

**FINAL**



**Environmental Stewardship Plan  
for the Proposed Border Wall Project  
U.S. Border Patrol Rio Grande Valley Sector,  
McAllen and Weslaco Stations, Texas**

**January 2020**



## COVER SHEET

### ENVIRONMENTAL STEWARDSHIP PLAN FOR THE PROPOSED BORDER WALL PROJECT U.S. BORDER PATROL RIO GRANDE VALLEY SECTOR, MCALLEN AND WESLACO STATIONS, TEXAS

**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)-Galveston District, U.S. Fish and Wildlife Service (USFWS), Texas Parks and Wildlife Department (TPWD), and the U.S. Section, International Boundary and Water Commission (USIBWC).

**Affected Location:** United States/Mexico International Border in Hidalgo County, Texas.

**Project Description:** U.S. Customs and Border Protection (CBP) proposes to construct approximately 13.3 miles of levee wall system in the U.S. Border Patrol's (USBP) Rio Grande Valley (RGV) Sector Area of Responsibility (AOR) near McAllen and Weslaco, Texas. The new wall will be composed of a reinforced concrete levee wall system to the approximate height of the existing levee. An 18-foot-tall steel wall consisting of bollards will be installed on the top of the levee wall system. In addition to the levee wall and bollards, CBP will also include a 150-foot enforcement zone on the south/river side of the levee wall system. The enforcement zone will be free of vegetation with the exception of short, mowed, and maintained grasses. The enforcement zone will also include the use of detection and surveillance technology that would be incorporated into the levee wall system. Automated vehicle gates, pedestrian gates, an all-weather patrol road that will run parallel to the levee wall system, and enforcement zone lighting are components of this project.

The new levee wall system will be constructed in seven linear segments that total approximately 13.3 miles in length (Table 1) in Hidalgo County, Texas. There are two distinct project corridors (RGV-02 and RGV-03) that make up the entire levee wall system. Within each of those corridors are individual segments. RGV-02 is composed of six segments of varying lengths located along the levee (Segments 2A, 2B, 2C, 2D, 2E, and 2F). Segment 2A is west of the Donna Alliance Bridge Port of Entry (POE) and Donna Irrigation Facility, and east of the eastern boundary of the Santa Ana National Wildlife Refuge (SANWR), Hidalgo County, Texas. Segment 2B is west of the Donna Alliance Bridge POE and Donna Irrigation Facility, Hidalgo County, Texas. Segment 2C is adjacent to the Donna Alliance Bridge POE and Donna Irrigation Facility, Hidalgo County, Texas. Segment 2D is approximately 4 miles southwest of Progreso, Texas. Segment 2E is southeast of Progreso, Texas, near the Progreso POE. Segment 2F is south of the Mercedes District Settling Basin just south of Relampago, Texas. RGV-03 is composed of one segment (Segment 3H) along the levee road that runs west of Madero, Texas, to Goodwin Road approximately 1.7 miles south of Abram-Perezville, Texas. Segment 3H passes through Bentsen-Rio Grande Valley State Park (BSP) and the National Butterfly Center (NBC). Table 1 shows the various segments and length of each segment.

**Table 1. RGV Levee/Wall System Project Segments**

<b>Project</b>	<b>Segment ID</b>	<b>Mileage</b>
RGV-02	2A	2.40
	2B	0.56
	2C	0.45
	2D	2.10
	2E	0.37
	2F	1.90
<b>RGV-02 Total Mileage</b>		<b>7.78</b>
RGV-03	3H	5.50
<b>RGV-03 Total Mileage</b>		<b>5.50</b>
<b>TOTAL MILEAGE ALL SEGMENTS</b>		<b>13.28</b>

**Report Designation:** Environmental Stewardship Plan (ESP).

**Abstract:** CBP plans to construct, operate, and maintain approximately 13.3 miles of levee/wall, gates, enforcement zone, patrol road, and detection and surveillance technology along the U.S./Mexico border in Hidalgo County, Texas. The project area lies within the USBP RGV Sector. All components of construction will occur adjacent to the existing levee and within the 150-enforcement zone.

The Environmental Stewardship Plan (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 (Section 1.5).

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## EXECUTIVE SUMMARY

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### BACKGROUND

On October 10, 2018, the Secretary of the Homeland Security, pursuant to Section 102(c) of the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) of 1996, as amended, issued a waiver to ensure the expeditious construction of 13.3 miles of levee wall system in the U.S. Border Patrol's (USBP) Rio Grande Valley (RGV) Sector Area of Responsibility (AOR) near McAllen and Weslaco, Texas (hereafter, "Project"). Although the Secretary's waiver means that United States (U.S.) Customs and Border Protection (CBP) no longer has any specific legal obligations under the laws set aside by the waiver, the Department of Homeland Security and CBP recognize the importance of responsible environmental stewardship. To that end CBP has prepared this Environmental Stewardship Plan (ESP) to analyze the potential environmental impacts associated with construction of tactical infrastructure in the U.S. Border Patrol's (USBP's) Rio Grande Valley (RGV) Sector. The ESP also discusses CBP's plans as to how it can mitigate potential environmental impacts. The ESP will guide CBP's efforts going forward.

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

### GOALS AND OBJECTIVES OF THE PROJECT

The Project is being carried out pursuant to Section 102(a) of IIRIRA, which 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 U.S. border to deter illegal crossings. 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.

On October 10, 2018, the Secretary issued a waiver covering, among other things, the construction of approximately 13.3 miles of border infrastructure system in the USBP RGV Sector (the Project). The RGV Sector is the busiest sector in the nation and accounts for more than 40 percent of the illegal immigrant apprehensions and more than 43 percent of the seized marijuana in the southwestern border. Although RGV accounts for a large percentage of the southwestern border illegal alien apprehensions and narcotic seizures, the majority of its activity is occurring in areas where RGV has limited infrastructure, access and mobility, and technology.

Historic data indicate that the implementation of infrastructure combined with the appropriate technology and personnel significantly reduces the amount of illegal border entries; RGV Sector is in immediate need to construct additional border barriers and roads. CBP will implement the Project to achieve operational control of the border in RGV Sector. The Project will begin near

the intersection of Abram Road and U.S. Section of the International Boundary and Water Commission (USIBWC) levee and extend eastward to the intersection of Rio Rico Road and the USIBWC levee. The Secretary's waiver means that CBP does not have any specific legal obligations under the laws that were included in the waiver, but just as was the case with past projects covered by a waiver, DHS and CBP recognize the importance of responsible environmental stewardship of our valuable natural and cultural resources.

## **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 Interior (DOI), including the U.S. Fish and Wildlife Service (USFWS); USIBWC; U.S. Army Corps of Engineers (USACE); Texas Parks and Wildlife Department (TPWD); Hidalgo County; Texas Historical Commission (THC); and U.S. Environmental Protection Agency (USEPA), along with various Native American tribes.

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

## **DESCRIPTION OF THE PROJECT**

CBP proposes to construct approximately 13.3 miles of levee wall system in the USBP's RGV Sector Area of Responsibility (AOR) near McAllen and Weslaco, Texas. The new fence will be composed of a reinforced concrete levee wall system to the approximate height of the existing levee. An 18-foot-tall steel wall consisting of bollards will be installed on the top of the levee wall system. In addition to the levee wall and bollards, CBP will also include a 150-foot enforcement zone on the south/river side of the levee wall system. The enforcement zone will be free of vegetation with the exception of short, mowed, and maintained grasses. The enforcement zone will also include the use of detection and surveillance technology that would be incorporated into the levee wall system. Automated vehicle gates, pedestrian gates, an all-weather patrol road that will run parallel to the levee wall system, and enforcement zone lighting are components of this project.

The new levee wall system will be constructed in seven linear segments that total approximately 13.3 miles in length (Table ES-1) in Hidalgo County, Texas. There are two distinct project corridors (RGV-02 and RGV-03) that make up the entire levee wall system. Within each of those corridors are individual segments. RGV-02 is composed of six segments of varying lengths located along the levee (Segments 2A, 2B, 2C, 2D, 2E, and 2F). Segment 2A is west of the Donna Alliance Bridge Port of Entry (POE) and Donna Irrigation Facility, and east of the eastern boundary of the Santa Ana National Wildlife Refuge (SANWR), Hidalgo County, Texas. Segment 2B is west of the Donna Alliance Bridge POE and Donna Irrigation Facility, Hidalgo County, Texas. Segment 2C is adjacent to the Donna Alliance Bridge POE and Donna Irrigation Facility, Hidalgo County, Texas. Segment 2D is approximately 4 miles southwest of Progreso, Texas. Segment 2E is south of the Progreso POE near Progreso, Texas. Segment 2F is south of the Mercedes District Settling Basin just south of Relampago, Texas. RGV-03 is composed of

one segment (Segment 3H) along the levee road that runs west of Madero, Texas, to Goodwin Road approximately 1.7 miles south of Abram-Perezville, Texas. Segment 3H passes through Bentsen-Rio Grande Valley State Park (BSP) and the National Butterfly Center (NBC).

**Table ES-1. RGV Levee/Wall System Project Segments**

Project	Segment ID	Mileage
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RGV-03	3H	5.50
RGV-03 Total Mileage		5.50
TOTAL MILEAGE ALL SEGMENTS		13.28

**ENVIRONMENTAL IMPACTS AND BEST MANAGEMENT PRACTICES**

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
<b>Air Quality</b>	Minor and temporary impacts on air quality will occur during construction; air emissions will remain below <i>de minimis</i> levels.	BMPs will be followed and equipment maintained according to specifications.
<b>Noise</b>	Minor temporary increases to ambient noise will occur during construction activities.	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.
<b>Land Use, Recreation, and Aesthetics</b>	Existing land use within the enforcement zone will change from agriculture, developed, rangeland, brushland, or recreational areas to developed space (i.e., levee wall system). This change of land use will have moderate long-term impacts within the region, including minor impacts on visual resources.	BMPs (e.g., environmental monitor) will be implemented as part of the Project to minimize impacts on the BSP and the NBC.

<b>Resource Area</b>	<b>Effects of the Project</b>	<b>Best Management Practices/Conservation Measures</b>
<b>Geologic Resources and Soils</b>	There will be minor impacts on soils. Impacts will be temporary and occur during construction only.	A Storm Water Pollution Prevention Plan (SWPPP) and Spill Prevention Control and Countermeasure Plan (SPCCP) will be implemented as part of the Project.
<b>Water Use and Quality</b>		
<b>Groundwater</b>	Groundwater is not the major water source in Hidalgo County and will be negligibly impacted.	A SPCC) will be implemented as part of the Project.
<b>Surface Waters and Waters of the United States</b>	No surface waters will be used during construction for concrete and dust abatement. Minor, temporary impacts on surface water will occur as a result of using the water. Long-term, permanent impacts on Waters of the U.S. will occur by potentially filling 7.2 acres of wetlands.	A SWPPP and SPCCP will be implemented as part of the Project.
<b>Floodplains</b>	Floodplains will have minor and temporary impacts from sedimentation, erosion, and accidental spills or leaks caused by construction.	A SWPPP and SPCCP will be implemented as part of the Project.
<b>Biological Resources</b>		
<b>Vegetation</b>	Approximately 184 acres of rangeland and Tamaulipan brushland will be impacted due to clearing and grubbing of the enforcement zone. These areas will be grassed, mowed, and maintained once construction activities are complete. Beneficial impacts on vegetation resources are anticipated as a result of protecting resources from Cross-Border Violator traffic.	A monitor will be on-site during construction to ensure that all BMPs are followed. CBP is coordinating with NBC regarding planting plants that will meet their needs and provide nectar sources for butterflies.
<b>Wildlife and Aquatic Resources</b>	Minor impacts on wildlife are expected. Loss of small mammals and reptiles during construction could occur. Lighting could affect some species but lights will occur only within the enforcement zone.	Surveys of nesting migratory birds will be conducted and migratory bird nests will be flagged and avoided if construction occurs during breeding/nesting season.
<b>Protected Species and Critical Habitat</b>	No adverse modification of Critical Habitat will occur as a result of the Project. The Project will adversely affect the jaguarundi and ocelot and could affect the northern aplomado falcon, Texas ayenia, and red crown parrot. 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 ensure that all BMPs are followed.

<b>Resource Area</b>	<b>Effects of the Project</b>	<b>Best Management Practices/Conservation Measures</b>
<b>Cultural Resources</b>	One archaeological resource and four above-ground historic resources will be adversely affected by the proposed Project.	All construction will be restricted to previously surveyed areas. If any cultural material is discovered during construction, all activities within the vicinity of the discovery will be halted until receipt of clearance to resume work by a qualified archaeologist.
<b>Socioeconomics</b>	Short-term beneficial impacts on the local economy will be expected.	No measures required.



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## **1.0 GENERAL PROJECT DESCRIPTION**

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### **1.1 INTRODUCTION TO THE ENVIRONMENTAL STEWARDSHIP PLAN**

The principal mission requirements of the Department of Homeland Security (DHS) include border security and detecting and preventing illegal entry into the United States (U.S.). Congress has provided the Secretary of Homeland Security (the Secretary) with a number of authorities necessary to carry out DHS's border security mission. One of these authorities is found in Section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA). Section 102(a) of IIRIRA provides that the Secretary shall take such actions as may be necessary to install additional physical barriers and roads (including the removal of obstacles to detection of illegal entrants) in the vicinity of the 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. CBP's construction of border infrastructure has been aided by the waiver authority set forth in Section 102(c) of IIRIRA. Although the waiver authority has facilitated the construction of border infrastructure, DHS/CBP has continually made a voluntary commitment to responsible environmental stewardship for projects covered by an IIRIRA waiver.

In October 10, 2018, the Secretary issued a waiver covering, among other things, the replacement of approximately 13.3 miles of levee wall system in the U.S. Border Patrol (USBP) Rio Grande Valley (RGV) Sector (the Project). The RGV Sector is the busiest sector in the nation and accounts for more than 40 percent of the illegal immigrant apprehensions and more than 43 percent of the seized marijuana in the southwestern border. Although RGV accounts for a large percentage of the southwestern border cross-border violator apprehensions and narcotic seizures, the majority of its activity is occurs in areas where RGV has limited infrastructure, access and mobility, and technology. The Secretary's waiver means that CBP does not have any specific legal obligations under the laws that were included in the waiver, but just as was the case with past projects covered by a waiver, DHS and CBP recognize the importance of responsible environmental stewardship of our valuable natural and cultural resources. In order to work toward responsible environmental stewardship, CBP has completed environmental resource surveys, consulted with various stakeholders, and prepared this Environmental Stewardship Plan (ESP). The 2018 waiver is included as Appendix A.

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

This ESP was prepared 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 on the extent practicable.

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 the 150-foot wide corridor (project corridor) south of the existing U.S. Section of the International Boundary and Water Commission (USIBWC) levee within the two proposed levee wall system segments (RGV 02 and RGV 03).

Some resources within the Project's region of influence (ROI), which is Hidalgo County, Texas, 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 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 Green House Gases (GHG) and climate decision-making analyses. Pursuant to the Executive Order, further analysis of GHG impacts from the Project is not required.
- **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.

## **1.2 U.S. BORDER PATROL BACKGROUND**

CBP's mission is to safeguard America'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 land ports of entry (POEs). USBP's mission strategy consists of five main objectives:

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

USBP has nine administrative sectors along the U.S/Mexico International Border. Each sector is responsible for implementing an optimal combination of personnel, technology, and infrastructure appropriate for its operational requirements. The USBP RGV Sector covers more than 34,000 square miles of Southeast Texas. The Sector area of control includes the following counties: Cameron, Willacy, Hidalgo, Starr, Brooks, Kenedy, Kleberg, Nueces, San Patricio, Jim Wells, Bee, Refugio, Calhoun, Goliad, Victoria, DeWitt, Jackson, Matagorda, Brazoria, Galveston, Chambers, Jefferson, Wharton, Fort Bend, Colorado, Austin, Waller, Montgomery, Liberty, Hardin, Orange, Harris, Aransas, and Lavaca. USBP Stations included in the RGV Sector include Brownsville, Fort Brown Station, Weslaco, Harlingen, McAllen, Rio Grande City, Falfurrias, Kingsville, and Corpus Christi, Texas. The Project is in Weslaco and McAllen Stations’ AOR and is entirely within Hidalgo County, Texas.

### **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 RGV Sector by improving border infrastructure, preventing terrorists and weapons from entering the U.S., reducing the flow of illegal drugs and other contraband, and thus providing a safer environment for USBP agents and the public.

### **1.4 STAKEHOLDER OUTREACH**

CBP has notified numerous tribes, agencies, and non-profit organizations of their intent to construct the Project. Stakeholders with interests in the area include:

USIBWC - CBP has coordinated with USIBWC to ensure that any construction along the U.S./Mexico border does not adversely affect International Boundary Monuments or substantially impede floodwater conveyance within international drainages.

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

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.

Texas Historical Commission (THC) - CBP has coordinated with the THC regarding the protection and preservation of Texas' historic resources.

Texas Parks and Wildlife Department (TPWD) - CBP has coordinated with TPWD regarding potential impacts on species within their jurisdiction.

Texas Commission on Environmental Quality (TCEQ) - CBP has coordinated with the TCEQ regarding potential impacts on water and air quality and BMPs to minimize potential sedimentation and pollution resulting from Project implementation.

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

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

- Alabama - Coushatta Of Texas
- Alabama - Quassarte Tribal Town
- Apache Tribe of Oklahoma
- Comanche Nation of Oklahoma
- Coushatta Tribe of Louisiana
- Fort Sill Apache
- Kickapoo Traditional Tribe of Texas
- Thlopthlocco Tribal Town
- Tonkawa Tribe of Oklahoma

## **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, resource type, and activity. Both general BMPs and species-specific BMPs have been developed during the preparation of this ESP. 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 both during construction and after it 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 the 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 could 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 potentially impacted resource category. The BMPs have been coordinated with the appropriate agencies and land managers or administrators.

### **1.5.2 Air Quality**

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

### **1.5.3 Noise**

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

### **1.5.4 Geological Resources**

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

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

### **1.5.5 Water Resources**

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



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

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 will be maintained in closed on-ground containers in upland areas, not in washes. Pumps, hoses, tanks, and other water storage devices will be cleaned and disinfected.

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

### **1.5.6 Biological Resources**

The following summary of general Biological BMPs will be implemented. This list has been ordered 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 on the greatest degree feasible, given that the Project is operating under the Secretary's waiver.

1. Areas already disturbed, or those to be disturbed later in the construction sequence, will be used for staging, parking, and equipment storage. Widening of existing roadbeds beyond approved designs will be prohibited.
2. To prevent impacts on avian species covered under the Migratory Bird Treaty Act (MBTA), clearing and grubbing should take place in fall and winter if possible to avoid impacts on nesting birds. If work cannot be avoided during the breeding season (March 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 for the duration of construction. The biologist will:
  - a. Conduct pre-construction nesting/breeding bird surveys along the project area ahead of active construction. Observations of birds, bird breeding/nesting

behavior, and bird nests 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 or 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.

- b. Advise the implementation of and document adherence to BMPs and project conditions. The monitor 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.
  - c. Immediately notify CBP in the event that a sensitive resource is inadvertently disturbed through construction 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 performed only where required to create ground conditions for construction and maintenance activities. Minimizing the disturbance footprint fragment minimizes impacts and restoration requirements. The top 6 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.
7. Materials used for construction and on-site erosion control will be biodegradable and free of non-native plant seeds and other non-native plant parts to limit potential for infestation. Some natural materials cannot be fully certified as completely weed-free, and if such materials are used, follow-up monitoring and control to limit establishment of non-native plants will be implemented during the establishment period to insure native plant materials provide effective erosion control cover. Erosion control blankets and wattles will use biodegradable netting.

8. All material sources will be reviewed and approved prior to material being brought on-site. Borrow areas for fill materials such as rock, gravel, or topsoil will be obtained from existing developed or previously used sources, not from undisturbed areas within or adjacent to the project 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 corridor.
10. Any night lighting for Project construction will be selectively placed, shielded, and directed away from all native vegetative communities south of the Project footprint and the levee.
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 will be collected and moved offsite for disposal.
12. Construction speed limits will not exceed 35 mph on major unpaved roads (graded with ditches on both sides) and 25 mph on all other unpaved roads. Night time travel speeds will not exceed 25 mph, and could be less based on visibility and other safety considerations.
13. To prevent entrapment of wildlife species, the ends of all hollow construction stock, such as vertical fence posts/bollards, including those that will later be filled with reinforcing or other materials, shall be covered to prevent wildlife from entering. Covers of all hollow construction stock will be in place upon arrival at the site and will be retained until such time the material is filled or otherwise closed to prevent entry by an animal. Construction (temporary or otherwise) of steep-walled pits is also to be avoided to prevent animal entrapment. Excavations more than 18 inches deep will be covered or a means of small animal escape provided, such as a firmly placed board (8" or wider) or an earthen ramp at a slope no steeper than 4:1, to prevent animal entrapment.
14. All areas temporarily impacted by Project construction will be revegetated with native plant species.
15. During follow-up monitoring and during maintenance activities, invasive plants found on the site will be treated and removed from the site. All chemical applications will be performed by a licensed applicator and herbicides will be used only according to label directions. The monitoring period will be defined in the site revegetation plan. Training to identify non-native invasive plants will be provided for CBP personnel or contractors, as necessary. Restored areas will have successfully established native plant communities within 5 years of implementing the plan.

### **1.5.7 Cultural Resources**

Cultural resources are the remains of past human life that document our history. They are non-renewable and are particularly important to indigenous groups. Examples include prehistoric villages, campsites, milling stations, rock art, railroads, bridges, buildings, agricultural features, plant gathering areas, and trails. Cultural resources are typically protected by state and Federal laws because of their cultural significance and the fact that information can be destroyed when these resources are disturbed.

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

BMPs to protect cultural resources include:

1. Preconstruction surveys and documentation of cultural resources have been completed within the construction corridor (Appendix B).
2. If cultural resources are encountered, work must stop and the monitors must be notified. The monitor(s) will coordinate with the on-site construction supervisor and with the Project management. An archaeologist will assess all findings and make recommendations to the CBP.
3. Archaeological material collected during the current Project will be cross analyzed with collections from earlier investigations for data recovery purposes.
4. All cultural resources should be treated with respect and dignity. No photographs should be taken of any human remains.

### **1.5.8 Hazardous Materials and Wastes**

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

The BMPs will include the following:

1. Nonhazardous waste materials and other discarded materials, such as construction waste, will be contained until removed from the construction site. Solid waste receptacles will be maintained at the staging areas, and non-hazardous solid waste (trash and waste construction materials) will be collected and deposited in on-site receptacles. Waste materials and other discarded materials contained in these receptacles will be removed from the site as quickly as practicable.
2. 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.

3. 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.
4. Any spill of reportable quantities will be contained immediately within an earthen dike, and the application of an absorbent material (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.
5. 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.
6. All equipment maintenance, laydown, and dispensing of fuel, oil, or any other such activities will occur in the staging areas. 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.

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## 2.0 DESCRIPTION OF THE PROJECT

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CBP proposes to construct approximately 13.3 miles of levee wall system in the USBP's RGV Sector Area of Responsibility (AOR) near McAllen and Weslaco, Texas (Figure 2-1). The new fence will be composed of a reinforced concrete levee wall system to the approximate height of the existing levee. An 18-foot-tall steel wall consisting of bollards will be installed on the top of the levee wall system. In addition to the levee wall and bollards, CBP will also include a 150-foot enforcement zone on the south/river side of the levee wall system. The enforcement zone will be free of vegetation with the exception of short, mowed, and maintained grasses. The enforcement zone will also include the use of detection and surveillance technology that would be incorporated into the levee wall system. Automated vehicle gates, pedestrian gates, an all-weather patrol road that will run parallel to the levee wall system, and enforcement zone lighting are components of this Project. The enforcement zone lighting will be limited from the levee wall to the outer perimeter of the enforcement zone (150 feet). In addition, shields will be installed on the lights to ensure that the light is directed downward and stays within the enforcement zone.

To facilitate construction activities during potential nighttime 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 lights (Photograph 2-1). Each unit typically has four 400- to 1000-watt lamps. The portable light systems can be towed to the desired construction location, as needed. Lights will be shielded and oriented to illuminate only the work area to ensure the safety of the workers. The number of lights will be minimized and will be used for construction purposes only. The area affected by illumination is limited to 200 feet from the light source.



**Photograph 2-1. Portable lights**

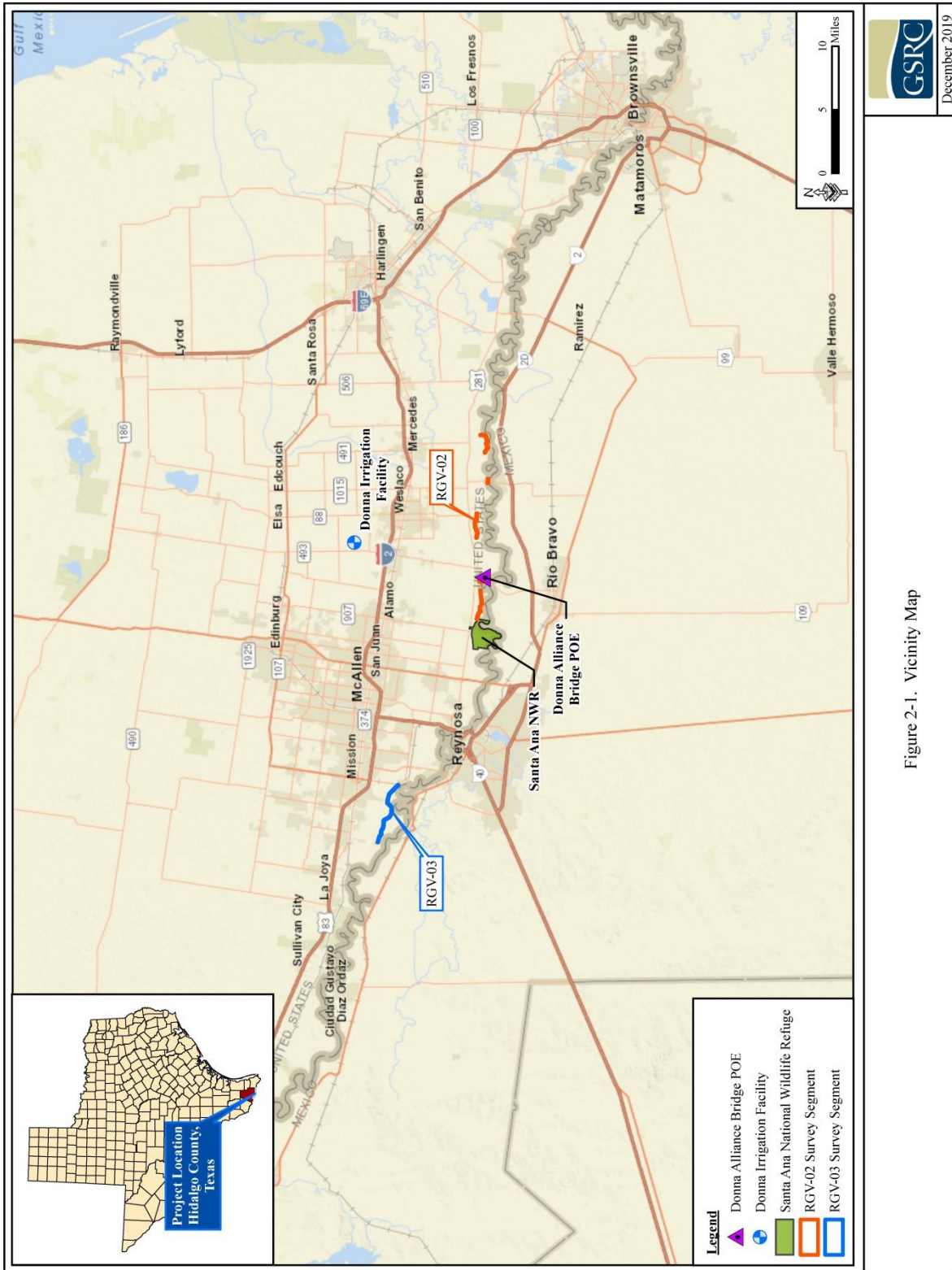


Figure 2-1. Vicinity Map

To account for heat restrictions for adequate concrete drying and curing processes, concrete pours could 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 to maintain the work task schedule due to weather or to meet Federally mandated timelines.

## 2.1 LOCATION

The new levee wall system will be constructed in seven linear segments that total approximately 13.3 miles in length in Hidalgo County, Texas. There are two distinct project corridors (RGV-02 and RGV-03) that make up the entire levee wall system (see Figure 2-1). Within each of those corridors are individual segments. RGV-02 is composed of six segments of varying lengths located along the levee (Segments 2A, 2B, 2C, 2D, 2E, and 2F). Segment 2A is west of the Donna Alliance Bridge POE and Donna Irrigation Facility, and east of the eastern boundary of the Santa Ana National Wildlife Refuge (SANWR), Hidalgo County, Texas. Segment 2B is west of the Donna Alliance Bridge POE and Donna Irrigation Facility, Hidalgo County, Texas. Segment 2C is adjacent to the Donna Alliance Bridge POE and Donna Irrigation Facility, Hidalgo County, Texas. Segment 2D is approximately 4 miles southwest of Progreso, Texas. Segment 2E is southeast of the Progreso, Texas near the Progreso POE. Segment 2F is south of the Mercedes District Settling Basin just south of Relampago, Texas. RGV-03 is composed of one segment (Segment 3H) along the levee road that runs west of Madero, Texas, to Goodwin Road approximately 1.7 miles south of Abram-Perezville, Texas. Segment 3H passes through Bentsen-Rio Grande Valley State Park (BSP) and the National Butterfly Center (NBC) Figures 2-2 through 2-7).

**Table 2-1. RGV Levee Wall System Project Segments**

<b>Project</b>	<b>Segment ID</b>	<b>Mileage</b>
RGV-02	2A	2.40
	2B	0.56
	2C	0.45
	2D	2.10
	2E	0.37
	2F	1.90
<b>RGV-02 Total Mileage</b>		<b>7.78</b>
RGV-03	3H	5.50
<b>RGV-03 Total Mileage</b>		<b>5.50</b>
<b>TOTAL MILEAGE ALL SEGMENTS</b>		<b>13.28</b>





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Figure 2-2. RGV-02 Segment 2A



Figure 2-3. RGV-02 Segments 2B & 2C

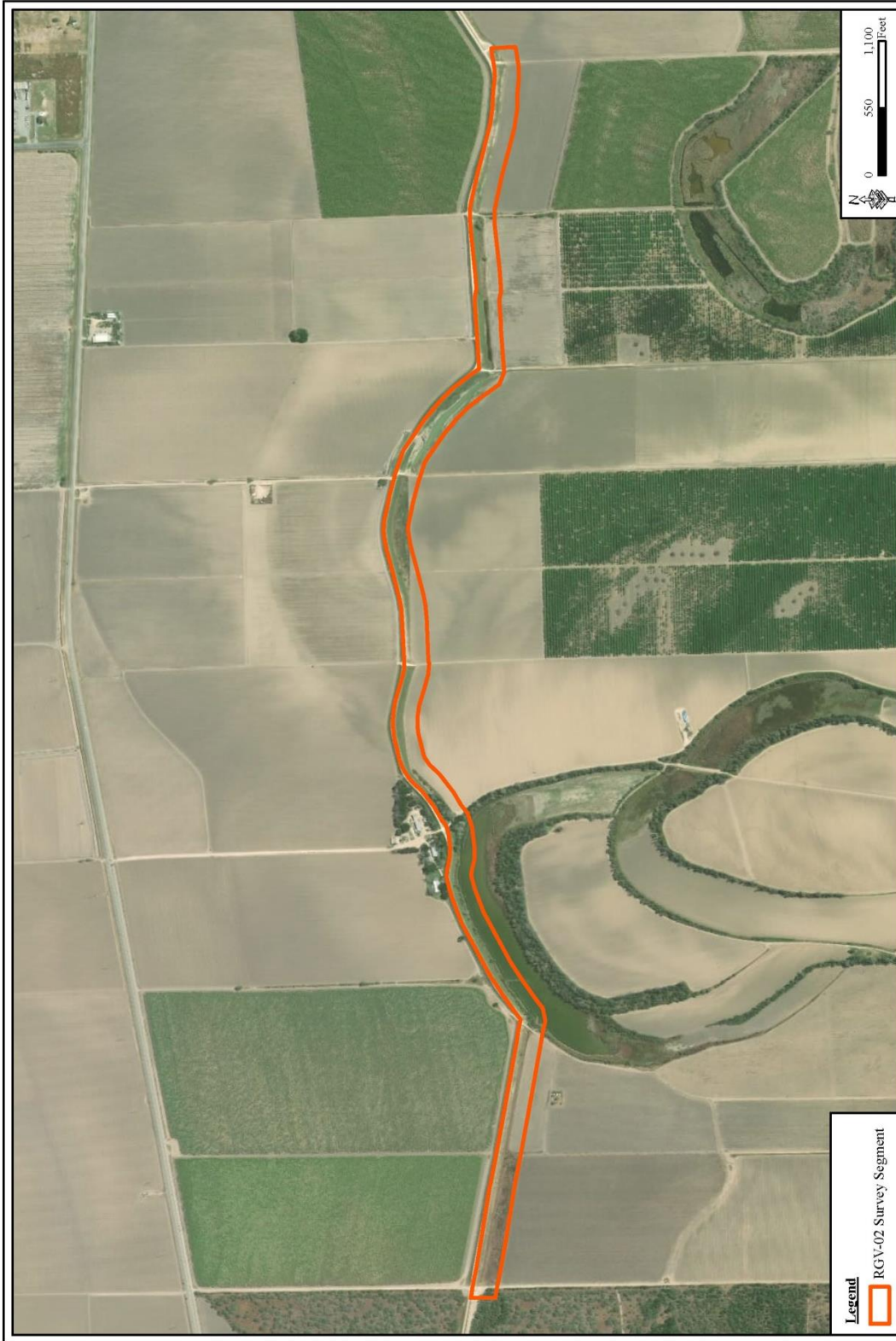
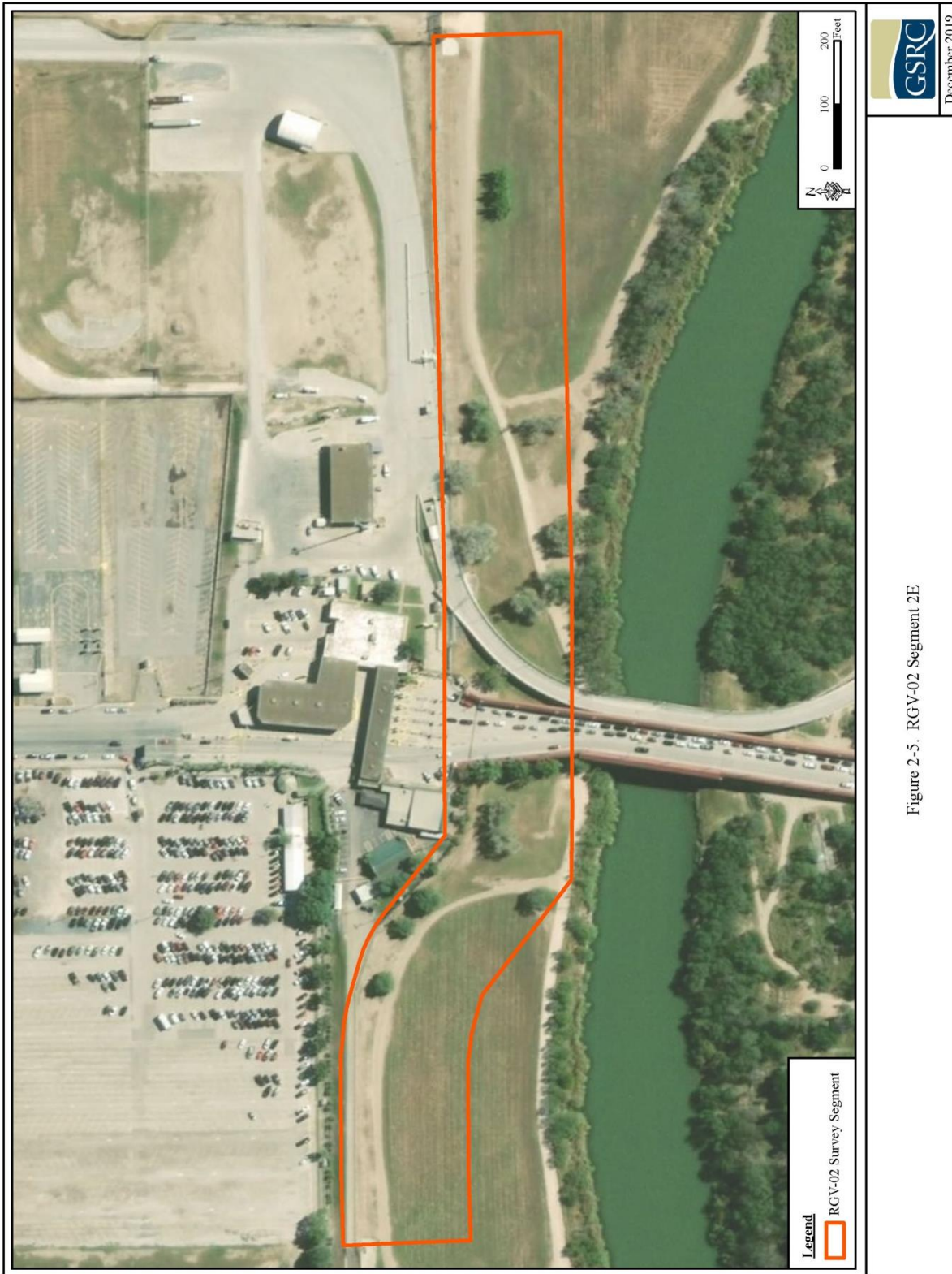


Figure 2-4. RGV-02 Segment 2D



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Figure 2-5. RGV-02 Segment 2E



Figure 2-6. RGV-02 Segment 2F

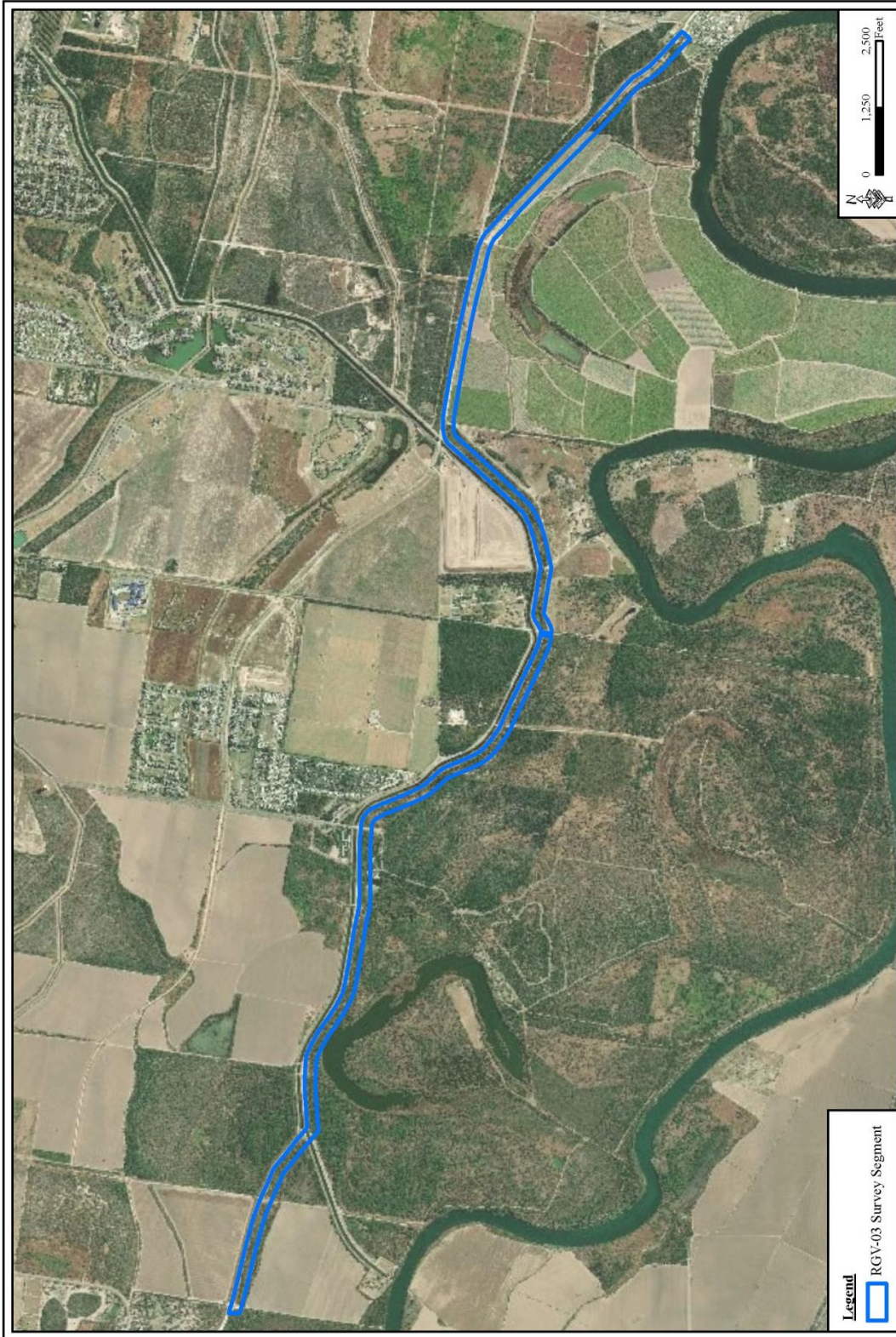


Figure 2-7. RGV-03 Segment 3H

## **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 concrete levee wall will be built from an elevation at the toe of the existing levee to the height of the existing levee. The bollard fence will be installed on top of the concrete levee wall and will be a minimum of 18 feet high.

An all-weather road will be constructed along the bottom of the levee wall. The road will be approximately 20 feet wide. Periodically throughout the various project segments, earthen ramps will be built to allow USBP agents to enter and exit the enforcement zone. Within the bollards at the junction of these earthen ramps and the existing levee road, wildlife gaps could be installed to allow small animals to migrate across the levee.

Construction of these design elements will generate impacts within the 150 foot enforcement zone and the existing levee. Temporary construction impacts could occur within the enforcement zone, and those will be restored, as applicable, to pre-construction conditions.

## **2.3 CONSTRUCTION ACCESS, MATERIAL DELIVERY, AND STAGING**

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

The staging areas will accept large fence panel deliveries, store larger equipment, and house construction materials. Access to the project corridor will use existing roads within the project area wherever possible, including Federal as well as state, county, and city roads. The primary access along the project corridor will be the all-weather road along the top of the existing levee, as well as the all-weather road along the southern side of the levee wall.

## **2.4 SITE PREPARATION**

Site preparation primarily consists of clearing and grubbing activities to remove any and all vegetation within the 150 enforcement zone. Erosion control measures will be necessary, as will biological surveys, if construction takes place during the nesting season (from March 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 area.

## **2.5 CONSTRUCTION SCHEDULE**

It is anticipated that construction will occur 7 days per week from 7:00 a.m. to 7:00 p.m., with some exceptions where work may be scheduled 24 hours per day. Construction is expected to last from May 2019 until May 2020. There is potential for nighttime construction to occur as well. In those areas where border security lighting is not present, mobile light plants will be used during nighttime construction.

## **2.6 ENVIRONMENTAL CONSIDERATIONS**

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



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## **3.0 AIR QUALITY**

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### **3.1 AFFECTED ENVIRONMENT**

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

The USEPA established National Ambient Air Quality Standards (NAAQS) for specific pollutants determined to be of concern with respect to the health and welfare of the general public. Ambient air quality standards are classified as either "primary" or "secondary." The major pollutants of concern, or criteria pollutants, are carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter less than 10 microns (PM-10), particulate matter less than 2.5 microns (PM-2.5), and lead. NAAQS represent the maximum levels of background pollution considered safe, with an adequate margin of safety, to protect the public health and welfare. The NAAQS are included in Table 3-1.

Areas that do not meet these NAAQS standards are called non-attainment areas; areas that meet both primary and secondary standards are known as attainment areas. The Federal Conformity Final Rule (40 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 designated as a non-attainment or maintenance area for one or more NAAQS.

A conformity analysis is the process used to determine whether a Federal action meets the requirements of the general conformity rule. It requires the responsible Federal agency to evaluate the nature of a Project 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 implement appropriate mitigation measures. The USEPA has designated Hidalgo County as in attainment for all NAAQS (USEPA 2019).

### **3.2 ENVIRONMENTAL CONSEQUENCES**

Temporary and minor increases in air pollution will occur from the use of construction equipment (combustion emissions) and the disturbance of soils (fugitive dust) during construction of the wall, low-water crossings, and gates, 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.

**Table 3-1. National Ambient Air Quality Standards**

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

Source: USEPA 2019

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/m<sup>3</sup>), and micrograms per cubic meter of air (µg/m<sup>3</sup>).

<sup>(1)</sup> Not to be exceeded more than once per year.

<sup>(2)</sup> Final rule signed October 15, 2008.

<sup>(3)</sup> The official level of the annual NO<sub>2</sub> standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

<sup>(4)</sup> 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).

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

<sup>(6)</sup> To attain this standard, the 3-year average of the weighted annual mean PM<sub>2.5</sub> concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m<sup>3</sup>.

<sup>(7)</sup> 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/m<sup>3</sup> (effective December 17, 2006).

<sup>(8)</sup> 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).

<sup>(9)</sup> 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).

<sup>(10)</sup> (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.

<sup>(11)</sup> (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.

Fugitive dust emissions were calculated using the emission factor of 0.22 tons per acre per month (Air Emissions Guide for Air Force Transitory Sources, Methods for Estimating Emissions of Air Pollutants for Transitory Sources at U.S. Air Force Installations, August 2018), which is a more current standard than the 1985 PM-10 emission factor of 1.2 tons per acre-month presented in AP-42 Section 13 Miscellaneous Sources 13.2.3.3 (USEPA 2001).

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

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

The purpose of this assessment is to evaluate impacts on ambient air quality from the Project. Air quality impacts from the Project will 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

Hidalgo County is designated attainment in all areas for criteria pollutants; therefore, *de minimis* levels would not apply. In determining the significance of the Projects, compounds would be compared to significance levels specified in (1) through (6), above.

Table 3-2 provides a summary of emissions from the Project and a determination of the significance of each. 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 ambient air quality. Air emissions calculations are provided in Appendix C.

**Table 3-2. Total Air Emissions (tons/year) from the Proposed Construction Project versus the *de minimis* Threshold Levels**

<b>Pollutant</b>	<b>Total (tons/year)</b>	<b>Significance Thresholds (tons/year)<sup>1</sup></b>	<b>Significant Impact</b>
CO	3.53	250	No
Volatile Organic Compounds (VOC)	0.82	250	No
Nitrogen Oxides (NO <sub>x</sub> )	1.88	250	No
PM-10	91.42	100	No
PM-2.5	9.35	250	No
SO <sub>2</sub>	0.01	250	No

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

<sup>1</sup> Note that Hidalgo County is in attainment for all criteria pollutants.

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## 4.0 NOISE

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### 4.1 AFFECTED ENVIRONMENT

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

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

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

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

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

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

Generally, noise generated by a stationary noise source, or “point source,” will decrease by approximately 6 dBA over hard surfaces and 9 dBA over soft surfaces for each doubling of the distance. For example, if a noise source produces a noise level of 85 dBA at a reference distance of 50 feet over a hard surface, that noise level will be 79 dBA at a distance of 100 feet from the noise source, 73 dBA at a distance of 200 feet, and so on. To estimate the attenuation of the noise over a given distance, the following relationship is used:

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

Where:

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

Source: California Department of Transportation 1998.

The majority of the levee wall system occurs outside metropolitan areas and is within more of a rural setting. A majority of the project corridor is buffered by agriculture or brushland. However, RGV-03 does occur within and adjacent to the BSP and the NBC, while RGV-02 is east of and adjacent to the SANWR. These areas are considered sensitive noise receptors. In addition to these sensitive noise receptors, there are approximately 25 to 30 residential homes within 1,000 feet of the levee wall system that would be considered sensitive noise receptors.

## 4.2 ENVIRONMENTAL CONSEQUENCES

Most of the Project will occur within a rural landscape. There are sensitive noise receptors within and adjacent to the project corridor. Table 4-1 depicts noise emission levels for construction equipment, which range from 68 dBA to 104 dBA at 100 feet (Federal Highway Administration [FHWA] 2007).

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

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

Source: FHWA 2007 and GSRC

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

\*Results based on GSRC modeled estimates.

Using a worst-case scenario of 78 dBA, the noise model predicts that noise emissions from the auger drill rig (proposed construction equipment) will have to travel 200 feet before attenuating to levels below 75 dBA. All of the proposed construction equipment will attenuate to a noise level less than 65 dBA at 500 feet from the source. It was assumed that the levee wall system will take approximately 365 days to construct, and construction noises affecting sensitive noise receptors will not occur over the entire project corridor. Additionally, these impacts will be short-term and limited to the amount of time that construction crews are working near sensitive noise receptors. Noise will return to ambient levels post-construction. It is anticipated that noise impacts from construction activities will be minor and short-term.

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## 5.0 LAND USE, RECREATION, AND AESTHETICS

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### 5.1 AFFECTED ENVIRONMENT

#### 5.1.1 Land Use and Recreation

The existing land use for the proposed levee wall project corridor predominantly includes agriculture and rangeland. Nearby existing land use includes recreational use, wildlife refuges, and urban development. Edinburg is the county seat of Hidalgo County, and other urban areas include McAllen (approximately 8 miles north of Project), Mission (approximately 12 miles northeast of Project), and Pharr (approximately 7 miles north of the Project) (Garza 2016).

Hidalgo County is approximately 995,200 acres in size with approximately 795,000 acres being used as farms. The major land use is agricultural production (59 percent) of crops such as sugar cane, grains, cotton, and citrus. Thirty-one percent of the farms in Hidalgo are used as rangeland for cattle production (U.S. Department of Agriculture [USDA] 2012). Using the 2011 National Land Cover Database, it was determined that 13 different land cover classifications occur within the various Project segments (Multi-Resolution Land Cover Characteristics Consortium 2011). The definitions of each of the classifications are described below and Table 5-1 shows the various classifications, the Project segments associated with those classifications, and the approximate acreage of each classification.

**Table 5-1. Land Use Classifications**

Land Use Classification	Project Segment	Acres
Developed, Open Space	RGV-02A, 02D, 02F, and 03H	16
Developed, Low Intensity	RGV-02A, 02B, 02C, 02D, 02E, 02F, 03H	76
Developed, Medium Intensity	RGV-02b, 02C, 02D, 02E, 02F, 03H	29
Developed, High Intensity	RGV-02E	2
Barren Land	RGV-02F	7
Deciduous Forest	RGV-02D, 03H	9
Evergreen Forest	RGV-03H	4
Shrub/Scrub	RGV-02A, 02B, 02C, 02D, 03H	41
Grassland/Herbaceous	RGV-02D, 02E, 02F, 03H	23
Pasture/Hay	RGV-02A	2
Cultivated Crops	RGV-02A, 02B, 02C, 02D, 02E, 02F, 03H	91
Woody Wetlands	RGV-02B, 02C, 03H	1
Emergent Herbaceous Wetlands	RGV-02B, 02C	29
	<b>Total</b>	<b>330</b>

#### **Developed, Open Space**

These areas have a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

### **Developed, Low Intensity**

These areas have a mixture of constructed materials and vegetation. Impervious surfaces account for 20 to 49 percent of total cover. These areas most commonly include single-family housing units.

### **Developed, Medium Intensity**

These areas have a mixture of constructed materials and vegetation. Impervious surfaces account for 50 to 79 percent of the total cover. These areas most commonly include single-family housing units.

### **Developed, High Intensity**

These are highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses, and commercial/industrial. Impervious surfaces account for 80 to 100 percent of the total cover.

### **Barren Land**

These areas are barren areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits, and other accumulations of earthen material. Generally, vegetation accounts for less than 15 percent of total cover.

### **Vegetated, Natural Forest Upland**

*Deciduous Forest:* These areas are dominated by trees generally greater than 15 feet tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species shed foliage simultaneously in response to seasonal change.

*Evergreen Forest:* These areas are dominated by trees generally greater than 15 feet tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species maintain leaves all year. Canopy is never without green foliage.

### **Vegetated, Natural Shrubland**

*Shrub/Scrub:* These areas are dominated by shrubs; less than 15 feet tall with shrub canopy typically greater than 20 percent of total vegetation. This class includes true shrubs, young trees in an early successional stage, or trees stunted from environmental conditions.

### **Herbaceous Upland Natural/Shrubland**

*Grassland/Herbaceous:* These areas are dominated by grammanoid or herbaceous vegetation, generally greater than 80 percent of total vegetation. These areas are not subject to intensive management such as tilling, but can be used for grazing.

### **Herbaceous Planted/Cultivated**

*Pasture/Hay:* These areas are dominated with grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of total vegetation.

*Cultivated Crops:* These areas are used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and



vineyards. Crop vegetation accounts for greater than 20 percent of total vegetation. This class also includes all land being actively tilled.

### **Wetlands**

**Woody Wetlands:** These are areas where forest or shrubland vegetation accounts for greater than 20 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

**Emergent Herbaceous Wetlands:** These are areas where perennial herbaceous vegetation accounts for greater than 80 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

Recreational activities in this county are associated with SANWR, Las Palomas Wildlife Management Area, BSP, Estero Llano Grande State Park, and the NBC (Garza 2016 and TPWD 2019a). Figure 5-1 shows the various recreational areas in relation to the project corridor.

Several studies have determined that ecotourism in the Rio Grande Valley brings in an estimated \$463 million dollars per year. The Rio Grande Valley is known as a top bird watching destination in the U.S. due to the subtropical ecosystem along the Rio Grande. Further, a 2010 study by the National Recreation and Park Association stated the BSP attracts 45,000 visitors per day with 40 percent of those people being “non-local” (United Press International 2019). The NBC is adjacent to the BSP and contributes to some of those visitors, as well.

### **5.1.2 Aesthetics**

The project corridor consists of areas of disturbed and non-disturbed habitat. A majority of the habitat within 150 feet of the corridor is active agriculture. The main vegetation component on the slopes of the levee is the non-native Guinea grass (*Urochloa maxima*), while the rest of the survey area is mixed Tamaulipan brushland or South Texas scrub. Other aesthetic resources include the Rio Grande, agricultural and ranch land, the SANWR, BSP, the NBC, and many urban areas. Metropolitan areas adjacent to the project area include Mission, McAllen, Pharr, and Hidalgo. U.S. Highways 83 and U.S. 281 are the main roads through the project area.

## **5.2 ENVIRONMENTAL CONSEQUENCES**

### **5.2.1 Land Use and Recreation**

Approximately 331 acres could be impacted by the proposed levee wall system Project. These lands will change from their current land use (i.e., developed, rangeland, agriculture, brushland, and recreational areas) to developed open space (i.e., levee wall system). This change of land use will have moderate long-term impacts within the region.

Recreation, in particular ecotourism, will be impacted through the loss of some lands within the enforcement zone that are currently wildlife habitat. BSP and NBC will be affected the greatest as the levee wall system transects these properties. However, by having the levee wall system, these same areas will be afforded much greater protection from illegal cross-border activities as the levee wall system will act as a deterrent within those areas. Further, the wildlife in these areas will no longer be impacted by illegal cross-border activities.

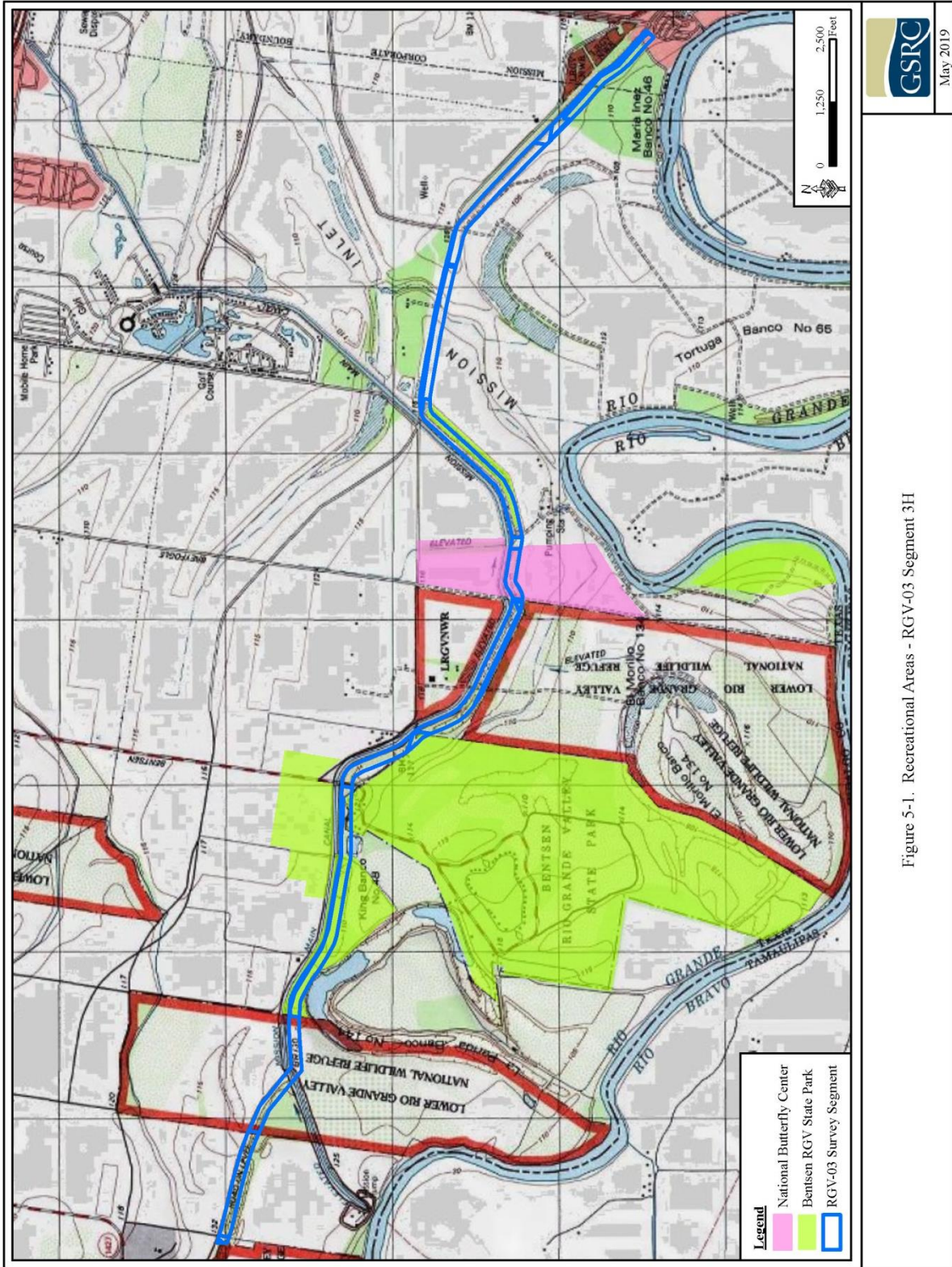


Figure 5-1. Recreational Areas - RGV-03 Segment 3H

### **5.2.2 Aesthetics**

The existing levee blocks the view of the Rio Grande from the north side. The levee will remain the same height; therefore, the view will remain encumbered by the levee. Installation of the bollard fence will allow for views through the fence; however, it will change the view from grass levee to grass levee with bollards on top. The transparent qualities of the bollard fence allow people to see through the fence, which is beneficial for USBP agents in an operational sense and for anyone else wishing to obtain views of the broader landscape on the other side of the levee.

## 6.0 GEOLOGICAL RESOURCES AND SOILS

### 6.1 AFFECTED ENVIRONMENT

There are 18 soil types associated with the RGV levee project corridor. Each of these soil types is described in Table 6-1. The Farmland Protection Policy Act of 1980 and 1995 was established to preserve the nation's farmland. In Section 7 of CFR Part 657.5, prime farmlands are defined as having the best combinations of physical and chemical properties to produce fiber, animal feed, and food, and are available for these uses. Of the 18 soil types in the project corridor, there are seven that are considered prime farmland.

**Table 6-1. Soil Types Found within the Project Corridor**

Name	Description	Prime Farmland	Segment
Camargo silt loam, 0 to 1 percent slopes, rarely flooded	These soils are found in the active floodplain of the Rio Grande and range from 10 to 30 acres. This soil type is well-drained and surface runoff is slow. The soil is rarely flooded. These soils consist of several layers from silt loam at the top, silty clay loam, to very fine sandy loam at the bottom and is calcareous throughout. These soils are mainly used for cropland and suitable crops include cotton and grain sorghum. This soil has a high potential for rangeland and is not suitable for urban or recreational uses.	Yes	RGV-02, RGV-03
Camargo silty clay loam, 0 to 1 percent slopes, rarely flooded	These soils are found in the active floodplain of the Rio Grande and range from 10 to 25 acres. These soils are well-drained and surface runoff is slow. This soil is rarely flooded. These soils are mainly irrigated cropland.	Yes	RGV-02
Cameron stily clay	This soil is deep, nearly level and found on ancient stream terraces. Slopes are predominantly less than 0.5% but range from 0 to 1%. Areas are small and irregular in shape and range from 10 to 45 acres. This soil is moderately well-drained, surface runoff is slow, and permeability is moderately low. Most areas of this soil are cultivated, and are suitable for various crops.	Yes	RGV-02
Laredo silty clay loam 0 to 1 percent slopes, rarely flooded	This deep, nearly level soil occurs on ancient stream terraces. Areas are small and irregular in shape and range in size from 10 to 75 acres, and are calcareous throughout. This soil is almost entirely used as irrigated cropland.	Yes	RGV-02, RGV-03
Olmito silty clay	These deep level soils are found on ancient stream terraces in sizes ranging from 10 to 250 acres. These soils are moderately well-drained and are calcareous throughout. These soils are mainly used as irrigated cropland.	Yes	RGV-02
Reynosa silty clay loam	These soils are found in ancient stream terraces. These areas are irregular in shape and range in size from 20 to 100 acres. These soils are well-drained and calcareous throughout. These soils are mainly used as irrigated cropland.	Yes	RGV-02, RGV-03

Name	Description	Prime Farmland	Segment
Runn silty clay	This soil is deep, nearly level soil occurs on areas of ancient stream terraces. Slopes are predominantly less than 0.5% but range from 0 to 1%. Areas are broad and irregularly shaped, and range from 10 to 250 acres in size. This soil is moderately well-drained, with slow surface runoff, and permeability is low. This soil is suitable for various crops.	Yes	RGV-02, RGV-03
Grulla clay, frequently flooded and ponded	These soils are found in partly filled resacas or oxbows on the active Rio Grande floodplain. Areas are long and narrow and are less than 50 acres. These soils are 1 to 5 feet below the surrounding landscape and have no natural drainage. This soil is poorly drained and is frequently flooded for long periods after heavy rainfall. This soil has low potential for crops, rangeland, and urban uses due to frequent flooding.	No	RGV-02, RGV-03,
Harlingen clay	This deep, nearly level soil occurs on broad areas of ancient stream terraces. Slopes are predominantly less than 0.5% but range from 0 to 1%. Areas are broad and irregular in shape, range in size from 25 to 900 acres and are entirely calcareous. This soil is moderately well-drained, surface runoff is very slow, and permeability is very low. This soil is used almost entirely as irrigated cropland.	No	RGV-02
Matamoros silty clay	This soil is found on the active Rio Grande floodplain and ranges in size from 10 to 50 acres. The soil is calcareous throughout and moderately well-drained and occasionally flooded. These soils are mainly used as irrigated cropland.	No	RGV-02, RGV-03
Reynosa silty clay loam, saline	These deep soils are found in ancient stream terraces and range in size from 10 to 75 acres. These soils are well-drained and calcareous throughout. These soils are moderately to strongly saline as a result of over irrigation and evaporation of slightly saline water. These soils are mainly irrigated cropland, and potential is low for other uses.	No	RGV-03
Rio grande silt loam	These deep, level soils are found on the active Rio Grande floodplain and areas range in size from 20 to 50 acres. These soils are well-drained, calcareous throughout, and are rarely flooded. They are almost exclusively as irrigated cropland.	No	RGV-02, RGV-03
Rio Grande silty clay loam	These deep, nearly level soils are found on the active Rio Grande floodplain and range in size from 5 to 45 acres. These soils are calcareous throughout. These soils are rarely flooded but flooding is possible during tropical storms. These areas are almost exclusively used for irrigated cropland.	No	RGV-02
Runn silty clay, saline	This soil is deep, nearly level and occurs in ancient stream terraces. Slopes range from 0 to 1 % and range in size from 10 to 150 acres. This soil is moderately well-drained, with slow surface runoff, and slow permeability. These soils are moderately to strongly saline as a result of over irrigation and evaporation of slightly saline water. These areas are almost exclusively used as irrigated cropland.	No	RGV-03

Name	Description	Prime Farmland	Segment
Zalla silt loam	This deep, nearly level soil is found in the active Rio Grande floodplain and range in size from 5 to 75 acres. This soil is somewhat excessively drained, with slow surface runoff and rapid permeability. This soil is rarely flooded but flooding is possible during tropical storms. These areas are used exclusively for irrigated cropland.	No	RGV-02

Source: USDA 1981, USDA Natural Resource Conservation Service 2019.

## 6.2 ENVIRONMENTAL CONSEQUENCES

The soils that will be permanently impacted currently make up the existing levee and the footprint of the patrol road. These soils have been previously impacted; therefore, no new impacts as a result of the Project will occur to those soils.

Temporary impacts on soils, such as increased compaction and erosion, can be expected from the creation of the staging areas; however, these impacts will be alleviated once construction is finished. The staging area will be disked, graded, and returned to pre-construction conditions, if applicable. 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 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.

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## **7.0 HYDROLOGY AND WATER MANAGEMENT**

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### **7.1 AFFECTED ENVIRONMENT**

#### **7.1.1 Groundwater**

The major aquifer within the Project region is the Gulf Coast Aquifer, which parallels the Gulf of Mexico coastline from the western boundary of Louisiana to Mexico. This aquifer covers over 41,800 square miles with an annual use of approximately 1.1 million acre-feet. The Gulf Coast Aquifer is found in all of Hidalgo County. Within the Gulf Coast Aquifer lie several other aquifers including the Jasper, Evangeline, and Chicot aquifers. These aquifers are composed of discontinuous sand, silt, clay, and gravel beds. The upper portion of the Gulf Coast Aquifer is generally fresher with saline levels increasing as the aquifer trends southward towards Mexico. The aquifer is generally used for municipal, industrial, and agricultural purposes (Texas Water Development Board [TWDB] 2011).

Recharge of the Gulf Coast Aquifer occurs primarily through percolation of precipitation and is supplemented in some areas by the addition of irrigation water from the Rio Grande. Within Hidalgo County, the available groundwater from the Gulf Coast Aquifer is estimated to be just under 3,000 acre-feet per year (TWDB 2016). It should be noted that groundwater is not a significant source of water within southern Hidalgo County; surface water from the Rio Grande is the major water supply source.

#### **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. The project corridor is located in extreme southern Texas and is within the Rio Grande and the Nueces-Rio Grande Coastal Basins (TCEQ 2004). The Rio Grande enters Texas northwest of El Paso and travels 1,248 miles to the Gulf of Mexico forming the international boundary between the U.S. and Mexico. It is estimated that within Texas approximately 48,259 square miles drain into surface waters that eventually flow to the Gulf of Mexico. The Nueces-Rio Grande Coastal Basin lies on the coastal plain between the Nueces River and the Rio Grande, and drains into the Laguna Madre, Baffin Bay, and Oso Bay. The total drainage area is approximately 10,442 square miles (TCEQ 2004). The TCEQ 2014 Section 303(d) report lists three stream reaches near the proposed levee wall segments. The closest impaired streams to the project areas are the Rio Grande Below Falcon Reservoir and the Arroyo Colorado Above Tidal in Hidalgo County. Table 7-1 provides information on the impaired waterbodies near the project corridor.

Waters of the United States are defined within the CWA, and jurisdiction is addressed by USACE and USEPA. There could be temporary impacts on Waters of the United States if drainage structures within agricultural ditches need replacement. These actions will be covered under Section 404 of the CWA, Nationwide Permit 14 (linear transportation) and are considered to result in negligible impacts. Wetlands are a subset of the Waters of the United States that may be subject to regulation under Section 404 of the CWA (40 CFR 230.3). Wetlands are those areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Waters of the United States delineations were

completed for the levee wall system Project. Based on the results of those delineations, there are a total of 7.2 acres of potentially jurisdictional wetlands within the project corridor, which are regulated by the USACE. The wetlands are located in RGV-02A (1.6 acres), 02F (3.06 acres), and 03H (2.5 acres). The project area also contains 1,516 linear feet of Waters of the United States and 4.86 acres of other Waters of the United States (CBP 2019a).

**Table 7-1. Impaired Waterbodies near the Project Corridor**

Sub-watershed Name & TCEQ ID	Location	Suspected Causes of Impairment	Suspected Sources of Impairment
Rio Grande Below Falcon Reservoir Texas-2302	From McAllen International Bridge (U.S. Highway 281) upstream to Falcon Dam	Bacteria – pathogens	Sources outside state jurisdiction or borders, urban runoff/storm sewers
Arroyo Colorado Above Tidal Texas-2202-03	From the confluence with La Feria Main Canal just upstream of Dukes Highway to the confluence with La Cruz Resaca just downstream of Farm to Market 907	Bacteria – pathogens; DDE – pesticides; Mercury in fish tissue; PCBs in fish tissue	Irrigated crop production (Dichlorodiphenyldichlorethlene [DDE]); mercury in fish tissues, (Polychlorinated biphenyl [PCBs] in fish tissues), municipal point source dischargers (bacteria), non-point source (DDE; mercury in fish tissues, PCBs in fish tissues), unpermitted discharge of industrial/commercial waste (DDE; mercury in fish tissues, PCBs in fish tissues), urban runoff/storm sewers (bacteria)

Source: TCEQ 2014.

### 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 (FEMA 2019). Due to the close proximity of the levee wall segments to the Rio Grande, all of the wall segments are in high-risk floodplain areas (Lower Rio Grande Valley Development Council [LRGVDC] 2008).

## 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

Groundwater is not a significant source of water within southern Hidalgo County and is rarely used. The likelihood for groundwater contamination due to construction of the levee wall system will be negligible due to the implementation of a SPCCP and the natural filtration of soils



overlying the aquifers in the project corridor. Therefore, no impacts are expected on groundwater resources from the implementation of the Project.

### **7.2.2 Surface Water**

Approximately 1,516 linear feet of Waters of the United States in the form of agricultural canals are located with the project corridor, and none will be directly affected by the Project. However, earth disturbance associated with clearing of the enforcement zone could result in erosion and sedimentation in the nearby Rio Grande. A SWPPP will be prepared by the contractor prior to construction and will be implemented with the other BMPs listed in Section 1.5.5 to minimize potential erosion and sedimentation.

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

### **7.2.3 Waters of the United States including Wetlands**

As mentioned previously, there are approximately 7.2 acres of potentially jurisdictional wetlands within the project corridor. These wetlands could be filled as part of the Project to create the enforcement zone. If these wetlands are filled, mitigation would occur to prevent long-term, adverse impacts. Mitigation can be accomplished by creating a mitigation bank or through purchasing and assigning a conservation easement on other wetlands elsewhere. A conservation easement will ensure these lands remain wetlands in perpetuity.

### **7.2.4 Floodplains**

The entire project corridor is within the 100-year floodplain. The new levee wall system would act the same as the original levee and would not impede any flows or cause any backwater effects if the Rio Grande were to flood. The removal of trees and brush within the floodplain as a result of creating the enforcement zone could enhance flood flow capacity; however, these areas are intermittent with scattered agricultural areas in between these brushed areas within the project corridor.

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 minor.

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

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### 8.1 AFFECTED ENVIRONMENT

#### 8.1.1 Vegetation

The project corridor is within the South Texas Plains Ecoregion as characterized by the TPWD (TPWD 2019b). The South Texas Plains Ecoregion is a diverse ecoregion because it has elements of three converging vegetative communities, Chihuahuan Desert to the west, Tamaulipan thornscrub and subtropical woodlands along the Rio Grande to the south, and coastal grasslands to the east. It is transected by numerous arroyos and streams and is generally covered in low-growing thorny vegetation (TPWD 2019b). The average temperature is 73 degrees Fahrenheit, with an average annual rainfall ranging from 16 inches in the east to 30 inches in the west.

Common tree species for the area includes pecan (*Carya illinoensis*), sugarberry (*Celtis laevigata*), anacua (*Ehretia anacua*), Texas ebony (*Pithecellobium flexicaule*), sabal palm (*Sabal palmetto*), black willow (*Salix nigra*), Texas persimmon (*Diospyros texana*), honey mesquite (*Prosopis glandulosa var. glandulosa*), lotebush (*Ziziphus obtusifolia*), huisache (*Acacia farnesiana*), and Texas wild olive (*Cordia boissieri*).

Shrubs that are most common in this ecoregion include fiddlewood (*Citharexylum berlandieri*), desert yaupon (*Schaefferia cuneifolia*), Rio Grande abutilon (*Abutilon hypoleucum*), bee bush (*Aloysia gratissima*), agarita (*Mahonia trifoliolata*), American beauty-berry (*Callicarpa americana*), lantana (*Lantana urticoides*), cenizo (*Leucophyllum frutescens*), Turk’s cap (*Malvaviscus drummondii*), rose pavonia (*Pavonia lasiopetala*), and autumn sage (*Salvia greggii*).

Common vines, grasses, and wildflowers according to the TPWD are marsh’s pipevine (*Aristolochic sp.*), old man’s beard (*Clematis drummondii*), sideoats grama (*Bouteloua curtipendula*), slender grama (*Bouteloua repens*), buffalograss (*Buchloe dactyloides*), inland sea-oats (*Chasmanthium latifolium*), plains lovegrass (*Eragrostis intermedia*), little bluestem (*Schizachyrium scoparium*), heartleaf hibiscus (*Hibiscus matianus*), scarlet sage (*Salvia coccinea*), red prickly poppy (*Argemone sanguinea*), and purple phacelia (*Phacelia bipinnatifida*) (TPWD 2019b). A complete list of floral species observed during the biological survey of the levee wall corridor is included in Table 8-1.

**Table 8-1. Vegetation Observed During the Levee Wall System Biological Surveys**

Common Name	Scientific Name	Common Name	Scientific Name
Retama	<i>Parkinsonia aculeata</i>	White plumbago	<i>Plumbago scandens</i>
Honey mesquite	<i>Prosopis glandulosa</i>	Texas lantana	<i>Lantana urticoides</i>
Texas ebony	<i>Ebenopsis ebano</i>	Mexican bastardia	<i>Bastardia viscosa</i>
Black willow	<i>Salix nigra</i>	Camphor weed	<i>Heterotheca subaxillaris</i>
Rio Grande palmetto	<i>Sabal mexicana</i>	Red sage	<i>Salvia coccinea</i>

Common Name	Scientific Name
Cedar elm	<i>Ulmus crassiflora</i>
Sugarberry	<i>Celtis laevigata</i>
Anacua	<i>Ehretia anacua</i>
Huisache	<i>Vachellia farnesiana</i>
Tepehuaje	<i>Leucaena pulverulenta</i>
White leadtree	<i>Leucaena leucocephala</i>
Granjeno	<i>Celtis pallida</i>
Lote bush	<i>Ziziphus obtusifolia</i>
Depression weed	<i>Baccharis neglecta</i>
Brasil	<i>Condalia hookeri</i>
Coma	<i>Sideroxylon celastrinum</i>
Colima	<i>Zanthoxylum fagara</i>
Guaiacum	<i>Guaiacum angustifolia</i>
Two-leaved senna	<i>Senna bauhinioides</i>
Huisachillo	<i>Vachellia bravoensis</i>
Wright's catclaw acacia	<i>Senegalia greggii</i>
Night-blooming cereus	<i>Acanthocereus tetragonus</i>
Pepper vine	<i>Ampelopsis arborea</i>
Old man's beard	<i>Clematis drummondii</i>
Poosum grape	<i>Cissus incisa</i>
Alamo vine	<i>Merremia dissecta</i>
Climbing milkweed	<i>Funastrum cynanchoides</i>
Talayote	<i>Cynanchum racemosum</i>
Common balloon vine	<i>Cardiospermum grandiflorum</i>
Queen's wreath	<i>Antigonon leptopus</i>
Guinea grass	<i>Urochloa maxima</i>
Buffel grass	<i>Pennisetum ciliare</i>
Cattail	<i>Typha domingensis</i>
Indian mallow	<i>Abutilon spp.</i>
Three furrowed Indian mallow	<i>Abutilon trisulactum</i>
Malva loca	<i>Malvastrum americanum</i>
Hierba del Soldado	<i>Waltheria indica</i>
Poiret's copperleaf	<i>Acalypha poiretii</i>
Turk's cap	<i>Malvaviscus arboreus</i>

Common Name	Scientific Name
Monstera	<i>Monstera deliciosa</i>
Black mimosa	<i>Mimosa asperata</i>
Coyotillo	<i>Karwinskia humboldtiana</i>
Cat brier	<i>Smilax bona-nox</i>
Variable leaf snailseed	<i>Cocculus diversifolius</i>
Mexican oregano	<i>Lippia graveolens</i>
Snake eyes	<i>Phaulothamnus spinescens</i>
Texas sticky snakeweed	<i>Gutierrezia texana</i>
Texas nightshade	<i>Solanum triquetrum</i>
Sangre de Drago	<i>Jatropha dioica</i>
Five needle dogweed	<i>Thymophylla pentachaeta</i>
Grassleaf spurge	<i>Euphorbia graminea</i>
Pitseed goosefoot	<i>Chenopodium berlandieri</i>
Broomsedge bluestem	<i>Andropogon virginicus</i>
Torrey's croton	<i>Croton incanus</i>
Texas prickly pear	<i>Opuntia engelmannii</i>
Fleabane	<i>Erigeron sp.</i>
Pink smartweed	<i>Persicaria pensylvanica</i>
Silky leaf frog fruit	<i>Phyla strigillosa</i>
Sea oxeye	<i>Borrichia frutescens</i>
Cow pen daisy	<i>Verbesina encelioides</i>
Fendler's ivy leaf ground cherry	<i>Physalis hederifolia</i>
Common sunflower	<i>Helianthus annuus</i>
Wild lettuce	<i>Launaea intybacea</i>
Brushy lippia	<i>Lippia alba</i>
Berlandier's fiddlewood	<i>Citharexylum berlandieri</i>
Morning glory	<i>Ipomoea sp.</i>
Mexican urvillea	<i>Urvillea ulmacea</i>
Meloncito	<i>Melothria pendula</i>
Corona de Cristo	<i>Passiflora foetida</i>
Smooth chaff flower	<i>Alternanthera paronychioides</i>
Fragrant beggar ticks	<i>Bidens pilosa</i>
Mexican ash	<i>Fraxinus berlandieriana</i>
Castor bean	<i>Ricinus communis</i>

Common Name	Scientific Name
Low croton	<i>Croton humilis</i>
Park's croton	<i>Croton parksii</i>
Rouge plant	<i>Rivina humilis</i>
Chilipiquin	<i>Capsicum annuum</i>
Blue mist flower	<i>Conoclinium coelestinum</i>
White mist flower	<i>Fleischmannia incarnata</i>
Encino live oak	<i>Quercus virginiana</i>
Anacahuita	<i>Cordia boissieri</i>
Bermuda grass	<i>Cynodon dactylon</i>
Giant reed	<i>Arundo donax</i>
Common reed	<i>Phragmites australis</i>
Barnyard grass	<i>Echinochloa sp.</i>
Kleberg's bluestem	<i>Dichanthium annulatum</i>
Three-awn grass	<i>Aristida sp.</i>
Johnson grass	<i>Sorghum halepense</i>
False ragweed	<i>Parthenium hysterophorus</i>
Silver leaf nightshade	<i>Solanum campechiense</i>

Source: CBP 2019b.

Common Name	Scientific Name
Rio Grande dewberry	<i>Rubus riograndis</i>
Globeberry	<i>Ibervillea lindheimeri</i>
Palmer's amaranth	<i>Amaranthus palmeri</i>
Laredo sand mat	<i>Chamaesyce laredana</i>
Spiny sida	<i>Sida spinose</i>
Texas thistle	<i>Cirsium texanum</i>
Sweet stem	<i>Aloysia macrostachya</i>
Golden bamboo	<i>Phyllosatchys aurea</i>
Turtle grass	<i>Battis maritima</i>
Salt grass	<i>Distichlis spicata</i>
Spike rush	<i>Eleocharis sp.</i>
Rush	<i>Juncus sp.</i>
Sedge	<i>Cyperus sp.</i>
Dock	<i>Rumex sp.</i>
Chinaberry tree	<i>Melia azedarach</i>
Tree tobacco	<i>Nicotiana glauca</i>

### 8.1.2 Wildlife and Aquatic Resources

The project corridor is within the Southwest Plateau and Plains Dry Steppe and Shrub Province. Common mammals within this province include the whitetail deer (*Odocoileus virginianus*), Mexican ground squirrel (*Spermophilus mexicanus*), fox squirrel (*Sciurus niger*), ringtail (*Bassariscus astutus*), raccoon (*Procyon lotor*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), collared peccary (*Pecari tajacu*), striped skunk (*Mephitis mephitis*), ninebanded armadillo (*Dasypus novemcinctus*), eastern cottontail (*Sylvilagus floridanus*), desert cottontail (*Sylvilagus audubonii*), fulvous harvest mouse (*Reithrodontomys fulvescens*), hispid cotton rat (*Sigmodon hispidus*), and Gulf Coast kangaroo rat (*Dipodomys compactus*) (TPWD 2019c).

Bird species are especially abundant in this region as the Central and Mississippi flyways converge in south Texas. In addition to the neotropical migrants that migrate through the region in the spring and fall, this area is also the northernmost extent for many Central American species. Approximately 500 avian species, including neotropical migrants, shorebirds, raptors, and waterfowl can occur in south Texas. Common birds that frequent south Texas include the least grebe (*Tachybaptus dominicus*), plain chachalaca (*Ortalis vetula*), red-billed pigeon (*Patagioenas flavirostris*), white-tipped dove (*Leptotila verreauxi*), green parakeet (*Aratinga holochlora*), groove-billed ani (*Crotophaga sulcirostris*), common pauraque (*Nyctidromus albicollis*), buff-bellied hummingbird (*Amazilia yucatanensis*), ringed kingfisher (*Ceryle*

*torquata*), green kingfisher (*Chloroceryle americana*), brown-crested flycatcher (*Myiarchus tyrannulus*), great kiskadee (*Pitangus sulphuratus*), tropical kingbird (*Tyrannus melancholicus*), Couch's kingbird (*Tyrannus couchii*), green jay (*Cyanocorax yncas*), brown jay (*Cyanocorax morio*), Tamaulipas crow (*Corvus imparatus*), cave swallow (*Petrochelidon fulva*), clay-colored robin (*Turdus grayi*), long-billed thrasher (*Toxostoma longirostre*), white-collared seedeater (*Sporophila torqueola*), olive sparrow (*Arremonops rufivirgatus*), Altamira oriole (*Icterus gularis*), and Audubon's oriole (*Icterus graduacauda*) (TPWD 2019c).

Common reptiles and amphibians include the blue spiny lizard (*Sceloporus serrifer*), Laredo striped whiptail (*Aspidocelus laredoensis*), prairie racerunner (*Aspidocelus sexlineata viridis*), Texas spiny softshell turtle (*Apalone spinifera emoryi*), Rio Grande cooter (*Pseudemys gorzugi*), Rio Grande leopard frog (*Lithobates berlandieri*), Rio Grande chirping frog (*Eleutherodactylus cystignathoides*), Gulf Coast toad (*Incilius nebulifer*), and the giant (marine) toad (*Rhinella marina*) (TPWD 2019c). A list of wildlife observed during biological surveys is included in Table 8-2.

**Table 8-2. Wildlife Observed During Biological Surveys**

Common Name	Scientific Name	V=visual, S=sign	Survey Segments
<b>Mammals</b>			
Virginia opossum	<i>Didelphis virginiana</i>	V	2A
Nine-banded armadillo	<i>Dasyus novemcinctus</i>	S	2A, 3H
Eastern cottontail	<i>Sylvilagus floridanus</i>	V	2C, 3H
Southern plains woodrat	<i>Neotoma micropus</i>	S	2A
Bobcat	<i>Lynx rufus</i>	S	2A, 2B, 3H
Coyote	<i>Canis latrans</i>	S	2A, 3H
Raccoon	<i>Procyon lotor</i>	S	2A
Collared peccary	<i>Pecari tajacu</i>	V	2A, 3H
House mouse	<i>Mus musculus</i>	V	2C
<b>Reptiles and Amphibians</b>			
Rio Grande chirping frog	<i>Eleutherodactylus cystignathoides</i>	V	2A
Rio Grande leopard frog	<i>Lithobates berlandieri</i>	V	2A, 2D
American bullfrog	<i>Lithobates catesbeianus</i>	V	2F
Six-lined racerunner	<i>Aspidoscelis sexlineata</i>	V	3H
Texas horned lizard	<i>Phrynosoma cornutum</i>	V	3H
Western ribbonsnake	<i>Thamnophis proximus</i>	V	3H
Checkered gartersnake	<i>Thamnophis marcianus</i>	V	2D
Rose-bellied lizard	<i>Sceloporus variabilis</i>	V	2A, 3H
Great plains ratsnake	<i>Pantherophis emoryi</i>	V	2D
Texas indigo snake	<i>Drymarchon melanurus</i>	V	2A, 3H
Texas patch-nosed snake	<i>Salvadora grahamiae</i>	V	3H
Red-eared slider	<i>Trachemys scripta</i>	V	3H
Texas tortoise	<i>Gopherus berlandieri</i>	V, S	2A
Green anole	<i>Anolis carolinensis</i>	V	2B
<b>Birds</b>			
Gray hawk	<i>Buteo plagiatus</i>	V	2A, 3H
Mallard	<i>Anus platyrhynchos</i>	V	2A, 2F
Bewick's wren	<i>Thryomanes bewickii</i>	V	2C, 3H

Common Name	Scientific Name	V=visual, S=sign	Survey Segments
Couch's kingbird	<i>Tyrannus couchii</i>	V	2A, 2B, 3H
Scissor-tailed flycatcher	<i>Tyrannus forficatus</i>	V	2F, 3H
Ruby-crowned kinglet	<i>Regulus calendula</i>	V	2C
Black-necked stilt	<i>Himantopus mexicanus</i>	V	2A
American avocet	<i>Recurvirostra americana</i>	V	2A
Roseate spoonbill	<i>Platalea ajaja</i>	V	2A, 2D
Pied-billed grebe	<i>Podilymbus podiceps</i>	V	2A, 2D
Great blue heron	<i>Ardea herodias</i>	V	2A, 2C, 2F
Lark sparrow	<i>Chondestes grammacus</i>	V	2A, 2C
American white pelican	<i>Pelecanus erythrorhynchos</i>	V	2A, 2D
Say's phoebe	<i>Sayornis saya</i>	V	2A
Tufted titmouse	<i>Baeolophus bicolor</i>	V	3H
Great egret	<i>Ardea alba</i>	V	2A, 2D, 2F
Blue-gray gnatcatcher	<i>Poliophtila caerulea</i>	V	2A, 3H
Turkey vulture	<i>Cathartes aura</i>	V	2A, 2C, 2E, 2F, 3H
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	V	2D, 2F
Northern bobwhite	<i>Colinus virginianus</i>	V	2F
Black-bellied whistling-duck	<i>Dendrocygna autumnalis</i>	V	2D
Anhinga	<i>Anhinga anhinga</i>	V	2E
Laughing gull	<i>Larus atricilla</i>	V	2F
Snow goose	<i>Chen caerulescens</i>	V	2D, 2F
American bittern	<i>Botaurus lentiginosus</i>	V	2F
Roadside hawk	<i>Buteo magnirostris</i>	V	3H
Snowy egret	<i>Egretta thula</i>	V	2D
Cattle egret	<i>Bubulcus ibis</i>	V	2D
Sandhill crane	<i>Grus canadensis</i>	V	2F
Red-shouldered hawk	<i>Buteo lineatus</i>	V	2D
Merlin	<i>Falco columbarius</i>	V	2F
Canada goose	<i>Branta canadensis</i>	V	2F
Northern harrier	<i>Circus cyaneus</i>	V	2A, 2F
Harris's hawk	<i>Parabuteo unicinctus</i>	V	3H
Crested caracara	<i>Caracara cheriway</i>	V	2F
Song sparrow	<i>Melospiza melodia</i>	V	2D, 3H
Vesper Sparrow	<i>Pooecetes gramineus</i>	V	2D
Grasshopper sparrow	<i>Ammodramus savannarum</i>	V	2A, 2F, 3H
Savannah sparrow	<i>Passerculus sandwichensis</i>	V	2D
Ladder-backed woodpecker	<i>Picoides scalaris</i>	V	2A
Common yellowthroat	<i>Geothlypis trichas</i>	V	2A
Green-winged teal	<i>Anas crecca</i>	V	2A
Cinnamon teal	<i>Spatula cyanoptera</i>	V	2A
American widgeon	<i>Mareca americana</i>	V	2A
Red-breasted merganser	<i>Mergus serrator</i>	V	2A
Red-winged blackbird	<i>Agelaius phoeniceus</i>	V	2A, 2B, 2C, 2D, 2F, 3H
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	V	2A, 2F
House wren	<i>Troglodytes aedon</i>	V	3H

Common Name	Scientific Name	V=visual, S=sign	Survey Segments
Carolina wren	<i>Troglodytes ludovicianus</i>	V	3H
Great crested flycatcher	<i>Myiarchus crinitus</i>	V	2A
Western kingbird	<i>Tyrannus verticalis</i>	V	2A, 2B, 2C, 2F, 3H
Yellow-rumped warbler	<i>Setophaga coronata</i>	V	2A
Gray catbird	<i>Dumetella carolinensis</i>	V	2A, 3H
Barn owl	<i>Tyto alba</i>	V	2A
Curve-billed thrasher	<i>Toxostoma curvirostre</i>	V	2A, 3H
Cooper's hawk	<i>Accipiter cooperii</i>	V	2A, 2F, 3H
Red-tailed hawk	<i>Buteo jamaicensis</i>	V	2A, 2D, 3H
American kestrel	<i>Falco sparverius</i>	V	2A, 2B, 2D, 2F
Purple martin	<i>Progne subis</i>	V	2A
Plain chachalaca	<i>Ortalis vetula</i>	S	3H
American coot	<i>Fulica americana</i>	V	2A, 2C
Killdeer	<i>Charadrius vociferus</i>	V	2C
Least sandpiper	<i>Calidris minutilla</i>	V	3H
White-winged dove	<i>Zenaida asiatica</i>	V	2E
Mourning dove	<i>Zenaida macroura</i>	V	2A, 2C, 2E, 3H
Eurasian collard-dove	<i>Streptopelia decaocto</i>	V	2E
Common ground dove	<i>Columbina passerina</i>	V	2A, 2B
Rock dove	<i>Columba livia</i>	V	2E
Hermit thrush	<i>Catharus guttatus</i>	V	3H
Common nighthawk	<i>Nyctidromus albigollis</i>	V	2A, 2D
Belted kingfisher	<i>Megaceryle alcyon</i>	V	2D
Golden-fronted woodpecker	<i>Melanerpes aurifrons</i>	V	2A, 2B, 2C, 2D, 2F, 3H
Eastern wood-pewee	<i>Contopus virens</i>	V	3H
Eastern phoebe	<i>Sayornis phoebe</i>	V	2A, 3H
Black phoebe	<i>Sayornis nigricans</i>	V	2A, 3H
Great kiskadee	<i>Pitangus sulphuratus</i>	V	2A, 2B, 2F, 3H
Loggerhead shrike	<i>Lanius ludovicianus</i>	V	2A, 2B, 2D
White-eyed vireo	<i>Vireo griseus</i>	V	2A, 2F, 3H
Green jay	<i>Cyanocorax yncas</i>	V	2A, 2F, 3H
Marsh wren	<i>Cistothorus palustris</i>	V	2F
Eared grebe	<i>Podiceps nigricollis</i>	V	2F
Double-crested cormorant	<i>Phalacrocorax auritus</i>	V	2F
Tri-colored heron	<i>Egretta tricolor</i>	V	2D
Northern mockingbird	<i>Mimus polyglottos</i>	S	2A, 3H
European starling	<i>Sturnus vulgaris</i>	V	2E
Northern cardinal	<i>Cardinalis cardinalis</i>	V	2B, 3H
Eastern meadow lark	<i>Sturnella magna</i>	V	2D, 2F
White-tailed kite	<i>Elanus leucurus</i>	V	2F,
Western meadowlark	<i>Sturnella neglecta</i>	V	2D, 2F
Royal tern	<i>Thalasseus maximus</i>	V	2F
Great-tailed grackle	<i>Quiscalus mexicanus</i>	V	2A, 2C, 2F, 3H
<b>Butterflies</b>			
Black swallowtail	<i>Papilio polyxenes</i>	V	All segments

Common Name	Scientific Name	V=visual, S=sign	Survey Segments
Pipevine swallowtail	<i>Battus philenor</i>	V	All segments
Checkered white	<i>Pontia protodice</i>	V	All segments
Orange sulphur	<i>Colias eurytheme</i>	V	All segments
Sleepy orange	<i>Abaeis nicippe</i>	V	All segments
Little yellow	<i>Pyrisitia lisa</i>	V	All segments
Cloudless sulphur	<i>Phoebis sennae</i>	V	All segments
Tropical leafwing	<i>Anaea aidea</i>	V	All segments
Painted lady	<i>Vanessa cardui</i>	V	All segments
White peacock	<i>Anartia jatrophae</i>	V	All segments
Empress leilia	<i>Asterocampa leilia</i>	V	All segments
American snout	<i>Libytheana carinenta</i>	V	All segments
Monarch	<i>Danaus plexippus</i>	V	All segments
Silver-spotted skipper	<i>Epargyreus clarus</i>	V	All segments
Desert checkered skipper	<i>Pyrgus philetas</i>	V	2F
Gulf fritillary	<i>Agraulis vanillae</i>	V	2F, 3H
Mexican yellow	<i>Eurema mexicana</i>	V	All segments
Fawn-spotted skipper	<i>Cymaenes trebius</i>	V	2A, 2F
Red admiral	<i>Vanessa atalanta rubria</i>	V	All segments
Fiery skipper	<i>Hylephila phyleus</i>	V	2A
Io moth	<i>Automeris io</i>	V	2A
Common mestra	<i>Mestra amymone</i>	V	2A
Common checkered skipper	<i>Pyrgus communis</i>	V	2B, 2F
Laviana white skipper	<i>Heliopetes laviana</i>	V	All segments
Dot-lined angle	<i>Psamatodes abydata</i>	V	2A, 2C
Rounded metalmark	<i>Calephelis perditalis</i>	V	2D
Queen	<i>Danaus gilippus</i>	V	All segments
Mallow scrub hairstreak	<i>Strymon istapa</i>	V	2F
Bordered patch	<i>Chlosyne lacinia</i>	V	2F
Variiegated fritillary	<i>Euptoieta claudia</i>	V	2F
Southern dogface	<i>Zerene cesonia</i>	V	All segments
Reakirt's blue	<i>Echinargus isola</i>	V	All segments
Orange skipperling	<i>Copaeodes aurantiaca</i>	V	All segments
Phaon crescent	<i>Phyciodes phaon</i>	V	All segments

Source: CBP 2019b

### 8.1.3 Protected Species and Critical Habitat

#### 8.1.3.1 Federally Listed Species

There are a total of nine Federally endangered species and one candidate species known to occur within Hidalgo County (USFWS 2019). A list of these species is presented in Table 8-3.

Biological surveys of the proposed project corridor were conducted by GSRC during November through December 2018. These investigations included surveys for all Federally listed and state-listed species potentially occurring at or near the project corridor and assessment of suitable habitat for those species. During the investigations no Federally listed species were observed.

Three state-listed species were observed in the project corridor: one Texas horned lizard (*Phrynosoma cornutum*), one Texas tortoise (*Gopherus berlandieri*) carcass and several active burrows, and three Texas indigo snakes (*Drymarchon melanurus*). Sensitive species and habitats



with the potential to occur in or adjacent to the project corridor are discussed in the following sections.

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

Common Name	Scientific Name	Status	Critical Habitat	Potential to Occur in the Project Corridor
<b>Mammals</b>				
Gulf Coast jaguarundi	<i>Herpailurus yagouaroundi cacomitli</i>	Endangered	None	Yes
Ocelot	<i>Leopardus pardalis</i>	Endangered	None	Yes
<b>Birds</b>				
Least tern	<i>Sterna antillarum</i>	Endangered	None	No
Northern aplomado falcon	<i>Falco femoralis septentrionalis</i>	Endangered	None	Yes
Piping plover	<i>Charadrius melodus</i>	Threatened	Yes	No
Red knot	<i>Calidris canutus rufa</i>	Threatened	None	No
Red-crowned parrot	<i>Amazona viridigenalis</i>	Candidate	None	Yes
<b>Flowering Plants</b>				
Star cactus	<i>Astrophytum asterias</i>	Endangered	None	No
Texas ayenia	<i>Ayenia limitaris</i>	Endangered	None	Yes
Walker's manioc	<i>Manihot walkerae</i>	Endangered	None	No

Legend: E – Endangered T – Threatened C – Candidate

Source: USFWS 2019

### ***Ocelot and Gulf Coast Jaguarundi***

Ocelots and Gulf Coast jaguarundi occupy similar habitats in south Texas. They prefer dense, concealing vegetation for hunting and travel corridors between larger habitat areas. Clearing of land for agricultural practices and urbanization has destroyed over 95 percent of their historic habitat in south Texas (USFWS 2010a). The project corridor contains suitable habitat for both ocelot and Gulf Coast jaguarundi; however, individuals have not been identified in the survey areas for some time. No ocelots or Gulf Coast jaguarundi were identified during biological surveys and no Critical Habitat has been designated for either species.

Currently, the Texas population of ocelots is believed to be fewer than 50 individuals, composing two separate populations in south Texas. The Laguna Atoscosa National Wildlife Refuge primarily supports one of these populations, and the other population occurs in Willacy and Kennedy counties on private ranches (USFWS 2010a). Individuals occurring in Texas outside these areas are occasionally observed but are likely wandering or released. A third population of the Texas subspecies of ocelot occurs in Tamaulipas, Mexico, but is geographically isolated from ocelots in Texas. Genetic evidence shows little or no recent genetic exchange between these populations (USFWS 2010a).

Little information is available on the population status of jaguarundi in Texas, and there are far fewer recent sightings of jaguarundi than ocelots. Both species face similar threats and occupy

similar habitat types. The primary threat to these species is habitat destruction and fragmentation. Existing habitat patches are often isolated by roads or expanses of non-habitat that do not offer protective cover or concealment. There are multiple references of road kills of these species in the literature (USFWS 2010a).

### ***Northern Aplomado Falcon***

The northern aplomado falcon is a subspecies of the aplomado falcon and is the only subspecies recorded in the U.S. Its historic range extended from portions of Trans-Pecos Texas down to Nicaragua (USFWS 1990). The essential habitat elements for this species appear to be open terrain with scattered trees, relatively low ground cover, an abundance of insects and small to medium-sized birds, and a supply of nest sites (abandoned stick platforms of corvids and other raptors). Reintroductions of this species in Texas began in 1993 (USFWS 2014), and productivity studies from 2013 indicate that northern aplomado falcons are successfully nesting in the Brownsville and Matagorda areas of Texas (USFWS 2014). No northern aplomado falcons were identified during biological surveys and no Critical Habitat is currently designated for this species.

### ***Red-crowned Parrot***

The red-crowned parrot generally occurs in tropical lowlands and foothills, inhabiting tropical deciduous forest, gallery forest, evergreen floodplain forest, Tamaulipan thornscrub, and semi-open areas (USFWS 2011). Red-crowned parrots occur in Hidalgo County, Texas, and in the cities of Brownsville, Los Fresnos, San Benito, and Harlingen in Cameron County, Texas. The species is known to prefer urban areas in its search for food and resources, and in the Rio Grande Valley, individuals were found to occur exclusively in urban habitats (USFWS 2016). In cities where the species was introduced, areas with large trees that provide both food and nesting sites were preferred (USFWS 2011). The project corridor does contain large trees that could serve as nesting sites for the species; however, no individuals or nesting sites were identified during biological surveys of the project corridor, and no Critical Habitat is designated for this species.

### ***Flowering Plants***

Star cactus occurs on clay or loam soils that typically contain high levels of gypsum, salt, or other alkaline minerals. The species is typically associated with low shrubs, grasses, and salt-tolerant plants on xeric upland sites (USFWS 2013). No individuals were identified during site surveys, and no Critical Habitat has been designated for the species.

Texas ayenia is a small shrub known to have populations in Hidalgo County, Texas. The plant is best adapted to partially shaded sites in shrubby savannas or the edges of brush thickets and arroyos, and is associated with plant species commonly found in the project corridor such as Texas ebony. No individuals were identified during site surveys; however, suitable habitat was present in the survey areas where Tamaulipan brushland was present. No Critical Habitat has been designated for the species (USFWS 2010b).

Walker's manioc is a perennial herb known to occur in Hidalgo County, Texas. The species usually grows among low shrubs, native grasses, and herbaceous plants, and prefers either full sunlight or the partial shade of shrub species (USFWS 2009). It is associated with plant species that were found within the project corridor, such as blackbrush acacia. No individuals were identified during site surveys, and no Critical Habitat has been designated for the species.

## **8.2 ENVIRONMENTAL CONSEQUENCES**

### **8.2.1 Vegetation**

The Project will have minor, long-term impacts on vegetation communities within the project corridor. Of the 331 acres that could be impacted, there are 158 acres of Tamaulipan brushlands; however, only 89 acres are continuous, intact Tamaulipan brushlands. The remaining Tamaulipan brushlands are not intact and occur along the southern toe of the existing levee. These brushlands are often less than 100 feet in width, with expansive agriculture fields abutting the southern boundary. The remainder of the impact areas is agriculture (91 acres), developed/cleared (42 acres), rangelands (26 acres), and open water (14 acres). The permanent impacts will be associated with the enforcement zone and the clearing and grubbing of vegetation within the zone. The enforcement zone will be revegetated with native grasses and maintained and mowed; therefore, the areas will remain vegetated but still in an altered state. The species located during the biological surveys are common to Hidalgo County and the levee wall system would not adversely affect the population viability of any vegetative species in the region.

Staging areas will be within the cleared enforcement zone and revegetated similar to the rest of the enforcement zone upon completion of construction activities. General BMPs to minimize soil disturbance and erosion will be implemented. The anticipated reduction in illegal border foot traffic could potentially have a slight beneficial impact on vegetation communities in the region by reducing the trash/debris, trampling of vegetation, and creation of trails. Further, CBP is coordinating with NBC on the potential for seeding the enforcement zone with plants that are low growing and provide a nectar source for butterflies.

### **8.2.2 Wildlife and Aquatic Resources**

The permanent loss of approximately 184 acres of wildlife habitat (158 acres of Tamaulipan brushland + 26 acres of rangeland) would have a long-term, minor impact on wildlife. Soil disturbance and operation of heavy equipment could result in the direct loss of less mobile individuals such as lizards, snakes, and ground-dwelling species such as mice and rats. However, most wildlife would avoid any direct harm by escaping to surrounding habitat. The direct degradation and loss of habitat could also impact burrows and nests, as well as cover, forage, and other important wildlife resources. The loss of these resources would result in the displacement of individuals that would then be forced to compete with other wildlife for the remaining resources. Although this competition for resources could result in a reduction of total population size, such a reduction would be minor in relation to total population size and would not result in long-term effects on the sustainability of any wildlife species. The wildlife habitat present in the project area is regionally common and the permanent loss of approximately 184 acres of wildlife habitat would not adversely affect the population viability or fecundity of any wildlife species in the region. Upon completion of construction, all temporary disturbance areas and the enforcement zone would be revegetated with a mixture of native plant seeds and would be mowed and maintained. Further, CBP is coordinating with NBC on the potential for seeding the enforcement zone with vegetation that is low growing and would provide a nectar source for butterflies.

The MBTA requires that Federal agencies coordinate with USFWS if a construction activity would result in the “take” of a migratory bird. In accordance with compliance measures of the MBTA, BMPs identified in Section 1.5.6 would be implemented if construction or clearing activities were scheduled during the nesting season (typically March 15 to September 15).

Lighting would attract or repel various wildlife species within the vicinity of the project area. The presence of lights within the project area could also produce some long term behavioral effects on wildlife, although the magnitude of these effects is not presently known. Some species, such as insectivorous bats, might benefit from the concentration of insects that would be attracted to the lights. Continual exposure to light has been proven to alter circadian rhythms in mammals and birds. Studies have demonstrated that under constant light, the time an animal is active, compared with the time it is at rest, increases in diurnal animals, but decreases in nocturnal animals (Carpenter and Grossberg 1984). Outdoor lighting can disturb flight, navigation, vision, migration, dispersal, oviposition, mating, feeding and crypsis in some moths. In addition, it could disturb circadian rhythms and photoperiodism (Frank 1988). It has also been shown that, within several weeks under constant lighting, mammals and birds would quickly stabilize and reset their circadian rhythms back to their original schedules (Carpenter and Grossberg 1984).

While the number of lights throughout the levee wall system is not presently known, artificial lighting spread throughout the 13.3 mile-long project corridor would not significantly disrupt activities of wildlife populations across the region since similar habitat is readily available to the north, east, west and south for wildlife relocation. Finally, construction activities would be limited primarily to daylight hours whenever possible; therefore, construction impacts on wildlife would be insignificant since the highest period of movement for most wildlife species occurs during night hours or low daylight hours.

Periodic noise from construction activities and subsequent operational activities, such as helicopter takeoffs and landings, would have moderate and intermittent impacts on the wildlife communities adjacent to the project area. However, because similar habitat is readily available, wildlife would easily relocate.

Although the periodic earthen ramps would allow for animals to cross the levee to avoid flood waters, some slow sedentary animals could be impacted. Animals would also be able to escape flood waters on either end of the various levee wall system segments. Impacts on wildlife from flooding would be similar to the current conditions without the levee wall; however, some animals that might have been able to escape floodwaters by finding safety on the levee will no longer be afforded that opportunity unless they find an earthen ramp. Impacts on wildlife would be long-term and minor to moderate, as the wildlife within the project corridor is regionally and locally abundant.

### **8.2.3 Protected Species and Critical Habitat**

CBP has applied the appropriate standards and guidelines associated with the Endangered Species Act (ESA) as the basis for evaluating potential environmental impacts on protected species and critical habitat. Of the nine Federally protected species listed in Hidalgo County, only five have the potential to occur in the project corridor (see Table 8-3). The greatest impact

is a result of permanently impacting 184 acres of Tamaulipan brushland because the ocelot and jaguarundi prefer this habitat for hunting and traveling. Texas ayenia is found in Tamaulipan brushland; however, no individuals were observed during biological surveys. Northern aplomado falcons could be impacted by the removal of the 184 acres of Tamaulipan brushland due to the loss of potential nesting habitat; however, the northern aplomado falcon could also be beneficially impacted as a result of increased foraging areas (i.e., grassland within the enforcement zone). No impacts on Walker's manioc or Star cactus would occur as none were observed during biological surveys and the area to be disturbed is considered marginal habitat.

No Critical Habitat is found anywhere within the 13.3 mile project corridor. The levee wall system will adversely affect the ocelot and jaguarundi due to the loss of 184 acres of Tamaulipan brushland. The construction and implementation of the levee wall system could affect but is not likely to adversely affect the northern aplomado falcon, Texas ayenia, or red crown parrot.

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

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## **9.0 CULTURAL RESOURCES**

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### **9.1 AFFECTED ENVIRONMENT**

The project corridor is within the south Texas archaeological region. The prehistoric cultural chronology of south Texas archaeological region is split into six broad periods: Paleoindian, Early Archaic, Middle Archaic, Late Archaic, Late Prehistoric, and Protohistoric (Perttula 2004). A detailed cultural history for the area can be found in Hester 1980 and Hester 2004.

Archaeological background and archival research as well as archaeological and historic aboveground resources surveys were conducted to identify potential historic resources that could be impacted by the proposed levee wall construction (Lindemuth et al. 2019). The background and archival research identified seven archaeological studies that were conducted within the footprint of the current levee/wall Project. These investigations, as well as others identified two archaeological sites, one National Register of Historic Places (NRHP)-listed district (Louisiana-Rio Grande Canal Company Irrigation System), and two cemeteries (Handy Cemetery and Weber Ranch Cemetery), which overlapped with portions of the current survey area. The archaeological surveys relocated and updated the one previously recorded archaeological site. In addition, the archaeological surveys recorded nine new archaeological sites and 11 new isolated occurrences. These archaeological resources included historic farmsteads, ranches, irrigation and flood control features (including the remains of a former pump house), and historic scatters and dumps. Eight of these resources were not considered to represent significant archaeological resources that would require additional investigations or preservation.

The eligibility of one newly recorded archaeological site, the Pump House, could not be determined without additional archival and subsurface archaeological testing. The site represents a former irrigation pump house and its associated structures and features. The site contains possible intact subsurface features as well as extant surface features that are related to the old irrigation pump house and could provide significant information on the development of agriculture in this area during the early twentieth century. The pump house appears in the 1946, 1958, 1967, 1971 and 1980 aerial photographs. By the 1996 aerial photograph the main pump house structure was levelled, though several of the associated features were still extant, suggesting that operations had been moved to the new pump house by 1996. Until additional archival and archaeological investigations can be completed and the significance of the Pump House site can be evaluated, it is recommended that no ground disturbing activities be conducted within the site boundary. In addition, it is recommended that the extant aboveground features associated with the site also be avoided.

### **9.2 ENVIRONMENTAL CONSEQUENCES**

In addition to the archaeological resources investigated, a total of 28 architectural/aboveground resources were evaluated during the survey of the two survey segments (RGV-02 and RGV-03). Of these 28 resources, four would be adversely affected by the proposed Project. As a result, the Project will have an adverse effect on properties that are considered eligible for listing on the NRHP.

One archaeological resource and four aboveground historic resources would be adversely affected by the proposed Project. No cemeteries will be impacted by the construction of the levee wall system; these areas will be avoided. BMPs to reduce impacts on historic and cultural resources are discussed in Section 1.5.7. If any cultural material is discovered during construction, all activities within the vicinity of the discovery will be halted until the area has been cleared by a qualified archaeologist in accordance with the BMPs.

## 10.0 SOCIOECONOMICS

### 10.1 AFFECTED ENVIRONMENT

This socioeconomics section outlines the basic attributes of population and economic activity in Hidalgo County, Texas, which is the ROI for socioeconomics. Demographic data for the cities of McAllen, Hidalgo, and Progreso, which are in the vicinity of wall sections, are also presented. Demographic data, shown in Table 10-1, provide an overview of the socioeconomic environment in the ROI. In 2017, Hidalgo County had an estimated population of 860,661. From 2010 to 2017, the county grew at an average annual rate of 1.6 percent. The population of Texas grew at a slightly faster rate of 1.8 percent; however, the U.S. grew at a slower rate of 0.8 percent. Hidalgo County is heavily Hispanic, with almost 94 percent of the population identifying as Hispanic. Approximately 94 percent of the population is minority compared to 58 percent for the State of Texas and 39 percent for the U.S.

**Table 10-1. Population Demographics in the ROI**

Geographic Area	Population	Population	Race/Ethnicity	Race/Ethnicity	Race/Ethnicity
	2017 Population Estimate	Average Annual Growth Rate 2010-2017 (Percent)	White, Not Hispanic (Percent)	Hispanic (Percent)	Minority (Percent)
McAllen (City), Texas	142,696	1.3	10.6	85.2	89.4
Mission (City), Texas	84,424	1.2	9.5	88.6	90.5
Hidalgo (City), Texas	13,931	1.6	1.0	99.0	99.0
Progreso (City), Texas	5,938	1.1	1.0	99.0	99.0
Hidalgo County, Texas	860,661	1.6	6.2	92.2	93.8
Texas	28,304,596	1.8	42.0	39.4	58.0
United States	325,719,178	0.8	60.7	18.1	39.3

Source: U.S. Census Bureau 2018

Data on the per capita income and poverty (Table 10-2) show that per capita income in Hidalgo County is very low, approximately half the per capita income for the U.S. The poverty rate is double the poverty rate for Texas and over 2.5 times greater than the U.S. poverty rate. The 2017 average annual unemployment rate in Hidalgo County (7.4 percent) is well above Texas (4.3 percent) and the U.S. (4.4 percent).



**Table 10-2. Income, Poverty, and Unemployment in Hidalgo County**

<b>Geographic Area</b>	<b>Per Capita Income (Dollars)</b>	<b>Per Capita Income As a Percent of the U.S. (Percent)</b>	<b>Poverty Rate (Percent)</b>	<b>Unemployment Rate (Annual Average 2017) (Percent)</b>
McAllen (City), Texas	21,726	73	25.7	NA
Mission (City), Texas	19,787	66	24.3	NA
Hidalgo (City), Texas	12,082	41	28.2	NA
Progreso (City), Texas	12,978	44	30.6	NA
Hidalgo County, Texas	15,240	51	29.5	7.4
Texas	27,828	93	14.7	4.3
U.S.	\$29,829	100	12.3	4.4

Source: U.S. Census Bureau 2018, U.S. Bureau of Labor Statistics (BLS) 2018a, BLS 2018b

Several structures are located within the proposed footprint of the Project; however, at this time the number of structures to be removed by the levee wall system is not known at this time. These structures range from mobile homes to pole barns.

## **10.2 ENVIRONMENTAL CONSEQUENCES**

Most of the Project segments are located in rural areas, and socioeconomic impacts related to their construction, operation, and maintenance would be negligible. However, the Project would permanently impact landowners/structures within the enforcement zone footprint. The number of structures that would be demolished to construct the levee wall system is not known at this time because the final footprints have not been established. However, some structures would be demolished to build the levee wall system, primarily within the enforcement zone. In the event that CBP would demolish a structure, CBP would pay fair market value to the landowner for the value of the structure, thereby, mitigating any loss of value. There would also be temporary, minor adverse socioeconomic impacts in areas immediately adjacent to segments of the levee wall that have residences within 500 feet of the construction areas. These residences and other areas (i.e., BSP and NBC) would experience temporary construction-related noise, traffic, and dust.

Temporary, minor beneficial impacts in the form of jobs and income for area residents, revenues to local businesses, and sales and use taxes to Hidalgo County, local cities, and the State of Texas from locally purchased building materials could be realized if construction materials are purchased locally and local construction workers are hired for road construction. Additionally, the wall would contribute to a decrease in cross-border violators. The decrease in cross-border violator activities could have a beneficial effect on the incidence of crime and enhanced safety, providing long-term beneficial impacts in the region.

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## **11.0 HAZARDOUS MATERIALS AND WASTE**

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### **11.1 AFFECTED ENVIRONMENT**

Hazardous materials are substances that cause physical or health hazards (29 CFR 1910.1200). Materials that are physically hazardous include combustible and flammable substances, compressed gases, and oxidizers. Health hazards are associated with materials that cause acute or chronic reactions, including toxic agents, carcinogens, and irritants. Hazardous materials are regulated in Texas by a combination of mandated laws promulgated by the USEPA and the TCEQ.

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.

Transaction Screen Site Assessments were conducted along all 13.3 miles of the project corridor in accordance with the American Society for Testing and Materials International Standard E1528-06. These assessments were performed to evaluate any potential environmental risk associated with the construction and operation of the levee wall system. Each assessment included a search of Federal and state records of known hazardous waste sites, potential hazardous waste sites and remedial activities and included sites that are either on the National Priorities List or being considered for the list.

There were four parcels of land for which current significant environmental risk concerns were observed on or immediately adjacent to the subject property corridor. Additionally, a government records search (Environmental Data Resources 2019) indicated that there are 19 sites within 0.5 mile of segments of the project corridor that report to state or Federal environmental databases. There are also 251 sites listed as orphan sites (sites lacking sufficient address information) within the vicinity of the project corridor. None of the orphan sites are expected to present an environmental risk to the subject property.

### **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 paragraphs describe the steps that 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 to maintain and refuel construction equipment. However, these activities will include primary and secondary containment measures, an SPCCP will be in place prior to the start of construction, and all personnel will be briefed on the implementation and responsibilities of this plan.

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

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

If CBP chooses to construct the levee wall system within the four parcels of land for which current significant environmental risk concerns were observed on or immediately adjacent to the project corridor, CBP will ensure the contractors properly remove the risks and remediate the properties as per USEPA and TCEQ regulations. Therefore, no adverse impacts are expected regarding environmental risk concerns.

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## 13.0 ABBREVIATIONS AND ACRONYMS

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am	ante meridiem
AOR	Area of Responsibility
BLS	Bureau of Labor Statistics
BMP	Best Management Practices
BSP	Bentsen Rio Grande Valley State Park
C	Candidate
CAA	Clean Air Act
CBP	United States Customs and Border Protection
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CM&R	Construction Mitigation and Restoration
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> <sup>e</sup>	Carbon Dioxide Equivalent
CWA	Clean Water Act
dB	decibel
dBA	decibel – A weighted scale
DDE	Dichlorodiphenyldichloroethylene
DHS	United States Department of Homeland Security
DOI	Department of Interior
E	Endangered
EDR	Environmental Data Resources
EPA	Environmental Protection Agency
EPP	Environmental Protection Plan
ESP	Environmental Stewardship Plan
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
GHG	Green House Gases
GSRC	Gulf South Research Corporation
HUD	U.S. Department of Housing and Urban Development
IBWC	International Boundary and Water Commission
ID	Identification
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act
LRGVDC	Lower Rio Grande Valley Development Council
MBTA	Migratory Bird Treaty Act
µg/m <sup>3</sup>	micrograms per cubic meter
mg/m <sup>3</sup>	milligrams per cubic meter
MOVES	Motor Vehicle Emission Simulator
mph	miles per hour
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NBC	National Butterfly Center
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides



NRHP	National Register of Historic Places
O <sub>3</sub>	Ozone
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated biphenyls
pm	post meridiem
PM-10	Particulate<10 micrometers
PM-2.5	Particulate<2.5 micrometers
POE	Port of Entry
POL	Petroleum, oil, and lubricants
ppb	parts per billion
ppm	parts per million
ROI	Region of influence
RGV	Rio Grande Valley
S	Sign
SANWR	Santa Ana National Wildlife Refuge
SBI	Secure Border Initiative
SO <sub>2</sub>	Sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure
SPCCP	Spill Prevention, Control, and Countermeasures Plan
std	Standard
SWPPP	Storm Water Pollution Prevention Plan
T	Threatened
TCEQ	Texas Commission on Environmental Quality
THC	Texas Historical Commission
TI	Tactical Infrastructure
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
U.S.	United States
USACE	United States Army Corps of Engineers
USBP	United States Border Patrol
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USIBWC	United States Section, International Boundary Water Commission
UTM	Universal Transverse Mercator
V	Visual
VOC	Volatile Organic Compounds

**Appendix A**  
**Copy of 2018 Border Waiver**

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This document is scheduled to be published in the Federal Register on 10/10/2018 and available online at <https://federalregister.gov/d/2018-21930>, and on [govinfo.gov](http://govinfo.gov)

**BILLING CODE 9111-14**

**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 of the United States in Cameron County in the State of Texas.

**DATES:** This determination takes effect on **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

**SUMMARY 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 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, § 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 Rio Grande Valley Sector is an area of high illegal entry. For the last several years, the Rio Grande Valley Sector has seen more apprehensions of illegal aliens than any other sector of the United States Border Patrol ("Border Patrol"). For example, in fiscal year 2017 alone, Border Patrol apprehended over 137,000 illegal aliens. In that same year Border Patrol seized approximately 260,000 pounds of marijuana and approximately 1,200 pounds of cocaine.

In order to satisfy the need for additional border infrastructure in the Rio Grande Valley Sector, DHS will take action to construct barriers and roads. DHS will construct mechanical gates and roads within gaps of existing barriers in the vicinity of the United States border in the Rio Grande Valley Sector. The segments of the border within which such construction will occur are referred to herein as the "project area" and are more specifically described in Section 2 below.

*Section 2*

I determine that the following areas in the vicinity of the United States border, located in Cameron County in the State of Texas, within the United States Border Patrol's Rio Grande Valley Sector, are areas of high illegal entry (the "project area"):

- Starting approximately three-tenths (0.3) of a mile west of a gap in the existing levee wall commonly referred to as the Anacua gate location, which is situated at the intersection of Wichita Street and the International Boundary and Water Commission (IBWC) levee

approximately one and one-half (1.5) miles south of the intersection of Wichita Street with US Route 281, and extending to approximately three-tenths (0.3) of a mile east of the Anacua gate location.

- Starting approximately three-tenths (0.3) of a mile west of a gap in the existing levee wall commonly referred to as the Webber Road gate location, which is situated at the intersection of Webber Road and the IBWC levee located approximately eight-tenths (0.8) of a mile southwest of the intersection of Webber Road with US Route 281, and extending approximately three-tenths (0.3) of a mile east of the Webber Road gate location.
- Starting approximately three-tenths (0.3) of a mile southwest of a gap in the existing levee wall commonly referred to as the Cantu Road gate location, which is situated at the intersection of Avilia Road and the IBWC levee located approximately eight-tenths of a mile south of the intersection of Avilia Road with US Route 281, and extending approximately three-tenths (0.3) of a mile northeast of the Cantu Road gate location.
- Starting approximately three-tenths (0.3) of a mile west of a gap in the existing levee wall commonly referred to as the Garza Sandpit Road gate location, which is situated at the intersection of the County Road 677 and the IBWC levee located approximately twotenths (0.2) of a mile southwest of the intersection of County Road 677 with US Route 281, and extending approximately three-tenths (0.3) of a mile northeast of the Garza Sandpit Road gate location.
- Starting approximately three-tenths (0.3) of a mile northwest of a gap in the existing levee wall commonly referred to as the Pool Road gate location, which is situated at the intersection of Domanski Drive with the IBWC levee located approximately one (1) mile

south of the intersection of Domanski Drive and US Route 281, and extending approximately three-tenths (0.3) of a mile southeast of the Pool Road gate location.

- Starting approximately three-tenths (0.3) of a mile northwest of a gap in the existing levee wall commonly referred to as the Flor De Mayo gate location, which is situated at the intersection of Flor De Mayo Road and the IBWC levee located approximately seventenths (0.7) of a mile southwest of the intersection of Flor De Mayo Road with US Route 281, and extending approximately three-tenths (0.3) of a mile southeast of the Flor De Mayo Road gate location.
- Starting approximately three-tenths (0.3) of a mile northwest of a gap in the existing levee wall commonly referred to as the Impala Road gate location, which is situated at the intersection of an unnamed road and the IBWC levee (said unnamed road is approximately 250 feet long from its point of intersection with the IBWC levee and a point located approximately 100 feet northwest of the intersection of Impala Drive and Gazelle Avenue) located approximately one (1) mile east of the Brownsville/Veterans Port of Entry, and extending approximately three-tenths (0.3) of a mile southeast of the Impala Road gate location.
- Starting approximately three-tenths (0.3) of a mile west of a gap in the existing levee wall commonly referred to as the South Point Road gate location, which is situated at the intersection of South Point Road and the IBWC levee located approximately seven-tenths (0.7) of a mile south of the intersection of South Point Road with Southmost Boulevard, and extending approximately three-tenths (0.3) of a mile northeast of the South Point Road gate location.

- Starting approximately three-tenths (0.3) of a mile south of a gap in the existing levee wall commonly referred to as the Loops Sandpit gate location, which is situated at the intersection of an unnamed road and the IBWC levee located approximately 65 feet east of the intersection of Alaska Road with S. Oklahoma Drive, and extending approximately three-tenths (0.3) of a mile north of the Loops Sandpit gate location.
- Starting approximately three-tenths (0.3) of a mile south of a gap in the existing levee wall commonly referred to as the Implement Shed gate location, which is situated at the intersection of County Road 142 and the IBWC levee located approximately 675 feet east of the intersection of Oklahoma Avenue with County Road 142, and extending approximately three-tenths (0.3) of a mile north of the Implement Shed gate location.
- Starting approximately three-tenths (0.3) of a mile south of a gap in the existing levee wall commonly referred to as the Florida Road gate location, which is situated at the intersection of Florida Road and the IBWC levee located approximately 600 feet east of the intersection of Oklahoma Avenue with Florida Road, and extending approximately three-tenths (0.3) of a mile north of the Florida Road gate location.

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. 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 roads and physical barriers (including, but not limited to, accessing the project area, creating and using staging areas, the conduct of earthwork, excavation, fill, and site



preparation, and installation and upkeep of physical barriers, roads, supporting elements, drainage, erosion controls, safety features, lighting, cameras, and sensors) in the project area, all of the following statutes, including all federal, state, or other laws, regulations, and legal requirements of, deriving from, or related to the subject of, the following statutes, as amended: The National Environmental Policy Act (Pub. L. 91-190, 83 Stat. 852 (Jan. 1, 1970) (42 U.S.C. 4321 et seq.)); the Endangered Species Act (Pub. L. 93-205, 87 Stat. 884 (Dec. 28, 1973) (16 U.S.C. 1531 et seq.)); the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act (33 U.S.C. 1251 et seq.)); the National Historic Preservation Act (Pub. L. 89-665, 80 Stat. 915 (Oct. 15, 1966), as amended, repealed, or replaced by Pub. L. 113-287 (Dec. 19, 2014) (formerly codified at 16 U.S.C. 470 et seq., now codified at 54 U.S.C. 100101 note and 54 U.S.C. 300101 et seq.)); the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.); the Migratory Bird Conservation Act (16 U.S.C. 715 et seq.); the Clean Air Act (42 U.S.C. 7401 et seq.); the Archeological Resources Protection Act (Pub. L. 96-95 (16 U.S.C. 470aa et seq.)); the Paleontological Resources Preservation Act (16 U.S.C. 470aaa et seq.); the Federal Cave Resources Protection Act of 1988 (16 U.S.C. 4301 et seq.); the Safe Drinking Water Act (42 U.S.C. 300f et seq.); the Noise Control Act (42 U.S.C. 4901 et seq.); the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.); the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601 et seq.); the Archaeological and Historic Preservation Act (Pub. L. 86-523, as amended, repealed, or replaced by Pub. L. 113-287 (Dec. 19, 2014) (formerly codified at 16 U.S.C. 469 et seq., now codified at 54 U.S.C. 312502 et seq.)); the Antiquities Act (formerly codified at 16 U.S.C. 431 et seq., now codified 54 U.S.C. § 320301 et seq.); the Historic Sites, Buildings, and Antiquities Act (formerly codified at 16 U.S.C. 461 et seq., now codified at 54 U.S.C. 3201-320303 & 320101-

320106); the Farmland Protection Policy Act (7 U.S.C. 4201 et seq.); the Coastal Zone Management Act (Pub. L. 92-583 (16 U.S.C. 1451, et seq.)); the Federal Land Policy and Management Act (Pub L. 94-579 (43 U.S.C. 1701 et seq.)); the National Wildlife Refuge System Administration Act (Pub. L. 89-669, 16 U.S.C. 668dd-668ee); 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 Administrative Procedure Act (5 U.S.C. 551 et seq.); the River 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 the previous waiver published in the Federal Register on April 8, 2008 (73 FR 19078), which shall remain in full force and effect in accordance with its terms. I reserve the authority to execute further waivers from time to time as I may determine to be necessary under section 102 of IIRIRA.

Dated: October 2, 2018.

**Kirstjen M. Nielsen,**

*Secretary of Homeland Security*

[FR Doc. 2018-21930 Filed: 10/9/2018 8:45 am; Publication Date: 10/10/2018]

**Appendix B**  
**Best Management Practices**

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## Best Management Practices

ID	Master BMP Number	BMP Description	BMP Keywords
108	2025-1	If an individual of a T&E species is found in the designated project area, work will cease in the area of the species until it moves away on its own or to the extent practicable be relocated by a qualified biological monitor to a safe location outside the impact corridor in accordance with accepted species handling protocols.	T&E, Species, Plants, Animals, General, Disturbance, Site restoration
108	2025-1	The perimeter of all areas to be disturbed during construction or maintenance activities are clearly demarcated using flagging or temporary construction fence to prevent unnecessary impacts. Photo document and provide GPS coordinates where correction is needed.	T&E, Non-Listed, Habitat, Soil, Water, Vegetation, General, Disturbance, Perimeter
108	2025-1	Construction speed limits should not exceed 35 mph on major unpaved roads (graded with ditches on both sides) and 25 mph on all other unpaved roads. Night time travel speeds should not exceed 25 mph, and may be less based on visibility and other safety considerations. Monitor to periodically (once a week) ask land managing agency and construction manager if any speeding incidents have occurred.	T&E, Animals, Vehicles, Roads
108	2025-1	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 noninfested 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 when unavoidable, the vehicle will be sprayed with a 10% bleach solution after the crossing before entering a new watershed. Photo document and provide GPS coordinates where correction is needed.	T&E, Invasives, Water, Vehicles, Wetlands
108	2025-1	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. Photodocument and provide GPS coordinates where correction is needed.	T&E, Water, Wetlands, Staging, Vehicles, HazMat, Disturbance
108	2025-1	A stormwater management plan is being implemented. ACOE to provide monitor a copy of SWPPP for review.	T&E, Water, General, Erosion, Runoff, Storm water
108	2025-1	Access routes into and out of the project area are clearly flagged. Photo document and provide GPS coordinates where correction is needed.	Roads, T&E, Non-Listed, Vegetation, Habitat, Disturbance, Perimeter
108	2025-1	No pets owned or under the care of the project proponent or any and all construction workers will be permitted inside the project's construction boundaries, adjacent native habitats, or other associated work areas.	T&E, Non-Listed, Disturbance, General

ID	Master BMP Number	BMP Description	BMP Keywords
108	2025-1	Light poles and other pole-like structures will be designed to discourage roosting by birds, particularly ravens or other raptors that may use the poles for hunting perches.	T&E, Non-Listed, General, Lights, Birds
108	2025-1	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 biologist and allowed to escape unimpeded.	T&E, Non-Listed, General, Disturbance, Excavation, Trench, Animals
108	2025-1	Road bed erosion into Federal Listed Species habitat will be avoided or minimized. Document areas where erosion has occurred along fence, washes, and roads.	Roads, Erosion, T&E
108	2025-1	Road location is such that the potential for roadbed erosion into federally listed species habitat will be avoided or minimized.	Roads, Erosion, T&E
108	2025-1	The potential for entrapment of surface flows within the roadbed due to grading will be avoided or minimized. Depth of any pits created will be minimized so animals do not become trapped. Photo document and provide GPS coordinates where correction is needed.	Roads, Runoff, Animals, Design, Erosion, Water
108	2025-1	The widening of existing or created roadbed beyond the design parameters due to improper maintenance and use will be avoided or minimized. The width of all roads that are created or maintained by CBP should be measured and recorded using GPS coordinates and provided to the Government. Maintenance actions should not increase the width of the road bed or the amount of disturbed area beyond the road bed. Photo document and provide GPS coordinates where correction is needed. Monitor to acquire GIS shape files from Construction Contractor at end of project.	Roads, Maintenance
108	2025-1	Water for construction use shall be from wells at the discretion of the landowner. If local groundwater pumping is an adverse effect to aquatic, marsh, or riparian dwelling T&E species, treated water from outside the immediate area will be utilized.	General, Water, Wetlands, T&E, Wells
108	2025-1	Where practicable, particular importance is given to proper design and locating roads such that stream crossings should not be located near or at bends or meanders but rather at straight stream reaches where channel stability is enhanced.	Roads, Water, Wetlands, Erosion, Streams

ID	Master BMP Number	BMP Description	BMP Keywords
108	2025-1	Was there excessive use of unimproved roads that resulted in their deterioration such that it affected the surrounding T&E species habitat areas? Was the condition monitored? Was corrective maintenance provided? Photo document and provide GPS coordinates where correction is needed.	Roads, Erosion, T&E, Habitat
108	2025-1	The minimum number of roads needed for proposed actions will be constructed and maintained to proper standards. Roads no longer needed should be closed and restored to natural surface and topography using appropriate techniques. The GPS coordinates of roads that are thus closed should be recorded and provided to the Government. A record of acreage or miles of roads taken out of use, restored, and revegetated will be maintained. Photo document restoration efforts if they occur prior to completion of project. Acquire GIS files from Construction Contractor.	Roads, Restoration
108	2025-1	When available, 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. Photo document and provide GPS coordinates where correction is needed	Staging Areas, Disturbance
108	2025-1	All construction shall follow DHS management directive 5100 for waste management.	General, HazMat, Waste
108	2025-1	Provision will be made for proper waste disposal at staging areas, work camps, bivouacs, and camp details, and implementation of waste management protocols will be made the responsibility of the appropriate project officers. Photo document and provide GPS coordinates where correction is needed.	Staging Areas, HazMat, Waste
108	2025-1	A CBP-approved spill protection plan is being implemented at construction and maintenance sites to ensure that any toxic substances are properly handled and escape into the environment prevented. Agency standard protocols should be used. Drip pans underneath equipment, containment zones used when refueling vehicles or equipment, and other measures are to be included. ACOE to provide monitor a copy of spill plan for review. Photo document and provide GPS coordinates where correction is needed.	General, HazMat, Fuel, Spill
108	2025-1	To eliminate attraction to 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. Photo document and provide GPS coordinates where correction is needed.	General, HazMat, Animals, Waste
108	2025-1	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. Photo document and provide GPS coordinates where correction is needed.	General, HazMat, Disturbed

ID	Master BMP Number	BMP Description	BMP Keywords
108	2025-1	Waste water (water used for project purposes that is contaminated with construction materials, was used for cleaning equipment and thus carries oils or other toxic materials or other contaminants in accordance with state regulations) will be stored in closed containers on site until removed for disposal. Concrete wash water will not be dumped on the ground, but is to be collected and moved offsite for disposal. This wash water is toxic to aquatic life. Photo document and provide GPS coordinates where correction is needed.	General, HazMat, Water
108	2025-1	To prevent entrapment of wildlife species during emplacement 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. Photo document and provide GPS coordinates where correction is needed.	General, Animals
108	2025-1	Site restoration for staging areas and construction access routes will be monitored, as appropriate.	Staging Areas, Restoration, Disturbance
108	2025-1	Materials such as gravel have been obtained from existing developed or previously used sources, not from undisturbed sites.	General, Soil, Fill
108	2025-1	If new access is needed or existing access requires improvements to be usable for the project, related road construction and maintenance BMPs will be incorporated into the access design and implementation.	Roads
108	2025-1	Within the designated disturbance area, grading or topsoil removal will be limited to areas where this activity is needed to provide the ground conditions needed for construction or maintenance activities. Minimizing disturbance to soils will enhance the ability to restore the disturbed area after the project is complete. Photo document and provide GPS coordinates where correction is needed.	Roads, Staging Areas, Disturbance, Soil, Restoration
108	2025-1	Removal of trees and brush in T&E species habitats will be limited to the smallest amount needed to meet the objectives of the project. Photo document and provide GPS coordinates where correction is needed.	General, Vegetation, T&E, Habitat, Brush, Clearing
108	2025-1	Surface water from aquatic or marsh habitats will not be used for construction purposes if that site supports aquatic T&E species or if it contains non-native invasive species or disease vectors and there is any opportunity to contaminate a T&E species habitat through use of the water at the project site.	General, Water, Wetlands, T&E, Invasives
108	2025-1	Wells or treated irrigation water sources will be used when within 1 mile of aquatic habitat for federally listed aquatic species. This is to prevent the transfer of invasive animals or disease pathogens between habitats, if water on the construction site were to reach the federally listed species habitats.	General, Water, Wetlands, T&E, Invasives

ID	Master BMP Number	BMP Description	BMP Keywords
108	2025-1	Water tankers that convey untreated surface water will not discard unused water within 2 miles of any drainage aquatic or marsh habitat for federally listed species.	General, Water, Wetlands
108	2025-1	Storage tanks containing untreated water should be of a size that if a rainfall event were to occur (assuming open tanks), the tank would not be overtopped and cause a release of water into the adjacent drainages. Water storage on the project area should be in on-ground containers located on upland areas not in washes. Photo document and provide GPS coordinates where correction is needed.	General, Water, Water Storage
108	2025-1	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. This is important to kill any residual disease organisms or early life stages of invasive species that may affect local populations of T&E species.	T&E, General, Water, Wetlands, Invasives, Water Storage
108	2025-1	If construction or maintenance work activities are to continue at night, all lights will be shielded to direct light only onto the work site and the area necessary to ensure the safety of the workers, the minimum wattage needed will be used, and the number of lights will be minimized. Photo document and provide GPS coordinates where correction is needed.	General, Lights
108	2025-1	Noise levels for construction (any time of day or night) and maintenance should be minimized for all projects affecting federally listed animals. All generators are in baffle boxes, have an attached muffler, or use other noise-abatement methods, in accordance with industry standards.	General, Noise, Vehicles, Generators
108	2025-1	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. 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. Photo document and provide GPS coordinates where correction is needed.	General, Erosion, Restoration, Invasives
108	2025-1	Fill material brought in from outside the project area will be identified as to source location and will appear to be weed free. Inspect fill loads as they arrive. Return to fill sites from earlier in construction and inspect for weed germination. Photodocument and provide GPS coordinates where correction is needed.	General, Soil, Invasives
108	2025-1	Infrastructure sites will only be accessed using designated roads. Parking will be in designated areas. This should limit the development of multiple trails to such sites and reduce the effects to T&E habitats in the vicinity.	Roads, Vehicles, T&E, Trails
108	2025-1	Appropriate techniques to restore the original grade, replace soils, and restore proper drainage will be implemented For areas to be restored ( e.g., temporary staging areas).	Staging Areas, Restoration, Drainage, Erosion



ID	Master BMP Number	BMP Description	BMP Keywords
108	2025-1	Fences and walls will provide for passage of wildlife species. Impermeable fences and walls will not be constructed in key wildlife movement corridors. The type of passage needed will vary with the location of the barrier and the species that occur in that area. Specific designs and locations will be coordinated with the USFWS, TPWD, and the landowner/manager.	General, Animals
108	2025-1	Invasive plants that appear on the site will be removed. Removal will be done in ways that eliminate the entire plant and remove all plant parts to a disposal area. Herbicides can be used according to label directions if they are not toxic to T&E species that may be in the area. Training to identify non-native invasive will be provided for CBP personnel or contractors as necessary. Photo document and provide GPS coordinates where correction is needed. Construction contractor to remove invasive plants as needed.	General, Invasives, HazMat, T&E, Herbicides
108	2025-1	No off-road vehicle activity will occur outside of the project footprint by the project proponent, project workers, and project contractors.	General, Vehicles, Perimeter
108	2025-1	Visible space underneath all heavy equipment is checked for listed species and other wildlife prior to moving the equipment.	General, Vehicles, Animals, Equipment
108	2025-1	During the construction phase, short term noise impacts are anticipated. All Occupational Safety and Health Administration requirements shall be followed. Construction equipment shall possess properly working mufflers and shall be kept properly tuned to reduce backfires. Implementation of these measures shall reduce the expected short term noise impacts to an insignificant level in and around the construction site.	General, Noise, Vehicles, Equipment
108	2025-1	Mitigation measures will be incorporated to ensure that PM10 emission levels do not rise above the de minimus threshold as required per 40 CFR 51.853(b)(1). Measures shall include dust suppression methods to minimize airborne particulate matter that will be created during construction activities. Standard construction BMPs, such as routine watering of the patrol, drag, and access roads, shall be used to control fugitive dust during the construction phases of the proposed project. Additionally, all construction equipment and vehicles shall be required to be kept in good operating condition to minimize exhaust emissions.	General, HazMat, Air, Vehicles, Equipment
108	2025-1	Vehicular traffic associated with the construction activities and operational support activities shall remain on established roads to the maximum extent practicable. Areas with highly erodible soils will be given special consideration when designing the proposed project to ensure incorporation of various BMPs, such as, straw bales, aggregate materials, and wetting compounds, to control erosion. A SWPPP will be prepared prior to construction activities and BMPs described in the SWPPP will be implemented to reduce erosion. Photodocument and provide GPS coordinates where correction is needed.	Roads, Vehicles, Erosion, Storm water

ID	Master BMP Number	BMP Description	BMP Keywords
108	2025-1	Standard construction procedures shall be implemented to minimize the potential for erosion and sedimentation during construction. All work shall cease during heavy rains, and shall not resume until conditions are suitable for the movement of equipment and materials. All fuels, waste oils, and solvents shall be collected and stored in tanks or drums within a secondary containment area consisting of an impervious floor and bermed sidewalls capable of holding the volume of the largest container stored therein. The refueling of machinery shall be completed following accepted guidelines, and all vehicles shall have drip pans during storage to contain minor spills and drips. No refueling or storage shall take place within 100 feet of a drainage channel or structure. Other design measures shall be implemented, such as straw bales, silt fencing, aggregate materials, wetting compounds, and re-vegetation with native plant species, where possible, to decrease erosion and sedimentation. Furthermore, a SWPPP and all applicable Section 404/401 permit procedures shall be completed before construction shall be initiated within jurisdictional Waters of the U.S. (WUS). It shall be the responsibility of the Design/Build Contractor to prepare and submit 404 and 401 permit applications to the respective USCOE and State offices. Photodocument and provide GPS coordinates where correction is needed	General, Erosion, HazMat, Fuel, Storm water, Water, Wetlands, Restoration, Streams
108	2025-1	(Ocelot) Pre-construction surveys will identify any ocelot habitat in or adjacent to the project area, and the presence of the ocelot at the habitat area will be assumed.	General, Animals, T&E, Ocelot, Habitat, Monitor
108	2025-1	(Ocelot) During construction or maintenance activities in or within 500 feet of ocelot habitat (or such distance that noise, light, or other effects reach the habitat), a biological monitor will be present on site to advise the construction contractor to temporarily suspend construction whenever the appropriate BMPs agreed to are not being properly implemented.	General, Animals, T&E, Ocelot, Habitat, Monitor
108	2025-1	(Ocelot) In planning for roads, fences, and other facilities that require land clearing, include avoidance of wetlands, dense thorn scrub, and riparian vegetation as a consideration for facility location.	General, Animals, T&E, Ocelot, Habitat, Wetlands, Vegetation, Clearing, Brush
108	2025-1	(Ocelot) Removal of wetland habitat, dense thorn scrub, or riparian vegetation will be avoided or minimized. Photo document and provide GPS coordinates where correction is needed.	General, Animals, T&E, Ocelot, Habitat, Wetlands, Vegetation, Clearing, Brush
108	2025-1	(Ocelot) Removal of dense thorn scrub or riparian vegetation within the conservation easements established by the USIBWC for the Rio Grande will be avoided to the extent practicable. Photo document and provide GPS coordinates where correction is needed.	General, Animals, T&E, Ocelot, Habitat, Wetlands, Vegetation, Brush, Clearing
108	2025-1	(Ocelot) To the extent practicable, impermeable fences/barriers will not be constructed that bisect or fragment ocelot dispersal corridors.	General, Habitat, Ocelot, Animals, T&E
108	2025-1	(Ocelot) If freshwater sources are limited, impermeable barriers will not be constructed that prevent ocelot access to freshwater sources.	General, Water, Ocelot, Animals, T&E

<b>ID</b>	<b>Master BMP Number</b>	<b>BMP Description</b>	<b>BMP Keywords</b>
108	2025-1	(Ocelot) Where artificial lighting must be used, directed (shielded) lighting will be used and directed away from ocelot (thorn scrub and riparian) habitat. Lighting intensity will be minimized, and the light reaching such habitat will not exceed 1.5 foot candles.	General, Ocelot, Animals, T&E, Lights
108	2025-1	(Ocelot) Documentation of ocelots in project and activity areas will be reported to USFWS. Report all Ocelot sightings in detail and submit in your daily notes.	General, Ocelot, Animals, T&E, Monitor
108	2025-1	(Ocelot) Construction and maintenance activities will be conducted during daylight hours only to avoid noise and lighting issues during the night. If construction or maintenance work activities continue at night, all lights will be shielded to direct light only onto the work site, the minimum wattage needed will be used, and the number of lights will be minimized.	General, Ocelot, Animals, T&E, Lights
108	2025-1	(Jaguarundi) Pre-construction surveys will identify any jaguarundi habitat in or adjacent to the project area, and the presence of the jaguarundi at the habitat area will be assumed.	General, Habitat, Animals, T&E, Jaguarundi, Monitor
108	2025-1	(Jaguarundi) During construction or maintenance activities in or within 500 feet of jaguarundi habitat (or such distance that noise, light, or other effects reach the habitat), a biological monitor will be present on site to advise the construction contractor to temporarily suspend construction whenever the appropriate BMPs agreed to are not being properly implemented.	General, Animals, T&E, Jaguarundi, Monitor
108	2025-1	(Jaguarundi) In planning for roads, fences, and other facilities that require land clearing, include the avoidance of wetlands, dense thorn scrub, and riparian vegetation as a consideration for facility location Photo document and provide GPS coordinates where correction is needed.	General, Habitat, Wetlands, Vegetation, Jaguarundi, Animals, T&E, Roads
108	2025-1	(Jaguarundi) Removal of wetland habitat, dense thorn scrub, or riparian vegetation will be avoided or minimized.	General, Animals, T&E, Jaguarundi, Wetlands, Vegetation, Habitat, Brush, Clearing
108	2025-1	(Jaguarundi) To the extent practicable, removal of dense thorn scrub or riparian vegetation within the conservation easements for the cat corridor established by the USIBWC along the Rio Grande will be avoided. Photo document and provide GPS coordinates where correction is needed.	General, Animals, T&E, Jaguarundi, Wetlands, Vegetation, Habitat, Brush, Clearing
108	2025-1	(Jaguarundi) To the extent practicable, impermeable fences/barriers will not be constructed that bisect or fragment jaguarundi dispersal corridors.	General, Habitat, Jaguarundi, Animals, T&E
108	2025-1	(Jaguarundi) If freshwater sources are limited, impermeable barriers will not be constructed that prevent jaguarundi access to freshwater sources.	General, Jaguarundi, Animals, T&E, Water
108	2025-1	(Texas ayenia) Surveys will be conducted on all intact Texas ayenia habitat within the impact corridor in Cameron, Hidalgo, and Starr counties before beginning activities that may affect individual plants or habitat.	General, Plants, T&E, Texas ayenia, Habitat, Monitor
108	2025-1	(Texas ayenia) Prevent or control guinea grass and other invasive plants from colonizing uninfested native habitat following CBP disturbance.	General, Plants, T&E, Texas ayenia, Invasives, Disturbance

ID	Master BMP Number	BMP Description	BMP Keywords
108	2025-1	(Texas ayenia) Minimize permanent impacts to individual Texas Ayenia populations and habitats.	General, Plants, T&E, Texas ayenia, Habitat
108	2025-1	(Texas ayenia) Reduce the duration of impacts to Texas ayenia populations and habitats.	General, Plants, T&E, Texas ayenia, Habitat
108	2025-1	(Texas ayenia) Where it is necessary to temporarily remove vegetation, cut plants above ground level rather than clearing with bulldozers, root plows, or other implements that cut into the soil. Only high quality Texas ayenia should be cut, and the remaining above ground height should not exceed 2 inches.	General, Plants, T&E, Texas ayenia, Vegetation, Clearing
108	2025-1	(Star cactus) Avoid impacts—Avoid disturbance to star cactus populations and occupied habitat, including land clearing, introduction and spread of invasive plants, herbivory, trampling, and exposure to toxic substances. Surveys should be conducted on all intact star cactus habitat and potential habitat in the impact corridor in western Hidalgo and Starr counties before beginning activities that may affect individual plants or habitat. Photo document and provide GPS coordinates where correction is needed.	General, Plants, T&E, Star cactus, Disturbance, Invasives, HazMat, Habitat, Vegetation, Cactus, Monitor
108	2025-1	(Walker's manioc) Surveys will be conducted in the impact corridor on all intact Walker's manioc habitat in Starr and Hidalgo counties before beginning activities that may affect individual plants or habitat.	General, Plants, T&E, Walker's manioc, Monitor
108	2025-1	(Walker's manioc) Prevent or control invasive plants from colonizing uninfested native habitat following disturbance.	General, Plants, T&E, Walker's manioc, Invasives, Disturbance
108	2025-1	(Walker's manioc) Minimize permanent impacts to individual Walker's manioc populations and habitats.	General, Plants, T&E, Walker's manioc, Habitat, Disturbance
108	2025-1	(Walker's manioc) Reduce the duration of impacts to Walker's manioc populations and habitats.	General, Plants, T&E, Walker's manioc, Habitat, Disturbance
108	2025-1	(Walker's manioc) Where it is necessary to temporarily remove vegetation, cut plants above ground level rather than clearing with bulldozers, root plows, or other implements that cut into the soil. Cut plants above ground only in suitable Walker's manioc habitat, and the remaining plant should not exceed 2 inches in height.	General, Plants, T&E, Walker's manioc, Vegetation, Clearing
108	2025-1	(Star cactus) If impacts were unavoidable, were they minimized? Minimization may be accomplished by, but is not limited to, the following : ? Prevent or control buffelgrass and other invasive plants from colonizing sites following disturbance. ? Minimize permanent impacts to individual populations and habitats. ? Reduce the duration of impacts to populations and habitats. ? Where it is necessary to temporarily remove vegetation, cut plants above ground level rather than clearing with bulldozers, root plows, or other implements that cut into the soil. Photo document and provide GPS coordinates where correction is needed.	General, Animals, T&E, Lesser long-nosed bat, Habitat, Training

ID	Master BMP Number	BMP Description	BMP Keywords
108	2025-1	All chemicals or potentially toxic materials are stored in secure containers, clearly labeled, and removed from the site when construction is complete.	General, Cultural Resources
378	C-TX-HID-001	Since construction or clearing activities cannot be scheduled to avoid the migratory bird nesting season (March 15 through September 15), surveys will be performed to identify active nests.	General, Animals, Migratory Birds, Clearing, Monitor
378	C-TX-HID-001	All construction activities shall be kept within previously surveyed areas. The Contractor shall not conduct ground disturbing activities in any area that has not been previously surveyed for cultural resources. If any cultural or historic resources are discovered during the action, the action will cease immediately and the ENV SME will be contacted.	General, Cultural Resources, Monitor
CRSA_68	28-CRSA37	If construction or clearing activities cannot be scheduled to avoid the migratory bird nesting season (March 1 through September 15), surveys will be performed to identify active nests. These surveys will be coordinated with USFWS and the CBP ENV SME.	General, Animals, Migratory Birds, Clearing, Monitor
CRSA_68	28-CRSA37	All construction activities shall be kept within previously surveyed areas. The Contractor shall not conduct ground disturbing activities in any area that has not been previously surveyed for cultural resources. If any cultural or historic resources are discovered during the action, the action will cease immediately and the ENV SME will be contacted.	General, Cultural Resources, Monitor

**Appendix C**  
**Air Emissions Calculations**

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**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	10	hrs/day	260	---	2,600	hours	
Dozer	1	10	hrs/day	260	---	2,600	hours	Assume dirt to be removed = 27.5 mi x (5280 ft/mi) x (3 ft wide) = 435,600 ft <sup>2</sup> = 10 acres (will need this for grading area) 435,600 ft <sup>2</sup> x 6 ft deep = 2,613,600 ft <sup>3</sup> . Assume spread and leveling dirt at 48 m <sup>3</sup> /day and 12-hour days = 576 m <sup>3</sup> /day (or 20,341.2 ft <sup>3</sup> /day) = 129 days.
Excavator	1	10	hrs/day	260	---	2,600	hours	Assume dirt to be removed = 27.5 mi x (5280 ft/mi) x (3 ft wide) = 435,600 ft <sup>2</sup> = 10 acres (will need this for grading area) 435,600 ft <sup>2</sup> x 6 ft deep = 2,613,600 ft <sup>3</sup> . Assume digging 40 m <sup>3</sup> /hour and 12-hour days = 480 m <sup>3</sup> /day (or 16,951 ft <sup>3</sup> /day) = 155 days.
Crane	1	10	hrs/day	260	---	2,600	hours	
Water Truck	1	10	miles/trip	---	260	2,600	miles	Assume Water Truck stays at project site and drives 10 miles in the project corridor once a day.
Delivery Truck (Vendor Trip)	1	46	miles/trip	---	2904	133,584	miles	Based on round trip from Yuma to San Luis (22.5 miles one way). Assume 5 panels per trip; flat bed truck (5280 ft/mi, 10' panel = 528 panels/mile = 14,520 panels = 2904 trips).
Truck (Hauling Demo Debris)	1	46	miles/trip	---	200	9,200	miles	Based on round trip from Yuma to San Luis (22.5 miles one way). Assume flat bed truck with 50,000-lb capacity. Assume using 8' sections (5280 ft/mi, 8' panel = 660 panels/mile = 18,150 panels total at 550 lbs per panel = 200 truck loads).
Cement Truck	1	46	miles/trip	---	2,555	117,530	miles	Based on round trip from Yuma to San Luis (22.5 miles one way). Assume 8 yd <sup>3</sup> concrete capacity per delivery. Assume footing = 27.5' x 1' x 2' = 290,400 ft <sup>3</sup> . 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 <sup>3</sup> ; 18ft <sup>3</sup> x 14, 520 panels = 261360 ft <sup>3</sup> . 290,400 + 261,360 = 551,760 ft <sup>3</sup> = 20,435 yd <sup>3</sup> . With 8 yd <sup>3</sup> trips with cement truck 2,555 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	46	miles/trip	---	260	179,400	miles	Based on round trip from Yuma to San Luis (22.5 miles one way). One operator, two riggers, and one safety representative for crane; one operator and one assistant for all other equipment; 3 other construction site workers (e.g., foreman). Assume 8 passenger trucks (8x46x260=95,680 miles) and 7 passenger cars (7x46x260=83,720).



Equipment	Pollutant Name Description	Pollutant Name	Total Emissions (lbs)	Total Emissions (tons)	Notes
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Carbon Monoxide (CO)	Carbon Monoxide (CO)	370.8092071	0.185404604	Crane
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Carbon Monoxide (CO)	Carbon Monoxide (CO)	228.6119688	0.114305984	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Carbon Monoxide (CO)	Carbon Monoxide (CO)	283.063233	0.141531616	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Carbon Monoxide (CO)	Carbon Monoxide (CO)	2.694901989	0.001347451	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Carbon Monoxide (CO)	Carbon Monoxide (CO)	9.703756672	0.004851878	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Carbon Monoxide (CO)	Carbon Monoxide (CO)	140.8985469	0.070449273	Delivery Truck (Vendor Trip)
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	Carbon Monoxide (CO)	Carbon Monoxide (CO)	10.33173804	0.005165869	Water Truck
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	Carbon Monoxide (CO)	Carbon Monoxide (CO)	2255.44736	1.12772368	Loader
Worker Commuter Vehicle - Car	Carbon Monoxide (CO)	Carbon Monoxide (CO)	484.5279093	0.242263955	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Carbon Monoxide (CO)	Carbon Monoxide (CO)	696.5238966	0.348261948	Passenger Vehicle (Worker Commute)
		<b>Carbon Monoxide (CO) Total</b>	4482.612518	2.241306259	
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	CO2 Equivalent	CO2 Equivalent	21.67841361	0.010839207	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	CO2 Equivalent	CO2 Equivalent	78.0592584	0.039029629	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	CO2 Equivalent	CO2 Equivalent	1133.420432	0.566710216	Delivery Truck (Vendor Trip)
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	CO2 Equivalent	CO2 Equivalent	176.596537	0.088298269	Water Truck
		<b>CO2 Equivalent Total</b>	1409.754641	0.70487732	
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	1746.34795	0.873173975	Crane
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	560.022109	0.280011054	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	721.540444	0.360770222	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	0	0	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	0	0	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	0	0	Delivery Truck (Vendor Trip)
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	2.913029392	0.001456515	Water Truck
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	1740.897291	0.870448646	Loader
Worker Commuter Vehicle - Car	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	6.529105128	0.003264553	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Oxides of Nitrogen (NOx)	Oxides of Nitrogen (NOx)	12.61502528	0.006307513	Passenger Vehicle (Worker Commute)
		<b>Oxides of Nitrogen (NOx) Total</b>	4790.864954	2.395432477	
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Primary Exhaust PM10 - Total	PM10	69.17569203	0.034587846	Crane
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Primary Exhaust PM10 - Total	PM10	35.69445113	0.017847226	Excavator
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Fugitive Dust PM 10	PM10	31000.00	15.50	Excavator

Equipment	Pollutant Name Description	Pollutant Name	Total Emissions (lbs)	Total Emissions (tons)	Notes
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Primary Exhaust PM10 - Total	PM10	50.56784374	0.025283922	Dozer
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 10	PM10	25800.00	12.90	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM10 - Total	PM10	0.000847558	4.23779E-07	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM10 - Total	PM10	0.003051871	1.52594E-06	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM10 - Total	PM10	0.044313166	2.21566E-05	Delivery Truck (Vendor Trip)
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	Primary Exhaust PM10 - Total	PM10	0.009506939	4.75347E-06	Water Truck
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	Primary Exhaust PM10 - Total	PM10	306.8525431	0.153426272	Loader
Worker Commuter Vehicle - Car	Primary PM10 - Tirewear Particulate	PM10	1.885449748	0.000942725	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	Primary Exhaust PM10 - Total	PM10	0.592231931	0.000296116	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	Primary PM10 - Brakewear Particulate	PM10	6.738011644	0.003369006	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary PM10 - Brakewear Particulate	PM10	12.80274944	0.006401375	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary PM10 - Tirewear Particulate	PM10	2.154799712	0.0010774	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary Exhaust PM10 - Total	PM10	0.983963552	0.000491982	Passenger Vehicle (Worker Commute)
		<b>PM10 Total</b>	57287.50546	28.64375273	
EP C80GV025 CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4	Primary Exhaust PM2.5 - Total	PM2.5	67.10046957	0.033550235	Crane
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Primary Exhaust PM2.5 - Total	PM2.5	34.62362227	0.017311811	Excavator
GEN H25Z3190 HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB (31,751 KG), 2.00 CY (1.5 M3) BUCKET, 21.6' (6.6 M) MAX DIGGING DEPTH	Fugitive Dust PM 2.5	PM2.5	3100.00	1.55	Excavator
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Primary Exhaust PM2.5 - Total	PM2.5	49.05080485	0.024525402	Dozer
GEN T15Z6500 TRACTOR, CRAWLER (DOZER), 136-180 HP (101-134 KW), POWERSHIFT, W/UNIVERSAL BLADE	Fugitive Dust PM 2.5	PM2.5	2580.00	1.29	Dozer
GEN T50Z7420 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM2.5 - Total	PM2.5	0.000779748	3.89874E-07	Cement Truck
GEN T50Z7520 TRUCK, HIGHWAY, 55,000 LB (24,948 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM2.5 - Total	PM2.5	0.002807705	1.40385E-06	Truck (Hauling Demo Debris)
GEN T50Z7580 TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	Primary Exhaust PM2.5 - Total	PM2.5	0.040767873	2.03839E-05	Delivery Truck (Vendor Trip)
GEN T60Z7910 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	Primary Exhaust PM2.5 - Total	PM2.5	0.008746343	4.37317E-06	Water Truck
MAP L40CA019 LOADER, FRONT END, WHEEL, 1.70 CY BUCKET, ARTICULATED, 4X4	Primary Exhaust PM2.5 - Total	PM2.5	297.6471159	0.148823558	Loader
Worker Commuter Vehicle - Car	Primary PM2.5 - Brakewear Particulate	PM2.5	0.842248316	0.000421124	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	Primary PM2.5 - Tirewear Particulate	PM2.5	0.282815369	0.000141408	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Car	Primary Exhaust PM2.5 - Total	PM2.5	0.523899667	0.00026195	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary Exhaust PM2.5 - Total	PM2.5	0.870428707	0.000435214	Passenger Vehicle (Worker Commute)
Worker Commuter Vehicle - Pickup Truck	Primary PM2.5 - Brakewear Particulate	PM2.5	1.600353248	0.000800177	Passenger Vehicle (Worker Commute)

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

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

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

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

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

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

- Notes:
- 1) Used excavation production and removal rates from <https://www.methvin.org/construction-production-rates/excavation/bulk-excavation> to estimate PM 10 for excavation using USAF Transitory guide and equation 4-4.
  - 2) Used "Spread and level" (Average) rate for grading from: <https://www.methvin.org/construction-production-rates/excavation/spread-and-level> - Dozer, 1.2m3 bucket, 50-200m2, Sand/Soil Slow: 43.5 Average: 48.0 Fast: 52.6 Unit: m3/hr to estimate PM 10 using USAF Transitory guide and equation 4-4.
  - 3) PM 10 Fugitive dust emissions were calculated using the emission factor of 0.22 ton per acre per month (20 lb/ac-day) (Air Emissions Guide for Air Force Transitory Sources, Methods for Estimating Emissions of Air Pollutants for Transitory Sources at U.S. Air Force Installations, August 2018).
  - 4) PM 2.5 was calculated using PM 10 conversion factor of 0.1. (Source: <https://www3.epa.gov/ttn/chief/ap42/ch13/bgdocs/b13s02.pdf>, AP-42, Chapter 13.2.2, Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors (Nov 2006), Table 1)