



FINAL

ENVIRONMENTAL STEWARDSHIP PLAN
FOR THE PROPOSED YUMA WALL REPLACEMENT PROJECT
U.S. BORDER PATROL, YUMA SECTOR
YUMA STATION, ARIZONA

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



May 2019

COVER SHEET

ENVIRONMENTAL STEWARDSHIP PLAN FOR THE PROPOSED YUMA WALL REPLACEMENT PROJECT U.S. BORDER PATROL YUMA SECTOR, YUMA STATION, ARIZONA

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

Parties Consulted: U.S. Army Corps of Engineers (USACE)-Los Angeles District, U.S. Fish and Wildlife Service (USFWS), and the U.S. Section of the International Boundary and Water Commission (USIBWC).

Affected Location: United States/Mexico international border in Yuma County, Arizona.

Project Description: U.S. Customs and Border Protection (CBP) proposes to remove and replace approximately 27.5 miles of existing pedestrian fence (legacy fence) with bollard fence in the U.S. Border Patrol's (USBP) Yuma Sector Area of Responsibility (AOR) near San Luis, Arizona. The new fence will be comprised of a P-3 Design Standard style bollard fence with a steel anti-climb plate and will range in height from 18 to 30 feet. The proposed Project corridor will be 60 feet wide and the majority of the corridor is disturbed from previous fence and road construction projects. A fiber optic communications cable will be installed within the Project corridor approximately 6 to 10 feet north of the U.S./Mexico border.

The new bollard fence will be constructed in seven linear segments that total approximately 27.5 miles in length (Table 1) in Yuma County, Arizona. Segment YUM8-01 is located 1.8 miles west of the San Luis Port of Entry (POE) and runs 1.6 miles in a north-south direction parallel to the Wellton-Mohawk Bypass Drain (Salinity Canal) and Colorado River. Segment YUM8-01 is disjunct from the six other segments, which run contiguously in a west to east direction, parallel to the U.S./Mexico Border, beginning on the east side of the San Luis POE and continuing east along the border for approximately 26 miles.

Table 1. Yuma Wall Replacement Project Segments

Segment ID	Length (miles)
YUM8-01	1.6
YUM9-02	2.9
YUM10-01	4.2
YUM 10-02	6.5
YUM10-03	1.1
YUM11-01	7.2
YUM11-03	4.0
Total Length	27.5

Report Designation: Environmental Stewardship Plan (ESP).

Abstract: CBP plans to construct, operate, and maintain approximately 27.5 miles of replacement fence and fiber optic communications cable along the U.S./Mexico border in Yuma County, Arizona. The Project area lies within the USBP Yuma Sector. With the exception of the staging area, the Project area is entirely under the administrative jurisdiction of CBP. Project activities for the eastern fence segments will begin near the City of San Luis, Arizona and continue approximately 26 miles east to the eastern terminus. The western fence segment (YUM8-01) will begin near the U.S./Mexico border and extend approximately 1.6 miles north along the Salinity Canal. Construction material will arrive at one primary staging area and then be distributed to secondary staging areas in each of the seven segments.

The ESP evaluates potential environmental impacts associated with the Project. Protection and Best Management Practices (BMPs) for factors such as air quality, noise, geological resources, water use and quality, biological resources, cultural resources, and hazardous materials have been incorporated into the Project design.

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**U.S. DEPARTMENT OF HOMELAND SECURITY
U.S. Customs and Border Protection
U.S. Border Patrol**

May 2019

EXECUTIVE SUMMARY

BACKGROUND

On April 18, 2019, the Secretary of the Department of Homeland Security (DHS), pursuant to Section 102(c) of the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) of 1996, as amended, issued a waiver in order to ensure the expeditious construction of the Project. Although the Secretary's waiver means that United States (U.S.) Customs and Border Protection (CBP) no longer has any specific legal obligations under the laws set aside by the waiver, the DHS and CBP recognize the importance of responsible environmental stewardship. To that end CBP has prepared this Environmental Stewardship Plan (ESP), which analyzes the potential environmental impacts associated with construction of tactical infrastructure in the U.S. Border Patrol's (USBP's) Yuma Sector. The ESP also discusses CBP's plans as to how it can mitigate potential environmental impacts. The ESP will guide CBP's efforts going forward.

As it moves forward with the Project described in this ESP, CBP will continue to work in a collaborative manner with local governments, state and Federal land managers, and the interested public to identify environmentally sensitive resources and develop appropriate best management practices (BMPs) to avoid or minimize adverse impacts, resulting from the installation of tactical infrastructure.

GOALS AND OBJECTIVES OF THE PROJECT

The Project will allow USBP agents to strengthen their control of the United States border between POEs in the USBP Yuma Sector. The Project will help to deter illegal entries within the USBP Yuma Sector by improving enforcement efficiency, thus preventing terrorists and terrorist weapons, cross-border violators (CBVs), drugs, and other contraband from entering the United States, while contributing to a safer work environment for USBP agents and the public.

OUTREACH AND AGENCY COORDINATION

CBP notified relevant Federal, state, and local agencies of the Project and requested input on environmental concerns such parties might have regarding the Project. CBP has coordinated with the Department of the Interior (DOI) including the Bureau of Land Management (BLM), Bureau of Reclamation (Reclamation), and U.S. Fish and Wildlife Service (USFWS); U.S. Section of the International Boundary and Water Commission (USIBWC); U.S. Environmental Protection Agency (USEPA); U.S. Army Corps of Engineers (USACE); U.S. Marine Corps Air Station (MCAS) Yuma; Arizona Game and Fish Department (AGFD); Yuma County; Arizona State Historic Preservation Office (AZSHPO); Greater Yuma Port Authority, and the City of San Luis along with various Native American tribes.

Although the Secretary issued the waiver, CBP has continued to work in a collaborative manner with federal, state, and local agencies, Native American tribes, and other stakeholders and has considered and incorporated agency comments into this ESP.

DESCRIPTION OF THE PROJECT

CBP will remove and replace approximately 27.5 miles of existing pedestrian fence (legacy fence) with bollard fence in the USBP Yuma Sector Area of Responsibility (AOR) near San Luis, Arizona. The new fence will be comprised of a P-3 Design Standard style bollard fence with a steel anti-climb plate and will range in height from 18 to 30 feet. The Project corridor will be 60 feet wide and the majority of the corridor is disturbed from previous fence and road construction projects. A fiber optic communications cable will be installed within the Project corridor approximately 6 to 10 feet north of the U.S./Mexico border.

The Project area contains several existing border security infrastructure elements including primary and secondary fences, patrol roads, and lighting and surveillance systems. The existing pedestrian fence, also referred to as the legacy fence, was installed in the 1990s and 2000s and does not meet current operational needs. The Project will include: (1) design, (2) site preparation and material delivery, (3) removal and replacement of the landing mat fence, and (4) construction of all-weather road and lighting improvements.

The Project will be constructed in seven linear segments that total approximately 27.5 miles in length (Table ES-1) in Yuma County, Arizona. Segment YUM8-01 is located 1.8 miles west of the San Luis Port of Entry (POE) and runs 1.6 miles in a north-south direction parallel to the Salinity Canal and Colorado River. Segment YUM8-01 is disjunct from the six other segments, which run contiguously in a west to east direction, parallel to the U.S./Mexico border, beginning on the east side of the San Luis POE and continuing east along the border for approximately 26 miles.

Table ES-1. Yuma Wall Replacement Project Segments

Segment ID	Length (miles)
YUM8-01	1.6
YUM9-02	2.9
YUM10-01	4.2
YUM 10-02	6.5
YUM10-03	1.1
YUM11-01	7.2
YUM11-03	4.0
Total Length	27.5

The removal of the legacy fence and installation of the bollard wall will be conducted in sections. As each section of the existing legacy fence is removed, a new section of bollard wall will be installed. Each new section of bollard wall will be placed into position and secured below ground. Work may be supported by, water trucks, dozers, excavators, crane, and pile drivers. Disposal or recycling of the existing legacy fence will be the responsibility of the construction contractor. Once the bollard wall is installed, the Project area will be returned to conditions similar to those currently existing.

ENVIRONMENTAL IMPACTS AND BEST MANAGEMENT PRACTICES (BMPs)

Table ES-2 provides an overview of potential environmental impacts by specific resource area and a brief summary of associated BMPs. Chapter 3 through 12 of this ESP evaluate these impacts and expand upon these BMPs.

Table ES-2. Summary of Anticipated Environmental Impacts

Resource Area	Effects of the Project	Best Management Practices/Conservation Measures
Air Quality	Minor and temporary impact on air quality will occur during construction; air emissions will remain below <i>de minimis</i> levels.	Bare soil will be wetted to suppress dust and equipment will be maintained according to specifications.
Noise	Minor temporary increases to ambient noise during construction activities will occur. Noise impacts will be greatest during pile driving activities.	Equipment will be operated on an as needed basis. Mufflers and properly maintained equipment will be utilized to reduce noise. All generators will be in baffle boxes, have an attached muffler, or use other noise-abatement methods in accordance with industry standards. Pile drivers will be limited to 4 hours per day in Segment YUM9-02.
Land Use, Recreation, and Aesthetics	No impacts will occur on land use as a result of the Project. Minimal impact on visual resources and character of the land are expected. The Project will result in beneficial effects as a result of the bollard fence allowing views through the fence. The Project may have minimal temporary impacts on the Yuma Desert Management Area.	Environmental monitors will be present during construction to ensure construction activities remain within the Project footprint and impacts on the Yuma Desert Management Area are minimized.
Geologic Resources and Soils	Minor impact on soils will occur as a result of the Project. The majority of the impacts will involve only topsoil layers. Approximately 33 acres of previously disturbed soils within the fence footprint will be permanently disturbed.	An Storm Water Pollution Prevention Plan (SWPPP) and Spill Prevention, Control, and Countermeasure Plan (SPCCP) will be implemented as part of the Project.
Water Use and Quality		
Groundwater	Approximately 460 acre-feet of water will be required during construction of the Project. Based on the storage estimates for the groundwater basin, impacts on groundwater from the Project will have negligible to minor impacts on the availability of water in the region. There is a potential for groundwater contamination as a result of a petroleum-based product spill.	An SPCCP will be implemented as part of the Project.

Resource Area	Effects of the Project	Best Management Practices/Conservation Measures
Surface Waters and Waters of the United States	No surface waters or waters of the U.S. will be directly impacted by the Project.	None required.
Floodplains	The Project will impact 1.2 acre of floodplains. The Project will have minor and temporary impacts from sedimentation, erosion, and accidental spills or leaks caused by construction.	None required.
Biological Resources		
Vegetation	Approximately 20 acres of disturbed habitat will be impacted due to fence replacement and approximately 0.75 acre of disturbed habitat will be temporarily impacted by the staging areas. Beneficial impact on vegetation resources is anticipated as a result of protecting resources from cross-border violator traffic.	A monitor will be on-site during construction to ensure that construction activities remain within the Project footprint.
Wildlife and Aquatic Resources	Negligible to minor impacts on wildlife are expected. Potential loss of small mammals and reptiles during construction may occur. There is no suitable aquatic habitat in the Project corridor to support any listed species.	Surveys of nesting migratory birds will be conducted, and migratory bird nests will be flagged and avoided if construction occurs during breeding/nesting season. Use of lights during construction will be minimized.
Protected Species and Critical Habitat	No Federally protected species or Critical Habitat will be impacted as a result of the Project. The project may have a minor to moderate impact on state-listed species. However, BMPs implemented as part of the Project will minimize impacts to these species.	A monitor will be on-site during construction to ensure survey for and relocate state-listed species within the active construction footprint.
Cultural Resources	No National Register of Historic Places (NRHP)-eligible cultural resources will be impacted by the Project.	All construction will be restricted to previously surveyed areas. If any cultural material is discovered during construction, all activities within the vicinity of the discovery will be halted until receipt of clearance to resume work by a qualified archaeologist.
Socioeconomics	Short-term beneficial impacts on the local economy will be expected.	None required.

CBP followed specially developed design criteria to reduce adverse environmental impacts. CBP will have environmental monitors on-site and impacts will be documented during construction to determine the extent and scope of mitigation measures necessary to reduce or

offset adverse environmental impacts. Design criteria to reduce adverse environmental impacts included consulting with Federal and state agencies and other stakeholders to develop appropriate BMPs and minimizing physical disturbance where practicable. BMPs will include implementation of a SPCCP, SWPPP, Environmental Protection Plan, Dust Control Plan, and Fire Prevention and Suppression Plan.

In addition to the design criteria and BMPs, CBP may implement mitigation measures. The scope or extent of CBP's mitigation will be based on the actual impacts from the Project and available funding. CBP will assess the actual impacts from the Project after it is complete. CBP's assessment will be based on, among other things, feedback from environmental monitors and the final construction footprint. To the extent mitigation is warranted and funding is available, CBP will work with stakeholders, to identify and implement appropriate mitigation measures.

The following definitions describe characteristics that might relate to various impacts:

- *Short-term or long-term.* These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. In general, short-term impacts are those that will occur only with respect to a particular activity or for a finite period or only during the time required for constructions or installation activities. Long-term impacts are those that are more likely to be persistent and chronic.
- *Direct or indirect.* A direct impact is caused by an action and occurs contemporaneously by at or near the location of the action. An indirect impact is caused by an action and might occur later in time or be farther removed in distance but is still a reasonably foreseeable outcome of the action.
- *Negligible, minor, moderate, or major.* These relative terms are used to characterize the magnitude or intensity of an impact. Negligible impacts are generally those that might be perceptible but are at the lower level of detection. A minor impact is slight, but detectable. A moderate impact is readily apparent. A major impact is one that is severely adverse or exceptionally beneficial.
- *Adverse or beneficial.* An adverse impact is one having adverse, unfavorable, or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having outcomes on the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.

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1.0 GENERAL PROJECT DESCRIPTION

1.1 INTRODUCTION TO THE ENVIRONMENTAL STEWARDSHIP PLAN

The principal mission requirements of the Department of Homeland Security (DHS) include border security and the detection and prevention of illegal entry into the United States. Congress has provided the Secretary of Homeland Security (the Secretary) with a number of authorities necessary to carry out DHS's border security mission. One of these authorities is found in Section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA). Section 102(a) of IIRIRA provides that the Secretary shall take such actions as may be necessary to install additional physical barriers and roads (including the removal of obstacles to detection of illegal entrants) in the vicinity of the United States (U.S) border to deter illegal crossings in areas of high illegal entry into United States lands. In Section 102(b) of IIRIRA, Congress has called for the installation of additional fencing, barriers, roads, lighting, cameras, and sensors on the southwest border. Finally, in Section 102(c) of IIRIRA, Congress granted to the Secretary the authority to waive all legal requirements as determined necessary to ensure the expeditious construction of barriers and roads authorized by Section 102 of IIRIRA.

DHS has used the authority granted to it by Congress in Section 102 of IIRIRA to construct needed border infrastructure across the southwest U.S. border. U.S. Customs and Border Protection (CBP) is the DHS component that has primary responsibility for such construction. CBP's construction of border infrastructure has been aided by the waiver authority set forth in Section 102(c) of IIRIRA. Although the waiver authority has facilitated the construction of border infrastructure, DHS/CBP has continually made a voluntary commitment to responsible environmental stewardship for projects covered by an IIRIRA waiver.

On April 18 of 2019, the Secretary issued a waiver covering, among other things, the replacement of approximately 27.5 miles of primary pedestrian fence in the United States Border Patrol (USBP) Yuma Sector (the Project). The existing pedestrian fence no longer meets USBP's operational needs; it will be replaced with a bollard-style wall that will improve both operational efficiency and safety for those USBP agents who work in the area. The Secretary's waiver means that CBP does not have any specific legal obligations under the laws that were included in the waiver, but just as was the case with past projects covered by a waiver, DHS and CBP recognize the importance of responsible environmental stewardship of our valuable natural and cultural resources. In order to work toward responsible environmental stewardship, CBP has completed environmental resource surveys, consulted with various stakeholders, and prepared this Environmental Stewardship Plan (ESP). The 2019 waiver is included as Appendix A.

The results of CBP's environmental review of the Project are being published in this ESP. The ESP includes a summary of the Best Management Practices (BMPs) that have been developed to help CBP avoid, minimize, and mitigate for potential environmental impacts and will guide the planning and execution of the Project (Appendix B).

This ESP was prepared in order to evaluate potential impacts of the Project on natural and human resources and to assist CBP and USBP to the extent practicable, while still achieving their security goals, in protecting critical resources during construction and operation of the tactical

infrastructure (TI) being installed as a part of the Project. This ESP is designed to identify each affected resource and evaluate all potential impacts on that resource. This ESP was not prepared to comply with specific laws or regulations; rather, it is a planning and guidance tool to facilitate construction in a manner that will minimize adverse impacts to the extent practicable.

The Project area in this document refers to the area in which permanent or temporary impacts may occur from Project construction activities. These impacts will generally be restricted to the 60-foot wide corridor (Project corridor) along the U.S./Mexico border known as the Roosevelt Reservation, a narrow strip of land east of the Wellton-Mohawk Bypass Drain (Salinity Canal), and the staging areas. To thoroughly address the potential impacts of the Project, a Study Area was analyzed as well, which generally extends 80 feet north of the border.

Some resources within the Project's region of influence (ROI), which is Yuma County, Arizona, are not addressed in this ESP because they are either not relevant to the analyses or the impacts to such resources are negligible. The resources that are excluded from further analyses, and the reasons for eliminating them are:

- **Climate:** An Executive Order dated March 28, 2017 rescinded guidance provided earlier in a Council on Environmental Quality (CEQ) memorandum regarding the approach to Greenhouse Gases (GHG) and climate decision-making analyses. Pursuant to the Executive Order, further analysis of GHG impacts from the Project is not required.
- **Sustainability:** The Project will use minimal resources during construction and maintenance and there will be minimal changes in USBP operations. Therefore, the Project will have a negligible impact on sustainability.
- **Human health and safety:** Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage, and no workplace safety laws or regulations were included in the waiver. The Occupational Safety and Health Administration (OSHA) and U.S. Environmental Protection Agency (USEPA) issue standards that specify the amount and type of training required for industrial workers, the use of protective equipment and clothes, engineering controls, and maximum exposure limits with respect to workplace stressors. The Project will not introduce new or unusual safety risks and construction protocols are expected to be carefully followed. Furthermore, the Project will benefit the safety of USBP agents and the public in the vicinity of the border by increasing operational efficiency of border infrastructure and reducing the flow of weapons, illegal drugs, and other contraband into the U.S. Since the only potential impacts of the Project on human safety are beneficial, this topic will not be reviewed in detail in the ESP.
- **Transportation effects on non-Federal existing roads:** The vast majority of the project takes place on land under Federal jurisdiction. However, some access routes may require use of county and limited access on some city roads. The anticipated impacts of this limited and temporary use of existing roads to replace the fence is expected to be negligible.

1.2 U.S. BORDER PATROL BACKGROUND

CBP's mission is to safeguard the U.S. borders, thereby protecting the public from dangerous people and materials while enhancing the Nation's global economic competitiveness by enabling legitimate trade and travel. In supporting CBP's mission, USBP is charged with establishing and maintaining operational control of the U.S. border between ports of entry (POEs). USBP's mission strategy consists of five main objectives:

- Establish substantial probability of apprehending terrorists and their weapons as they attempt to enter illegally between the POEs
- Deter illegal entries through improved enforcement
- Detect, apprehend, and deter smugglers of humans, drugs, and other contraband
- Leverage "smart border" technology to multiply the effect of enforcement personnel
- Reduce crime in border communities and consequently improve quality of life and economic vitality of targeted areas

USBP has nine administrative sectors along the U.S./Mexico international border. Each sector is responsible for implementing an optimal combination of personnel, technology, and infrastructure appropriate for its operational requirements. The USBP Yuma Sector is responsible for Yuma County in Arizona, and the area affected by the Project includes a portion of Yuma County.

1.3 GOALS AND OBJECTIVES OF THE PROJECT

The goal of the Project is to ensure CBP is able to fulfill its mission and prevent illegal entries into the U.S. This Project will help to achieve operational control of the U.S./Mexico international border.

The Project will help deter cross-border violations within the USBP Yuma Sector by improving border infrastructure, preventing terrorists and weapons from entering the U.S., reducing the flow of illegal drugs and other contraband, and thus providing a safer environment for USBP agents and the public.

1.4 STAKEHOLDER OUTREACH

CBP has notified numerous tribes, agencies, and non-profit organizations of their intent to replace the fence with a larger bollard style wall. Stakeholders with interests in the area include:

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

U.S. Army Corps of Engineers (USACE) - Regulatory Division - CBP has coordinated all activities with USACE to identify potential jurisdictional Waters of the U.S., including wetlands, and to develop measures to avoid and minimize impacts to these resources.

U.S. Fish and Wildlife Service (USFWS) - CBP has coordinated with USFWS to identify listed species that have the potential to occur in the Study Area.

U.S. Environmental Protection Agency (USEPA) - CBP has coordinated with USEPA to obtain feedback regarding, among other things, potential mitigation opportunities for unavoidable impacts, should mitigation be necessary, and to ensure appropriate Storm Water Pollution Prevention Plan (SWPPP) guidelines are implemented.

Bureau of Reclamation (Reclamation) - CBP has coordinated with the City regarding design features and potential conflict with Reclamation's planning goals.

Bureau of Land Management (BLM) - CBP has coordinated with the BLM regarding design features and potential conflict with BLM's planning goals.

Arizona State Historic Preservation Office (AZSHPO) - CBP has coordinated with the AZSHPO regarding the protection and preservation of Arizona's historic resources.

Arizona Game and Fish Department (AGFD) - CBP has coordinated with AGFD regarding potential impacts to species within their jurisdiction.

Arizona Department of Environmental Quality (ADEQ) - CBP has coordinated with the ADEQ regarding potential impacts to water and air quality and BMPs to minimize potential sedimentation and pollution resulting from Project implementation.

U.S. Marine Corps Air Station (MCAS) Yuma - CBP has coordinated with MCAS Yuma regarding design features and potential conflict with MCAS Yuma's planning goals.

Yuma County - CBP has coordinated with the County regarding design features and potential conflict with County's planning goals.

Greater Yuma Port Authority - CBP has coordinated with the Greater Yuma Port Authority regarding design features and potential conflict with the Greater Yuma Port Authority's planning goals.

City of San Luis - CBP has coordinated with the City regarding design features and potential conflict with City's planning goals.

Tribes - CBP has coordinated with the following tribes to alert them of the Project. Tribes on the notification list include:

- Quechan Tribe
- Ak-Chin Indian Community
- Cocopah Tribe
- Gila River Indian Community
- Tohono O'odham Nation

1.5 BEST MANAGEMENT PRACTICES

It is CBP's policy to reduce impacts through the sequence of avoidance, minimization, and mitigation. BMPs vary based on location and resource type. Both general BMPs and species-specific BMPs have been developed during the preparation of this ESP. CBP may also implement mitigation measures. The scope or extent of CBP's mitigation will be based on the actual impacts from the Project and available funding. Project impacts will be documented during construction, and assessed through monitoring after Project construction has been completed. CBP's assessment of mitigation will be based on, among other things, feedback from environmental monitors and the final construction footprint.

1.5.1 General Design BMPs

The design build contract will include design performance measures aimed at avoiding impacts prior to any construction. Designs will be evaluated on their ability to avoid and otherwise minimize environmental impacts by incorporating the following Design BMPs:

1. Maximum use of existing roads for construction access.
2. Lands and roads disturbed by temporary impacts repaired/returned to pre-construction conditions.
3. Early identification and protection of sensitive resource areas to be avoided.
4. Restoration of grades, soils, and vegetation in temporarily disturbed areas.
5. On-site retention of stormwater and runoff.

The following sections describe those measures that may be implemented to reduce or eliminate potential adverse impacts on specific aspects of the human and natural environment. Many of these measures have been incorporated by CBP as standard operating procedures based on past projects. Below is a summary of BMPs for each resource category that will be potentially affected. The BMPs have been coordinated with the appropriate agencies and land managers or administrators.

1.5.2 Air Quality

Measures will be incorporated to ensure that emissions of particulate matter less than 10 microns in size (PM-10) do not significantly impact the environment. Such measures will include dust suppression methods to minimize airborne particulate matter and diesel emissions generated during construction activities. Standard construction BMPs, such as minimized diesel idling and routine watering of the construction site and access roads, will be used to control fugitive dust during the construction phases of the Project. Additionally, all construction equipment and vehicles will be maintained in good operating condition to minimize exhaust emissions.

1.5.3 Noise

During the construction phase, short-term noise impacts are anticipated. All OSHA requirements will be followed by the contractor. Construction equipment will possess properly working mufflers and will be properly tuned to reduce backfires.

Minimize impact pile driver use to 4 hours per day in Segment YUM9-02.

1.5.4 Geological Resources

Vehicular traffic associated with the construction, maintenance, and repair activities will remain on established roads to the maximum extent practicable. Areas with highly erodible soils will be given special consideration when designing the Project to ensure incorporation of various BMPs, such as silt fences, straw bales, aggregate materials, wetting compounds, and rehabilitation, where possible, to decrease erosion. A SWPPP will be prepared prior to construction activities, and BMPs described in the SWPPP will be implemented to reduce erosion. Materials such as gravel or topsoil will be obtained from existing developed or previously used sources and not from undisturbed areas adjacent to the Project corridor.

Erosion control measures, such as waterbars, gabions, straw bales, and revegetation, will be implemented during and after construction activities. Revegetation efforts will be needed to ensure long-term recovery of the area and to prevent major soil erosion problems.

1.5.5 Water Resources

With regard to managing stormwater flows, CBP will address the potential for sedimentation and erosion with appropriate BMPs. A SWPPP will be adopted and implemented by contractors performing work on the Project, which will also include BMPs to reduce potential stormwater erosion and sedimentation effects on local drainages. A SWPPP will be adopted and implemented by contractors performing work on the Project, which will also include BMPs to reduce potential stormwater erosion and sedimentation effects on local drainages.

The changing of oil, refueling, and other actions that could result in a release of a hazardous substance should be restricted to designated staging areas that are a minimum of 100 feet from any surface drainage. Such designated areas should be surrounded with berms, sandbags, or other barriers to further prevent the accidental spill of fuel, oil, or chemicals. Any accidental spills should be immediately contained, cleaned up, and properly disposed of.

Recycled water will be used for dust suppression to the maximum extent possible. Water tankers will not discard unused water where it has the potential to enter any aquatic or marsh habitat. Water storage within the Project area should be maintained in closed on-ground containers located on upland areas, not in washes. Pumps, hoses, tanks, and other water storage devices will be cleaned and disinfected.

All engineering designs and subsequent hydrology reports will be reviewed by USIBWC prior to the start of construction activities so that the results of those activities do not increase, concentrate, or relocate overland surface flows into the U.S. or Mexico.

1.5.6 Biological Resources

The following summary of general Biological BMPs will be implemented. This list has been developed to follow a typical construction sequence. CBP recognizes all measures and BMPs discussed as valid interests and will work with USFWS and other appropriate agencies to address impacts to the greatest degree feasible, given that the Project is operating under the Secretary's waiver.

1. Areas already disturbed, or those to be disturbed later in the construction sequence, will be used for staging, parking, and equipment storage. Widening of existing roadbeds beyond approved designs will be prohibited.
2. To prevent impacts to avian species covered under the Migratory Bird Treaty Act (MBTA), if construction work cannot be avoided during the breeding season (February 15 to September 15), a biologist will survey for nesting birds and identify any nests one week prior to starting work. An appropriate buffer for avoidance will be established around any nesting birds until the young have fledged or the nest is no longer being used.
3. The perimeter of all areas to be disturbed and/or protected during construction or maintenance activities will be clearly demarcated using flagging or temporary construction fence prior to habitat clearing, and the marked boundaries maintained throughout the construction period. Disturbance outside of the construction perimeter will not be permitted. Construction travel will generally be constrained to previously disturbed areas wherever possible, using only designated roads and parking areas.
4. A designated biological monitor will be present during construction activities 5 days per week during the duration of construction. The biologist will conduct pre-construction nesting/breeding bird surveys along the Study Area ahead of active construction. Observations of birds, bird breeding/nesting behavior and bird nest, including burrowing owl (*Athene cunicularia*), shall be documented or recorded. Any active nests that are observed shall be identified to the species level and a buffer zone around the nest shall be flagged for avoidance until the young have fledged and the nests are abandoned to the extent practicable. If avoidance is not possible, the biologist shall coordinate with CBP on the relocation of active nests or closure of active burrows. The monitor shall advise the implementation of and document adherence to BMPs and project conditions. The monitors shall also remind the construction crews as necessary to stay within the Project area and of sensitive resources not to be damaged, destroyed, relocated, or removed. The monitor shall immediately notify the on-site construction representative assigned to the construction project if any sensitive resources are observed in the Project area and offer appropriate measures to avoid adverse effects to the resources. In the event that a sensitive resource is inadvertently disturbed through construction, the monitor shall immediately notify CBP and provide a description and location of the resource and the disturbance. Any infraction of other BMPs (e.g., accidental spills, lack of drip pans, etc.) shall also be reported to the on-site construction representative and recorded in the weekly monitoring reports. The monitor shall also be present at the final construction walk-through to identify any unresolved BMP or project condition infractions. The

monitor will maintain daily notes and prepare weekly reports. The weekly reports will be used to prepare a monthly monitoring report that will be submitted to CBP.

5. With the guidance of a biologist familiar with the potential species and habitats to be affected, CBP will develop a training plan regarding sensitive resources for CBP and construction personnel. This BMP does not apply to USBP operations. The training will include at a minimum descriptions of the resource and purpose for its protection, the conservation measures that must be implemented, and environmentally responsible construction practices.
6. Within the designated disturbance area, grading or topsoil removal will be limited to areas of necessity and within the limit of grading to provide required ground conditions for construction and maintenance activities. Minimizing the disturbance footprint minimizes impacts and restoration requirements.
7. Materials used for construction and on-site erosion control will be biodegradable and free of non-native plant seeds and other non-native plant parts to limit potential for infestation. Some natural materials cannot be fully certified as completely weed-free, and if such materials are used, follow-up monitoring and control to limit establishment of non-native plants will be implemented during the establishment period to insure native plant materials provide effective erosion control cover. Erosion control blankets and wattles will use biodegradable netting.
8. All material sources will be reviewed and approved prior to material being brought on-site. Borrow areas for fill materials such as rock, gravel, or topsoil will be obtained from existing developed or previously used sources, not from undisturbed areas within or adjacent to the Study Area.
9. To eliminate attracting predators of protected animals, all food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in closed containers and removed daily from the project site.
10. Any night lighting for the construction of the Project will be selectively placed, shielded, and directed away from all native vegetative communities north of the project footprint.
11. Waste contaminated with construction materials or from cleaning equipment carries oils, toxic materials, or other contaminants. Contaminated wastewater will be stored in closed containers on site until removed for disposal. Concrete wash water will not be dumped on the ground, but is to be collected and moved offsite for disposal.
12. Construction speed limits will not exceed 35 miles-per-hour (mph) on major unpaved roads (graded with ditches on both sides) and 25 mph on all other unpaved roads. Night time travel speeds will not exceed 25 mph, and may be less based on visibility and other safety considerations.
13. To prevent entrapment of wildlife species, the ends of all hollow construction stock, such as vertical fence posts/bollards, including those that will later be filled with reinforcing or

other materials, shall be covered to prevent wildlife from entering. Covers of all hollow construction stock will be in place upon arrival at the site and will be retained until such time the material is filled or otherwise closed to prevent entry by an animal. Construction (temporary or otherwise) of steep-walled pits is also to be avoided to prevent animal entrapment. Excavations more than 18 inches deep will be covered or a means of small animal escape provided, such as a firmly placed board (8" or wider) or an earthen ramp at a slope no steeper than 4:1, to prevent animal entrapment.

14. During follow-up monitoring and during maintenance activities, invasive plants found on the site will be treated and removed from the site. All chemical applications will be performed by a licensed applicator and herbicides will be used only according to label directions. The monitoring period will be defined in the site revegetation plan. Training to identify non-native invasive plants will be provided for CBP personnel or contractors, as necessary. Restored areas will have successfully established native plant communities within 5 years of implementing the plan.

15. In addition, species-specific and habitat-specific BMPs are also recommended:

- a. Burrowing Owl: Burrowing owl surveys shall be conducted 30 days prior to commencement of construction in burrowing owl areas. Active burrows shall be flagged for avoidance with a 250-foot buffer. Active burrows that cannot be avoided will be collapsed. If construction is during the nesting period (February 15 through September 15), the presence of eggs or young will be determined before owls are prevented from re-entering and collapsing the burrows following established guidelines. If young are present, burrows will not be collapsed until they fledge.
- b. Flat-Tailed Horned Lizard (*Phrynosoma mcallii*) and Yuman Fringe-Toed Lizard (*Uma rufopunctata*): Monitors will be present during construction activities to conduct surveys of the active construction footprint and relocate any individuals within the Project corridor. Individuals will be located outside the Project corridor.

1.5.7 Cultural Resources

The artifacts of previous cultures, the Spanish occupations, and the early American Period on the site could include: stone tools, pottery, arrow points, prehistoric and historic archaeological sites, old cans and bottles, historic structures, and human burials. Border monuments are also considered important cultural resources. Cultural resources can occur on the surface and underground, and are not specifically identified on plans to protect their locations. BMPs to protect cultural resources include:

1. Preconstruction surveys and documentation of cultural resources have been completed within the Study Area.
2. If cultural resources are encountered during construction, work must stop and the monitors must be notified. The monitor(s) will coordinate with the on-site construction supervisor and with the project management. An archaeologist will assess all findings and make recommendations to the CBP.

3. Archaeological material collected during the current Project will be cross analyzed with collections from earlier investigations for data recovery purposes.
4. All cultural resources should be treated with respect and dignity. No photographs should be taken of any human remains.

1.5.8 Hazardous Materials and Wastes

BMPs will be implemented as standard operating procedures during all construction activities, and will include proper handling, storage, and/or disposal of hazardous and/or regulated materials. The BMPs will include:

1. Recycling of old fence panels will be a part of the Project.
2. Nonhazardous waste materials and other discarded materials, such as construction waste, will be contained until removed from the construction site. Solid waste receptacles will be maintained at the staging areas, and non-hazardous solid waste (trash and waste construction materials) will be collected and deposited in on-site receptacles. Waste materials and other discarded materials contained in these receptacles will be removed from the site as quickly as practicable.
3. All fuels, waste oils, and solvents will be collected and stored in tanks or drums within a secondary containment system that consists of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein.
4. The refueling of machinery will be completed following accepted industry guidelines, and all vehicles will have drip pans during storage to contain minor spills and drips.
5. Any spill of reportable quantities will be contained immediately within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock, etc.) will be used to absorb and contain the spill. All spills will be reported to the designated CBP point of contact for the Project as well as the appropriate Federal and state agencies.
6. A Spill Prevention, Control, and Countermeasures Plan (SPCCP) will be in place prior to the start of operations, and all personnel will be briefed on the implementation and responsibilities of this plan.
7. All equipment maintenance, laydown, and dispensing of fuel, oil, or any other such activities will occur in the staging areas identified for use in this ESP. The designated staging areas will be located in such a manner as to prevent runoff from staging areas from entering surface drainages. All used oil and solvents will be recycled if practicable. All non-recyclable hazardous and regulated wastes will be collected, characterized, labeled, stored, transported, and disposed of consistent with USEPA standards.

2.0 DESCRIPTION OF THE PROJECT

DHS and CBP will remove and replace approximately 27.5 miles of existing pedestrian fence (legacy fence) with bollard fence in the USBP Yuma Sector AOR near San Luis, Arizona. The Project area, with a small exception of the staging and access that will occur on state, county, and city roads, is managed by Federal land management agencies (Figure 2-1). The new fence will be comprised of a P-3 Design Standard style bollard fence with a steel anti-climb plate and will range in height from 18 to 30 feet. The proposed Project corridor will be 60 feet wide and the majority of the corridor is disturbed from previous fence and road construction projects. A fiber optic communications cable will be installed within the Project corridor approximately 6 to 10 feet north of the U.S./Mexico border.

The Project area contains several existing border security infrastructure elements including primary and secondary fences, patrol roads, and lighting and surveillance systems. The existing legacy fence was installed in the 1990s and 2000s and does not meet current operational needs. Legacy fence in the Project corridor consists of landing mat fence (Photograph 2-1), steel sheet and post fence (Photograph 2-2), and steel mesh and post fence (Photograph 2-3). Currently, there is approximately 7 miles of landing mat fence, 6 miles of steel sheet and post fence, and 14.5 miles of steel mesh and post fence. The Project will include: (1) design, (2) site preparation and material delivery, (3) removal and replacement of legacy fence, and (4) installation of a fiber optics communications cable.



Photograph 2-1. Existing landing mat fence

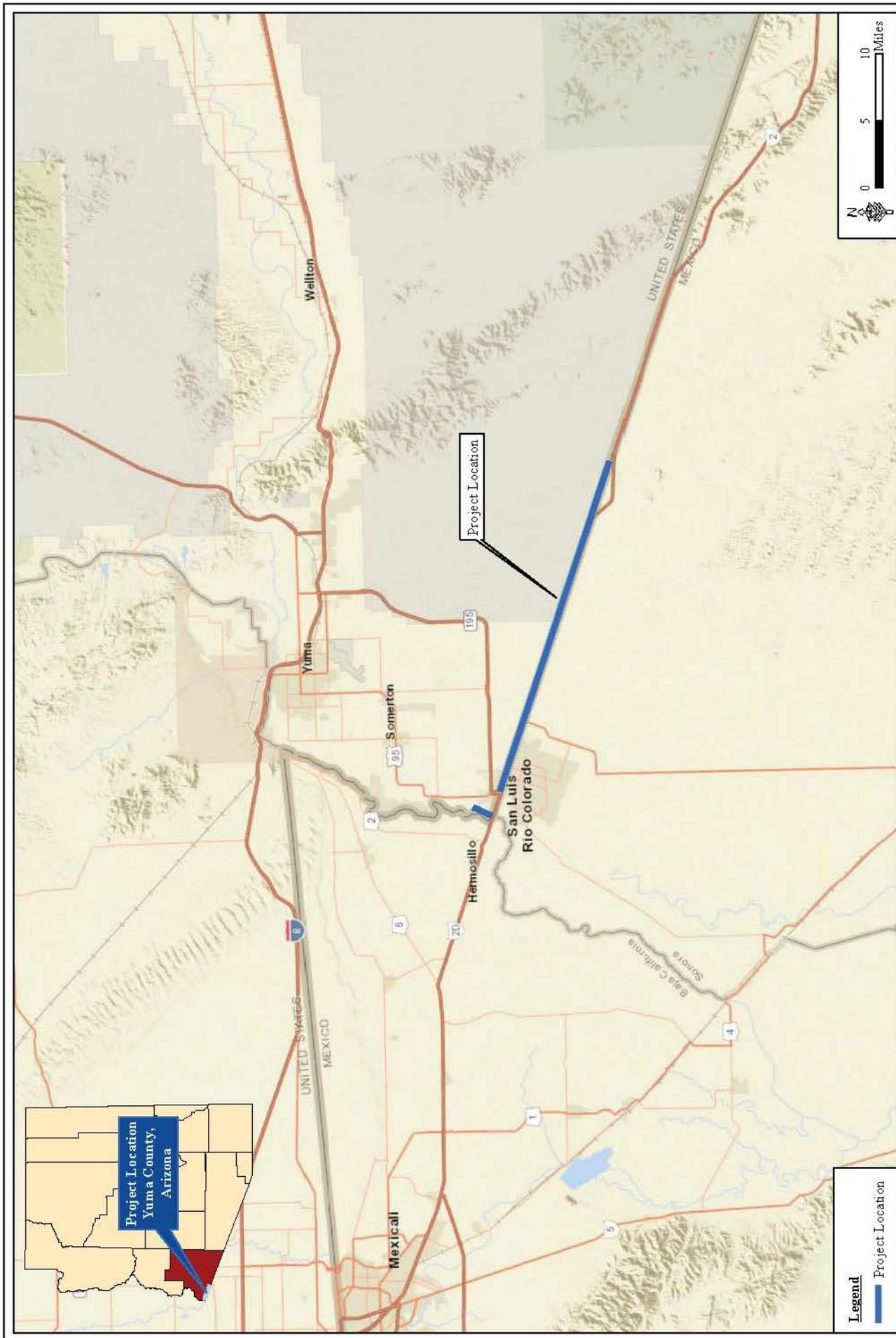


Figure 2-1. Project Location



Photograph 2-2. Steel sheet and post fence



Photograph 2-3. Existing steel mesh and post fence

The Project will be constructed in seven linear segments that total approximately 27.5 miles in length (Table 2-1) in Yuma County, Arizona. Segment YUM8-01 is located 1.8 miles west of the San Luis Port of Entry (POE) and runs 1.6 miles in a north-south direction parallel to the Salinity Canal and Colorado River (Figure 2-2a). Segment YUM8-01 is disjunct from the six other segments, which run contiguously in a west to east direction, parallel to the U.S./Mexico border, beginning on the east side of the San Luis POE and continuing east along the border for approximately 26 miles (Figures 2-2b through 2-2g).

Table 2-1. Yuma Wall Replacement Project Segments

Segment ID	Length (miles)
YUM8-01	1.6
YUM9-02	2.9
YUM10-01	4.2
YUM 10-02	6.5
YUM10-03	1.1
YUM11-01	7.2
YUM11-03	4.0
Total Length	27.5

To account for heat restrictions for adequate concrete drying and curing processes, concrete pours may take place during pre-dawn hours during summer months. The contractor will determine the appropriate schedule for concrete pouring and will ensure that the concrete is installed in accordance with industry standards. A 24-hour schedule will be implemented only when additional efforts are needed in order to maintain the work task schedule due to weather or to meet Federally mandated timelines. In order to facilitate construction activities during these work hours, portable lights will be used. It is estimated that no more than 10 lights will be in operation at any one time at each site within the Project corridor.

A 6-kilowatt self-contained diesel generator powers these portable lights (Photograph 2-4). Each unit typically has four 400- to 1000-watt lamps. The portable light systems can be towed to the desired construction location, as needed. Lights will be shielded and will be oriented to illuminate only the work area to ensure the safety of the workers. The number of lights will be minimized and will be utilized for construction purposes only. The area affected by illumination is limited to 200 feet from the light source.



Figure 2-2a. Segment YUM8-01



Figure 2-2b. Segment YUM9-02



Figure 2-2c. Segment YUM10-01



Figure 2-2.d. Segment YUM10-02



Figure 2-2e. Segment YUM10-03



Figure 2-2f. Segment YUM11-01

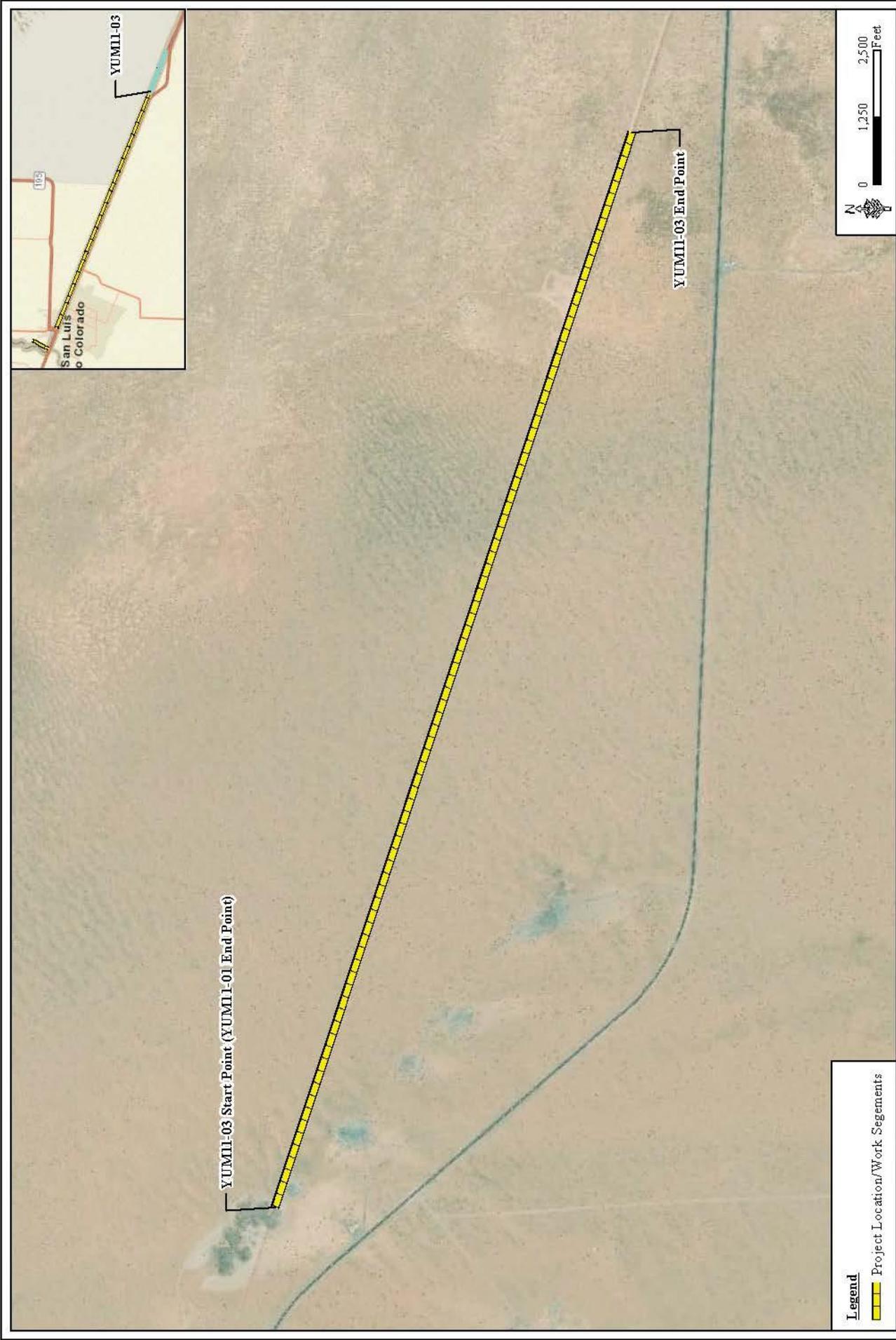


Figure 2-2g. Segment YUM11-03



Photograph 2-4. Portable lights

2.1 LOCATION

The Project area is in the southwestern corner of Yuma County, Arizona and follows the U.S./Mexico International Border. Specifically, it is located directly on the border in Township 10 South, Range 25 West, Section 35; Township 11 South, Range 25 West, Sections 3, 10, and 12; Township 11 South, Range 24 West, Sections 7, 17, 16, 22, 23, 24, and 25; Township 11 South, Range 23 West, Sections 30, 29, 28, 33, 34, 35, and 36; Township 12 South, Range 23 West, Section 1; Township 12 South, Range 22 West, Sections 6, 5, 4, 9, 10, 11, 14, and 13; and Township 12 South, Range 21 West, Sections 18, 17, 20, 21, 22, 23, 26, and 25.

2.2 DESIGN

The preliminary design meets the project goals and has been informed by numerous technical studies such as engineering, constructability, and environmental evaluations, which included biological and cultural resource assessments. The bollard fence will be a minimum of 18 feet high; however, CBP will install 25 to 30-foot high sections in areas where dense housing or conflicting land uses may be present.

Construction of these design elements will generate impacts mainly within the Roosevelt Reservation and along the eastern levee of the Salinity Canal. This 60-foot wide area of impact is described in this document as the Project corridor, and the larger Study Area was created during the initial analyses to provide full consideration of impacts within the larger landscape. The Study Area is 80 feet wide from the U.S./Mexico border and includes the staging area sites. Temporary construction impacts may occur within the Study Area, and those sites will be restored to pre-construction conditions.

2.3 CONSTRUCTION ACCESS, MATERIAL DELIVERY, AND STAGING

The new bollard wall will be prefabricated off-site and then transported to the site by 18-wheel flatbed trucks using pre-approved haul routes. The new bollard wall will arrive on-site as 8 to 10-foot wide panels. Each truck will transport an estimated five panels at a time. Each panel will be comprised of eight to ten, 6-inch-square (5/16-inch thick) Core-10 steel bollards filled with cement and welded in place by a horizontal steel bar on the bottom and an approximately 2-foot-wide steel sheet across the top. The steel bollards will be spaced approximately 5 inches apart to allow for cross-border visibility. Each panel is estimated to weigh approximately 3,500 pounds, excluding any below ground materials or concrete.

One designated primary staging area will accept large fence panel deliveries, store larger equipment, and house construction materials. Each of the seven Project segments will also have at least one secondary staging area located within the 60-foot Project corridor. The secondary staging areas will be equipped to support nearby construction and will have equipment necessary for fence removal and installation.

Access to Project sites will utilize existing roads within the Project area wherever possible, including Federal as well as county, and city roads. The primary access along the border will be the all-weather patrol road within the Roosevelt Reservation.

2.4 SITE PREPARATION

Site preparation primarily consists of grading staging areas. Erosion control measures will be necessary, as will biological surveys if construction takes place during the nesting season (from February 15 through September 15 every year). BMPs will limit impacts to all resources including (but not limited to) wildlife, botanical, cultural, and other resources. Specific BMPs, will be implemented prior to and during construction to ensure minimal disturbance to the Project area.

All activities associated with implementation of the Project have been designed pursuant to the constraints identified in the Biological Survey Report prepared for the Project. These constraints to on-site preparation and construction ensure impacts to the biological resources present are minimized to the extent practicable.

2.5 REMOVAL AND REPLACEMENT OF LEGACY FENCE WITH BOLLARD WALL

The removal of the legacy fence and installation of the bollard wall will be conducted in sections. As each section of the existing legacy fence is removed, a new section of bollard wall will be installed. Each new section of bollard wall will be placed into position and secured below ground. Heavy equipment anticipated to be used during wall replacement and bollard wall construction consists of water trucks, impact pile driver, loader, dozer, excavator, and a crane. Disposal or recycling of the existing legacy fence will be the responsibility of the construction contractor. Once the bollard wall is installed, the Project area will be returned to conditions similar to those currently existing.

2.6 CONSTRUCTION SCHEDULE

It is anticipated that construction will occur seven days per week from 7:00 am to 7:00 pm, with some exceptions where work may be scheduled 24 hours per day. Construction is expected to last from April 2019 until April 2020 and take approximately 260 work days to complete. There is potential for nighttime construction to occur as well. Border security lighting exists throughout a portion (Segment YUM9-02 and YUM10-01) of the Project corridor and will light the area to allow for construction at night. In those areas where border security lighting is not present, mobile light plants will be used during nighttime construction.

2.7 ENVIRONMENTAL CONSIDERATIONS

The following Sections 3 through 11 address numerous environmental factors to be considered during final design and implementation of the Project.

3.0 AIR QUALITY

3.1 AFFECTED ENVIRONMENT

Pursuant to the DHS Secretary's waiver, CBP no longer has any specific legal obligations under the Clean Air Act (CAA). However, CBP recognizes the importance of environmental stewardship and has applied the appropriate standards and guidelines associated with the CAA as the basis for evaluating potential environmental impacts and implementing appropriate BMPs in regard to air quality.

The USEPA 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), 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. The NAAQS are included in Table 3-1.

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

A conformity analysis is the process used to determine whether a Federal action meets the requirements of the 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. If the emissions exceed established limits, known as *de minimis* thresholds, the proponent is required to implement appropriate mitigation measures. Yuma County is designated as a moderate non-attainment area for PM-10 and a portion of the county is marginal non-attainment area for 8-Hour Ozone (2015). It is important to note that the proposed action is located in a corridor that is outside the marginal non-attainment area for 8-Hour Ozone (2015). The sources of PM-10 include natural windstorms, windblown dust from agricultural operations, and emissions from the combustion of hydrocarbons in cars, trucks, generators, and industrial equipment. The sources of PM-2.5 include natural windstorms, emissions from combustion engines, and power generation.

Table 3-1. National Ambient Air Quality Standards

Pollutant	Primary Standard Level	Primary Standard Averaging Time	Secondary Standard Level	Secondary Standards Averaging Times
Carbon Monoxide	9 ppm (10 mg/m ³)	8-hour ⁽¹⁾	None	None
	35 ppm (40 mg/m ³)	1-hour ⁽¹⁾	None	None
Lead	0.15 µg/m ³ ⁽²⁾	Rolling 3-Month Average	Same as Primary	Same as Primary
	1.5 µg/m ³	Quarterly Average	Same as Primary	Same as Primary
Nitrogen Dioxide	53 ppb ⁽³⁾	Annual (Arithmetic Average)	Same as Primary	Same as Primary
	100 ppb	1-hour ⁽⁴⁾	None	None
Particulate Matter (PM-10)	150 µg/m ³	24-hour ⁽⁵⁾	Same as Primary	Same as Primary
Particulate Matter (PM-2.5)	12.0 µg/m ³	Annual ⁽⁶⁾ (Arithmetic Average)	15.0 µg/m ³	Annual ⁽⁶⁾ (Arithmetic Average)
	35 µg/m ³	24-hour ⁽⁷⁾	Same as Primary	Same as Primary
Ozone	0.075 ppm (2008 std)	8-hour ⁽⁸⁾	Same as Primary	Same as Primary
	0.070 ppm (2015 std)	8-hour ⁽⁹⁾	Same as Primary	Same as Primary
	0.12 ppm	1-hour ⁽¹⁰⁾	Same as Primary	Same as Primary
Sulfur Dioxide	75 ppb ⁽¹¹⁾	1-hour	0.5 ppm	3-hour ⁽¹⁾

Source: USEPA 2019a

Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb - 1 part in 1,000,000,000) by volume, milligrams per cubic meter of air (mg/m³), and micrograms per cubic meter of air (µg/m³).

⁽¹⁾ Not to be exceeded more than once per year.

⁽²⁾ Final rule signed October 15, 2008.

⁽³⁾ The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard

⁽⁴⁾ To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).

⁽⁵⁾ Not to be exceeded more than once per year on average over 3 years.

⁽⁶⁾ To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.

⁽⁷⁾ To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (effective December 17, 2006).

⁽⁸⁾ To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).

⁽⁹⁾ To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.070 ppm (effective December 28, 2015).

⁽¹⁰⁾ (a) USEPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").

(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1.

⁽¹¹⁾ (a) Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

3.2 ENVIRONMENTAL CONSEQUENCES

Temporary and minor increases in air pollution will occur from the use of construction equipment (combustion emissions) and the disturbance of soils (fugitive dust) during construction of the fence, low-water crossings, and gate and repair and maintenance of the construction road. The following paragraphs describe the air calculation methodologies utilized to estimate air emissions produced by the proposed Project.

Fugitive dust emissions were calculated using the emission factor of 0.22 ton per acre per month (Air Emissions Guide for Air Force Transitory Sources, Methods for Estimating Emissions of Air Pollutants for Transitory Sources at U.S. Air Force Installations, August 2018), 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 (USEPA 2001).

USEPA's Motor Vehicle Emission Simulator (MOVES) model was used to calculate emissions from construction equipment. Combustion emission calculations were made for standard construction equipment, such as front-end loaders, excavators, bulldozers, cranes, and cement trucks. Assumptions were made regarding the total number of days each piece of equipment will be used and the number of hours or miles per day each type of equipment will be used.

Construction workers will temporarily increase the combustion emissions in the airshed during their commute to and from the Project area. Emissions from delivery trucks will also contribute to the overall air emission budget. Emissions from delivery trucks and construction worker commuters traveling to the job site were also calculated using the MOVES model.

The purpose of this assessment is to evaluate impacts to ambient air quality from the proposed actions. Air quality impacts from the proposed actions will be significant if emissions will:

- 1) Increase ambient air pollution concentrations above the National Ambient Air Quality Standards (NAAQS),
- 2) Contribute to existing violations of the NAAQS,
- 3) Interfere with, or delay timely attainment of, the NAAQS,
- 4) Impair visibility within Federally-mandated Prevention of Significant Deteriorations Class I areas,
- 5) Result in the potential for any new stationary source to be considered a major source of emissions as defined in 40 CFR Part 52.21 (total emissions of any pollutant subject to regulations under the CAA that is greater than 250 tons per year for attainment areas),
- 6) for mobile source emissions, the increase in emissions to exceed 250 tons per year for any pollutant, or

- 7) for (GHG) emissions, exceed 25,000 metric tons (27,557 U.S. Tons) of direct CO₂-equivalent CO_{2e} emissions on an annual basis.

Per 40 Code of Federal Regulations (CFR) Part 93, Chapter 153, a conformity determination is required for each criteria pollutant or precursor where the total of direct and indirect emissions from the criteria pollutant or precursors in a nonattainment or maintenance area caused by a Federal action will equal or exceed specified *de minimis* levels. In determining the significance of the Proposed Actions, the *de minimis* levels will be used for PM-10. All other compounds will be compared to significance levels specified in (1) through (7), above.

Table 3-2 provides a summary of emissions from the proposed action and a determination of their significance. The total emissions from all activities are demonstrated to be below the significance levels; therefore, the proposed action is determined to not have significant impacts on air ambient quality. Air emissions calculations are provided in Appendix C.

Table 3-2. Total Air Emissions from the Project versus the *de minimis* Threshold Levels

Pollutant	Total (tons/year)	Significance Threshold (tons/year) ¹	Significant Impact
CO	2.24	250	No
Volatile Organic Compounds (VOC)	0.51	250	No
Nitrogen Oxides (NO _x)	2.40	250	No
PM-10	28.64	100	No
PM-2.5	3.07	250	No
SO ₂	0.01	250	No
CO _{2e}	0.70	27,557	No

Source: 40 CFR 93.153(b)(1) and Gulf South Research Corporation (GSRC) model projections.

¹ Note that Yuma County is in moderate non-attainment for PM-10.

4.0 NOISE

4.1 AFFECTED ENVIRONMENT

The U.S. Department of Housing and Urban Development (HUD) noise program sets the standards for construction activities in residential areas (HUD 1984). The HUD noise regulations are based on 24 CFR 51B and establish the minimum national standards “to protect citizens against excessive noise in their community and places of residence.” Generally, noise is described as an unwanted sound, which can be based either on objective (e.g., hearing loss, damage to structures, etc.) or subjective (e.g., community annoyance) observations.

Sound is usually represented on a logarithmic scale in units called decibels (dB) and is referred to as sound level. Another measurement, A-weighted decibel (dBA), is a single measure of noise at a given, maximum level or constant state level, but weighted to approximate the response of the human ear with respect to frequencies. In general, the range of human hearing is 0 dB to approximately 120 dB, with discomfort or pain being experienced around 120 dB.

Nighttime noise levels are generally viewed as a greater community annoyance than the same levels occurring during the day. It is generally given that people perceive a nighttime noise at 10 dBA louder than when that same noise is experienced during the day. This perception occurs largely because background environmental sound levels at night, in most areas, are also approximately 10 dBA lower than those during the day. As such, nighttime noise levels are often perceived as intrusive more often than the same noise level during the day. Below is a summary and definition of noise levels based on the HUD noise program.

Acceptable (not exceeding 65 dBA) – The noise exposure may be of some concern, but common building construction will make the indoor environment acceptable and the outdoor environment will be reasonably pleasant for recreation and play.

Normally Unacceptable (above 65 dBA but not greater than 75 dBA) – The noise exposure is significantly more severe; barriers may be necessary between the site and prominent noise sources to make the outdoor environment acceptable; special building constructions may be necessary to ensure that people indoors are sufficiently protected from outdoor noise.

Unacceptable (greater than 75 dBA) – The noise exposure at the site is so severe that the construction costs to make the indoor noise environment acceptable may be prohibitive, and the outdoor environment will still be unacceptable.

Generally, 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, that noise level will be 79 dBA at a distance of 100 feet from the noise source, 73 dBA at a distance of 200 feet, and so on. To estimate the attenuation of the noise over a given distance, the following relationship is used:

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

Where:

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

Source: California Department of Transportation 1998.

The majority of the new bollard fence is located outside the city limits of San Luis, Arizona within more of a rural setting. A majority of the Project corridor is buffered by crop fields on the south side and farmland on the west. Segment YUM 9-02 has three businesses (Arizona Secure Self Storage Co, U-Haul, and Frank’s Service and Trucking) that are adjacent to the Study Area and office suites designed for light industrial activities approximately 500 feet north. The closest that the Study Area comes to residential homes is approximately 800 feet. There are 34 residential homes within 800 to 1,000 feet of the Study Area. There are no parks, churches, schools, hospitals, or other sensitive noise receptors within 1,000 feet of the Project corridor.

4.2 ENVIRONMENTAL CONSEQUENCES

Table 4-1 depicts noise emission levels for construction equipment, which range from 68 dBA to 104 dBA at 100 feet (Federal Highway Administration [FHWA] 2007).

Table 4-1. A-Weighted (dBA) Sound Levels of Construction Equipment and Modeled Attenuation at Various Distances from the Source¹

Noise Source	100 feet	200 feet	500 feet	1,000 feet	2,000 feet	3,000 feet
	dBA	dBA	dBA	dBA	dBA	dBA
Backhoe	72	66	58	52	46	43
Crane	75	69	61	55	49	46
Dump truck	70	64	56	50	44	41
Excavator	75	69	61	55	51	48
Front-end loader	73	67	59	53	47	44
Concrete mixer truck	73	67	59	53	47	44
Pneumatic tools	75	69	61	55	49	46
Auger drill rig	78	72	64	58	52	49
Bull dozer	76	70	62	56	50	47
Generator	75	69	61	55	49	46
Impact pile driver	104	98	90	84	78	75
Flatbed truck	68	62	54	48	42	39

Source: FHWA 2007 and GSRC

¹The dBA at 50 feet is a measured noise emission (FHWA 2007).

*Results based on GSRC modeled estimates.

Using worst-case scenario of 104 dBA, the noise model predicts that noise emissions from the impact pile driver (proposed construction equipment) will have to travel 3,000 feet before they will attenuate to levels below 75 dBA. The area encompassed within the 2,000 feet (78 dBA)

noise contour was measured using Google Earth Pro™ and was used to determine the number of residential receptors (Figures 4-1). It was assumed that the new bollard fence will take approximately 260 days to construct, and construction noises affecting residential receptors will not occur over the entire Project corridor.

Residential Receptors

Approximately 550 single-family homes and six green spaces are located within 2,000 feet of the construction limits of the Project corridor (see Figure 4-1). These sensitive noise receptors may experience noise emissions greater than 78 dBA, which are normally unacceptable (HUD 1984) on days that the pile driver is operational and inside the 2,000-foot corridor. This level of noise will only be exposed during the construction phase of Section YUM9-02 (8,100 feet) and only during pile driver operations. When the pile driver is not operational, noise levels fall within acceptable limits, (less than 65 dBA) for all sensitive receptors. Pile drivers will be limited to 4 hours per day in Segment YUM9-02 due to excessive noise levels. Noise impact may be excessive for those residential neighborhood houses within 2,000 feet, but only while the pile driver is in operation. It is anticipated the impact pile drive will only be used intermittently.

Construction noise will not negatively affect the entire construction corridor. Sensitive receptors will only be impacted for the construction of Segment YUM9-02 within 2,000 feet for short periods of times as the Project progresses down the line (i.e., on any given day, approximately 150 houses may experience excessive noise / vibration levels) during construction of Segment YUM9-02 (see Figure 4-1). Noise generated by the construction activities will be intermittent and last for approximately 260 days over the span of the entire Project. Noise will return to ambient levels post-construction. It is anticipated that noise impacts from construction activities will be minor.



Figure 4-1. Impacted Sensitive Receptors

5.0 LAND USE, RECREATION, AND AESTHETICS

5.1 AFFECTED ENVIRONMENT

5.1.1 Land Use and Recreation

The majority of the Project will occur within the Roosevelt Reservation, a 60-foot-wide reservation immediately north of the U.S./Mexico border which was set aside for border security uses. CBP operations and tactical infrastructure construction within the 60-foot Roosevelt Reservation is consistent with the purpose of the Roosevelt Reservation. The Project corridor traverses the San Luis POE, as well as urban, suburban, and agricultural areas of Yuma County, Arizona. The landscape within the Study Area is generally disturbed, and varies from canal levee, open desert and agricultural fields. None of the land within the Study Area is identified for recreational use.

A portion of the Study Area occurs within the Yuma Desert Management Area (YDMA) (Figure 5-1). The YDMA was established by the 1997 Flat-Tailed Horned Lizard Rangeland Management Strategy and serves as a tool to facilitate flat-tailed horned lizard conservation (Flat Tailed Horned Lizard Interagency Coordinating Committee [FTHLICC] 2003). Five such management areas were established to:

- Continue to secure and manage sufficient habitat to maintain self-sustaining flat-tailed horned lizard populations.
- Maintain a long-term stable or increasing population of flat-tailed horned lizards in all management areas.
- Continue to support research that promotes conservation of the species. Limit the loss of habitat and effects on the flat-tailed horned lizard populations through effective mitigation and compensation.
- Encourage and assist Mexico in developing and implementing a flat-tailed horned lizard conservation plan.

5.1.2 Aesthetics

Aesthetic resources consist of the natural and man-made landscape features that give a particular environment its visual characteristics. All of the Project corridor is heavily disturbed by anthropogenic land use. YUM8-01 is located along the Salinity Canal levee and is bordered by active agricultural fields. The eastern Project segments are located within the Roosevelt Reservation that is disturbed by prior fence and road construction and USBP law enforcement activities. Very little natural vegetation is present within the Project corridor, but Lower Colorado River Subdivision Sonoran Desertscrub vegetation is found adjacent to the Project corridor in the eastern segments.

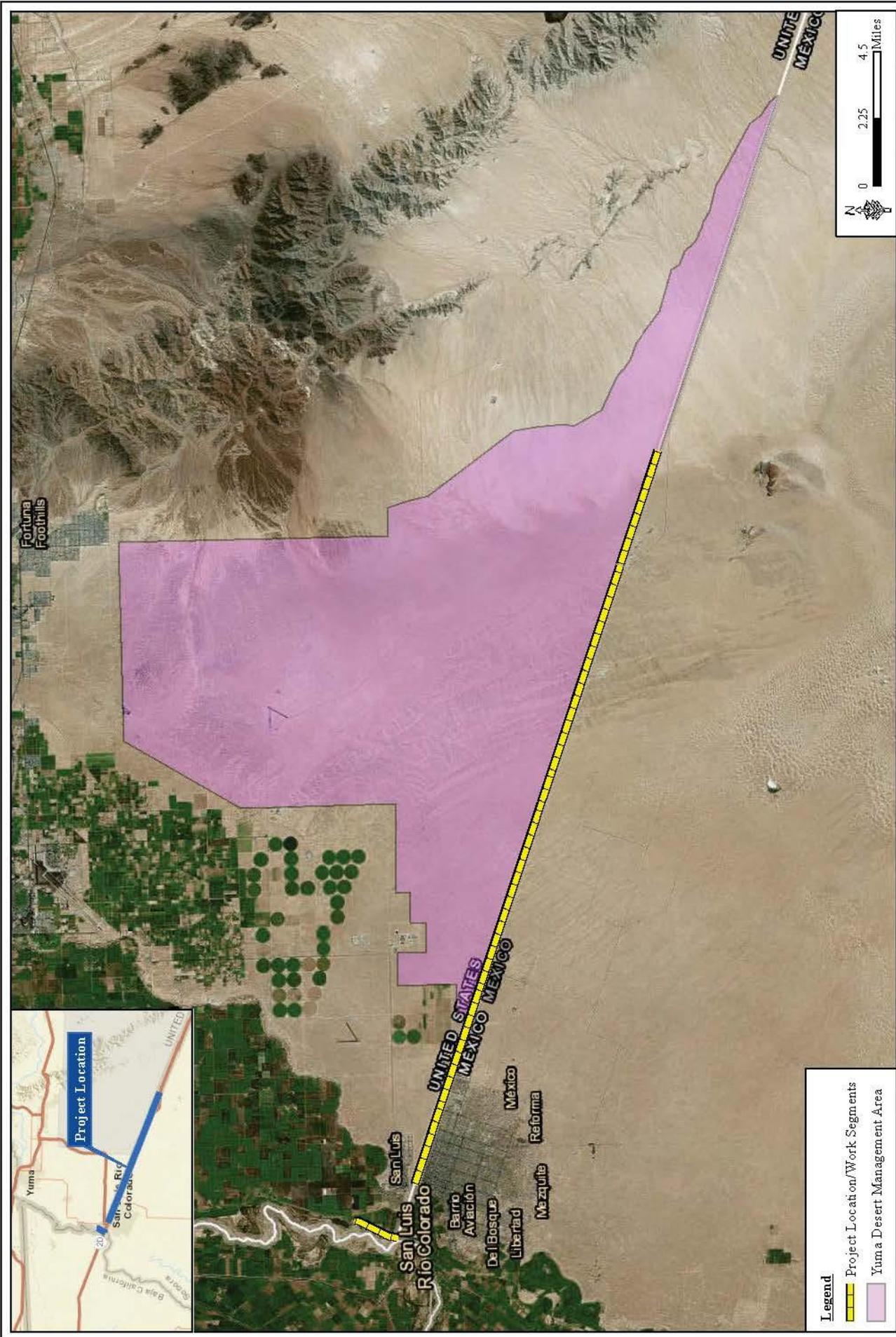


Figure 5-1. Yuma Desert Management Area

5.2 ENVIRONMENTAL CONSEQUENCES

5.2.1 Land Use and Recreation

There will be no impacts on land use with the implementation of the Project. The Project will replace the legacy fence within the same footprint. With the exception of YUM8-01 the Project corridor is located within the Roosevelt Reservation which is designated for border security. Segment YUM8-01 is within a corridor currently under the operational control of USBP and managed by USIBWC.

Potential impacts will occur within the YDMA. Impacts on the YDMA will include temporary impacts to soils, vegetation, and wildlife resources as discussed in those respective sections. Design measure discussed in Section 1.5.6 will minimize impacts on the YMDA and potential impacts on the YDMA are anticipated to be temporary and negligible.

5.2.2 Aesthetics

Currently, the legacy fence consists of landing mat fence, steel sheet and post or steel mesh and post fences. Landing mat and steel sheet and post fences are solid and restrict the view across the border. Installation of the bollard fence will allow for views through the fence which are currently restricted by the landing mat and steel sheet and post fences. The replacement fence will be 18 to 30 feet tall, which is taller than the current 12-foot legacy fences. The taller bollard fence will be visually more substantial than the existing fence; however, it will be less of a visual impediment compared to the existing fence. Additionally, the existing fence is a linear feature which is an identifying characteristic of the border control area. The overall linear characteristic of the fence will remain; however, it will allow for views through the fence, thus having beneficial impacts on the appearance of the Project corridor. The transparent qualities of the bollard fence allow people to see through the fence, which is beneficial for USBP agents in an operational sense and for anyone else wishing to obtain views of the broader landscape across the border.

6.0 GEOLOGICAL RESOURCES AND SOILS

6.1 AFFECTED ENVIRONMENT

The Project corridor is located in the Basin and Range Province of the southwest United States. Outcropping rocks consist primarily of intrusive igneous granites, rhyolites, and volcanics of Cretaceous age (U.S. Geological Survey [USGS] 2000). The alluvium in the valleys is the result of erosion and weathering of these rocks. Yuma County is near active faults that exist in Southern California, and seismic potential in this area is high (Fellows 2000). The rock types and formations found in the region are common, and no special significance is placed on their occurrence in the Project corridor.

Arizona has a diverse assortment of soil types throughout the state with variations in depth, texture, chemical properties, and appropriate land uses. This diversity is directly related to regional differences in climate, parent material, topography, and erosion actions. The soil types and associations found within the Project corridor are the Holtville clay, Gadsden clay, Glenbar silt clay loam, Ripley silt loam, Indigo-Lagunita-Ripley complex, Superstition sand, Rosita sand (Table 6-1) and are depicted in Figures 6-1a through 6-1e (Natural Resources Conservation Service [NRCS] Undated). The soils are unmapped for the majority of Segment YUM10-03, and all of Segments YUM11-01 and YUM11-03.

Table 6-1. Yuma Wall Replacement Project Segments

Segment ID	Soil Type/Association	Length (miles)	Area (Acres)
YUM8-01	Holtville Clay	0.60	4.36
YUM8-01	Indigo-Lagunita-Ripley Complex	0.55	4.00
YUM8-01	Gadsden Clay	0.23	1.67
YUM8-01	Glenbar Silty Clay Loam	0.19	1.38
YUM8-01	Ripley silt loam	0.10	0.73
YUM9-02	Superstition Sand	2.90	21.1
YUM10-01	Superstition Sand	0.34	2.47
YUM10-01	Rositas Sand	3.85	28
YUM10-02	Rosita Sand	6.45	46.9
YUM10-03, YUM11-01, and YUM 11-03	Unmapped	12.3	89.4
	Total	27.5	200

NRCS Undated

Holtville clay is a well-drained soil that formed in mixed alluvium. This soil exhibits moderately low to moderately high runoff potential, and water permeability is very high. Holtville clay soils do not exhibit high erosion potential, and occur on slopes of 0 to 1 percent within flood plains. Irrigated Holtville clay soils are ideal for cropland, but problems may exist in the rooting zone. Non-irrigated soils are best suited for pasture land, recreation, or wildlife.

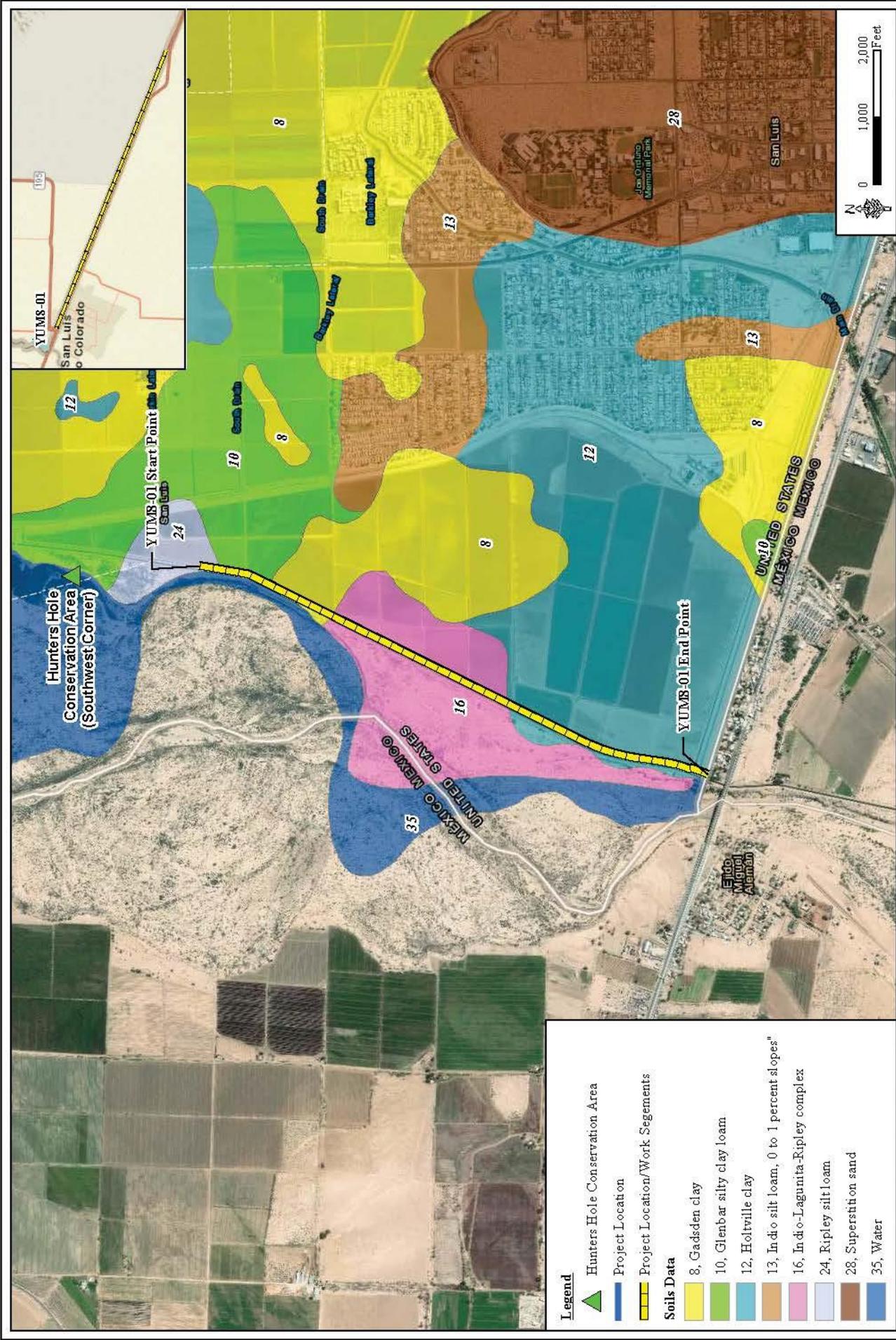


Figure 6-1a. Segment YUM8-01

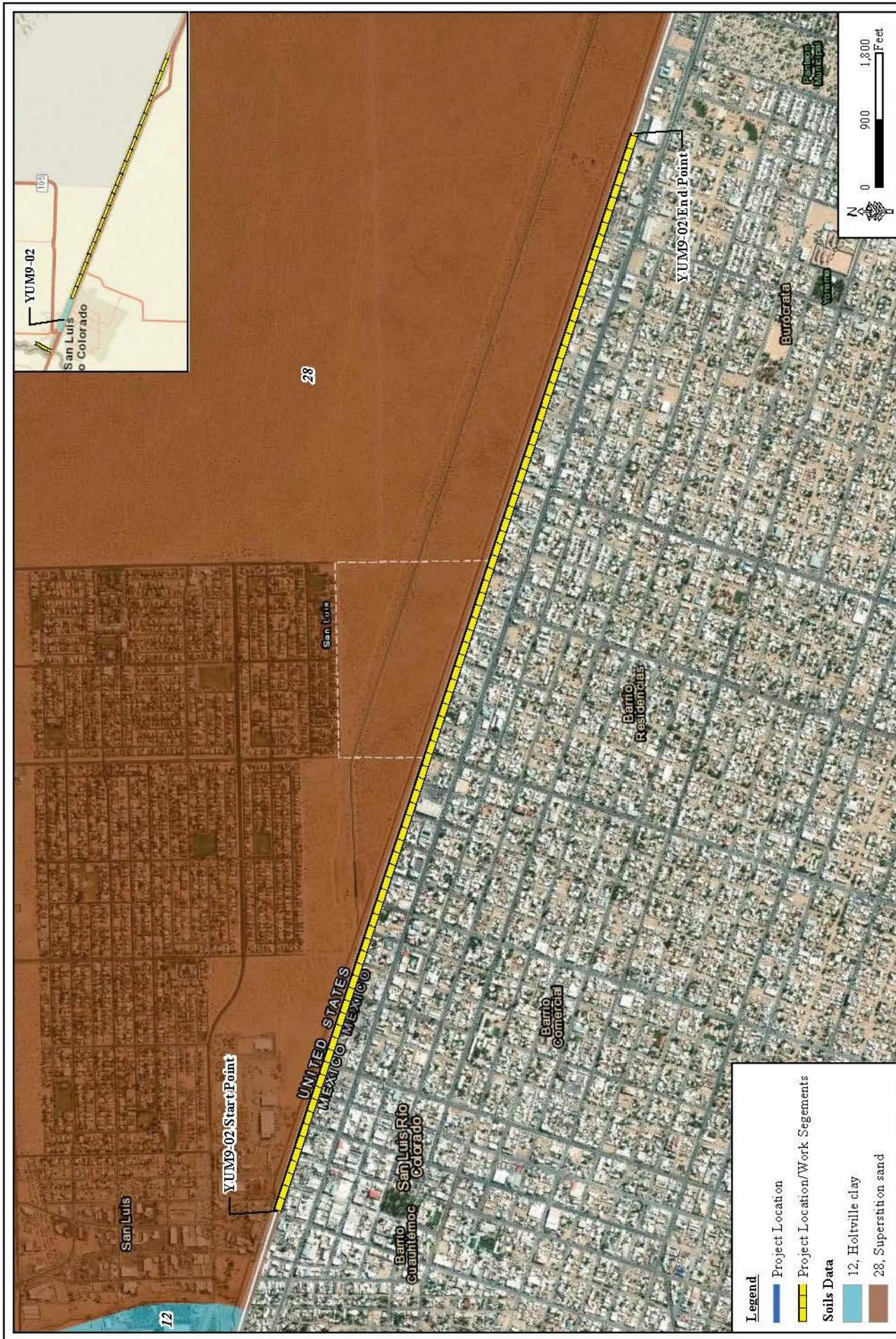


Figure 6-1b. Segment YUM9-02

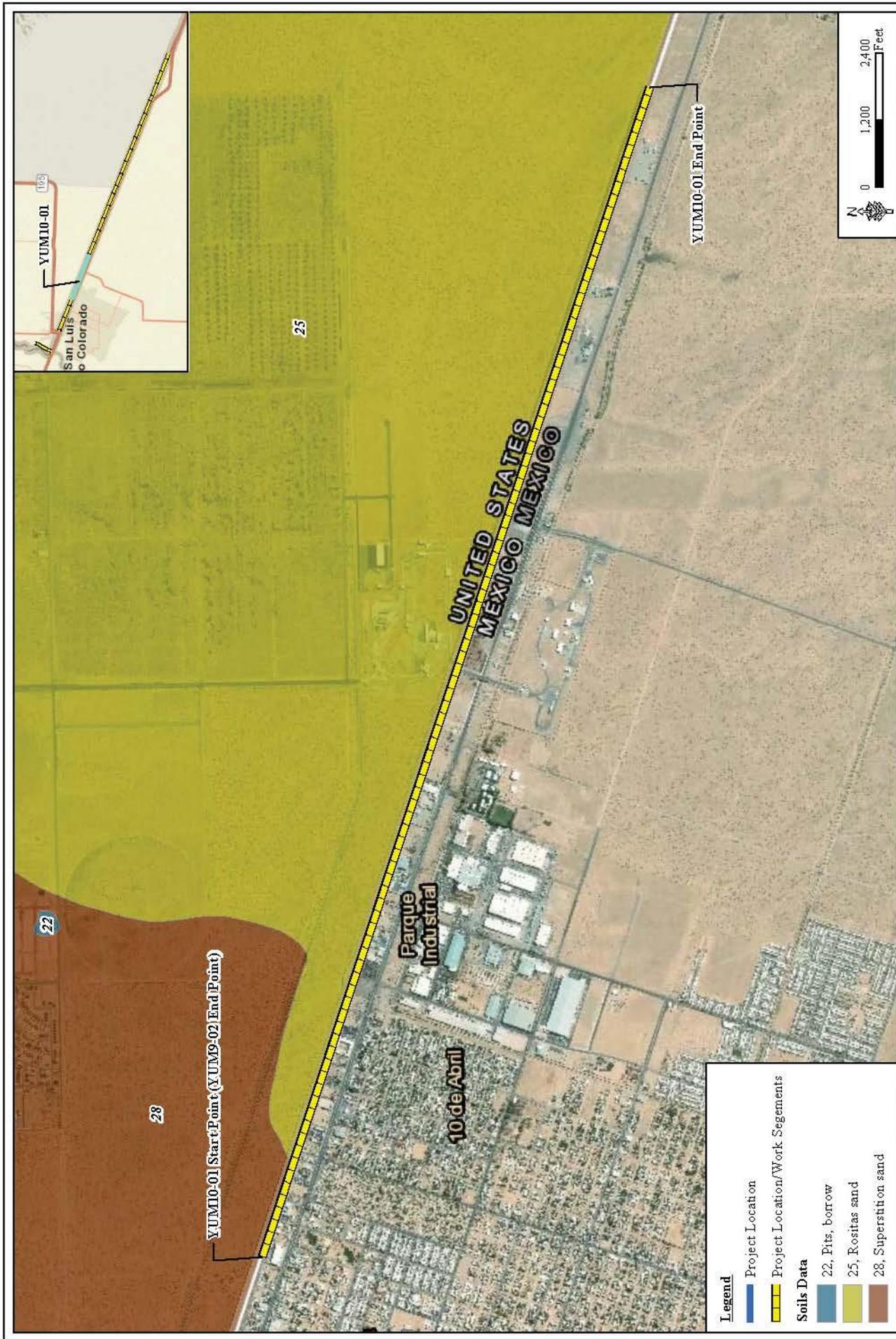


Figure 6-1c. Segment YUM10-01



Figure 6-1d. Segment YUM10-02

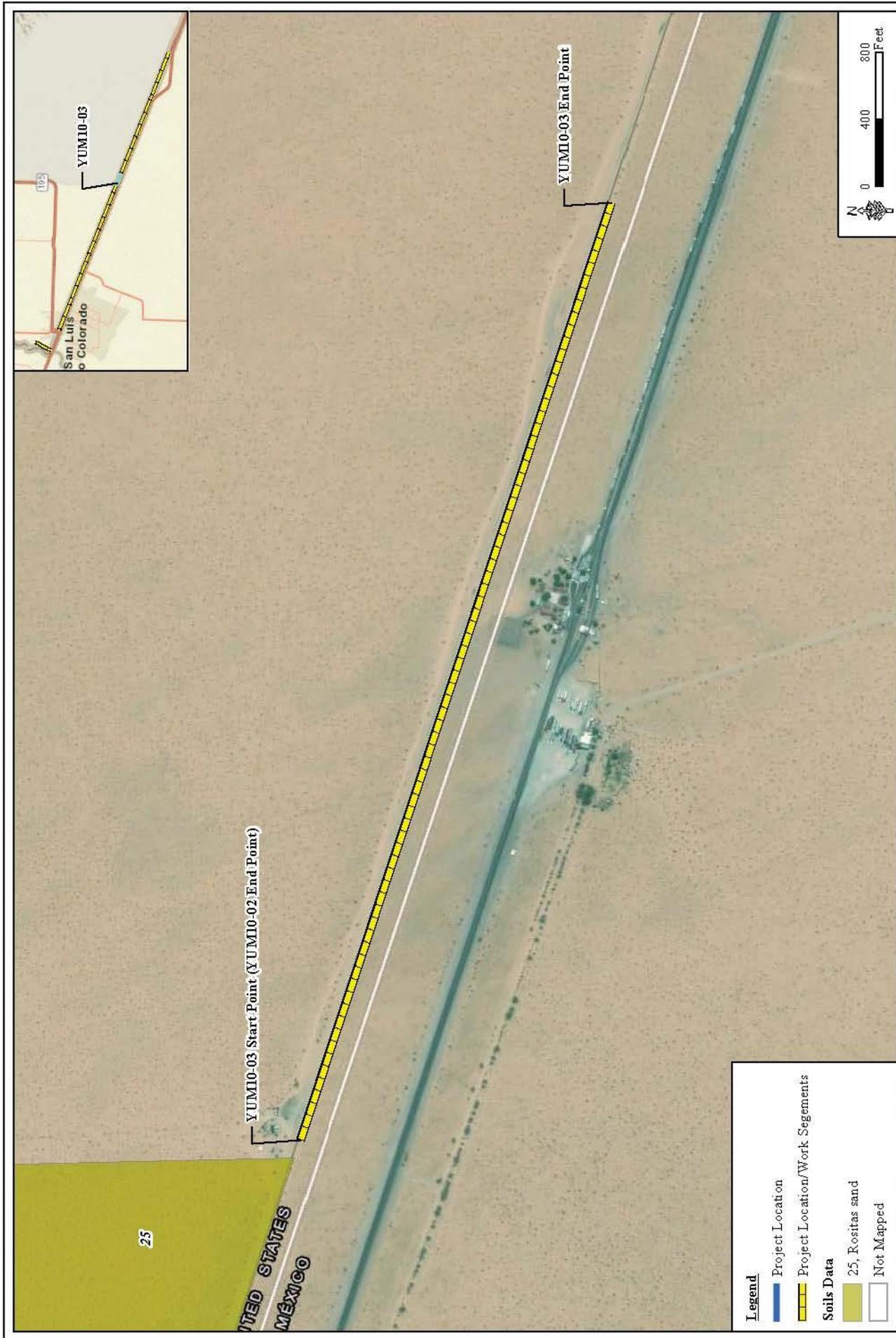


Figure 6-1e. Segment YUM10-03

This soil typically occurs between 80 and 600 feet above mean sea level (amsl) and is located in the western portion of the Project corridor (Soil Survey Staff Undated).

The Indigo-Lagunita-Ripley complex is a well-drained soil that formed in mixed alluvium. This soil exhibits moderately high to high runoff potential, and water permeability is typically low. Indigo-Lagunita-Ripley soils exhibit do not exhibit high erosion potential, and occur on slopes of 0 to 2 percent. Irrigated Indigo-Lagunita-Ripley soils are suitable for agriculture but problems may exist in the rooting zone, while non-irrigated soils are best suited for pasture land, recreation, or wildlife. This soil typically occurs between 100 and 500 feet amsl and is located in the western portion of the Project corridor (Soil Survey Staff Undated).

Gadsden clay is a well-drained soil that formed in mixed alluvium. This soil exhibits moderately low to moderately high runoff potential, and water permeability is high. Gadsden clay generally occurs on flood plains and terraces at elevations of 80 to 600 feet amsl on slopes from 0 to 1 percent. Irrigated Gadsden clay soils are suitable for cropland, but problems may exist in the rooting zone. Non-irrigated soils are best suited for pasture land, recreation, or wildlife. This soil is located in the western portion of the Project corridor (Soil Survey Staff Undated).

Glenbar silty clay loam soils are well-drained soils which formed in mixed alluvium. This soil generally occurs on flood plains and terraces at elevations of 80 to 600 feet amsl on slopes from 0 to 1 percent. The potential for runoff is moderately high, and permeability is high. If irrigated, Glenbar silty clay loam can be used to successfully grow crops. Glenbar silty clay loam soils are located within the western portion of the Project corridor (Soil Survey Staff Undated).

Ripley silt loam is a deep, well drained, nearly level soil occurring on flood plains and low terraces. It formed in mixed alluvium and generally occurs on flood plains and low terraces at elevations of 75 to 600 feet. Ripley silt loam produces a relatively large amount of native vegetation, but it has moderate limitations for livestock grazing due to the variability of production (Barmore 1980).

Superstition sands are very deep, somewhat excessively drained soils that formed in sandy eolian deposits. This soil is located on dunes at elevations of 40 to 2,500 feet amsl and has a slope of 0 to 10 percent. The potential for runoff is very low and permeability is rapid. The mean annual precipitation is about 3 inches and the mean annual air temperature is approximately 74 degrees Fahrenheit. Superstition sands are used for livestock grazing and irrigated cropland (Soil Survey Staff Undated).

The Rositas sand is a semi-excessively drained soil that formed in mixed eolian sands. This soil exhibits high to very high runoff potential, and water permeability is low. Rositas sand do not exhibit high erosion potential, and occur on slopes of 2 to 15 percent within dunes, terraces, and alluvial fans. Irrigated Rositas sand soils are suitable for agriculture but problems may exist in the rooting zone, while non-irrigated soils are best suited for pasture land, recreation, or wildlife. This soil typically occurs between 80 and 700 feet amsl and is located in the central and eastern portions of the Project corridor (Soil Survey Staff Undated).

Prime farmlands are protected under the Farmland Protection Policy Act (FPPA) of 1980 and 1995. Prime farmlands are defined as having the best combinations of physical and chemical properties to be able to produce fiber, animal feed, food, and are available for these uses (U.S. Department of Agriculture [USDA] 2019). The FPPA's purpose is to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. Glenbar silty clay loam is designated as a prime farmland soil (California Department of Conservation [CDC] 1995). When irrigated, Holtville clay and Indio silt loam are also listed as prime farmland soils (CDC 1995).

6.2 ENVIRONMENTAL CONSEQUENCES

The soils within the 60-foot Project corridor have been permanently impacted by previous fence and all-weather patrol road construction. Potential permanent impacts on soils (33 acres) will be localized and contained within the narrow linear fence line (10 feet x 27.5 miles). The Project could temporally impact approximately 5.5 acres of prime farmland soils during construction but will not permanently remove any prime farmland soils from production. The Project will not adversely impact geological resources.

Temporary impacts on soils, such as increased compaction and erosion, can be expected from the fence replacement, fiber optic cable installation; and staging area; however, these impacts will be alleviated once construction is finished. The staging area will be graded and returned to pre-construction conditions. Additional temporary impacts during construction may occur from wind or water erosion along the access roads and within staging areas. Pre- and post-construction BMPs will be developed and implemented to reduce or eliminate erosion and potential downstream sedimentation. Erosion control measures such as wetting compounds, silt fencing, and straw bales will be some of the BMPs implemented.

The potential exists for petroleum, oil, and lubricants (POLs) to be spilled during refueling of the construction equipment, adversely impacting soils; however, drip pans will be placed under all staged equipment and secondary containment will be used when refueling equipment. A SWPPP and SPCCP will be prepared prior to construction activities and BMPs described in these plans will be implemented to reduce potential erosion and contamination. With the implementation of the BMPs, the Project is not anticipated to result in an adverse effect on geological resources and soils.

7.0 HYDROLOGY AND WATER MANAGEMENT

7.1 AFFECTED ENVIRONMENT

7.1.1 Groundwater

The Project is located in the Yuma Basin. The Yuma basin covers approximately 792 square miles of southwestern Arizona. The Gila and Tinajas Altas Mountains bound it to the east, the Colorado and Gila Rivers to the west and north, respectively and the U.S./Mexico border to the south (Arizona Department of Water Resources [ADWR] 2014). The Yuma basin consists of recent stream alluvium overlying older, partially consolidated basin-fill deposits, which overlie the Bouse formation (ADWR 2014). The Bouse formation consists of two zones. The upper zone is composed of medium to coarse-grained sand which can yield moderate amounts of groundwater under unconfined conditions. The lower zone contains fine-grained sediments which produce limited amounts of groundwater. Tertiary and Quaternary basin fill is the primary aquifer in the Yuma Basin.

The natural recharge estimate for the Basin is 213,000 acre-feet per year. Groundwater storage estimates range from 34 million acre-feet to 49 million acre-feet to a depth of 1,200 feet. (ADWR 2014). Prior to development, nearly all groundwater recharge was from the Colorado and Gila rivers through direct channel infiltration and annual flooding. The general groundwater flow direction was from the Colorado and Gila rivers southward under the Yuma Mesa. Currently, a significant source of groundwater recharge comes from percolation of excess irrigation water. A groundwater mound has developed under Yuma Mesa as a result of agricultural irrigation and because groundwater flow away from the area is insufficient to drain rising water levels. Groundwater flow patterns have been altered as a result of this groundwater mound. Groundwater flow in the western portion of the basin is west towards the Colorado River and south the mound, groundwater flow is still generally south towards the U.S./Mexico border (ADWR 2014).

Groundwater quality varies across the Yuma Basin (ADWR 2014). Elevated concentrations of total dissolved solids, arsenic, lead, agricultural pesticides, nitrate and volatile organic compounds occur in some areas. Originally, the groundwater composition was more similar in chemical composition to its source waters (Colorado and Gila rivers); however, the quality has been altered by more than 100 years of irrigation activity.

7.1.2 Surface Water

The Project corridor is within the Lower Colorado and Yuma Desert watersheds (ADWR 2015). The Lower Colorado watershed encompasses approximately 986,832 acres and covers a small portion of the Project corridor. Only segment YUM8-01 is located within the Lower Colorado watershed. The remainder of the Project segments is located in the Yuma Desert watershed which encompasses approximately 1,866,844 acres. The USGS topographical maps show no natural drains in the Project corridor other than the Colorado River. Man-made canals are common near the Colorado River, as water is diverted from the river for agricultural irrigation.

The Colorado River and lowlands immediately adjacent are included in this watershed. The Colorado is classified as a Category 5 stream and has been listed on Arizona's 303(d) list as an impaired stream since 2006 (ADEQ 2018). The cause of the listing is an exceedance of total selenium.

Waters of the United States

No Waters of the U.S., including wetlands, were identified during the field surveys conducted on January 8 and 9, 2019 (CBP 2019a).

7.1.3 Floodplains

Floodplains are low-lying areas adjacent to or within major watersheds that serve to contain excess water during rainfall events. The 100-year flood is generally the standard utilized in management of floodplains. This boundary is based on the elevation in which there is a 1 percent chance that floodwater will reach a designated limit during a rainfall event. According to panels 04027C1815E and 04027C2130E of the Federal Emergency Management Agency (FEMA) floodplain map, Segment YUM8-01 is located within the 100-year flood zone (Figure 7-1). All construction activities near the floodplain should be coordinated with the Floodplain Manager for the area FEMA office.

7.2 ENVIRONMENTAL CONSEQUENCES

CBP has applied the appropriate standards and guidelines associated with the Clean Water Act (CWA) as the basis for evaluating potential environmental impacts.

7.2.1 Groundwater

The Project will require water for dust suppression and construction during construction activities. Approximately 460 acre-feet of water will be required during construction of the Project. The water required for dust suppression and construction is minimal compared to the volume used annually for municipal, agricultural, and industrial purposes, and since there is a surplus of groundwater in the Yuma Basin, the Project will have a negligible to minor impact on the region's groundwater. Water not lost to evaporation during watering of road surfaces during construction will potentially contribute to aquifer recharge through downward seepage. The Project will not interfere with groundwater recharge.

The likelihood for groundwater contamination due to fence installation will be negligible due to the implementation of a SPCCP and the natural filtration of soils overlying the aquifers in the Project corridor.

7.2.2 Surface Water

No drainages are located with the Project corridor, and none will be directly affected by the Project. However, earth disturbance associated with site preparation of the staging area and removal of the legacy fence could result in erosion and sedimentation in the adjacent desert. A SWPPP will be prepared by the contractor prior to construction and will be implemented with the other BMPs listed in Section 1.5.5 to minimize potential erosion and sedimentation.

BMPs for the handling and storage of hazardous substances, such as fuel, lubricants, and hydraulic fluid during construction will be incorporated to minimize the potential for these substances to migrate to the adjacent area. An SPCCP will be in place prior to the start of construction, and all personnel will be briefed on the implementation and responsibilities of this plan. A more detailed description of the measures related to hazards and hazardous materials is found in Section 11 of this ESP.

7.2.3 Water of the U.S.

No Waters of the U.S., including wetlands are located within the Project corridor. Therefore, the Project will have no impact on Waters of the U.S., including wetlands.

7.2.4 Floodplains

Approximately 1.6 miles of existing fence and road (YUM 9-20) are located within the 100- year floodplain within the Project corridor. The existing fence is a Sandia mesh fence and is located parallel to the floodplain and does not serve as an impediment to water flow. The new bollard fence will follow the same alignment as the legacy fence and the bollard fence will allow water to flow more freely through the fence. Thus, impacts on the floodplain as a result of the Project will be beneficial. The estimated permanent footprint for the fence replacement will be approximately 6 feet wide. The impacts on the 100-year floodplain will total approximately 1.2 acres.

During the construction period, erosion, sedimentation, and accidental spills or leaks could have temporary and minor effects on the floodplain. However, with proper implementation of BMPs, as identified in the SWPPP and SPCCP prepared for the Project, these effects will be substantially reduced or eliminated. Therefore, the overall impact as a result of the Project will be minimal.

8.0 BIOLOGICAL RESOURCES (VEGETATION, WILDLIFE, AQUATIC SPECIES, SPECIAL STATUS SPECIES)

8.1 AFFECTED ENVIRONMENT

8.1.1 Vegetation

Lower Colorado River Sonoran Desertscrub

The Project corridor consists primarily of areas that have been previously disturbed with little to no vegetative cover. Sonoran Desertscrub vegetation is present to the north of the Project corridor where the corridor runs in a west to east direction, parallel to the U.S./Mexico Border. The Project corridor occurs within the Lower Colorado River Subdivision Sonoran Desertscrub as described by Brown and Lowe (1994).

A biological survey of the Project corridor was conducted by GSRC biologists in January 2019 (CBP 2019b). The landscape within the Project corridor is generally void of vegetation and has a history of anthropogenic disturbance (Photograph 8-1). The vegetation species identified adjacent to the Project corridor is typical of Sonoran Desertscrub (Photograph 8-2). A list of the plant species encountered during the surveys can be found in Table 8-1. A total of 42 plant species were found within and immediately adjacent to the Project corridor during the biological survey (CBP 2019b). Algodones sunflower (*Helianthus niveus* ssp. *tephrodes*) and dune spurge (*Chamaesyce platysperma*), two plant species obligate to the Sonoran Desertscrub community, were identified during biological survey.



Photograph 8-1. Overview of Segment YUM10-02 (looking west).



Photograph 8-2. Example of Lower Colorado Subdivision Sonoran Desertscrub adjacent to the Project corridor.

Table 8-1. Vegetation Observed During the Yuma Primary Wall Replacement Project Biological Resources Surveys

Common Name	Scientific Name	Common Name	Scientific Name
Algodones sunflower	<i>Helianthus niveus</i>	Hairy desert sunflower	<i>Geraea canescens</i>
Annual desert milkvetch	<i>Astragalus aridus</i>	Hairy prairie clover	<i>Dalea mollis</i>
Arizona lupine	<i>Lupinus arizonicus</i>	Long-leaved jointfir	<i>Ephedra trifurca</i>
Big galleta	<i>Pleuraphis rigida</i>	New Mexico silverbush	<i>Ditaxis neomexicana</i>
Birdcage evening primrose	<i>Oenothera deltoides</i>	Purple threeawn	<i>Aristida purpurea</i>
Bitter rubberweed	<i>Hymenoxys odorata</i>	Sahara mustard	<i>Brassica tournefortii</i>
Brittlebush	<i>Encelia farinosa</i>	Schott's calico	<i>Loeseliastrum schottii</i>
Brown-eyed primrose	<i>Chylismia claviformis</i>	Six-weeks grama	<i>Bouteloua barbata</i>
California shieldpod	<i>Dithyrea californica</i>	Soft prairie clover	<i>Dalea mollissima</i>
Cattle saltbush	<i>Atriplex polycarpa</i>	White bursage	<i>Ambrosia dumosa</i>
Colorado Desert buckwheat	<i>Eriogonum deserticola</i>	White rhatany	<i>Krameria bicolor</i>
Colorado desert marigold	<i>Baileya pauciradiata</i>	Woolly brickellbush	<i>Brickellia incana</i>
Common fiddleneck	<i>Amsinkia intermedia</i>	Fanleaf crinklemat	<i>Tiquilia plicata</i>
Common Mediterranean grass	<i>Schismus barbatus</i>	Emory's globemallow	<i>Sphaeralcea emoryi</i>
Coulter's lupine	<i>Lupinus sparsifolius</i>	Dyebush	<i>Psorothamnus emoryi</i>

Common Name	Scientific Name	Common Name	Scientific Name
Creosote bush	<i>Larrea tridentata</i>	Dune spurge	<i>Chamaesyce platysperma</i>
Desert cryptantha	<i>Cryptantha angustifolia</i>	Devil's spineflower	<i>Chorizanthe rigida</i>
Desert heliotrope	<i>Phaecelia ambigua</i>	Desert twinbugs	<i>Dicoria canescens</i>
Desert indianwheat	<i>Plantago ovata</i>	Desert trumpet	<i>Eriogonum inflatum</i>
Desert lily	<i>Hesperocallis undulata</i>	Desert straw	<i>Stephanomeria pauciflora</i>
Desert palafox	<i>Palafoxia arida</i>	Desert sand verbena	<i>Abronia villosa</i>

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8.1.2 Wildlife and Aquatic Resources

Wildlife within the Project corridor is typical of those associated with the Lower Colorado Subdivision Sonoran Desertscrub communities. The wildlife community is characterized by species that are tolerant of dry habitat and migrating neotropical birds. During the January 2019 biological survey, a total of 35 species of mammals, reptiles, and birds (Table 8-2), were identified either through direct observations or through observations of signs such as vocalizations, tracks, scat, and burrows (Table 8-2) (CBP 2019b). No Federally listed species were observed. No natural aquatic habitat is located within the Project corridor.

Table 8-2. Wildlife Observed During January 2019 Field Surveys

Common Name	Scientific Name	V=visual, S=sign	Survey Segments
Mammals			
Black-tailed jack rabbit	<i>Lepus californicus</i>	S	YUM11-03
Botta's pocket gopher	<i>Thomomys bottae</i>	S	YUM10-01, YUM10-02, YUM10-03, YUM11-01
Kangaroo rat	<i>Dipodomys</i> sp.	S	YUM10-01, YUM10-02, YUM10-03, YUM11-01, YUM11-03
Kit fox	<i>Vulpes macrotis</i>	S	YUM10-01, YUM10-02, YUM10-03, YUM11-01, YUM11-03
Coyote	<i>Canis latrans</i>	S	YUM10-03, YUM11-01, YUM11-03
Reptiles			
Chuckwalla	<i>Sauromalus ater</i>	V	YUM11-01
Side-blotched lizard	<i>Uta stansburiana</i>	V	YUM11-03
Yuman Desert fringe-toed lizard	<i>Uma rufopunctata</i>	V	YUM11-01, YUM11-03
Birds			
American kestrel	<i>Falco sparverius</i>	V	YUM10-02, YUM11-01
American pipit	<i>Anthus rubescens</i>	V	YUM8-01
Anna's hummingbird	<i>Calypte anna</i>	V	YUM9-02, YUM10-01
Black phoebe	<i>Sayornis nigricans</i>	V	YUM8-01
Blue-gray gnatcatcher	<i>Poliophtila caerulea</i>	V	YUM11-01
Burrowing owl	<i>Athene cunicularia</i>	V	YUM10-01
Common raven	<i>Corvus corax</i>	V	YUM10-02, YUM11-03

Common Name	Scientific Name	V=visual, S=sign	Survey Segments
Cooper's hawk	<i>Accipiter cooperi</i>	V	YUM8-01
Costa's hummingbird	<i>Calypte costae</i>	V	YUM11-01
Eurasian collared dove	<i>Streptopelia decaocto</i>	V	YUM8-01, YUM9-02
Great-tailed grackle	<i>Quiscalus mexicanus</i>	V	YUM8-01, YUM9-02
Green heron	<i>Butorides virescens</i>	V	YUM8-01
Horned lark	<i>Eremophila alpestris</i>	V	YUM10-02, YUM10-03, YUM11-01
House finch	<i>Haemorhous mexicanus</i>	V	YUM10-01, YUM10-02, YUM11-01
House sparrow	<i>Passer domesticus</i>	V	YUM9-02, YUM10-01
Killdeer	<i>Charadrius vociferous</i>	V	YUM8-01, YUM10-01
Loggerhead shrike	<i>Lanius ludovicianus</i>	V	YUM10-03, YUM11-01
Mourning dove	<i>Streptopelia decipiens</i>	V	YUM8-01, YUM10-01, YUM10-02
Northern harrier	<i>Circus hudsonius</i>	V	YUM8-01
Prairie falcon	<i>Falco mexicanus</i>	V	YUM11-01
Red-tailed hawk	<i>Buteo jamaicensis</i>	V	YUM8-01, YUM9-02, YUM10-01, YUM10-02, YUM11-03
Rock pigeon	<i>Columba livia</i>	V	YUM8-01, YUM10-02
Rock wren	<i>Salpinctes obsoletus</i>	V	YUM11-01
Sanderling	<i>Calidris alba</i>	V	YUM8-01
Say's phoebe	<i>Sayornis saya</i>	V	YUM8-01
Snowy egret	<i>Egretta thula</i>	V	YUM8-01
Sparrow sp.	<i>Artemisiospiza</i> sp.	V	YUM10-02
Verdin	<i>Auriparus flaviceps</i>	V	YUM10-02, YUM11-01
Yellow-rumped warbler	<i>Setophaga coronata</i>	V	YUM8-01, YUM10-02, YUM11-01

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8.1.3 Protected Species and Critical Habitat

8.1.3.1 Federal

A total of four Federally listed species have the potential to occur within Yuma County, Arizona (USFWS 2018). The Federally protected species, their status, and their likelihood of occurring in the Project corridor are provided in Table 8-3 (CBP 2019b). None of the listed species are likely to occur within the Project corridor due to inadequate habitat. Additionally, the Project corridor is not located within any Critical Habitat. Protected species and habitats with the potential to occur in or adjacent to the Project corridor are discussed in the following sections.

Table 8-3. Federally Listed Threatened and Endangered Species with Potential to Occur Within the Project corridor, Their Status, and Critical Habitat Designation

Common Name	Scientific Name	Status	Critical Habitat	Potential to Occur in Project Corridor
Mammals				
Sonoran pronghorn	<i>Antilocarpa americana sonoriensis</i>	Endangered	None	None; nearest current records for the species are approximately 50 miles east of the Project corridor
Birds				
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered	Yes (outside Project corridor)	None; no suitable habitat present within the Project corridor
Yuma Ridgeway's rail	<i>Rallus obsoletus yumanensis</i>	Endangered	None	None; no suitable habitat present within the Project corridor
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	Threatened	Proposed	None; no suitable habitat present within the Project corridor

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Legend: E – Endangered T – Threatened C – Candidate

Source: USFWS 2018

Sonoran Pronghorn

The Sonoran pronghorn (*Antilocarpa americana sonoriensis*) is a Federally listed endangered species (USFWS 1967) with experimental/non-essential populations with no Critical Habitat designated. They are usually found in upland subdivisions of Sonoran Desert scrublands. Their habitat preference differs seasonally; in the winter they typically prefer sparsely vegetated, flat, open spaces and in summer they prefer dense vegetated areas. Sonoran pronghorn require large areas of contiguous habitat to accommodate their seasonal movements. Threats to this species include habitat loss and fragmentation, reduced forage quality, altered habitat structure, extended drought and climate change, reduced access to and availability of water, predation, disease, loss of genetic diversity, human disturbance and accidental deaths or poaching (USFWS 2015). Recovery efforts include ensuring there are multiple viable populations, adequate habitat, minimizing and mitigating human disturbance, identifying and conducting monitoring and research, maintaining and developing partnerships to support conservation, securing funding, and practicing adaptive management of the species (USFWS 2016). No Sonoran pronghorn were observed during the biological surveys conducted within the Project corridor. There are no current records for wild Sonoran pronghorn west of the Tule Desert, within the Cabeza Prieta National Wildlife Refuge (CBP 2019b). The Tule Desert lies approximately 50 miles east-southeast of the eastern end of the Project corridor.

Southwestern Willow Flycatcher

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a Federally listed endangered species (USFWS 1995) with designated Critical Habitat (USFWS 2013a). It is a small olive to brown colored migratory bird found in riparian habitats from southern Nevada and Utah,

southwestern Colorado, Arizona, New Mexico, and Southern California, to extreme western Texas (USFWS 2002). This species migrates and winters in southern Mexico and northern South America. The southwestern willow flycatcher is a riparian obligate species and utilizes a variety of riparian habitats for breeding in elevations ranging from sea level to 8,500 feet. At lower elevations southwestern willow flycatcher prefers to breed in riparian patches that can vary from dense, linear, contiguous stands to a more irregular-shaped mosaic patchwork of dense vegetation and open space (USFWS 2002). Vegetation at southwestern willow flycatcher breeding sites can vary from stands of native willow (*Salix* spp.) and broadleaf trees and shrubs to monotypic stands of exotic species such as salt cedar (*Tamarix* spp.). One of the common unifying characteristics of preferred breeding habitat is proximity to slow-moving or standing water of stream reaches, generally within 60 feet of surface water or saturated soils (USFWS 2002). Southwestern willow flycatchers typically arrive on their breeding grounds in late April and can spend 3 to 4 months inhabiting these areas. Migratory southwestern willow flycatcher may be found in riparian habitat that is unsuitable for breeding, and these areas may be critical for survival (USFWS 2002). There is no riparian vegetation present within or immediately adjacent to the Project corridor. However, Hunters Hole Conservation Area, located approximately 0.4 mile to the north of Segment YUM8-01, contains riparian vegetation with potential to support migratory southwestern willow flycatcher. No southwestern willow flycatchers were observed during the biological surveys conducted within the Project corridor (CBP 2019b).

The Project corridor is not located within designated Critical Habitat for southwestern willow flycatcher. The nearest Critical Habitat (Bill Williams Management Unit) is approximately 105 miles north of the Project corridor (CBP 2019b).

Yuma Ridgway's Rail

The Yuma Ridgway's rail (*Rallus obsoletus yumanensis*) is a Federally listed as endangered species (USFWS 1967) with no Critical Habitat. The Ridgway's rail is a large marsh bird, with a long, slightly decurved, narrow bill. It has relatively long legs and feet, and is grayish-brown in coloration. Rails in general are very secretive, and are more often heard than seen. The Yuma Ridgway's rail is a resident species and occurs within its range year-round (Eddleman and Conway 2018). The Yuma Ridgway's rail is found in freshwater and brackish habitats in the southwestern U.S. from southern Nevada to southern Arizona and California (Eddleman and Conway 2018). The U.S. population has ranged in size from 50 to 1076 individuals between 1969 and 2008 (USFWS 2009). The Yuma Ridgway's rail is found in fresh and brackish marsh habitats dominated by cattail (*Typha* sp.) and bulrush (*Scirpus* sp.). One common characteristic of their preferred breeding habitat is emergent vegetation is typically taller than 6 feet tall. Additionally, adjacent riparian vegetation is a mix of native and non-native species (*Salix* sp., *Tamarix* sp., and *Baccharis* sp.) (USFWS 2009). There is no riparian vegetation present within or immediately adjacent to the Project corridor. No Yuma Ridgway's rail were observed during the survey effort (CBP 2019b).

Western yellow-billed Cuckoo

The Western Distinct Population Segment of yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is Federally listed as threatened by USFWS (USFWS 2014a) and considered a "Species of Concern" by the Arizona Game and Fish Department (AGFD). Currently, there is

proposed Critical Habitat for the Western Distinct Population Segment of yellow-billed cuckoo (USFWS 2014b). There are three primary constituents that USFWS considers to be essential physical or biological features to yellow-billed cuckoo: riparian woodlands, adequate prey base, and dynamic riverine processes (USFWS 2014a). Populations of yellow-billed cuckoo have been negatively impacted through modifications to all three of these constituents. The loss of riparian habitat is the primary factor in the decline of the species, and it is estimated that past riparian habitat losses in Arizona have been approximately 90 to 95 percent (USFWS 2013b), usually due to direct changes to the landscape, the hydrology, or both. During breeding seasons, yellow-billed cuckoo need expansive blocks of riparian habitat with large, mature trees utilized for nesting and foraging. Yellow-billed cuckoo primarily relies on riparian habitat for foraging, particularly in cottonwood and willow woodlands with vegetation high in foliage (USFWS 2013b). These habitats can usually sustain insect and amphibian faunas utilized by young and adult yellow-billed cuckoos during nesting season and in post-breeding dispersal areas. The use of pesticides and the loss of riparian habitat in Arizona have had a direct negative impact on yellow-billed cuckoo foraging habitat. Changes in the landscape ecology further exacerbate riparian habitat destruction through the construction of dams, water diversions, riverflow management, channelization, levees, and additional forms of bank stabilization. These alterations cause a transition from native riparian vegetation to monotypic stands of non-native vegetation. One example is the almost complete removal of willow and cottonwood trees at a site along the Colorado River, which occurred due to repeated large release of water from a dam; thus, a direct loss to yellow-billed cuckoo population density was documented (Groschupf 1987). Similar declines in population have occurred in other parts of Arizona, such as along the Bill Williams River Delta and the Santa Cruz River. There is no suitable habitat for yellow-billed cuckoo present within or immediately adjacent to the Project corridor. However, Hunters Hole Conservation Area, located approximately 0.4 mile to the north of Segment YUM8-01, contains riparian vegetation with potential to support yellow-billed. No yellow-billed cuckoos were observed during the biological surveys conducted within the Project corridor.

The Project corridor is not located within the proposed Critical Habitat for yellow-billed cuckoo. Proposed Critical Habitat Unit 7 (CA-AZ-1) is located approximately 2.1 miles north of the northern end of Segment YUM8-01 (CBP 2019b).

8.1.3.2 State

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 has known or perceived threats or population declines (AGFD 2019). These species are not necessarily the same as those protected under the Endangered Species Act of 1973 (ESA), as amended. The Project corridor could be considered suitable habitat for various state-sensitive reptile, bird, mammal, and plant species. Six state-listed special status species for Yuma County were observed during the January 2019 biological surveys (Table 8-4 and Figures 8-1a through 8-1d).

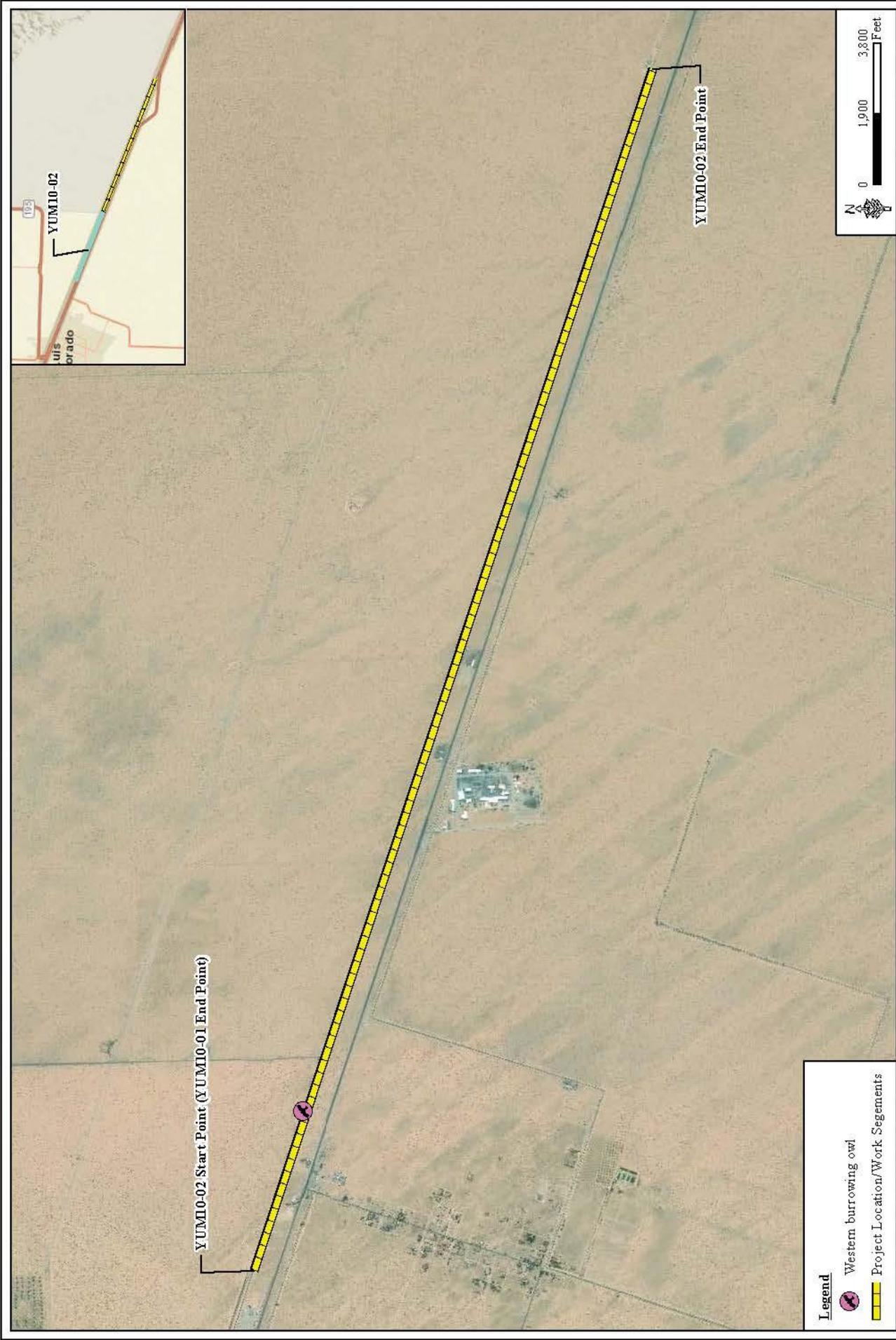


Figure 8-1a. Segment YUM10-02



Figure 8-1b. Segment YUM10-03

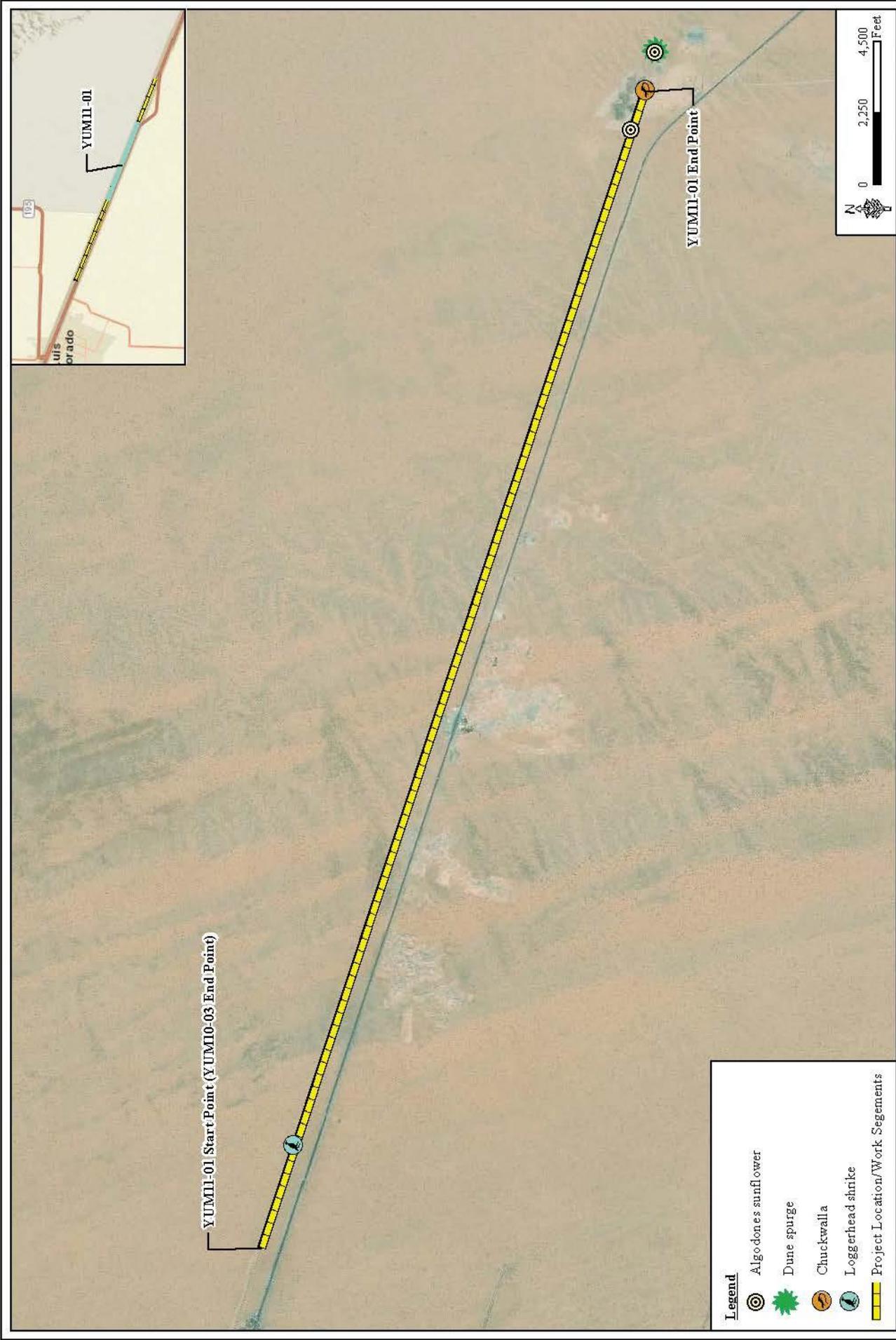


Figure 8-1c. Segment YUM11-01

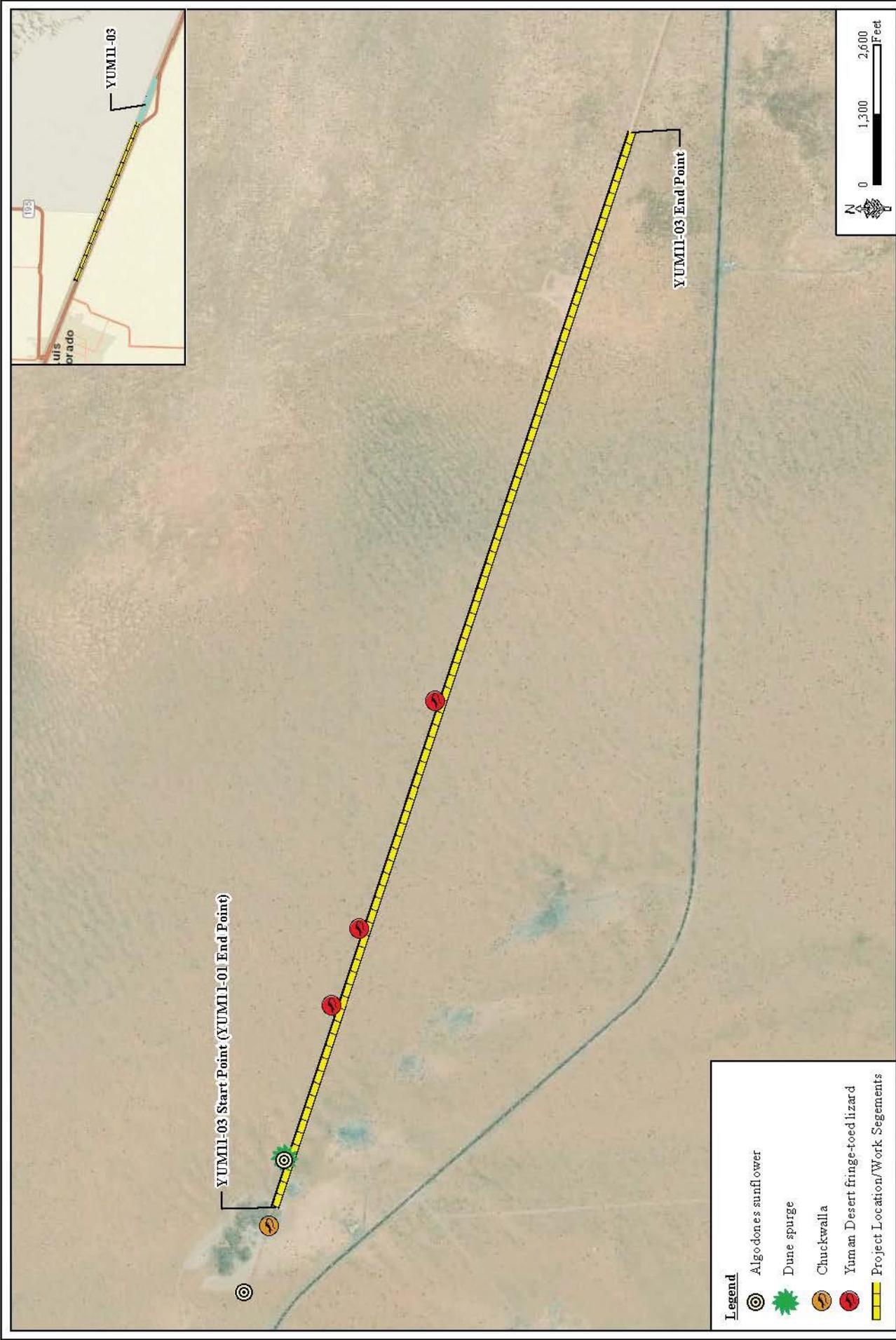


Figure 8-1d. Segment YUM11-03

Table 8-4. State-Listed Special Status Species Observed During the Yuma Wall Replacement Biological Resources Surveys

Common Name	Scientific Name	Survey Segments
Plants		
Algodones sunflower	<i>Helianthus niveus</i> ssp. <i>tephrodes</i>	YUM11-01, YUM11-03
Dune spurge	<i>Chamaesyce platysperma</i>	YUM11-03
Reptiles		
Chuckwalla	<i>Sauromalus ater</i>	YUM11-01
Yuman Desert fringe-toed lizard	<i>Uma rufopunctata</i>	YUM11-01, YUM11-03
Birds		
Burrowing owl	<i>Athene cunicularia</i>	YUM10-02
Loggerhead shrike	<i>Lanius ludovicianus</i>	YUM10-03, YUM11-01

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8.2 ENVIRONMENTAL CONSEQUENCES

8.2.1 Vegetation

The Project will have negligible impacts on vegetation communities. Replacement of the legacy fence will permanently impact approximately 33 acres within the Roosevelt Reservation along the legacy fence alignment; however, the majority of this area is devoid of vegetation except for an occasional plant. Permanent impacts describe the character of the 6-foot wide area that will be disturbed during fence replacement. Approximately 0.75 acre will be temporarily impacted by the primary staging area. The primary staging area will be located in a previously disturbed area. General BMPs to minimize soil disturbance and erosion will be implemented. The anticipated reduction in illegal border traffic anticipated from the increase in deterrence provided by the new bollard fence will have a potential beneficial impact on vegetation communities in the region.

8.2.2 Wildlife and Aquatic Resources

The wildlife likely to use the Project corridor are typically common and abundant throughout the Sonoran Desertscrub community. Mobile animals (e.g., birds) will escape to areas of similar or better habitat, while other slow or sedentary species of reptiles, amphibians, and small mammals could potentially be lost during construction. Predators and scavengers could be attracted to the area to consume dead wildlife. As a result, direct negligible adverse impacts on wildlife species in the vicinity of the Project corridor are expected. Although some animals may be lost, this Project will not result in any substantial reduction of the breeding opportunities for birds and other animals on a regional scale due to the suitable, similar habitat adjacent to the Project corridor. BMPs provided in Section 1.5.6 and incorporated as part of the Project design will minimize impacts to wildlife.

While habitat is minimal within the Project corridor, potential temporary impacts on migratory birds include direct loss of habitat (e.g., escape cover, foraging, roosting, and nesting), and are also dependent upon timing of construction, maintenance, and repair activities. Any nesting birds found within the Project corridor will be avoided or relocated by a qualified biologist.

There could also be a benefit for migratory birds due to the reduction of foot traffic through the habitats. BMPs to ensure minimal impacts on migratory birds are discussed in Section 1.5.6.

Construction related noise could have short-term impacts on wildlife species within the Project corridor. Anthropogenic noise has been found to increase physiological stress, compromise predatory/prey detection, affect mating signals and territorial defense, decrease foraging efficiency, and alter temporal or movement patterns in wildlife (Francois and Barber 2013). The intensity of behavioral responses due to noise varies among species as well as individuals within a species. Construction activities will mostly be limited to daylight hours and the most active periods for most wildlife are between dusk and dawn; therefore, Project noise-related impacts are expected to be minimal.

If used, the operation of portable construction lighting has the potential to affect wildlife. Light pollution can cause orientation and disorientation to wildlife by extending diurnal and crepuscular behavior into the night. Some species, such as insectivorous bats and amphibians, may benefit from the concentration of insects that will be attracted to the lights. However, animals that forage at night may be negatively influenced as a result of shortened nighttime hours or may move away from the area altogether. Approximately 7 miles of the Project corridor is currently illuminated at night by permanent lighting for border enforcement activities. If required, nighttime lighting will likely be used in the eastern, more remote segments of the Project corridor. Therefore, impacts on wildlife are expected to be negligible and temporary as a result of the operation of portable lights.

8.2.3 Protected Species and Critical Habitat

CBP has applied the appropriate standards and guidelines associated with the ESA as the basis for evaluating potential environmental impacts on protected species and critical habitat.

No suitable habitat exists within the Project corridor, and no Federally protected species were observed during the 2019 biological survey (CBP 2019b). The Project will have no effect on the six Federally listed species for Yuma County or Critical Habitat. Additionally, the Project will have no effect on aquatic resources as none occur within the Project corridor.

The Project could have a minimal to moderate impact on state-listed species (e.g., flat-tailed horned lizard) that occur in the Project corridor. BMPs (e.g., environmental monitor) will minimize the impact on these species resulting from the Project.

9.0 CULTURAL RESOURCES

The Project corridor is located within the western Papaguería. The western Papaguería has a long history of human occupation; a brief summary of major trends in each of the main periods is provided below. It is important to note that the following discussion is intended to be general in nature. The western Papaguería region is bounded by the Colorado River to the west, the Gila River to the north, and the Rio Sonoita in Sonora, Mexico, and the Gulf of California to the south (Ahlstrom 2000:5). The eastern Papaguería and the Tohono O’odham Nation bound the region to the east. The cultural chronology of the western Papaguería can be broadly divided into five broad periods. The five periods are Preceramic (10,000 B.C. to A.D. 200), Ceramic (A.D. 200 to 1900), Early Historic (A.D. 1540 to 1848), Late Historic (A.D. 1848 to 1945), and World War II and Cold War (A.D. 1945 to 1989). More detailed cultural histories of the Western Papaguería are provided by Ahlstrom 2000, Altschul and Rankin 2008, and Schaefer et al. 2004.

A cultural resources overview was conducted in support of the Project in January 2019 (CBP 2019c). The overview examined General Land Office (GLO) plat maps for the entire survey area, records on file with the AZSITE database, GSRC’s archival records, and EvironSystems archival records for previously conducted archaeological investigations and previously recorded archaeological resources within a 1-mile area of the Project. The results of that record search showed that 38 investigations have been conducted within a 1-mile radius of the Project corridor. Three of the previously conducted archaeological surveys encompassed the Study Area for the Project. The 38 previous investigations resulted in the identification of 18 archaeological sites within a 1-mile radius of the Project corridor. Recorded sites represent water control structures in and around San Luis, such as canals, levees, checks, and pump stations. The late historic water control features are largely determined or recommended eligible for listing in the National Register of Historic Places (NRHP). Several International Boundary Monuments were also recorded and have been determined eligible as well. The NRHP eligible sites that were located within the Project corridor have previously been avoided and will not be impacted by the Project. The remaining sites consisted of a BLM site lacking associated information, a BLM site consisting of a potbreak, which no longer meets Arizona State Museum site definitions, and a historic trash scatter (ASM X:9:8[ASM]) that was recommended as not eligible for listing on the NRHP.

9.1 ENVIRONMENTAL CONSEQUENCES

A thorough review of previous research from AZSITE, GSRC, and EnviroSystems indicates that the entire current Study Area has been previously surveyed to current standards. Furthermore, the entire Project corridor has been modified and disturbed by drag roads, all-weather roads, and existing pedestrian fence, as well as the Salinity Canal and road. All proposed activities will be confined to the existing footprint. Therefore, no NRHP-eligible cultural resources will be adversely affected by the proposed fence replacement since the existing features have continued to be avoided through the development of the border infrastructure.

BMPs to reduce impacts on historic and cultural resources are discussed in Appendix B and Section 1.5.7. If any cultural material is discovered during construction, all activities within the vicinity of the discovery will be halted until the area has been cleared by a qualified archaeologist in accordance with the BMPs.

10.0 SOCIOECONOMICS

10.1 AFFECTED ENVIRONMENT

The ROI for the Project is Yuma County, Arizona which is part of the Yuma Metropolitan Statistical Area. Yuma is one of 15 counties in Arizona and had a 2017 population of 204,281 (U.S. Census Bureau 2019a). The racial mix of Yuma County is mainly composed of Caucasians (73.1 percent), followed by people claiming to be some race other than Caucasian, African American, Native American, Asian, Native Hawaiian, or other Pacific Islander (19.6 percent), and people claiming to be two or more races (2.5 percent). The remaining 1.6 percent of the population is split among African Americans, Native Americans, Asians, and Native Hawaiians or other Pacific Islanders. More than half of the total estimated 2017 population of Yuma County (62.9 percent) claim to be of Hispanic origin (U.S. Census Bureau 2019a).

The estimated number of civilians employed in Yuma County in 2017 was 74,891 (U.S. Census Bureau 2019b). The industry employing the largest amount of civilians in Yuma County in 2018 was educational services, and health care and social assistance industry (19.8 percent). This was followed by the retail trade industry (12.7 percent) and the agriculture, forestry, fishing and hunting, and mining industry (11.3 percent). The 2017 estimated unemployment rate for Yuma County was 10.9 percent (U.S. Census Bureau 2019b).

In 2017, Yuma County had a per capita personal income (PCPI) of \$34,752 (Bureau of Economic Analysis [BEA] 2019). This PCPI, ranked 9th in the state was 82 percent of the state average (\$42,280) and 67 percent of the National average (\$51,640). Total personal income (TPI) of an area is the income that is received by, or on behalf of, all the individuals who live in that area. In 2017, the TPI of Yuma County was \$7.2 billion (BEA 2019). The median income in 2017 was \$43,253, significantly less than the median income of the state (\$53,510) and Nation (\$57,652) (U.S. Census Bureau 2019b).

10.2 ENVIRONMENTAL CONSEQUENCES

The Project will have no impacts, direct or indirect, on long-term population or employment. The total cost of this Project is not known at this stage of the planning process, but the amount that will be spent in the local area can be assumed to be between 15 and 30 percent of the total Project cost. These expenditures are subject to economic multiplier effects, which will have overall beneficial, short-term impacts on the economy within the ROI.

Yuma County will benefit from effective enforcement operations across the ROI. Overall, replacement of the fence will reduce adverse impacts currently experienced by local law enforcement and the emergency response community. The Project will provide additional protection from illegal vehicle and foot traffic and illegal tunnels, will lower crime, and is expected to improve the quality of life along the border.

11.0 HAZARDOUS MATERIALS AND WASTE

11.1 AFFECTED ENVIRONMENT

The USEPA maintains a list of hazardous waste sites, particularly waste storage/treatment facilities or former industrial manufacturing sites in the U.S. The chemical contaminants released into the environment (air, soil, or groundwater) from hazardous waste sites may include heavy metals, organic compounds, solvents, and other chemicals. The potential adverse impact of hazardous waste sites on human health is a considerable source of concern to the general public, as well as government agencies and health professionals.

Solid and hazardous wastes are regulated in Arizona by a combination of mandated laws promulgated by the Federal, state, and regional Councils of Government. A search of USEPA's Envirofacts Data Warehouse showed no superfund sites near the Project corridor (USEPA 2019b). There were several hazardous waste sites reporting to USEPA in San Luis, Arizona. The closest three hazardous waste sites, Virco Manufacturing, RL Jones Customs Brokers, Inc., and Semex International, Inc. are located approximately 562 to 678 feet north of the Project corridor.

11.2 ENVIRONMENTAL CONSEQUENCES

CBP will apply the appropriate standards and guidelines associated with the Comprehensive Environmental Response, Compensation, and Liability Act for evaluating potential environmental impacts.

The soils in the Project corridor could be impacted by hazardous or toxic materials in the event of an accidental spill, which could lead to groundwater contamination. To minimize the potential for release of hazardous materials into the environment, BMPs will be implemented throughout construction to avoid release and to anticipate capture requirements in advance of any potential release. The following steps will be taken to prevent contamination of the Project area. Care will be taken to avoid impacting the Project corridor with hazardous substances (i.e., anti-freeze, fuels, oils, lubricants) used during construction. POL will likely be stored at the temporary staging areas in order to maintain and refuel construction equipment. However, these activities will include primary and secondary containment measures, an SPCCP will be in place prior to the start of construction, and all personnel will be briefed on the implementation and responsibilities of this plan.

Cleanup materials (e.g., oil mops), in accordance with the Project's SPCCP, will also be maintained at the site to allow immediate action in case an accidental spill occurs. Drip pans will be provided for the power generators and other stationary equipment to capture any POL accidentally spilled during maintenance activities or leaks from the equipment.

Sanitation facilities will be provided during construction activities, and waste products will be collected and disposed of by licensed contractors. No gray water will be discharged to the ground. Disposal contractors will use only established roads to transport equipment and supplies; all waste will be disposed of in strict compliance with Federal, state, and local regulations, in accordance with the contractor's permits. All construction waste will be disposed

of in compliance with Federal, state, and local regulations. Due to the proper permits being obtained by the licensed contractor tasked to handle any unregulated solid waste, and because all of the unregulated solid waste will be handled in the proper manner, no hazards to the public are expected through the transport, use, or disposal of unregulated solid waste.

12.0 RELATED PROJECTS AND POTENTIAL EFFECTS

12.1 CUMULATIVE AFFECTED ENVIRONMENT

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 Project and other projects/programs planned within the ROI, which is the USBP's Yuma Sector AOR.

This cumulative impacts analysis summarizes expected environmental effects from the combined impacts of past, current and reasonably foreseeable future actions which affected any part of the human or natural environment impacted by the Project. 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. Projects that do not occur in close proximity (i.e., within several miles) to the Project will not contribute to cumulative impacts (or are not possible to evaluate if they are south of the border) and are not generally evaluated further.

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

With continued funding and implementation of CBP's environmental conservation measures, including environmental education and training of its agents, use of biological and archaeological monitors, and restoration of wildlife water systems and other habitats, adverse impacts of future and ongoing projects will be prevented or minimized. However, recent, ongoing, and reasonably foreseeable proposed projects will result in cumulative impacts. General descriptions of these types of activities are discussed in the following paragraphs.

12.2 CUMULATIVE FENCING ALONG THE SOUTHWESTERN BORDER

As of August 2, 2017, CBP has completed 654 miles of pedestrian and vehicle fencing along the southwest border. A total of 354 miles of primary pedestrian fence, 37 miles of secondary pedestrian fence, and 14 miles of tertiary pedestrian fence has been constructed. The final total of vehicle fence constructed was 300 miles.

12.3 PAST ACTIONS

Past actions are those in the relatively recent past that are within the cumulative effects analysis areas of this ESP. The effects of these past actions are generally described throughout the previous sections. For example the existing pedestrian fence, the heavily used POEs, the secondary fence, all-weather road, lighting and remote video surveillance system (RVSS) towers have all contributed to the existing environmental conditions of the area.

- The USBP recently completed construction of eight RVSS towers in the Yuma Sector's AOR. The project also included the operation and maintenance of the RVSS towers, as well as improvements to approximately 2.0 miles of approach roads. The effects of this project were analyzed in an Environmental Assessment (CBP 2012).
- The USBP recently completed the upgrade of existing RVSS tower in the Yuma Sector AOR. All upgrades were evaluated under the National Environmental Policy Act (NEPA) by individual Categorical Exclusions.

12.4 PRESENT ACTIONS

Present actions include current or funded construction projects, USBP or other agency actions in close proximity to the Project, and current resource management programs and land use activities within the cumulative effects analysis area. Ongoing actions considered in the cumulative effects analysis include:

- Border Infrastructure System Maintenance and Repair: Routine all-weather road, secondary fence, tower approach road, lighting, and RVSS repair and maintenance.
- Levee Maintenance and Repair: USIBWC repairs and maintains the levees and roads paralleling the Colorado River.
- Military Training: The U.S. Marine Corps will continue conducting military training on MCAS, Yuma and the Barry M. Goldwater Bombing Range.

12.5 REASONABLY FORESEEABLE FUTURE ACTIONS

Reasonably foreseeable future actions consist of activities that have been approved and can be evaluated with respect to their effects. The following projects are reasonable foreseeable actions that are likely to occur in the USBP Yuma Sector AOR.

- Border Wall: As part of this or future administrations, DHS/CBP may construct additional border walls in the USBP Yuma Sector AOR. Currently, approximately 0.9 mile of primary fence replacement is proposed at the Andrade POE in California. Approximately 0.3 mile will be of existing primary pedestrian will be replace with bollard fence east of the Andrade POE and approximately 0.6 miles of existing primary pedestrian fence will be replace west of the Andrade POE.

USBP might be required to implement other activities and operations that are currently not foreseen or mentioned in this document. These actions could be in response to National

emergencies or security events, or to changes in the mode of operations of the cross-border violators.

Plans by other agencies that will also affect the region's natural and human environment include various road improvements by Arizona Department of Transportation and Yuma County. The majority of these projects will be expected to occur along existing corridors and within previously disturbed areas. The magnitude of the impacts will depend upon the length and width of the road right-of-way and the extant conditions within and adjacent to the right-of-way. However, currently no large Yuma County projects are ongoing or near completion within the vicinity of the Project corridor.

Other organizations, such as MCAS, Yuma and BLM routinely prepare or update Resource Management Plans for the resources they manage. A summary of the anticipated cumulative impacts relative to the Project (i.e., construction of the all-weather road and installation of the primary fence) is presented below. These discussions are presented for each of the resources previously described.

12.6 ENVIRONMENTAL CONSEQUENCES

12.6.1 Air Quality

The emissions generated during and after the replacement of the legacy pedestrian fence will be short-term and minor. There will be cumulative adverse construction impacts to air quality from the current or foreseeable wall replacement project discussed above. The emissions associated with these actions will also result in short-term and minor impacts to the airshed, even when combined with the other proposed developments in the border region. CBP will minimize air quality impacts by the use of standard BMPs, such as dust suppression, during construction. Deterrence of and improved response time to illegal border crossings created by the construction of infrastructure will lead to improved control of the border. A result of this improved control will be a reduction in the number of off-road enforcement actions that are currently necessary by USBP agents, thus reducing dust generation and serving to benefit overall air quality as well.

12.6.2 Noise

Most of the noise generated by the Project will occur during construction and thus will not contribute to cumulative impacts of ambient noise levels. Routine maintenance of the primary pedestrian fence will result in slight temporary increases in noise levels that will continue to sporadically occur over the long-term and will be similar to those associated with ongoing road maintenance within the Project corridor. Potential sources of noise from other projects are not significant enough (temporally or spatially) to increase ambient noise levels above the 65 dBA range at the Project sites. Thus, the noise generated by the construction and maintenance of Project infrastructure, when considered with the other existing and proposed projects in the region, is considered to have a minor cumulative adverse effect.

12.6.3 Land Use, Recreation, and Aesthetics

The Project will primarily affect lands located in the Roosevelt Reservation, which was set aside specifically for border control actions. This project is therefore consistent with the authorized land use and, when considered with other potential alterations of land use, will not be expected to

have a major cumulative adverse impact. Similarly, open space opportunities they provide will not be affected by the project and will not be negatively impacted when considered with other present and foreseeable projects in the region.

There will be visually apparent changes within the viewsheds that currently include the primary fence; however, the addition of a new larger fence, while potentially causing an adverse visual effect in some areas, does not constitute a major impact on visual resources within the Study Area due to the presence of currently existing infrastructure. However, when considered with other USBP projects, it will degrade the existing visual character of the region; thus, cumulative impacts will be considered moderate and CBP will minimize impacts to resources to the maximum extent feasible.

Areas north of the border within the construction corridors will be expected to experience beneficial, indirect cumulative impacts to aesthetics and habitat through the reduction of trash, soil erosion, and creation of trails by illegal pedestrian traffic.

12.6.4 Geological Resources and Soils

The Project will not create any dangerous or unstable conditions within any geologic unit, nor will it expose people or structures to potential substantial adverse effects. Further, no geologic resource is located exclusively within the Project corridor. The impact of the Project on previously disturbed lands, when combined with past and proposed projects in the region, will be considered to have minor cumulative adverse impacts on geological resources.

The Project, when combined with other USBP projects, will not permanently reduce prime farmland soils or agricultural production. Pre and post-construction SWPPP measures will be implemented to control soil erosion. The permanent impact of approximately 33 acres for legacy fence replacement combined with the other USBP projects, will constitute a minor to moderate cumulative adverse impact.

12.6.5 Hydrology and Water Management

As a result of the Project, when combined with other USBP projects, increased temporary erosion during construction may occur; however, due to the lack of surface waters in the Study Area increased sedimentation and turbidity will have a negligible cumulative impacts on water quality. Pre and post-construction SWPPP measures for this and other projects will be implemented to control erosion. Water withdrawal from domestic water supplies or regional groundwater basins for dust suppression and other construction/maintenance activities, for this and other related projects in the region, will result in a negligible to minor cumulative impact due to the groundwater storage capacity in the region. These short-term activities will not affect long-term water supplies or the quantity of groundwater in the region. Although the volume of water withdrawn will not affect the public drinking water supplies, it may indirectly contribute to aquifer contamination from surface runoff. With the implementation of appropriate BMPs, the Project will not substantially affect water quality.

12.6.6 Biological Resources (Vegetation, Wildlife, Aquatic Species, Special Status Species)

The Project will have minimal impacts on native vegetation communities, but as discussed in the Biological Resources section, some direct negative impacts to wildlife within the Study Area

may occur due to erosion, noise, lighting, or conflict with construction equipment. These adverse impacts will be cumulatively more significant when considered alongside other current and foreseeable projects in the region. However, because construction will be temporary and impacts will be minimized through implementation of appropriate BMPs for the protection of general plants and wildlife, these projects combined are unlikely to result in any long-term or significant decreases in wildlife populations in the region.

12.6.7 Cultural Resources

Construction of the proposed Project will not adversely affect any NRHP-eligible cultural resources since the existing features have continued to be avoided by past projects. Therefore, this action when combined with other existing and proposed projects in the region will have negligible cumulative impacts on cultural resources.

12.6.8 Socioeconomics

Construction of the Project, when combined with other USBP projects, will result in temporary, minor, and beneficial impacts on the region's economy. No impacts on populations, minorities, or low-income families will occur. When practicable, materials and other Project expenditures will predominantly be obtained through merchants in the local community. Local construction crews will also be employed to complete the Project. Safety buffer zones will be designated around all construction sites to ensure public health and safety. Long-term cumulative effects of the projects on the economy of the region should be beneficial by reducing smuggling and other illegal activity in the area. Legal border crossings and international trade will continue unaffected by the Project. When combined with the other projects currently planned or ongoing within the region, they will have minor cumulative, temporary beneficial impacts on the region's socioeconomics.

12.6.9 Hazardous Materials and Waste

The use of hazardous substances will be required in small amounts within the Study Area during the construction phase. It is anticipated, with the inclusion of BMPs listed in Section 1.5.7, that impacts resulting from the use of hazardous materials during this phase will be avoided or minimized. Similarly, only minor temporary increases in the use of hazardous materials will potentially be experienced from construction associated with other projects in the region. Removal of the existing fence could generate waste, but most of the existing steel plate and mesh material is valuable as a recyclable material. Therefore the Project, when combined with other ongoing and proposed projects in the region, is not expected to have a major cumulative impact on the generation of waste nor the potential for release of hazardous materials.

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14.0 ABBREVIATIONS AND ACRONYMS

ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
ANHP	Arizona Natural Heritage Program
AZSHPO	Arizona State Historic Preservation Office
BEA	United States Bureau of Economic Analysis
BLM	Bureau of Land Management
BMP	Best Management Practices
CAA	Clean Air Act
CBP	United States Customs and Border Protection
CBV	Cross-border Violator
CDC	California Department of Conservation
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CH ₄	Methane
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CWA	Clean Water Act
dB	decibel
dBA	decibel – A weighted scale
DHS	United States Department of Homeland Security
DOI	Department of Interior
ESA	Endangered Species Act
ESP	Environmental Stewardship Plan
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FPPA	Farmland Protection Policy Act
FR	Federal Register
GHG	Green House Gases
GIS	Geographic Information Systems
GLO	General Land Office
GSRC	Gulf South Research Corporation
HFC	Hydrofluorocarbons
HUD	U.S. Department of Housing and Urban Development
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act
MBTA	Migratory Bird Treaty Act
MCAS	Marine Corps Air Station
MOVES	Motor Vehicle Emission Simulator
Mph	miles-per-hour
µg/m ³	micrograms per cubic meter
mg/m ³	milligrams per cubic meter
NO _x	Nitrogen Oxide
N ₂ O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards

NEPA	National Environmental Policy Act
NO ₂	Nitrogen Dioxide
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
OHM	Ordinary High Water Mark
O ₃	Ozone
OSHA	Occupational Safety and Health Administration
PCPI	per capita personal income
PM-10	Particulate<10 micrometers
PM-2.5	Particulate<2.5 micrometers
POE	Port of Entry
POL	Petroleum, oil, and lubricants
ppb	parts per billion
ppm	parts per million
Reclamation	Bureau of Reclamation
ROI	Region of influence
Secretary	Secretary of the Department of Homeland Security
SO ₂	Sulfur dioxide
SPCCP	Spill Prevention, Control, and Countermeasures Plan
SSS	Soil Survey Staff
SWPPP	Storm Water Pollution Prevention Plan
TI	Tactical Infrastructure
TPI	Total Personal Income
USACE	United States Army Corps of Engineers
USBP	United States Border Patrol
U.S.	United States
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USIBWC	United States Section, International Boundary Water Commission
VOC	Volatile Organic Compounds
YDMA	Yuma Desert Management Area

Appendix A
Copy of 2019 Border Waiver

controls, safety features, lighting, cameras, and sensors) in the project area, all of the following statutes, including all federal, state, or other laws, regulations, and legal requirements of, deriving from, or related to the subject of, the following statutes, as amended: The National Environmental Policy Act (Pub. L. 91–190, 83 Stat. 852 (Jan. 1, 1970) (42 U.S.C. 4321 *et seq.*)); the Endangered Species Act (Pub. L. 93–205, 87 Stat. 884 (Dec. 28, 1973) (16 U.S.C. 1531 *et seq.*)); the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act (33 U.S.C. 1251 *et seq.*)); the National Historic Preservation Act (Pub. L. 89–665, 80 Stat. 915 (Oct. 15, 1966), as amended, repealed, or replaced by Public Law 113–287 (Dec. 19, 2014) (formerly codified at 16 U.S.C. 470 *et seq.*, now codified at 54 U.S.C. 100101 note and 54 U.S.C. 300101 *et seq.*)); the Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*); the Migratory Bird Conservation Act (16 U.S.C. 715 *et seq.*); the Clean Air Act (42 U.S.C. 7401 *et seq.*); the Archeological Resources Protection Act (Pub. L. 96–95 (16 U.S.C. 470aa *et seq.*)); the Paleontological Resources Preservation Act (16 U.S.C. 470aaa *et seq.*); the National Trails System Act (16 U.S.C. 1241 *et seq.*); the Federal Cave Resources Protection Act of 1988 (16 U.S.C. 4301 *et seq.*); the Safe Drinking Water Act (42 U.S.C. 300f *et seq.*); the Noise Control Act (42 U.S.C. 4901 *et seq.*); the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (42 U.S.C. 6901 *et seq.*); the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601 *et seq.*); the Archaeological and Historic Preservation Act (Pub. L. 86–523, as amended, repealed, or replaced by Pub. L. 113–287 (Dec. 19, 2014) (formerly codified at 16 U.S.C. 469 *et seq.*, now codified at 54 U.S.C. 312502 *et seq.*)); the Antiquities Act (formerly codified at 16 U.S.C. 431 *et seq.*, now codified at 54 U.S.C. 320301 *et seq.*); the Historic Sites, Buildings, and Antiquities Act (formerly codified at 16 U.S.C. 461 *et seq.*, now codified at 54 U.S.C. 3201–320303 and 320101–320106); the Farmland Protection Policy Act (7 U.S.C. 4201 *et seq.*); the Federal Land Policy and Management Act (Pub. L. 94–579 (43 U.S.C. 1701 *et seq.*)); National Fish and Wildlife Act of 1956 (Pub. L. 84–1024 (16 U.S.C. 742a *et seq.*)); the Fish and Wildlife Coordination Act (Pub. L. 73–121 (16 U.S.C. 661 *et seq.*)); the Wild Horse and Burro Act (16 U.S.C. 1331 *et seq.*); the Administrative Procedure Act (5 U.S.C. 551 *et seq.*); the Eagle Protection Act (16 U.S.C. 668 *et seq.*); the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 *et seq.*); and the American Indian Religious Freedom Act (42 U.S.C. 1996).

This waiver does not revoke or supersede the previous waiver published in the **Federal Register** on April 8, 2008 (73 FR 19078), which shall remain in full force and effect in accordance with its terms. I reserve the authority to execute further waivers from time to time as I may determine to be necessary under section 102 of IIRIRA.

Dated: April 18, 2019.

Kevin K. McAleenan,

Acting Secretary of Homeland Security.

[FR Doc. 2019–08290 Filed 4–23–19; 8:45 am]
BILLING CODE 9111–14–P

DEPARTMENT OF HOMELAND SECURITY

Office of the Secretary

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

AGENCY: Office of the Secretary, Department of Homeland Security.
ACTION: Notice of determination.

SUMMARY: The Secretary of Homeland Security has determined, pursuant to law, that it is necessary to waive certain laws, regulations, and other legal requirements in order to ensure the expeditious construction of barriers and roads in the vicinity of the international land border in Yuma County, Arizona.

DATES: This determination takes effect on April 24, 2019.

SUPPLEMENTARY INFORMATION: Important mission requirements of the Department of Homeland Security (“DHS”) include border security and the detection and prevention of illegal entry into the United States. Border security is critical to the nation’s national security. Recognizing the critical importance of border security, Congress has mandated DHS to achieve and maintain operational control of the international land border. Secure Fence Act of 2006, Public Law 109–367, section 2, 120 Stat. 2638 (Oct. 26, 2006) (8 U.S.C. 1701 note). Congress defined “operational control” as the prevention of all unlawful entries into the United States, including entries by terrorists, other unlawful aliens, instruments of terrorism, narcotics, and other contraband. *Id.* Consistent with that mandate from Congress, the President’s Executive Order on Border Security and Immigration Enforcement directed executive

departments and agencies to deploy all lawful means to secure the southern border. Executive Order 13767, section 1. In order to achieve that end, the President directed, among other things, that I take immediate steps to prevent all unlawful entries into the United States, including the immediate construction of physical infrastructure to prevent illegal entry. Executive Order 13767, section 4(a). Congress has provided to the Secretary of Homeland Security a number of authorities necessary to carry out DHS’s border security mission. One of those authorities is found at section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as amended (“IIRIRA”). Public Law 104–208, Div. C, 110 Stat. 3009–546, 3009–554 (Sept. 30, 1996) (8 U.S.C. 1103 note), as amended by the REAL ID Act of 2005, Public Law 109–13, Div. B, 119 Stat. 231, 302, 306 (May 11, 2005) (8 U.S.C. 1103 note), as amended by the Secure Fence Act of 2006, Public Law 109–367, section 3, 120 Stat. 2638 (Oct. 26, 2006) (8 U.S.C. 1103 note), as amended by the Department of Homeland Security Appropriations Act, 2008, Public Law 110–161, Div. E, Title V, section 564, 121 Stat. 2090 (Dec. 26, 2007). In section 102(a) of IIRIRA, Congress provided that the Secretary of Homeland Security shall take such actions as may be necessary to install additional physical barriers and roads (including the removal of obstacles to detection of illegal entrants) in the vicinity of the United States border to deter illegal crossings in areas of high illegal entry into the United States. In section 102(b) of IIRIRA, Congress mandated the installation of additional fencing, barriers, roads, lighting, cameras, and sensors on the southwest border. Finally, in section 102(c) of IIRIRA, Congress granted to the Secretary of Homeland Security the authority to waive all legal requirements that I, in my sole discretion, determine necessary to ensure the expeditious construction of barriers and roads authorized by section 102 of IIRIRA.

Determination and Waiver

Section 1

United States Border Patrol’s Yuma Sector is an area of high illegal entry. In fiscal year 2018, the United States Border Patrol (“Border Patrol”) apprehended over 26,000 illegal aliens attempting to enter the United States between border crossings in the Yuma Sector. Also in fiscal year 2018, the Border Patrol had over 1,400 separate drug-related events between border crossings in the Yuma Sector, through

which it seized over 8,000 pounds of marijuana, over 78 pounds of cocaine, over 102 pounds of heroin, and over 1,700 pounds of methamphetamine. Additionally, Yuma County, Arizona, which is located in the Yuma Sector, has been identified as a High Intensity Drug Trafficking Area by the Office of National Drug Control Policy.

Due to the high levels of illegal entry of people and drugs within the Yuma Sector, I must use my authority under Section 102 of IIRIRA to install additional physical barriers and roads in the Yuma Sector. Therefore, DHS will take immediate action to replace existing barriers in the Yuma Sector. The project will occur within two segments of the border in the Yuma Sector. The first is southeast of the Andrade Port of Entry and runs south along the international border adjacent to the Colorado River. The second is situated on the eastern edge of the Barry Goldwater Range. The segments within which such construction will occur are referred to herein as the “project area” and are more specifically described in Section 2 below.

The existing barriers within the project area include both vehicle fencing and outmoded pedestrian fencing that no longer meet the United States Border Patrol’s operational needs. The construction of vehicle barriers in the project area initially curtailed illegal vehicular crossings. However, transnational criminal organizations have adapted their tactics by smuggling illicit cargo by foot, cutting the barrier, or driving over it, which has prompted the need for the construction of a more effective barrier. The design of the existing pedestrian barrier makes it susceptible to being breached and repeated damage to the existing fencing has made it less effective. The existing vehicle barriers and outmoded pedestrian fencing will be replaced with an eighteen to thirty foot barrier that employs a more operationally effective design. In addition, roads will be constructed or improved and lighting will be installed.

To support DHS’s action under Section 102 of IIRIRA, DHS requested that the Department of Defense, pursuant to 10 U.S.C. 284(b)(7), assist by constructing fence, roads, and lighting within the Yuma Sector in order to block drug smuggling corridors across the international boundary between the United States and Mexico. The Acting Secretary of Defense has concluded that the support requested satisfies the statutory requirements of 10 U.S.C. 284(b)(7), and that the Department of

Defense will provide such support in the project area described in Section 2 below.

Section 2

I determine that the following areas in the vicinity of the United States border, located in the State of Arizona within the United States Border Patrol’s Yuma Sector, are areas of high illegal entry (the “project area”):

- Starting at the Morelos Dam and extending south and generally following the Colorado River for approximately five and one-half (5.5) miles.
- Starting two and one-half (2.5) miles east of Border Monument 198 and extending east to Border Monument 197.

There is presently an acute and immediate need to construct physical barriers and roads in the vicinity of the border of the United States in order to prevent unlawful entries into the United States in the project area pursuant to sections 102(a) and 102(b) of IIRIRA. In order to ensure the expeditious construction of the barriers and roads in the project area, I have determined that it is necessary that I exercise the authority that is vested in me by section 102(c) of IIRIRA.

Accordingly, pursuant to section 102(c) of IIRIRA, I hereby waive in their entirety, with respect to the construction of physical barriers and roads (including, but not limited to, accessing the project area, creating and using staging areas, the conduct of earthwork, excavation, fill, and site preparation, and installation and upkeep of physical barriers, roads, supporting elements, drainage, erosion controls, safety features, lighting, cameras, and sensors) in the project area, all of the following statutes, including all federal, state, or other laws, regulations, and legal requirements of, deriving from, or related to the subject of, the following statutes, as amended:

The National Environmental Policy Act (Pub. L. 91–190, 83 Stat. 852 (Jan. 1, 1970) (42 U.S.C. 4321 *et seq.*)); the Endangered Species Act (Pub. L. 93–205, 87 Stat. 884 (Dec. 28, 1973) (16 U.S.C. 1531 *et seq.*)); the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act (33 U.S.C. 1251 *et seq.*)); the National Historic Preservation Act (Pub. L. 89–665, 80 Stat. 915 (Oct. 15, 1966), as amended, repealed, or replaced by Pub. L. 113–287 (Dec. 19, 2014) (formerly codified at 16 U.S.C. 470 *et seq.*, now codified at 54 U.S.C. 100101 note and 54 U.S.C. 300101 *et seq.*)); the Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*); the Migratory Bird Conservation Act (16 U.S.C. 715 *et seq.*); the Clean Air Act (42

U.S.C. 7401 *et seq.*); the Archeological Resources Protection Act (Pub. L. 96–95 (16 U.S.C. 470aa *et seq.*)); the Paleontological Resources Preservation Act (16 U.S.C. 470aaa *et seq.*); the Federal Cave Resources Protection Act of 1988 (16 U.S.C. 4301 *et seq.*); the National Trails System Act (16 U.S.C. 1241 *et seq.*); the Safe Drinking Water Act (42 U.S.C. 300f *et seq.*); the Noise Control Act (42 U.S.C. 4901 *et seq.*); the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (42 U.S.C. 6901 *et seq.*); the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601 *et seq.*); the Archaeological and Historic Preservation Act (Pub. L. 86–523, as amended, repealed, or replaced by Pub. L. 113–287 (Dec. 19, 2014) (formerly codified at 16 U.S.C. 469 *et seq.*, now codified at 54 U.S.C. 312502 *et seq.*)); the Antiquities Act (formerly codified at 16 U.S.C. 431 *et seq.*, now codified 54 U.S.C. 320301 *et seq.*); the Historic Sites, Buildings, and Antiquities Act (formerly codified at 16 U.S.C. 461 *et seq.*, now codified at 54 U.S.C. 3201–320303 and 320101–320106); the Wild and Scenic Rivers Act (Pub. L. 90–542 (16 U.S.C. 1281 *et seq.*)); the Farmland Protection Policy Act (7 U.S.C. 4201 *et seq.*); the Federal Land Policy and Management Act (Pub. L. 94–579 (43 U.S.C. 1701 *et seq.*)); National Fish and Wildlife Act of 1956 (Pub. L. 84–1024 (16 U.S.C. 742a *et seq.*)); the Fish and Wildlife Coordination Act (Pub. L. 73–121 (16 U.S.C. 661 *et seq.*)); the Wild Horse and Burro Act (16 U.S.C. 1331 *et seq.*); the Administrative Procedure Act (5 U.S.C. 551 *et seq.*); the Rivers and Harbors Act of 1899 (33 U.S.C. 403); the Eagle Protection Act (16 U.S.C. 668 *et seq.*); the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 *et seq.*); the American Indian Religious Freedom Act (42 U.S.C. 1996); the Military Lands Withdrawal Act of 1999 (Pub. L. 106–65, 113 Stat. 885); the Sikes Act (16 U.S.C. 670, *et seq.*); and 43 U.S.C. 387.

This waiver does not revoke or supersede previous waivers published in the **Federal Register** on January 19, 2007 (72 FR 2535) and April 8, 2008 (73 FR 19078), which shall remain in full force and effect in accordance with their terms. I reserve the authority to execute further waivers from time to time as I may determine to be necessary under section 102 of IIRIRA.

Dated: April 18, 2019.

Kevin K. McAleenan,
Acting Secretary of Homeland Security.

[FR Doc. 2019–08291 Filed 4–23–19; 8:45 am]

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Appendix B
Best Management Practices

BEST MANAGEMENT PRACTICES

The Contractor shall implement all BMPs as outlined in this section along with all other BMPs required per provisions of this Request for Proposal. All BMPs shall be incorporated into the Contractor's Environmental Protection Plan and the Storm Water Pollution Prevention Plan.

GENERAL CONSTRUCTION ACTIVITIES

BMPs shall be implemented as standard operating procedures during all construction activities. These BMPs shall include proper handling, storage, and/or disposal of hazardous and/or regulated materials. All construction will follow *DHS Directive 025-01* for Sustainable Practices for Environmental, Energy, and Transportation Management.

Avoid contamination of ground and surface waters by storing concrete wash water, and any water that has been contaminated with construction materials, oils, equipment residue, etc., in closed containers on-site until removed for disposal. This wash water is toxic to wildlife.

All equipment maintenance, staging, laydown, and dispensing of fuel, oil, or any other such activities, will occur in designated upland areas. The designated upland areas will be located in such a manner as to prevent any runoff from entering waters of the United States, including wetlands.

Storage tanks must have proper air space (to avoid rainfall-induced overtopping), be on-ground containers, and be located in upland areas instead of washes. To minimize potential impacts from hazardous and regulated materials, all fuels, waste oils, and solvents will be collected and stored in tanks or drums within a secondary containment system that consists of an impervious floor and bermed sidewalls capable of holding 110% of the total volume of vessels present in that storage area.

No refueling or storage shall take place within 100 feet of a drainage channel or structure. Avoid storage of chemicals or fuels within 0.3 mile of aquatic habitat.

The refueling of machinery shall be completed following accepted guidelines, and all vehicles shall have approved drip pans during storage to contain minor spills and drips. Although it will be unlikely for a major spill to occur, any spill of 5 gallons or more shall be contained immediately within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock, etc.) shall be used to absorb and contain the spill. Furthermore, any spill of petroleum liquids (e.g., fuel) or material listed on 40 CFR 302 Table 302.4 of a reportable quantity must be cleaned up and reported to the appropriate Federal and state agencies. Reportable quantities of those substances listed on 40 CFR 302 Table 302.4 will be included as part of the Spill Prevention, Control and Countermeasures Plan (SPCCP). An SPCCP will be in place prior to the start of construction, and all personnel will be briefed on the implementation and responsibilities of this plan.

All construction shall follow *DHS Directive 025-01* for Sustainable Practices for Environmental, Energy, and Transportation Management. All waste oil and solvents shall be recycled. All non-

recyclable hazardous and regulated wastes shall be collected, characterized, labeled, stored, transported, and disposed of in accordance with all Federal, state, and local regulations, including proper waste manifesting procedures. Solid waste receptacles shall be maintained at staging areas. Non-hazardous solid waste (trash and waste construction materials) shall be collected and deposited in on-site receptacles. Solid waste shall be collected and disposed of by a local waste disposal contractor. Waste materials and other discarded materials will be removed from the site as quickly as possible. Nonhazardous waste materials and other discarded materials such as construction waste will be contained until removed from site. This should assist in keeping the project area and surroundings free of litter and reduce the amount of disturbed area needed for waste storage.

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. Waste water (water used for project purposes that is contaminated with construction materials, was used for cleaning equipment and thus carries oils or other toxic materials or other contaminants in accordance with state regulations) will be stored in closed containers on-site until removed for disposal or placed in a settling pond.

Concrete wash water will not be dumped on the ground, but will be collected and moved off-site for disposal.

The perimeter of all areas to be disturbed during construction or maintenance activities shall be clearly demarcated using flagging or temporary construction fence, and no disturbance outside of that perimeter will be authorized.

For construction purposes, infrastructure sites will only be accessed using designated roads. Parking will be in designated areas.

Within the designated disturbance areas, grading or topsoil removal will be limited to only those areas where this activity is needed to provide ground conditions for construction or maintenance activities. Minimizing disturbance to soils will enhance the ability to restore the disturbed area after the project is complete. When available and approved by the Contracting Officer, areas already disturbed by past activities or those that will be used later in the construction period will be used for staging, parking, and equipment storage.

No off-road vehicle activity will occur outside of the project footprint by the project proponent, project workers, and project contractors.

No pets of any kind will be permitted inside the project's construction boundaries, adjacent native habitats, or other associated work areas.

The width of all roads that are created or maintained by the Contractor should be measured and recorded using GPS coordinates and provided to the Government.

Water tankers that convey untreated surface water will not discard unused water where it has the potential to enter surface waters or drainages. Water storage on the project area should be in closed on-ground containers located on upland areas not in washes.

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

Areas with highly erodible soils will be given special consideration when designing the proposed project to ensure incorporation of various BMPs, such as, straw bales, aggregate materials, and wetting compounds, to control erosion. A SWPPP shall be prepared prior to construction activities and BMPs described in the SWPPP shall be implemented to reduce erosion.

Any unnecessary ground disturbance, such as scraping or vegetation removal, shall be avoided within temporary staging areas as approved by the Government construction representative. When required, these areas shall be hand cleared to avoid disturbance to soils. Minimizing disturbance of the soils shall facilitate natural restoration (i.e., some native plants will resprout if not heavily disturbed), and shall impede the establishment of non-native plant species (i.e., many invasive, non-native plant species will easily invade and dominate heavily disturbed areas).

Materials such as gravel or topsoil will be obtained from existing developed or previously used sources not from undisturbed areas adjacent to the project area.

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

If construction or maintenance must occur during non-daylight hours, minimize the duration and frequency of these activities to the greatest extent possible.

Avoid creating new access routes by using and improving existing roads, if necessary.

Avoid transmitting disease vectors, introducing invasive non-native species, and depleting natural aquatic systems by using wells, irrigation water sources, or treated municipal sources for construction or irrigation purposes instead of natural sources.

SOILS

Collect and stockpile organic material for later use in staging areas for erosion control while those areas naturally revegetate. Revegetation shall be undertaken in accord with an approved revegetation plan.

Areas with highly erodible soils will be given special consideration when designing the proposed project to ensure incorporation of various BMPs, such as straw bales, aggregate materials, and wetting compounds, to control erosion. A SWPPP shall be prepared prior to construction activities, and BMPs described in the SWPPP shall be implemented to reduce erosion.

Any unnecessary ground disturbance, such as scraping or vegetation removal, shall be avoided within temporary staging areas as approved by the Government construction representative. When required, these areas shall be hand-cleared to avoid disturbance to soils. Minimizing disturbance of the soils shall facilitate natural restoration (i.e., some native plants will resprout if not heavily disturbed), and shall impede the establishment of non-native plant species (i.e., many invasive, non-native plant species will easily invade and dominate heavily disturbed areas).

VEGETATION

Construction equipment shall be cleaned using BMPs prior to entering and departing the project corridor to minimize the spread and establishment of non-native invasive plant species.

Removal of trees and brush will be limited to the smallest amount needed to meet the objectives of the project. This type of clearing is likely to be maintained over time, and loss of habitat is likely to be permanent.

Materials used for on-site erosion control in uninfested native habitats will be free of non-native plant seeds and other plant parts to limit potential for infestation. Identify fill material brought in from outside the project area by its source location. Use sources that are clean and weed-free.

Quantify the volume and type of spoil material from construction activities. Work with land management agency to determine disposition and location of spoil material. If requested by the land management agency, haul spoil material to an appropriate off-site disposal area.

Since natural materials cannot be certified as completely weed-free, if such materials are used, there will be follow up monitoring to document establishment of non-native plants and appropriate control measures should be implemented for a period of time to be determined in the site restoration plan. Avoid the spread of non-native plants by not using natural materials (e.g., straw) for on-site erosion control. Natural materials would be certified weed and weed-seed free.

Herbicides not toxic to listed species that may be in the area can be used for non-native vegetation control. Application of herbicides will follow Federal guidelines and in accordance with label directions.

Avoid transmitting disease vectors, introducing invasive non-native species, and depleting natural aquatic systems by using wells, irrigation water sources, or treated municipal sources for construction or irrigation purposes instead of natural sources.

BIOLOGICAL RESOURCES

Areas already disturbed, or those to be disturbed later in the construction sequence, will be used for staging, parking, and equipment storage. Widening of existing roadbeds beyond approved designs will be prohibited.

Comply with the Migratory Bird Treaty Act. If all ground disturbing activities cannot be completed outside of the migratory bird nesting season (February 15 – September 15), prior to

the start of the project, and as a one-time occurrence, the Contractor's Environmental Monitor, shall conduct migratory bird surveys at the project site before said activities begin. The Contractor's biological monitor shall locate and clearly mark bird nests 48 hours prior to the Contractor's scheduled ground disturbing activities. Under no circumstance shall the Contractor conduct any of the ground-disturbing activities prior to the completion of the surveys by the biological monitor. An appropriate buffer for avoidance will be established around any nesting birds until the young have fledged or the nest is no longer being used.

The perimeter of all areas to be disturbed and/or protected during construction or maintenance activities will be clearly demarcated using flagging or temporary construction fence prior to habitat clearing, and the marked boundaries maintained throughout the construction period. Disturbance outside of the construction perimeter will not be permitted. Construction travel will generally be constrained to previously disturbed areas wherever possible, using only designated roads and parking areas.

A designated biological monitor will be present during construction activities 5 days per week during the duration of construction. The biologist will conduct pre-construction nesting/breeding bird surveys along the study area ahead of active construction. Observations of birds, bird breeding/nesting behavior and bird nest, including burrowing owls, shall be documented or recorded. Any active nests that are observed shall be identified to the species level and a buffer zone around the nest shall be flagged for avoidance until the young have fledged and the nests are abandoned to the extent practicable. If avoidance is not possible, the biologist shall coordinate with CBP on the relocation of active nests or closure of active burrows. The monitor shall advise the implementation of and document adherence to BMPs and project conditions. The monitors shall also remind the construction crews as necessary to stay within the project area and of sensitive resources not to be damaged, destroyed, relocated, or removed. The monitor shall immediately notify the on-site construction representative assigned to the construction project if any sensitive resources are observed in the project area and offer appropriate measures to avoid adverse effects to the resources. In the event that a sensitive resource is inadvertently disturbed through construction, the monitor shall immediately notify CBP and provide a description and location of the resource and the disturbance. Any infraction of other BMPs (e.g., accidental spills, lack of drip pans, etc.) shall also be reported to the on-site construction representative and recorded in the weekly monitoring reports. The monitor shall also be present at the final construction walk-through to identify any unresolved BMP or project condition infractions. The monitor will maintain daily notes and prepare weekly reports. The weekly reports will be used to prepare a monthly monitoring report that will be submitted to CBP.

With the guidance of a biologist familiar with the potential species and habitats to be affected, CBP will develop a training plan regarding sensitive resources for CBP and construction personnel. This BMP does not apply to Border Patrol operations. The training will include at a minimum descriptions of the resource and purpose for its protection, the conservation measures that must be implemented, and environmentally responsible construction practices.

Within the designated disturbance area, grading or topsoil removal will be limited to areas of necessity and within the limit of grading to provide required ground conditions for construction

and maintenance activities. Minimizing the disturbance footprint minimizes impacts and restoration requirements. The top six inches of topsoil will be stockpiled for use in revegetation whenever feasible. Stockpiles will not exceed 3.5 feet in height and will be covered with natural materials such as burlap. No plastic is permitted due to the heat's sterilization effect on the topsoil.

Materials used for construction and on-site erosion control will be biodegradable and free of non-native plant seeds and other non-native plant parts to limit potential for infestation. Some natural materials cannot be fully certified as completely weed-free, and if such materials are used, follow-up monitoring and control to limit establishment of non-native plants will be implemented during the establishment period to insure native plant materials provide effective erosion control cover. Erosion control blankets and wattles will use biodegradable netting.

All material sources will be reviewed and approved prior to material being brought on-site. Borrow areas for fill materials such as rock, gravel, or topsoil will be obtained from existing developed or previously used sources, not from undisturbed areas within or adjacent to the Study Area.

To eliminate attracting predators of protected animals, all food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in closed containers and removed daily from the project site.

Any night lighting for the construction of the Project will be selectively placed, shielded, and directed away from all native vegetative communities north of the project footprint and the beach.

Waste contaminated with construction materials or from cleaning equipment carries oils, toxic materials, or other contaminants. Contaminated wastewater will be stored in closed containers on site until removed for disposal. Concrete wash water will not be dumped on the ground, but is to be collected and moved offsite for disposal. This wash water is toxic to aquatic life.

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

To prevent entrapment of wildlife species, the ends of all hollow construction stock, such as vertical fence posts/bollards, including those that will later be filled with reinforcing or other materials, shall be covered to prevent wildlife from entering. Covers of all hollow construction stock will be in place upon arrival at the site and will be retained until such time the material is filled or otherwise closed to prevent entry by an animal. Construction (temporary or otherwise) of steep-walled pits is also to be avoided to prevent animal entrapment. Excavations more than 18 inches deep will be covered or a means of small animal escape provided, such as a firmly placed board (8" or wider) or an earthen ramp at a slope no steeper than 4:1, to prevent animal entrapment.

During follow-up monitoring and during maintenance activities, invasive plants found on the site will be treated and removed from the site. All chemical applications will be performed by a licensed applicator and herbicides will be used only according to label directions. The monitoring period will be defined in the site revegetation plan. Training to identify non-native invasive plants will be provided for CBP personnel or contractors, as necessary. Restored areas will have successfully established native plant communities within 5 years of implementing the plan.

In addition, species-specific and habitat-specific BMPs are also recommended:

a. Burrowing Owl (*Athene cunicularia*)

Burrowing owl surveys shall be conducted 30 days prior to commencement of construction in burrowing owl areas. Active burrows shall be flagged for avoidance with a 250-foot buffer. Active burrows that cannot be avoided will be collapsed. If construction is during the nesting period (February 15 through September 15), the presence of eggs or young will be determined before owls are prevented from re-entering and collapsing the burrows following established guidelines. If young are present, burrows will not be collapsed until they fledge.

The U.S. Fish and Wildlife Service (USFWS) lists Federally protected species with the potential of occurring in Yuma County. It is the Contractor's responsibility to be aware of these species and if any of these species are encountered the Contractor shall take appropriate measures to protect each species. Refer to Environmental Stewardship Plan for a list of Federally protected species.

The Government will develop (in coordination with USFWS) a training plan regarding Trust Resources for border patrol and construction personnel. At a minimum, the program will include the following topics: Occurrence of the listed and sensitive species in the area, their general ecology, sensitivity of the species to human activities, legal protection afforded these species, and project features designed to reduce the impacts on these species and promote continued successful occupation of the project area environs. Included in this program will be color photos of the listed species, which will be shown to the employees. Following the education program, the photos will be posted in the contractor and resident engineer office, where they will remain through the duration of the project. The Contractor will be responsible for ensuring that its employees are aware of the listed species. This BMP does not apply to Border Patrol operations.

Design, and construct project to avoid or minimize habitat loss within or adjacent to the footprint.

Clearing and grubbing and all other ground-disturbing activities shall be limited to biologically surveyed areas.

To prevent entrapment of wildlife species during the construction of the project, all excavated, steepwalled holes or trenches more than 2 feet deep will either be covered at the close of each working day by plywood or provided with one or more escape ramps constructed of earth fill or

wooden planks. The ramps will be located at no greater than 1,000-foot intervals and will be sloped less than 45 degrees. Each morning before the start of construction and before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. Any animals so discovered will be allowed to escape voluntarily (by escape ramps or temporary structures), without harassment, before construction activities resume, or removed from the trench or hole by a qualified environmental monitor and allowed to escape unimpeded.

To prevent entrapment of wildlife species during placement or vertical posts/bollards, all vertical fence posts/bollards that are hollow (i.e., those that will be filled with a reinforcing material such as concrete), shall be covered so as to prevent wildlife from entrapment. Covers will be deployed from the time the posts or hollow bollards are erected to the time they are filled with reinforcing material. Monitoring of open post holes and trenches will take place daily to reduce or avoid impacts on biological species.

The Contractor shall not conduct any construction-related activities in areas that have not been previously surveyed for biological resources.

Minimize wildlife collision mortalities by minimizing the number of vehicles traveling to and from the project site and the number of trips per day.

Transmission of disease vectors and invasive non-native aquatic species can occur if vehicles cross infected or infested streams or other waters and water or mud remains on the vehicle. If these vehicles subsequently cross or enter uninfected or infested waters, the disease or invasive species may be introduced to the new area. To prevent this, crossing of streams or marsh areas with flowing or standing water will be avoided, and if not, the vehicle sprayed with a 10% bleach solution or allowed to dry completely to kill any organisms.

Pumps, hoses, tanks and other water storage devices will be cleaned and disinfected with a 10% bleach solution at an appropriate facility (this water is not to enter any surface water area) before use at another site, if untreated surface water was used. If a new water source is used that is not from a treated or groundwater source, the equipment will require additional cleaning.

Minimize impacts on wildlife species and their habitats by using areas already disturbed by past activities, or those that will be used later in the construction period, for staging, parking, laydown, and equipment storage.

If site disturbance is unavoidable, minimize the area of disturbance by scheduling deliveries of materials and equipment to only those items needed for ongoing project implementation.

Minimize impacts on wildlife species and their habitats by limiting grading or topsoil removal to areas where this activity is absolutely necessary for construction, staging, or maintenance activities.

Minimize habitat disturbance by restricting vegetation removal to the smallest possible project footprint. Limit the removal of trees, cacti, and brush to the smallest amount needed to meet the objectives of the project.

If vegetation must be removed outside the permanent project footprint, allow natural regeneration of native plants by cutting vegetation with hand tools, mowing, trimming, or using other removal methods that allow root systems to remain intact.

Completely avoid working in an area where a listed individual is found until that individual leaves or is removed by a qualified biological monitor.

Locate roads, fences, security zones or other facilities that require land clearing at least 0.5 mile from occupied threatened and endangered fish and plant habitats.

Minimize impacts on listed species and their habitats by obtaining materials such as gravel or topsoil that are clean and acceptable to the land management agency from existing developed or previously used sources, and not from undisturbed areas adjacent to the project area.

Avoid restricting water access by identifying and not creating barriers to natural water sources available to listed species. Do not use rodenticides during construction of project.

Notify USFWS and Federal land managers two weeks before any project construction and maintenance activities begin and within one week after project construction and maintenance activities are completed.

AIR QUALITY

During the construction of the proposed project, proper and routine maintenance of all vehicles and other construction equipment will be implemented to ensure that emissions are within the design standards of all construction equipment.

Dust suppression methods, such as watering of roads and construction areas, will be implemented to minimize fugitive dust. Construction speed limits will not exceed 35 miles per hour on major unpaved roads (graded with ditches on both sides) and 25 miles per hour on all other unpaved roads. Nighttime travel speeds will not exceed 25 mph, and may be less based on visibility and other safety considerations.

CULTURAL RESOURCES

Although no buried cultural resources are known within the project areas, should any evidence of cultural resources be observed during construction, work will stop in the immediate vicinity, the resource will be protected, coordination with the State Historic Preservation Office will be conducted, and a mitigation plan will be developed and implemented if necessary. The Contractor may continue to work in areas that have been previously cleared, unless cultural resource materials are also discovered in these areas.

HEALTH AND SAFETY

A health and safety plan will be developed prior to construction to direct construction activities in accordance with OSHA requirements.

Construction sites will be barricaded to prevent unauthorized entry.

During the construction phase, short term noise impacts are anticipated. All OSHA requirements shall be followed. Construction equipment shall possess properly working mufflers and shall be kept properly tuned to reduce backfires. Implementation of these measures shall reduce the expected short term noise impacts to an insignificant level in and around the construction site.

Noise levels for day or night construction and maintenance should be minimized. All generators should be in baffle boxes (a sound-resistant box that is placed over or around a generator), have an attached muffler, or use other noise-abatement methods in accordance with industry standards.

BIOLOGICAL RESOURCES

Design, and construct project to avoid or minimize habitat loss within or adjacent to the footprint. Towers, light poles, and other pole-like structures will be designed to discourage roosting and nesting by birds, particularly ravens or other raptors that may use the poles for hunting perches. Tubular supports with pointed tops will be used rather than lattice supports to minimize bird perching and nesting opportunities.

Comply with the Migratory Bird Treaty Act. If all ground disturbing activities cannot be completed outside of the migratory bird nesting season (February 1 – August 31), prior to the start of the project, and as a one-time occurrence, the Contractor's Environmental Monitor, shall conduct migratory bird surveys at the project site before said activities begin. The Contractor's biological monitor shall locate and clearly mark bird nests 48 hours prior to the Contractor's scheduled ground disturbing activities. Under no circumstance shall the Contractor conduct any of the ground-disturbing activities prior to the completion of the surveys by the biological monitor.

Clearing and grubbing and all other ground-disturbing activities shall be limited to biologically surveyed areas.

To prevent entrapment of wildlife species during the construction of the project, all excavated, steepwalled holes or trenches more than 2 feet deep will either be covered at the close of each working day by plywood or provided with one or more escape ramps constructed of earth fill or wooden planks. The ramps will be located at no greater than 1,000-foot intervals and will be sloped less than 45 degrees. Each morning before the start of construction and before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. Any animals so discovered will be allowed to escape voluntarily (by escape ramps or temporary structures), without harassment, before construction activities resume, or removed from the trench or hole by a qualified environmental monitor and allowed to escape unimpeded.

To prevent entrapment of wildlife species during placement or vertical posts/bollards, all vertical fence posts/bollards that are hollow (i.e., those that will be filled with a reinforcing material such as concrete), shall be covered so as to prevent wildlife from entrapment. Covers will be deployed from the time the posts or hollow bollards are erected to the time they are filled with

reinforcing material. Monitoring of open post holes and trenches will take place daily to reduce or avoid impacts on biological species.

The Contractor shall not conduct any construction-related activities in areas that have not been previously surveyed for biological resources.

Minimize wildlife collision mortalities by minimizing the number of vehicles traveling to and from the project site and the number of trips per day.

Transmission of disease vectors and invasive non-native aquatic species can occur if vehicles cross infected or infested streams or other waters and water or mud remains on the vehicle. If these vehicles subsequently cross or enter uninfected or infested waters, the disease or invasive species may be introduced to the new area. To prevent this, crossing of streams or marsh areas with flowing or standing water will be avoided, and if not, the vehicle sprayed with a 10% bleach solution or allowed to dry completely to kill any organisms.

Pumps, hoses, tanks and other water storage devices will be cleaned and disinfected with a 10% bleach solution at an appropriate facility (this water is not to enter any surface water area) before use at another site, if untreated surface water was used. If a new water source is used that is not from a treated or groundwater source, the equipment will require additional cleaning.

Minimize access road construction. Minimize impacts on listed species and their habitats by using areas already disturbed by past activities, or those that will be used later in the construction period, for staging, parking, laydown, and equipment storage.

If site disturbance is unavoidable, minimize the area of disturbance by scheduling deliveries of materials and equipment to only those items needed for ongoing project implementation.

Minimize impacts on wildlife species and their habitats by limiting grading or topsoil removal to areas where this activity is absolutely necessary for construction, staging, or maintenance activities.

Minimize habitat disturbance by restricting vegetation removal to the smallest possible project footprint. Limit the removal of trees, cacti, and brush to the smallest amount needed to meet the objectives of the project.

If vegetation must be removed outside the permanent project footprint, allow natural regeneration of native plants by cutting vegetation with hand tools, mowing, trimming, or using other removal methods that allow root systems to remain intact.

For projects requiring land clearing within 0.5 mile of aquatic habitats, limit vegetation clearing to that needed for construction and include in project design erosion controls to be put into place concurrent with construction to minimize sediment runoff potential.

Completely avoid working in an area where a listed individual is found until that individual leaves or is removed by a qualified biological monitor.

Locate roads, fences, security zones or other facilities that require land clearing at least 0.5 mile from occupied threatened and endangered fish and plant habitats.

Minimize impacts on listed species and their habitats by obtaining materials such as gravel or topsoil that are clean and acceptable to the land management agency from existing developed or previously used sources, and not from undisturbed areas adjacent to the project area.

Avoid restricting water access by identifying and not creating barriers to natural water sources available to listed species. Do not use rodenticides during construction of project.

Notify USFWS and Federal land managers two weeks before any project construction and maintenance activities begin and within one week after project construction and maintenance activities are completed.

WATER RESOURCES

Standard construction procedures shall be implemented to minimize the potential for erosion and sedimentation during construction.

All work shall cease during heavy rains, and shall not resume until conditions are suitable for the movement of equipment and materials.

Other design measures shall be implemented, such as straw bales, silt fencing, aggregate materials, wetting compounds, and revegetation with native plant species, where possible, to decrease erosion and sedimentation. Furthermore, a Stormwater Pollution Prevention Plan and Spill Prevention Control & Countermeasure Plan shall be completed before start of construction.

Appendix C
Air Emissions Calculations

GRSC 2019-USBP Yuma - Table of Equipment

Type of Equipment	Quantity	Usage	Usage Unit	Total Days	Number of Trips	Total Usage	Total Usage Units	Comments
Loader	1	10	hrs/day	260	---	2,600	hours	
Dozer	1	10	hrs/day	260	---	2,600	hours	Assume dirt to be removed = 27.5 mi x (5280 ft/mi) x (3 ft wide) = 435,600 ft ² = 10 acres (will need this for grading area) 435,600 ft ² x 6 ft deep = 2,613,600 ft ³ . Assume spread and leveling dirt at 48 m ³ /day and 12-hour days = 576 m ³ /day (or 20,341.2 ft ³ /day) = 129 days.
Excavator	1	10	hrs/day	260	---	2,600	hours	Assume dirt to be removed = 27.5 mi x (5280 ft/mi) x (3 ft wide) = 435,600 ft ² = 10 acres (will need this for grading area) 435,600 ft ² x 6 ft deep = 2,613,600 ft ³ . Assume digging 40 m ³ /hour and 12-hour days = 480 m ³ /day (or 16,951 ft ³ /day) = 155 days.
Crane	1	10	hrs/day	260	---	2,600	hours	
Water Truck	1	10	miles/trip	---	260	2,600	miles	Assume Water Truck stays at project site and drives 10 miles in the project corridor once a day.
Delivery Truck (Vendor Trip)	1	46	miles/trip	---	2904	133,584	miles	Based on round trip from Yuma to San Luis (22.5 miles one way). Assume 5 panels per trip; flat bed truck (5280 ft/mi, 10' panel = 528 panels/mile = 14,520 panels = 2904 trips).
Truck (Hauling Demo Debris)	1	46	miles/trip	---	200	9,200	miles	Based on round trip from Yuma to San Luis (22.5 miles one way). Assume flat bed truck with 50,000-lb capacity. Assume using 8' sections (5280 ft/mi, 8' panel = 660 panels/mile = 18,150 panels total at 550 lbs per panel = 200 truck loads).

Type of Equipment	Quantity	Usage	Usage Unit	Total Days	Number of Trips	Total Usage	Total Usage Units	Comments
Cement Truck	1	46	miles/trip	---	2,555	117,530	miles	Based on round trip from Yuma to San Luis (22.5 miles one way). Assume 8 yd ³ concrete capacity per delivery. Assume footing = 27.5' x 1' x 2' = 290,400 ft ³ . Assume 8 poles per 10 ft panel of fence and poles are 6" x 6" x 18'. Assume poles filled half capacity with cement to account for rebar. 1 panel of fence = 18 ft ³ ; 18ft ³ x 14, 520 panels = 261360 ft ³ . 290,400 + 261,360 = 551,760 ft ³ = 20,435 yd ³ . With 8 yd ³ trips with cement truck 2,555 trips are needed.
Passenger Vehicle (Worker Commute)	15	46	miles/trip	---	260	179,400	miles	Based on round trip from Yuma to San Luis (22.5 miles one way). One operator, two riggers, and one safety representative for crane; one operator and one assistant for all other equipment; 3 other construction site workers (e.g., foreman). Assume 8 passenger trucks (8x46x260=95,680 miles) and 7 passenger cars (7x46x260=83,720).

Equipment	Pollutant Name Description	Pollutant Name	Total Emissions (lbs)	Total Emissions (tons)	Notes
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Carbon Monoxide (CO)	Carbon Monoxide (CO)	370.8092071	0.185404604	Crane
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Carbon Monoxide (CO)	Carbon Monoxide (CO)	228.6119688	0.114305984	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Carbon Monoxide (CO)	Carbon Monoxide (CO)	283.063233	0.141531616	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Carbon Monoxide (CO)	Carbon Monoxide (CO)	2.694901989	0.001347451	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Carbon Monoxide (CO)	Carbon Monoxide (CO)	9.703756672	0.004851878	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Carbon Monoxide (CO)	Carbon Monoxide (CO)	140.8985469	0.070449273	Delivery Truck (Vendor Trip)
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	Carbon Monoxide (CO)	Carbon Monoxide (CO)	10.33173804	0.005165869	Water Truck
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	Carbon Monoxide (CO)	Carbon Monoxide (CO)	2255.44736	1.12772368	Loader
Worker Commuter Vehicle - Car	Carbon Monoxide (CO)	Carbon Monoxide (CO)	484.5279093	0.242263955	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Carbon Monoxide (CO)	Carbon Monoxide (CO)	696.5238966	0.348261948	Passenger Vehicle (Worker Commute)
		Carbon Monoxide (CO) Total	4482.612518	2.241306259	
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	CO2 Equivalent	CO2 Equivalent	21.67841361	0.010839207	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	CO2 Equivalent	CO2 Equivalent	78.0592584	0.039029629	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	CO2 Equivalent	CO2 Equivalent	1133.420432	0.566710216	Delivery Truck (Vendor Trip)
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	CO2 Equivalent	CO2 Equivalent	176.596537	0.088298269	Water Truck
		CO2 Equivalent Total	1409.754641	0.70487732	
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	1746.34795	0.873173975	Crane
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	560.022109	0.280011054	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	721.540444	0.360770222	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	0	0	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	0	0	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	0	0	Delivery Truck (Vendor Trip)
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	2.913029392	0.001456515	Water Truck
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	1740.897291	0.870448646	Loader
Worker Commuter Vehicle - Car	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	6.529105128	0.003264553	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	12.61502528	0.006307513	Passenger Vehicle (Worker Commute)
		Oxides of Nitrogen (NOx) Total	4790.864954	2.395432477	
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Primary Exhaust PM10 - Total	PM10	69.17569203	0.034587846	Crane
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Primary Exhaust PM10 - Total	PM10	35.69445113	0.017847226	Excavator

Equipment	Pollutant Name Description	Pollutant Name	Total Emissions (lbs)	Total Emissions (tons)	Notes
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Fugitive Dust PM 10	PM10	31000.00	15.50	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Primary Exhaust PM10 - Total	PM10	50.56784374	0.025283922	Dozer
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 10	PM10	25800.00	12.90	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM10 - Total	PM10	0.000847558	4.23779E-07	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM10 - Total	PM10	0.003051871	1.52594E-06	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM10 - Total	PM10	0.044313166	2.21566E-05	Delivery Truck (Vendor Trip)
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	Primary Exhaust PM10 - Total	PM10	0.009506939	4.75347E-06	Water Truck
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	Primary Exhaust PM10 - Total	PM10	306.8525431	0.153426272	Loader
Worker Commuter Vehicle - Car	Primary PM10 - Tirewear Particulate	PM10	1.885449748	0.000942725	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	Primary Exhaust PM10 - Total	PM10	0.592231931	0.000296116	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	Primary PM10 - Brakewear Particulate	PM10	6.738011644	0.003369006	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary PM10 - Brakewear Particulate	PM10	12.80274944	0.006401375	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary PM10 - Tirewear Particulate	PM10	2.154799712	0.0010774	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary Exhaust PM10 - Total	PM10	0.983963552	0.000491982	Passenger Vehicle (Worker Commute)
		PM10 Total	57287.50546	28.64375273	
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Primary Exhaust PM2.5 - Total	PM2.5	67.10046957	0.033550235	Crane
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Primary Exhaust PM2.5 - Total	PM2.5	34.62362227	0.017311811	Excavator
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Fugitive Dust PM 2.5	PM2.5	3100.00	1.55	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Primary Exhaust PM2.5 - Total	PM2.5	49.05080485	0.024525402	Dozer
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 2.5	PM2.5	2580.00	1.29	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM2.5 - Total	PM2.5	0.000779748	3.89874E-07	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM2.5 - Total	PM2.5	0.002807705	1.40385E-06	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM2.5 - Total	PM2.5	0.040767873	2.03839E-05	Delivery Truck (Vendor Trip)
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	Primary Exhaust PM2.5 - Total	PM2.5	0.008746343	4.37317E-06	Water Truck
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	Primary Exhaust PM2.5 - Total	PM2.5	297.6471159	0.148823558	Loader
Worker Commuter Vehicle - Car	Primary PM2.5 - Brakewear Particulate	PM2.5	0.842248316	0.000421124	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	Primary PM2.5 - Tirewear Particulate	PM2.5	0.282815369	0.000141408	Passenger Vehicle (Worker Commute)

Equipment	Pollutant Name Description	Pollutant Name	Total Emissions (lbs)	Total Emissions (tons)	Notes
Worker Commuter Vehicle - Car	Primary Exhaust PM2.5 - Total	PM2.5	0.523899667	0.00026195	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary Exhaust PM2.5 - Total	PM2.5	0.870428707	0.000435214	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary PM2.5 - Brakewear Particulate	PM2.5	1.600353248	0.000800177	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary PM2.5 - Tirewear Particulate	PM2.5	0.323217565	0.000161609	Passenger Vehicle (Worker Commute)
		PM2.5 Total	6132.918077	3.066459039	
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	4.718335172	0.002359168	Crane
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	2.660991736	0.001330496	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	2.702214479	0.001351107	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	0.000178262	8.91312E-08	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	0.000641884	3.20942E-07	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	0.009320156	4.66008E-06	Delivery Truck (Vendor Trip)
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	0.001479894	7.39947E-07	Water Truck
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	2.31203437	0.001156017	Loader
Worker Commuter Vehicle - Car	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	0.452900084	0.00022645	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	0.631185651	0.000315593	Passenger Vehicle (Worker Commute)
		Sulfur Dioxide (SO2) Total	13.48928169	0.006744641	
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Total Gaseous Hydrocarbons	Volatile Organic Compounds	267.5028764	0.133751438	Crane
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Total Gaseous Hydrocarbons	Volatile Organic Compounds	144.3707084	0.072185354	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Total Gaseous Hydrocarbons	Volatile Organic Compounds	149.1800768	0.074590038	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Volatile Organic Compounds	Volatile Organic Compounds	1.462839197	0.00073142	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Volatile Organic Compounds	Volatile Organic Compounds	5.267366189	0.002633683	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Volatile Organic Compounds	Volatile Organic Compounds	76.48215707	0.038241079	Delivery Truck (Vendor Trip)
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	Volatile Organic Compounds	Volatile Organic Compounds	1.67609292	0.000838046	Water Truck
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	Total Gaseous Hydrocarbons	Volatile Organic Compounds	355.7037767	0.177851888	Loader
Worker Commuter Vehicle - Car	Volatile Organic Compounds	Volatile Organic Compounds	8.838293275	0.004419147	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Volatile Organic Compounds	Volatile Organic Compounds	16.48171816	0.008240859	Passenger Vehicle (Worker Commute)
		Volatile Organic Compounds Total	1026.965905	0.513482952	

Equipment Description	Year	Horsepower (HP)	MOVES EF Set	Emission Rate	Emission Rate Units	Total Usage	Total Usage Unit	Pollutant Name	Total Emissions (lbs)	TOE Identifier
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	2020	300	Cranes-Diesel Fuel-300HP	0.147730087	g/hp-hr per day	2600	Hours	Volatile Organic Compounds	267.5028764	Crane
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	2020	300	Cranes-Diesel Fuel-300HP	0.215635062	g/hp-hr per day	2600	Hours	Carbon Monoxide (CO)	370.8092071	Crane
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	2020	300	Cranes-Diesel Fuel-300HP	1.015546111	g/hp-hr per day	2600	Hours	Oxides of Nitrogen (NOx)	1746.34795	Crane
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	2020	300	Cranes-Diesel Fuel-300HP	4.02E-02	g/hp-hr per day	2600	Hours	Primary Exhaust PM10 - Total	69.17569203	Crane
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	2020	300	Cranes-Diesel Fuel-300HP	3.90E-02	g/hp-hr per day	2600	Hours	Primary Exhaust PM2.5 - Total	67.10046957	Crane
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	2020	300	Cranes-Diesel Fuel-300HP	2.74E-03	g/hp-hr per day	2600	Hours	Sulfur Dioxide (SO2)	4.718335172	Crane
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	2020	175	Excavators-Diesel Fuel-175HP	3.45E-02	g/hp-hr per day	2600	Hours	Primary Exhaust PM2.5 - Total	34.62362227	Excavator
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	2020	175	Excavators-Diesel Fuel-175HP	0.136679314	g/hp-hr per day	2600	Hours	Volatile Organic Compounds	144.3707084	Excavator
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	2020	175	Excavators-Diesel Fuel-175HP	2.65E-03	g/hp-hr per day	2600	Hours	Sulfur Dioxide (SO2)	2.660991736	Excavator
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	2020	175	Excavators-Diesel Fuel-175HP	0.558286656	g/hp-hr per day	2600	Hours	Oxides of Nitrogen (NOx)	560.022109	Excavator
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	2020	175	Excavators-Diesel Fuel-175HP	0.227903523	g/hp-hr per day	2600	Hours	Carbon Monoxide (CO)	228.6119688	Excavator
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	2020	175	Excavators-Diesel Fuel-175HP	3.56E-02	g/hp-hr per day	2600	Hours	Primary Exhaust PM10 - Total	35.69445113	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	2020	175	Crawler Tractor/Dozers-Diesel Fuel-175HP	4.89E-02	g/hp-hr per day	2600	Hours	Primary Exhaust PM2.5 - Total	49.05080485	Dozer
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	2020	175	Crawler Tractor/Dozers-Diesel Fuel-175HP	2.69E-03	g/hp-hr per day	2600	Hours	Sulfur Dioxide (SO2)	2.702214479	Dozer
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	2020	175	Crawler Tractor/Dozers-Diesel Fuel-175HP	0.141232462	g/hp-hr per day	2600	Hours	Volatile Organic Compounds	149.1800768	Dozer
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	2020	175	Crawler Tractor/Dozers-Diesel Fuel-175HP	0.282186048	g/hp-hr per day	2600	Hours	Carbon Monoxide (CO)	283.063233	Dozer
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	2020	175	Crawler Tractor/Dozers-Diesel Fuel-175HP	0.719304462	g/hp-hr per day	2600	Hours	Oxides of Nitrogen (NOx)	721.540444	Dozer
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	2020	175	Crawler Tractor/Dozers-Diesel Fuel-175HP	0.050411139	g/hp-hr per day	2600	Hours	Primary Exhaust PM10 - Total	50.56784374	Dozer
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	2020	100	Tractors/Loaders/Backhoes-Diesel Fuel-100HP	3.934801415	g/hp-hr per day	2600	Hours	Carbon Monoxide (CO)	2255.44736	Loader
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	2020	100	Tractors/Loaders/Backhoes-Diesel Fuel-100HP	3.03712924	g/hp-hr per day	2600	Hours	Oxides of Nitrogen (NOx)	1740.897291	Loader
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	2020	100	Tractors/Loaders/Backhoes-Diesel Fuel-100HP	0.535327865	g/hp-hr per day	2600	Hours	Primary Exhaust PM10 - Total	306.8525431	Loader
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	2020	100	Tractors/Loaders/Backhoes-Diesel Fuel-100HP	0.51926829	g/hp-hr per day	2600	Hours	Primary Exhaust PM2.5 - Total	297.6471159	Loader
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	2020	100	Tractors/Loaders/Backhoes-Diesel Fuel-100HP	4.03E-03	g/hp-hr per day	2600	Hours	Sulfur Dioxide (SO2)	2.31203437	Loader
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	2020	100	Tractors/Loaders/Backhoes-Diesel Fuel-100HP	0.589318709	g/hp-hr per day	2600	Hours	Volatile Organic Compounds	355.7037767	Loader

Note: 1.053 is the ratio of VOC to THC from "Conversion Factors for Hydrocarbon Emission Components", July 2010, EPA-420-R-10-015

Equipment Description	Year	MOVES EF Set	Pollutant Name	Emission Rate	Emission Rate Units	Total Usage	Total Usage Unit	Total Emissions (lbs)	TOE Identifier
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	2020	Single Unit Short-haul Truck	Primary Exhaust PM2.5 - Total	3.36398E-06	lbs/mi	2600	Miles	0.008746343	Water Truck
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	2020	Single Unit Short-haul Truck	Sulfur Dioxide (SO2)	5.6919E-07	lbs/mi	2600	Miles	0.001479894	Water Truck
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	2020	Single Unit Short-haul Truck	Primary Exhaust PM10 - Total	3.65652E-06	lbs/mi	2600	Miles	0.009506939	Water Truck
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	2020	Single Unit Short-haul Truck	Volatile Organic Compounds	0.000644651	lbs/mi	2600	Miles	1.67609292	Water Truck
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	2020	Single Unit Short-haul Truck	Oxides of Nitrogen (NOx)	0.001120396	lbs/mi	2600	Miles	2.913029392	Water Truck
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	2020	Single Unit Short-haul Truck	CO2 Equivalent	0.067921745	lbs/mi	2600	Miles	176.596537	Water Truck
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	2020	Single Unit Short-haul Truck	Carbon Monoxide (CO)	0.003973745	lbs/mi	2600	Miles	10.33173804	Water Truck
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	CO2 Equivalent	0.008484702	lbs/mi	2555	Miles	21.67841361	Cement Truck
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Sulfur Dioxide (SO2)	6.977E-08	lbs/mi	2555	Miles	0.000178262	Cement Truck
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Volatile Organic Compounds	0.00057254	lbs/mi	2555	Miles	1.462839197	Cement Truck
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Carbon Monoxide (CO)	0.001054756	lbs/mi	2555	Miles	2.694901989	Cement Truck
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Primary Exhaust PM10 - Total	3.31725E-07	lbs/mi	2555	Miles	0.000847558	Cement Truck
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Primary Exhaust PM2.5 - Total	3.05185E-07	lbs/mi	2555	Miles	0.000779748	Cement Truck
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Oxides of Nitrogen (NOx)	0	lbs/mi	2555	Miles	0	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	CO2 Equivalent	0.008484702	lbs/mi	9200	Miles	78.0592584	Truck (Hauling Demo Debris)
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Sulfur Dioxide (SO2)	6.977E-08	lbs/mi	9200	Miles	0.000641884	Truck (Hauling Demo Debris)
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Volatile Organic Compounds	0.00057254	lbs/mi	9200	Miles	5.267366189	Truck (Hauling Demo Debris)
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Carbon Monoxide (CO)	0.001054756	lbs/mi	9200	Miles	9.703756672	Truck (Hauling Demo Debris)
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Primary Exhaust PM10 - Total	3.31725E-07	lbs/mi	9200	Miles	0.003051871	Truck (Hauling Demo Debris)
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Primary Exhaust PM2.5 - Total	3.05185E-07	lbs/mi	9200	Miles	0.002807705	Truck (Hauling Demo Debris)
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Oxides of Nitrogen (NOx)	0	lbs/mi	9200	Miles	0	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	CO2 Equivalent	0.008484702	lbs/mi	133584	Miles	1133.420432	Delivery Truck (Vendor Trip)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Sulfur Dioxide (SO2)	6.977E-08	lbs/mi	133584	Miles	0.009320156	Delivery Truck (Vendor Trip)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Volatile Organic Compounds	0.00057254	lbs/mi	133584	Miles	76.48215707	Delivery Truck (Vendor Trip)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Carbon Monoxide (CO)	0.001054756	lbs/mi	133584	Miles	140.8985469	Delivery Truck (Vendor Trip)

Equipment Description	Year	MOVES EF Set	Pollutant Name	Emission Rate	Emission Rate Units	Total Usage	Total Usage Unit	Total Emissions (lbs)	TOE Identifier
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Primary Exhaust PM10 - Total	3.31725E-07	lbs/mi	133584	Miles	0.044313166	Delivery Truck (Vendor Trip)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Primary Exhaust PM2.5 - Total	3.05185E-07	lbs/mi	133584	Miles	0.040767873	Delivery Truck (Vendor Trip)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	2020	Combination Short-haul Truck	Oxides of Nitrogen (NOx)	0	lbs/mi	133584	Miles	0	Delivery Truck (Vendor Trip)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Oxides of Nitrogen (NOx)	0.000131846	lbs/mi	95680	Miles	12.61502528	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Carbon Monoxide (CO)	0.007279723	lbs/mi	95680	Miles	696.5238966	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Volatile Organic Compounds	0.000172259	lbs/mi	95680	Miles	16.48171816	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary Exhaust PM2.5 - Total	9.09729E-06	lbs/mi	95680	Miles	0.870428707	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM10 - Brakewear Particulate	0.000133808	lbs/mi	95680	Miles	12.80274944	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM10 - Tirewear Particulate	2.25209E-05	lbs/mi	95680	Miles	2.154799712	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM2.5 - Brakewear Particulate	1.67261E-05	lbs/mi	95680	Miles	1.600353248	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM2.5 - Tirewear Particulate	3.37811E-06	lbs/mi	95680	Miles	0.323217565	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Sulfur Dioxide (SO2)	6.59684E-06	lbs/mi	95680	Miles	0.631185651	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary Exhaust PM10 - Total	1.02839E-05	lbs/mi	95680	Miles	0.983963552	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM10 - Tirewear Particulate	2.25209E-05	lbs/mi	83720	Miles	1.885449748	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM2.5 - Brakewear Particulate	1.00603E-05	lbs/mi	83720	Miles	0.842248316	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM2.5 - Tirewear Particulate	3.37811E-06	lbs/mi	83720	Miles	0.282815369	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Sulfur Dioxide (SO2)	5.4097E-06	lbs/mi	83720	Miles	0.452900084	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Volatile Organic Compounds	0.00010557	lbs/mi	83720	Miles	8.838293275	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary Exhaust PM10 - Total	7.07396E-06	lbs/mi	83720	Miles	0.592231931	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary Exhaust PM2.5 - Total	6.25776E-06	lbs/mi	83720	Miles	0.523899667	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Oxides of Nitrogen (NOx)	7.79874E-05	lbs/mi	83720	Miles	6.529105128	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Carbon Monoxide (CO)	0.005787481	lbs/mi	83720	Miles	484.5279093	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM10 - Brakewear Particulate	8.04827E-05	lbs/mi	83720	Miles	6.738011644	Passenger Vehicle (Worker Commute)

Equipment	Pollutant Name Description	Pollutant Name	Total Emissions (lbs)	Total Emissions (tons)	Notes
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Fugitive Dust PM 10	PM10	31000	15.5	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 10	PM10	25800	12.9	Dozer
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Fugitive Dust PM 2.5	PM2.5	3100	1.55	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 2.5	PM2.5	2580	1.29	Dozer

Notes: 1) Used excavation production and removal rates from <https://www.methvin.org/construction-production-rates/excavation/bulk-excavation> to estimate PM 10 for excavation using USAF Transitory guide and equation 4-4.

2) Used "Spread and level" (Average) rate for grading from: <https://www.methvin.org/construction-production-rates/excavation/spread-and-level> - Dozer, 1.2m3 bucket, 50-200m2, Sand/Soil Slow: 43.5 Average: 48.0 Fast: 52.6 Unit: m3/hr to estimate PM 10 using USAF Transitory guide and equation 4-4.

3) PM 10 Fugitive dust emissions were calculated using the emission factor of 0.22 ton per acre per month (20 lb/ac-day) (Air Emissions Guide for Air Force Transitory Sources, Methods for Estimating Emissions of Air Pollutants for Transitory Sources at U.S. Air Force Installations, August 2018).

4) PM 2.5 was calculated using PM 10 conversion factor of 0.1. (Source: <https://www3.epa.gov/ttn/chief/ap42/ch13/bgdocs/b13s02.pdf>, AP-42, Chapter 13.2.2, Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors (Nov 2006), Table 1)