 3,000 lumens per luminaire.
- Lighting for outdoor athletic fields and lighting for special-use areas are exempt from the lumen caps.

3.13.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the proposed IFTs would not be constructed. The No Action Alternative would not affect the availability of utilities or require construction of additional facilities.

3.13.2 Alternative 2: Proposed Action

The Proposed Action would result in negligible effects on the availability of utilities, including connection to existing hardline communications service and installation of underground fiber-optic services. Five of the new IFTs (TCA-AJO-0452, -0454, -0458 and TCA-CAG-0432 and -0442) would potentially be connected to existing commercial grid power located adjacent to each of the five IFT sites. Fiber-optic communication services would be installed at the San Miguel LEC C2 facility and at towers TCA-AJO-0452, TCA-AJO-0454, and TCA-CAG-0432. All utility installations would be coordinated with the Tohono O’odham Nation Utility Authority and service line agreements would be established with the BIA as needed.

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. Lighting for construction activities is not anticipated. If nighttime construction becomes necessary, use of lights would conform to the Pima County Code and would have a temporary negligible impact on ambient or atmospheric light.

3.13.3 Alternative 3

Under Alternative 3, impacts would be similar to those described for the Proposed Action.

3.14 ROADWAYS AND TRAFFIC

SR 86 is the primary east-west route for vehicular traffic through the main reservation of the Tohono O’odham Nation (Figure 3-4). Indian Rural Route (IRR) 1, IRR 5, IRR 19, and IRR 21 provide secondary access from SR 86 south to the proposed IFT sites. SR 86 is maintained by the Tucson Engineering District of the ADOT, and the IRRs are maintained by the BIA. ADOT classifies SR 86 as a minor arterial roadway and the IRRs as minor collectors. The annual average daily traffic count (AADT) for SR 86 west of Tucson from Robles Junction to Sells is 1,400 vehicles (ADOT 2009). The AADT for SR 86 from Why, Arizona, east to IRR 15 is 750 vehicles and the AADT from IRR 15 east to Sells is 1,800 vehicles. These sections of SR 86 and associated IRRs would ultimately carry all traffic related to the proposed IFT sites.

3.14.1 Alternative 1: No Action Alternative

Under the No Action Alternative, impacts on roadways and traffic would remain status quo.

3.14.2 Alternative 2: Proposed Action

With the implementation of the Proposed Action, construction activities at IFT sites would have a temporary, minor, direct impact on roadways and traffic within the project area. An increase of vehicular traffic along SR 86 and the adjacent IRRs would occur to supply materials and work crews to the IFT sites during the construction phase and in support of tower maintenance and refueling trips.

Tower maintenance requires vehicle travel to and from 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 (e.g., sensor) and power type (e.g., commercial grid power). The Proposed Action estimates that 416 vehicle trips per year would be needed for tower maintenance and refueling (see Table 2-3). Traffic impacts associated with tower maintenance would be long-term and negligible.

3.14.3 Alternative 3

Alternative 3 would result in traffic impacts similar to those described for the Proposed Action.

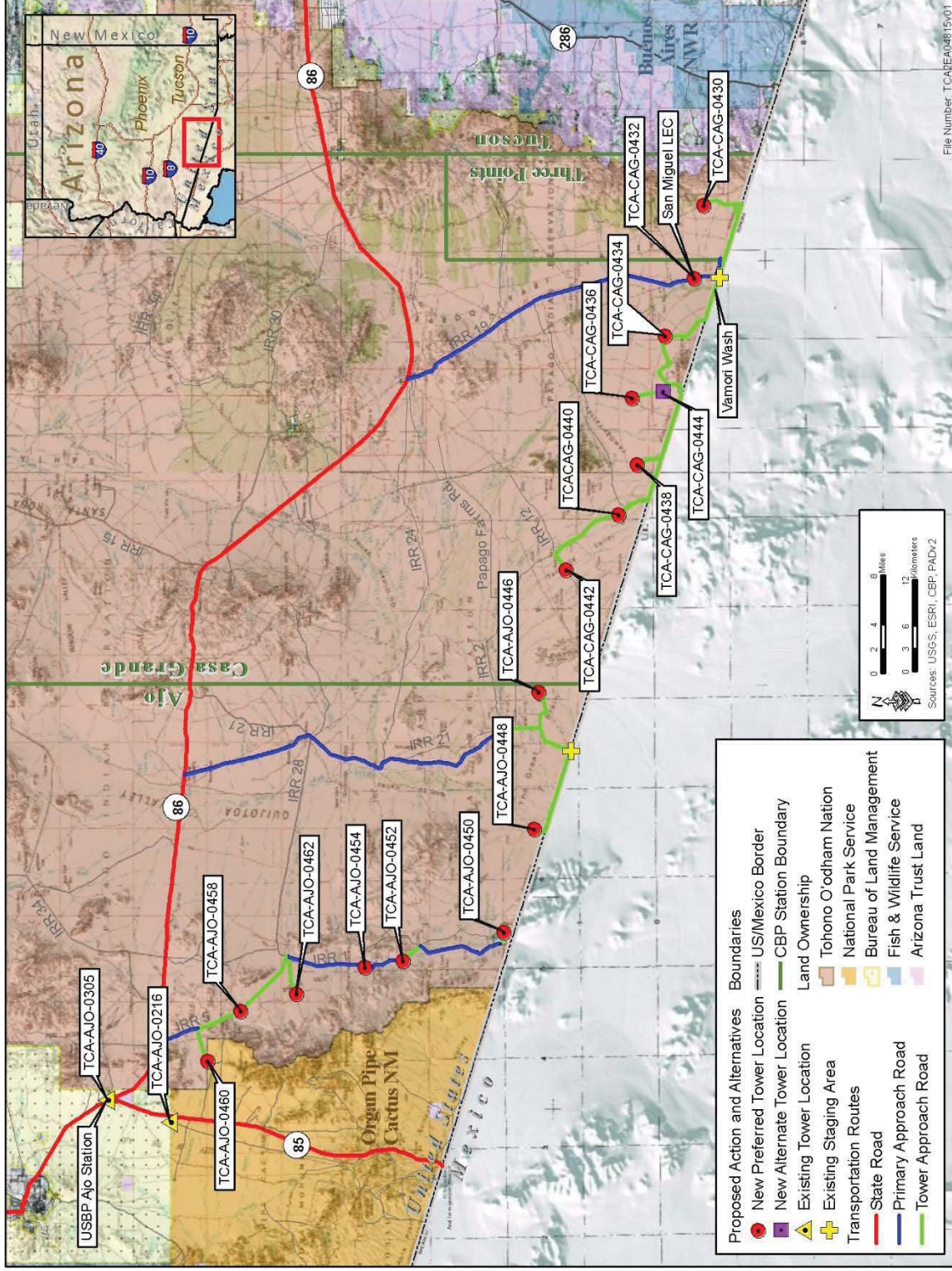


Figure 3-4. Transportation Routes to the Project Area

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3.15 AESTHETIC AND VISUAL RESOURCES

The Proposed Action area is a sparsely populated, scenic expanse along the border between Arizona and Sonora, Mexico. Few roads cross the region and the land use remains relatively unchanged from historic grazing and agricultural practices. The landscape is largely dominated by native vegetation.

The aesthetic and visual resources within the Tohono O’odham Nation in the vicinity of the proposed IFT sites include the low mountain foothills, broad bajadas, and the characteristic natural desertscrub vegetation of the Sonoran Desert Biome (Brown and Lowe 1994). The relatively uniform structure and composition of the Sonoran Desert vegetation creates an almost unbroken visual landscape that changes little from horizon to horizon. The region lies within the Basin and Range geologic province that created a rugged mountainous landscape dating back to the Early Miocene epoch (Chronic 1983). Mountains and ridges can be seen clearly in all cardinal directions from the IFT sites. Many of these mountain areas hold a cultural significance for the Tohono O’odham people and are classified or are eligible for classification as TCPs. Isolated, rural, agricultural communities contribute to the aesthetic and visual quality of the region.

Federal lands are often assigned visual resource inventory classes. These landscapes are often subdivided 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 5 miles away and where management activities might be viewed in detail. This zone can be more visible to the public and changes may be 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 Tohono O’odham Nation does not have an established visual resource management system. In general, the BLM distance zone classes were used as a means to quantify the visual impacts of each IFT analyzed in this EA.

3.15.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the visual and aesthetic resources of the project area would not be directly affected because no towers would be constructed. However, discarded debris and trash, as well as increases in illegal off-road traffic, graffiti, and general vandalism resulting from cross-border violator activity would be expected to continue and would increasingly detract from the visual and aesthetic quality of the project area.

3.15.2 Alternative 2: Proposed Action

The Proposed Action would have a long-term, moderate impact on visual and aesthetic qualities within the project area. Depending on the location and elevation of a viewer and due to the open nature of the landscape throughout most of the Proposed Action area, it is possible that most of the proposed IFTs would be visible from up to 5 miles away and some towers may be visible from up to 15 miles. However, the IFTs would not be visible from SR 86, the main vehicular

access routes through the Tohono O’odham Nation. Based on observations made of existing towers and the minimalistic structure of the proposed towers, the impacts on the region’s visual and aesthetic quality from the IFTs would be negligible beyond an observation point of 15 miles with the exception of the two existing towers located along SR 85. These towers are readily visible from SR 85 and the proposed upgrade activities would produce a minor temporary impact on the visual and aesthetic quality in the immediate proximity due to the presence of construction equipment; however, modifications to these existing towers would be minor and would pose little or no additional long-term visual or aesthetic impacts.

Temporary visual and aesthetic impacts during the construction phase of the project would occur at the IFT sites. Generally, these temporary impacts would involve the presence of construction equipment on the landscape and temporary ground disturbances. Post-construction revegetation with native species and surface contouring would be utilized to minimize and reduce these temporary impacts.

3.15.3 Alternative 3

Alternative 3 would result in aesthetic and visual impacts similar to those described for the Proposed Action.

3.16 HAZARDOUS MATERIALS

Environmental due diligence documentation was completed for each IFT site in accordance with CBP’s due diligence policy. 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 either are on the National Priorities List or are 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 June 3 through 14, 2013, and on June 24 and 25, 2013, or during the review of state and Federal records. Potential use of hazardous materials and disposal of hazardous waste are discussed under the Alternatives below.

3.16.1 Alternative 1: No Action Alternative

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

3.16.2 Alternative 2: Proposed Action

The proposed IFT sites are owned by the Tohono O’odham Nation. As such, the Tohono O’odham Nation’s Environmental Protection Agency should be contacted prior to any construction at the proposed sites. Additionally, the Tohono O’odham Nation’s Solid Waste Management Office would be contacted for any Tohono O’odham Nation-specific guideline criteria for solid waste disposal.

All hazardous and regulated wastes, materials, and substances generated during construction of the proposed IFTs would be collected, characterized, labeled, stored, transported, and disposed of in accordance with all applicable Federal, state, local, and tribal laws and 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 would use propane fuel, which does not have the potential for contamination if spilled.

3.16.3 Alternative 3

Under Alternative 3, impacts would be the same as those described for the Proposed Action.

3.17 RADIO FREQUENCY ENVIRONMENT

This Section considers the effect of EM radiation on humans. A description of RF and EM impacts on wildlife is provided in Section 3.5. All populations are currently exposed to EM frequencies in varying degrees (World Health Organization 2002). RF radiation are radio and microwave signals having frequencies from about 3 kilohertz to 300 gigahertz, which are typically used for communications systems such as radio and TV, and radar. This is referred to as non-ionizing radiation because the EM fields are much too weak to break the bonds holding molecules together, unlike X-rays or gamma rays.

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 environments. The FCC adopted recognized safety guidelines for evaluating RF exposure in the mid-1980s (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 (47 C.F.R. §§ 1.1310, 2.1093). IEEE updated these standards in 2005 with IEEE C95.1-2005 and amended that standard in 2010.

The FCC's guidelines are also based on the National Council of Radiation Protection (NCRP) and Measurements exposure guidelines. The NCRP 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 of exposure limits: occupational ("controlled") and general ("uncontrolled"). Occupational exposure occurs 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. General exposure occurs 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 2015).

During the public comment period of this EA, a few members of the public requested more information on the potential health effects of EM frequencies at levels below the FCC's exposure limits. These effects are sometimes referred to as "non-thermal effects." The World Health Organization (WHO) started a program in 1996 to assess the health effects of radiofrequency fields. The WHO currently classifies extremely low frequency (3 to 30 hertz) magnetic fields as "possibly carcinogenic to humans" based on an epidermal study of childhood leukemia, which means that there is limited evidence that the agent is carcinogenic in humans and less than sufficient evidence that the agent is carcinogenic in animals (WHO 2001, 2002). Extremely low frequencies are emitted by electrical appliances like hair dryers and shavers (National Cancer Institute 2011). The WHO found that there was inadequate evidence for other types of frequencies exposures or other types of cancers (WHO 2001, 2002). Litvak et al. (2002) presented views of a working group who concluded that the scientific evidence did not show health hazards from intermediate frequencies below recommended guidelines and the few epidemiology studies suggesting links between health effects and intermediate frequency exposure cannot be reliably interpreted. Several other studies have examined whether there is a link between RF and microwave exposure and cancer; however, the results to date are inconclusive and studies indicate a link between exposure and tumor formation in animals (under very specific conditions) have not been independently replicated (Kelly 2015). To date, there has been no consistent evidence for a link between any source of non-ionizing EMF and cancer (National Cancer Institute 2016).

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). Nonetheless, 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). Numerous studies have also looked at the effect radiofrequency fields could have on brain electrical activity, cognitive function, sleep, heart rate and blood pressure. In addition, there are also several studies examining the relationship between having multiple wireless devices in an environment, referred to as "electrosmog," and claims of electrohypersensitivity. The World Health Organization states, "To date, research does not suggest any consistent evidence of adverse health effects from exposure to radiofrequency fields at levels below those that cause tissue heating" (World Health Organization, 2014).

3.17.1 Alternative 1: No Action Alternative

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

3.17.2 Alternative 2: 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.

It is anticipated that this tower would use similar equipment as that being used at other IFT sites being constructed along the border. Under the Proposed Action, each IFT would have a Transceiver. When the Transceiver is in radiation mode, the exclusion area is 3.2 feet (1 meter) within the front of the antenna and 90 degrees to each side and 0.5 meters (1.6 feet) behind the radar. A radiation indication light would be installed at the backside of the antenna. When the radiation indication light is lit, personnel would adhere to all safety instructions.

The Proposed Action also includes installing a radio communication system, which includes installing radios and a radio transmitter dish antenna on the tower. These microwave beams would be concentrated in a cone, like a flashlight, and any dispersion of microwave energy outside the line-of-sight paths would be minimal. IFTs that are currently operational along the Border use a Peregrine communication system with Cambium PTP45600 radios and a Radio Waves HPD 4-foot parabolic dish antenna. This system transmits in the 4.5 gigahertz range (super high frequency), with maximum output power of 27 watts. The antenna features a 3.6 degrees beam width and 32.0-dB gain. The MPE limit for this antenna is 8.25 feet within 3.6 degrees of the front of the center axis of the dish.

The project also includes installing radars. Like the communications equipment, radar beams are directional and RF levels drop off rapidly on either side of the beam. However, unlike communication dishes, radar beams are continuously rotating or varying their elevation. In addition, radar systems send EM waves in pulses. Currently operational IFTs use an Elta ELM-2112(V10) Groundmaster Radar. The Operator' manual for this equipment recommends a safe operating distance of 1 meter (3.3 feet) at any angle in front of the radar and 0.5 meters (1.7 feet) at any angle behind the radar. The radiation pattern of the antenna shows that the power level falls 20dB, relative to the peak, at approximately 14 degrees from the front center axis of the antenna. Power is thus 0.005 watts (5 mW) or less outside that region. At this power, the safe

distance would fall to 0.25 meters (0.825 feet, 9.9 inches). The radiation pattern of the antenna shows that at 90 degrees from the front center axis of the antenna, the power level falls more than 40 dB, relative to the peak. Power is thus 0.05mW or less outside that region. At this power level, the safe distance would fall to 25 millimeter (1 inch).

All IFTs would be located within fenced-in, remote areas and would not be accessible by the public. The transmitting equipment would be hung greater than 20 feet high, which exceeds the MPE limits for the equipment currently being used at other IFT sites. Tower construction and maintenance crews would be required to follow standard safety procedures while working on or within IFT sites. The tower construction and maintenance contractors would be required to ensure that all installed equipment complies with the requirements of ANSI C95.1 "American National Standard Safety Levels with respect to Human Exposure to Radio Frequency, Electromagnetic Fields, 3 kilohertz to 300 gigahertz. System test measurements for RF Signal Safety Compliance would be in accordance with ANSI 95.3 and 95.5 "American National Standard Recommended Practice for the Measurement of (Potentially) Hazardous Electromagnetic Fields - RF and Microwave." In addition, all RF hazards would be marked in accordance with ANSI C95.2 "American National Standard for RF Energy and Current Flow Symbols." 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 human health but this impact would not be significant.

3.17.3 Alternative 3

Under Alternative 3, impacts on the radio frequency environment would be similar to those discussed under the Proposed Action.

3.18 SUMMARY OF IMPACTS

Table 3-16 summarizes the impacts of the No Action Alternative, Proposed Action, and Alternative 3 on each of the resources discussed in this section (Affected Environment).

Table 3-16. Summary Matrix of Potential Impacts

Affected Environment	Alternative 1 (No Action Alternative)	Alternative 2 (Proposed Action)	Alternative 3
Land Use	No direct impacts would occur.	The Proposed Action would have a permanent, negligible impact on land use. Up to 223.00 acres of undeveloped land would be permanently converted to a developed land use and up to 6.06 acres would be temporarily converted to a developed land use.	Impacts on land use would be similar to those described for the Proposed Action.
Soils	No direct impacts would occur.	The Proposed Action would have a direct, minor impact on soils. The Proposed Action would permanently impact up to 223.00 acres of undisturbed soil. In addition, up to 6.06 acres of undisturbed soil would be temporarily disturbed during tower construction. Temporary impact areas would be revegetated using native plant seeds, nursery plantings, and/or allowed to revegetate naturally.	Impacts on soils would be similar to those described for the Proposed Action.
Vegetative Habitat	No direct impacts would occur.	The Proposed Action would permanently remove up to 223.00 acres and temporarily alter up to 6.06 acres of Sonoran desertscrub and grassland habitat. The plant community associated with the IFT sites is both locally and regionally common, and the permanent loss of vegetation would not adversely affect the population viability of any plant species in the region. Temporary impact areas would be revegetated using native plant seeds, nursery plantings, and/or allowed to revegetate naturally. BMPs would be implemented to prevent the spread of invasive species.	Impacts on vegetative habitat would be similar to those described under the Proposed Action.
Wildlife Resources	No direct impacts would occur.	The Proposed Action would have a long-term, minor impact on wildlife resources. The Proposed Action would permanently remove up to 223.00 acres and temporarily impact up to 6.06 acres of Sonoran desertscrub and grassland habitat. The permanent loss 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 communication towers could pose hazards to migratory birds and even bird mortality; however, since the towers would not use guy-wires and would be less than 200 feet high, the potential for adverse impacts is greatly reduced. In addition, EM radiation may affect wildlife in various ways. BMPs could be used to discourage nesting or perching at the tower sites. The Proposed Action would have a permanent, minor effect on migratory birds.	Alternative 3 would result in impacts on wildlife and wildlife habitat similar to those described for the Proposed Action.
Protected Species and Critical Habitats	No direct impacts would occur.	The Proposed Action may affect, but is not likely to adversely affect, the Sonoran pronghorn, jaguar, lesser long-nosed bat, and yellow-billed cuckoo. No designated or proposed critical habitat is present within the project's action area. ESA Section 7 consultation with USFWS is currently ongoing.	Impacts on protected species and critical habitat would be similar to those discussed for the Proposed Action.

Affected Environment	Alternative 1 (No Action Alternative)	Alternative 2 (Proposed Action)	Alternative 3
Groundwater	No direct impacts would occur.	The withdrawal of water could have a temporary, minor impact on groundwater resources.	Impacts on groundwater would be similar to those described for the Proposed Action.
Surface Waters, including Waters of the U.S.	No direct impacts would occur.	Surface water quality could be temporarily impacted during construction activities as a result of erosion and sedimentation. However, SWPPPs would be prepared and roadwork within potential waters of the United States would be authorized under NWP 14. BMPs would be implemented to ensure minimum degradation to water quality.	Impacts on surface water and waters of the U.S. would be similar to those described for the Proposed Action.
Floodplains	No direct impacts would occur.	There are no designated flood zones or flood hazard areas within the project area. Impacts on floodplains would not be anticipated for tower construction.	Impacts on floodplains would be similar to those described for the Proposed Action.
Air Quality	No direct impacts would occur.	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 and the maintenance and repair of approach roads. Negligible impacts would result from the operation of the towers.	Under Alternative 3, impacts on air quality would be similar to those described for the Proposed Action.
Noise	Noise emissions associated with cross-border violator off-road travel and consequent law enforcement actions would be long-term and minor, and would continue.	Temporary and negligible increases in noise would occur during construction of IFTs and access roads and maintenance and repair of approach roads. 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.
Cultural Resources	No direct impacts would occur.	Based on the archaeological surveys, archival research results, Native American Tribal consultation to date, and implementation of BMPs, CBP has determined that there would be no adverse effects on any NRHP-eligible architectural or aboveground resources, TCPs, or sacred sites. 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. NHPA Section 106 consultation with the Tohono O'odham Nation THPO is complete.	Impacts would be similar to those described for the Proposed Action, with one exception. IFT TCA-CAG-0444 would be constructed as an alternate to TCA-CAG-04436. Impacts associated with IFT TCA-CAG-0436 would not occur. No sites were observed at TCA-CAG-0444.

Affected Environment	Alternative 1 (No Action Alternative)	Alternative 2 (Proposed Action)	Alternative 3
Utilities and Infrastructure	No direct impacts would occur.	Negligible demands on power utilities would be required as a result of the Proposed Action.	Under Alternative 3, impacts would be similar to those described for the Proposed Action.
Roadways and Traffic	No direct impacts would occur.	Construction activities and staging for towers and 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. The Proposed Action includes approximately 416 vehicle trips per year for tower maintenance and refueling. These trips would have a long-term, negligible impact on roadways and traffic.	Impacts would be similar to those described for the Proposed Action.
Aesthetics and Visual Resources	No direct impacts would occur.	The Proposed Action would have a long-term, moderate, direct impact on aesthetic and visual qualities within the project area. Most towers would be visible up to 5 miles away from the tower and some may be visible from up to 15 miles. Temporary aesthetic and visual impacts during the construction phase of the project would occur at the IFT sites, and these impacts would include the aesthetic and visual impacts of construction equipment.	Impacts would be similar to those described for the Proposed Action.
Hazardous Material	No direct impacts would occur.	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 would 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.
Radio Frequency Environment	No direct impacts would occur.	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 would be negligible due to the minimal exposure risk and the elevated locations in which the communications equipment would be positioned.	Impacts on the radio frequency environment would be similar to those discussed under the Proposed Action.

SECTION 4.0
CUMULATIVE IMPACTS



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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 comprises the USBP's Ajo and Casa Grande Stations' AORs.

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, or 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 affecting 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 REGION OF INFLUENCE

The ecosystems within the ROI have been substantially impacted by historical and ongoing activities such as ranching, livestock grazing, mining, agricultural development, climate change, and cross-border violator activity and resulting law enforcement actions. 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 due to cross-border violator activity and resulting law enforcement actions. Although activities that occurred on Federal lands (DOI and BLM) were regulated by NEPA, the most substantial impacts of these activities within the ROI such as ranching, livestock grazing, and cross-border violator activity and resulting law enforcement actions, 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 REGION OF INFLUENCE

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 cross-border

violators, 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 have also 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. Recent, ongoing, and reasonably foreseeable proposed actions would result in cumulative impacts; however, the cumulative impacts would not be significant. CBP is currently planning, is conducting, or has completed several projects in the USBP's Ajo and Casa Grande Stations' AORs, including the following:

- Installation and maintenance of permanent vehicle barriers (PVB) at the U.S./Mexico border within the Tohono O'odham Nation, creation of a 2-track primitive trail parallel to the PVBs, turn-arounds to facilitate construction and maintenance of the PVBs, and improvement and maintenance of the existing patrol road near the border
- Construction, operation, and maintenance of a new Ajo Station
- Construction, operation, and maintenance of a new Ajo Station Forward Operating Base (FOB)
- Construction, operation, and maintenance of communication towers under the SBInet program for Tucson Sector. The Tucson West project was located within Tucson Station's AOR immediately east of the Tohono O'odham Nation (CBP 2008) and the Ajo-1 project within Ajo Station's AOR immediately west of the Tohono O'odham Nation (CBP 2009).
- Road Improvement on the Pozo Nuevo Road in Cabeza Prieta National Wildlife Refuge (CPNWR)
- Expansion of the San Miguel LEC (CBP 2013b)
- Expansion of the Papago Farm FOB
- Restoration of Unauthorized Vehicle Roads within CPNWR and OPCNM
- Remote Video Surveillance Systems upgrade for Ajo Station's AOR (CBP 2012d)
- Construction of a vehicle bridge or high-water crossing over the Vamori Wash in the vicinity of where the existing Traditional Northern Road traverses the wash
- Maintenance and repair of roads on the Tohono O'odham Nation. Maintenance and repair of roads within that project area would consist of filling potholes, regrading road surfaces, implementing improved water drainage measures, applying soil stabilization agents, controlling vegetation, removing debris, and adding lost road surface material to reestablish intended surface elevation needed for adequate drainage.

In addition, ADOT and the Tohono O’odham Nation are currently planning or conducting several projects on the Tohono O’odham Nation, which include the following:

- Improvements to 4 miles of SR 86 between San Pedro and Viopuli Road (Mile Post [MP] 137 and MP 141). The project includes expanding the roadway shoulders for enhanced safety, applying a new, smooth driving surface and installing drainage features (Tohono O’odham Nation 2012a).
- Improvements to pedestrian access along SR 86 through Sells (Tohono O’odham Nation 2012b). Three miles of ADOT right of way along SR 86 through the town of Sells is being considered.

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 action alternatives. Impacts 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 is 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 (Alternative 2 [Proposed Action] and Alternative 3). A summary of the anticipated cumulative impacts on each resource is presented below. All impacts would be adverse unless otherwise stated.

4.4.1 Land Use

A vast majority of the project area is currently undeveloped scrub and brush rangeland located in a rural area. Under No Action Alternative, land use would not change. However, cross-border violator activities would continue to impact land use in the project area. Although the Proposed Action would permanently convert up to 223.00 acres of undeveloped land to a developed use, the Proposed Action and other CBP actions would not initiate an increase of development in the immediate vicinity of the projects. The restoration of Unauthorized Vehicle Roads within CPNWR and OPCNM would return the associated land to its original use. Therefore, the Proposed Action, when combined with past and proposed actions in the region, would not be expected to result in a major cumulative effect.

4.4.2 Soils

Modification of soils would not occur under the No Action Alternative; however, soils would continue to be impacted due to cross-border violator activity in the area of tower coverage. The Proposed Action and other CBP actions would not reduce Prime Farmland soils or agricultural production regionally, as much of the land developed by CBP has not been previously used for agricultural production. Pre- and post-construction SWPPP measures would be implemented to control soil erosion. There may be an indirect beneficial impacts due to the deterrence of cross-border violator activity within the area of tower coverage resulting in a reduction in soil disturbances. The permanent disturbance of 223.00 acres of previously undisturbed soil from the

Proposed Action, when combined with past and proposed actions in the region, would not be considered a major cumulative effect.

4.4.3 Vegetative Habitat

Since the proposed IFTs and associated road construction and improvements would not occur under the No Action Alternative, vegetative habitat would not be disturbed or removed. However, long-term direct and indirect impacts on vegetation communities would continue as a result of cross-border violator activities that create unauthorized roads and trails, damage vegetation and promote the dispersal and establishment of nonnative invasive species. Approximately 2 million acres of Sonoran desertscrub rangeland occur within the Tohono O'odham Nation. Therefore, the potential, permanent disturbance of 223.00 acres of Sonoran desertscrub habitat, in conjunction with other past, ongoing, and proposed regional projects, would not create a major cumulative effect on vegetative habitat in the region.

4.4.4 Wildlife Resources

Under the No Action Alternative, no direct impacts on wildlife or wildlife habitats would occur. However, off-road cross-border violator activity and required interdiction actions would continue to degrade wildlife habitat through a loss of cover, forage, nesting, or other opportunities and potentially a loss of suitable habitat over large areas. Approximately 2 million acres of Sonoran desertscrub rangeland occur within the Tohono O'odham Nation. Therefore, due to the potential, permanent disturbance of 223.00 acres of habitat, 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.

4.4.5 Threatened and Endangered Species

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 illegal border activities throughout the project area and surrounding areas would continue due to the creation of trails, damage to vegetation, and the promotion of the dispersal and establishment of invasive species. The Proposed Action may affect, but is not likely to adversely affect, the Sonoran pronghorn, jaguar, lesser long-nosed bat, and yellow-billed cuckoo. There is no designated critical habitat within the project area. As discussed in Section 3.2, both the Sonoran pronghorn and jaguar are not known to occupy suitable habitat in the project area. BMPs, which limit potential impacts on these species, would be in place during the construction of the Proposed Action and would continue to be in place once the IFTs are operational. Thus, when combined with other existing and proposed actions in the region, the Proposed Action would not result in major cumulative impacts on protected species or designated or proposed critical habitats. Any indirect, cumulative impacts on protected species and their critical habitats would be negligible to minor.

4.4.6 Groundwater, Surface Water, Waters of the United States, and Floodplains

Under the No Action Alternative, no impacts on water resources would occur because the construction of the proposed IFTs and associated access roads and maintenance and repair of approach roads would not occur. Groundwater withdrawals from the San Simon Wash Basin are below the natural recharge rate, and drainage patterns of surface water sources would not be

impacted by the project proposed within the USBP's Ajo and Casa Grande Stations' AORs. Water quality in the San Simon Wash Basin would remain unchanged under the Proposed Action. Specific erosion and sedimentation controls and other BMPs would be in place during construction as standard operating procedures and roadwork would be permitted under NWP 14. 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.

4.4.7 Air Quality

No direct impacts on air quality would occur due to construction activities under the No Action Alternative; 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. The emissions generated during the construction of the IFT sites, and all associated road construction, repair, and improvement would not exceed Federal *de minimis* thresholds and would be short-term and minor. Generator emissions would be intermittent and would not exceed Federal *de minimis* thresholds. There would be no long-term increase in vehicular traffic in the region's airshed. Approximately 416 annual vehicle trips would be required to maintain the IFTs. Since the average daily traffic count along stretches of SR 86 ranges from 750 to 1800 vehicles per day, the 416 trips per year to maintain the IFTs would be negligible in comparison. Therefore, the Proposed Action, when combined with other past, ongoing, and proposed actions in the region, would not result in major cumulative impacts.

4.4.8 Noise

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; however, noise emissions associated with cross-border violator off-road travel and consequent law enforcement actions would be long-term and minor, and would continue under the No Action Alternative. Most of the noise generated by the Proposed Action would occur during IFT construction, road construction, road improvement, road maintenance, and occasional running of the backup propane generator. These activities would be negligible 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 actions in the region, would not result in major cumulative impacts.

4.4.9 Cultural Resources

Although no impacts on cultural resources would occur from construction activities under the No Action Alternative, potential adverse impacts on cultural resources could continue to occur due to cross-border violator traffic within the area of tower coverage. The Proposed Action would not affect cultural resources or historic properties but may, in time, provide increased protection from disturbance due to the deterrence of cross-border violator traffic within the area of tower coverage. Therefore, the Proposed Action, when combined with other existing and proposed actions in the region, would not result in major cumulative impacts on cultural resources or historic properties. Additionally, 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 the Proposed Action, and other past, ongoing, and proposed actions in the region.

4.4.10 Utilities and Infrastructure

The proposed IFTs would not be constructed under the No Action Alternative, so the availability of utilities would not be affected. Four of the new IFTs would potentially connect to existing commercial grid power infrastructure. The use of commercial grid power would not require greater utilities or infrastructure than can be provided since the IFT sites 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 actions 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 actions in the region, no major cumulative adverse effects on ambient or atmospheric light is anticipated.

4.4.11 Roadways and Traffic

Under the No Action Alternative, impacts on roadways and traffic would remain status quo. The roads in the vicinity of the IFT sites are very lightly travelled and construction activities for the Proposed Action would be limited in duration, and maintenance trips would be minimal. Road improvements on SR 86 would create short-term minor impacts on daily traffic. Therefore, when combined with past, ongoing, or proposed actions in the region, no major cumulative adverse effect on roadways and traffic would occur as a result of the Proposed Action.

4.4.12 Aesthetics and Visual Resources

Aesthetics and visual resources would not be directly affected by the No Action Alternative because no towers would be constructed, however, discarded debris, trash, increases in illegal roads, graffiti, and general vandalism resulting from cross-border violator activity would be expected to continue and would increasingly detract from the visual quality of the project area. No major impacts on aesthetic and 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 and may be visible up to 15 miles depending on the location and elevation of an observer. The Proposed Action, in conjunction with other past, ongoing, and proposed actions in the region, would result in moderate adverse cumulative impacts on the region's visual resources.

4.4.13 Hazardous Materials

Under the No Action Alternative, no impacts associated with the use of hazardous materials would be expected. 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 actions in the region, would not be considered a major cumulative effect.

4.4.14 Radio Frequency Environment

Under the No Action Alternative, daily radio operations by CBP and other law enforcement would continue; however the IFT sites would not be installed or operated. There would be no impacts on the existing RF environment or effects on the human or natural environment. The communications and sensor equipment proposed as part of the Proposed Action would emit EM and RF; however, the equipment proposed by CBP would be certified safe for humans and wildlife at normal exposure levels. CBP would seek NTIA certification for communications equipment. No other known actions would affect the EM and RF environment within the project area; thus, the Proposed Action would not be considered a major cumulative effect.

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SECTION 5.0
BEST MANAGEMENT PRACTICES



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5.0 BEST MANAGEMENT PRACTICES

This chapter describes those measures that would be implemented to reduce or eliminate potential adverse impacts on the human and natural environments. Many of these measures have been incorporated as standard operating procedures by CBP on past projects. BMPs are presented for each resource category that would be potentially affected. It should be emphasized that these are general BMPs. Specific BMPs would be developed for certain activities implemented under the action alternatives. 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

1. Excluding routine maintenance and repair service to the towers and their technology, CBP will provide written notice, including a scope of work and schedule, at least 14 calendar days in advance to the Tohono O'odham Nation's Realty Office, Roads Program, Environmental Protection Office, Wildlife and Vegetation Management Program (WVMP), Tribal Historic Preservation Office (THPO), Chukut Kuk District, and Gu Vo District before commencing construction, repairs, and maintenance unless emergency conditions do not allow 14 calendar days of advance notice. For purposes of this BMP, "emergency conditions" means unforeseen damage to the right of way, towers, and/or roadway caused by natural events such as severe weather conditions that necessitates immediate repair in order to reduce the possibility of injury to vehicles and people using the road and to keep the towers operating as intended. In such emergency cases, CBP will provide the required written notice within 48 hours of determining repairs will be made
2. If security lights are necessary, only low-sodium bulbs that are both shielded and motion-activated will be used.
3. 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.
4. Avoid lighting impacts during the night by conducting construction and 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 the sky or out laterally into the landscape; and 4) selectively place lights so they are directed away from all native vegetative communities.

5. Towers no longer in use or determined to be obsolete will be removed within six months following cessation of use and all towers will be removed at the end of the ROW term unless the Nation agrees in writing that removal of a tower is not required.
6. CBP will comply with federal law and applicable Tohono O'odham Nation laws.
7. CBP will follow best management practices as described in the environmental assessment, which shall incorporate the Nation's comments wherever practicable and reasonable, to prevent any damage to the Nation's natural and cultural resources, and as cultural resource sites significant to the Nation may occur along or near individual tower sites, access/approach roads, low-water crossings along the Traditional Northern Road, and temporary construction work/staging areas, the Nation's Realty Office, Roads Program, Environmental Protection Office, Wildlife and Vegetation Management Program (WVMP), and Tribal Historic Preservation Office (THPO) will be provided with advance written notice, as set forth in Section 5.1(1) above, prior to CBP commencing any construction, maintenance, and repair activity
8. CBP will coordinate with the Tohono O'odham Nation Wildlife and Vegetation Management Program (WVMP) before and during construction, maintenance, or repair work within habitat of threatened and endangered species, including species protected by the Nation's laws, to allow the WVMP to determine applicable and reasonable mitigation measures for necessary work in areas that contain such species and/or habitat.
9. Workers and equipment will not be allowed to enter into the Republic of Mexico during the construction and maintenance of the Proposed Action. Construction activities would be performed in accordance with the construction documents submitted to the U.S. Section of the International Boundary Water Commission (USIBWC). Any modification to the Proposed Action will be submitted for review to USIBWS. The construction phase of the Proposed Action will be such that the transboundary flows (for United States to Mexico and Mexico to the United States) will not be significantly affected. CBP is responsible for any damage caused to infrastructure of either country by the Proposed Action. CBP is responsible for the replacement and/or repair of the Proposed Action resulting from flood damage.

5.2 SOILS

1. Clearly demarcate the perimeter of all new areas to be disturbed using flagging or temporary construction fencing. Do not allow any disturbance outside that perimeter.
2. Areas that will be disturbed later in the construction period will be used for staging, parking, and equipment storage.
3. The area of disturbance will be minimized by limiting deliveries of materials and equipment to only those amounts needed for effective project implementation.

4. 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.
5. Only those roads necessary for construction of tower sites will be constructed, improved, maintained, or repaired.
6. 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 or road surface as applicable.
7. Roads will be properly designed and located. The widening of existing or created roadbed will be within the design parameters.
8. Properly design and locate roads such that the potential for roadbed erosion, including into Federally listed species habitat, will be avoided or minimized.
9. 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 revegetate.
10. Vehicular traffic associated with the construction activities and operational support activities will remain on established roads to the maximum extent practicable.
11. To the extent significant erosion occurs within or in proximity to a wash, and that erosion exists outside of the right of way, CBP will coordinate with the Nation to professionally assess the erosion and to determine next steps. To the extent the erosion extends beyond 100 feet downstream of a low water crossing infrastructure (*specifically, from the leading edge of the rip-rap*), that low water crossing shall not be deemed as the primary cause of such erosion, and CBP will not be held accountable for repair of such erosion. If significant erosion is within 100-feet downstream of a low water crossing, CBP and the Nation will work together to determine whether and to what extent CBP's low water crossing contributed to such erosion. If licensed professional engineers representing CBP and the Nation concur that the low water crossing was the primary cause of erosion, the parties will work together to agree on an appropriate scope of repair work to be performed by CBP. Any erosion repair work CBP performs will be limited to a 100-foot distance from the leading edge of low water crossing infrastructure. The Nation will expeditiously grant CBP (its employees, contractors and agents) a right of entry at no cost to the government to allow for all necessary activities that may be required outside of the right of way, including but not limited to: assessment, design development associated with the proposed repair (*including soil sampling*), environmental and cultural surveys (*if outside the area already surveyed as part of the IFT Project*), and to perform the repair work itself. The duration of the right of entry shall typically be two years, which is deemed sufficient to accommodate assessment, planning and design, contracting, repair work and potential follow-up or warranty-related work.

5.3 BIOLOGICAL RESOURCES

1. The removal of native vegetation and disturbance of soil will be minimized. The removal of roadside vegetation will be limited to only those portions of plants necessary to allow the passage of vehicles, material, and equipment. All removed mesquite that has a diameter of 4 inches or more will be salvaged.
2. Removal of nonnative plants will be done in coordination with the Tohono O'odham Nation WVMP. Notice would include indicating the location, quantity, and type of plants as well as the proposed measures to remove the plants. All removed plants will be bagged and disposed of in construction-related debris bins. Herbicides can be used according to label directions if they are not toxic to Federally listed species that may be in the area. No restricted-use herbicides shall be utilized for nonnative plant treatment. If herbicides are used, the plants will be pulled out after systematic absorption.
3. All chemical applications, including Herbicides, on the Tohono O'odham Nation will be coordinated with the Tohono O'odham Nation's Environmental Protection Office, WVMP, and the affected Tohono O'odham Nation districts to ensure accurate reporting.
4. Materials used for on-site erosion control will be free of nonnative plant seeds and other plant parts to limit potential for infestation.
5. Identify any fill material, sandbags, hay bales, straw, and mulch brought in from outside the project area by its source location. These materials will be free of nonnative plant seeds and other plant parts to limit potential for infestation.
6. Native seeds or plants, which are compatible with the enhancement of protected species, will be used to revegetate temporarily disturbed areas. USFWS and the Tohono O'odham Nation will be provided the opportunity to review seed and plant lists proposed to be used for revegetation.
7. Design and construction or improvements of the tower and roads will avoid impacting columnar cacti to the maximum extent practicable. If impacts are not avoidable, columnar cacti 10 feet or less in height are eligible for relocation or replacement with a nursery stock at a 3:1 ratio in an area proximate to the project area. Prior to the initiation of construction within the range of this species, a qualified biologist will conduct a survey to identify and flag all columnar cacti to be avoided.
8. No construction activities are proposed to occur within known saguaro cactus harvesting areas that are traditionally used by the Tohono O'odham Nation. Proposed road improvements will be coordinated with the Tohono O'odham Nation WVMP to avoid impacting the Tohono O'odham Nation's saguaro fruit harvest festival. Construction and maintenance crews will avoid traversing roads through previously-identified saguaro fruit harvesting areas during the festival to the maximum extent practicable. CBP will contact the Tohono O'odham Nation WVMP for the dates of the festival, which typically occurs for two weeks in late June or early July.

9. As part of tower construction, the contractor will be responsible for developing a Vegetation Management Plan in order to minimize or avoid impacts to existing vegetation, including columnar and barrel cacti.
10. Vegetation targeted for retention will be flagged for avoidance to reduce the likelihood of being treated or removed.
11. 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.
12. Soil cement may be used to stabilize low-water crossings. Avoid applying soil-binding agents in or near surface waters (e.g. wetlands, perennial streams, intermittent streams, or washes) during the monsoon season or periods of heavy rain. Only apply soil-binding agents to areas that lack any vegetation.
13. 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 animals on the road.
14. Vehicle 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. During periods of decreased visibility (e.g., night, poor weather, curves), do not exceed speeds of 25 mph. A law enforcement vehicle driven in response to an emergency call or in pursuit of an actual or suspected violator of law may exceed these speed limits if the higher speed does not endanger life or property.
15. To prevent entrapment of wildlife species, ensure that excavated, steep-walled holes or trenches are either completely covered by plywood or metal caps at the close of each workday or provided with one or more escape ramps (at no greater than 1,000-foot intervals and sloped less than 45 degrees) constructed of earthen fill or wooden planks.
16. Each morning before the start of construction or maintenance activities and before such holes or trenches are filled, ensure that 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, and before construction activities resume, or are removed from the trench or hole by a qualified person and allowed to escape unimpeded.
17. If hollow bollards, fence posts, vent pipes, or other hollow items are necessary, cover hollow items to prevent wildlife from entrapment. Deploy covers (and ensure that 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.
18. Do not permit pets owned or under the care of the contractor or USBP Sector personnel 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.

19. Initial mechanical and chemical vegetation clearing and subsequent mechanical vegetation control should be timed to avoid the migration, breeding, and nesting time frame 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 in an area designated by the WVMP in consultation with CBP and its contractors will be established around the nest and no activities will occur within that zone until nestlings have fledged and abandoned the nest.
20. A survey for migratory birds will be conducted by qualified personnel prior to all activities that involve removing vegetation or ground disturbance during the nesting period (February 1 through September 1) in areas where migratory birds might be nesting. Qualified personnel will also conduct protocol surveys for burrowing owls, which are year-around residents in the project area, prior to any vegetation or ground disturbance in areas where the species may occur. If an active nest is observed within the project area, the contractor will notify personnel with the Tohono O'odham Nation WVMP prior to performing these activities.
21. If construction is to take place during the breeding season for the cactus ferruginous pygmy-owl (1 January through 30 June), protocol surveys for cactus ferruginous pygmy-owls would be conducted prior to construction. If an active nest is observed within the project area, the contractor will notify personnel with the Tohono O'odham Nation WVMP prior to performing these activities.
22. If construction or maintenance is scheduled during the migratory bird-nesting season (February 1 through September 1), 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 without the required permits. If nesting migratory birds are found during the supplemental survey, defer intrusive construction and maintenance activities until the birds have left the nest. Confirmation that all young have fledged should be made by qualified personnel.
23. A Fire Management Plan will be developed by the construction contractor as part of tower construction. For post-construction fire management, the maintenance contractor will either adopt the construction-related Fire Management Plan or develop a new Fire Management Plan to address fire management during post-construction activities. Both plans will be developed in coordination with the Nation's Fire Management Office. All activities will be performed in accordance with National Fire Protection Association codes and standards, particularly NFPA 58: Liquefied Petroleum Gas Code. Clearing of vegetation using herbicides within each tower site and up to a 30-foot buffer beyond the perimeter fencing and within the ROW footprint will be performed to achieve an

adequate reduction of fire potential. The type of herbicide(s) and application will be approved by the Tohono O'odham Nation's Environmental Protection Office prior to use.

24. Recommendations of the Avian Power Line Interaction Committee and USFWS (2000 and 2008) for any required aboveground lines, transformers, or conductors will be implemented.
25. Construction equipment will be cleaned at the staging areas, in accordance with BMPs, prior to entering and departing the project corridor to minimize the spread and establishment of non-native invasive plant species.

5.4 PROTECTED SPECIES

1. All contractors, work crews (including military personnel), and CBP personnel in the field performing construction and maintenance activities will receive environmental awareness training. At a minimum, environmental awareness training will include 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, Migratory Bird Treaty Act, and applicable tribal laws. The WVMP shall provide CBP with a list of applicable tribal laws in advance of such training. 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 environmental awareness 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. USFWS and the Tohono O'odham Nation will have an opportunity to review environmental awareness training material.
2. Biological monitors will be present at each area of construction activity.
3. Biological monitors will be able to communicate the purpose of all BMPs and will be able to consult project managers on appropriate actions.
4. Biological monitors will survey habitats potentially occupied by Federally listed species prior to the arrival of construction equipment or vehicles.
5. Following this initial survey, the biological monitor will be in sight of all construction equipment, vehicles, and personnel during all construction activities.
6. 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.

7. 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 Tohono O'odham Nation WVMP, the Contracting Officer, the Administrative Contracting Officer, and the Contracting Officer's Representative of the suspension so that the key personnel can be notified and apprised of the situation and the potential conflict can be resolved.
8. If an individual of a Federally listed species is found in the designated project area, work will cease in the area of the species until either a qualified specialist (an individual, agency personnel, or personnel with the Tohono O'odham Nation WVMP with permits to handle the species) can safely remove the individual, or it moves away on its own.
9. 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.
10. Biological monitors will check visible space underneath all vehicles and heavy equipment for listed species and other wildlife prior to starting or moving vehicles and equipment at the beginning of each workday and after vehicles have idled for more than 15 minutes.
11. 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. A list of species observed during monitoring will be included in the monitoring reports.
12. Reports from the biological monitor will be used for development of the post-construction report, a copy of which will be provided to the Tohono O'odham Nation and USFWS.

Sonoran Pronghorn

13. Notify the Tohono O'odham Nation WVMP if a Sonoran pronghorn is observed within or near the project area during construction-related activities, decrease vehicle speeds to 10 to 15 mph until the vehicle or animal safely passes. Suspend construction activities and wait for Sonoran pronghorn to relocate if Sonoran pronghorn are observed in proximity to the tower sites during tower construction.

Lesser Long-nosed Bat

14. Removal of columnar cacti (i.e., saguaro and organ pipe) and agave will be limited to the minimum necessary to maintain drivable access roads and to maintain the functionality of other tactical infrastructure. Prior to conducting any maintenance or repair activity outside of the existing disturbed footprint of tactical infrastructure within the range of this species, a qualified biologist will conduct a survey to identify and flag all columnar cactus (i.e., saguaro and organ pipe) and agave to be avoided.

15. Prior to conducting any maintenance or repair activity outside of the existing disturbed footprint of tactical infrastructure within the range of the lesser long-nosed bat, a qualified biologist will conduct a survey to identify and flag all columnar cactus (i.e., saguaro and organ pipe cactus) to be avoided.
16. No tower construction will take place within 0.5 mile of an occupied lesser long-nosed bat roost from mid-April through early November without prior discussion with FWS.
17. No maintenance and repair activities will be conducted within 0.5 mile of any known lesser long-nosed bat roost from mid-April through early November. CBP will contact USFWS and the Tohono O'odham Nation for updated maps of known lesser long-nosed bat roosts prior to implementing the action.
18. For maintenance and repair activities that will take place greater than 0.5 mile and less than 5 miles from any known lesser long-nosed bat roost, CBP will contact USFWS and the Tohono O'odham Nation for updated maps of known lesser long-nosed bat prior to implementing the action.
19. Construction and maintenance activities will be limited to daylight hours. If night lighting is unavoidable, (1) minimize the number of lights used; (2) place lights on poles such that they are pointed down toward the ground, with shields on lights to prevent light from going up into sky, or out laterally into landscape; and (3) selectively place lights so they are directed away from native vegetation.

Yellow-billed Cuckoo

20. CBP will contact USFWS and the Tohono O'odham Nation for updated maps of known yellow-billed cuckoo breeding and foraging areas prior to implementing the action.
21. Avoid performing maintenance and repair of the Traditional Northern Road through the Vamori Wash during the yellow-billed cuckoo's breeding season (mid-May through September). If maintenance and repair of the Traditional Northern Road cannot be avoided during the yellow-billed cuckoo's breeding period, minimize the duration and frequency of these activities to the greatest extent possible, and use noise abatement technology, including dampeners.
22. No more than a minor amount of mesquite will be removed for maintenance and repair of the Traditional Northern Road within the Vamori Wash.
23. If CBP improves the Traditional Northern Road within the Vamori Wash, CBP will conduct two years of post-construction monitoring for yellow-billed cuckoo in accordance with accepted guidelines and protocols. A baseline survey may need to occur prior to these improvements.

Sonoran Desert Tortoise

24. Do not take, possess, or harass wild Sonoran desert tortoises. Biological monitors will alert construction vehicle drivers and where necessary and practicable temporarily flag

occupied Sonoran desert tortoise's habitat along approach and access roads during tower construction.

25. Avoid impacts to occupied desert tortoise burrows. If impacts cannot be avoided, consult with the Tohono O'odham Nation WVMP.
26. Follow the guidelines identified in Arizona Game and Fish Department, *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects* (Revised Oct. 2007), where practicable.

5.5 CULTURAL RESOURCES

1. Each tower site should be staked and flagged before construction to keep the contractor working only in approved areas. Avoidance measures will include no ground disturbance in areas of cultural materials and the use of stakes and flagging to keep equipment and vehicles within approved areas.
2. NRHP eligible sites and sites of undetermined eligibility will be avoided and demarked with painted lath or flagging tape. When an access or approach road passes through a cultural resource site, the boundaries of the site will be flagged so the contractor vehicles know they are passing through the site and are not to leave the road.
3. The qualified archeologist will flag the cultural resource boundary, providing at least a 10 meter buffer around the mapped perimeter of cultural resource sites, where the sites intersect any road, and ensure that no maintenance activities occur within the flagged boundaries of the site. Flagging will be removed upon completion of activities in the vicinity of the cultural resources.
4. Tohono O'odham tribal representatives will be present during construction at tower sites and roadwork. Tohono O'odham tribal representatives will also be present at each low water crossing where the road may be widened beyond the existing ROW.
5. Archaeological monitors will be present when road maintenance and repair is needed within 0.25 miles of any cultural site. Tribal representatives may also be present during these activities.
6. Archeological monitors will meet the Secretary of the Interior standards (36 C.F.R. Part 800) and will be familiar with, and have previous experience conducting, archeological work in the State of Arizona.
7. Vehicular traffic associated with the construction and operational support activities will remain on established roads to the maximum extent practicable.
8. Ground disturbance will not occur in any situation where roadwork is required within a roadbed that traverses any NRHP-eligible site or site of undetermined eligibility. The road may be repaired by the import of fill or material and mechanically compacted to

restore the road surface and provide for proper drainage across the site. Road widening will not be permitted when it passes through a cultural resources site. When an approach or access road passes through a cultural site, the road will not be widened or graded.

9. Qualified archaeologist(s) shall conduct a subsurface archaeological investigation of a potential covered adobe mound near one of the IFT sites to accurately assess the nature and significance of the site prior to construction using ground penetrating radar or a magnetometer. Ground penetrating radar or a magnetometer will also be used at four other IFT sites.
10. CBP will provide notification to the Tohono O'odham Nation THPO at least ten days prior to executing project-related activities, including maintenance and repair activities.
11. CBP will invite the Tohono O'odham Nation's Cultural Affairs Office to pre-construction meeting to brief the contractor.
12. The qualified archeologist, Tohono O'odham Nation tribal representative, and staff from the Tohono O'odham Nation's Cultural Affairs Office will provide a training session for the construction contractor and road maintenance contractors regarding how to minimize potential impacts to cultural sites.
13. During construction and maintenance activities, the archaeologist will be positioned so that he or she has a clear view of the activities and can observe any unanticipated cultural resources if they are uncovered. Monitoring will consist of the observation and inspection of all ground disturbances conducted near archaeological sites. This will include the visual inspection of any back dirt for culturally significant materials. All surface and subsurface exposures will be examined for cultural features and natural stratigraphy.
14. In the event that unanticipated archaeological resources or human remains are discovered during construction or any other project-related activities, or should known archaeological resources be inadvertently affected in a manner that was not anticipated, the following procedures would be implemented:
 - a. The project proponent or contractor will immediately cease all activities within a 100-foot buffer and the onsite archaeologist will take steps to stabilize and protect the discovered resource.
 - b. CBP or the contractor shall immediately notify the Tohono O'odham Nation Cultural Affairs Office and the BIA Western Regional Office (WRO) Regional Archaeologist to document and preliminarily assess the find and formulate a recommendation regarding whether the discovery is National Register-eligible or a tribal sacred object and merits further consideration. The assessment shall address the following factors:
 - The nature of the resource, such as the number and kinds of artifacts, presence or absence of archaeological features, or sacred to the Tohono O'odham.

- The spatial extent of the resource.
 - The nature of the deposits in which the discovery was made.
 - The contextual integrity of the resource, damage related to the initial discovery, and potential impacts of the continued activity that resulted in the discovery.
- c. If the preliminary evaluation concludes that the find is not a NRHP-eligible property or tribal sacred object, nor a contributing element of an historic property or its documentation has exhausted the information potential, this conclusion and accompanying documentation shall be transmitted by CBP or the contractor to the THPO and the BIA WRO. If the THPO and the BIA WRO agree within five calendar days of receipt, CBP may authorize resumption of the activity that resulted in the discovery.
- d. If the preliminary evaluation concludes that the find is a NRHP-eligible property, a contributing element of an historic property, a tribal sacred object, or that its documentation has not exhausted the information potential, this conclusion and accompanying documentation shall be transmitted by CBP and/or the contractor to the THPO with a Treatment Plan. If the THPO and the BIA WRO determine that the Treatment Plan is acceptable, the THPO and the BIA WRO shall ensure that the plan is implemented to resolve the adverse effects. CBP shall not resume the activity that resulted in the discovery until the THPO, in consultation with the BIA WRO, has determined that the adverse effect has been resolved and authorizes resumption of the activity.
- e. If human remains or associated funerary items are identified as a result of construction or related activities, all work will stop immediately. The Pima County Sheriff's Office and Tohono O'odham Police Department may be contacted if the remains are potentially recent and forensic in nature. The cultural resources contractor will immediately notify the THPO of the discovery. No photos of the discovery will be taken at any time by any individuals. Remains and objects will be treated with respect and dignity at all times. The construction crews will be relocated to another area of the project to avoid additional damage or disturbance. Remains or objects that are unequivocally prehistoric or historic O'odham will be assessed in situ by the THPO or a representative of the Cultural Affairs Office. The THPO will determine if the remains and any associated objects can be avoided and protected from additional impact. If the remains and associated objects are sufficiently disturbed or cannot be avoided with complete surety, the THPO may request that the human remains and associated objects be excavated. All excavation would be conducted by a qualified archaeologist using hand tools appropriate for burials and all soils would be screened through 1/8 inch mesh or window screen. Natural materials (e.g., paper bags, cotton batting, and cardboard boxes) would be used for collection and recovery of all remains and materials. The remains and associated items would be completely excavated and returned to a representative of the Tohono O'odham Nation Cultural Affairs Office within 24 hours for repatriation.

5.6 AIR QUALITY

1. 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 (see 5.3, paragraph 5) to lessen wind erosion during the time between tower construction and the revegetation of temporary impact areas with a mixture of native plant seeds, nursery plantings, and/or allowed to revegetate naturally. All construction equipment and vehicles will be kept in good operating condition to minimize exhaust emissions.

5.7 WATER RESOURCES

1. 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 regulations.
2. Avoid contamination of ground and surface waters by collecting concrete wash water in open containers and disposing of it off-site.
3. Avoid contaminating natural aquatic and wetland systems with runoff by limiting all equipment maintenance, staging, and laydown and dispensing hazardous liquids, such as fuel and oil, to designated upland areas.
4. Cease work during heavy rains and do not resume work until conditions are suitable for the movement of equipment and materials.
5. Erosion control measures and appropriate BMPs, as required and promulgated through site-specific SWPPPs and engineering designs, will be implemented before, during, and after soil-disturbing activities.
6. Areas with highly erodible soils will be given special consideration when preparing a 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.
7. All construction and maintenance contractors and personnel will review the CBP-approved spill protection plan and implement it during construction and maintenance activities. Petroleum contaminated soil will be properly managed in accordance with applicable state, local, and tribal rules and regulations.
8. Except for emergency repairs required to protect human life, limit work within drainages to dry periods to reduce effects on downstream water quality.

9. 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 wastes.
10. 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.
11. If soaps or detergents are used, the wastewater and solids must be pumped or 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.
12. Road maintenance will be designed and implemented so that the hydrology of streams, ponds, and other habitat is not altered.
13. 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.
14. Water tankers that convey untreated surface water will not discard unused water within 2 miles of any aquatic or marsh habitat.
15. Storage tanks containing untreated water will be of a sufficient capacity that if a rainfall event were to occur, the tank (assuming open) will not be overtopped and cause a release of water into the adjacent drainages.
16. Water storage on the project area will be in on-ground containers located on upland areas and not in washes.

5.8 NOISE

1. All generators will have an attached muffler or use other noise-abatement methods in accordance with industry standards.
2. 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.
3. All Occupational, Safety, and Health Administration (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

1. The Tohono O’odham Nation’s Solid Waste Management Office will be contacted for any Tribal Nation-specific solid waste disposal guideline criteria.
2. Where handling of hazardous and regulated waste or 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.
3. Implement proper and routine maintenance of all vehicles and other maintenance equipment such that emissions are within the design standards of all maintenance equipment. The refueling of machinery will be conducted following accepted industry guidelines, and all vehicles will have drip pans during storage to contain minor spills and drips.
4. Nonhazardous waste materials and other discarded materials, such as construction waste, will be contained until removed from the construction and maintenance sites.
5. Do not pressure wash more than the area to be painted or treated (e.g., for graffiti removal) each day. Operate pressure-washing equipment according to manufacturer’s recommendations.
6. 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.
7. 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.
8. Use water-based paints instead of oil-based paints where practicable. Look for the words “Latex” or “Cleanup with water” on the label. Do not rinse into natural drainages (e.g., intermittent streams, creeks, irrigation canals, wetlands) or storm drains.
9. All paints and cleaning materials should be approved by the appropriate land manager.
10. Use a ground cloth or an oversized tub for paint mixing and tool cleaning. Properly dispose of the wastes offsite, at an approved facility, in accordance with Federal, State, local, and tribal laws and regulations.
11. Clean paintbrushes and tools covered with water-based paints in sinks plumbed to a sanitary sewer or in portable containers that can be dumped into sanitary sewer drains. Never clean such tools in a natural drainage or over a storm drain.

12. Brushes and tools covered with non-water-based paints, finishes, thinners, solvents, or other materials must be cleaned over a tub or container and the cleaning wastes must be disposed of or recycled at an approved facility. Never clean such tools in a natural drainage or over a storm drain.

5.10 ROADWAYS AND TRAFFIC

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

SECTION 6.0
IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

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6.0 IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

NEPA requires that Federal agencies identify “any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented” (42 U.S.C. § 4332). An irreversible commitment of resources occurs when the primary or secondary impacts of an action result in the loss of future options for a resource. Usually, this is when the action affects the use of a nonrenewable resource or it affects a renewable resource that takes a long time to renew. An irretrievable commitment of resources is typically associated with the loss of productivity or use of a natural resource (e.g. loss of production or harvest).

Most impacts for this project are short term and temporary or, if long term, are negligible. An irreversible commitment of resources includes the commitments of labor, energy/fossil fuels, and construction materials (e.g. sand, gravel, steel, aluminum, etc.). However, not all this material would be irreversibly committed because some of it may be recovered and recycled later. An irreversible commitment of resources would also include the commitment of land and natural resources, such as soils and vegetation, located within the project area. However, not all of this would be irreversible because much of the land could be converted back to prior use at a future date. A loss of agricultural land (land used for grazing and farming) would result in irretrievable impacts to agricultural production during construction and operation of the tower sites though. The accidental or unintentional removal or disturbance of previously unidentified cultural resources could result in the irretrievable and irreversible loss of data. However, monitors and other BMPs decrease the likelihood of this occurring. No irreversible or irretrievable impacts to Federally protected species or their habitat is anticipated.

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SECTION 7.0
REFERENCES



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7.0 REFERENCES

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SECTION 8.0
ACRONYMS/ABBREVIATIONS



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8.0 ACRONYMS/ABBREVIATIONS

AADT	Annual Average Daily Traffic
ABSTP	Arizona Border Surveillance Technology Plan
ACHP	Advisory Council on Historic Preservation
A.D.	<i>Anno Domini</i>
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
ADOT	Arizona Department of Transportation
AGFD	Arizona Game and Fish Department
amsl	Above Mean Sea Level
ANHP	Arizona Natural Heritage Program
ANSI	American National Standards Institute
AOR	Area of Responsibility
APE	Area of Potential Effect
ASM	Arizona State Museum
AZ CCAG	Arizona Climate Change Advisory Group
BANWR	Buenos Aires National Wildlife Refuge
B.C.	Before Christ
bgs	Below Ground Surface
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
C2	Command and Control
CALTRANS	California Department of Transportation
CBP	U.S. Customs and Border Protection
CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
CH ₄	Methane
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted Decibel
DHS	Department of Homeland Security
DNL	Day-Night Sound Level
DOI	U.S. Department of the Interior
DPS	Distinct Population Segment
EA	Environmental Assessment
EIS	Environmental Impact Statement
EM	Electromagnetic
EMF	Electromagnetic Field
EO	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCC	Federal Communications Commission

FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FOB	Forward Operating Base
FONSI	Finding of No Significant Impact
FR	Federal Register
GHG	Greenhouse Gases
GIS	Geographic Information System
GPS	Global Positioning System
GSRC	Gulf South Research Corporation
HFC	Hydrofluorocarbons
HUD	U.S. Department of Housing and Urban Development
IEEE	Institute of Electrical and Electronics Engineers
IFT	Integrated Fixed Tower
IO	Isolated Occurrence
IoI	Item of Interest
IRR	Indian Rural Route
LEC	Law Enforcement Center
MP	Mile Post
MPE	Maximum Permissible Exposure
mph	miles per hour
NAAQS	National Ambient Air Quality Standards
NCRP	National Council on Radiation Professionals
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NF ₃	Nitrogen Trifluoride
N ₂ O	Nitrous Oxide
NO _x	Nitrogen Oxides
NO ₂	Nitrogen Dioxide
NOA	Notice of Availability
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTE	Not to Exceed
NTIA	National Telecommunications and Information Administration
NVG	Night Vision Goggles
NWP	Nationwide Permit
O ₃	Ozone
OA	Office of Acquisition
OET	Office of Engineering and Technology
OPCNM	Organ Pipe Cactus National Monument
OSHA	Occupational, Safety, and Health Administration
PM-2.5	Particulate Matter Less than 2.5 Microns
PM-10	Particulate Matter Less than 10 Microns
PVB	Permanent Vehicle Barriers
RF	Radio Frequency
ROI	Region of Influence
ROW	Rights of Way

SHPO	State Historic Preservation Officer
SO ₂	Sulfur Dioxide
SR	State Route
SST	Self-standing Tower
SWPPP	Stormwater Pollution Prevention Plan
TCP	Traditional Cultural Properties
THPO	Tribal Historic Preservation Officer
U.S.	United States
USACE	U.S. Army Corps of Engineers
USBP	U.S. Border Patrol
U.S.C.	U.S. Code
EPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USIBWC	U.S. Section, International Boundary and Water Commission
VOC	Volatile Organic Compounds
WRO	Western Regional Office
WVMP	Wildlife & Vegetation Management Program (Tohono O'odham Nation)

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SECTION 9.0
LIST OF PREPARERS



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