

FINAL



**Environmental Stewardship Plan
for the Primary Fence Replacement Project in
San Diego, El Centro, and Yuma Sectors
U.S. Customs and Border Protection
San Diego and Imperial Counties, California**

October 2020



COVER SHEET

ENVIRONMENTAL STEWARDSHIP PLAN FOR THE PRIMARY FENCE REPLACEMENT PROJECT IN SAN DIEGO, EL CENTRO, AND YUMA SECTORS U.S. CUSTOMS AND BORDER PROTECTION SAN DIEGO AND IMPERIAL COUNTIES, CALIFORNIA

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 San Diego and Imperial counties, California.

Project Description: CBP proposes to remove and replace approximately 16.2 miles of existing pedestrian fence (legacy fence) with bollard wall in the USBP's San Diego (SDC), El Centro (ELC), and Yuma (YUM) Sectors located near the Tecate Port of Entry (POE), Calexico POE, and Andrade POE, respectively. The new wall will be 30 feet high and comprised of a P-3 Design Standard style bollard barrier with a steel anti-climb plate. The proposed Project corridor will be 60 feet wide and the majority of the corridor is disturbed from previous fence and road construction projects and daily USBP patrols and enforcement actions associated with border security. A fiber optic communications cable will be installed within the Project corridor approximately 6 to 10 feet north of the U.S./Mexico border.

Report Designation: Environmental Stewardship Plan (ESP).

Abstract: CBP plans to construct, operate, and maintain approximately 16.2 miles of replacement fence and fiber optic communications cable along the U.S./Mexico border in San Diego and Imperial counties, California. The Project area lies within the USBP SDC, ELC, YUM sectors. With the exception of the staging area, the Project area is entirely under the administrative jurisdiction of CBP.

The new bollard wall will be constructed in 11 linear segments that total approximately 16.2 miles in length (Table 1) in San Diego and Imperial counties, California. Two segments in the SDC Sector, SDC26-01 and SDC27A-02, run west and east of the Tecate POE, respectively. Five segments in the ELC Sector run west of the Calexico POE and total 7.8 miles; ELC7-02, ELC8-01, ELC9-01, ELC10-01, and ELC10-02. ELC13-01 and ELC14-01 run east of the Calexico POE and total 3.7 miles. There are two segments in the YUM Sector located west and east of the Andrade POE; YUM2 and YUM1, respectively, and these total 0.90 miles.

Table 1. SDC, ELC, and YUM Wall Replacement Project Segments

Segment ID	Length (miles)
SDC26-01	2.2
SDC27A-02	1.6
ELC7-02	0.1
ELC8-01	2.9
ELC9-01	2.64
ELC10-01	2.1
ELC10-02	0.1
ELC13-01	1.1
ELC14-01	2.6
YUM1	0.3
YUM2	0.6
Total Length	16.2

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

October 2020

EXECUTIVE SUMMARY

BACKGROUND

On May 15, 2019 and March 16, 2020, 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 waivers in order to ensure the expeditious construction of the Project. Although the Secretary's waivers mean that United States (U.S.) Customs and Border Protection (CBP) no longer has any specific legal obligations under the laws set aside by the waivers, 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) San Diego, El Centro, and Yuma Sectors. 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.

This report has been prepared from data collected prior to and during the initial phases of project construction. The data was compiled through field surveys, photo interpretation with ground truthing and use of data from prior surveys and other sources, as referenced. The report is an analysis of potential impacts on the resources discussed based on the initially planned project footprint. This is intended to be viewed as a baseline document and is not intended to capture all impacts during construction. Upon completion of the project, an additional report, called an Environmental Stewardship Summary Report (ESSR), will be prepared summarizing the observed actual impacts. This ESSR will review the baseline information provided in this ESP and be used to compare anticipated to actual impacts, so that a final new baseline of impacts is established for any potential future actions, including maintenance and repair activities. The ESSR will document the success of BMPs and any changes or improvements that could be required for the future. Additionally, the ESSR will summarize any significant modifications during construction that increased or reduced environmental impacts.

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 border security between POEs in the USBP San Diego (SDC), El Centro (ELC), and Yuma (YUM) sectors. The Project will help to deter illegal entries within the USBP SDC, ELC, and YUM sectors 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 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, International Boundary and Water Commission (USIBWC); U.S. Environmental Protection Agency (USEPA); U.S. Army Corps of Engineers (USACE); California Department of Fish and Wildlife; Imperial County; San Diego County; the California State Historic Preservation Office; and various Native American tribes.

Although the Secretary issued the waivers, 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 16.2 miles of existing pedestrian fence (legacy fence) with bollard wall in the USBP SDC, ELC, and YUM sectors Area of Responsibility (AOR) in San Diego and Imperial counties, California. The new wall will be 30 feet high and be comprised of a P-3 Design Standard style bollard barrier with a steel anti-climb plate. The Project corridor will be 60 feet wide and the majority of the corridor has been disturbed from previous fence and road construction projects and daily USBP patrols and enforcement actions associated with border security. 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 new bollard wall will be constructed in 11 linear segments that total approximately 16.2 miles in length (Table ES-1). Two segments in the SCD Sector, SDC26-01 and SDC27A-02, run west and east of the Tecate POE, respectively. Five segments in the ELC Sector run west of the Calexico POE and total 7.8 miles; ELC7-02, ELC8-01, ELC9-01, ELC10-01, and ELC10-02. ELC13-01 and ELC14-01 run east of the Calexico POE and total 3.7 miles. There are two segments in the YUM Sector located west and east of the Adrade POE; YUM2 and YUM1, respectively, and these total 0.90 miles.

Table ES-1. SDC, ELC, and YUM Sectors Fence Replacement Segments

Segment ID	Length (miles)
San Diego Sector (SDC)	
SDC26-01	2.2
SDC27A-02	1.6
<i>Subtotal SDC</i>	<i>3.8</i>
El Centro Sector (ELC)	
ELC7-02	0.1
ELC8-01	2.9
ELC9-01	2.6
ELC10-01	2.1
ELC10-02	0.1
ELC13-01	1.1
ELC14-01	2.6
<i>Subtotal ELC</i>	<i>11.5</i>
Yuma Sector (YUM)	
YUM1	0.3
YUM2	0.6
<i>Subtotal YUM</i>	<i>0.9</i>
Total Length	16.2

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 will be supported by water trucks, dozers, excavators, cranes, 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 BMPs

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 would 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 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 positive 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.

Table ES-2 provides an overview of potential environmental impacts by specific resource area and a brief summary of associated BMPs. Chapters 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 significance thresholds in all three sectors.	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 in all three sectors.	Equipment will be operated on an as needed basis. Mufflers and properly maintained equipment will be used 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.
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 wall allowing views through the fence in the SDC and ELC sectors.	Environmental monitors will be present during construction to ensure construction activities remain within the Project footprint and impacts 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 27.8 acres (SDC Sector), 83.6 acres (ELC Sector), and 6.5 acres (YUM) acres of previously disturbed soils within the fence footprint would be permanently disturbed.	A Stormwater Pollution Prevention Plan (SWPPP) and a Spill Prevention, Control, and Countermeasure Plan (SPCCP) will be implemented as part of the Project.

Resource Area	Effects of the Project	Best Management Practices/Conservation Measures
Water Use and Quality		
Groundwater	Based on the storage estimates for the groundwater basins, impacts on groundwater from the Project would have minor impact on the availability of water in the region in the SDC, ELC, and YUM sectors. There is a potential for groundwater contamination as a result of a petroleum-based product spill.	A SPCCP will be implemented as part of the Project.
Surface Waters and Waters of the United States	Waters of the U.S. could be impacted in the SDC and YUM sectors as a result of sedimentation and construction of low-water crossings.	A SWPPP and SPCCP will be implemented as part of the Project.
Floodplains	The project will impact approximately 0.08 acre of floodplains in the SDC Sector and 0.07 acre of floodplains in the YUM Sector.	A SWPPP and SPCCP will be implemented as part of the Project.
Biological Resources		
Vegetation	Approximately 27.6, 83.6, and 6.5 acres of disturbed habitat will be impacted due to fence replacement in the SDC, ELC, and YUM sectors, respectively. Up to approximately 19.2, 37.9, and 12.2 acres could be temporarily impacted by the staging areas in the SDC, ELC, and YUM sectors respectively. Beneficial impacts 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	Minor impacts on wildlife are expected. Potential loss of small mammals and reptiles during construction could 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 Critical Habitat will be impacted as a result of the Project. The Project could have a minor impact on Coastal California gnatcatcher in the SDC Sector. The project could have a minor to moderate impact on state-listed species. However, BMPs implemented as part of the Project will minimize impacts on these species.	A monitor will be on-site during construction to 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.	Known cultural resources sites will be flagged with a buffer for avoidance and a monitor will be present during construction.
Socioeconomics	Short-term beneficial impacts on the local economy will be expected in all three sectors.	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 Spill Prevention, Control, and Countermeasure (SPCC) Plan, Storm Water Pollution Prevention Plan (SWPPP), Environmental Protection Plan, Dust Control Plan, Fire Prevention and Suppression Plan, and Unanticipated Discovery Plan.

In addition to the design criteria and BMPs, CBP will 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.

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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 the Department 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 U.S. lands. In Section 102(b) of IIRIRA, Congress has called for the installation of additional fencing, barriers, roads, lighting, cameras, and sensors on the southwestern 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(c) of IIRIRA to construct needed border infrastructure across the southwestern U.S. border. U.S. Customs and Border Protection (CBP) is the DHS component that has primary responsibility for such construction. 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 May 15, 2019 and March 16, 2020, the Secretary issued waivers covering, among other things, the replacement of approximately 16.2 miles of primary pedestrian fence in the United States Border Patrol (USBP) San Diego (SDC), El Centro (ELC), and Yuma (YUM) Sectors, California (the Project). The existing pedestrian fence (legacy fence) no longer meets USBP's operational needs; it will be replaced with a bollard-style fence that will improve both operational efficiency and safety for those USBP agents who work in the area. The Secretary's waivers mean that CBP does not have any specific legal obligations under the laws that were included in the waivers, 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 waivers are included in 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.

This report has been prepared from data collected prior to and during the initial phases of project construction. The data was compiled through field surveys, photo interpretation with ground truthing and use of data from prior surveys and other sources, as referenced. The report is an analysis of potential impacts on the resources discussed based on the initially planned project footprint. This is intended to be viewed as a baseline document and is not intended to capture all impacts during construction. Upon completion of the project, an additional report, called an Environmental Stewardship Summary Report (ESSR), will be prepared summarizing the observed actual impacts. This ESSR will review the baseline information provided in this ESP and be used to compare anticipated to actual impacts, so that a final new baseline of impacts is established for any potential future actions, including maintenance and repair activities. The ESSR will document the success of BMPs and any changes or improvements that could be required for the future. Additionally, the ESSR will summarize any significant modifications during construction that increased or reduced environmental impacts.

The Project area in this document refers to the area in which permanent or temporary impacts could occur from Project construction activities. These impacts will generally be restricted to an area known as the Roosevelt Reservation, a 60-foot-wide corridor (Project corridor) along the U.S./Mexico border. To thoroughly address the potential impacts of the Project, a Study corridor 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 San Diego and Imperial counties, California, are not addressed in this ESP because they are either not relevant to the analyses or the impacts on such resources are negligible. The resources that are excluded from further analyses, and the reasons for eliminating them are as follows:

- **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.
- **Sustainability:** The Project will use minimal resources during construction and maintenance and there will be minimal changes in USBP operations. Therefore, the Project would 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 roads and limited access on some city roads. The anticipated impact of this limited and temporary use of existing roads to replace the fence is expected to be minimal.

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:

1. Establish substantial probability of apprehending terrorists and their weapons as they attempt to enter illegally between the POEs.
2. Deter illegal entries through improved enforcement.
3. Detect, apprehend, and deter smugglers of humans, drugs, and other contraband.
4. Leverage "smart border" technology to multiply the effect of enforcement personnel.
5. 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 SDC Sector is responsible for San Diego County in California and the ELC, and YUM Sectors are responsible for Imperial County in California. The area affected by the Project includes a portion of San Diego and Imperial counties.

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 SDC, ELC, and YUM Sectors 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), Los Angeles District, 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 on 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 Project corridor.

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 Reclamation 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.

California Department of Fish and Wildlife (CDFG, Regions 5 and 6) - CBP has coordinated with CDFG regarding potential impacts on species within their jurisdiction.

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

Colorado River Regional Water Quality Board (CRRWQB) - CBP has coordinated with CRRWQB regarding design features and potential conflicts with CRRWQB's planning goals.

California Environmental Protection Agency (CalEPA) - CBP has coordinated with the CalEPA regarding potential impacts on water and air quality and BMPs to minimize potential sedimentation and pollution resulting from Project implementation.

Imperial Irrigation District (IID) - CBP has coordinated with IID regarding design features and potential conflict with IID's planning goals.

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

San Diego County - CBP has coordinated with the County to ensure plans, such as the Multiple Species Conservation Program, were reviewed and species evaluated for impacts. BMPs will be incorporated to offset potential impacts where practicable.

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

San Diego County Board of Supervisors district 1 - CBP has coordinated with the board of supervisors regarding design features and potential conflict with the County's planning goals.

San Diego Regional Water Quality Control Board - CBP has coordinated with the San Diego Regional Water Quality Control Board regarding appropriate water quality BMPs to minimize potential sedimentation and pollution resulting from Project implementation.

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

- San Pasqual Band of Mission Indians
- Santa Rosa Band of Mission Indians
- Santa Ysabel Band of Mission Indians
- Soboba Band of Luiseno Indians
- Inaja -- Cosmit Band of Mission Indians
- Inaja Band of Mission Indians
- Jamul Indian Village
- Kwaaymii Laguna band of Mission Indians
- La Jolla Band of Luiseno Indians
- La Posta Band of Mission Indians
- La Posta Band of Mission Indians
- Los Coyotes Band of Mission Indians
- Manzanita Band of Kumeyaay Nation
- Augustine Band of Mission Indians
- Cahuilla Band of Mission Indians
- Chemehuevi Indian Tribe
- Mesa Grande Band of Mission Indians
- Manzanita Band of Mission Indians
- Mesa Grande Band of Mission Indians
- Pala Band of Mission Indians
- Rincon San Luiseno Band of Mission Indians
- Iipay Nation of Santa Ysabel
- Viejas Band of Kumeyaay Indians
- Torres-Martinez Desert Cahuilla Indians
- Viejas Band of Kumeyaay Indians
- Quechan Tribe
- Ak-Chin Indian Community Council
- Cocopah Tribal Council
- Agua Caliente Band of Cahuilla Indians
- Sycuan Band of the Kumeyaay Nation
- Campo Bank of Mission Indians
- Ewiiapaayp Band of Kumeyaay Indians
- Baron Band of Mission Indians

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 will 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 will 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 General Construction BMPs

BMPs shall be implemented as standard operating procedures during all construction activities.

1. These BMPs shall include proper handling, storage, and/or disposal of hazardous and/or regulated materials.
2. 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. Concrete wash water will not be dumped on the ground, but will be collected and moved offsite for proper disposal. This wash water is toxic to wildlife.
3. 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.
4. 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.

5. No refueling or storage shall take place within 100 feet of a drainage channel or structure. Storage of chemicals will be avoided within 0.3 miles of aquatic habitat.
6. 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) 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). A 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.
7. 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.
8. 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.
9. 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.
10. For construction purposes, infrastructure sites will only be accessed using designated roads. Parking will be in designated areas.
11. 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.
12. No off-road vehicle activity will occur outside of the project footprint by the project proponent, project workers, and project contractors.
13. No pets of any kind will be permitted inside the project's construction boundaries, adjacent native habitats, or other associated work areas.

14. 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.
15. 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 in upland areas not in washes.
16. Vehicular traffic associated with the construction activities and operational support activities shall remain on established roads to the maximum extent practicable.
17. 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 Stormwater Pollution Prevention Plan (SWPPP) shall be prepared prior to construction activities and BMPs described in the SWPPP shall be implemented to reduce erosion.
18. 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).
19. 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.
20. Construction speed limits will not exceed 35 miles per hour (mph) on major unpaved roads (graded with ditches on both sides) or 25 mph on all other unpaved roads. Nighttime travel speeds will not exceed 25 mph, and could be less based on visibility and other safety considerations.
21. If construction or maintenance must occur during non-daylight hours, the duration and frequency of these activities will be minimized to the greatest extent possible.
22. Avoid creating new access routes by using and improving existing roads, if necessary.
23. 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.

1.5.3 Air Quality

1. Measures will be incorporated to ensure that emissions of particulate matter less than 10 microns in size (PM₁₀) do not significantly impact the environment. Such measures will include dust suppression methods to minimize airborne particulate matter 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.

1.5.4 Noise

1. 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.

1.5.5 Geological Resources

1. 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.
2. 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.

1.5.6 Water Resources

1. 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. The SWPPP will also include BMPs to reduce potential stormwater erosion and sedimentation effects on local drainages.
2. 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.
3. 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.
4. 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.

1.5.7 Biological Resources

The following summary of 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 waivers.

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 on 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 corridor ahead of active construction. Observations of birds, bird breeding/nesting behavior and bird nests, 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 ensure 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 corridor.
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. 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.
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. To limit the potential for invasive species infestation, materials used for on-site erosion control in uninfested native habitats should be free of non-native plant seeds and other plant parts. Fill material brought in from outside of the project area will be identified by its source location. Sources used will be clean and weed-free.
15. The volume and type of spoil material from construction activities will be quantified. Work should be coordinated with a land management agency to determine disposition and location of spoil material. If requested by the land management agency, spoil materials will be hauled to an appropriate off-site disposal area.
16. 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. The spread of non-native plants would be avoided by not using natural materials (e.g., straw) for on-site erosion control. Natural materials will be certified weed and weed-seed free.
17. In addition, species-specific and habitat-specific BMPs are also recommended:
 - 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.
- Coastal California Gnatcatcher (*Polioptila californica californica*): Between February 15 and August 15, construction surveys will be conducted to determine if gnatcatchers are nesting within 300 feet of construction activities prior to construction commencing. If a nest is found, an 8-foot plywood sound wall will be established as far from the nest as possible, but no less than 50 feet between construction and the nest.

1.5.8 Cultural Resources

The artifacts of previous cultures, native populations, 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. An archaeological monitor will be present when construction activities occur within 50 feet of a known archaeological site.
2. Preconstruction surveys and documentation of cultural resources have been completed within the Study corridor.
3. 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. A qualified archaeologist will assess all findings and make recommendations to CBP.
4. Archaeological material collected during the current Project will be cross analyzed with collections from earlier investigations for data recovery purposes.
5. All cultural resources should be treated with respect and dignity. No photographs will be taken of any human remains.

1.5.9 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. Non-hazardous 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 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

The DHS and CBP will remove and replace approximately 16.2 miles of legacy fence with bollard wall in the USBP San Diego, El Centro, and Yuma Sectors' Areas of Responsibility (AOR) in California (Figure 2-1). CBP will execute three projects (a project per Sector) to replace the 16.2 miles of legacy fence (Table 2-1 and Figures 2-2 through 2-4). The Project consists of 11 fence segments located in San Diego and Imperial counties, California. Two segments are located in the San Diego (DC) Sector near the Tecate Point of Entry (POE), seven segments are located in the El Centro (ELC) Sector near the Calexico POE, and two segments are located in the Yuma (YUM) Sector near the Andrade POE. The three projects are summarized below:

Table 2-1. SDC, ELC, YUM Fence Replacement Segments

Segment ID	Length (miles)
San Diego Sector (SDC)	
SDC26-01	2.2
SDC27A-02	1.6
Subtotal SDC	3.8
El Centro Sector (ELC)	
ELC7-02	0.1
ELC8-01	2.9
ELC9-01	2.6
ELC10-01	2.1
ELC10-02	0.1
ELC13-01	1.1
ELC14-01	2.6
Subtotal ELC	11.5
Yuma Sector (YUM)	
YUM1	0.3
YUM2	0.6
Subtotal YUM	0.9
Total Length	16.2

- San Diego Sector (SDC)** – Approximately 3.8 miles of legacy fence will be replaced on the east and west side of the Tecate POE (Table 2-1 and Figure 2-2). Segment SDC26-01 starts on the west side of the Tecate POE and runs approximately 2.2 miles to the west. This portion of the fence replacement Project is within the USBP El Cajon Station AOR. Segment SDC27A-02 starts on the east side of the Tecate POE and extends approximately 1.6 miles to the east. This portion of the Project is within the USBP Campo Station AOR.

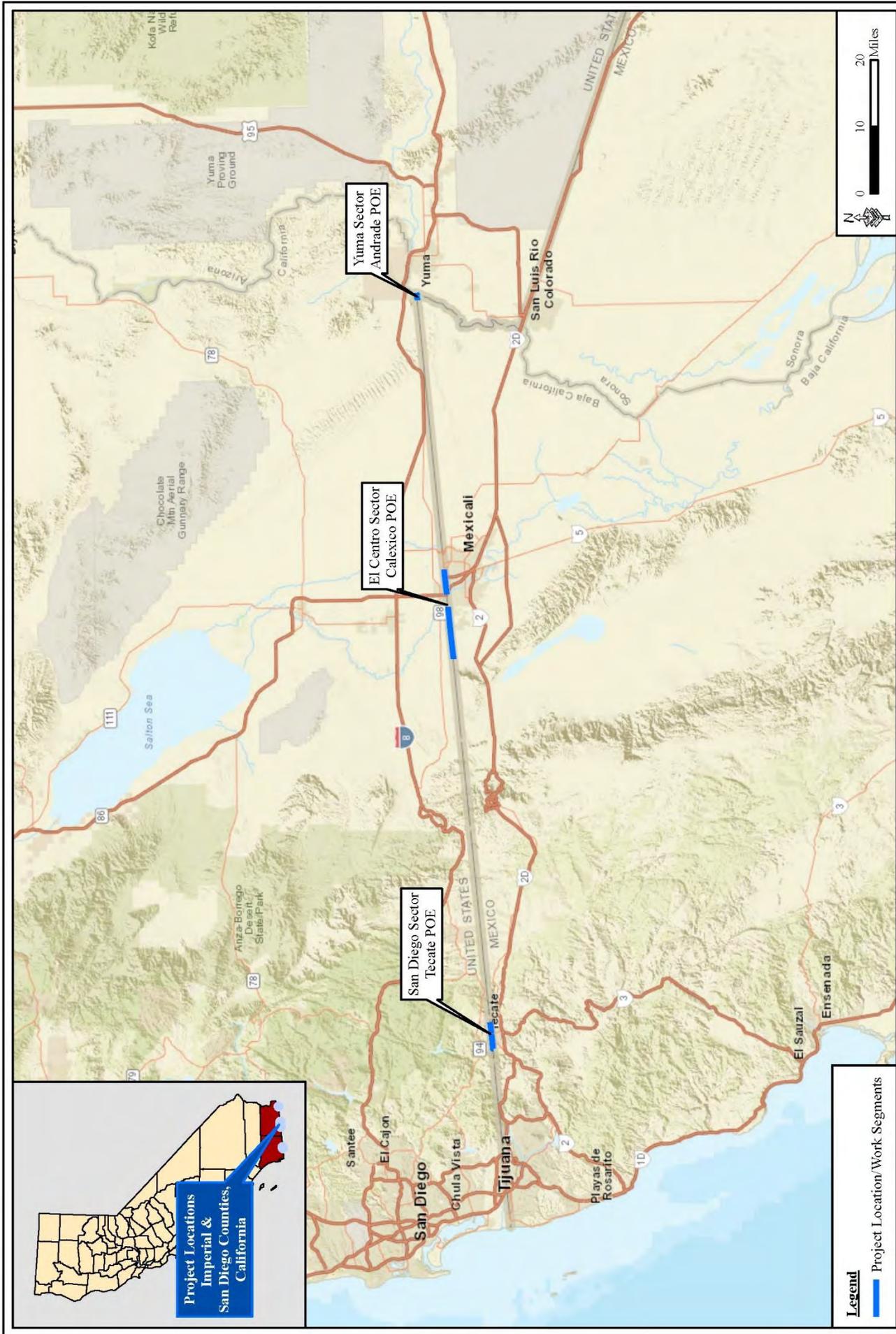


Figure 2-1. Project Vicinity Map

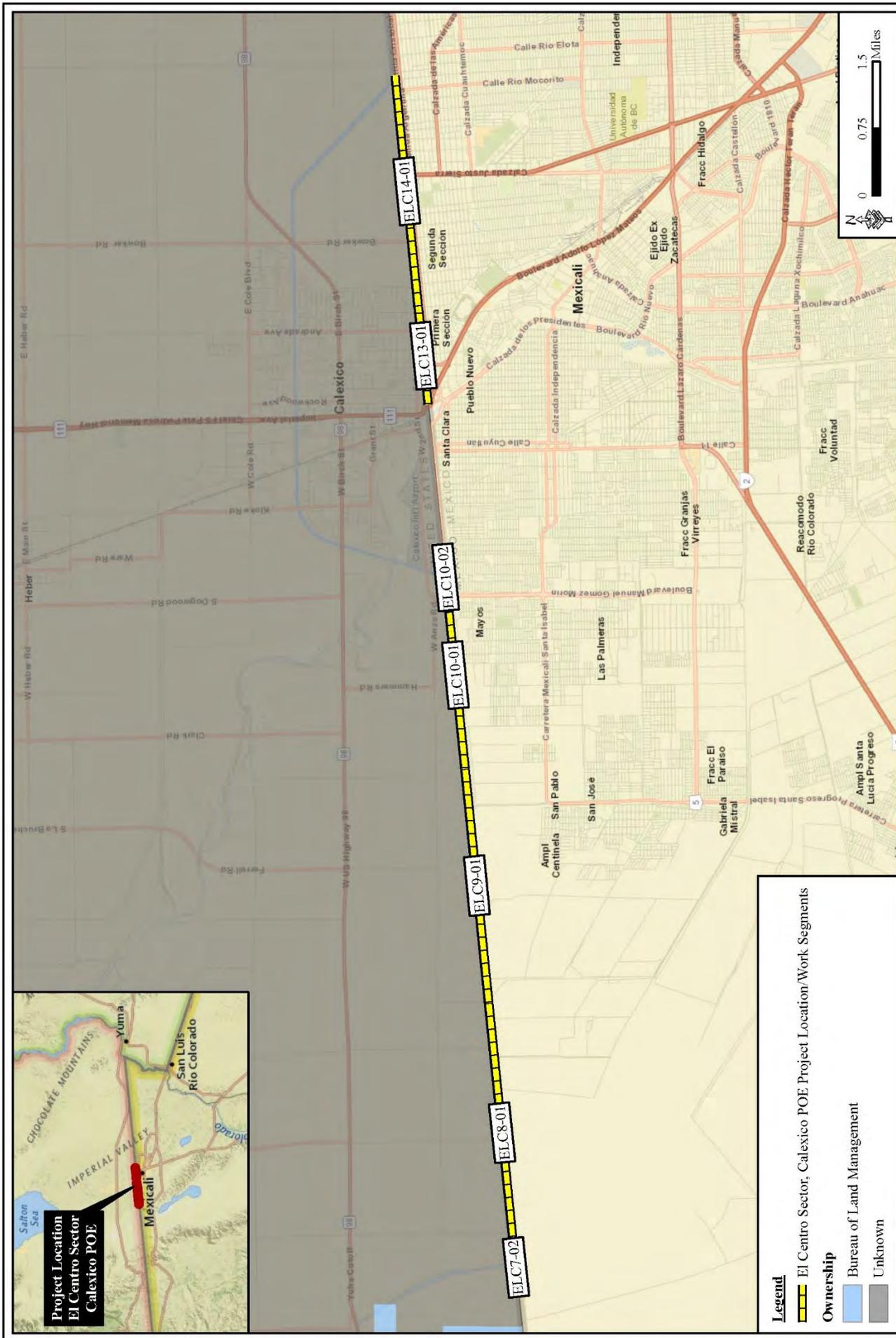


Figure 2-3. Project Location Map (El Centro Sector)



Figure 2-4. Project Location Map (Yuma Sector)

- **El Centro Sector (ELC)** – Approximately 11.5 miles of legacy fence will be replaced on the east and west sides of the Calexico POE (Table 2-1 and Figure 2-3). Starting approximately 2 miles west of the Calexico POE, Segments ELC 10-02, ELC10-01, ELC9-01, ELC8-01, and ELC7-02 continue and extend approximately 7.8 miles to the west, and Segments ELC13-01 and ELC14-01 starting on the east side of the Calexico POE extend approximately 3.7 miles to the east. This portion of the Project is entirely within the USBP El Centro Station AOR.
- **Yuma Sector (YUM)** – Approximately 0.9 miles on the east and west sides of the Andrade POE will be replaced (Table 2-1 and Figure 2-4). Segment YUM1 starts on the east side of the Andrade POE and extends approximately 0.3 miles to the west bank of the Colorado River. Segment YUM2 starts on the west side of the Andrade POE and extends approximately 0.6 miles to the west. This portion of the Project is entirely within the USBP Yuma Station AOR.

The new wall will consist of 30-foot tall steel bollards with a steel anti-climb plate at the top. The Project corridor will be 60 feet wide and in an area used for daily USBP patrols and enforcement actions associated with border security. A fiber optic communications cable will be installed along the U.S./Mexico border as part of the Project. Additionally, access gates to Border Monuments will be installed as part of the Project. The actual location, size, and number of gates will be determined during the design phase.

The Project corridor contains several existing border security infrastructure elements including legacy fence, lighting, and patrol roads. The existing legacy fence was installed in the 1990s and 2000s and does not meet current operational needs. Legacy fence in the SDC Sector Project corridor consists of landing mat fence (Photograph 2-1). In the ELC Sector Project corridor, legacy fence consists of picket fence (Photograph 2-2). Legacy fence in the YUM Sector Project corridor consists of picket fence with anti-climb plates (Photograph 2-3), picket fence (Photograph 2-4), and landing mat fence. The Project will include: (1) design, (2) site preparation and material delivery, (3) removal and replacement of legacy fence with bollard wall, and (4) installation of a fiber optics communications cable.

2.1 LOCATION

The Project corridor is in San Diego and Imperial counties in California and follows the U.S./Mexico Border. The SDC Sector Project corridor is located directly on the border in Township 18 South; Range 3 East; Sections 25, 26, and 27; and Township 18 South; Range 4 East; Sections 29 and 30, San Diego County, California. The ELC Sector Project corridor is located in Township 17 South; Range 13 East; Sections 20, 21, 22, 23, and 24; Township 17 South; Range 14 East; Sections 13, 19, 20, and 21; and Township 17 South; Range 15 East; Sections 16, 17, and 18, Imperial County, California. The YUM Sector Project corridor is located in Township 16 South; Range 21 East; Sections 34 and 35, Imperial County, California.



Photograph 2-1. Existing landing mat fence in the SDC Sector Project corridor.



Photograph 2-2. Existing picket fence in the ELC Sector Project corridor.



Photograph 2-3. Picket fence with anti-climb plate in the YUM Sector Project corridor.



Photograph 2-4. Picket fence in the YUM Sector Project corridor.

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 wall will be 30 feet high.

Construction of aforementioned design elements will primarily impact the Roosevelt Reservation. This 60-foot-wide area of impact is described in this document as the Project corridor. The larger Study corridor was created during the initial analyses to provide full consideration of impacts within the larger landscape. The Study corridor is the 60-foot-wide Project corridor plus an additional 20 feet. Thus, the Study corridor extends 80 feet north from the U.S./Mexico border and includes the staging area sites. Temporary construction impacts could occur within the Study corridor 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 eight 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 with 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 6 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 per Sector will accept large fence panel deliveries, store larger equipment, and house construction materials. Each of the 11 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 use existing roads within the Project corridor 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 for migratory birds if construction takes place during the nesting season (from February 15 through September 15 every year). BMPs will limit impacts on 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 corridor.

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. Replacement will consist of demolishing the legacy fence, removing any excess concrete from the legacy fence foundation, and trenching to install rebar cage and wall panels. Four gates will be installed in the bollard wall to allow access to Border Monuments. Each new section of bollard wall will be placed into position and secured below ground. Heavy equipment anticipated to be used during fence replacement and bollard wall construction will consist of water trucks, impact pile driver, loader, bulldozer, excavator, and a crane. Disposal or recycling of the existing legacy fence at an appropriate off-site disposal facility will be the responsibility of the construction contractor. Once the bollard wall is installed, the Project corridor will be returned as close to pre-existing conditions as possible.

2.6 LOW-WATER CROSSINGS

Low-water crossings will be constructed within the Project corridor to allow surface flow across the U.S.-Mexico border and to allow access along the border road during rain events. The low-water crossings will be constructed of concrete to allow all-weather access.

2.7 FIBER OPTIC CABLE

A fiber optic communications cable will be installed within the Project corridor approximately 6 to 10 feet north of the U.S./Mexico border.

2.8 CONSTRUCTION SCHEDULE

It is anticipated that construction will occur 7 days per week from 7:00 am to 7:00 pm, with some exceptions where work could be scheduled 24 hours per day. Construction is expected to last from May 2019 and take approximately 210 work days to complete. In the case of nighttime construction, border security lighting will light the area to allow for construction at night. In those areas where border security lighting is not present, portable lights will be used during nighttime construction.

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 2-5). Each unit typically has four 400- to 1,000-watt lamps. The portable light systems can be towed to the

desired construction location, as needed. Lights will be shielded and oriented to illuminate only the work area to ensure the safety of the workers. The number of lights will be minimized and used for construction purposes only. The area affected by illumination is limited to 200 feet from the light source.



Photograph 2-5. Portable light unit.

2.9 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 waivers, 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), particulate matter less than 10 microns (PM₁₀), 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.

The sources of PM₁₀ 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. Emissions of all other pollutants are from fuel combustion in on- and off-road vehicles and construction equipment.

Areas that do not meet these NAAQS standards are called non-attainment areas while 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 applicability 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 project or proposed action and associated air pollutant emissions and calculate emissions as a result of the project. If the emissions exceed established limits, known as *de minimis* thresholds, the proponent is required to then perform a more detailed Conformity Determination.

Table 3-1. National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	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 (O ₃)	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 (SO ₂)	75 ppb (11)	1-hour	0.5 ppm	3-hour (1)

Source: USEPA 2019b

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 PM_{2.5} 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.

3.1.1 SDC Sector

A portion of San Diego County is designated as non-attainment for two different ozone standards; the 2008 8-Hour Ozone standard (moderate non-attainment) and the 2015 8-Hour Ozone standard (marginal non-attainment) (USEPA 2019a). It is important to note that only part of San Diego County is in the moderate non-attainment area for 8-Hour ozone (2008) and the

marginal non-attainment area for 8-Hour Ozone (2015), and the project corridor is located outside of these areas.

3.1.2 ELC Sector

Imperial County is designated as non-attainment for the following criteria pollutants: moderate for PM_{2.5}, serious for PM₁₀ (1987), moderate for 8-Hour Ozone (2008), and marginal for 8-Hour Ozone (2015) (USEPA 2019a). The entirety of Imperial County, including the Project corridor, is designated as non-attainment for both 8-Hour Ozone standards. Portions of Imperial County are designated non-attainment for PM_{2.5} and PM₁₀, and the ELC Sector Project corridor is outside the moderate non-attainment area for PM_{2.5} and the serious non-attainment area for PM₁₀.

3.1.3 YUM Sector

As both the ELC and YUM sectors are located in Imperial County, the attainment status is the same as that described for the ELC Sector. It is important to note that the YUM Sector project corridor is located outside the moderate non-attainment area for PM_{2.5} and the serious non-attainment area for PM₁₀.

3.2 ENVIRONMENTAL CONSEQUENCES

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

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 water trucks, impact pile drivers, loaders, bulldozers, excavators, and cranes. 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.

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).

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

The purpose of this assessment is to evaluate impacts on ambient air quality from the Project. Air quality impacts from the Project would be significant if emissions would:

- 1) Increase ambient air pollution concentrations above the 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 emissions on an annual basis.

Per 40 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 would equal or exceed specified *de minimis* levels. In determining the significance of the Project, the *de minimis* levels would be used for O₃, volatile organic compounds (VOCs) or NO_x. All other compounds would be compared to significance levels specified in (1) through (7), above.

3.2.1 SDC Sector

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

Table 3-2. Total Air Emissions (tons/year) from the Proposed SDC Sector Construction Project versus the Significance Threshold Levels

Pollutant	Total (tons/year)	Significance Thresholds (tons/year)*	Significant Impact
CO	2.99	250	No
Volatile Organic Compounds (VOC)	0.61	100	No
Nitrogen Oxides (NO _x)	2.88	100	No
PM ₁₀	0.64	250	No
PM _{2.5}	0.31	250	No
SO ₂	0.01	250	No
CO ₂ e	0.70	27,557	No

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

*Note that San Diego is in moderate non-attainment for 8-Hour Ozone (2008) and marginal non-attainment for 8-Hour Ozone (2015).

3.2.2 ELC Sector

The total emissions from all activities are demonstrated to be below the significance levels; therefore, the Project is determined to not have significant impacts on air ambient quality. Table 3-3 provides a summary of emissions from the Project and a determination of their significance.

Table 3-3. Total Air Emissions (tons/year) from the Proposed ELC Sector Construction Project versus the Significance Threshold Levels

Pollutant	Total (tons/year)	Significance Thresholds (tons/year)*	Significant Impact
CO	2.26	250	No
Volatile Organic Compounds (VOC)	0.58	100	No
Nitrogen Oxides (NO _x)	2.89	100	No
PM ₁₀	1.57	250	No
PM _{2.5}	0.40	250	No
SO ₂	0.01	250	No
CO ₂ e	0.43	27,557	No

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

*Note that Imperial County is in moderate non-attainment for 8-Hour Ozone (2008) and marginal non-attainment for 8-Hour Ozone (2015).

3.2.3 YUM Sector

The total emissions from all activities are demonstrated to be below the significance levels; therefore, the Project is determined to not have significant impacts on air ambient quality. Table 3-4 provides a summary of emissions from the Project and a determination of their significance.

Table 3-4. Total Air Emissions (tons/year) from the Proposed YUM Sector Construction Project versus the Significance Threshold Levels

Pollutant	Total (tons/year)	Significance Thresholds (tons/year)*	Significant Impact
CO	2.18	250	No
Volatile Organic Compounds (VOC)	0.57	100	No
Nitrogen Oxides (NO _x)	2.87	100	No
PM ₁₀	0.32	250	No
PM _{2.5}	0.27	250	No
SO ₂	0.01	250	No
CO ₂ e	0.43	27,557	No

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

*Note that Imperial County is in moderate non-attainment for 8-Hour Ozone (2008) and marginal non-attainment for 8-Hour Ozone (2015).

4.0 NOISE

4.1 AFFECTED ENVIRONMENT

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

Noise levels occurring at night generally cause a greater community annoyance than do the same levels occurring during the day. An 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. It is generally agreed that people perceive intrusive noise at night as being 10 dBA louder than 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. Acceptable noise levels have been established by the U.S. Department of Housing and Urban Development (HUD) for construction activities in residential areas (HUD 1984):

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

Normally Unacceptable (above 65 but not greater than 75 dBA) – The noise exposure is significantly more severe; barriers would be necessary between the site and prominent noise sources to make the outdoor environment acceptable; special building constructions would 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 would be prohibitive, and the outdoor environment will still be unacceptable.

As a general rule of thumb, noise generated by a stationary noise source, or “point source,” will decrease by approximately 6 dB over hard surfaces and 9 dB over soft surfaces for each doubling of the distance. For example, if a noise source produces a noise level of 85 dBA at a reference distance of 50 feet over a hard surface, then the noise level 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:

Equation 1: $dB_{A2} = dB_{A1} - 20 \log (d_2/d_1)$

Where:

- dB_{A2} = dBA at distance 2 from source (predicted)
- dB_{A1} = 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.

4.1.1 SDC Sector

The majority of the new bollard wall in the SDC Sector is located immediately north of the city of Tecate, Mexico, and is located approximately 50 feet north of residential homes and businesses in Tecate, Mexico. The project corridor is mostly surrounded by rural areas to the north in the U.S, except for a length of approximately 0.6 miles where the Project corridor extends through the Tecate POE. Additionally there are two residential houses located in the U.S. that are located within 1,000 feet of the project corridor.

4.1.2 ELC Sector

The wall segment west of the Tecate POE is mostly surrounded by agricultural land to the north and south, and is bordered by residential homes and businesses to the south for approximately 0.8 miles at the eastern end of the segment, where the Project corridor is located approximately 50 to 150 feet north of residential homes.

The wall segment east of the Tecate POE is bounded by residential homes and businesses to the south for the entirety of the segment, where the Project corridor is located approximately 0 to 50 feet from residential homes and businesses. The first 1.3 miles of the segment is surrounded by urban and residential homes/businesses in the U.S. and the remaining 2.4 miles is agricultural land in the U.S.

4.1.3 YUM Sector

The wall segments in the YUM Sector are bounded by residential homes and businesses to the south in Mexico and rural land to the north in the U.S. The Project corridor is located approximately 50 to 100 feet north of homes and businesses in Los Algodones, Baja California, Mexico. The Andrade POE is located west of the YUM2 wall segment, and a large parking lot is immediately adjacent to the Project corridor.

4.2 ENVIRONMENTAL CONSEQUENCES

The noise emission levels for common construction equipment ranges from 76 dBA to 84 dBA at a distance of 50 feet (see Table 4-1) (Federal Highway Administration [FHWA] 2007).

Assuming the worst-case scenario of 84 dBA, the noise model predicts that noise emissions will have to travel 450 feet before they will attenuate to acceptable levels of 65 dBA or 1,000 feet before they will attenuated to acceptable levels of 55 dBA (night). Geographic Information System (GIS) data were used to determine the area encompassed within the 450 feet 65 dBA noise contour. It was assumed that the time required to complete all components of the Project would take approximately 210 days. In other words, construction noise would not occur over the

entire Project corridor during the entire construction period but would be limited to segments of the Project corridor while repairing and maintaining roads, replacing fence, and constructing low-water crossings.

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

Noise Source	50 feet	100 feet	200 feet	500 feet	1000 feet
Backhoe	78	72	68	58	52
Crane	81	75	69	61	55
Dump truck	76	70	64	56	50
Excavator	81	75	69	61	55
Front-end loader	79	73	67	59	53
Concrete mixer truck	79	73	67	59	53
Pneumatic tools	81	75	69	61	55
Auger drill rig	84	78	72	64	58
Bull dozer	82	76	70	62	56
Generator	81	75	69	61	55

Source: FHWA 2007 and GSRC

*The dBA at 50 feet is a measured noise emission (FHWA 2007). The 100- to 1,000-foot results are GSRC modeled estimates.

4.2.1 SDC Sector

Much of the Project corridor is located adjacent to residential neighborhoods in Tecate. There are no residential homes, churches, schools, hospitals, or other sensitive noise receptors in the U.S. that are located within 450 feet of the edge of the project corridor. There two homes located within 1, 000 of the Project corridor that could potentially be impacted by nighttime noise. Noise generated by the construction activities will be intermittent and last for approximately 210 days over the span of the entire Project corridor, after which noise levels will return to current ambient levels. Therefore, the noise impacts from construction activities will be considered minimal and there is no significant noise impact.

4.2.2 ELC Sector

Much of the Project corridor is located adjacent to residential neighborhoods in Calexico and Mexicali. In the U.S., approximately 200 single-family homes, 17 residential multi-plex units, two parks (i.e., Border Park and Cortez Park), one church (i.e., Amistad Cristana), and one school (i.e. Calexico Mission Academy) are located within 450 feet of the edge of the project corridor. There are no hospitals or other sensitive noise receptors in the U.S. that are located within 450 feet of the edge of the project corridor. A major impact would occur if ambient noise levels permanently increased to over 65 dBA. The noise generated by the Project would occur during construction. These activities would be temporary and would not contribute to cumulative impacts on ambient noise levels. Thus, the noise generated by the Project, when considered with the other existing projects and proposed actions in the region, would not result in a major cumulative adverse effect. To minimize noise impacts associated with the Project, construction activities would be limited to daylight hours between 7:00 am and 7:00 pm. Noise generated by the construction activities will be intermittent and last for approximately 210 days

over the span of the entire Project corridor, after which noise levels will return to ambient levels. Therefore, the noise impacts from construction activities will be considered minimal and insignificant.

4.2.3 YUM Sector

Much of the Project corridor is located adjacent to residential neighborhoods in Calexico and Mexicali. There are no residential homes, churches, schools, hospitals, or other sensitive noise receptors in the U.S. that are located within 450 feet of the edge of the Project corridor. Noise generated by the construction activities will be intermittent and last for approximately 210 days over the span of the entire Project corridor, after which noise levels will return to current ambient levels. Therefore, the noise impacts from construction activities will be considered minimal and there is no significant noise impact.

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.

5.1.1.1 SDC Sector

The San Diego Sector project corridor traverses the Tecate POE, as well as rural areas of San Diego County, California. The landscape within the project corridor primarily consists of California coastal scrub community (Data Basin 2013). There is an area on a north-facing slope on the eastern side of the Tecate POE that has been actively managed to prevent erosion. None of the land within the Project corridor is identified for recreational use.

5.1.1.2 ELC Sector

The El Centro Sector Project corridor traverses the Calexico POE as well as urban, suburban, and agricultural areas of Imperial County, California. The landscape within the project corridor has been heavily disturbed with little to no vegetative cover present. Sparse vegetation is occasionally observed to the north of the access road that runs the length of the Study corridor. The five segments on the west side of the Calexico POE are heavily disturbed by urbanization and agriculture practices. Most vegetation encountered during pedestrian surveys consisted of non-native species such as mustard (*Brassica* spp.), London rocket (*Sisymbrium irio*), and the occasional shrub-sized saltcedar (*Tamarix ramosissima*). All segments directly west of the Calexico POE are devoid of vegetation, except for a few non-native and disturbance-adapted species, and are a mix of barren land, agriculture fields, and other urban developments. The limited vegetation present in the Study corridor within ELC has similar composition on both sides of the Calexico POE. The ELC Sector Study corridor occurs within the Lower Colorado River Valley Subdivision Sonoran Desertscrub as described by Brown and Lowe (1994). None of the land within the Project corridor is identified for recreational use.

5.1.1.3 YUM Sector

The Yuma Sector Project corridor is located near the Andrade POE. The landscape within the Project corridor has been previously disturbed; however, desert vegetation is present north of the Study corridor adjacent to the access road that runs in a west to east direction, parallel to the U.S./Mexico border. Segment YUM2 is located on the west side of the Andrade POE and is primarily composed of foothills and sandy washes. Vegetation along the YUM2 segment is primarily common desert annuals, creosote (*Larrea tridentata*), and non-native species. Segment YUM1 is located east of the Andrade POE and ends immediately adjacent to the Colorado River. Segment YUM1 is primarily flat and composed of Mojave sea-blite (*Suaeda nigra*) and saltbush (*Atriplex* spp.). The YUM Sector Study corridor occurs within the Lower Colorado River Valley Subdivision Sonoran Desertscrub as described by Brown and Lowe (1994). None of the land within the Project corridor is identified for recreational use.

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.

5.1.2.1 SDC Sector

The Project corridor within the SDC Sector has been previously disturbed by prior fence and road construction, and USBP law enforcement activities. Residential and commercial developments in Tecate, Mexico are located immediately adjacent to the Project Corridor to the south. In the U.S. the Project corridor is mostly surrounded by rural areas. The Project corridor lies within California Coastal scrub community, as described by the Data Basin (2013), and native vegetation extends north of the Project corridor.

5.1.2.2 ELC Sector

The Project corridor within the ELC Sector has been heavily disturbed by urbanization and agricultural uses. The Project segments located west of the Calexico POE are bordered by active agricultural fields while the project segments east of the POE are bordered by urban, suburban, and agricultural lands. The Project corridors contain very little to no vegetative cover, and the vegetation composition is dominated by non-native species. The Project corridor lies within Lower Colorado River Valley Subdivision Sonoran Desertscrub (Brown and Lowe 1994).

5.1.2.3 YUM Sector

The Project corridor within the YUM Sector has been previously disturbed by prior fence and road construction, and law enforcement activities, and the entire Project corridor is heavily disturbed by anthropogenic land use. Very little natural vegetation is present within the Project corridor, and the area lies within Lower Colorado River Valley Subdivision Sonoran Desertscrub (Brown and Lowe 1994).

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.

5.2.1.1 SDC Sector

The Project corridor is 60 feet wide with an additional 20 foot buffer constituting the Study corridor. The majority of the Project corridor has been disturbed from previous fence and road construction projects and daily USBP patrols and enforcement actions associated with border security. The Project corridor does not overlap any recreational areas.

5.2.1.2 ELC Sector

The Project corridor is 60 feet wide with an additional 20 foot buffer constituting the Study corridor. The majority of the corridor has been disturbed from previous fence and road construction projects and daily USBP patrols and enforcement actions associated with border security. The Project corridor does not overlap any recreational areas.

5.2.1.3 YUM Sector

The Project corridor is 60 feet wide with an additional 20 foot buffer constituting the Study corridor. The majority of the corridor has been disturbed from previous fence and road construction projects and daily USBP patrols and enforcement actions associated with border security. The Project corridor does not overlap any recreational areas.

5.2.2 Aesthetics

5.2.2.1 SDC Sector

Currently, the legacy fence consists of landing mat fence in the SDC Sector. Landing mat fence is solid and restricts the view across the border. Installation of the bollard wall will allow for views through the fence, which are currently restricted by the landing mat fence. The replacement bollard wall will be 30 feet tall, which is taller than the current legacy fences. The taller bollard wall 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 would remain; however, it will allow for views through the bollard wall.

5.2.2.2 ELC Sector

Currently, the legacy fence in the ELC Sector Project corridor consists of picket fence. The legacy picket fence allows for views through the fence. The replacement bollard wall will be 30 feet tall, which is taller than the current legacy fence. The taller bollard wall will be visually more substantial than the existing fence. However, the bollard wall would retain the transparent qualities of the legacy fence, which would allow people to continue to see through the bollard wall. Construction of the bollard wall would have a minor impact on aesthetics.

5.2.2.3 YUM Sector

Currently, the legacy fence in the YUM Sector consists of landing mat fence and picket fence. Landing mat fences are solid and restrict the view across the border. Installation of the bollard wall will allow for views through the bollard wall, which are currently restricted by the landing mat fence. The replacement bollard wall will be 30 feet tall, which is taller than the current legacy fences. The taller bollard wall will be visually more substantial than the existing fence; however, it will be less of a visual impediment compared to the landing mat 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 would remain; however, the bollard wall will allow for views through the fence, thus having beneficial impacts on the appearance of the Project corridor in those areas with landing mat fence. The bollard wall will still allow views through the fence in areas with picket fence. Thus a minor impact would occur in those areas with legacy picket fence.

6.0 GEOLOGICAL RESOURCES AND SOILS

6.1 AFFECTED ENVIRONMENT

California 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 Study corridor are discussed below, listed in Table 6-1, and are depicted in Figures 6-1 through 6-3 (Natural Resources Conservation Service [NRCS] Undated).

Table 6-1. Soil Associations for SDC, ELC, and YUM Wall Replacement Project

Soil Association	Area (Acres)	Prime Farmland ¹
SDC Sector		
Cieneba rocky coarse sandy loam, 9 to 30 percent slopes, eroded (CmE2)	7.84	N
Cieneba-Fallbrook rocky sandy loams, 9 to 30 percent slopes, eroded (CnE2)	3.03	N
Fallbrook sandy loam, 5 to 9 percent slopes, eroded (FaC2)	4.52	Y
Las Posas fine sandy loam, 5 to 9 percent slopes, eroded (LpC2)	2.12	Y
Las Posas stony fine sandy loam, 9 to 30 percent slopes, eroded (LrE2)	10.31	N
Las Posas stony fine sandy loam, 30 to 65 percent slopes (LrG)	4.61	N
Visalia sandy loam, 2 to 5 percent slopes (VaB)	1.09	Y ²
Visalia sandy loam, 5 to 9 percent slopes (VaC)	1.06	Y ²
Wyman loam, 5 to 9 percent slopes (WmC)	2.24	Y
ELC Sector		
Holtville silty clay, wet (110)	8.59	Y ²
Imperial silty clay, wet (114)	71.07	Y
Imperial-Glenbar silty clay loams, wet, 0 to 2 percent slopes (115)	25.18	Y
Indio loam, wet (118)	0.76	Y ²
Meloland very fine sandy loam, wet (122)	5.64	Y ²
YUM Sector		
Unmapped	8.71	U
Total³	157.0	

Source: NRCS undated

¹ Y= yes, N=no, U=unknown.

² if irrigated and/or drained

³ The total has been rounded to the nearest whole number

6.1.1 SDC Sector

The Project corridor is located in the eastern portion of the Peninsular Range province of Southern California (U.S. Geological Survey [USGS] 2003). Outcropping rocks consist primarily of intrusive igneous granites, rhyolites, and volcanics of Cretaceous age. There are no active faults located near the ELC Project corridor (California Department of Conservation [CDC] 2015). Soils in the SDC Sector Project corridor are primarily derived from weathered granite, granodiorite, sandstone, shale, and igneous rock and typically occur as a result of alluvial forces (see Table 6-1).

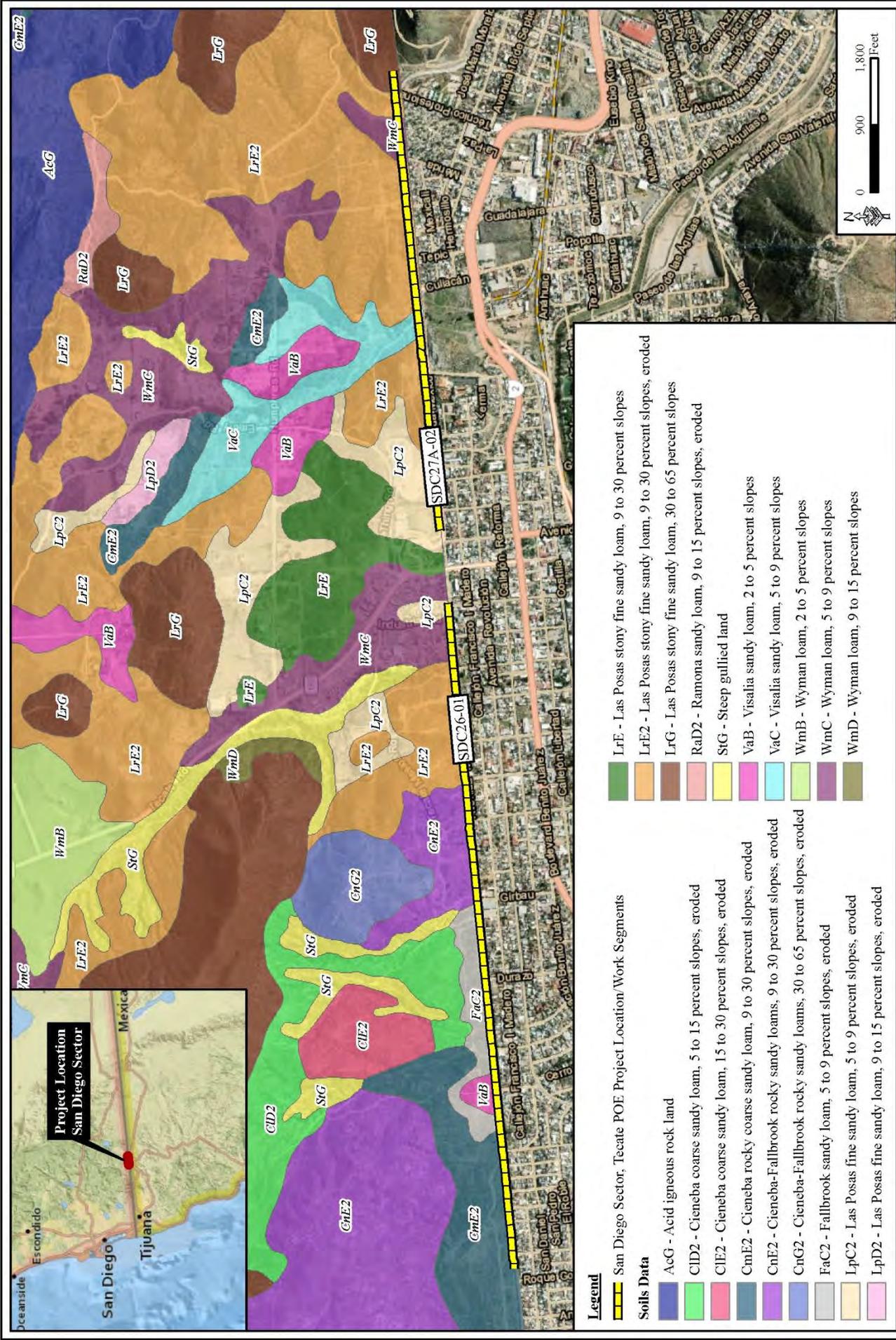


Figure 6-1. Soils Map of San Diego Wall Replacement Project, Tecate POE

Legend

- San Diego Sector, Tecate POE Project Location/Work Segments
- AcG - Acid igneous rock land
- CID2 - Cieneba coarse sandy loam, 5 to 15 percent slopes, eroded
- CIE2 - Cieneba coarse sandy loam, 15 to 30 percent slopes, eroded
- CmE2 - Cieneba rocky coarse sandy loam, 9 to 30 percent slopes, eroded
- CnE2 - Cieneba-Fallbrook rocky sandy loams, 9 to 30 percent slopes, eroded
- CnG2 - Cieneba-Fallbrook rocky sandy loams, 30 to 65 percent slopes, eroded
- FaC2 - Fallbrook sandy loam, 5 to 9 percent slopes, eroded
- LpC2 - Las Posas fine sandy loam, 5 to 9 percent slopes, eroded
- LpD2 - Las Posas fine sandy loam, 9 to 15 percent slopes, eroded
- LrE - Las Posas stony fine sandy loam, 9 to 30 percent slopes
- LrE2 - Las Posas stony fine sandy loam, 30 to 65 percent slopes, eroded
- LrG - Las Posas stony fine sandy loam, 9 to 15 percent slopes, eroded
- RaD2 - Ramona sandy loam, 9 to 15 percent slopes, eroded
- StG - Steep gullied land
- VaB - Visalia sandy loam, 2 to 5 percent slopes
- VaC - Visalia sandy loam, 5 to 9 percent slopes
- WmB - Wyman loam, 2 to 5 percent slopes
- WmC - Wyman loam, 5 to 9 percent slopes
- WmD - Wyman loam, 9 to 15 percent slopes

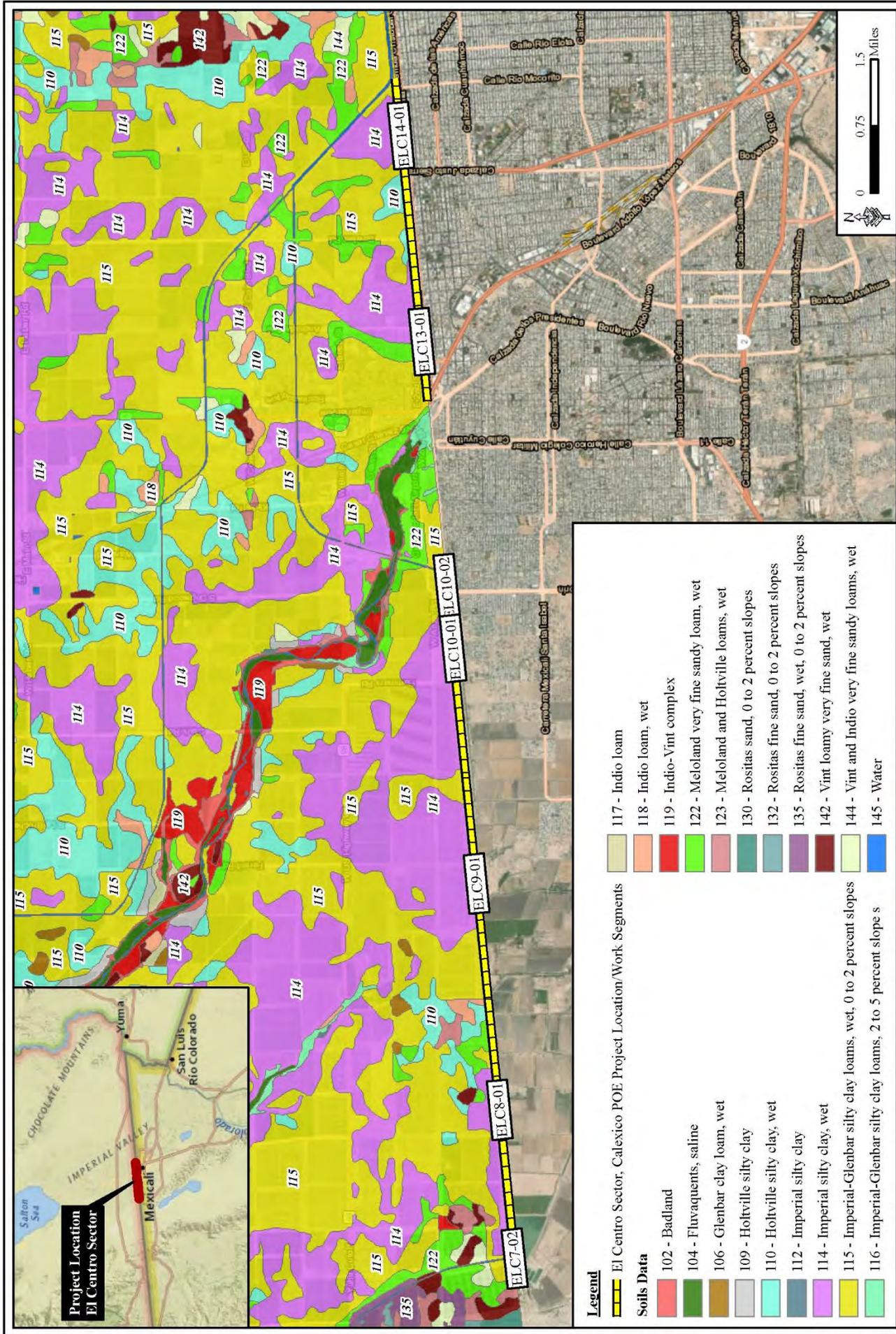


Figure 6-2. Soils Map of El Centro Wall Replacement Project, Calexico POE

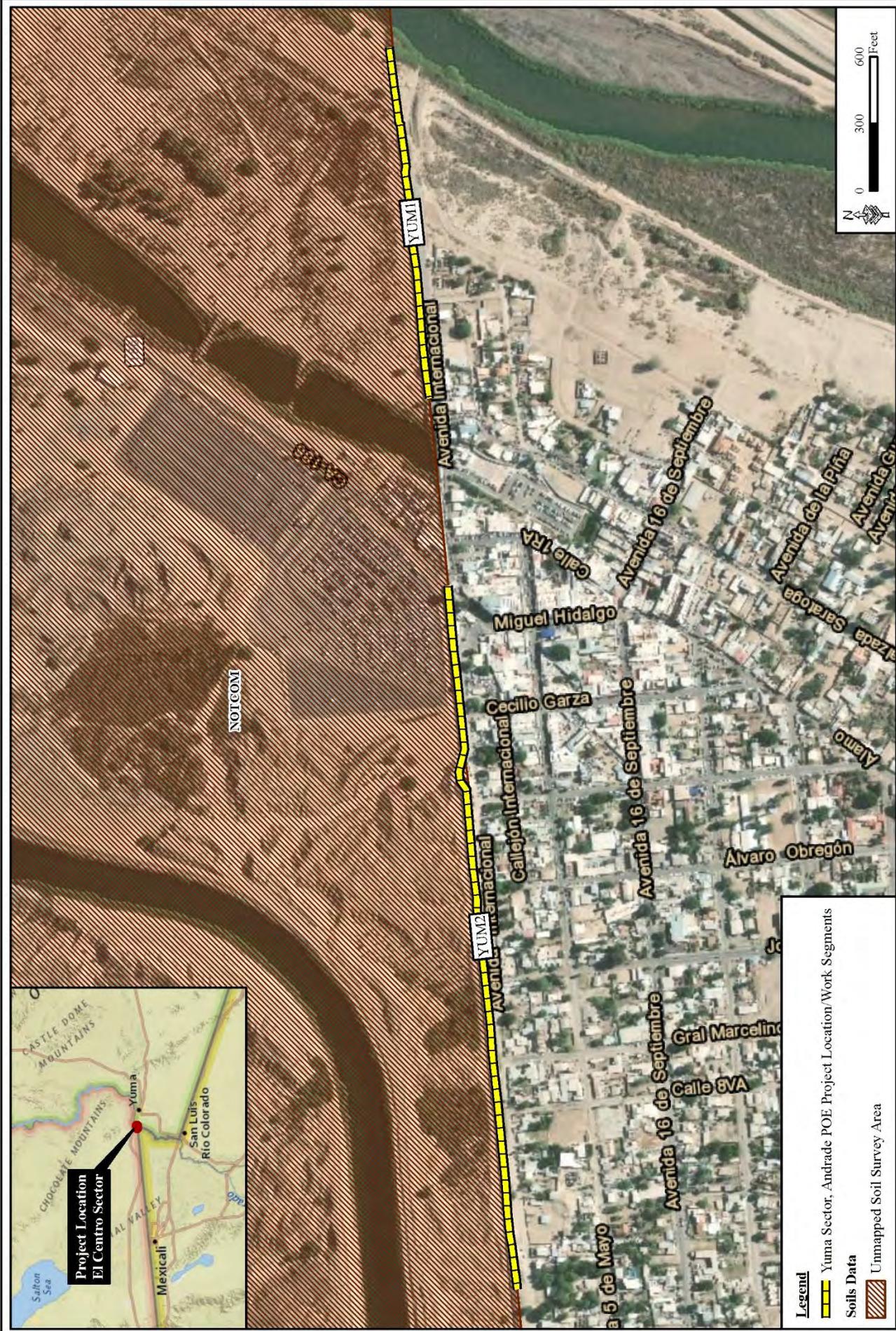


Figure 6-3. Soils Map of Yuma Sector Project, Andrade POE

6.1.2 ELC Sector

The Project corridor is located in the Basin and Range Province of the southwestern United States (USGS 2003). Outcropping rocks consist primarily of intrusive igneous granites, rhyolites, and volcanics of Cretaceous age. The alluvium in the valleys is a result of erosion and weathering of these rocks. There is one active fault located near the ELC Project corridor (Imperial fault), and seismic potential in this area is high (CDC 2015). Soils in the ELC Sector Project corridor are primarily derived from clay and mixed alluvium and occur as a result of alluvial, lacustrine, and eolian forces (see Table 6-1).

6.1.3 YUM Sector

The Project corridor is located in the Basin and Range Province of the southwestern United States (USGS 2003). The YUM Sector is near an active fault in Southern California (Algodones Fault), and seismic potential in this area is high (Fellows 2000, CDC 2015). The soils are unmapped for all of the segments in the YUM Sector.

6.1.4 Soils

Cieneba rocky coarse sandy loam (CmE2) soils are somewhat excessively drained and formed from granite and granodiorite. This soil generally occurs on hills and slopes at elevations of 500 to 4,000 feet on slopes from 9 to 30 percent. The potential for runoff is moderate, and water storage is very low. This soil is classified as non-hydric and not listed as a candidate to support prime farmland. CmE2 soils are located within the SDC Sector portion of the Project corridor (Soil Survey Staff Undated).

Fallbrook sandy loam (FaC2) soils are well drained and formed from weathered granodiorite. This soil generally occurs on hills and slopes at elevations of 200 to 3,500 feet on slopes from 5 to 9 percent. The potential for runoff is high, and water storage is very high. This soil is classified as non-hydric and is a soil of importance for agriculture. FaC2 soils are located within the SDC Sector portion of the Project corridor (Soil Survey Staff Undated).

Visalia sandy loam (VaB) soils are well drained and formed from granite. This soil generally occurs in alluvial fans at elevations of 0 to 1,500 feet on slopes from 2 to 5 percent. The potential for runoff is very low, and water storage is high. This soil is classified as non-hydric and is listed as a candidate to support prime farmland, if irrigated. VaB soils are located within the SDC Sector portion of the Project corridor (Soil Survey Staff Undated).

Visalia sandy loam (VaC) soils are well drained and formed from granite. This soil generally occurs in alluvial fans at elevations of 0 to 1,500 feet on slopes from 5 to 9 percent. The potential for runoff is low, and water storage is high. This soil is classified as non-hydric and is listed as a candidate to support prime farmland, if irrigated. VaC soils are located within the SDC Sector portion of the Project corridor (Soil Survey Staff Undated).

Cieneba-Fallbrook rocky sandy loam (CnE2) soils are somewhat excessively drained and formed from granite and granodiorite. This soil generally occurs on hills and slopes at elevations of 300 to 4,000 feet on slopes from 9 to 30 percent. The potential for runoff is high, and water storage is moderate. This soil is classified as non-hydric and not listed as a candidate to support prime

farmland. CnE2 soils are located within the SDC Sector portion of the Project corridor (Soil Survey Staff Undated).

Las Posas stony fine sandy loam (LrE) and eroded Las Posas stony fine sandy loam (LrE2) soils are well drained and formed from weathered igneous rock. These soils generally occur on hills and slopes at elevations of 200 to 3,000 feet on slopes from 9 to 30 percent. The potential for runoff is very high, and water storage is high. These soils are classified as non-hydric and not listed as candidates to support prime farmland. LrE and LrE2 soils are located within the SDC Sector portion of the Project corridor (Soil Survey Staff Undated).

Las Posas stony fine sandy loam (LrG) soils are well drained and formed from weathered sandstone and shale. This soil generally occurs on hills and slopes at elevations of 200 to 3,000 feet on slopes from 30 to 65 percent. The potential for runoff is very high, and water storage is high. This soil is classified as non-hydric and not listed as a candidate to support prime farmland. LrG soils are located within the SDC Sector portion of the Project corridor (Soil Survey Staff Undated).

Las Posas fine sandy loam (LpC2) soils are well drained and formed from weathered igneous rock. This soil generally occurs on hillslopes at elevations of 200 to 3,000 feet on slopes from 5 to 9 percent. The potential for runoff is high, and water storage is high. This soil is classified as non-hydric and is listed as a candidate to support prime farmland. LpC2 soils are located within the SDC Sector portion of the Project corridor (Soil Survey Staff Undated).

Wyman loam (WmC) soils are well drained and formed from granite. This soil generally occurs in alluvial fans at elevations of 300 to 2,500 feet on slopes from 5 to 9 percent. The potential for runoff is high, and water storage is high. This soil is classified as non-hydric and is listed as a candidate to support prime farmland. WmC soils are located within the SDC Sector portion of the Project corridor (Soil Survey Staff Undated).

Imperial silty clay (114) soils are moderately well drained and formed from clayey alluvium or lacustrine deposits. This soil generally occurs on the floors of basins at elevations of -230 to 200 feet on slopes from 0 to 2 percent. The potential for runoff is low, and water storage is moderate. This soil is classified as non-hydric and is listed as a candidate to support prime farmland. Imperial silty clay soils are located within the ELC Sector portion of the Project corridor (Soil Survey Staff Undated).

Imperial-Glenbar silty clay loam (115) soils are moderately well drained and formed from clayey alluvium or lacustrine deposits. This soil generally occurs on the floors of basins at elevations of -230 to 200 feet on slopes from 0 to 2 percent. The potential for runoff is low, and water storage is high. This soil is classified as non-hydric and is listed as a candidate to support prime farmland. Imperial-Glenbar silty clay loam soils are located within the ELC Sector portion of the Project corridor (Soil Survey Staff Undated).

Meloland very fine sandy loam (122) soils are moderately well drained and formed from alluvium from mixed eolian deposits. This soil generally occurs on the floors of basins at elevations of -230 to 200 feet on slopes from 0 to 2 percent. The potential for runoff is low, and

water storage is moderate. This soil is classified as non-hydric and is listed as a candidate to support farmland, if irrigated and drained. Meloland very fine sandy loam soils are located within the ELC Sector portion of the Project corridor (Soil Survey Staff Undated).

Holtville silty clay (110) soils are moderately well drained and formed from alluvium of mixed sources. This soil generally occurs on the floors of basins at elevations of -230 to 200 feet on slopes from 0 to 2 percent. The potential for runoff is low, and water storage is moderate. This soil is classified as non-hydric and is listed as a candidate to support farmland, if irrigated and drained. Holtville silty clay soils are located within the ELC Sector portion of the Project corridor (Soil Survey Staff Undated).

Indio loam (118) soils are moderately well drained and formed from alluvium from mixed eolian deposits. This soil generally occurs on the floors of basins at elevations of -230 to 200 feet on slopes from 0 to 2 percent. The potential for runoff is low, and water storage is moderate. This soil is classified as non-hydric and is listed as a candidate to support farmland, if irrigated and drained. Indio loam soils are located within the ELC Sector portion of the Project corridor (Soil Survey Staff Undated).

Soil information from the NRCS – Web Soil Survey is not available for the YUM Sector portion of the Project corridor.

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. A majority of the soil types throughout the SDC Sector and ELC sectors Project corridor are potentially suitable for agriculture. Prime farmland soil types that exist in the Project corridor are the following: Fallbrook sandy loam, Visalia sandy loam, Las Posas fine sandy loam, Wyman loam, Imperial silty clay, and Imperial-Glenbar silty clay loam (115 and 116). If irrigated, Visalia sandy loam can be used for agriculture. When irrigated and drained, Holtville silty clay, Meloland very fine sandy loam, and Indio loam are also listed as appropriate farmland soils (Soil Survey Staff Undated).

6.2 ENVIRONMENTAL CONSEQUENCES

The soils within the 60-foot Project corridor have been permanently impacted by previous fence construction, patrol road construction, and daily USBP patrol activities. Potential permanent impacts on soils (117.8 acres) would be localized and contained within the Project corridor. The Project would 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 could 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 construction of low-water crossing could possibly redirect surface flows thus increasing erosion due to scouring. Thus, low-water crossing construction could possibly increasing sedimentation downstream in ephemeral drains. However, the low-water crossings would also be expected to reduce erosion within the channel at the crossings, thus decreasing erosion and sedimentation. Construction of low water crossing would be expected to have a minor adverse impact on soils.

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.

6.2.1 SDC Sector

Approximately 27.6 acres of soils would be permanently impacted in the SDC Sector Project corridor. The permanent impacts would be contained within the narrow linear wall alignment (60 feet x 3.8 miles). The project could potentially impact 4.6 acres of prime farmland in the SDC Project corridor; however, these soils have been previously impacted and are not currently under agricultural production.

6.2.2 ELC Sector

Approximately 83.6 acres of soils would be permanently impacted in the ELC Sector Project corridor. The permanent impact would be localized and contained within the narrow linear wall alignment (60 feet x 11.5 miles). The project could potentially impact 1.8 acres of prime farmland in the ELC Project corridor; however, these soils have been previously impacted and are not currently under agricultural production.

6.2.3 YUM Sector

Approximately 6.5 acres of soils would be permanently impacted in the ELC Project corridor. The permanent impact would be localized and contained within the narrow linear wall alignment (60 feet x 0.9 miles). No prime farmlands have been mapped in the YUM Sector.

7.0 HYDROLOGY AND WATER MANAGEMENT

7.1 AFFECTED ENVIRONMENT

7.1.1 Groundwater

7.1.1.1 SDC Sector

The SDC Sector Project corridor is located within the South Coast Hydrologic Region of southwestern California, and is not located within a subbasin (California Department of Water Resources [CDWR] 2016). The South Coast Hydrologic Region encompasses nearly 7 million acres of Southern California; it is bounded by the Pacific Ocean to the west, the international boundary with Mexico to the south, the Transverse Ranges to the north, and the San Jacinto Mountains to the east (CDWR 2003). Although this hydrologic region only covers approximately 7 percent of the state's area, it contains nearly 50 percent of the population and therefore has the highest population density of any hydrologic region in California (CDWR 2003). The South Coast Hydrologic Region imports water through the State Water Project, the Colorado River Aqueduct, the Los Angeles Aqueduct, as well as numerous local sources (CDWR 2003). It has a storage capacity of approximately 140 million acre-feet; however, due to the high population density in the area its net water use exceeds its supply (Public Policy Institute of California [PPIC] 2011).

7.1.1.2 ELC Sector

The ELC Sector Project corridor is located within the Colorado River basin and the Imperial Valley groundwater subbasin (CDWR 2016). The Imperial Valley subbasin covers approximately 1,870 square miles in southeastern California. The subbasin is bounded by the Sand Hills to the east, the Coyote Mountains to the west, and the Salton Sea to the north, where the water is also discharged. The subbasin extends south into Baja California, Mexico, although the international boundary is considered the political boundary (CDWR 2004a). The Imperial Valley subbasin contains two major aquifers, which mostly contain late Tertiary and Quaternary deposits, and these aquifers are separated by a semi-permeable aquitard ranging from 60-280 feet thick. The upper aquifer ranges in thickness from 200-450 feet and the lower aquifer averages 380 feet thick but has a maximum thickness of 1,500 feet. The Imperial Valley subbasin is primarily recharged from irrigation return; other sources include percolation of rainfall, surface runoff, underflow into the basin, and seepage from canals within the valley (CDWR 2004a). The estimated recharge for the Imperial Valley aquifer is 250,000 acre-feet per year. The storage capacity is estimated to be 14 million acre-feet, with saturated deposits as thick as 20,000 feet. However, the quality of the water is questionable, as much of this groundwater has high total dissolved solids.

7.1.1.3 YUM Sector

The YUM Sector Project corridor is located within the Colorado River basin and the Ogilby Valley and the Yuma Valley groundwater subbasins (CDWR 2016). The Ogilby Valley subbasin covers 209 square miles in southeastern Imperial County, California. It is bounded by the Peter Kane Mountains to the north, the Cargo Muchacho Mountains and Pilot Knob to the east, and the San Andreas fault to the southwest (CDWR 2004b). The Ogilby Valley subbasin contains Quaternary-age alluvium, which consists of unconsolidated gravel, sand, silt, and clay derived from the surrounding mountains. The Ogilby Valley subbasin is primarily recharged

from percolation of runoff from the surrounding landscape, and the natural recharge rate is estimated at 250 acre-feet per year. The storage capacity in the Ogilby Valley subbasin is estimated at 2.9 million acre-feet.

The Yuma Valley subbasin covers 5.9 square miles in southeastern Imperial County, California. It is bounded by the Chocolate and Picacho Mountains to the north and northeast, and the Colorado River to the south and east, and the Cargo Muchacho Mountains on the west. The Yuma Valley subbasin consists of varying ages of alluvial deposits; younger, unconsolidated Quaternary deposits overlay older, semi-consolidated Tertiary to Quaternary deposits (CDWR 2004c). It is primarily recharged from subsurface inflow from the Ogilby Groundwater Basin and surface runoff through alluvial deposits. Additionally, the basin would be recharged from seepage from the All American Canal and percolation of irrigation return flows. The recharge rate and storage capacity is estimated to be 400 and 4.6 million acre-feet per year, respectively.

7.1.2 Surface Water

The Clean Water Act (CWA) §303[d][1][A] requires that each state monitor surface waters and compile a “303 [d] List” of impaired streams and lakes, these are waters that do not meet established water quality standards. A description of the watersheds the project sectors are located in, their surface water drainages, and any waters listed as impaired are described in the following sections.

7.1.2.1 SDC Sector

The SDC Sector Project corridor is located in the Cottonwood-Tijuana watershed. This watershed covers approximately 1,750 square miles in the United States and Mexico, and both of the SDC Sector project segments are located within it. The area that lies within the United States is referred to as the Tijuana River Watershed Management Area and it encompasses 467 square miles. The major drainages within this watershed are located northwest (Cottonwood Creek) and south (tributary of the Tijuana river) of the project site (USGS 2012); however there are four smaller unnamed drainages that lie within the project area (EPA 2019e). The only water body listed as impaired in the SDC Sector is Cottonwood Creek, and the causes of impairment in 2016 were listed as high levels of indicator bacteria and selenium, and the sources for these contaminants are currently unknown (EPA 2019e).

7.1.2.2 ELC Sector

The ELC Sector Project corridor is located within the Salton Sea watershed. The Salton Sea watershed encompasses 8,360 square miles. The New and Alamo rivers are the main drainages within the watershed, and both of these rivers originate in Mexico and flow north to the Salton Sea. The New River flows through Mexicali and Calexico, California and is located adjacent to the ELC Sector Project corridor while the Alamo River flows to the east of Calexico and the Project segments. Both of these rivers carry runoff, municipal waste, industrial waste, and agricultural runoff. In addition to these rivers, the Imperial Valley agricultural drains carry water throughout the watershed (California Environmental Protection Agency [CalEPA] 2003).

All of the Imperial Valley drains that run through the project area are listed as impaired and there are six drains located adjacent to the project corridor on the western side of the Calexico POE. Sources of impairment for the Imperial Valley Drains include high levels of several pesticides

(chlordane, dichloro-diphenyl-trichloroethane [DDT], dieldrin, and toxaphene), polychlorinated biphenyl (PCB), sediment, and metals (selenium) (EPA 2019f). Agriculture is listed as the source of high levels of sediment found in the drains while an unknown source is listed for all of the other contaminants (EPA 2019f). There are no drains located on the eastern side of the Project corridor. Although the New River is not located directly adjacent to the Project corridor, it is located approximately 0.1 miles from the segments on the eastern side of Calexico. The New River was listed as impaired in 2016; the causes include high levels of numerous pesticides, pathogens, nutrients, metals, trash, and low levels of oxygen (EPA 2019g).

7.1.2.3 YUM Sector

The YUM Sector Project corridor is also located within the Salton Sea watershed. The Salton Sea watershed encompasses 8,360 square miles in Southern California. The New and Alamo Rivers are the main drainages within the watershed, and both of these rivers originate in Mexico and flow north to the Salton Sea. Both of these rivers carry runoff, municipal waste, industrial waste, and agricultural runoff. In addition to these rivers, the Imperial Valley agricultural drains carry water throughout the watershed (CalEPA 2003). The YUM Sector Project corridor is located outside of both of the major river drainages in the Salton Sea watershed. The All American Canal, the Alamo Canal, and the Colorado River are the drainages located closest to the YUM Sector Project corridor.

The Colorado River was listed as impaired in 2016, and the cause is listed as high levels of selenium (EPA 2019d). Multiple probable sources are listed for selenium in this waterbody and include agriculture, municipal point source discharge, on-site treatment systems, and sources outside state jurisdiction or borders (EPA 2019d).

7.1.3 Floodplains

A floodplain is the area adjacent to a river, creek, lake, stream, or other open waterway that is subject to flooding when there is a major rain event. Floodplains are further defined by the likelihood of a flood event. If an area is in the 100-year floodplain, there is a 1-in-100 chance in any given year that the area will flood. Federal Emergency Management Agency (FEMA) floodplain maps were reviewed to identify project locations within mapped floodplains for each project sector and are described below.

7.1.3.1 SDC Sector

Approximately 0.07 miles of wall segment SDC27A-02, located to the east of the Tecate POE, is located within the 100-year floodplain (FEMA 2019) (Figure 7-1).

7.1.3.2 ELC Sector

There are no wall segments within the ELC Sector Project corridor that lie within the 100-year floodplain (FEMA 2019) (Figure 7-2).

7.1.3.3 YUM Sector

Approximately 0.06 miles of wall segment YUM1, the easternmost segment in the YUM Sector, Project corridor is located adjacent to the Colorado River and is located within the 100-year floodplain (FEMA 2019) (Figure 7-3).

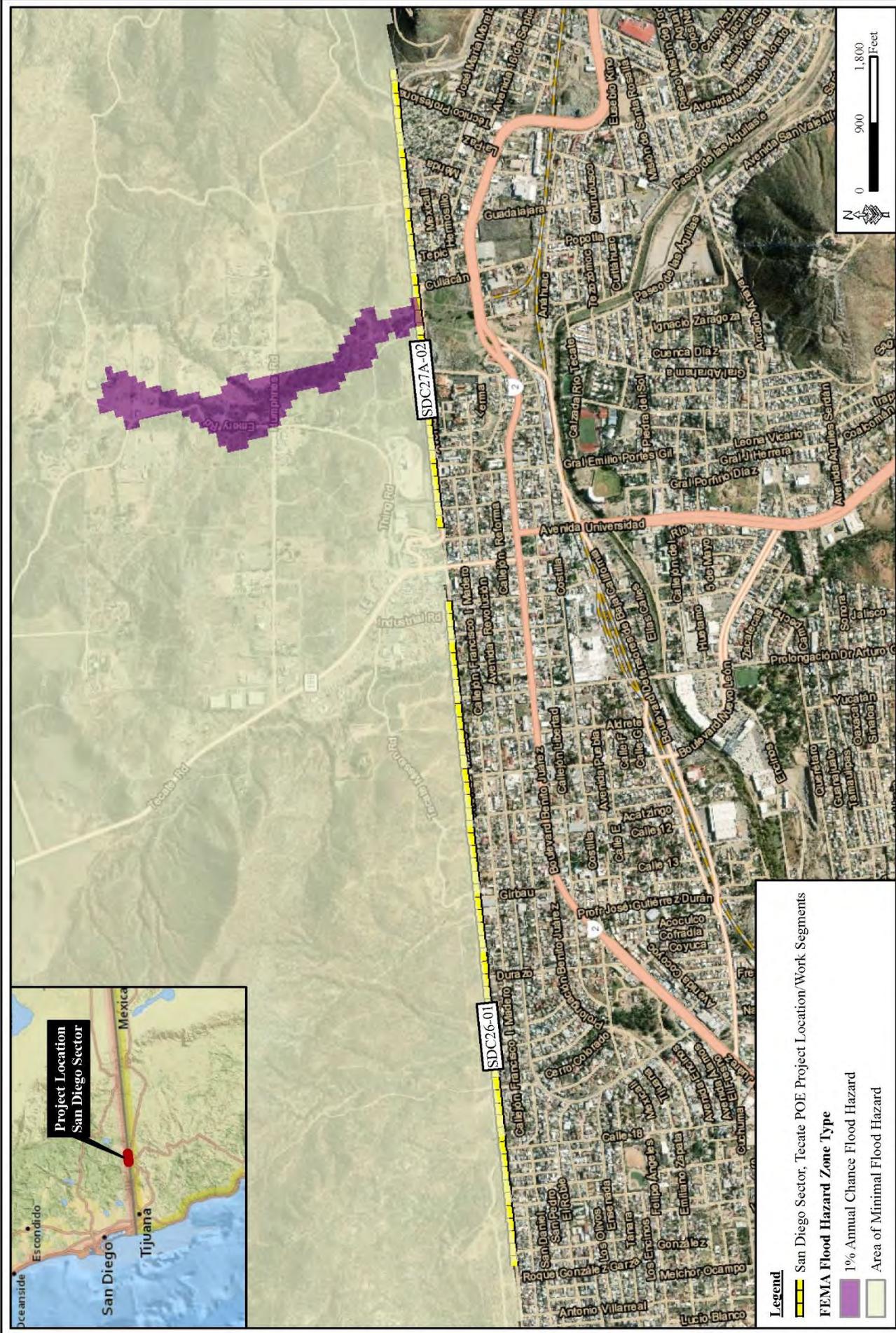


Figure 7-1. FEMA Flood Zone Map of San Diego Wall Replacement Project, Tecate POE

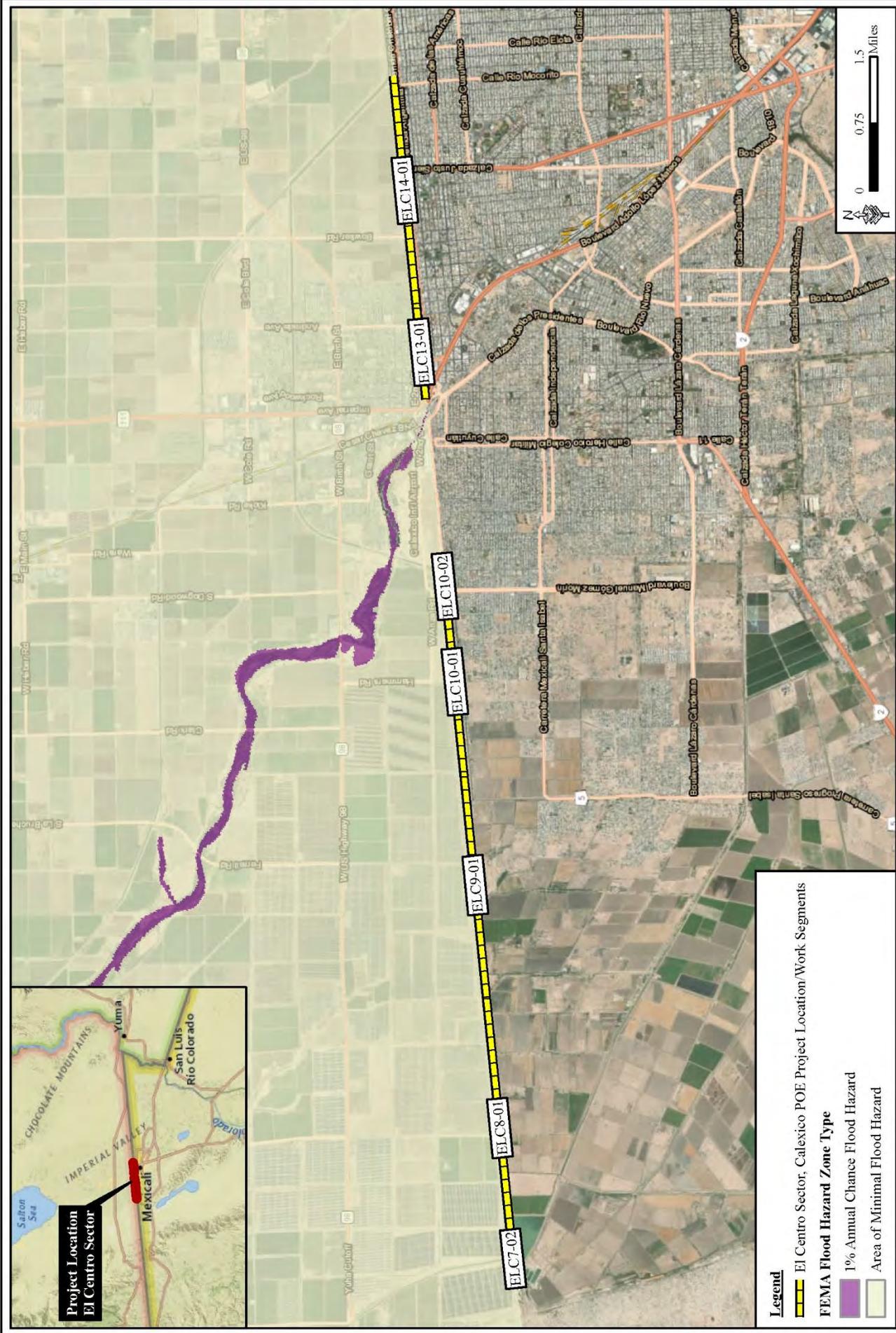


Figure 7-2. FEMA Flood Zone Map of El Centro Wall Replacement Project, Calexico POE



Figure 7-3. FEMA Flood Zone Map of Yuma Sector Project, Andrade POE

7.1.4 Waters of the U.S.

Waters of the United States (WUS) are defined as:

all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters: (1) which are or could be used by interstate or foreign travelers for recreational or other purposes; or (2) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (3) which are used or could be used for industrial purposes by industries in interstate commerce; all impoundments of waters otherwise defined as waters of the United States under this definition; tributaries of waters identified in paragraphs (s)(1) through (4) of this section; the territorial sea; and wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States (40 CFR 230.3[s]).

Surveys for potential WUS and wetlands were completed concurrently with the biological survey of the Project sectors in March 2019 and are described below.

7.1.4.1 SDC Sector

Seventeen potential WUS segments and no wetlands were found within the SDC Project Sector. These WUS are in the form of ephemeral drainages and total 0.49 acre. The locations of these potential WUS are shown in Figure 7-4 and 7-5 and detailed in Table 7-1.

7.1.4.2 ELC Sector

There were no wetlands or potential WUS found within the ELC Sector Project corridor.

7.1.4.3 YUM Sector

Three potential WUS segments and no wetlands were found within the Yuma Sector Project corridor. These WUS are in the form of ephemeral drainages and total 0.05 acre. The locations of these potential WUS are shown in Figure 7-6 and detailed in Table 7-1.



Figure 7-4. Waters of the U.S. Map - Segment SDC26-01, San Diego Sector, Tecate POE

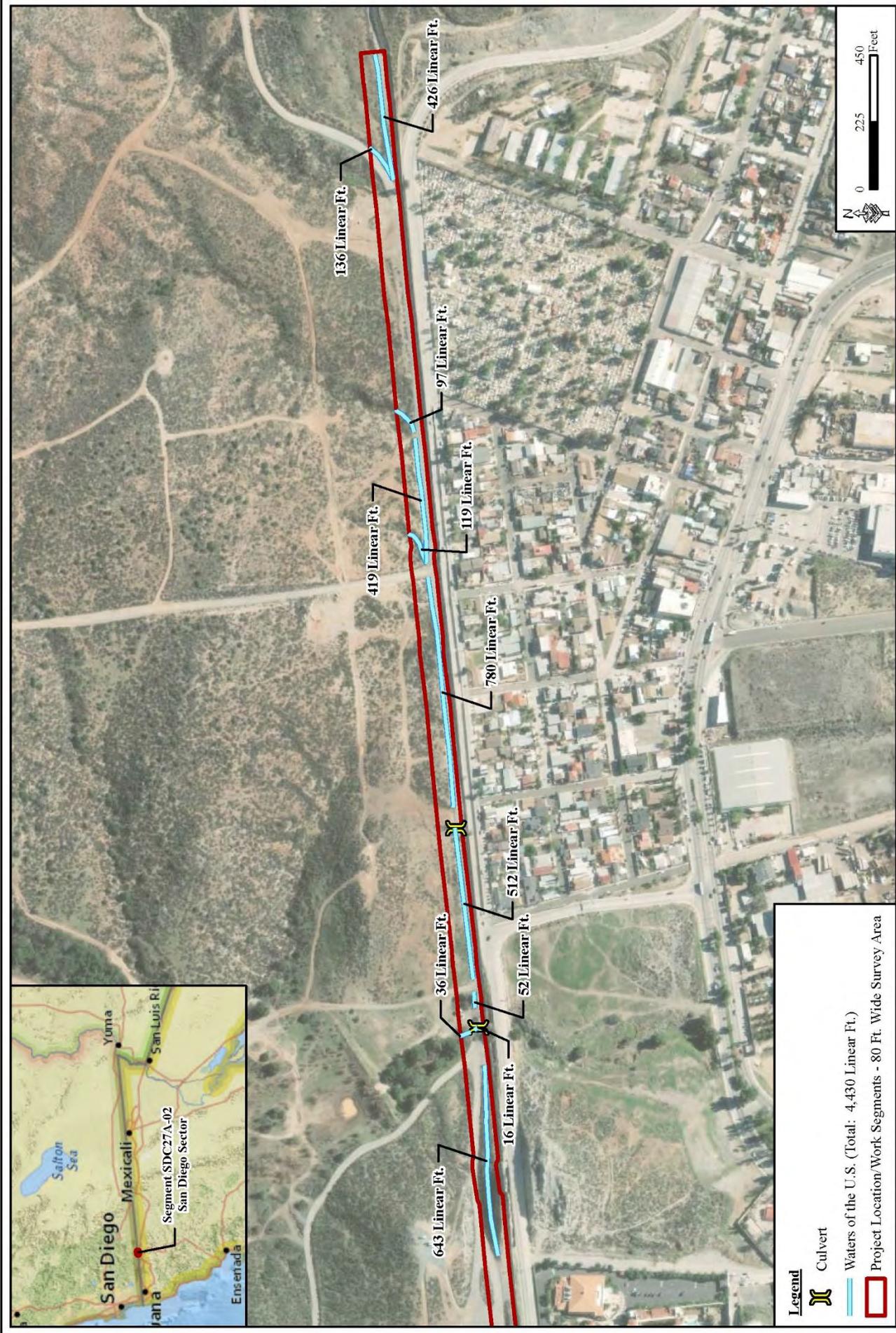


Figure 7-5. Waters of the U.S. Map - Segment SDC27A-02, San Diego Sector, Tecate POE

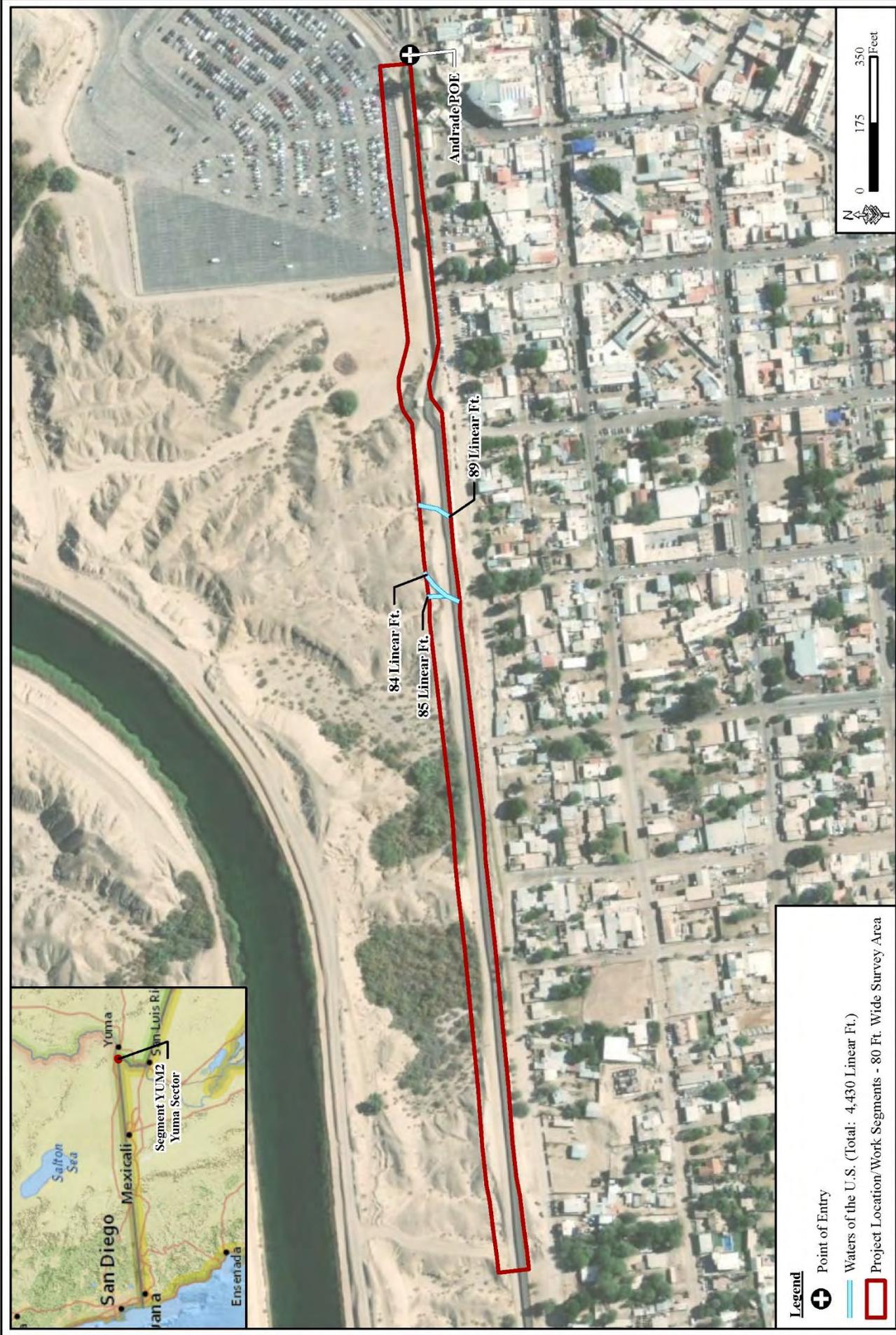


Figure 7-6. Waters of the U.S. Map - Segment YUM2, Yuma Sector,

Table 7-1. Potential Waters of the U.S. Observed During the SDC, ELC, and YUM Primary Fence Replacement Surveys

Survey Sector	Survey Segment	WUS Area (acre)
SDC	SDC26-01	.006
SDC	SDC26-01	.201
SDC	SDC26-01	.011
SDC	SDC26-01	.015
SDC	SDC26-01	.007
SDC	SDC26-01	.021
SDC	SDC27A-02	.029
SDC	SDC27A-02	.011
SDC	SDC27A-02	.026
SDC	SDC27A-02	.002
SDC	SDC27A-02	.011
SDC	SDC27A-02	.017
SDC	SDC27A-02	.008
SDC	SDC27A-02	.041
SDC	SDC27A-02	.028
SDC	SDC27A-02	.021
SDC	SDC27A-02	.034
YUM	YUM2	.018
YUM	YUM2	.019
YUM	YUM2	.019
Total		0.55

CBP 2019b

7.2 ENVIRONMENTAL CONSEQUENCES

CBP has applied the appropriate standards and guidelines associated with the CWA as the basis for evaluating potential environmental impacts.

7.2.1 Groundwater

7.2.1.1 SDC Sector

The Project will require water for dust suppression and construction during construction activities. It is anticipated that approximately 60.3 acre-feet of water will be required for construction of the wall in the SDC Sector. The water required for dust suppression and construction is minimal compared to the volume used annually for municipal, agricultural, and industrial purposes. However, due to the net water use exceeding the supply in the South Coast Hydrologic Region, the Project would have a minor impact on the region's groundwater. Uncontaminated 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 replacement will be minor due to the implementation of a SPCCP and the natural filtration of soils in the Project corridor.

7.2.1.2 ELC Sector

The Project will require water for dust suppression and construction during construction activities. It is anticipated that approximately 182 acre-feet of water will be required for construction of the wall in the ELC Sector. 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 Colorado River basin and the Imperial Valley subbasin, the Project will have a minor impact on the region's groundwater. The Imperial Valley aquifer has an estimated recharge of 250,000 acre-feet per year, so this project would potentially use less than 1 percent of the annual recharge water. Furthermore, the storage capacity of the Imperial Valley aquifer is estimated to be 14 million acre-feet. 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 minor due to the implementation of a SPCCP and the natural filtration of soils overlying the aquifers in the Project corridor.

7.2.1.3 YUM Sector

The Project will require water for dust suppression and construction during construction activities. It is anticipated that approximately 14 acre-feet of water will be required for construction of the wall in the YUM Sector. 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 Colorado River basin and the Ogilby Valley and Yuma Valley subbasins, the Project will have a minor impact on the region's groundwater. The Ogilby Valley subbasin has an estimated recharge of 250 acre-feet per year, while the Yuma Valley subbasin has an estimated recharge of 400 acre-feet per year. So, this project would potentially use approximately 2 percent of the annual recharge water from the combined annual recharge of these two subbasins. Furthermore, the combined storage capacity of the Ogilby Valley and Yuma Valley subbasins is estimated to be 7.5 million acre-feet. 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 minor 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

7.2.2.1 SDC Sector

Four small unnamed drainages are located within the project area and are located adjacent to the project segments, and could potentially be directly affected by the Project. Disturbance of the soil 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. Therefore, the Project may have minor impacts on surface water.

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

7.2.2.2 ELC Sector

Six Imperial Valley Drains and the New River are located directly adjacent to the project segments and could be directly affected by the Project. Disturbance of the soil associated with site preparation of the staging area and removal of the legacy fence could result in erosion and sedimentation in the adjacent desert. The Project may have minor impacts on surface water in the area. 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 would be the same as those described for the SDC Sector.

7.2.2.3 YUM Sector

The All American Canal, the Alamo Canal, and the Colorado River are located adjacent to the YUM Sector Project corridor and could be directly affected by the Project. Disturbance of the soil associated with site preparation of the staging area and removal of the legacy fence could result in erosion and sedimentation in the adjacent desert and result in minor impacts on surface water. 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 would be the same as those described for the SDC Sector.

7.2.3 Floodplains

7.2.3.1 SDC Sector

Approximately 0.07 miles of existing fence and road (SDC27A-02) are located within the 100-year floodplain within the SDC Sector Project corridor. The estimated impact footprint for the fence replacement will be approximately 10 feet wide; thus the impacts on the 100-year floodplain will total approximately 0.08 acre. The existing fence is a landing mat fence and is located perpendicular to the direction of water flow within the floodplain. The new bollard wall would follow the same alignment as the legacy fence while allowing water to flow more freely through the wall. Thus, impacts on the floodplain as a result of the Project are anticipated to be beneficial.

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.

7.2.3.2 ELC Sector

None of the segments in the ELC Sector Project corridor are located within the 100-year floodplain within the Project corridor. Therefore, there will be no impacts on floodplains in the area as a result of the Project.

7.2.3.3 YUM Sector

Approximately 0.06 miles of legacy fence and road (YUM1) are located within the 100-year floodplain within the YUM Sector Project corridor. The estimated impact footprint for the fence replacement will be approximately 10 feet wide, thus the impacts on the 100-year floodplain will total approximately 0.07 acre. The existing fence is a landing mat fence and is located perpendicular to the direction of water flow within the floodplain. The new bollard wall would follow the same alignment as the legacy fence while allowing water to flow more freely through the fence. Thus, the bollard wall would have a minor positive impact on the floodplain.

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.

7.2.4 Waters of the U.S.

7.2.4.1 SDC Sector

There are 17 potential WUS segments within the SDC Project corridor. These WUS are in the form of ephemeral drainages and total 0.49 acres. While the new bollard wall would follow the same alignment as the legacy fence, it will allow water to flow more freely through the fence. Low-water crossings will be constructed to further aid the flow of water through the wall. Construction of the new bollard wall and low-water crossings could have a permanent adverse impact on up to 0.49 acres as a result of fill material being placed in WUS. During construction there is a potential for sediment to enter WUS and possibly create water quality issues downstream. Impervious surfaces would redirect surface flows which could possibly result in increased sedimentation. Thus, impacts on WUS as a result of the Project could be moderate and adverse. 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 moderate.

7.2.4.2 ELC Sector

There are no WUS segments within the ELC Sector Project corridor; therefore there will be no impacts on WUS in the area as a result of the Project.

7.2.4.3 YUM Sector

There are three potential WUS segments within the YUM Sector Project corridor in the form of ephemeral drainages and these total 0.05 acre. While the new bollard wall will follow the same alignment as the legacy fence, it will allow water to flow more freely through the fence. Low-water crossings will be constructed to further aid the flow of water through the wall. Construction of the new bollard wall and low-water crossings could have a permanent adverse impact on up to 0.05 acre as a result of fill material being placed in WUS. During construction

there is a potential for sediment to enter WUS and possibly create water quality issues downstream. Impervious surfaces would redirect surface flows which could possibly result in increased sedimentation. Thus, impacts on WUS as a result of the Project could be moderate and adverse. 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 moderate.

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

8.1 AFFECTED ENVIRONMENT

8.1.1 Vegetation

8.1.1.1 SDC Sector

The SDC Sector Study corridor consists of areas with moderately diverse vegetation that have also been previously disturbed. Both of the segments in the SDC Sector occur within the Lower Colorado River Valley Subdivision Sonoran Desertscrub, as described by Brown and Lowe (1994). A biological survey of the Study corridor was conducted by GSRC in March 2019. Vegetation is present north of the Project corridor adjacent to the access road that runs parallel to the U.S./Mexico border in an east to west direction.

Segment SDC26-01, located on the western side of the Tecate POE, is composed of foothills with boulders interspersed throughout (Photograph 8-1). This segment is located near the eastern boundary of the San Diego County's South County Multiple Species Conservation Program Subarea Plan (Subarea Plan). Segment SDC27A-02, located on the eastern side of the POE, is located on a north-facing slope that has been actively managed to prevent erosion (Photograph 8-2). The vegetation in the SDC Sector Study corridor consists of California buckwheat (*Eriogonum fasciculatum*) and California sagebrush (*Artemisia californica*) shrub community (CBP 2019a). A total of 80 plant species were encountered in the SDC Sector Study corridor; a complete list of plant species identified during the biological survey can be found in Table 8-1.



Photograph 8-1. West end of Segment SDC26-01 facing east.



Photograph 8-2. West end of Segment SDC27A-02 facing east.

Table 8-1. Vegetation Observed During the SDC, ELC, and YUM Sectors Primary Fence Replacement Project Biological Resources Surveys

Common Name	Scientific Name	Survey Sector
African daisy	<i>Osteospermum</i> sp.	SDC
Annual fescue	<i>Festuca myuros</i>	SDC
Annual meadow grass	<i>Poa annua</i>	SDC
Arrowweed	<i>Pluchea sericea</i>	YUM, ELC
Beavertail cactus	<i>Opuntia basilaris</i>	YUM
Bermuda grass	<i>Cynodon dactylon</i>	YUM, ELC
Big saltbush	<i>Atriplex lentiformis</i>	YUM
Bird's foot cliffbrake	<i>Pellaea mucronata</i>	SDC
Bitter dock	<i>Rumex obtusifolius</i>	SDC
Black mustard	<i>Brassica nigra</i>	ELC, SDC
Black sage	<i>Salvia mellifera</i>	SDC
Blue dicks	<i>Dichelostemma capitatum</i>	SDC
Blue palo verde	<i>Parkinsonia florida</i>	YUM
Blue rye	<i>Elymus elymoides</i>	ELC
Brittlebush	<i>Encelia farinosa</i>	SDC
Brown-eyed primrose	<i>Chylismia claviformis</i>	YUM
Bur clover	<i>Medicago polymorpha</i>	SDC
Bushrue	<i>Cneoridium dumosum</i>	SDC

Common Name	Scientific Name	Survey Sector
California buckwheat	<i>Eriogonum fasciculatum</i>	SDC
California cholla	<i>Cylindropuntia californica</i>	SDC
California dodder	<i>Cuscuta californica</i>	SDC
California live oak	<i>Quercus agrifolia</i>	SDC
California matchweed	<i>Gutierrezia californica</i>	SDC
California poppy	<i>Eschscholzia californica</i>	SDC
California sagebrush	<i>Artemisia californica</i>	SDC
Camissoniopsis	<i>Camissoniopsis</i> sp.	SDC
Castor bean	<i>Ricinus communis</i>	SDC
Cattle saltbush	<i>Atriplex polycarpa</i>	YUM
Chalk dudleya	<i>Dudleya pulverulenta</i>	SDC
Chaparral yucca	<i>Hesperoyucca whipplei</i>	SDC
Cheeseweed	<i>Malva parviflora</i>	ELC
Chia	<i>Salvia columbariae</i>	SDC
Chile lotus	<i>Acmispon wrangelianus</i>	SDC
Chuckwalla's delight	<i>Bebbia juncea</i>	YUM
Coastal cholla	<i>Cylindropuntia prolifera</i>	SDC
Coastal pricklypear	<i>Opuntia littoralis</i>	SDC
Common sowthistle	<i>Sonchus oleraceus</i>	ELC
Compact brome	<i>Bromus madritensis</i>	SDC
Coyote brush	<i>Baccharis pilularis</i>	SDC
Creosote bush	<i>Larrea tridentata</i>	YUM
Cudweed	<i>Logfia</i> sp.	SDC
Deerweed	<i>Acmispon glaber</i>	SDC
Desert fan palm	<i>Washingtonia filifera</i>	YUM
Desert star	<i>Monoptilon bellioides</i>	YUM
Desert sand verbena	<i>Abronia villosa</i>	YUM
Desert wishbone bush	<i>Mirabilis laevis</i> var. <i>crassifolia</i>	SDC
Distant heliotrope	<i>Phacelia distans</i>	SDC
Dwarf coastweed	<i>Amblyopappus pusillus</i>	SDC
Elderberry	<i>Sambucus nigra</i>	SDC
Eriogonum	<i>Eriogonum</i> sp.	SDC
Eriophyllum	<i>Eriophyllum</i> sp.	SDC
Fanleaf crinklemat	<i>Tiquilia plicata</i>	YUM
Foothill needlegrass	<i>Stipa lepida</i>	SDC
Forget-me-not	<i>Cryptantha</i> sp.	SDC
Fourwing saltbush	<i>Atriplex canescens</i>	YUM
Frémont's dalea	<i>Psoralea fremontii</i>	YUM
Giant cane	<i>Arundo donax</i>	YUM
Goodding's black willow	<i>Salix gooddingii</i>	SDC
Hairy desert sunflower	<i>Geraea canescens</i>	YUM

Common Name	Scientific Name	Survey Sector
Henbit dead-nettle	<i>Lamium amplexicaule</i>	SDC
Laurel sumac	<i>Malosma laurina</i>	SDC
London rocket	<i>Sisymbrium irio</i>	YUM, ELC, SDC
Longbeak stork's bill	<i>Erodium botrys</i>	SDC
Manroot	<i>Marah macrocarpus</i>	SDC
Mexican fan palm	<i>Washingtonia robusta</i>	ELC, SDC
Mexican palo verde	<i>Parkinsonia aculeata</i>	YUM
Mexican tea	<i>Dysphania ambrosioides</i>	ELC
Mojave sea-blite	<i>Suaeda nigra</i>	YUM
Mojave yucca	<i>Yucca schidigera</i>	SDC
Morning glory	<i>Calystegia</i> sp.	ELC
Mule fat	<i>Baccharis salicifolia</i>	SDC
Needle goldfields	<i>Lasthenia gracilis</i>	SDC
Notch-leaved phacelia	<i>Phacelia crenulata</i>	YUM
Oak	<i>Quercus</i> spp.	SDC
Palmer's penstemon	<i>Penstemon palmeri</i>	SDC
Phacelia	<i>Phacelia</i> sp.	SDC
Ragweed	<i>Ambrosia polystachya</i>	YUM
Rattlesnake spurge	<i>Chamaesyce polycarpa</i>	ELC
Red maids	<i>Calandrinia ciliata</i>	SDC
Redroot cryptantha	<i>Cryptantha micrantha</i>	YUM
Red sandspurry	<i>Spergularia rubra</i>	ELC
Redstem filaree	<i>Erodium cicutarium</i>	SDC
Russian thistle	<i>Salsola australis</i>	SDC
Sahara mustard	<i>Brassica tournefortii</i>	YUM, SDC
Saltcedar	<i>Tamarix ramosissima</i>	YUM, ELC, SDC
Salt heliotrope	<i>Heliotropium curassavicum</i>	ELC
San Diego sunflower	<i>Bahiopsis laciniata</i>	SDC
Sand pygmyweed	<i>Crassula connata</i>	SDC
Screwbean mesquite	<i>Prosopis pubescens</i>	YUM
Sedge	<i>Carex</i> sp.	SDC
Shining pepperweed	<i>Lepidium nitidum</i>	SDC
Sleeping combseed	<i>Pectocarya penicillata</i>	SDC
Slender oat	<i>Avena barbata</i>	ELC, SDC
Smooth mustard	<i>Sisymbrium erysimoides</i>	SDC
Snapdragon penstemon	<i>Keckiella antirrhinoides</i>	SDC
Spanish needles	<i>Palafoxia linearis</i>	YUM
Spear thistle	<i>Cirsium vulgare</i>	SDC
Spiny redberry	<i>Rhamnus crocea</i>	SDC
Stiff-haired lotus	<i>Acmispon strigosus</i>	SDC
Stinging lupine	<i>Lupinus hirsutissimus</i>	SDC
Stinging nettle	<i>Urtica dioica</i>	SDC

Common Name	Scientific Name	Survey Sector
Tasmanian bluegum	<i>Eucalyptus globulus</i>	SDC
Thickleaf yerba santa	<i>Eriodictyon crassifolium</i>	SDC
Tree tobacco	<i>Nicotiana glauca</i>	SDC
Velvet mesquite	<i>Prosopis velutina</i>	YUM
Wall barley	<i>Hordeum murinum</i>	SDC
Wild cucumber	<i>Marah macrocarpus</i>	SDC
Wild oat	<i>Avena fatua</i>	SDC
Wild radish	<i>Raphanus sativus</i>	SDC
White horehound	<i>Marrubium vulgare</i>	SDC
White mustard	<i>Brassica alba</i>	SDC
White sage	<i>Salvia apiana</i>	SDC
Yellow pincushion	<i>Chaenactis glabriuscula</i>	SDC

8.1.1.2 ELC Sector

The ELC Sector Study corridor primarily consists of areas that have been heavily disturbed with little to no vegetative cover present. The ELC Study corridor falls within the Lower Colorado River Valley Subdivision Sonoran Desertscrub, as described by Brown and Lowe (1994). A biological survey of the Study corridor was conducted by GSRC in March 2019. Sparse vegetation is present north of the Project corridor adjacent to the access road that runs parallel to the U.S./Mexico border in an east to west direction.

The five segments located on the western side of the Calexico POE are heavily disturbed by urbanization and agricultural practices (Photograph 8-3) while the segments on the eastern side of the POE are devoid of vegetation except for a few disturbance-adapted species, and is a mix of barren land, agriculture fields, and urban development (Photograph 8-4) (CBP 2019a). The limited vegetation present within the ELC Sector Study corridor has similar composition on both sides of the Calexico POE. Most vegetation consists of non-native species such as mustard (*Brassica* spp.), London rocket (*Sisymbrium irio*), and saltcedar (*Tamarix ramosissima*). A total of 15 plant species were encountered in the ELC Sector Study corridor. A complete list of the plant species identified during the biological survey can be found in Table 8-1.



Photograph 8-3. West end of Segment ELC13-01 facing east.



Photograph 8-4. West end of Segment ELC7-02 facing east.

8.1.1.3 YUM Sector

The YUM Sector Study corridor consists primarily of areas that have been previously disturbed with little to no vegetative cover. Both of the segments in the YUM Sector occur within the Lower Colorado River Valley Subdivision Sonoran Desertscrub, as described by Brown and Lowe (1994). A biological survey of the Study corridor was conducted by GSRC in March 2019. Desert vegetation is present north of the Project corridor adjacent to the access road that runs parallel to the U.S./Mexico border in an east to west direction. Segment YUM2, on the western side of the Andrade POE, is primarily composed of foothills and sandy washes, and the vegetation in this area is primarily common desert annuals, creosote (*Larrea tridentata*), and non-native species (Photograph 8-5) (CBP 2019a). Segment YUM1, on the eastern side of Andrade POE, is primarily flat and contains Mojave sea blite (*Suaeda nigra*) and saltbush (*Atriplex* spp.) (Photograph 8-6) (CBP 2019a). A total of 28 plant species were encountered in the YUM Sector Study corridor; a complete list of the plant species identified during the biological survey can be found in Table 8-1.



Photograph 8-5. East end of Segment YUM2 facing west.



Photograph 8-6. East end of Segment YUM1 facing west.

8.1.2 Wildlife and Aquatic Resources

8.1.2.1 SDC Sector

Wildlife within the SDC Sector 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 migratory neotropical birds. During the March 2019 biological survey, a total of 38 species of mammals, reptiles, and birds were identified either through direct observations or through observations of signs such as vocalizations, tracks, scat, and burrows (Table 8-2) (CBP 2019a). No federally listed species were observed. No natural aquatic habitats are located within the Project corridor.

8.1.2.2 ELC Sector

Wildlife within the ELC Sector 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 migratory neotropical birds. During the March 2019 biological survey, a total of 26 species of mammals, reptiles, and birds were identified either through direct observations or through observations of signs such as vocalizations, tracks, scat, and burrows (Table 8-2) (CBP 2019a). No federally listed species were observed. No natural aquatic habitats are located within the Project corridor.

8.1.2.3 YUM Sector

Wildlife within the YUM Sector Project corridor is typical of those associated with the Lower Colorado Subdivision Sonoran Desertscrub communities. During the January 2019 biological survey, a total of 20 species of mammals, reptiles, and birds were identified either through direct

observations or through observations of signs such as vocalizations, tracks, scat, and burrows (Table 8-2) (CBP 2019a). No federally listed species were observed. No natural aquatic habitats are located within the Project corridor.

Table 8-2. Wildlife Observed During the SCE, ELC, and YUM Sectors Primary Fence Replacement Project Biological Resources Surveys

Common Name	Scientific Name	Survey Sector
Mammals		
Black-tailed jackrabbit	<i>Lepus californicus</i>	SDC
California ground squirrel	<i>Otospermophilus beecheyi</i>	SDC
Desert cottontail	<i>Syvilagus audubonii</i>	YUM, SDC
Virginia opossum	<i>Didelphis virginiana</i>	SDC
Reptiles		
Side-blotched lizard	<i>Uta stansburiana</i>	YUM, ELC
Coronado skink	<i>Plestiodon skiltonianus interparietalis</i>	SDC
Butterflies and Moths		
Ceanothus silkmoth	<i>Hyalophora euryalus</i>	SDC
Painted lady	<i>Vanessa cardui</i>	YUM, ELC, SDC
Queen butterfly	<i>Danaus gilippus</i>	YUM
White-lined sphinx	<i>Hyles lineata</i>	YUM, SDC
Birds		
American coot	<i>Fulica americana</i>	YUM, ELC
American crow	<i>Corvus brachyrhynchos</i>	SDC
Anna's hummingbird	<i>Calypte anna</i>	YUM, SDC
Bell's sparrow	<i>Artemisiospiza belli</i>	SDC
Bewick's wren	<i>Thryomanes bewickii</i>	SDC
Black-necked stilt	<i>Himantopus mexicanus</i>	ELC
Black phoebe	<i>Sayornis nigricans</i>	ELC, SDC
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	YUM
Bushtit	<i>Psaltriparus minimus</i>	SDC
California scrub jay	<i>Aphelocoma californica</i>	SDC
California towhee	<i>Melospiza crissalis</i>	SDC
Cassin's kingbird	<i>Tyrannus vociferans</i>	SDC
Cattle egret	<i>Bubulcus ibis</i>	ELC
Cedar waxwing	<i>Bombycilla cedrorum</i>	SDC
Common raven	<i>Corvus corax</i>	SDC
Dark-eyed junco	<i>Junco hyemalis</i>	SDC
Double-crested cormorant	<i>Phalacrocorax auritus</i>	ELC
Eurasian collared dove	<i>Streptopelia decaocto</i>	YUM, ELC, SDC
Great blue heron	<i>Ardea herodias</i>	ELC
Great egret	<i>Ardea alba</i>	ELC
Greater/lesser yellowlegs	<i>Tringa sp.</i>	ELC
Great-tailed grackle	<i>Quiscalus mexicanus</i>	ELC

Common Name	Scientific Name	Survey Sector
Gull sp.	<i>Larus sp.</i>	ELC
House finch	<i>Haemorhous mexicanus</i>	YUM, SDC
House sparrow	<i>Passer domesticus</i>	YUM, ELC, SDC
Killdeer	<i>Charadrius vociferous</i>	ELC
Least sandpiper	<i>Calidris minutilla</i>	ELC
Lesser scaup	<i>Aythya affinis</i>	YUM, ELC
Lincoln's sparrow	<i>Melospiza lincolnii</i>	SDC
Long-billed dowitcher	<i>Limnodromus scolopaceus</i>	ELC
Merlin	<i>Falco columbarius</i>	SDC
Mourning dove	<i>Streptopelia decipiens</i>	YUM, ELC, SDC
Northern mockingbird	<i>Mimus polyglottos</i>	YUM, SDC
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	YUM, ELC
Orange-crowned warbler	<i>Oreothlypis celata</i>	SDC
Osprey	<i>Pandion haliaetus</i>	ELC
Redhead	<i>Aythya americana</i>	ELC
Red-tailed hawk	<i>Buteo jamaicensis</i>	SDC
Red-winged blackbird	<i>Agelaius phoeniceus</i>	YUM
Rock pigeon	<i>Columba livia</i>	YUM, ELC, SDC
Rock wren	<i>Salpinctes obsoletus</i>	SDC
Ruby-crowned kinglet	<i>Regulus calendula</i>	SDC
Ruddy duck	<i>Oxyura jamaicensis</i>	ELC
Rufous-crowned sparrow	<i>Aimophila ruficeps</i>	SDC
Say's phoebe	<i>Sayornis saya</i>	SDC
Snowy egret	<i>Egretta thula</i>	ELC
Turkey vulture	<i>Cathartes aura</i>	YUM, SDC
Verdin	<i>Auriparus flaviceps</i>	YUM
Western bluebird	<i>Sialia mexicana</i>	SDC
Western meadowlark	<i>Sturnella neglecta</i>	ELC
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	YUM, SDC
Yellow-rumped warbler	<i>Setophaga coronata</i>	SDC

8.1.3 Federally Protected Species and Critical Habitat

8.1.3.1 SDC Sector

A total of seven federally listed species have the potential to occur within the SDC Sector Project corridor in San Diego County, California (USFWS 2018). The federally protected species, their status, and their likelihood of occurring in the Project corridor are provided in Table 8-3. None of the listed species are likely to occur within the SDC Sector Project corridor due to unsuitable 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 the Potential to Occur Within the Project corridor, Their Status, and Critical Habitat Designation

Common Name	Scientific Name	Status	Critical Habitat	County	Survey Sector	Potential to Occur in Study Corridor
Amphibians						
Arroyo toad	<i>Anaxyrus californicus</i>	Endangered	Yes (outside Study corridor)	San Diego	SDC	None; no suitable habitat present within the Study corridor
Insects						
Quino checkerspot butterfly	<i>Euphydryas editha quino</i>	Endangered	Yes (outside Study corridor)	San Diego	SDC	None; plants that larval forms feed on are not present within the Study corridor
Flowering plants						
San Diego thornmint	<i>Acanthomintha ilicifolia</i>	Threatened	Yes (outside Study corridor)	San Diego	SDC	None; no suitable habitat present within the Study corridor
Birds						
California condor	<i>Gymnopys californianus</i>	Endangered	Yes (outside Study corridor)	San Diego	SDC	None; no suitable habitat present within the Study corridor
Coastal California gnatcatcher	<i>Polioptila californica californica</i>	Threatened	Yes (outside Study corridor)	San Diego	SDC	Unlikely; species range falls outside Study corridor.
Least Bell's vireo	<i>Vireo bellii psillus</i>	Endangered	Yes (outside Study corridor)	San Diego	SDC	Unlikely; this species favors riparian habitat dominated by willow and cottonwood – of which none were found
Southwestern willow fly catcher	<i>Empidonax traillii extimus</i>	Endangered	Yes (outside Study corridor)	San Diego	SDC	None; no suitable habitat present within the Study corridor
Yuma Ridgeway's rail	<i>Rallus obsoletus yumanensis</i>	Endangered	None	Imperial	ELC, YUM	None; no suitable habitat present within the Study corridor
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	Proposed	Yes (Proposed)	Imperial	YUM	None; no suitable habitat present within the Study corridor

CBP 2019a. Legend: E – Endangered, T – Threatened, C – Candidate.

8.1.3.2 ELC Sector

One federally listed species has the potential to occur within the ELC Sector Project corridor in Imperial County, California (USFWS 2018): the Yuma Ridgway's rail (*Rallus obsoletus yumanensis*). The Yuma Ridgway's rail status and likelihood of occurring in the Project corridor are provided in Table 8-3.

8.1.3.3 YUM Sector

Two federally listed species have the potential to occur within the YUM Sector Project corridor in Imperial County, California (USFWS 2018). The federally protected species, their status, and their likelihood of occurring in the Project corridor are provided in Table 8-3. None of the listed species are likely to occur within the Project corridor due to inadequate habitat. The Project corridor near the Andrade POE is located within proposed Critical Habitat for the western yellow-billed cuckoo (Figure 8-1). Protected species and habitats with the potential to occur in or adjacent to the Project corridor are discussed in the following sections.

Arroyo Toad

In 1994, USFWS listed the arroyo toad (*Anaxyrus californicus*) as endangered due to the disappearance of the species from over 75 percent of its historical range (Madden-Smith et al. 2005). Arroyo toads are habitat specialists that are typically associated with riparian areas within low-gradient streams and rivers with braided channels, extensive terracing, and fine sediment that experiences periodic turnover from flooding. Arroyo toads require shallow, slow-moving pools within suitable riparian areas for breeding and oviposition (Madden-Smith et al. 2005). As tadpoles, arroyo toads feed on loose organic material such as algae, bacteria, and diatoms within the interstitial spaces of breeding pool substrate (USFWS 2014a). Newly metamorphosed arroyo toads and juveniles feed predominately on ants, and adult arroyo toads likely feed on a variety of arthropods in addition to ants (USFWS 2014a).

Historically, the arroyo toad inhabited costal drainages throughout Southern California and northern Baja California, Mexico (USFWS 2014a). Predominant threats to the arroyo toad include habitat loss and degradation caused by urbanization, agricultural development, mining, and the alteration of stream flow regimes and conditions through the damming of many watersheds within their historical range (Mitrovich et al. 2011). Additionally, the introduction of non-native predators including bullfrogs (*Lithobates catesbeiana*), African clawed frogs (*Xenopus laevis*), and fish such as large-mouth bass (*Micropterus salmoides*) and sunfish (*Lepomis* spp.) pose a serious risk to arroyo toad populations.

No arroyo toads were found within the Study corridor near the Tecate POE in the SDC Sector, and the Study corridor is not located within designated Critical Habitat for arroyo toad. It has been determined the project will not impact the arroyo toad due to lack of suitable habitat.

Quino Checkerspot Butterfly

The Quino checkerspot butterfly (*Euphydryas editha quino*) was federally listed as an endangered species in 1997 by the USFWS (USFWS 2009a). The flight season for the Quino checkerspot butterfly is generally from 15 March to 15 April but occasionally extends into May, depending on environmental conditions of the given year. Adults could be observed during the spring flight season, while larvae could potentially be found in a diapausal stage.



- Legend**
-  Yuma Sector, Andrade POE Project Location/Work Segments
 -  Yellow-billed Cuckoo Critical Habitat



Figure 8-1. Western Yellow-Billed Cuckoo Proposed Critical Habitat

This stage of suspended development occurs during late spring, summer, and early fall months when their food plants (purple owl's clover [*Castilleja exserta*] and dotseed plantain [*Plantago erecta*]) are not in growth (Mattoni et al. 1997). Diapausal larvae or post-diapausal larvae are most likely to be found on the branches of or in the leaf litter below California buckwheat. They have also been observed on ladies' tobacco (*Pseudognaphalium californicum*) and fiddleneck species (*Amsinckia* spp.) (Pratt and Emmel 2010).

The species is a member of the brush-footed butterfly family (Nymphalidae), and was once widespread throughout coastal Southern California and Baja California, Mexico, with populations at many localities in Los Angeles, Orange, Riverside, and San Diego counties. Today, the species is known only in a small number of locations in San Diego County, Riverside County, and Baja California (Emmel and Emmel 1973; Brown et al. 1992). The result is a highly fragmented population that is susceptible to local extinction events.

No Quino checkerspot butterflies were found within the Study corridor near the Tecate POE in the SDC Sector, and the Study corridor is not located within designated Critical Habitat for Quino checkerspot butterflies. Due to the lack of suitable habitat in the Study corridor, the project will have no effect on the Quino checkerspot butterfly.

San Diego Thornmint

San Diego thornmint (*Acanthomintha ilicifolia*) is a small herbaceous annual in the mint family that grows on soil formations known as clay lenses in San Diego County (USFWS 2009a). San Diego thornmint grows in a range of plant communities including chaparral, coastal sage scrub, and perennial grasslands. Within these communities, the species will grow in open areas on heavy clay soils, typically on south- or west-facing slopes (USFWS 2009b). USFWS listed San Diego thornmint as a threatened species in 1998 (USFWS 2009b). San Diego thornmint has experienced critical population declines due to human development, fragmentation, and disturbance.

The species has not been found within the surveyed portion of the SDC Sector Study corridor and is not likely to be found due to the lack of clay lenses or heavy clay soils in addition to the occurrence of steep, north facing slopes that characterize the Study corridor. Furthermore, the Study corridor is outside of the designated Critical Habitat for this species. Due to the lack of suitable habitat, the project will have no effect on San Diego thornmint.

California Condor

The California condor (*Gymnogyps californianus*) was first listed as endangered by the Endangered Species Preservation Act of 1966 in the year 1967 (USFWS 2013a). With wingspans up to 9.5 feet and weighing up to 24 pounds, California condors are one of the largest birds on earth (USFWS 2013a). California condors nest in cavities either along rock crevices or hollows found in giant sequoia trees (*Sequoiadendron giganteum*) or other large conifer species (USFWS 2013a). A limiting factor of California condor expansion is the availability of foraging habitat such as open grasslands and oak savannas that have stable populations of ungulates (USFWS 2013a). Furthermore, California condors require large amounts of habitat to forage, but unfortunately these habitat types are scarce in large contiguous patches. Due to the California condor's nesting and foraging requirements, it is very unlikely that these birds would

be found near the Tecate POE, and there were no sightings of California condors during pedestrian surveys. Due to the lack of suitable habitat, the project will have no effect on California condor.

Coastal California Gnatcatcher

The coastal California gnatcatcher (*Poliophtila californica californica*) was first listed as threatened in March of 1993 (USFWS 2010). This species of gnatcatcher is found in the Pacific coastal regions of Southwest California as well as the northwestern portion of Baja California, Mexico (USFWS 2010). Habitat preferences include coastal scrub vegetation for breeding, but coastal California gnatcatchers can also be found in succulent scrub and sage scrub communities (USFWS 2010). Previously, this species was deemed common locally, but their numbers have dropped largely due to the reduction of coastal scrub habitat for urban and agricultural purposes. The coastal scrub community favored by the coastal California gnatcatcher is present at this location; however, no coastal California gnatcatchers were found during pedestrian surveys. Although there is Critical Habitat designated for this species, it falls outside of the Study corridor. The nearest designated Critical Habitat unit is located approximately 12 miles northwest and the current known range of the coastal California gnatcatcher is located approximately 4 miles west of the Study corridor (CNDDB 2019). Due to the project occurring outside the known range of the species, the project is not likely to have an effect on the coastal California gnatcatcher.

Least Bell's Vireo

The least Bell's vireo (*Vireo bellii pusillus*) was first listed as federally endangered in 1986 (USFWS 2006). This species is found throughout Southern California and northern Baja California, Mexico, but it is estimated that a little over half of the extant population is located in San Diego, California (USFWS 2006). A primary need of least Bell's vireo is the availability of riparian habitat. Reduction in riparian habitat for agriculture and other anthropogenic uses has left preferred habitat fragmented or completely lost. Least Bell's vireo was not found during pedestrian surveys of the Study corridor in the SDC Sector segments. Although a small amount of riparian habitat is located within the SDC Sector, it is unlikely that least bell's vireo would be found within the SDC Project Sector; this riparian habitat does not provide the dense shrub cover and diverse canopy that this species prefers (Kus 2002). Due to the lack of suitable habitat, the project will have no effect on least Bell's vireo.

Southwestern Willow Flycatcher

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a federally listed endangered species (USFWS 1995) with designated Critical Habitat (USFWS 2013b). This species is migratory and found in riparian habitats from southern Nevada and Utah, southwestern Colorado, Arizona, New Mexico, and Southern California, to extreme western Texas (USFWS 2002). The southwestern willow flycatcher is a riparian obligate species and uses a variety of riparian habitats for breeding in elevations ranging from sea level to 8,500 feet. At lower elevations southwestern willow flycatchers prefer 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). Migratory southwestern willow flycatchers can be found in riparian habitat that is unsuitable for breeding, and these areas are critical for their survival (USFWS 2002).

There is a small amount of riparian vegetation present within or immediately adjacent to the Study corridor in the SDC Sector. However, no slow-moving or standing water is present within or adjacent to the Study corridor. In addition, no southwestern willow flycatchers were observed during the biological surveys conducted within the Study corridor. The Study corridor is not located within designated Critical Habitat for southwestern willow flycatcher. Due to the lack of suitable habitat, the project will have no effect on southwestern willow flycatcher.

Yuma Ridgway's Rail

The Yuma Ridgway's rail (*Rallus obsoletus yumanensis*) is a federally listed endangered species (USFWS 1967) with no Critical Habitat. The Yuma Ridgway's rail is a large marsh bird, 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 water or marsh habitats in the southwestern United States from southern Nevada to southern Arizona and California (Eddleman and Conway 2018). The U.S. population has ranged in size from 50 to 1,076 individuals between 1969 and 2008 (USFWS 2009c). 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 that is typically taller than 6 feet tall. There is sparse riparian vegetation present within or immediately adjacent to the Study corridor in ELC and YUM sectors. However, the small, isolated patches of giant cane (*Arundo donax*) found within the Study corridor are unlikely to meet the habitat requirements of this species. Furthermore, no Yuma Ridgway's rails were observed during the survey effort. Due to the lack of suitable habitat, the project will have no effect on Yuma Ridgway's rail.

Western Yellow-billed Cuckoo

The Western Distinct Population Segment (DPS) of yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is federally listed as threatened by USFWS (USFWS 2014b). Currently, there is proposed Critical Habitat for the Western DPS of yellow-billed cuckoo (USFWS 2014c). 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 2014b). Populations of yellow-billed cuckoo have been negatively impacted through modifications to all three of these constituents. During the breeding season, yellow-billed cuckoos need expansive blocks of riparian habitat with large, mature trees used for nesting and foraging. Yellow-billed cuckoos primarily rely on riparian habitat for foraging, particularly in cottonwood and willow woodlands with vegetation high in foliage (USFWS 2013c). These habitats can usually sustain insect and amphibian faunas used by young and adult yellow-billed cuckoos during nesting season and in post-breeding dispersal areas. 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 releases of water from a dam; a direct loss to yellow-billed cuckoo population density was documented (Groschupf 1987). Although the Study corridor is located within proposed Critical Habitat for yellow-billed cuckoo (Figure 8-1), there is no suitable habitat for yellow-billed cuckoo present within or immediately adjacent to the Study corridor. Furthermore, no yellow-billed cuckoos were observed during the biological surveys conducted within the Study corridor. Due to the lack of suitable habitat, the project is not likely to have an effect on yellow-billed cuckoo.

8.1.4 State Protected Species

8.1.4.1 SDC Sector

The CNDDDB maintains a list of species with state protection in California. The CNDDDB list includes flora and fauna whose occurrence in California is or could be in jeopardy or that have known or perceived threats or population declines (CNDDDB 2019), and these species are not necessarily the same as those protected under the Endangered Species Act of 1973 (ESA), as amended. The CNDDDB list is provided in Appendix D. The Study corridor could be considered suitable habitat for various state-sensitive reptile, bird, insect, mammal, and plant species. However, no state-listed species were observed during the March 2019 biological surveys.

8.1.4.2 ELC Sector

State protected species are the same as those described in for the SDC Sector.

8.1.4.3 YUM Sector

State protected species are the same as those described in for the SDC Sector.

8.2 ENVIRONMENTAL CONSEQUENCES

8.2.1 Vegetation

8.2.1.1 SDC Sector

The Project will have minor impacts on vegetation communities. Replacement of the legacy fence will permanently impact approximately 27.6 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 10-foot wide area that will be disturbed during fence replacement. Up to approximately 19.2 acres could be temporarily impacted by staging north of the Project corridor and at 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 border enforcement provided by the new bollard wall will have a potential beneficial impact on vegetation communities in the region by reducing trampling and crushing of vegetation in the area.

8.2.1.2 ELC Sector

The Project will have minor impacts on vegetation communities. Replacement of the legacy fence will permanently impact approximately 83.6 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 10-foot wide area that will

be disturbed during fence replacement. Up to approximately 37.9 acres could 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 border enforcement provided by the new bollard wall will have a potential beneficial impact on vegetation communities in the region by reducing trampling and crushing of vegetation in the area.

8.2.1.3 YUM Sector

The Project will have minor impacts on vegetation communities. Replacement of the legacy fence will permanently impact approximately 6.5 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 10-foot wide area that will be disturbed during fence replacement. Approximately 12.2 acres could be temporarily impacted by staging materials and equipment north of the Project corridor and at 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 border enforcement provided by the new bollard wall will have a potential beneficial impact on vegetation communities in the region by reducing trampling and crushing of vegetation in the area.

8.2.2 Wildlife and Aquatic Resources

8.2.2.1 SDC Sector

The wildlife likely to use the SDC Sector Project corridors are typically common and abundant throughout the Sonoran Desertscrub community. Mobile animals (e.g., birds) are able to 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 minor adverse impacts on wildlife species in the vicinity of the SDC Sector Project corridor are expected while species that scavenge could experience minor beneficial impacts due to the Project. Although some animals could be lost, the SDC Project will not result in any substantial reduction of breeding opportunities for birds and other animals on a regional scale due to the similar, suitable habitat adjacent to the SDC Project corridor. BMPs provided in Section 1.5.6 and incorporated as part of the Project design would minimize impacts on wildlife.

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 corridors 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 corridors. 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 (Francis 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.

When 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, would benefit from the concentration of insects that will be attracted to the lights. However, animals that forage at night could be negatively influenced as a result of shortened nighttime hours or may move away from the area altogether. If used during construction, lights will be directed towards the project area to minimize light pollution outside the project corridor. Therefore, impacts on wildlife are expected to be minor and temporary as a result of the operation of portable lights.

8.2.2.2 ELC Sector

Impacts on wildlife would be the same as those described for SDC.

8.2.2.3 YUM Sector

Impacts on wildlife would be the same as those described for SDC.

8.2.3 Protected Species and Critical Habitat

8.2.3.1 SDC Sector

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 corridors, and no federally protected species were observed during the 2019 biological survey (CBP 2019a). It is anticipated that the Project will not adversely affect the other six federally-listed species in the SDC Sector. The project could potential affect a nesting Coastal California gnatcatcher. However, this potential would be minimal as the Project corridor is just east of the gnatcatcher's range. Additionally, the Project will have no effect on aquatic resources as none occur within the Project corridor. The Project could have a minor to moderate impact on state-listed species that occur in the Project corridor. BMPs (e.g., environmental monitor) will minimize the impact on these species resulting from the Project. Although the project is outside the range of Coastal California gnatcatcher, BMPs are provided in Section 1.5.6 to mitigate for nesting Coastal California gnatcatcher if one is observed adjacent to the Project corridor.

8.2.3.2 ELC Sector

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 corridors, and no federally protected species were observed during the 2019 biological survey (CBP 2019a). The Project will have no effect on Yuma Ridgway rail as there is no suitable habitat in the Project corridor. 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. There is a potential for an individual lizard to be struck by

construction vehicle or equipment. BMPs (e.g., environmental monitor) will minimize the impact on these species resulting from the Project.

8.2.3.3 YUM Sector

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 corridors, and no federally protected species were observed during the 2019 biological survey (CBP 2019a). The project would not be expected to have an adverse impact on Yuma ridgeway rail or western yellow-billed cuckoo as suitable habitat for either species was not observed in the Project corridor. 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. There is a potential for an individual lizard to be struck by construction vehicle or equipment. BMPs (e.g., environmental monitor) will minimize the impact on these species resulting from the Project.

9.0 CULTURAL RESOURCES

9.1 CULTURAL OVERVIEW

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). 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).

9.2 AFFECTED ENVIRONMENT

9.2.1 SDC Sector

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 0.5-mile area of the Project. The results of that record search showed that 26 investigations have been conducted within a 0.5-mile radius of the SDC Sector Study corridor. Approximately 75 percent of the SDC Sector Study corridor has been subject to previously conducted archaeological investigations. The overview identified 16 previously recorded archaeological sites within 0.5-mile of the Project Study corridor. One of those archaeological sites, SDI-016798, was plotted within the SDC Sector Study corridor. An additional seven archaeological sites (P-37-029847, P-37-032936, P-37-032937, P-37-032938, SDI-11168, SDI-012218, and SDI-012219) are plotted adjacent to the SDC Sector Study corridor and were revisited during the 2019 field surveys to verify their boundaries and to confirm that they did not extend into the SDC Project area. Two of the seven sites could not be relocated during the field surveys and have probably been incorrectly plotted. The remaining five archaeological sites were comprised of historic structures, all of which were confirmed to be outside of the SDC Sector Study corridor.

An archaeological survey was conducted on the complete SDC Study corridor as part of the 2019 investigations. The field survey recorded one new archaeological site (CA-SDI-22614), the update of one previously recorded archaeological site (CA-SDI-016798) and the identification of six isolated occurrences. The newly recorded site represents a homestead dating to ca. 1880 to 1920. Artifacts recorded at the site included five metal cans, one bullet casing, historic glass fragments, and historic ceramic sherds. In addition to the artifacts recorded at site CA-SDI-016798, three structural features were also recorded, which included two retaining walls, a water well, and porch foundation. The site is considered eligible for the NRHP and represents a significant archaeological resource.

The previously recorded archaeological site CA-SDI-01678 was revisited and its condition updated. The site is a historic building complex that was originally documented in 2003. The original recorders documented one adobe building, five building foundations, two wells, one rock alignment, two concrete pads, and one concrete tank along with an associated artifact scatter of glass, ceramics, and metal. The 2019 survey was able to relocate two of the 12 features that were originally documented at the site, the adobe building and a building foundation. The remaining features that were originally recorded but could not be relocated have either been destroyed or buried. In addition, artifacts noted at the site included a metal sanitary can, a whiteware bowl fragment, and four architectural ceramic tiles. While the site has been heavily disturbed since its original recording with several features now either destroyed or buried by past construction, the site does retain its potential to provide additional information regarding the historic occupation of the Laguna Mountains and is considered eligible for the NRHP and a significant resource. The isolated occurrences (IOs) recorded consisted of milk glass shards, a steel church-key beverage can, and a whiteware cup shard. These IOs do not meet the minimum requirements to be considered as a site and are not considered significant resources.

9.2.2 ELC Sector

A cultural resources overview was conducted in support of the project in January 2019 (Thibodeaux and Hart 2019). 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 0.5-mile area of the ELC Sector Study corridor. The results of the record search indicated that 34 archaeological investigations have been previously conducted within 0.5 miles of the ELC Sector Study corridor and which encompassed approximately 95 percent of the ELC Sector Study corridor. The 34 previously conducted archaeological investigations identified 20 archaeological sites within 0.5 miles of the ELC Sector Study corridor. None of the previously recorded archaeological sites fell within the ELC Sector Study corridor, but seven sites (IMP-006906, IMP007130, IMP-007834, IMP-008166, P-13-008019, P13-14744, and P-13-017040) were in proximity of the ELC Sector Study corridor.

As part of the 2019 field investigations, an archaeological survey was conducted for the entire ELC Sector Study corridor. The seven previously recorded sites that were in proximity to the ELC Sector Study corridor were revisited during the field surveys conducted in 2019 to ensure that they did not extend into the ELC Sector Study corridor. None of the previously recorded archaeological sites were found to extend into the ELC Sector Study corridor. Two historic objects (HOs) and five IOs were recorded during the 2019 surveys of the ELC Sector Study corridor. The two HOs both are historic border monuments (No. 222 and No. 223), which date from ca. 1941 to present. Both of the HOs are recommended eligible for the NRHP and are considered significant resources. The remaining IOs consisted of a milk glass shard, solarized manganese shards, a colorless glass bottle, and a placard commemorating the construction of the All-American canal. None of the IOs meet the minimum requirement to be considered archaeological sites and are not considered significant resources.

9.2.3 YUM Sector

A cultural resources overview was conducted in support of the project in January 2019 (Thibodeaux and Hart 2019). 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 0.5-mile area of the YUM Sector Study corridor. The records search identified 20 archaeological projects that have been previously conducted within 0.5 miles of the YUM Sector Study corridor. These projects encompassed 100 percent of the YUM Sector Study corridor. The 20 previously conducted archaeological investigations resulted in the recording of 40 sites within 0.5 miles of the YUM Sector Project corridor. Of the 40 previously recorded sites, seven (P-13-011460, CA-IMP-003416, CA-IMP-003448, CA-IMP-01373, CA-IMP-010374, CA-IMP-010375, and CA-IMP-010378) were mapped as overlapping the YUM Sector Project area. In addition, two archaeological sites (IMP-003465 and P-13-011461) were located in the proximity of the YUM Sector Study corridor and were revisited to verify that they did not extend into the YUM Sector Study corridor.

An archaeological survey was conducted in the YUM Sector Study corridor as part of the 2019 archaeological investigations. This survey relocated two (CA-IMP-010374 and CA-IMP-010378) of the seven previously recorded archaeological sites that were plotted within the YUM sector Study corridor. Both sites were unaffiliated prehistoric lithic scatters of undetermined eligibility for the NRHP. Both sites were found to be located outside and did not extend into the YUM Sector Study corridor. The remaining five sites (P-13-011460, CA0IMP003416, CA-IMP-003448, CA-IMP-010373, and CA-IMP-010375) that were plotted as overlapping with the YUM Sector Project corridor and the two sites (IMP-003465 and P-13-011461) that were in proximity to the YUM Sector Project corridor could not be relocated. Information for four of the sites (CA-IMP-003416, CA-IMP-003448, CA-IMP-010373, and CA-IMP-010375) was restricted upon Tribal request since the sites are located on Tribal lands. All of these four sites fell within or overlapped with the existing border wall access road and could have been destroyed by road construction. One site (P-13-011460) consisted of Border Monument No. 206, which was obscured behind the existing corrugated tin border fence. As a result, the surveyors could not confirm the monument's presence or condition.

No new archaeological sites were recorded during the 2019 archaeological investigations, but one HO and eight IOs were recorded. The HO consisted of Border Monument 207, which is recommended eligible for the NRHP, and is considered a significant resource. All of the IOs were historic to modern in nature and consisted of solarized manganese shards, colorless bottle bases, a colorless medicine bottle, a glass marble, an aquamarine glass shard, a milk glass shard, a crushed hole-in-top can, crushed single-serve sanitary cans, and a whiteware sherd. All of the IOs do not meet the minimum requirements to be considered archaeological sites and are not considered significant resources.

9.3 ENVIRONMENTAL CONSEQUENCES

9.3.1 SDC Sector

Two archaeological sites (CA-SDI-22614 and CA-SDI-016798) are considered eligible for the NRHP and are significant resources. Both sites are located within the SDC Sector Study

corridor. Both archaeological sites would be flagged with an appropriate buffer within the SDC Sector Study corridor so construction activities can avoid any adverse effects to these two resources. Archaeological monitoring would also be conducted during construction to ensure no adverse effects would occur on these two resources. The anticipated reduction in illegal border traffic provided by the new bollard wall will have a potential beneficial impact on archaeological sites in the region through reduction of damage to sites and looting from illegal traffic.

9.3.2 ELC Sector

Two HOs consisting of Border Monuments Nos. 222 and No. 223 are located within the ELC Sector Study corridor and are considered eligible for the NRHP and significant resources. Both HOs would be flagged with an appropriate buffer within the ELC Sector Project corridor so construction activities can avoid any adverse effects to these two resources. Archaeological monitoring would also be conducted during construction to ensure no adverse effects would occur on these two resources. The anticipated reduction in illegal border traffic provided by the new bollard wall will have a potential beneficial impact on archaeological sites in the region through reduction of damage to sites and looting from illegal traffic.

9.3.3 YUM Sector

One HO, Border Monument No. 207, is located within the YUM Sector Study corridor area and is considered eligible for the NRHP and a significant resource. In addition site P-13-011460, which also consisted of a Border Monument (No. 206), is also present within the YUM Sector Study corridor although its location and condition could not be verified during the 2019 surveys. While the site has an undetermined eligibility for the NRHP it is considered a significant resource. Both the HO and archaeological site would be flagged with a sufficient buffer so construction activities can avoid any adverse effects to these two resources. Archaeological monitoring would also be conducted during construction to ensure no adverse effects would occur on these two resources. The anticipated reduction in illegal border traffic provided by the new bollard wall will have a potential beneficial impact on archaeological sites in the region through reduction of damage to sites and looting from illegal traffic.

10.0 SOCIOECONOMICS

10.1 AFFECTED ENVIRONMENT

10.1.1 SDC Sector

The ROI for the SDC Sector Project corridor is San Diego County, California, which is one of 58 counties in California and is part of the San Diego-Carlsbad Metropolitan Statistical Area (Bureau of Economic Analysis [BEA] 2019a). San Diego County had a 2017 population of 3,283,665 (U.S. Census Bureau 2019). The racial mix of San Diego County is mainly composed of Caucasians (70.8 percent), followed by Asians (11.7 percent) and people claiming to be a race other than White, Black or African American, American Indian and Alaska Native, Asian, or Native Hawaiian and other Pacific Islander (6.3 percent). The remaining 11.2 percent of the population is split among people claiming to be two or more races, African American, American Indian and Alaska Native, and Native Hawaiian and other Pacific Islander. Less than half the population claim to be Hispanic or Latino descent (U.S. Census Bureau 2019).

The estimated number of working-age civilians (16 years old or older) employed in San Diego County in 2017 was 1,536,073 (U.S. Census Bureau 2019). The educational services and healthcare and social assistance industry employed the largest amount of people (21.2 percent). This was followed by professional, scientific, management, administrative, and waste management services industry (15.0 percent) and arts, entertainment, recreation, accommodation, and food services industry (11.9 percent). The 2017 estimated unemployment rate for San Diego County was 7.1 percent. This was slightly lower than the 2017 unemployment rate for California of 7.7 percent but higher than the 2017 estimated unemployment rate for the U.S. of 6.6 percent (U.S. Census Bureau 2019).

In 2018, San Diego County had a per capita personal income (PCPI) of \$61,386 (BEA 2019a). This PCPI, ranked 18th in the state, was 97 percent of the state average (\$65,557) and 113 percent of the National average (\$54,446). 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 2018, the TPI of San Diego County was \$205 billion, which ranked 4th in the state and accounted for 8.2 percent of the state total (BEA 2019a). The median income in 2017 was \$70,588, which was greater than the median income of the state (\$67,169) and Nation (\$57,652) (U.S. Census Bureau 2019). In 2017, 13 percent of all people within San Diego County had an income that is below the poverty level recorded over the past 12 months. This is lower than the poverty rate for all people in California (15.1 percent) and the U.S. (14.9 percent) (U.S. Census Bureau 2019).

10.1.2 ELC Sector

The ROI for the ELC Sector Project corridor is Imperial County, California; which is one of 58 counties within California and is part of the El Centro, California Metropolitan Statistical Area (BEA 2019b). Imperial County had a 2017 estimated population of 179,957 (U.S. Census Bureau 2019). The racial mix of Imperial County is mainly composed of Caucasians (65.1 percent), followed by individuals claiming to be a race other than White, Black or African American, American Indian and Alaska Native, Asian, or Native Hawaiian and other Pacific Islander (24.9 percent) and people claiming to be two or more races (4.6 percent). The remaining 5.4 percent of the population is split African Americans, American Indian and Alaska

Natives, Asians, and Native Hawaiian and other Pacific Islander. The vast majority of the people in Imperial County claim to be of Hispanic or Latino origin (80.4 percent) (U.S. Census Bureau 2019). Calexico is the closest settlement to the ELC Sector Project corridor and has an estimated 2017 population of 39,953, which is 22 percent of the total population of Imperial County. Similar to Imperial County, the majority of the population of Calexico claims to be Caucasian (78.2 percent). This is followed by individuals claiming to be a race other than White, Black or African American, American Indian and Alaska Native, Asian, or Native Hawaiian and other Pacific Islander (18 percent) and people claiming to be two or more races (2.6 percent). The vast majority of the population claim to be of Hispanic or Latino origin (97.4 percent) (U.S. Census Bureau 2019).

The estimated number of working-age civilians employed in Imperial County in 2017 was 71,582 (U.S. Census Bureau 2019). The educational services and healthcare and social assistance industry employed the largest amount of people (25.5 percent). This was followed by the retail trade industry (13.7 percent) and arts, entertainment, and recreation and public administration industry (10.0 percent). The 2017 estimated unemployment rate for Imperial County was 16.0 percent. This was much higher than the 2017 estimated unemployment rate for California (7.7 percent) and the U.S. (6.6 percent) (U.S. Census Bureau 2019). The number of working-age civilians employed in Calexico is 13,762. This represents 19 percent of the employed civilians of Imperial County. Similar to Imperial County as a whole, the educational services and healthcare and social assistance industry employed the largest amount of people (26.5 percent). This was followed by the retail trade industry (15.8 percent) and arts, entertainment, and recreation and public administration industry (10.3 percent). The 2017 estimated unemployment rate for Calexico was 17.5 percent. This was higher than the unemployment rate for Imperial County as a whole and was much higher than the 2017 estimated unemployment rate for California and the U.S. (U.S. Census Bureau 2019).

In 2018, Imperial County had a PCPI of \$36,974 (BEA 2019b). This PCPI, ranked 57th in the state was 58 percent of the state average (\$65,557) and 68 percent of the National average (\$54,446). In 2018, the TPI of Imperial County was \$6.7 billion, which ranked 32nd in the state and accounted for 0.3 percent of the state total (BEA 2019b). The median income in 2017 was \$44,779, which was less than the median income of the state (\$67,169) and Nation (\$57,652) (U.S. Census Bureau 2019). In 2017, 23.8 percent of all people within Imperial County had an income that is below the poverty level recorded over the past 12 months. This is higher than both the poverty rate for all people in California (15.1 percent) and the U.S. (14.9 percent) (U.S. Census Bureau 2019). In comparison, 25.3 percent of all people within Calexico had an income that was below the poverty level recorded over the past 12 months in 2017. This was higher than the poverty rate for Imperial County, the State of California, and the U.S. (U.S. Census Bureau 2019).

10.1.3 YUM Sector

The ROI for the YUM Sector Project corridor is Imperial County, California the same as that for the ELC Sector Project corridor. As a result, the affected environment information for Imperial County is summarized above in Section 10.1.2. The nearest settlement to the YUM Sector Project corridor is Andrade, California, which is located within the Fort Yuma Indian

Reservation. Detailed summaries of the population and economic statistics were not available from the U.S. Census Bureau for the small town of Andrade.

10.2 ENVIRONMENTAL CONSEQUENCES

10.2.1 SDC Sector

The Project will have no impacts, direct or indirect, on long-term population, housing, 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.

San Diego County will benefit from effective enforcement operations across the ROI. Overall, replacement of the primary fence will reduce adverse impacts currently experienced by local law enforcement and the emergency response community. The Project will provide additional protection from illegal foot traffic and the potential for illegal activities.

10.2.2 ELC Sector

The effects from the Project are anticipated to be similar to those discussed for the SDC Sector. Imperial County and Calexico both have a much greater percentage of people claiming to be of Hispanic or Latino origin, significantly higher unemployment rates, and significantly higher poverty rates. As a result, the beneficial impacts outlined for the SDC sector would be experienced to a greater extent by both minority and low income populations.

10.2.3 YUM Sector

The effects from the Project are anticipated to be similar to those discussed for the ELC Sector.

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 could 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.

11.1.1 SDC Sector

Solid and hazardous wastes are regulated in California 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 2019c). No sites reporting to the USEPA were found in the search for Tecate, California.

11.1.2 ELC Sector

A search of USEPA's Envirofacts Data Warehouse showed no superfund sites near the Project corridor (USEPA 2019b). A total of six sites reporting to the USEA were found in the search for Calexico, California. The three closest hazardous waste sites include the Calexico International Airport, City of Calexico, and Rocha Trucking are located approximately 437 to 861 feet from the ELC Sector Project corridor.

11.1.3 YUM Sector

A search of USEPA's Envirofacts Data Warehouse showed no superfund sites near the Project corridor (USEPA 2019c). No sites reporting to the USEPA were found in the search for Andrade, California.

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, a 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 ESP 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 Imperial and San Diego counties.

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, 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 705 miles of pedestrian and vehicle fencing along the southwestern border. A total of 354 miles of primary pedestrian fence, 37 miles of secondary pedestrian fence, and 14 miles of tertiary pedestrian fence have been constructed. The final total of vehicle fence constructed was approximately 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.

- CBP recently completed construction of 14 miles of primary pedestrian fence and other border infrastructure system improvements in the SDC Sector.
- USBP recently completed construction of eight RVSS towers in the YUM 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).
- USBP recently completed the upgrade of existing RVSS tower in the YUM Sector's 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.
- Border Wall Construction in the ELC and YUM sectors.

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 SDC, ELC, and YUM sectors' AOR.

- Border Wall: As part of this or future administrations, DHS/CBP could construct additional border walls in the USBP YUM Sector AOR.

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 the California Department of Transportation and San Diego and Imperial counties. The majority of these projects will be expected to occur along existing corridors and with 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 Imperial or San Diego County are ongoing or near completion within the vicinity of the Project corridor.

Other organizations, such as 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 on 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 on 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, would 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 on aesthetic resources to the maximum extent feasible.

Areas north of the border within the construction corridors will be expected to experience beneficial, indirect cumulative impacts on 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 117.8 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 would occur and increased sedimentation and turbidity could have minor 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, would result in a minor to moderate 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 would 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 on wildlife within the Study Area would 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 would 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 minor 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 would be avoided or minimized. Similarly, only minor temporary increases in the use of hazardous materials would 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

BEA	United States Bureau of Economic Analysis
BLM	Bureau of Land Management
BMP	Best Management Practices
CAA	Clean Air Act
CalEPA	California Environmental Protection Agency
CALSHPO	California State Historic Preservation Office
CBP	United States Customs and Border Protection
CBV	Cross-border Violator
CDC	California Department of Conservation
CDFG	California Department of Fish and Game
CDWR	California Department of Water Resources
CEQ	Council on Environmental Quality
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CH ₄	Methane
CNDDDB	California Natural Diversity Database
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CRRWQB	Colorado River Regional Water Quality Board
CWA	Clean Water Act
dB	decibel
dBA	decibel – A weighted scale
DDT	dichloro-diphenyl-trichloroethane
DHS	United States Department of Homeland Security
DOI	Department of Interior
ELC	El Centro
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	Greenhouse 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
IID	Imperial Irrigation District
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act
MBTA	Migratory Bird Treaty Act
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
O ₃	Ozone
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated biphenyls
PCPI	per capita personal income
PM ₁₀	Particulate matter less than 10 microns
PM _{2.5}	Particulate less than 2.5 microns
POE	Port of Entry
POL	Petroleum, oil, and lubricants
ppb	parts per billion
ppm	parts per million
ROI	Region of influence
Secretary	Secretary of the Department of Homeland Security
SDC	San Diego
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
USDA	United States Department of Agriculture
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
WUS	Waters of the United States

Appendix A
Copy of 2019 Border Waiver



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 & 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 Wild and Scenic Rivers Act (Pub. L. 90–542 (16 U.S.C. 1281 *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.*); and the American Indian Religious Freedom Act (42 U.S.C. 1996).

This waiver does not revoke or supersede any other waiver determination made pursuant to section 102(c) of IIRIRA. Such waivers 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: March 11, 2020.
Chad F. Wolf,
Acting Secretary of Homeland Security.
 [FR Doc. 2020–05348 Filed 3–13–20; 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 Acting 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, and Imperial County, California.

DATES: This determination takes effect on March 16, 2020.

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 Improvements 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

The United States Border Patrol’s Yuma Sector is an area of high illegal entry. In fiscal year 2019, the United States Border Patrol (“Border Patrol”) apprehended over 68,000 illegal aliens attempting to enter the United States between border crossings in the Yuma Sector. Also in fiscal year 2019, there were over 800 drug-related events between border crossings in the Yuma Sector, through which Border Patrol seized over 3,000 pounds of marijuana, over 33 pounds of heroin, over 1,186 pounds of methamphetamine, and over 50 pounds of fentanyl. Additionally, Yuma County, Arizona, which is located in the Yuma Sector, and Imperial County, California, a portion of which is located in the Yuma Sector, have 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 construct new secondary fencing and replace existing vehicle barriers and primary pedestrian and secondary fencing in the Yuma Sector. The segments of the border within which such construction will occur are referred to herein as the "project areas" and are more specifically described in Section 2 below.

The existing barriers within the project areas include outmoded vehicle barriers as well as primary pedestrian fencing and secondary fencing that no longer meet the Border Patrol's operational needs. The older fencing designs are easily breached and have been damaged to such a degree that they are ineffective. Both will be replaced with fencing that has a more operationally effective design. Although the deployment of vehicle barriers in the Yuma Sector initially curtailed the volume of illegal cross-border vehicular traffic, transnational criminal organizations have adapted their tactics by switching to foot traffic, cutting the barriers, or simply driving over them to smuggle illicit cargo into the United States. To respond to these changes in tactics, Border Patrol now requires pedestrian fencing rather than vehicle barrier. Additionally, constructing new and replacing existing secondary fencing will mean that a portion of the Yuma Sector will have a contiguous enforcement zone, which is critical to securing the border. Within the project areas roads will also be constructed or improved and lighting will be installed.

To support DHS's action under section 102 of IIRIRA, I requested that the Secretary 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 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 areas 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 areas"):

- Starting approximately three-quarters (.75) of a mile west of the Andrade Port of Entry and extending east to the Colorado River;
 - Starting approximately five and one-half miles (5.5) miles south of the Morelos Dam and extending south and generally following the Colorado River for approximately seven and one-half (7.5) miles; and
 - Starting at the point where the Colorado River crosses the international border between the United States and Mexico and extending east to approximately Border Monument 201.
- 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 areas 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 areas, 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 areas, 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 areas, 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 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 & 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), and 43 U.S.C. 387.

This waiver does not revoke or supersede any other waiver determination made pursuant to section 102(c) of IIRIRA. Such waivers 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: March 11, 2020.

Chad F. Wolf,

Acting Secretary of Homeland Security.

[FR Doc. 2020–05364 Filed 3–13–20; 8:45 am]

BILLING CODE 9111–14–P



specifically described in Section 2 below.

The existing vehicle barriers within the project area no longer satisfy the Border Patrol's operational needs. Transnational criminal organizations known for smuggling drugs into United States from Mexico are known to operate in the area. Further, due to the close proximity of urban areas on both sides of the border, the El Centro Sector experiences some of the quickest vanishing times—that is, the time it takes to illegally cross into the United States and assimilate into local, legitimate traffic—on the border. The vanishing times facilitate the illegal activities of transnational criminal organizations, whether they are smuggling people or narcotics. Therefore, the Border Patrol requires a more effective barrier. The existing vehicle barriers will be replaced with an 18 to 30 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 El Centro 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 area in the vicinity of the United States border, located in the State of California within the Border Patrol's El Centro Sector, is an area of high illegal entry (the "project area"): Starting at Border Monument 229 and extending east to approximately one and one-half miles (1.5) west of Border Monument 223.

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 Public Law 113-287, 128 Stat. 3094 (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, 93 Stat. 721 (Oct. 31, 1979) (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 Safe Drinking Water Act (42 U.S.C. 300f *et seq.*); the Noise Control Act (42 U.S.C. 4901 *et seq.*); the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (42 U.S.C. 6901 *et seq.*); the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601 *et seq.*); the Archeological and Historic Preservation Act (Pub. L. 86-523, 74 Stat. 220 (June 27, 1960) as amended, repealed, or replaced by Public Law 113-287, 128 Stat. 3094 (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 & 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, 90 Stat. 2743 (Oct. 21, 1976) (43 U.S.C. 1701 *et seq.*)); National Fish and Wildlife Act of 1956 (Pub. L. 84-1024, 70 Stat. 1119 (Aug. 8, 1956) (16 U.S.C. 742a, *et seq.*)); the Fish and Wildlife Coordination Act (Pub. L. 73-121, 48 Stat. 401 (March 10, 1934) (16 U.S.C. 661 *et seq.*)); the National Trails System Act (16 U.S.C. 1241 *et seq.*); the Administrative Procedure Act (5 U.S.C. 551 *et seq.*); the Wild Horse and Burro Act (16 U.S.C. 1331 *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); 43 U.S.C. 387; the Wilderness Act (Pub. L. 88-577, 78 Stat. 890 (Sept. 3, 1964) (16 U.S.C. 1131 *et seq.*)); and sections 102(29) and 103 of Title I of the California Desert Protection Act (Pub. L. 103-433, 108 Stat. 4471 (Oct. 31, 1994)).

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.

Kevin K. McAleenan,

Acting Secretary of Homeland Security.

[FR Doc. 2019-10080 Filed 5-14-19; 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 near Tecate and Calexico, California.

DATES: This determination takes effect on May 15, 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, 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 Improvements directed executive departments and agencies to deploy all lawful means to secure the southern border. Executive Order 13767, § 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, § 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 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, 3, 120 Stat. 2638 (Oct. 26, 2006) (8 U.S.C. 1103 note), as amended by the Department of Homeland Security Appropriations Act, 2008, Public Law 110-161, Div. E, Title V, § 564, 121 Stat. 2090 (Dec. 26, 2007). In section 102(a) of IIRIRA, Congress provided that the Secretary of Homeland Security shall take such actions as may be necessary to install additional physical barriers and roads (including the removal of obstacles to detection of illegal entrants) in the vicinity of the United States border to deter illegal crossings in areas of high illegal entry into the United States. In section 102(b) of IIRIRA, Congress 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

The United States Border Patrol's (Border Patrol) San Diego and El Centro Sectors are areas of high illegal entry. In fiscal year 2018 alone, the Border Patrol apprehended over 38,000 illegal aliens attempting to enter the United States between border crossings in the San Diego Sector. In that same year, the Border Patrol had over 500 separate drug-related events between border crossings in the San Diego Sector, through which it seized approximately 8,700 pounds of marijuana, approximately 1,800 pounds of cocaine, over 175 pounds of heroin, and over 5,100 pounds of methamphetamine. In fiscal year 2018, the Border Patrol apprehended over 29,000 illegal aliens attempting to enter the United States between border crossings in the El Centro Sector. Also in fiscal year 2018, the Border Patrol had approximately 200 separate drug-related events between border crossings in the El Centro Sector, through which it seized over 620 pounds of marijuana, over 165 pounds of cocaine, over 56 pounds of heroin, and over 1,600 pounds of methamphetamine.

Due to the high levels of illegal entry within the San Diego and El Centro Sectors, I must use my authority under section 102 of IIRIRA to install additional physical barriers and roads in the San Diego and El Centro Sectors. Therefore, DHS will take immediate action to replace existing barriers in the San Diego and El Centro Sectors. The segments of the border within which such construction will occur are referred to herein as the "project areas" and are more specifically described in Section 2 below. Congress provided funding for these projects in the Fiscal Year 2018 DHS Appropriations Act, Public Law 115-141, Division F, Title II, § 230.

The replacement of primary fencing within the project areas will further the Border Patrol's ability to deter and prevent illegal crossings. The existing barriers were constructed between the early-to-mid 1990s and mid-to-late 2000s. The existing barriers will be replaced with 18 to 30 foot barriers that employ a more operationally effective design that is intended to meet the Border Patrol's operational

requirements. In addition, DHS will, where necessary, make improvements to existing roads within the project areas.

Section 2

I determine that the following areas in the vicinity of the United States border, located in the State of California within the Border Patrol's San Diego and El Centro Sectors, are areas of high illegal entry (the "project areas"):

- Within the San Diego Sector, starting approximately one mile west of Border Monument 245 and extending east to approximately one mile east of Border Monument 243;
- Within the El Centro Sector, starting approximately one and one-half (1.5) miles west of Border Monument 223 and extending east approximately eight miles; and
- Within the El Centro Sector, starting at Border Monument 221 and extending east to Border Monument 219.

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 areas 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 areas, 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 roads and physical barriers (including, but not limited to, accessing the project areas, 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 areas, 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, 93 Stat. 721 (Oct. 31, 1979) (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, 74 Stat. 220 (June 27, 1960) as amended, repealed, or replaced by Pub. L. 113–287, 128 Stat. 3094 (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 & 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, 90 Stat. 2743 (Oct. 21, 1976) (43 U.S.C. 1701 *et seq.*)); National Fish and Wildlife Act of 1956 (Pub. L. 84–1024, 70 Stat. 1119 (Aug. 8, 1956) (16 U.S.C. 742a, *et seq.*)); the Fish and Wildlife Coordination Act (Pub. L. 73–121, 48 Stat. 401 (March 10, 1934) (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); and 43 U.S.C. 387.

This waiver does not revoke or supersede the previous waivers published in the **Federal Register** on April 8, 2008 (73 FR 19078), and on September 12, 2017 (82 FR 42829), 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.

Kevin K. McAleenan,

Acting Secretary of Homeland Security.

[FR Doc. 2019–10078 Filed 5–14–19; 3:45 am]

BILLING CODE 9111–14–P

DEPARTMENT OF THE INTERIOR

National Park Service

[NPS–WASO–NAGPRA–NPS0027788:
PPWOCRADN0–PCU00RP14.R50000]

Notice of Inventory Completion: Kansas State Historical Society, Topeka, KS

AGENCY: National Park Service, Interior.
ACTION: Notice.

SUMMARY: The Kansas State Historical Society has completed an inventory of human remains and associated funerary objects, in consultation with the appropriate Indian Tribes or Native Hawaiian organizations, and has determined that there is a cultural affiliation between the human remains and associated funerary objects and present-day Indian Tribes or Native Hawaiian organizations. Lineal descendants or representatives of any Indian Tribe or Native Hawaiian organization not identified in this notice that wish to request transfer of control of these human remains and associated funerary objects should submit a written request to the Kansas State Historical Society. If no additional requestors come forward, transfer of control of the human remains and associated funerary objects to the lineal descendants, Indian Tribes, or Native Hawaiian organizations stated in this notice may proceed.

DATES: Lineal descendants or representatives of any Indian Tribe or Native Hawaiian organization not identified in this notice that wish to request transfer of control of these human remains and associated funerary objects should submit a written request with information in support of the request to the Kansas State Historical Society at the address in this notice by June 14, 2019.

ADDRESSES: Dr. Robert J. Hoard, Kansas State Historical Society, 6425 SW 6th Avenue, Topeka, KS 66615, telephone (785) 272–8681 Ext. 269, email Robert.Hoard@ks.gov.

SUPPLEMENTARY INFORMATION: Notice is here given in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C.

3003, of the completion of an inventory of human remains and associated funerary objects under the control of the Kansas State Historical Society, Topeka, KS. The human remains and associated funerary objects were removed from archeological site 14RP1, Republic County, KS.

This notice is published as part of the National Park Service's administrative responsibilities under NAGPRA, 25 U.S.C. 3003(d)(3). The determinations in this notice are the sole responsibility of the museum, institution, or Federal agency that has control of the Native American human remains and associated funerary objects. The National Park Service is not responsible for the determinations in this notice.

Consultation

A detailed assessment of the human remains was made by the Kansas State Historical Society professional staff in consultation with representatives of the Pawnee Nation of Oklahoma.

History and Description of the Remains

Removal of human remains and associated funerary objects from the Pawnee Indian Village site (also known as Kansas Monument site and Kansas archeological site number 14RP1) occurred in several instances.

In 1996 and 1997, human remains representing, at minimum, seven individuals were removed from archeological site 14RP1, the Pawnee Indian Village site, in Republic County, KS. The human remains and associated funerary objects were taken from burial pits within and near the site. Some of the burial had been disturbed variously, by intentional looting and excavation by professional archeologists before burial law protection had been enacted. Burial 1 consists of one adult represented by 38 skeletal elements. Burial 2 consists of one adult represented by fragmentary cranial bones, phalanges, mandible fragments, long bone diaphysis, and teeth. Burial 3 consists of one adult male represented by 74 badly damaged and decomposed cranial elements, long bones, and scapula, clavicle, and pelvic elements. Burial 4 consists of one adult represented by fragmented long bones and a patella. Burial 5 consists of one adult female represented by over 140 small bone fragments that include one pelvic fragment and several identifiable long bone fragments. Burial 6 consists of one four-to-six month old infant represented by 15 bone fragments and two teeth. Burial 7 consists of seven element fragments. No known individuals were identified. The 90 associated funerary objects include one chipped stone scraper, ochre, flakes,

Appendix B
Best Management Practices

BEST MANAGEMENT PRACTICES (BMPs)

The Contractor shall implement all BMPs as outlined in this section. 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.

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. Concrete wash water will not be dumped on the ground, but will be collected and moved offsite for proper 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) 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 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.

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 Stormwater Pollution Prevention Plan (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.

BIOLOGICAL RESOURCES

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.

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.

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 biological monitor, shall conduct migratory bird surveys at the project site before said activities begin. The 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 throughout 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) 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. 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.

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.

The U.S. Fish and Wildlife Service (USFWS) lists Federally protected species with the potential of occurring in San Diego and Imperial County, California. 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.

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

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 of vertical posts/bollards, all vertical fence posts/bollards that are hollow (i.e., those that will be filled with a reinforcing material such as concrete), 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 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.

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.

b. Coastal California Gnatcatcher (*Polioptila californica californica*)

Between February 15 and August 15, construction surveys will be conducted to determine if gnatcatchers are nesting within 300 feet of construction activities prior to construction commencing. If a nest is found, an 8-foot plywood sound wall will be established as far from the nest as possible, but no less than 50 feet between construction and the nest.

Appendix C
Air Emissions Calculations

GSRC 2019-USBP ELC – Table of Equipment

Type of Equipment	Quantity	Usage	Usage Unit	Total Days	Number of Trips	Total Usage	Total Usage Units	Comments
Loader	1	12	hrs/day	260	---	3,120	hours	
Dozer	1	12	hrs/day	260	---	3,120	hours	Assume dirt to be removed = 11.29 mi x (5280 ft/mi) x (3 ft wide) = 178,833.6 ft ² = 4.12 acres (will need this for grading area) 178,833.6 ft ² x 6 ft deep = 1,073,002 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) = 53 days.
Excavator	1	12	hrs/day	260	---	3,120	hours	11.29 mi x (5280 ft/mi) x (3 ft wide) = 178,833.6 ft ² = 4.12 acres (will need this for grading area) 178,833.6 ft ² x 6 ft deep = 1,073,002 ft ³ . Assume digging 40 m ³ /hour and 12-hour days = 480 m ³ /day (or 16,951 ft ³ /day) = 64 days.
Crane	1	12	hrs/day	260	---	3,120	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.

Type of Equipment	Quantity	Usage	Usage Unit	Total Days	Number of Trips	Total Usage	Total Usage Units	Comments
Delivery Truck (Vendor Trip)	1	26	miles/trip	---	1,193	31,018	miles	Based on round trip from El Centro to Calexico (13 miles one way). Assume 5 panels per trip; flatbed truck (5280 ft/mi, 10' panel = 528 panels/mile = 5,962 panels = 1,193 trips).
Truck (Hauling Demo Debris)	1	26	miles/trip	---	82	2,132	miles	Based on round trip from El Centro to Calexico (13 miles one way). Assume flatbed truck with 50,000-lb capacity. Assume using 8' sections (5280 ft/mi, 8' panel = 660 panels/mile = 7,452 panels total at 550 lbs per panel = 82 truckloads).
Cement Truck	1	26	miles/trip	---	1,842	47,892	miles	Based on round trip from El Centro to Calexico (13 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 5,962 = 107,316 ft ³ . 290,400 + 107,316 = 397,716 ft ³ = 14,731 yd ³ . With 8 yd ³ trips with cement truck 1,842 trips are needed.

Type of Equipment	Quantity	Usage	Usage Unit	Total Days	Number of Trips	Total Usage	Total Usage Units	Comments
Passenger Vehicle (Worker Commute)	15	26	miles/trip	---	260	101,400	miles	Based on round trip from El Centro to Calexico (13 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 (8x26x260=54,080 miles) and 7 passenger cars (7x26x260=47,320).

Emissions Summary - ELC

Equipment	Pollutant Name Description	Pollutant Name	Total Emissions (lbs)	Total Emissions (tons)	Notes
		Carbon Monoxide (CO) Total	4528.88043	2.264440215	
		CO2 Equivalent Total	864.2137565	0.432106878	
		Oxides of Nitrogen (NOx) Total	5736.302978	2.868151489	
		PM10 Total	3143.006662	1.571503331	
		PM2.5 Total	798.1512613	0.399075631	
		Sulfur Dioxide (SO2) Total	15.49216921	0.007746085	
		Volatile Organic Compounds Total	1162.4961	0.58124805	

Off Road Table – ELC

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	3,120	Hours	Volatile Organic Compounds	321.0034516	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	3,120	Hours	Carbon Monoxide (CO)	444.9710485	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	3,120	Hours	Oxides of Nitrogen (NOx)	2095.61754	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	3,120	Hours	Primary Exhaust PM10 - Total	83.01083043	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	3,120	Hours	Primary Exhaust PM2.5 - Total	80.52056348	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	3,120	Hours	Sulfur Dioxide (SO2)	5.662002206	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	3,120	Hours	Primary Exhaust PM2.5 - Total	41.54834673	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	3,120	Hours	Volatile Organic Compounds	173.24485	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	3,120	Hours	Sulfur Dioxide (SO2)	3.193190083	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	3,120	Hours	Oxides of Nitrogen (NOx)	672.0265308	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	3,120	Hours	Carbon Monoxide (CO)	274.3343626	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	3,120	Hours	Primary Exhaust PM10 - Total	42.83334135	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	3,120	Hours	Primary Exhaust PM2.5 - Total	58.86096582	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	3,120	Hours	Sulfur Dioxide (SO2)	3.242657375	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	3,120	Hours	Volatile Organic Compounds	179.0160921	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	3,120	Hours	Carbon Monoxide (CO)	339.6758796	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	3,120	Hours	Oxides of Nitrogen (NOx)	865.8485328	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	3,120	Hours	Primary Exhaust PM10 - Total	60.68141248	Dozer

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
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	3,120	Hours	Carbon Monoxide (CO)	2706.536832	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	3,120	Hours	Oxides of Nitrogen (NOx)	2089.07675	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	3,120	Hours	Primary Exhaust PM10 - Total	368.2230517	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	3,120	Hours	Primary Exhaust PM2.5 - Total	357.1765391	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	3,120	Hours	Sulfur Dioxide (SO2)	2.774441244	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	3,120	Hours	Volatile Organic Compounds	426.844532	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

On Road Table - ELC

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	2,600	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	2,600	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	2,600	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	2,600	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	2,600	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	2,600	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	2,600	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	47,892	Miles	406.3493482	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	47,892	Miles	0.003341425	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	47,892	Miles	27.42007625	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	47,892	Miles	50.51438201	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	47,892	Miles	0.015886978	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	47,892	Miles	0.014615934	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	47,892	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	2,132	Miles	18.08938466	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	2,132	Miles	0.00014875	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	2,132	Miles	1.22065486	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	2,132	Miles	2.248740133	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	2,132	Miles	0.000707238	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	2,132	Miles	0.000650655	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	2,132	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	31,018	Miles	263.1784866	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	31,018	Miles	0.002164126	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	31,018	Miles	17.75903962	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	Carbon Monoxide (CO)	0.001054756	lbs/mi	31,018	Miles	32.71642657	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 PM10 - Total	3.31725E-07	lbs/mi	31,018	Miles	0.010289449	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	31,018	Miles	0.009466238	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	31,018	Miles	0	Delivery Truck (Vendor Trip)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Oxides of Nitrogen (NOx)	0.000131846	lbs/mi	54,080	Miles	7.13023168	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Carbon Monoxide (CO)	0.007279723	lbs/mi	54,080	Miles	393.6874198	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Volatile Organic Compounds	0.000172259	lbs/mi	54,080	Miles	9.315753741	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary Exhaust PM2.5 - Total	9.09729E-06	lbs/mi	54,080	Miles	0.491981443	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM10 - Brakewear Particulate	0.000133808	lbs/mi	54,080	Miles	7.23633664	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM10 - Tirewear Particulate	2.25209E-05	lbs/mi	54,080	Miles	1.217930272	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM2.5 - Brakewear Particulate	1.67261E-05	lbs/mi	54,080	Miles	0.904547488	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM2.5 - Tirewear Particulate	3.37811E-06	lbs/mi	54,080	Miles	0.182688189	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Sulfur Dioxide (SO2)	6.59684E-06	lbs/mi	54,080	Miles	0.356757107	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary Exhaust PM10 - Total	1.02839E-05	lbs/mi	54,080	Miles	0.556153312	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM10 - Tirewear Particulate	2.25209E-05	lbs/mi	47,320	Miles	1.065688988	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM2.5 - Brakewear Particulate	1.00603E-05	lbs/mi	47,320	Miles	0.476053396	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM2.5 - Tirewear Particulate	3.37811E-06	lbs/mi	47,320	Miles	0.159852165	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Sulfur Dioxide (SO2)	5.4097E-06	lbs/mi	47,320	Miles	0.255987004	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Volatile Organic Compounds	0.00010557	lbs/mi	47,320	Miles	4.995557068	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary Exhaust PM10 - Total	7.07396E-06	lbs/mi	47,320	Miles	0.334739787	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary Exhaust PM2.5 - Total	6.25776E-06	lbs/mi	47,320	Miles	0.296117203	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Oxides of Nitrogen (NOx)	7.79874E-05	lbs/mi	47,320	Miles	3.690363768	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Carbon Monoxide (CO)	0.005787481	lbs/mi	47,320	Miles	273.8636009	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM10 - Brakewear Particulate	8.04827E-05	lbs/mi	47,320	Miles	3.808441364	Passenger Vehicle (Worker Commute)

Fugitive Dust - ELC

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	1408	0.704	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 10	PM10	1166	0.583	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	140.8	0.0704	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 2.5	PM2.5	116.6	0.0583	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)

GSRC 2019-USBP SDC - Table of Equipment

Type of Equipment	Quantity	Usage	Usage Unit	Total Days	Number of Trips	Total Usage	Total Usage Units	Comments
Loader	1	12	hrs/day	260	---	3,120	hours	
Dozer	1	12	hrs/day	260	---	3,120	hours	Assume dirt to be removed = 2.89 mi x (5280 ft/mi) x (3 ft wide) = 45,777 ft ² = 1.1 acres (will need this for grading area) 45,777 ft ² x 6 ft deep = 274,662 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) = 14 days.
Excavator	1	12	hrs/day	260	---	3,120	hours	Assume dirt to be removed = 2.89 mi x (5280 ft/mi) x (3 ft wide) = 45,777 ft ² = 1.1 acres (will need this for grading area) 45,777 ft ² x 6 ft deep = 274,662 ft ³ . Assume digging 40 m ³ /hour and 12-hour days = 480 m ³ /day (or 16,951 ft ³ /day) = 17 days.
Crane	1	12	hrs/day	260	---	3,120	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	79.8	miles/trip	---	306	24,419	miles	Based on round trip from Tecate to San Diego (39.9 miles one way). Assume 5 panels per trip; flatbed truck (5280 ft/mi, 10' panel = 528 panels/mile = 1,526 panels = 306 trips).

Type of Equipment	Quantity	Usage	Usage Unit	Total Days	Number of Trips	Total Usage	Total Usage Units	Comments
Truck (Hauling Demo Debris)	1	79.8	miles/trip	---	21	1,676	miles	Based on round trip from Tecate to San Diego (39.9 miles one way). Assume flatbed truck with 50,000-lb capacity. Assume using 8' sections (5280 ft/mi, 8' panel = 660 panels/mile = 1,908 panels total at 550 lbs per panel = 21 truckloads).
Cement Truck	1	79.8	miles/trip	---	1,472	117,466	miles	Based on round trip from Tecate to San Diego (39.9 miles one way). Assume 8 yd3 concrete capacity per delivery. Assume footing = 27.5' x 1' x 2' = 290,400 ft3. 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 ft3; 18ft3 x 1,526 panels = 27,468 ft3. 290,400 + 27,468 = 317,868 ft3 = 11,773 yd3. With 8 yd3 trips with cement truck 1,472 trips are needed.
Passenger Vehicle (Worker Commute)	15	79.8	miles/trip	---	260	311,220	miles	Based on round trip from Tecate to San Diego (39.9 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 (8x79.8x260=165,984 miles) and 7 passenger cars (7x46x260=145,236).

Emissions Summary – SDC

Pollutant Name Description	Pollutant Name	Total Emissions (lbs)	Total Emissions (tons)	Notes	Pollutant Name Description
	Carbon Monoxide (CO) Total	5976.138999	2.988069499		
	CO2 Equivalent Total	1394.662053	0.697331027		
	Oxides of Nitrogen (NOx) Total	5758.693287	2.879346643		
	PM10 Total	1280.450545	0.640225272		
	PM2.5 Total	613.7886518	0.306894326		
	Sulfur Dioxide (SO2) Total	16.76444008	0.00838222		
	Volatile Organic Compounds Total	1227.903663	0.613951831		

Off Road Table - SDC

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	3,120	Hours	Volatile Organic Compounds	321.0034516	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	3,120	Hours	Carbon Monoxide (CO)	444.9710485	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	3,120	Hours	Oxides of Nitrogen (NOx)	2095.61754	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	3,120	Hours	Primary Exhaust PM10 - Total	83.01083043	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	3,120	Hours	Primary Exhaust PM2.5 - Total	80.52056348	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	3,120	Hours	Sulfur Dioxide (SO2)	5.662002206	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	3,120	Hours	Primary Exhaust PM2.5 - Total	41.54834673	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	3,120	Hours	Volatile Organic Compounds	173.24485	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	3,120	Hours	Sulfur Dioxide (SO2)	3.193190083	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	3,120	Hours	Oxides of Nitrogen (NOx)	672.0265308	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	3,120	Hours	Carbon Monoxide (CO)	274.3343626	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	3,120	Hours	Primary Exhaust PM10 - Total	42.83334135	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	3,120	Hours	Primary Exhaust PM2.5 - Total	58.86096582	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	3,120	Hours	Sulfur Dioxide (SO2)	3.242657375	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	3,120	Hours	Volatile Organic Compounds	179.0160921	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	3,120	Hours	Carbon Monoxide (CO)	339.6758796	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	3,120	Hours	Oxides of Nitrogen (NOx)	865.8485328	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	3,120	Hours	Primary Exhaust PM10 - Total	60.68141248	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	3,120	Hours	Carbon Monoxide (CO)	2706.536832	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	3,120	Hours	Oxides of Nitrogen (NOx)	2089.07675	Loader

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
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	3,120	Hours	Primary Exhaust PM10 - Total	368.2230517	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	3,120	Hours	Primary Exhaust PM2.5 - Total	357.1765391	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	3,120	Hours	Sulfur Dioxide (SO2)	2.774441244	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	3,120	Hours	Volatile Organic Compounds	426.844532	Loader+CA1:Q4261

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

On Road Table - SDC

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	2,600	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	2,600	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	2,600	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	2,600	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	2,600	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	2,600	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	2,600	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	117,466	Miles	996.6606113	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	117,466	Miles	0.008195575	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	117,466	Miles	67.25373151	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	117,466	Miles	123.8975652	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	117,466	Miles	0.038966288	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	117,466	Miles	0.035848774	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	117,466	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	1,676	Miles	14.21866361	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	1,676	Miles	0.000116921	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	1,676	Miles	0.959462202	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	1,676	Miles	1.767560373	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	1,676	Miles	0.000555905	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	1,676	Miles	0.00051143	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	1,676	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	24,419	Miles	207.1862412	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	Sulfur Dioxide (SO2)	6.977E-08	lbs/mi	24,419	Miles	0.0017037	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	24,419	Miles	13.98073495	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	24,419	Miles	25.75587972	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 PM10 - Total	3.31725E-07	lbs/mi	24,419	Miles	0.008100329	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	24,419	Miles	0.007452259	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	24,419	Miles	0	Delivery Truck (Vendor Trip)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Oxides of Nitrogen (NOx)	0.000131846	lbs/mi	165,984	Miles	21.88432646	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Carbon Monoxide (CO)	0.007279723	lbs/mi	165,984	Miles	1208.317542	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Volatile Organic Compounds	0.000172259	lbs/mi	165,984	Miles	28.59219802	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary Exhaust PM2.5 - Total	9.09729E-06	lbs/mi	165,984	Miles	1.510004583	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM10 - Brakewear Particulate	0.000133808	lbs/mi	165,984	Miles	22.20998707	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM10 - Tirewear Particulate	2.25209E-05	lbs/mi	165,984	Miles	3.738109066	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM2.5 - Brakewear Particulate	1.67261E-05	lbs/mi	165,984	Miles	2.776264982	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM2.5 - Tirewear Particulate	3.37811E-06	lbs/mi	165,984	Miles	0.56071221	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Sulfur Dioxide (SO2)	6.59684E-06	lbs/mi	165,984	Miles	1.094969891	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary Exhaust PM10 - Total	1.02839E-05	lbs/mi	165,984	Miles	1.706962858	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM10 - Tirewear Particulate	2.25209E-05	lbs/mi	145,236	Miles	3.270845432	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM2.5 - Brakewear Particulate	1.00603E-05	lbs/mi	145,236	Miles	1.461117731	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM2.5 - Tirewear Particulate	3.37811E-06	lbs/mi	145,236	Miles	0.490623184	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Sulfur Dioxide (SO2)	5.4097E-06	lbs/mi	145,236	Miles	0.785683189	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Volatile Organic Compounds	0.00010557	lbs/mi	145,236	Miles	15.33251746	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary Exhaust PM10 - Total	7.07396E-06	lbs/mi	145,236	Miles	1.027393655	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary Exhaust PM2.5 - Total	6.25776E-06	lbs/mi	145,236	Miles	0.908852031	Passenger Vehicle (Worker Commute)

Equipment Description	Year	MOVES EF Set	Pollutant Name	Emission Rate	Emission Rate Units	Total Usage	Total Usage Unit	Total Emissions (lbs)	TOE Identifier
Worker Commuter Vehicle - Car	2020	Passenger Car	Oxides of Nitrogen (NO _x)	7.79874E-05	lbs/mi	145,236	Miles	11.32657803	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Carbon Monoxide (CO)	0.005787481	lbs/mi	145,236	Miles	840.5505905	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM10 - Brakewear Particulate	8.04827E-05	lbs/mi	145,236	Miles	11.68898542	Passenger Vehicle (Worker Commute)

Fugitive Dust - SDC

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	374	0.187	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 10	PM10	308	0.154	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	37.4	0.0187	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 2.5	PM2.5	30.8	0.0154	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)

GSRC 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	12	hrs/day	260	---	3,120	hours	
Dozer	1	12	hrs/day	260	---	3,120	hours	Assume dirt to be removed = 0.9 mi x (5280 ft/mi) x (3 ft wide) = 14,256 ft ² = 0.33 acres (will need this for grading area) 14,256 ft ² x 6 ft deep = 85,536 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) = 5 days.
Excavator	1	12	hrs/day	260	---	3,120	hours	Assume dirt to be removed = 0.9 mi x (5280 ft/mi) x (3 ft wide) = 14,256 ft ² = 0.33 acres (will need this for grading area) 14,256 ft ² x 6 ft deep = 85,536 ft ³ . Assume digging 40 m ³ /hour and 12-hour days = 480 m ³ /day (or 16,951 ft ³ /day) = 6 days.
Crane	1	12	hrs/day	260	---	3,120	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	21.6	miles/trip	---	96	2,074	miles	Based on round trip from Yuma to Andrade (10.8 miles one way). Assume 5 panels per trip; flatbed truck (5280 ft/mi, 10' panel = 528 panels/mile = 476 panels = 96 trips).

Type of Equipment	Quantity	Usage	Usage Unit	Total Days	Number of Trips	Total Usage	Total Usage Units	Comments
Truck (Hauling Demo Debris)	1	21.6	miles/trip	---	7	151	miles	Based on round trip from Yuma to Andrade (10.8 miles one way). Assume flatbed truck with 50,000-lb capacity. Assume using 8' sections (5280 ft/mi, 8' panel = 660 panels/mile = 594 panels total at 550 lbs per panel = 7 truckloads).
Cement Truck	1	21.6	miles/trip	---	1,385	29,916	miles	Based on round trip from Yuma to Andrade (10.8 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 476 = 8,568 ft ³ . 290,400 + 8,568 = 298,968 ft ³ = 11,073 yd ³ . With 8 yd ³ trips with cement truck 1,385 trips are needed.
Passenger Vehicle (Worker Commute)	15	21.6	miles/trip	---	260	84,240	miles	Based on round trip from Yuma to Andrade (10.8 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 (8x21.6x260= 44,928 miles) and 7 passenger cars (7x21.6x260= 39,312).

Emissions Summary - Yuma

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)	444.9710485	0.222485524	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)	274.3343626	0.137167181	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Carbon Monoxide (CO)	Carbon Monoxide (CO)	339.6758796	0.16983794	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Carbon Monoxide (CO)	Carbon Monoxide (CO)	31.55408528	0.015777043	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Carbon Monoxide (CO)	Carbon Monoxide (CO)	0.159479131	7.97396E-05	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)	2.187142373	0.001093571	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)	2706.536832	1.353268416	Loader
Worker Commuter Vehicle - Car	Carbon Monoxide (CO)	Carbon Monoxide (CO)	227.5174531	0.113758727	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Carbon Monoxide (CO)	Carbon Monoxide (CO)	327.0633949	0.163531697	Passenger Vehicle (Worker Commute)
		Carbon Monoxide (CO) Total	4364.331415	2.182165708	
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	CO2 Equivalent	CO2 Equivalent	253.828345	0.126914173	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	CO2 Equivalent	CO2 Equivalent	1.282886942	0.000641443	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	CO2 Equivalent	CO2 Equivalent	17.59387807	0.008796939	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	449.301647	0.224650824	
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	2095.61754	1.04780877	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)	672.0265308	0.336013265	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	865.8485328	0.432924266	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)	2089.07675	1.044538375	Loader
Worker Commuter Vehicle - Car	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	5.923577088	0.002961789	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	3.065840669	0.00153292	Passenger Vehicle (Worker Commute)

Equipment	Pollutant Name Description	Pollutant Name	Total Emissions (lbs)	Total Emissions (tons)	Notes
		Oxides of Nitrogen (NOx) Total	5734.4718	2.8672359	
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Primary Exhaust PM10 - Total	PM10	83.01083043	0.041505415	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	42.83334135	0.021416671	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 10	PM10	39.60	0.020	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Primary Exhaust PM10 - Total	PM10	60.68141248	0.030340706	Dozer
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 10	PM10	33.00	0.017	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM10 - Total	PM10	0.009923888	4.96194E-06	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	0.000687865	3.43933E-07	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	368.2230517	0.184111526	Loader
Worker Commuter Vehicle - Car	Primary PM10 - Tirewear Particulate	PM10	1.011818995	0.000505909	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	Primary Exhaust PM10 - Total	PM10	0.462035059	0.000231018	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	Primary PM10 - Brakewear Particulate	PM10	6.011725824	0.003005863	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary PM10 - Brakewear Particulate	PM10	3.163935902	0.001581968	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary PM10 - Tirewear Particulate	PM10	0.885341621	0.000442671	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary Exhaust PM10 - Total	PM10	0.278091516	0.000139046	Passenger Vehicle (Worker Commute)
		PM10 Total	639.1847554	0.319592378	
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Primary Exhaust PM2.5 - Total	PM2.5	80.52056348	0.040260282	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	41.54834673	0.020774173	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	3.96	0.00198	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Primary Exhaust PM2.5 - Total	PM2.5	58.86096582	0.029430483	Dozer
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 2.5	PM2.5	3.30	0.00165	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM2.5 - Total	PM2.5	0.009129923	4.56496E-06	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	4.6144E-05	2.3072E-08	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	0.000632832	3.16416E-07	Delivery Truck (Vendor Trip)

Equipment	Pollutant Name Description	Pollutant Name	Total Emissions (lbs)	Total Emissions (tons)	Notes
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	357.1765391	0.17858827	Loader
Worker Commuter Vehicle - Car	Primary PM2.5 - Brakewear Particulate	PM2.5	0.751470221	0.000375735	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	Primary PM2.5 - Tirewear Particulate	PM2.5	0.282815369	0.000141408	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	Primary Exhaust PM2.5 - Total	PM2.5	0.408723045	0.000204362	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary Exhaust PM2.5 - Total	PM2.5	0.246005061	0.000123003	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary PM2.5 - Brakewear Particulate	PM2.5	0.395490514	0.000197745	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary PM2.5 - Tirewear Particulate	PM2.5	0.13280026	6.64001E-05	Passenger Vehicle (Worker Commute)
		PM2.5 Total	547.6022748	0.273801137	
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	5.662002206	0.002831001	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)	3.193190083	0.001596595	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	3.242657375	0.001621329	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	0.002087239	1.04362E-06	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	1.05492E-05	5.27461E-09	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)	0.000144675	7.23375E-08	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)	2.774441244	0.001387221	Loader
Worker Commuter Vehicle - Car	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	0.296382828	0.000148191	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Sulfur Dioxide (SO2)	Sulfur Dioxide (SO2)	0.212666126	0.000106333	Passenger Vehicle (Worker Commute)
		Sulfur Dioxide (SO2) Total	15.38506222	0.007692531	
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Total Gaseous Hydrocarbons	Volatile Organic Compounds	321.0034516	0.160501726	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	173.24485	0.086622425	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Total Gaseous Hydrocarbons	Volatile Organic Compounds	179.0160921	0.089508046	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Volatile Organic Compounds	Volatile Organic Compounds	17.12810075	0.00856405	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Volatile Organic Compounds	Volatile Organic Compounds	0.086568018	4.3284E-05	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	1.187218536	0.000593609	Delivery Truck (Vendor Trip)

Equipment	Pollutant Name Description	Pollutant Name	Total Emissions (lbs)	Total Emissions (tons)	Notes
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	426.844532	0.213422266	Loader
Worker Commuter Vehicle - Car	Volatile Organic Compounds	Volatile Organic Compounds	7.739241569	0.003869621	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Volatile Organic Compounds	Volatile Organic Compounds	4.150155103	0.002075078	Passenger Vehicle (Worker Commute)
		Volatile Organic Compounds Total	1132.076303	0.566038151	

Off Road Table – Yuma

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	3,120	Hours	Volatile Organic Compounds	321.0034516	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	3,120	Hours	Carbon Monoxide (CO)	444.9710485	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	3,120	Hours	Oxides of Nitrogen (NOx)	2095.61754	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	3,120	Hours	Primary Exhaust PM10 - Total	83.01083043	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	3,120	Hours	Primary Exhaust PM2.5 - Total	80.52056348	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	3,120	Hours	Sulfur Dioxide (SO2)	5.662002206	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	3,120	Hours	Primary Exhaust PM2.5 - Total	41.54834673	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	3,120	Hours	Volatile Organic Compounds	173.24485	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	3,120	Hours	Sulfur Dioxide (SO2)	3.193190083	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	3,120	Hours	Oxides of Nitrogen (NOx)	672.0265308	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	3,120	Hours	Carbon Monoxide (CO)	274.3343626	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	3,120	Hours	Primary Exhaust PM10 - Total	42.83334135	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	3,120	Hours	Primary Exhaust PM2.5 - Total	58.86096582	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	3,120	Hours	Sulfur Dioxide (SO2)	3.242657375	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	3,120	Hours	Volatile Organic Compounds	179.0160921	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	3,120	Hours	Carbon Monoxide (CO)	339.6758796	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	3,120	Hours	Oxides of Nitrogen (NOx)	865.8485328	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	3,120	Hours	Primary Exhaust PM10 - Total	60.68141248	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	3,120	Hours	Carbon Monoxide (CO)	2706.536832	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	3,120	Hours	Oxides of Nitrogen (NOx)	2089.07675	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	3,120	Hours	Primary Exhaust PM10 - Total	368.2230517	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	3,120	Hours	Primary Exhaust PM2.5 - Total	357.1765391	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	3,120	Hours	Sulfur Dioxide (SO2)	2.774441244	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	3,120	Hours	Volatile Organic Compounds	426.844532	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

On Road Table – Yuma

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	2,600	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	2,600	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	2,600	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	2,600	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	2,600	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	2,600	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	2,600	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	29,916	Miles	253.828345	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	29,916	Miles	0.002087239	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	29,916	Miles	17.12810075	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	29,916	Miles	31.55408528	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	29,916	Miles	0.009923888	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	29,916	Miles	0.009129923	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	29,916	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	151	Miles	1.282886942	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	151	Miles	1.05492E-05	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	151	Miles	0.086568018	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	151	Miles	0.159479131	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	151	Miles	5.01568E-05	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	151	Miles	4.6144E-05	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	151	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	2,074	Miles	17.59387807	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	Sulfur Dioxide (SO2)	6.977E-08	lbs/mi	2,074	Miles	0.000144675	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	2,074	Miles	1.187218536	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	2,074	Miles	2.187142373	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 PM10 - Total	3.31725E-07	lbs/mi	2,074	Miles	0.000687865	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	2,074	Miles	0.000632832	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	2,074	Miles	0	Delivery Truck (Vendor Trip)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Oxides of Nitrogen (NOx)	0.000131846	lbs/mi	44,928	Miles	5.923577088	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Carbon Monoxide (CO)	0.007279723	lbs/mi	44,928	Miles	327.0633949	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Volatile Organic Compounds	0.000172259	lbs/mi	44,928	Miles	7.739241569	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary Exhaust PM2.5 - Total	9.09729E-06	lbs/mi	44,928	Miles	0.408723045	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM10 - Brakewear Particulate	0.000133808	lbs/mi	44,928	Miles	6.011725824	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM10 - Tirewear Particulate	2.25209E-05	lbs/mi	44,928	Miles	1.011818995	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM2.5 - Brakewear Particulate	1.67261E-05	lbs/mi	44,928	Miles	0.751470221	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary PM2.5 - Tirewear Particulate	3.37811E-06	lbs/mi	44,928	Miles	0.151771726	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Sulfur Dioxide (SO2)	6.59684E-06	lbs/mi	44,928	Miles	0.296382828	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	2020	Passenger Truck	Primary Exhaust PM10 - Total	1.02839E-05	lbs/mi	44,928	Miles	0.462035059	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM10 - Tirewear Particulate	2.25209E-05	lbs/mi	39,312	Miles	0.885341621	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM2.5 - Brakewear Particulate	1.00603E-05	lbs/mi	39,312	Miles	0.395490514	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM2.5 - Tirewear Particulate	3.37811E-06	lbs/mi	39,312	Miles	0.13280026	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Sulfur Dioxide (SO2)	5.4097E-06	lbs/mi	39,312	Miles	0.212666126	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Volatile Organic Compounds	0.00010557	lbs/mi	39,312	Miles	4.150155103	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary Exhaust PM10 - Total	7.07396E-06	lbs/mi	39,312	Miles	0.278091516	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary Exhaust PM2.5 - Total	6.25776E-06	lbs/mi	39,312	Miles	0.246005061	Passenger Vehicle (Worker Commute)

Equipment Description	Year	MOVES EF Set	Pollutant Name	Emission Rate	Emission Rate Units	Total Usage	Total Usage Unit	Total Emissions (lbs)	TOE Identifier
Worker Commuter Vehicle - Car	2020	Passenger Car	Oxides of Nitrogen (NOx)	7.79874E-05	lbs/mi	39,312	Miles	3.065840669	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Carbon Monoxide (CO)	0.005787481	lbs/mi	39,312	Miles	227.5174531	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	2020	Passenger Car	Primary PM10 - Brakewear Particulate	8.04827E-05	lbs/mi	39,312	Miles	3.163935902	Passenger Vehicle (Worker Commute)

Fugitive Dust – Yuma

Equipment	Pollutant Name Description	Pollutant Name	Emission Rate	Emission Rate Unit	PM 10 Conversion (Unpaved Roads)	Grading Area (acre)	Work Days	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	20	lb/ac-day	---	0.33	6	39.6	0.0198	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 10	PM10	20	lb/ac-day	---	0.33	5	33	0.0165	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	39.6	lbs (PM 10)	0.1	---	---	3.96	0.00198	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 2.5	PM2.5	33	lbs (PM 10)	0.1	---	---	3.3	0.00165	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)

Appendix D
California Natural Diversity Database Protected Species List for
San Diego and Imperial Counties, California

State of California
 Natural Resources Agency
 DEPARTMENT OF FISH AND WILDLIFE
 Biogeographic Data Branch
 California Natural Diversity Database (CNDDDB)

STATE AND FEDERALLY LISTED ENDANGERED, THREATENED, AND RARE PLANTS OF CALIFORNIA

August 6, 2018

This document contains a list of California plant taxa that have been officially classified as Endangered, Threatened, or Rare by the California Fish & Game Commission (FGC; state listed) or by the U.S. Secretary of the Interior or the U.S. Secretary of Commerce (federally listed). This list also includes taxa that are official Candidates for state or federal listing, or have been officially Proposed for federal listing, as well as taxa that were once listed but have since been delisted.

State listing is pursuant to the Native Plant Protection Act of 1977 (Fish and Game Code Chapter 10, §§1900-1913) and the California Endangered Species Act of 1984 (CESA; California Code of Regulations, Title 14, Chapter 6, §§783.0-787.9; Fish and Game Code Chapter 1.5, §§ 2050-2115.5). The official California listing of Endangered and Threatened species is contained in the California Code of Regulations, Title 14, §670.5.

Federal listing is pursuant to the Federal Endangered Species Act of 1973, as amended (16 USC §§1531-1544; 50 CFR §§17.1-17.108). The federal agencies responsible for listing are the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). The official federal listing of Endangered and Threatened species is published in the Federal Register, 50 CFR §17.11.

Abbreviation	Designation	Totals
SE	State Listed - Endangered	134
ST	State Listed - Threatened	22
SR	State Listed - Rare	64
SC	State Candidate for Listing	2
SCD	State Candidate for Delisting	0
SDR	State Delisted (Recovered)	0
SDE	State Delisted (Extinct)	0
FE	Federally Listed - Endangered	134
FT	Federally Listed - Threatened	52
FPE	Federally Proposed - Endangered	0
FPT	Federally Proposed - Threatened	0
FC	Federal Candidate for Listing	1
FPDE	Federally Proposed for Delisting (currently Endangered)	0
FPDT	Federally Proposed for Delisting (currently Threatened)	0
FDR	Federally Delisted (Recovered)	3
FDE	Federally Delisted (Extinct)	0
# Plant Taxa State-Listed Only		98
# Plant Taxa Federally-Listed Only		64
# Plant Taxa State- AND Federally-Listed		122
Total # State-Listed Taxa (SE, ST, SR, SCD)		220
Total # Federally-Listed Taxa (FE, FPDE, FT, FPDT)		186
Total Number of Listed Plant Taxa		284

(Totals include subspecies or varieties when listed separately. Note that CNDDDB does not currently track *Pinus albicaulis* or *Carex albida*, so counts generated from RareFind may differ from those above.)

State and Federally Listed Endangered and Threatened Plants of California
Last updated 20180806

Common and scientific names are shown as they are in current usage, typically based on the NatureServe Natural Heritage Network, unless otherwise noted. If current nomenclature differs from that in state and federal listing documents, the nomenclature at the time of listing is provided in the notes. Synonyms are included when state, federal, and/or CNDDDB usage differs; name changes and other clarifying points are also noted. Where state and federal listings apply to different ranges, subspecies, or populations, each taxa will be listed separately, and statuses that apply to only a portion of the taxon, or that also encompass other taxa, will be shown in parentheses. Where state and federal listings differ in name, but represent the same biological unit, the common name will be listed using the California state listing; the federal name will be listed in the notes.

The "List Date" for **final** federal listing is the date the listing became effective. This is typically not the date of publication of the rule in the Federal Register; it is usually about 30 days after publication, but may be longer.

If a plant was previously listed and no longer has any listing status, the entry text is *grey*. For taxa having more than one status entry, the **current status is in bold and underlined**. All dates are in the "YYYYMMDD" format.

ABBREVIATIONS

CCR: California Code of Regulations
CDFW: California Department of Fish and Wildlife (previously Department of Fish and Game (DFG))
CESA: California Endangered Species Act
ESA: Endangered Species Act (Federal)
FGC: California Fish and Game Commission
NMFS: National Marine Fisheries Service
NOAA: National Oceanic and Atmospheric Administration
USFWS: United States Fish and Wildlife Service

ADDITIONAL RESOURCES

The California Fish and Game Commission publishes notices relating to changes to Title 14 of the California Code of Regulations: www.fgc.ca.gov

Title 14 of the California Code of Regulations can be accessed through The Office of Administrative Law: www.oal.ca.gov

The U.S. Fish and Wildlife Service is responsible for protecting Endangered and Threatened species, and conserving candidate species and at-risk species so that ESA listing is not necessary: www.fws.gov/Endangered

NOAA's National Marine Fisheries Service, Office of Protected Resources is responsible for protecting marine mammals and Endangered and Threatened marine life: www.fisheries.noaa.gov/about/office-protected-resources

State and Federally Listed Endangered, Threatened, and Rare Plants of California
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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Hesperis matronalis</i>	Ramshead Meadows abronia					FC on 20040504; removed from FC list on 20151008
<i>Acanthomintha duttonii</i>	San Mateo thorn-mint	SE	197907XX	FE	19850918	Scientific name at time of listing: <i>Acanthomintha obovata</i> ssp. <i>duttonii</i>
<i>Acanthomintha ilicifolia</i>	San Diego thorn-mint	SE	198201XX	FT	19981013	
<i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i>	Cushenbury oxytheca			FE	19940824	Scientific name at time of listing: <i>Oxytheca parishii</i> var. <i>goodmaniana</i>
<i>Acmispon argophyllus</i> var. <i>adsurgens</i>	San Clemente Island bird's-foot trefoil	SE	197911XX			Scientific name at time of listing: <i>Lotus argophyllus</i> var. <i>adsurgens</i>
<i>Acmispon argophyllus</i> var. <i>niveus</i>	Santa Cruz Island bird's-foot trefoil	SE	198108XX			Scientific name at time of listing: <i>Lotus argophyllus</i> var. <i>niveus</i>
<i>Acmispon dendroideus</i> var. <i>traskiae</i>	San Clemente Island lotus	SE	198204XX	FT FE	20130726 19770912	Scientific name at time of listing: <i>Lotus dendroideus</i> var. <i>traskiae</i>
<i>Agrostis blanda</i> var. <i>sonomensis</i>	Blasdale's bent grass	Delisted SR	200804XX 197611XX			Current taxonomic treatment no longer recognizes varieties within <i>A. blanda</i>
<i>Allium munzii</i>	Munz's onion	ST	199001XX	FE	19981013	
<i>Allium yosemitense</i>	Yosemite onion	SR	198207XX			
<i>Alopecurus aequalis</i> var. <i>sonomensis</i>	Sonoma alopecurus			FE	19971022	
<i>Ambrosia pumila</i>	San Diego ambrosia			FE	20020702	
<i>Amsinckia grandiflora</i>	large-flowered fiddleneck	SE	198204XX	FE	19850508	
<i>Arabis mcdonaldiana</i>	McDonald's rockcress	SE	197907XX	FE	19780929	
<i>Arctostaphylos bakeri</i> ssp. <i>bakeri</i>	Baker's manzanita	SR	197909XX			Listing status includes the entire species, <i>A. bakeri</i> .
<i>Arctostaphylos bakeri</i> ssp. <i>sublaevis</i>	The Cedars manzanita	SR	197909XX			Listing status includes the entire species, <i>A. bakeri</i> .
<i>Arctostaphylos confertiflora</i>	Santa Rosa Island manzanita			FE	19970731	
<i>Arctostaphylos densiflora</i>	Vine Hill manzanita	SE	198108XX			
<i>Arctostaphylos edmundsii</i> var. <i>parvifolia</i>	Little Sur manzanita	Delisted SR	200804XX 198108XX			Current taxonomic treatment no longer recognizes varieties within <i>A. edmundsii</i> .
<i>Arctostaphylos franciscana</i>	Franciscan manzanita			FE	20121005	
<i>Arctostaphylos glandulosa</i> ssp. <i>crassifolia</i>	Del Mar manzanita			FE	19961007	
<i>Arctostaphylos hookeri</i> ssp. <i>hearstiorum</i>	Hearsts' manzanita	SE	197909XX			
<i>Arctostaphylos imbricata</i>	San Bruno Mountain manzanita	SE	197909XX			
<i>Arctostaphylos montana</i> ssp. <i>ravenii</i>	Presidio manzanita	SE	197811XX	FE	19791129	Scientific name at time of listing: <i>Arctostaphylos hookeri</i> var. <i>ravenii</i>
<i>Arctostaphylos morroensis</i>	Morro manzanita			FT	19941215	
<i>Arctostaphylos myrtifolia</i>	Ione manzanita			FT	19990526	
<i>Arctostaphylos pacifica</i>	Pacific manzanita	SE	197909XX			
<i>Arctostaphylos pallida</i>	pallid manzanita	SE	197911XX	FT	19980422	
<i>Arenaria paludicola</i>	marsh sandwort	SE	199002XX	FE	19930803	

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Astragalus agnicidus</i>	Humboldt milk-vetch	SE	198204XX			
<i>Astragalus albens</i>	Cushenbury milk-vetch			FE	19940824	
<i>Astragalus brauntonii</i>	Braunton's milk-vetch			FE	19970129	
<i>Astragalus claranus</i>	Clara Hunt's milk-vetch	ST	199001XX	FE	19971022	Scientific name at time of listing: <i>Astragalus clarianus</i>
<i>Astragalus jaegerianus</i>	Lane Mountain milk-vetch			FE	19981006	
<i>Astragalus johannis-howellii</i>	Long Valley milk-vetch	SR	198207XX			
<i>Astragalus lentiginosus</i> var. <i>coachelae</i>	Coachella Valley milk-vetch			FE	19981006	
<i>Astragalus lentiginosus</i> var. <i>piscinensis</i>	Fish Slough milk-vetch			FT	19981006	
<i>Astragalus lentiginosus</i> var. <i>sesquimetralsis</i>	Sodaville milk-vetch	SE	197909XX			
<i>Astragalus magdaleneae</i> var. <i>peirsonii</i>	Peirson's milk-vetch	SE	197911XX	FT	19981006	
<i>Astragalus monoensis</i>	Mono milk-vetch	SR	198207XX			
<i>Astragalus pycnostachyus</i> var. <i>lanosissimus</i>	Ventura Marsh milk-vetch	SE	200004XX	FE	20010521	
<i>Astragalus tener</i> var. <i>titi</i>	coastal dunes milk-vetch	SE	198202XX	FE	19980812	
<i>Astragalus traskiae</i>	Trask's milk-vetch	SR	197911XX			
<i>Astragalus tricarinatus</i>	triple-ribbed milk-vetch			FE	19981006	
<i>Atriplex coronata</i> var. <i>notatior</i>	San Jacinto Valley crownscale			FE	19981013	
<i>Atriplex tularensis</i>	Bakersfield smallscale	SE	198701XX			
<i>Baccharis vanessae</i>	Encinitas baccharis	SE	198701XX	FT	19961007	
<i>Bensoniella oregona</i>	bensoniella	SR	198207XX			
<i>Berberis nevini</i>	Nevin's barberry	SE	198701XX	FE	19981013	
<i>Berberis pinnata</i> ssp. <i>insularis</i>	island barberry	SE	197911XX	FE	19970731	
<i>Blennosperma bakeri</i>	Sonoma sunshine	SE	199202XX	FE	19911202	
<i>Blennosperma nanum</i> var. <i>robustum</i>	Point Reyes blennosperma	SR	197811XX			
<i>Bloomeria humilis</i>	dwarf goldenstar	SR	197811XX			
<i>Boechera hoffmannii</i>	Hoffmann's rockcress			FE	19970731	Scientific name at time of listing: <i>Arabis hoffmannii</i>
<i>Brodiaea filifolia</i>	thread-leaved brodiaea	SE	198201XX	FT	19981013	
<i>Brodiaea insignis</i>	Kaweah brodiaea	SE	197911XX			
<i>Brodiaea pallida</i>	Chinese Camp brodiaea	SE	197811XX	FT	19981014	
<i>Brodiaea rosea</i>	Indian Valley brodiaea	SE	197909XX			Scientific name at time of listing: <i>Brodiaea coronaria</i> ssp. <i>rosea</i>
<i>Calamagrostis foliosa</i>	leafy reed grass	SR	197911XX			
<i>Calochortus dunnii</i>	Dunn's mariposa-lily	SR	197911XX			
<i>Calochortus persistens</i>	Siskiyou mariposa-lily	SR	198207XX			FC on 20040504; removed from FC list on 20151008.

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Calochortus tiburonensis</i>	Tiburon mariposa-lily	ST	198705XX	FT	19950203	
<i>Calyptridium pulchellum</i>	Mariposa pussypaws			FT	19981014	
<i>Calystegia stebbinsii</i>	Stebbins' morning-glory	SE	198108XX	FE	19961018	
<i>Camissonia benitensis</i>	San Benito evening-primrose			FT	19850212	
<i>Carex albida</i>	white sedge	SE	197911XX	FE	19971022	Current taxonomic treatment considers <i>Carex albida</i> as a synonym of <i>Carex lemmonii</i> , a common taxon. No longer tracked by CNDDB.
<i>Carex tompkinsii</i>	Tompkins' sedge	SR	197911XX			
<i>Carpenteria californica</i>	tree-anemone	ST	199001XX			
<i>Castilleja affinis</i> var. <i>neglecta</i>	Tiburon paintbrush	ST	199001XX	FE	19950203	Scientific name at time of listing: <i>Castilleja affinis</i> ssp. <i>neglecta</i>
<i>Castilleja campestris</i> var. <i>succulenta</i>	succulent owl's-clover	SE	197909XX	FT	19970326	Scientific name at time of listing: <i>Castilleja campestris</i> ssp. <i>succulenta</i>
<i>Castilleja cinerea</i>	ash-gray paintbrush			FT	19981014	
<i>Castilleja gleasoni</i>	Mt. Gleason paintbrush	SR	198207XX			
<i>Castilleja grisea</i>	San Clemente Island paintbrush	SE	198204XX	FT FE	20130726 19770912	
<i>Castilleja mollis</i>	soft-leaved paintbrush			FE	19970731	
<i>Castilleja uliginosa</i>	Pitkin Marsh paintbrush	SE	197811XX			
<i>Caulanthus californicus</i>	California jewel-flower	SE	198701XX	FE	19900719	
<i>Caulanthus stenocarpus</i>	slender-pod jewel-flower	Delisted SR	200804XX 197911XX			Current taxonomic treatment considers <i>Caulanthus stenocarpus</i> as a synonym of <i>Caulanthus heterophyllus</i> , a common taxon.
<i>Ceanothus ferrisiae</i>	Coyote ceanothus			FE	19950203	Scientific name at time of listing: <i>Ceanothus ferrisiae</i>
<i>Ceanothus hearstiorum</i>	Hearsts' ceanothus	SR	198108XX			
<i>Ceanothus maritimus</i>	maritime ceanothus	SR	197811XX			
<i>Ceanothus masonii</i>	Mason's ceanothus	SR	197811XX			
<i>Ceanothus ophiochilus</i>	Vail Lake ceanothus	SE	199401XX	FT	19981013	
<i>Ceanothus roderickii</i>	Pine Hill ceanothus	SR	198207XX	FE	19961018	
<i>Cercocarpus traskiae</i>	Catalina Island mountain-mahogany	SE	198204XX	FE	19970808	
<i>Chlorogalum purpureum</i> var. <i>purpureum</i>	Santa Lucia purple amole			FT	20000320	USFWS listed the entire species, <i>Chlorogalum purpureum</i> .
<i>Chlorogalum purpureum</i> var. <i>reductum</i>	Camatta Canyon amole	SR	197811XX	FT	20000320	USFWS listed the entire species, <i>Chlorogalum purpureum</i> .
<i>Chloropyron maritimum</i> ssp. <i>maritimum</i>	salt marsh bird's-beak	SE	197907XX	FE	19781029	Scientific name at time of listing: <i>Cordylanthus maritimum</i> ssp. <i>maritimum</i>
<i>Chloropyron molle</i> ssp. <i>molle</i>	soft bird's-beak	SR	197907XX	FE	19971120	Scientific name at time of listing: <i>Cordylanthus molle</i> ssp. <i>molle</i> . Synonym: soft salty bird's-beak.

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Chloropyron palmatum</i>	palmate-bracted bird's-beak	SE	198405XX	FE	19860701	Scientific name at time of listing: <i>Cordylanthus palmatus</i> . Synonym: palmate salty bird's-beak.
<i>Chorizanthe howellii</i>	Howell's spineflower	ST	198701XX	FE	19920622	
<i>Chorizanthe orcuttiana</i>	Orcutt's spineflower	SE	197911XX	FE	19961007	
<i>Chorizanthe parryi</i> var. <i>fernandina</i>	San Fernando Valley spineflower	SE	200108XX			FC on 20040504, reclassified as FPT on 20160915, Proposed Rule withdrawn on 20180315.
<i>Chorizanthe pungens</i> var. <i>hartwegiana</i>	Ben Lomond spineflower			FE	19940204	
<i>Chorizanthe pungens</i> var. <i>pungens</i>	Monterey spineflower			FT	19940204	
<i>Chorizanthe robusta</i> var. <i>hartwegii</i>	Scotts Valley spineflower			FE	19940204	
<i>Chorizanthe robusta</i> var. <i>robusta</i>	robust spineflower			FE	19940204	
<i>Chorizanthe valida</i>	Sonoma spineflower	SE	199001XX	FE	19920622	
<i>Cirsium ciliolatum</i>	Ashland thistle	SE	198209XX			
<i>Cirsium fontinale</i> var. <i>fontinale</i>	fountain thistle	SE	197907XX	FE	19950203	Synonym: Crystal Springs fountain thistle
<i>Cirsium fontinale</i> var. <i>obispoense</i>	Chorro Creek bog thistle	SE	199306XX	FE	19941215	Synonym: San Luis Obispo fountain thistle
<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>	Suisun thistle			FE	19971120	
<i>Cirsium rhotophilum</i>	surf thistle	ST	199002XX			
<i>Cirsium scariosum</i> var. <i>lancholepis</i>	La Graciosa thistle	ST	199002XX	FE	20000320	Scientific name at time of listing: <i>Cirsium lancholepis</i>
<i>Clarkia franciscana</i>	Presidio clarkia	SE	197811XX	FE	19950203	
<i>Clarkia imbricata</i>	Vine Hill clarkia	SE	197811XX	FE	19971022	
<i>Clarkia lingulata</i>	Merced clarkia	SE	198701XX			
<i>Clarkia speciosa</i> ssp. <i>immaculata</i>	Pismo clarkia	SR	197811XX	FE	19941215	
<i>Clarkia springvillensis</i>	Springville clarkia	SE	197909XX	FT	19981014	
<i>Cordylanthus nidularius</i>	Mt. Diablo bird's-beak	SR	197811XX			
<i>Cordylanthus rigidus</i> ssp. <i>littoralis</i>	seaside bird's-beak	SE	198201XX			
<i>Cordylanthus tenuis</i> ssp. <i>capillaris</i>	Pennell's bird's-beak	SR	197811XX	FE	19950203	
<i>Croton wigginsii</i>	Wiggins' croton	SR	198201XX			
<i>Cryptantha roosiorum</i>	bristlecone cryptantha	SR	198207XX			
<i>Dedeckera eurekensis</i>	July gold	SR	197811XX			
<i>Deinandra arida</i>	Red Rock tarplant	SR	198207XX			Scientific name at time of listing: <i>Hemizonia arida</i>
<i>Deinandra bacigalupii</i>	Livermore tarplant	SE	20171001			
<i>Deinandra conjugens</i>	Otay tarplant	SE	197911XX	FT	19981013	Scientific name at time of listing: <i>Hemizonia conjugens</i>
<i>Deinandra increscens</i> ssp. <i>villosa</i>	Gaviota tarplant	SE	199001XX	FE	20000320	Scientific name at time of listing: <i>Hemizonia increscens</i> ssp. <i>villosa</i>
<i>Deinandra minthornii</i>	Santa Susana tarplant	SR	197811XX			Scientific name at time of listing: <i>Hemizonia minthornii</i>
<i>Deinandra mohavensis</i>	Mojave tarplant	SE	198108XX			Scientific name at time of listing: <i>Hemizonia mohavensis</i>
<i>Delphinium bakeri</i>	Baker's larkspur	SE	200704XX	FE	20000126	
<i>Delphinium hesperium</i> ssp. <i>cuyamaca</i>	Cuyamaca larkspur	SR	198207XX			

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<i>Delphinium luteum</i>	golden larkspur	SR	197909XX	FE	20000126	
<i>Delphinium variegatum</i> ssp. <i>kinkiense</i>	San Clemente Island larkspur	SE	197909XX	FE	19770912	
<i>Dieteria asteroides</i> var. <i>lagunensis</i>	Mount Laguna aster	SR	197909XX			Scientific name at time of listing: <i>Machaeranthera asteroides</i> var. <i>lagunensis</i>
<i>Diplacus vandenbergensis</i>	Vandenberg monkeyflower			FE	20140925	Scientific name when proposed as a Federal Candidate: <i>Mimulus fremontii</i> var. <i>vandenbergensis</i>
<i>Dithyrea maritima</i>	beach spectaclepod	ST	199002XX			
<i>Dodecahema leptoceras</i>	slender-horned spineflower	SE	198201XX	FE	19870928	
<i>Downingia concolor</i> var. <i>brevior</i>	Cuyamaca Lake downingia	SE	198202XX			
<i>Dudleya abramsii</i> ssp. <i>setchellii</i>	Santa Clara Valley dudleya			FE	19950203	Scientific name at time of listing: <i>Dudleya setchellii</i>
<i>Dudleya brevifolia</i>	short-leaved dudleya	SE	198201XX			
<i>Dudleya cymosa</i> ssp. <i>agourensis</i>	Agoura Hills dudleya			FT	19970129	USFWS listed the more encompassing <i>Dudleya cymosa</i> ssp. <i>ovatifolia</i> from which ssp. <i>agourensis</i> was split.
<i>Dudleya cymosa</i> ssp. <i>marcescens</i>	marcescent dudleya	SR	197811XX	FT	19970129	
<i>Dudleya cymosa</i> ssp. <i>ovatifolia</i>	Santa Monica dudleya			FT	19970129	
<i>Dudleya nesiotica</i>	Santa Cruz Island dudleya	SR	197911XX	FT	19970731	
<i>Dudleya parva</i>	Conejo dudleya			FT	19970129	Scientific name at time of listing: <i>Dudleya abramsii</i> ssp. <i>parva</i>
<i>Dudleya stolonifera</i>	Laguna Beach dudleya	ST	198701XX	FT	19981013	
<i>Dudleya traskiae</i>	Santa Barbara Island dudleya	SE	197911XX	FE	19780527	
<i>Dudleya verityi</i>	Verity's dudleya			FT	19970129	
<i>Enceliopsis nudicaulis</i> var. <i>corrugata</i>	Ash Meadows daisy			FT	19850520	
<i>Eremalche kernensis</i>	Kern mallow			FE	19900719	
<i>Eremogone ursina</i>	Big Bear Valley sandwort			FT	19981014	Scientific name at time of listing: <i>Arenaria ursina</i>
<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	Santa Ana River woollystar	SE	198701XX	FE	19870928	
<i>Eriastrum hooveri</i>	Hoover's woolly-star			FDR	10031007	
<i>Eriastrum tracyi</i>	Tracy's eriastrum	SR	198207XX			
<i>Erigeron parishii</i>	Parish's daisy			FT	19940824	
<i>Eriodictyon altissimum</i>	Indian Knob mountainbalm	SE	197907XX	FE	19941215	
<i>Eriodictyon capitatum</i>	Lompoc yerba santa	SR	197909XX	FE	20000320	
<i>Eriogonum alpinum</i>	Trinity buckwheat	SE	197907XX			
<i>Eriogonum apricum</i> var. <i>apricum</i>	ione buckwheat	SE	198108XX	FE	19990526	USFWS listed the entire species, <i>Eriogonum apricum</i> .
<i>Eriogonum apricum</i> var. <i>prostratum</i>	Irish Hill buckwheat	SE	198701XX	FE	19990526	USFWS listed the entire species, <i>Eriogonum apricum</i> .
<i>Eriogonum butterworthianum</i>	Butterworth's buckwheat	SR	197911XX			
<i>Eriogonum crocatum</i>	conejo buckwheat	SR	197909XX			
<i>Eriogonum giganteum</i> var. <i>compactum</i>	Santa Barbara Island buckwheat	SR	197911XX			

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<i>Eriogonum grande</i> var. <i>timorum</i>	San Nicolas Island buckwheat	SE	197911XX			Scientific name at time of listing: <i>Eriogonum grande</i> ssp. <i>timorum</i> . CCR lists common name as San Nicolas Island buckwheat.
<i>Eriogonum kelloggii</i>	Kellogg's buckwheat	SE	198204XX			FC on 20040504; removed from FC list on 20140918.
<i>Eriogonum kennedyi</i> var. <i>austromontanum</i>	southern mountain buckwheat			FT	19981014	
<i>Eriogonum ovalifolium</i> var. <i>vineum</i>	Cushenbury buckwheat			FE	19940824	
<i>Eriogonum thornei</i>	Thorne's buckwheat	SE	197909XX			Scientific name at time of listing: <i>Eriogonum ericifolium</i> var. <i>thornei</i>
<i>Eriogonum twisselmannii</i>	Twisselmann's buckwheat	SR	198207XX			
<i>Eriophyllum congdonii</i>	Congdon's woolly sunflower	SR	198207XX			
<i>Eriophyllum latilobum</i>	San Mateo woolly sunflower	SE	199206XX	FE	19950203	
<i>Eryngium aristulatum</i> var. <i>parishii</i>	San Diego button-celery	SE	197907XX	FE	19930803	
<i>Eryngium constancei</i>	Loch Lomond button-celery	SE	198701XX	FE	19870122	Emergency FE listing 19850801; formal FE status on 19870122. Synonym: Loch Lomond coyote thistle.
<i>Eryngium racemosum</i>	Delta button-celery	SE	198108XX			
<i>Erysimum capitatum</i> var. <i>angustatum</i>	Contra Costa wallflower	SE	197811XX	FE	19780527	
<i>Erysimum menziesii</i>	Menzies' wallflower	SE	198409XX	FE	19920622	USFWS separately listed three subspecies as endangered; <i>E. menziesii</i> ssp. <i>eurekaense</i> , <i>E. menziesii</i> ssp. <i>menziesii</i> , and <i>E. menziesii</i> ssp. <i>yadonii</i> . Current taxonomic treatment no longer recognizes subspecies within <i>E. menziesii</i> .
<i>Erysimum teretifolium</i>	Santa Cruz wallflower	SE	198108XX	FE	19940204	
<i>Euphorbia hooveri</i>	Hoover's spurge			FT	19970326	Scientific name at time of listing: <i>Chamaesyce hooveri</i>
<i>Fremontodendron decumbens</i>	Pine Hill flannelbush	SR	197907XX	FE	19961018	Scientific name at time of listing: <i>Fremontodendron californicum</i> ssp. <i>decumbens</i>
<i>Fremontodendron mexicanum</i>	Mexican flannelbush	SR	198207XX	FE	19981013	
<i>Fritillaria gentneri</i>	Gentner's fritillary			FE	19991210	
<i>Fritillaria roderickii</i>	Roderick's fritillary	SE	197911XX			
<i>Fritillaria striata</i>	striped adobe-lily	ST	198701XX			
<i>Galium angustifolium</i> ssp. <i>borregoense</i>	Borrego bedstraw	SR	197909XX			
<i>Galium buxifolium</i>	box bedstraw	SR	197911XX	FE	19970731	
<i>Galium californicum</i> ssp. <i>sierrae</i>	El Dorado bedstraw	SR	197911XX	FE	19961018	
<i>Galium catalinense</i> ssp. <i>acrispum</i>	San Clemente Island bedstraw	SE	198204XX			
<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>	sand gilia	ST	198701XX	FE	19920622	Synonym: Monterey gilia
<i>Gilia tenuiflora</i> ssp. <i>hoffmannii</i>	Hoffmann's slender-flowered gilia			FE	19970731	
<i>Gratiola heterosepala</i>	Boggs Lake hedge-hyssop	SE	197811XX			

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<i>Grindelia fraxinipratensis</i>	Ash Meadows gumplant			FT	19850520	Scientific name at time of listing: <i>Grindelia fraxino-pratensis</i>
<i>Hazardia orcuttii</i>	Orcutt's hazardia	ST	200208XX			FC on 20040504; removed from FC list on 20131122.
<i>Helianthemum greenii</i>	island rush-rose			FT	19970731	
<i>Helianthus niveus</i> ssp. <i>tephrodes</i>	Algodones Dunes sunflower	SE	197911XX			
<i>Hesperocyparis abramsiana</i> var. <i>abramsiana</i>	Santa Cruz cypress	SE	197911XX	FT FE	20160321 19870108	USFWS listed the entire species, <i>Cupressus abramsiana</i> , as FE on 19870108; reclassified as FT on 20160321.
<i>Hesperocyparis abramsiana</i> var. <i>butanoensis</i>	Butano Ridge cypress	SE	197911XX	FT FE	20160321 19870108	USFWS listed the entire species, <i>Cupressus abramsiana</i> , as FE on 19870108; reclassified as FT on 20160321.
<i>Hesperocyparis goveniana</i>	Gowen cypress			FT	19980812	Scientific name at time of listing: <i>Cupressus goveniana</i> ssp. <i>goveniana</i>
<i>Hesperolinon congestum</i>	Marin western flax	ST	199206XX	FT	19950203	
<i>Hesperolinon didymocarpum</i>	Lake County western flax	SE	198108XX			
<i>Holmgrenanthe petrophila</i>	rock lady	SR	198207XX			Scientific name at time of listing: <i>Maurandya petrophila</i>
<i>Holocarpha macradenia</i>	Santa Cruz tarplant	SE	197909XX	FT	20000320	
<i>Howellia aquatilis</i>	water howellia			FT	19940714	
<i>Ivesia callida</i>	Tahquitz ivesia	SR	198207XX			
<i>Ivesia webberi</i>	Webber's ivesia			FT	20140703	FC on 20040504; moved to FPT on 20130802.
<i>Lasthenia burkei</i>	Burke's goldfields	SE	197909XX	FE	19911202	
<i>Lasthenia conjugens</i>	Contra Costa goldfields			FE	19970618	
<i>Layia carnososa</i>	beach layia	SE	199001XX	FE	19920622	
<i>Leptosiphon croceus</i>	coast yellow leptosiphon	SC	20161208			State Candidate for Endangered status listing; FGC voted to list as Endangered on 20180419, official Notice of Findings pending.
<i>Lessingia germanorum</i>	San Francisco lessingia	SE	199001XX	FE	19970619	Synonym: <i>Lessingia germanorum</i> var. <i>germanorum</i>
<i>Lewisia congonii</i>	Congdon's lewisia	SR	198207XX			
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	SR	197911XX			
<i>Lilium occidentale</i>	western lily	SE	198201XX	FE	19940817	
<i>Lilium pardalinum</i> ssp. <i>pitkinense</i>	Pitkin Marsh lily	SE	197811XX	FE	19971022	
<i>Limnanthes alba</i> ssp. <i>parishii</i>	Parish's meadowfoam	SE	197907XX			Scientific name at time of listing: <i>Limnanthes gracilis</i> var. <i>parishii</i>
<i>Limnanthes bakeri</i>	Baker's meadowfoam	SR	197811XX			
<i>Limnanthes douglasii</i> ssp. <i>sulphurea</i>	Point Reyes meadowfoam	SE	198204XX			
<i>Limnanthes floccosa</i> ssp. <i>californica</i>	Butte County meadowfoam	SE	198202XX	FE	19920608	
<i>Limnanthes vincularis</i>	Sebastopol meadowfoam	SE	197911XX	FE	19911202	
<i>Lithophragma maximum</i>	San Clemente Island woodland star	SE	198202XX	FE	19970808	
<i>Lupinus citrinus</i> var. <i>deflexus</i>	Mariposa lupine	ST	199001XX			

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<i>Lupinus constancei</i>	The Lassics lupine	SC	20170208			State Candidate for Endangered status listing; FGC voted to list as Endangered on 20180419, official Notice of Findings pending.
<i>Lupinus milo-bakeri</i>	Milo Baker's lupine	ST	198701XX			
<i>Lupinus nipomensis</i>	Nipomo Mesa lupine	SE	198701XX	FE	20000320	
<i>Lupinus padre-crowleyi</i>	Father Crowley's lupine	SR	198108XX			
<i>Lupinus tidestromii</i>	Tidestrom's lupine	SE	198701XX	FE	19920622	Federally listed at the species level; state listed as <i>Lupinus tidestromii</i> var. <i>tidestromii</i> (plants of <i>L. tidestromii</i> from Monterey County only)
<i>Malacothrix sonnei</i>	Truckee barberry	Delisted SE	200804XX 197907XX	Delisted FE	20031001 19791106	Synonym: <i>Berberis sonnei</i> . Current taxonomic treatment considers <i>B. sonnei</i> as a form of the common <i>B. aquifolium</i> var. <i>repens</i> , and not a separate taxon.
<i>Malacothamnus clementinus</i>	San Clemente Island bush-mallow	SE	198202XX	FE	19770912	
<i>Malacothamnus fasciculatus</i> var. <i>nesioticus</i>	Santa Cruz Island bush-mallow	SE	197911XX	FE	19970731	
<i>Malacothrix indecora</i>	Santa Cruz Island malacothrix			FE	19970731	
<i>Malacothrix squalida</i>	island malacothrix			FE	19970731	
<i>Monardella viminea</i>	willowy monardella	SE	197911XX	FE	19981013	Scientific name at time of listing: <i>Monardella linoidea</i> ssp. <i>viminea</i>
<i>Monolopia congdonii</i>	San Joaquin woollythreads			FE	19900719	Synonym: <i>Lembertia congdonii</i>
<i>Nasturtium gambelii</i>	Gambel's water cress	ST	199001XX	FE	19930803	Scientific name at time of listing: <i>Rorippa gambelii</i>
<i>Navarretia fossalis</i>	spreading navarretia			FT	19981013	
<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i>	few-flowered navarretia	ST	199001XX	FE	19970618	Synonym: <i>Navarretia pauciflora</i>
<i>Navarretia leucocephala</i> ssp. <i>pliantha</i>	many-flowered navarretia	SE	197911XX	FE	19970618	
<i>Nemacladus twisselmannii</i>	Twisselmann's nemacladus	SR	198207XX			
<i>Neostapfia colusana</i>	Colusa grass	SE	197911XX	FT	19970326	
<i>Nitrophila mohavensis</i>	Amargosa nitrophila	SE	197911XX	FE	19850520	
<i>Noccaea fendleri</i> ssp. <i>californica</i>	Kneeland Prairie pennycress			FE	20000209	Scientific name at time of listing: <i>Thlapsi californicum</i>
<i>Nolina interrata</i>	Dehesa nolina	SE	197911XX			
<i>Oenothera californica</i> ssp. <i>eurekaensis</i>	Eureka Dunes evening-primrose	SR	197811XX	FDR FE	20180329 19780527	Scientific name at time of listing: <i>Oenothera avita</i> ssp. <i>eurekaensis</i> . FE on 19780527; removed from FE list on 20180329.
<i>Oenothera deltoides</i> ssp. <i>howellii</i>	Antioch Dunes evening-primrose	SE	197811XX	FE	19780527	
<i>Opuntia basilaris</i> var. <i>treleasei</i>	Bakersfield cactus	SE	199001XX	FE	19900719	Scientific name at time of listing: <i>Opuntia treleasei</i>
<i>Orcuttia californica</i>	California Orcutt grass	SE	197909XX	FE	19930803	
<i>Orcuttia inaequalis</i>	San Joaquin Valley Orcutt grass	SE	197909XX	FT	19970326	
<i>Orcuttia pilosa</i>	hairy Orcutt grass	SE	197909XX	FE	19970326	
<i>Orcuttia tenuis</i>	slender Orcutt grass	SE	197909XX	FT	19970326	

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<i>Orcuttia viscida</i>	Sacramento Orcutt grass	SE	197907XX	FE	19970326	
<i>Ornithostaphylos oppositifolia</i>	Baja California birdbush	SE	200105XX			
<i>Packera ganderi</i>	Gander's ragwort	SR	198207XX			Scientific name at time of listing: <i>Senecio ganderi</i>
<i>Packera layneae</i>	Layne's ragwort	SR	197911XX	FT	19961018	Scientific name at time of listing: <i>Senecio layneae</i>
<i>Panicum acuminatum</i> var. <i>thermale</i>	Geysers panicum	SE	197809XX			Scientific name at time of listing: <i>Dichanthelium lanuginosum</i> var. <i>thermale</i>
<i>Pedicularis dudleyi</i>	Dudley's lousewort	SR	197909XX			
<i>Pentachaeta bellidiflora</i>	white-rayed pentachaeta	SE	199206XX	FE	19950203	
<i>Pentachaeta lyonii</i>	Lyon's pentachaeta	SE	199001XX	FE	19970129	
<i>Phacelia insularis</i> var. <i>insularis</i>	northern Channel Islands phacelia			FE	19970731	Synonym: island phacelia
<i>Phacelia stellaris</i>	Brand's star phacelia					FC on 20040504; removed from FC list on 20131122
<i>Phlox hirsuta</i>	Yreka phlox	SE	198701XX	FE	20000203	
<i>Physaria kingii</i> ssp. <i>bernardina</i>	San Bernardino Mountains bladderpod			FE	19940824	Scientific name at time of listing: <i>Lesquerella kingii</i> ssp. <i>bernardina</i>
<i>Pinus albicaulis</i>	whitebark pine			FC	20100720	Not tracked by CNDDB.
<i>Piperia yadonii</i>	Yadon's rein orchid			FE	19980812	
<i>Plagiobothrys diffusus</i>	San Francisco popcornflower	SE	197909XX			
<i>Plagiobothrys strictus</i>	Calistoga popcornflower	ST	199001XX	FE	19971022	
<i>Pleuropogon hooverianus</i>	North Coast semaphore grass	ST	200208XX			
<i>Poa atropurpurea</i>	San Bernardino blue grass			FE	19981014	
<i>Poa napensis</i>	Napa blue grass	SE	197907XX	FE	19971022	
<i>Pogogyne abramsii</i>	San Diego mesa mint	SE	197907XX	FE	19781029	
<i>Pogogyne clareana</i>	Santa Lucia mint	SE	197911XX			
<i>Pogogyne nudiuscula</i>	Otay Mesa mint	SE	198701XX	FE	19930803	
<i>Polygonum hickmanii</i>	Scotts Valley polygonum	SE	200410XX	FE	20030408	
<i>Potentilla basariloba</i>	Black Rock potentilla					FC on 20040504; removed from FC list on 20130802
<i>Potentilla hickmanii</i>	Hickman's cinquefoil	SE	197909XX	FE	19980812	
<i>Pseudobahia bahifolia</i>	Hartweg's golden sunburst	SE	198108XX	FE	19970206	
<i>Pseudobahia peirsonii</i>	San Joaquin adobe sunburst	SE	198701XX	FT	19970206	
<i>Rorippa subumbellata</i>	Tahoe yellow cress	SE	198204XX			FC on 20040504; removed from FC list on 20151008.
<i>Rosa minutifolia</i>	small-leaved rose	SE	198910XX			
<i>Sanicula maritima</i>	adobe sanicle	SR	198108XX			
<i>Sanicula saxatilis</i>	rock sanicle	SR	198207XX			
<i>Sedella leiocarpa</i>	Lake County stonecrop	SE	199001XX	FE	19970618	Scientific name at time of listing: <i>Parvisedum leiocarpum</i>
<i>Sedum laxum</i> ssp. <i>eastwoodiae</i>	Red Mountain stonecrop					Scientific name at time of listing: <i>Sedum eastwoodiae</i> . FC on 20040504; removed from FC list on 20140918.
<i>Sibara filifolia</i>	Santa Cruz Island winged-rockcress			FE	19970808	

State and Federally Listed Endangered, Threatened, and Rare Plants of California
 Last updated 20180806

Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Sidalcea covillei</i>	Owens Valley checkerbloom	SE	197907XX			
<i>Sidalcea hickmanii</i> ssp. <i>anomala</i>	Cuesta Pass checkerbloom	SR	197911XX			
<i>Sidalcea hickmanii</i> ssp. <i>parishii</i>	Parish's checkerbloom	SR	197911XX			
<i>Sidalcea keckii</i>	Keck's checkerbloom			FE	20000216	
<i>Sidalcea oregana</i> ssp. <i>valida</i>	Kenwood Marsh checkerbloom	SE	198201XX	FE	19971022	
<i>Sidalcea pedata</i>	bird-foot checkerbloom	SE	198201XX	FE	19840831	
<i>Sidalcea stipularis</i>	Scadden Flat checkerbloom	SE	198201XX			
<i>Silene campanulata</i> ssp. <i>campanulata</i>	Red Mountain catchfly	SE	198204XX			
<i>Streptanthus albidus</i> ssp. <i>albidus</i>	Metcalf Canyon jewel-flower			FE	19950203	
<i>Streptanthus glandulosus</i> ssp. <i>niger</i>	Tiburon jewel-flower	SE	199002XX	FE	19950203	Scientific name at time of listing: <i>Streptanthus niger</i>
<i>Suaeda californica</i>	California seablite			FE	19941215	
<i>Swallenia alexandrae</i>	Eureka Valley dune grass	SR	198108XX	FT FE	20180329 19780527	FE on 19780527; reclassified as FT on 20180329
<i>Taraxacum californicum</i>	California dandelion			FE	19981014	
<i>Thelypodium stenopetalum</i>	slender-petaled thelypodium	SE	198202XX	FE	19840831	
<i>Thermopsis macrophylla</i>	Santa Ynez false lupine	SR	198108XX			Scientific name at time of listing: <i>Thermopsis macrophylla</i> var. <i>agnina</i>
<i>Thysanocarpus conchuliferus</i>	Santa Cruz Island fringe-pod			FE	19970731	
<i>Trichostema austrorontanum</i> ssp. <i>compactum</i>	Hidden Lake bluecurls			FDR FT	20180702 19981014	
<i>Trifolium amoenum</i>	showy rancheria clover			FE	19971022	
<i>Trifolium polyodon</i>	Pacific Grove clover	SR	197909XX			
<i>Trifolium trichocalyx</i>	Monterey clover	SE	197911XX	FE	19980812	
<i>Tuctoria greenei</i>	Greene's tuctoria	SR	197909XX	FE	19970326	
<i>Tuctoria mucronata</i>	Crampton's tuctoria or Solano grass	SE	197907XX	FE	19780929	
<i>Verbena californica</i>	Red Hills vervain	ST	199408XX	FT	19981014	
<i>Verbesina dissita</i>	big-leaved crownbeard	ST	199001XX	FT	19961007	