Draft Programmatic Environmental Impact Statement

USMCA Mitigation of Contaminated Transboundary Flows Project

June 10, 2022

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Abstract:
The U.S. Environmental Protection Agency and the U.S. International Boundary and Water Commission, as joint lead agencies, are proposing to fund and implement the United States–Mexico–Canada Agreement Mitigation of Contaminated Transboundary Flows Project (the Proposed Action) to reduce transboundary flows from Tijuana that cause adverse public health and environmental impacts in the Tijuana River watershed and adjacent coastal areas. This Draft Programmatic Environmental Impact Statement (PEIS) sets forth a tiered framework for future funding decisions and reviews the environmental impacts of the Proposed Action, which is located in San Diego County, California and Tijuana, Mexico. The Draft PEIS includes two alternatives to address the purpose and need—a limited funding approach for implementing the Proposed Action and a more comprehensive solution for implementing the Proposed Action—and a third alternative of no disbursement of funding and continuation of current wastewater management practices. No preferred alternative has been selected at this time. The public and any interested party are invited to review and comment on this Draft PEIS before preparation of the Final PEIS, which would support a Record of Decision that identifies the decision on the Proposed Action by selecting an alternative.

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Work Performed Under EPA Contract No. 68HERH19D0033
Task Order No. 53

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ABBREVIATIONS, ACRONYMS, AND SYMBOLS

AADT	annual average daily traffic
AB	Assembly Bill
ac-ft/year	acre-feet per year
ACS	American Community Survey
APE	Area of Potential Effect
APTP	Advanced Primary Treatment Plant
AQIA	Air Quality Impact Assessment
ARPA	Archaeological Resources Protection Act
ATSDR	Agency for Toxic Substances and Disease Registry
BACT	best available control technology
BFE	Base Flood Elevation
BGEPA	Bald and Golden Eagle Protection Act
bgs	below ground surface
BGY	billion gallons per year
BIF	beach impact fraction
BMP	best management practice
BOD_5	biochemical oxygen demand over a five-day period
BWIP	Border Water Infrastructure Program
CAAQS	California ambient air quality standards
CA H&SC	California Health and Safety Code
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CAPP	Community Air Protection Program
CARB	California Air Resources Board
CBP	United States Customs and Border Protection
CCA	California Coastal Act
CCC	California Coastal Commission
CCMP	California Coastal Management Program
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDP	Coastal Development Permit
CDPR	California Department of Parks and Recreation
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CESPT	Comisión Estatal de Servicios Públicos de Tijuana
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	methane
C_2H_3Cl	vinyl chloride
CILA	Comisión International de Limites y Aguas
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CONAGUA	Comisión Nacional del Agua

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CPS	Coastal Pelagic Species
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DAC	disadvantaged communities
DAF	dissolved air flotation
dB	decibels
dBA	A-weighted decibels
DPR	Department of Parks and Recreation
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
EID	Environmental Information Document
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EJ	environmental justice
EO	Executive Order
EPA	United States Environmental Protection Agency
EPECG	Eligible Public Entities Coordinating Group
ESA	Endangered Species Act
FEM	Field Environmental Monitor
FEMA	Federal Emergency Management Agency
FIB	fecal indicator bacteria
FMP	Fishery Management Plans
FP	Fully Protected
FR	Federal Register
FTA	Federal Transit Administration
FWCA	Fish and Wildlife Coordination Act
GCR	General Conformity Rule
GHG	greenhouse gases
GSA	General Services Administration
GWh	gigawatt-hours
GWh/yr	gigawatt-hours per year
H_2S	hydrogen sulfide
HAB	harmful algal blooms
HAP	hazardous air pollutants
HAPC	Habitat Areas of Particular Concern
HDPE	high-density polyethylene
HPI	Healthy Places Index
HMS	Highly Migratory Species
hp	horsepower
HrC2	Huerhuero loam
IBC	International Boundary Commission
IBWC	International Boundary and Water Commission
IPaC	Information for Planning and Conservation
ITP	South Bay International Wastewater Treatment Plant
IWG	Interagency Working Group
JB-1	Junction Box 1
LCP	Local Coastal Program

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lps	liters per second
LSA	Lake and Streambed Alteration
MACT	Maximum Achievable Control Technology
MBTA	Migratory Bird Treaty Act
Mcf/day	million cubic feet per day
mg	million gallons
mg/L	milligrams per liter
MGD	million gallons per day
MHPA	Multi-Habitat Planning Area
MIA	Manifestacion de Impacto Ambiental
MMPA	Marine Mammal Protection Act
MPA	Marine Protected Area
MRZ	Mineral Resource Zones
MS4	municipal separate storm sewer system
MSCP	Multiple Species Conservation Program
MSL	mean sea level
NAAQS	National Ambient Air Quality Standards
NADBank	North American Development Bank
NAFTA	North American Free Trade Agreement
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NAMPAN	North American Marine Protected Area Network
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
N_{ill}	number of ill swimmers
NMFS	National Marine Fisheries Service
NNL	National Natural Landmark
NO_2	nitrogen dioxide
N_2O	nitrous oxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRWQC	National Recommended Water Quality Criteria
NSR	New Source Review
NWR	National Wildlife Refuge
O_3	ozone
OEHHA	California Office of Environmental Health Hazard Assessment
OHP	Office of Historic Preservation
OHWM	ordinary high water mark
O&M	operations and maintenance
PB1-A	Pump Station 1A
PB1-B	Pump Station 1B
PB-CILA	Planta de Bombeo CILA
PCG	Pacific Coast Groundfish

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PCS	Pacific Coast Salmon
PEIS	Programmatic Environmental Impact Statement
PEM	palustrine emergent
PLOO	Point Loma Ocean Outfall
PM	particulate matter
$PM_{2.5}$	fine particulate matter
PM_{10}	respirable particulate matter
PRC	Public Resources Code
PSP	paralytic shellfish poisoning
PSS	palustrine scrub-shrub
PTE	potential-to-emit
PVC	polyvinyl chloride
RCD	Resource Conservation District
ROD	Record of Decision
ROV	remotely operated vehicle
RWQCB	Regional Water Quality Control Board
SAB	San Antonio de los Buenos
SABTP	San Antonio de los Buenos Wastewater Treatment Plant
SANDAG	San Diego Association of Governments
SB	Senate Bill
SBLO	South Bay Land Outfall
SBOO	South Bay Ocean Outfall
SBWRP	South Bay Water Reclamation Plant
SCB	Southern California Bight
SCEJTF	South County Environmental Justice Taskforce
SCIC	South Coastal Information Center
SDAPCD	San Diego County Air Pollution Control District
SDG&E	San Diego Gas & Electric
SDRWQCB	San Diego Regional Water Quality Control Board
SDWA	Safe Drinking Water Act
SEMARNAT	Secretariat of Environment and Natural Resources
SF	square feet
SFEI	San Francisco Estuary Institute
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Officer
SMCA	State Marine Conservation Area
SMR	State Marine Reserve
SO_2	sulfur dioxide
SSC	Species of Special Concern
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T-BACT	best available control technology for toxics
TBEL	technology-based effluent limitations
TDS	total dissolved solids
TECP	Technical Expert Consultation Process
TMDL	Total Maximum Daily Load
TNW	Traditional Navigable Water
tons/yr	tons per year
TRNERR	Tijuana River National Estuarine Research Reserve

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TSS	total suspended solids
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGCRP	United States Global Change Research Program
USGS	United States Geological Survey
USIBWC	United States Section of the International Boundary and Water Commission
USMCA	United States–Mexico–Canada Agreement
VMT	vehicle miles traveled
VOC	volatile organic compounds
WHO	World Health Organization
WQBEL	water quality-based effluent limitations
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY

The United States (U.S.) Environmental Protection Agency (EPA) and the U.S. International Boundary and Water Commission (USIBWC), as joint lead agencies, are proposing to fund and implement the United States–Mexico–Canada Agreement (USMCA) Mitigation of Contaminated Transboundary Flows Project (the Proposed Action) to reduce transboundary flows from Tijuana that cause adverse public health and environmental impacts in the Tijuana River watershed and adjacent coastal areas. In accordance with the requirements of the National Environmental Policy Act (NEPA) (42 U.S.C. 4321–4347), Council on Environmental Quality (CEQ) NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500–1508 [2022]), EPA Procedures for Implementing NEPA (40 CFR Part 6), and USIBWC NEPA Implementing Procedures (48 FR 44083), this Draft Programmatic Environmental Impact Statement (Draft PEIS) supports an informed decision-making process, sets forth a tiered framework for future funding decisions, considers reasonable alternatives, and reviews the environmental impacts of the Proposed Action.

The San Diego–Tijuana region has faced persistent transboundary flows of contaminated wastewater originating in Mexico for many years. The three primary entryways of these transboundary flows into the U.S. are in coastal waters of the Pacific Ocean, the Tijuana River, and tributaries flowing north through canyons to the Tijuana River Valley and Estuary. Seasonal marine currents cause coastal discharges of largely untreated wastewater (sewage) from the Tijuana area to migrate north along the Pacific Ocean coast into the U.S. These discharges impact southern San Diego County beaches, especially during the summer. Additionally, transboundary flows in the Tijuana River and its canyon tributaries routinely reach the U.S., bringing untreated wastewater (sewage), trash, and sediment into the U.S. These contaminated flows can reach the Pacific Ocean through the Tijuana River Valley and Estuary and migrate north along the coast, compounding the impacts of coastal discharges from the Tijuana area. Collectively, these polluted transboundary flows impact the environment and public health in communities along the border and the coast, public access to beaches and recreational opportunities in southern California, and the personnel and activities of U.S. Customs and Border Protection and the U.S. Navy.

The USMCA Implementation Act, signed in January 2020, appropriated funds to EPA for implementation of wastewater infrastructure projects at the U.S.-Mexico border and authorized EPA, in coordination with eligible public entities, to plan, design, and construct wastewater (including stormwater) treatment projects in the Tijuana River area. EPA established the Eligible Public Entities Coordinating Group (EPECG), consisting of federal, state, and local stakeholders, and solicited their input on the set of project options to be considered for evaluation. It is possible that EPA's Border Water Infrastructure Program may also be utilized to fund and carry out activities under this action.

EPA and USIBWC have identified two alternatives to address the purpose and need: a limited funding approach for implementing the Proposed Action (Alternative 1) and a more comprehensive solution for implementing the Proposed Action (Alternative 2), as well as a third alternative of no disbursement of funding and continuation of current wastewater management practices (No-Action Alternative). While EPA and USIBWC have not yet identified a preferred alternative, both Alternative 1 and Alternative 2 are expected to have beneficial impacts to public safety and water quality in the Tijuana River watershed and adjacent coastal areas. The alternatives cover a large geographic area and impact a broad range of resource areas, including water resources, geologic resources, the coastal zone, air quality, climate, biological resources, cultural resources, land use, visual resources, solid and hazardous waste, energy, public services and utilities, public health and safety, transportation, noise, socioeconomics, and environmental justice. The impacts to these resources are analyzed in this Draft PEIS. A summary of significant and potentially significant impacts is provided in Table ES-1. In this Draft PEIS, EPA and USIBWC have identified mitigation measures to address these impacts as presented in Section 5 (Mitigation Measures).

Implementation of the Proposed Action would likely require federal authorizations and permits pursuant to the Endangered Species Act, Clean Water Act, National Historic Preservation Act, and Coastal Zone Management Act. EPA has initiated engagement with federal agencies such as the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and U.S. Army Corps of Engineers, and is working closely with other binational, state, and local agencies and stakeholders.

Table ES-1. Significant Impacts to be Mitigated

Significant Impact	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Comprehensive Solution)
Freshwater and Estuarine Resources			
Continuation of impacts to freshwater and estuarine resources and water quality degradation	✕		
Potential impacts to potential jurisdictional water of the U.S. for construction of U.S.-side river diversion and trash boom(s) in Tijuana River main channel and floodplain			⊙
Potential permanent reduction in acreage of potential jurisdictional water resources in the Tijuana River floodplain for the U.S.-side river diversion and trash boom[s] requiring an individual CWA 404 permit			⊙
Marine Waters			
Continuation, and worsening over time, of existing marine water quality impacts	✕		
Substantial increase in pollutant loadings to Pacific Ocean via the SBOO		■	■⊙
Floodplains			
[None identified]			
Inland Biological Resources			
Continuation of negative effects on inland biological resources resulting from contaminated transboundary flows	✕		
Potential short-term substantial disturbances of special-status wildlife and fish species during construction in Tijuana River main channel and floodplain, depending on the locations of the proposed river diversion and trash boom(s)			⊙
Potential long-term substantial disturbances of special-status plant and wildlife species associated with downstream riparian habitat due to reduced wet-weather transboundary flows			⊙
Potential long-term reduction in special-status fish migration ability and/or estuarine rearing conditions due to reduced wet-weather transboundary flows			⊙
Marine Biological Resources			
[None identified]			
Geological Resources			
[None identified]			
Cultural Resources			
[None identified]			
Visual Resources			
Potential detraction from the visual character or quality of the localized area due to introduction of physical structures, land conversion, and O&M associated with the U.S.-side river diversion and trash boom(s)			⊙

Table ES-1. Significant Impacts to be Mitigated

Significant Impact	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Comprehensive Solution)
Potential disproportionately high and adverse effect due to visual intrusions from U.S.-side river diversion and/or trash boom(s)*			⊙
Land Use			
[None identified]			
Coastal Zone			
[None identified]			
Air Quality and Odor			
Potential objectionable odor emissions from ITP anaerobic digestion process		■	■⊙
Potential objectionable odors and/or impacts to sensitive receptors due to trash boom operations			⊙
Disproportionately high and adverse effect due to minor increase in $PM_{2.5}$ and diesel PM emissions (due to construction, operations, and/or commuting) in areas that currently experience extremely high overburdens from $PM_{2.5}$ and diesel PM*		■	■⊙
Disproportionately high and adverse effect due to objectionable odor emissions from ITP anaerobic digestion process*		■	■⊙
Potential for cumulative daily PM_{10} emissions (from the Proposed Action and concurrent restoration activities at the nearby Nelson Sloan Quarry) to exceed AQIA trigger levels and result in disproportionately high and adverse effect*		■	■⊙
Climate			
Inconsistent with the City of San Diego Climate Action Plan due to an increase in GHG emissions		■	■⊙
Solid and Hazardous Waste			
[None identified]			
Energy			
[None identified]			
Public Services and Utilities			
Potential impedance to CBP operations due to U.S.-side river diversion and trash boom(s)			⊙
Public Health and Safety			
Exacerbation of unsafe field conditions for CBP personnel	✕		
Exacerbation of water quality issues at public beaches	✕		
Increase in unsafe field conditions for CBP personnel due to trash boom(s)			⊙
Introduction of breeding areas for disease-spreading vectors due to U.S.-side river diversion and trash boom(s)			⊙

Table ES-1. Significant Impacts to be Mitigated

Significant Impact	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Comprehensive Solution)
Potential disproportionately high and adverse effect due to proximity to disease vectors from U.S.-side river diversion and/or trash boom(s)*			⦿
Transportation			
Potential substantial localized increases in traffic volumes and congestion from Project J, depending on frequency of trash hauling			⦿
Disproportionately high and adverse effects due to minor increases in traffic associated with operations, commuting, and waste hauling in areas currently experiencing extremely high overburdens from traffic impacts and/or traffic proximity*		■	■⦿
Noise			
Potential localized, short-term exceedances of city and county noise levels during construction		■	■⦿
Potential for substantial, short-term increases in noise levels during construction in specific areas near noise-sensitive receptors (e.g., protected species habitat and recreational areas in Smuggler's Gulch; residences immediately adjacent to portions of Monument Rd)		■	■⦿
Potential long-term impacts from increase in noise due to continuous (or near-continuous) operation of biogas-fired engine and electrical generator		■	■⦿
Socioeconomics			
[None identified]			
Environmental Justice			
[See disproportionately high and adverse effects identified with an asterisk (*) listed in Visual Resources, Air Quality and Odor, Public Health and Safety, and Transportation sections above in this table.]			

* Indicates a disproportionately high and adverse effect that was identified in the environmental justice analysis (see Section 4.20 [Environmental Justice]) or the environmental justice portion of the cumulative effects analysis (see Section 4.21.5 [Cumulative Effects]).

Symbol key:

- ✕ Significant impact is a result of the No-Action Alternative.
- ■ Significant impact is a result of a Core Project(s).
- ⦿ Significant impact is a result of a Supplemental Project(s).
- ■⦿ Significant impact is a result of both a Core and Supplemental Project(s).

1. INTRODUCTION

1.1 Background

The Tijuana River watershed is a 1,750-square-mile watershed that includes portions of San Diego County in California and northern Baja California in Mexico. Approximately three-quarters of the watershed is in Mexico, including the cities of Tijuana and Tecate. The remaining quarter is in the United States (U.S.), including portions of the cities of San Diego and Imperial Beach. The Tijuana River originates in Mexico and flows northwest, crossing into the U.S. before ultimately discharging to the Pacific Ocean via the Tijuana River Estuary (see Figure 1-1).

Deficiencies in the treatment, piping, and pump station network in Tijuana contribute to contaminated transboundary flows entering the U.S. via coastal waters of the Pacific Ocean, the Tijuana River, and tributaries that flow north through canyons to the Tijuana River Valley and Estuary. Polluted transboundary maritime flows threaten the health of communities along the border and the coast, impact marine and estuarine ecosystems, damage agricultural resources, negatively impact the economy, and have the potential to affect training flexibility for U.S. military activities, as there are U.S. Navy facilities within the affected area. Transboundary flows in the Tijuana River and its canyon tributaries routinely reach the U.S., bringing untreated wastewater, trash, and sediment into the U.S. These contaminated flows negatively impact U.S. Customs and Border Protection (CBP) personnel and can reach the Pacific Ocean through the Tijuana River Valley and Estuary and migrate north along the coast, compounding the impacts of coastal discharges from the Tijuana area described above. Untreated wastewater contributes to high bacterial concentrations in the Tijuana River and tributaries, creates health risks for recreational users, and introduces other pollutants of concern that have led to the Tijuana River being listed as an impaired water body under Section 303 of the Clean Water Act (CWA).

In 1889, the International Boundary Commission (IBC) was established by the U.S. and Mexico to address concerns related to land jurisdiction and river boundaries. Transboundary flows crossing into the U.S. from Mexico have raised water quality and human health concerns since at least the 1930s. The U.S. and Mexico have relied on binational collaborative efforts to address pollution near the border of Tijuana and San Diego, as summarized below:

- 1944: The Treaty of February 3, 1944 created a joint commission to address issues related to the ownership of waters, sanitation, water quality, and flood control. The Treaty renamed the previously existing IBC to the International Boundary and Water Commission (IBWC). The U.S. is represented on the IBWC by the U.S. International Boundary and Water Commission (USIBWC) and Mexico by the Comisión International de Limites y Aguas (CILA), Sección Mexicana.

- 1965: The IBWC signs Treaty Minute No. 222, allowing for emergency sewer connection of the City of Tijuana to the City of San Diego.

- 1972: The CWA was created, giving federal authority to the U.S. Environmental Protection Agency (EPA) to regulate discharges into U.S. waters to improve water quality.

- 1983: Through the 1983 La Paz Agreement, the U.S. and Mexico agreed to protect and enhance the environment surrounding the U.S.-Mexico border. The La Paz Agreement set the framework to give joint authority to EPA and Mexico’s Secretariat of Environment and Natural Resources (SEMARNAT) for addressing border pollution.

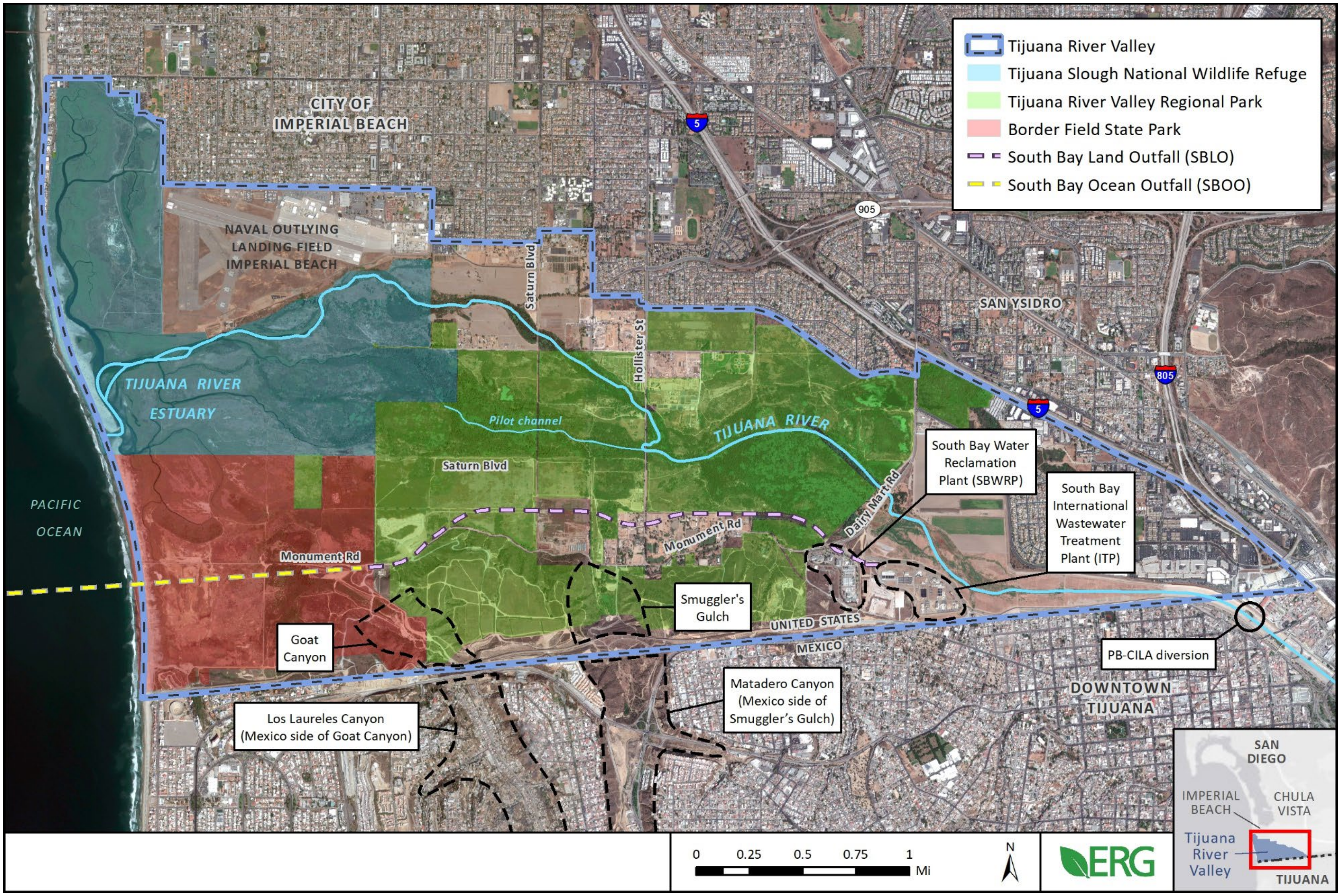


Figure 1-1. Overview of Tijuana River Valley

- 1985: IBWC signs Treaty Minute No. 270, providing recommendations for first-stage treatment in Tijuana.
- 1990: USIBWC and CILA adopted Treaty Minute No. 283, which stipulates that "the Government of Mexico will assure that there are no discharges of treated or untreated domestic or industrial wastewaters into waters of the Tijuana River that cross the international boundary."
- 1994: Through the North American Free Trade Agreement (NAFTA), the U.S. and Mexico agreed to collaborate to develop joint environmental infrastructure projects, leading to the creation of the Border Environment Cooperation Commission and the North American Development Bank (NADBank), which help implement and finance water and wastewater treatment projects along the U.S.-Mexico border.
- 1997: USIBWC and CILA collaborated to construct the South Bay International Wastewater Treatment Plant (ITP) in the U.S. in response to a noticeable increase in transboundary flows occurring due to population growth in Mexico throughout the 1980s and 1990s. The project was completed in 1997, with advanced primary treated effluent discharged to the Pacific Ocean via the Point Loma outfall. Upon completion of the project, untreated wastewater that would enter the river was diverted to the new treatment plant, resulting in improved water quality in the Tijuana River.
- 1999: USIBWC began discharging treated ITP effluent to the Pacific Ocean via the newly constructed South Bay Ocean Outfall (SBOO) instead of the Point Loma outfall.
- 2000: The Tijuana River Valley Estuary and Beach Sewage Cleanup Act of 2000 (Public Law 106-457) was passed.
- 2005: USIBWC finalized the Supplemental Environmental Impact Statement (EIS) for CWA compliance at the ITP and issued a Record of Decision (ROD) for an advanced primary facility with secondary treatment in Mexico. In 2008, USIBWC rescinded the previous ROD and issued a Revised ROD to upgrade the ITP under the Activated Sludge with Expanded Capacity Alternative.
- 2013: The binational Border 2020 program was established in 2013 in accordance with the 1983 La Paz Agreement. EPA and SEMARNAT identified the reduction of bacteria, sediment, and trash into the Tijuana River Estuary as a top priority in the eight-year binational program. EPA has since engaged with agencies, elected officials, and stakeholder groups in both the U.S. and Mexico to help identify solutions to the persistent water quality issues in the San Diego–Tijuana region.
- 2015: IBWC adopted Treaty Minute No. 320, which aims to reduce bacteria, sediment, and trash in the Tijuana River watershed through binational collaboration. Recent deterioration of infrastructure in Mexico—including many critical collection lines and pumps and the San Antonio de los Buenos Wastewater Treatment Plant (SABTP)—led to increased frequency of poor water quality events (HDR, 2020a).
- 2018: The U.S. signed the United States–Mexico–Canada Agreement (USMCA), a trade agreement that renegotiated and replaced NAFTA.

- 2020–present: In January 2020, Congress passed the USMCA Implementation Act, which appropriated $300 million to EPA under Title IX of the Act for architectural, engineering, planning, design, construction, and related activities in connection with the construction of high-priority wastewater facilities in the U.S.-Mexico border area. Subtitle B, Section 821 of the Act authorized EPA to plan, design, and construct wastewater (including stormwater) treatment projects in the Tijuana River area. Based on that direction, EPA is coordinating an interagency and binational effort to plan, design, and construct infrastructure to reduce transboundary flows of untreated wastewater (sewage), trash, and sediment that routinely enter the U.S. from Mexico via the Tijuana River, its tributaries, and across the maritime boundary along the San Diego County coast. The projects identified through this effort form the basis of the alternatives evaluated in this review.

On April 5, 2021, EPA published a Notice of Intent (NOI) to prepare an EIS (86 FR 17595) for the Proposed Action pursuant to the requirements of the National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] 4321–4347). Since the NOI was issued, EPA decided to prepare a Programmatic EIS (PEIS) for the USMCA Mitigation of Contaminated Transboundary Flows Project, which sets forth a framework for tiered decision making. USIBWC is a joint lead agency for preparation of the PEIS. The Proposed Action in this PEIS includes projects that address the purpose and need described in Section 1.4 (Purpose and Need for Action) by achieving one or more of the following:

- Reducing the generation and/or discharge of contaminated flows from point and nonpoint sources of pollution in the Tijuana region.
- Improving the collection and/or treatment of contaminated flows in the Tijuana region before they reach the U.S.-Mexico border.
- Improving the collection and/or treatment of contaminated transboundary flows in the U.S.

This PEIS evaluates three alternatives: the No-Action Alternative, Alternative 1, and Alternative 2. A preferred alternative has not been identified at this time. This PEIS is prepared in accordance with the Council on Environmental Quality (CEQ) NEPA Implementing Regulations (40 CFR Parts 1500–1508 [2022]), EPA Procedures for Implementing NEPA (40 CFR Part 6), and USIBWC NEPA Implementing Procedures (48 FR 44083).

1.2 Existing Diversion and Treatment Infrastructure

Existing treatment facilities and associated infrastructure in the U.S. include the South Bay International Wastewater Treatment Plant, the South Bay Water Reclamation Plant, the South Bay Land Outfall, the South Bay Ocean Outfall, and the canyon collector system, which are described as follows (PG Environmental, 2021g) and identified in Figure 1-1, Figure 1-2, and Figure 1-3:

- The **South Bay International Wastewater Treatment Plant (ITP)** is located approximately 1.3 miles west of where the Tijuana River enters the U.S., and about one-half mile south of where Dairy Mart Road crosses over the Tijuana River. The existing plant is a primary and secondary treatment system designed to treat an average daily flow of 25 million gallons per day (MGD) of wastewater from the International Collector in Mexico (including diverted Tijuana River flows), as well as dry-weather flows from the canyon collector system. The ITP began operation in 1997 with advanced primary treatment, was expanded in 2011 to include secondary treatment, and was further expanded in 2018 to include additional secondary sedimentation tanks to improve activated sludge process performance. The ITP is owned by USIBWC and operated by a contract operator, Veolia.

- The **South Bay Water Reclamation Plant (SBWRP)** was constructed in 2002 by the City of San Diego on a 22-acre site adjacent to the ITP and currently treats wastewater collected from U.S. communities only. The existing SBWRP is designed to treat an average daily flow of 15 MGD and a peak daily flow of 35 MGD. The treatment process consists of preliminary, primary, and secondary treatment for discharged effluent, plus tertiary treatment and disinfection of effluent for beneficial reuse.

- The **South Bay Land Outfall (SBLO)** is a tunnel extending from the effluent distribution vault near the ITP and SBWRP to a point near the coastline and then discharges to the **South Bay Ocean Outfall (SBOO)**. The SBOO is a pipe, designed to handle an average flow of 174 MGD, with a wye diffuser system at the end that extends 3.5 miles offshore to discharge treated effluent from both the ITP and the SBWRP into the Pacific Ocean.

- The **canyon collector system** (Figure 1-2, Figure 1-3Figure 4-1) consists of canyon flow diversion structures[1] in Goat Canyon, Smuggler's Gulch, Cañón del Sol, Silva Drain, and Stewart's Drain in the U.S., which are designed to capture transboundary dry-weather flows from Mexico and convey them through canyon collector pipelines to the ITP for treatment and discharge to the Pacific Ocean through the SBOO. The average design flow rates of the diversion structures are 2.33 MGD at Goat Canyon, 4.67 MGD at Smuggler's Gulch, 0.67 MGD at Cañón del Sol, 0.33 MGD at Silva Drain, and 1.67 MGD at Stewart's Drain (Arcadis, 2019). Actual flows from the canyon collector system to the ITP average approximately 0.6 MGD in total (PG Environmental, 2021g).

[1] The canyon flow diversion structures along the U.S.-Mexico border consist of culverts, concrete approach pads, and grated intakes that drain to the ITP headworks via subsurface gravity piping. These are also referred to as "canyon collectors" in HDR (HDR, 2020a).

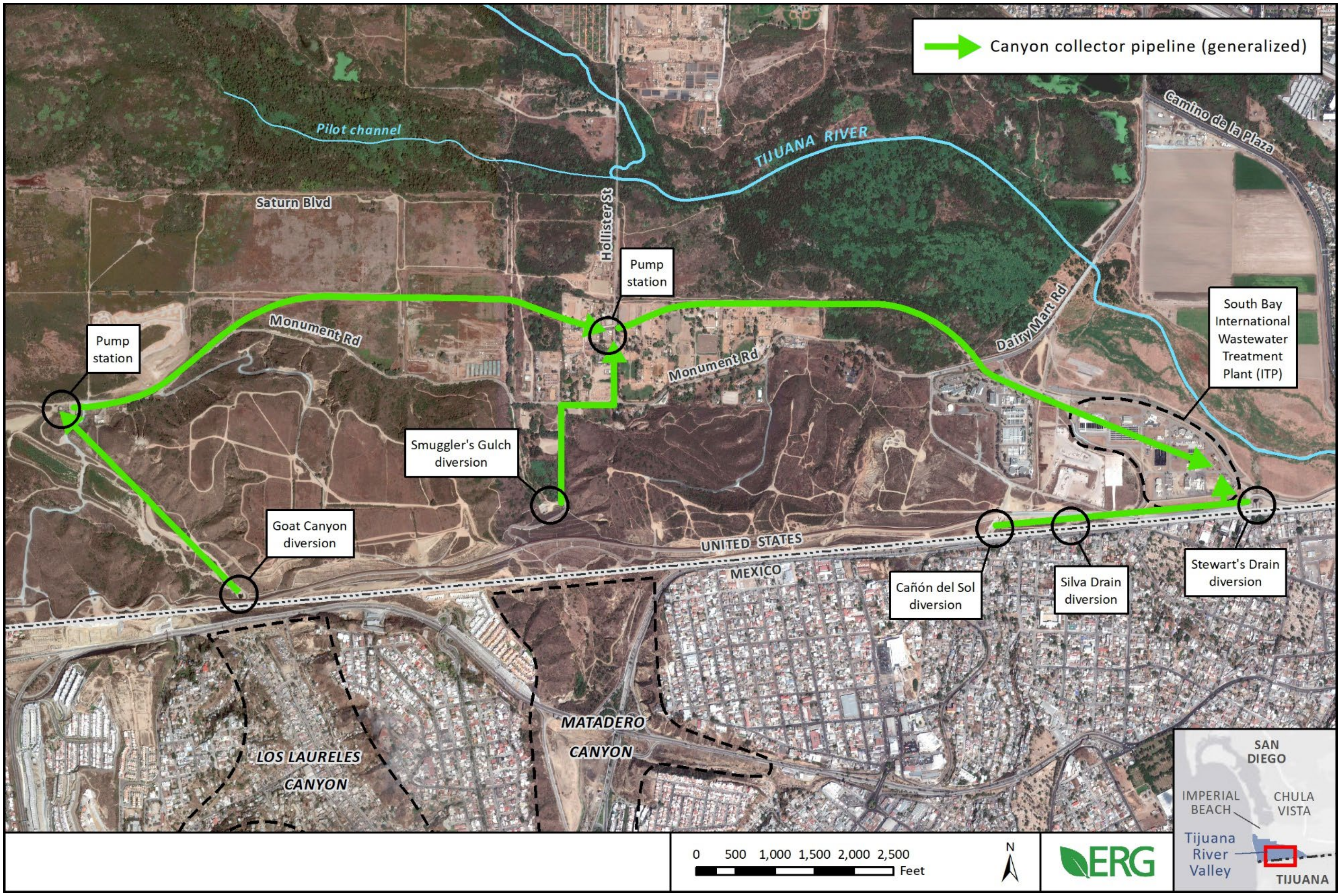


Figure 1-2. Overview of ITP Canyon Collector System

Figure 1-3. Photographs of Canyon Flow Diversion Structures

Tijuana has a complex piping and pumping network to transfer both wastewater and wet-weather flows from a series of sources for treatment. Figure 1-4 shows the locations of key components of the system in Tijuana. Figure 1-5 provides a schematic illustration of the existing river and wastewater diversion system in Tijuana and its connection to the ITP. The existing infrastructure is described as follows (PG Environmental, 2021g, 2021j):

- Diverted river water and wastewater from the Tijuana River, and wastewater from the International Collector (the portion that is not conveyed to the ITP), are pumped to the **San Antonio de los Buenos Wastewater Treatment Plant (SABTP)**, which discharges into the Pacific Ocean via **San Antonio de los Buenos (SAB) Creek** at Punta Bandera. The SABTP began operation in 1987 as an aerated lagoon system with a design flow rate of 750 liters per second (lps) (17 MGD). It was expanded in 2003 with surface aerators to treat a flow rate of 1,100 lps (25 MGD). By the original design, the SABTP is intended to treat wastewater received from the International Collector via Pump Station 1B (PB1-B); however, as discussed in Section 1.3.1 (Causes of Contaminated Transboundary Flows), current operations at the SABTP do not effectively improve water quality prior to discharge.

- The **La Morita Wastewater Treatment Plant (WWTP)** is the easternmost WWTP in Tijuana, serving communities in the far southeast portion of the city and surrounding areas beyond the city boundary. The plant is designed for a capacity of 5.8 MGD. The **Arturo Herrera WWTP** is also located in eastern Tijuana, about 2 miles downstream from the La Morita WWTP and serving communities in southeast Tijuana. The plant is designed for a capacity of 10.5 MGD. Both plants' effluent is discharged, with reportedly high water quality (biochemical oxygen demand over a five-day period [BOD_5] under 10 milligrams per liter [mg/L]) (IBWC, 2020), to the Tijuana River upstream of the diversion.

- The **Planta de Bombeo CILA pump station (PB-CILA)** is located along the Tijuana River channel just south of the U.S.-Mexico border and is owned and operated by CILA. When the PB-CILA river diversion system is functioning properly, all dry-weather flow (up to 23 MGD) in the Tijuana River is diverted before transboundary flows occur. The diverted flow is routed to Pump Station 1A (PB1-A) or into the International Collector. The PB-CILA river diversion system was upgraded in 2021 with a new river intake, new bar screens, a new vortex desander, and new pumps to improve reliability and provide the capability to divert up to 35 MGD of river flows.[2]

- The **International Collector** is located in the north area of Tijuana near the Tijuana River and the international border. It consists of about 1.5 miles of 72-inch reinforced concrete pipe with a design flow capacity of about 103 MGD. The International Collector receives untreated wastewater collected in downtown Tijuana and the portion of diverted river water from PB-CILA that is not sent to PB1-A. The mixture of untreated wastewater and river water flows by gravity in the International Collector from east to west. At the west end

[2] The recent PB-CILA capacity upgrade to 35 MGD is not, on its own, sufficient to allow diversion and treatment of more than 23 MGD unless supplemented by operational protocol changes (specifically, a new treaty minute to require diversion of 35 MGD) and modifications to address other failing components of the diversion and pumping system (specifically, PB1-A).

of the conveyance, a diversion box directs about 25 MGD to the ITP with the remainder being pumped to the SABTP by PB1-B.

- The **Tijuana metropolitan area wastewater collection system** collects wastewater from about 89 percent of city residents and, when functioning properly, conveys it to the ITP, SABTP, La Morita WWTP, or Arturo Herrera WWTP. The remaining 11 percent of Tijuana's current population does not have access to sanitary service (Arcadis, 2019).

- **Pump Station 1A (PB1-A)** is a sanitary sewer pump station in Tijuana that receives flow from PB-CILA. It is operated by the Comisión Estatal de Servicios Públicos de Tijuana (State Public Service Commission of Tijuana [CESPT]), the Mexican public utility responsible for supplying drinking water and sewage services to Tijuana. PB1-A has a single operational parallel pump train consisting of a dual set of pumps in series. Under proper operating conditions, PB1-A receives diverted river water from PB-CILA and conveys these flows via one of two 10-mile pipelines (the "parallel conveyance pipelines") to an outfall into SAB Creek as shown in Figure 1-4. PB1-A's current pumping capacity of about 11.5 MGD (500 lps) is considered to be the limiting factor that prevents PB-CILA from diverting more flow from the Tijuana River. When PB1-A is not operating properly (often due to mechanical or electrical challenges), PB-CILA either pumps diverted river water into the International Collector or shuts off and allows transboundary flows to occur in the Tijuana River main channel.

- **Pump Station 1B (PB1-B)** is a sanitary sewer pump station in Tijuana operated by CESPT that receives flow from the International Collector. PB1-B has two parallel pump trains, each with a dual set of pumps in series. Flows from PB1-B are pumped south to the SABTP and SAB Creek via the parallel conveyance pipelines. PB1-B's total station pumping capacity is 23 MGD (1,000 lps). When PB1-B is operating at a reduced capacity (e.g., due to insufficient power availability), the ITP must receive a higher proportion of the flows in the International Collector, even if this results in exceeding the plant's design average daily flow capacity of 25 MGD.

- The Mexico-side **canyon pump stations** include the Matadero Pump Station in Matadero Canyon (i.e., the portion of Smuggler's Gulch in Mexico) and the Los Laureles 1 and Los Laureles 2 Pump Stations in Los Laureles Canyon (i.e., the portion of Goat Canyon in Mexico). When the pump stations are operating properly, approximately 6.3 MGD of dry-weather wastewater flows in the canyons are conveyed via the Tijuana sanitary sewer system to the SABTP, along with approximately 2.2 MGD of wastewater flows from the Playas Pump Station serving the Playas de Tijuana neighborhood. The canyon pump stations do not convey any "disconnected" flows that drain directly into the canyons.

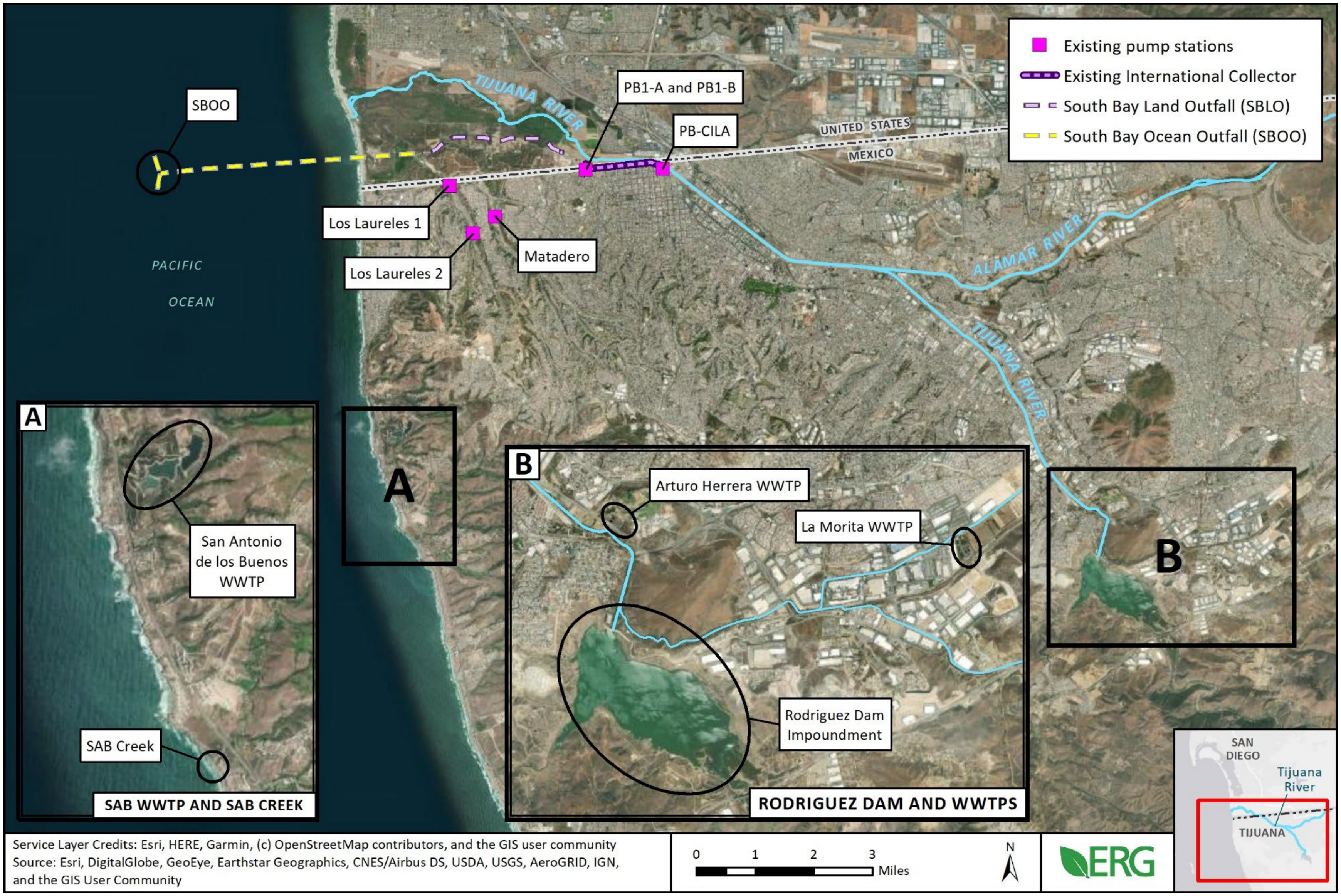


Figure 1-4. Overview of Existing Diversion and Treatment Infrastructure in Tijuana

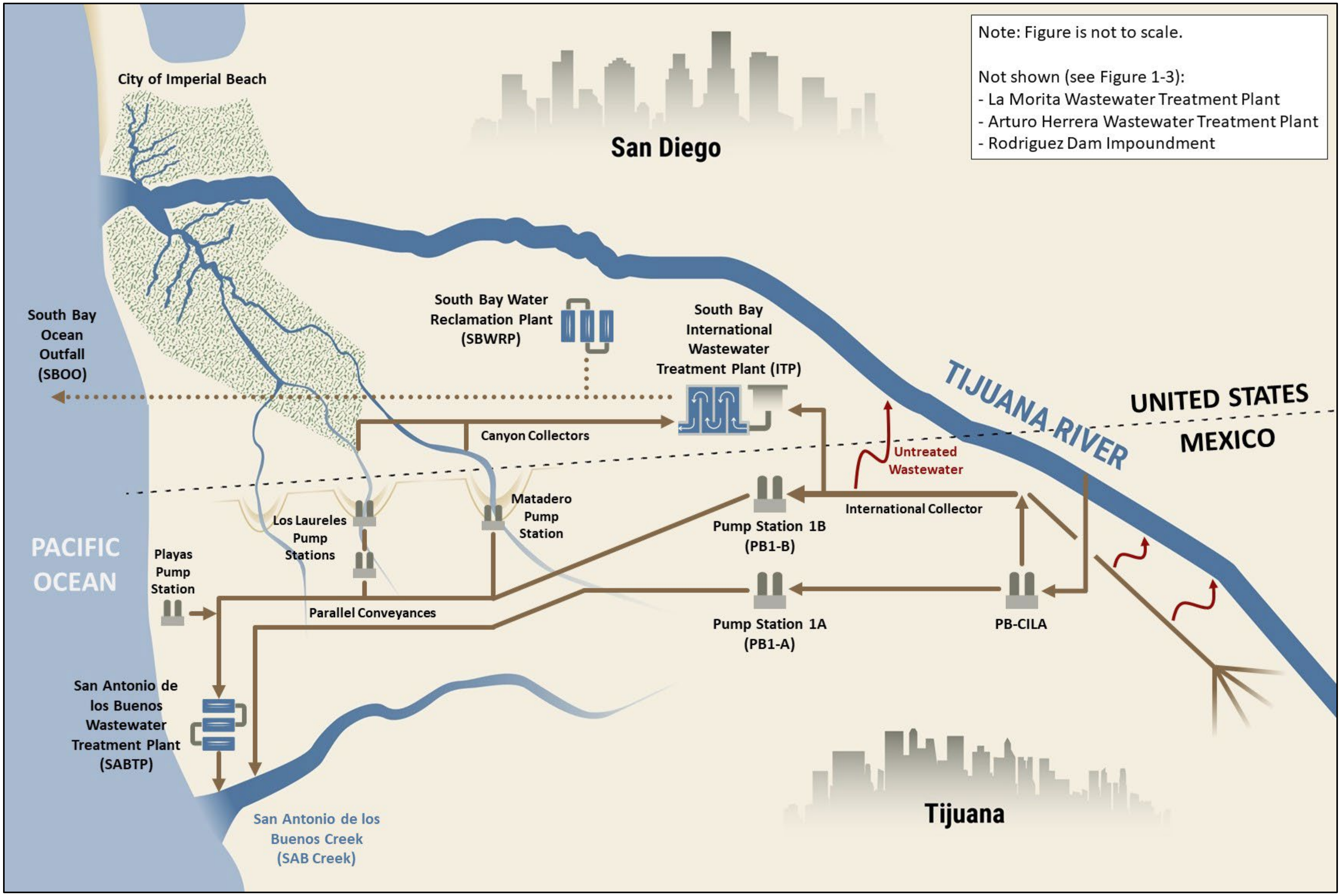


Figure 1-5. Schematic of Existing Wastewater Diversion and Treatment System

Rodriguez Dam, while not a component of the wastewater diversion and treatment system, controls flows from approximately 56 percent of the Tijuana River watershed (City of San Diego, 2012) and greatly influences flows in the Tijuana River and therefore the operation of the diversion system. The dam, located approximately 11 miles upstream from where the Tijuana River crosses the U.S.-Mexico border, impounds flows from the Río de las Palmas, creating the Rodriguez Dam impoundment. The watercourse downstream of the dam is identified as the Tijuana River. With construction completed in 1936, the Rodriguez Dam impoundment was originally intended to satisfy the water needs of Tijuana, a small city at that time (City of San Diego, 2012). However, the impoundment can no longer satisfy the current water demand of Tijuana. The Rodriguez Dam has a capacity of 76,210 acre-feet at the spillway crest and 111,070 acre-feet at the top of the spillway gates (IBWC, 1966). During the 2021 calendar year, the Rodriguez Dam had an average total storage of approximately 11,620 acre-feet. The dam only releases water to the Tijuana River during extreme runoff events. The water in the Rodriguez Dam impoundment falls under the jurisdiction of Comisión Nacional del Agua (CONAGUA) (PG Environmental, 2021f).

1.3 Causes and Impacts of Contaminated Transboundary Flows from Tijuana

1.3.1 Causes of Contaminated Transboundary Flows

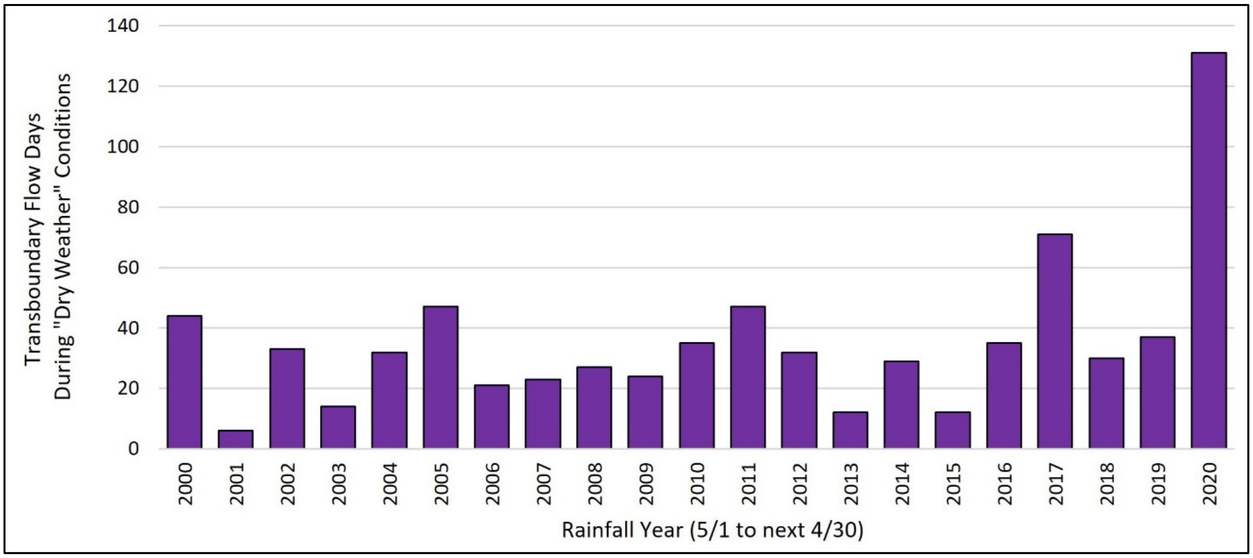
Deficiencies in the treatment, piping, and pump station network in Tijuana described in Section 1.2 (Existing Diversion and Treatment Infrastructure) contribute to contaminated transboundary flows entering the U.S. via coastal waters of the Pacific Ocean, the Tijuana River, and tributaries that flow north through canyons to the Tijuana River Valley and Estuary. Specific deficiencies, as summarized below, are described in further detail in the Feasibility Analysis memoranda for each project option and the Baseline Conditions Summary (PG Environmental, 2021d, 2021a, 2021b, 2021c, 2021e, 2021f, 2021g, 2021h, 2021j, 2021i, 2021k, 2021l, 2021m).

- **Conveyance of untreated wastewater and diverted river water to SABTP, and inability to treat these flows prior to coastal discharge via SAB Creek**. A variety of operational and capacity issues have necessitated that untreated wastewater flows from PB1-B be mixed with the river diversion flows from PB1-A, resulting in mixed Tijuana River water and wastewater being conveyed through the parallel conveyance pipelines to the SABTP or directly to SAB Creek. The SABTP in its current condition does not improve the water quality of the effluent. Additionally, river flows from PB1-A are designed to bypass the SABTP and are conveyed directly to SAB Creek. As a result of these two factors, approximately 35.5 MGD of mixed Tijuana River water and wastewater is discharged from the parallel conveyance pipelines to the Pacific Ocean via SAB Creek, approximately 28.2 MGD of which is untreated wastewater. These dry-weather flows can vary depending on a variety of factors, including PB-CILA operations, spills, and time of day. Seasonal marine currents cause these coastal discharges of largely untreated wastewater (sewage) to migrate north along the Pacific Ocean coast into the U.S.

- **Inconsistent diversion of dry-weather river and canyon flows.** Transboundary flows via the river and canyons along the border can occur at any time of the year when the diversion and pumping system is not functioning as designed. Breakdowns or power outages at the river diversion or canyon pump stations or physical blocking of the diversion inlets by trash frequently result in dry-weather flows crossing the border, bringing untreated wastewater, sediment, and trash into the U.S. Figure 1-6 shows a graphical representation of the number of days per year in which dry-weather transboundary river flows entered the U.S. during each rainfall year from 2000 to 2020. This figure shows significant increases in the occurrence of dry-weather transboundary flows during the 2017 and 2020 rainfall years, corresponding with extended periods where PB-CILA was shut down. As noted earlier in this section, the recent PB-CILA capacity upgrade to 35 MGD will not prevent these dry-weather river flows unless supplemented by further infrastructure and protocol modifications.

- **Inability to divert wet-weather river and canyon flows.** While dry-weather flows from the Tijuana River are intended to be diverted in Tijuana before reaching the U.S., the amount of river flow that occurs during and after rain events generally exceeds the capacity of the Tijuana diversion system. In such instances, to protect the pumps from sediment and trash, the river diversion and PB-CILA shut down (typically for a multi-day period), and flows cross the border into the U.S. instead. The flow rate in the river can reach several billion gallons per day during large rain events. Operators in Mexico reengage PB-CILA once river flows have subsided to within the pump's operating capacity, a period that can range from a few days to weeks. Additionally, transboundary wet-weather flows in the canyons occasionally exceed the capacity of U.S.-side drainage systems, resulting in localized flooding and persistent road closures.

- **Deteriorating infrastructure in Mexico.** Other existing infrastructure in Mexico is in poor condition or is not properly maintained and contributes to transboundary flows of untreated wastewater. An average of approximately 10 MGD (based on 2016–2019 data) of wastewater escapes the Tijuana metropolitan area wastewater collection system and flows into the Tijuana River, primarily because of sewer system deterioration and pump station mechanical failures. Sanitary wastewater generated by the unsewered 11 percent of Tijuana's current population appears to flow directly to the Tijuana River. In Goat Canyon, transboundary wastewater flows during dry weather have increased in the last two years, possibly due to increased leaks from the wastewater collection system in Los Laureles Canyon in Tijuana. This further exacerbates the impacts of the canyon flow diversion failures described above. Additionally, the International Collector requires rehabilitation to prevent untreated wastewater from spilling into the Tijuana River and Stewart's Drain.



Note: For purposes of this analysis, "dry-weather" conditions indicate that the flow occurred at least five days after the most recent precipitation registered at San Diego International Airport, and the flow rate did not exceed 23 MGD. A select few flow events that exceeded the 23-MGD threshold were considered dry-weather due to either the time of year they occurred with no registered precipitation, or they varied only slightly above 23 MGD during a period that was predominantly dry-weather.

Figure 1-6. Dry-Weather Transboundary Tijuana River Flow Days per Rainfall Year (2000–2020)

Mechanical issues at the ITP can occasionally contribute to these transboundary flows. For example, a mechanical failure at Junction Box 1 (JB-1) in January 2022 restricted influent flow to the ITP, thus increasing back pressure and resulting in leakage through a deteriorated section of the International Collector in Mexico. This leak flowed through Stewart's Drain, exceeding the diversion capacity and reaching the Tijuana River in the U.S. for a period of approximately one week.

Dry-weather flows in the main channel of the Tijuana River south of the border (i.e., upstream) typically range between 20 to 30 MGD, including approximately 10 MGD of treated effluent from La Morita WWTP and Arturo Herrera WWTP and 4 to 5 MGD of flows from the Alamar River. The remainder consists of untreated wastewater and "urban drool" (i.e., unnatural, unpermitted, non-exempted dry-weather flows) (PG Environmental, 2021g). If wastewater production and discharges to the Tijuana River continue to increase from population growth and/or urbanization, future dry-weather flows will increasingly stress the operational capabilities of the diversion and pumping system in Tijuana, and the frequency, volume, and impact of transboundary river flows on the U.S. side could increase.

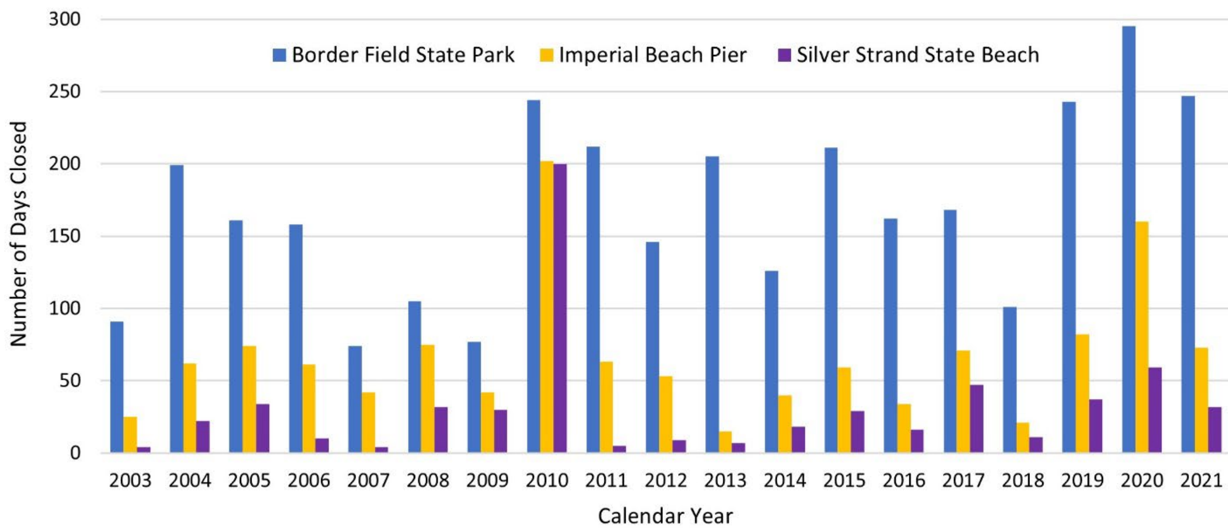
Uncontrolled trash, waste tires, and sedimentation are ongoing issues in the Tijuana River watershed. Uncontained trash and solid waste from Tijuana cause damage and increase operations and maintenance (O&M) requirements at the conveyance and treatment systems designed to mitigate transboundary flows. Unpaved roads, channel erosion, broken water mains, and erosion of disturbed areas contribute to transboundary flows of sediment via the Tijuana River and tributary canyons.

1.3.2 Impacts of Contaminated Transboundary Flows

The three primary entryways of contaminated transboundary flows from Tijuana into the U.S. are in coastal waters of the Pacific Ocean, in the Tijuana River, and in tributaries that flow north through the canyons to the Tijuana River Valley and Estuary.

Polluted transboundary maritime flows threaten the health of communities along the border and the coast, impact marine and estuarine ecosystems, damage agricultural resources, negatively impact the economy, and have the potential to limit training flexibility for U.S. military activities. See Figure 1-7 for locations of coastal communities and U.S. Navy facilities in the South Bay area. Poor coastal water quality, driven by both maritime and riverine transboundary flows (discussed below), has caused frequent beach closures in southern San Diego County, particularly for the beaches closest to the U.S.-Mexico border. The beaches at Imperial Beach Pier and Border Field State Park have averaged 66 and 170 closure days per year since 2003, respectively, with even more frequent closures at Border Field State Park in recent years (averaging 262 closure days per year since 2019). Figure 1-8 depicts the annual number of beach closure days at Border Field State Park, Imperial Beach Pier, and Silver Strand State Beach from 2003 to 2021. Recent ocean modeling simulations indicate that transboundary maritime flows of untreated wastewater discharged via SAB Creek at Punta Bandera pose a substantial health risk to swimmers at beaches in southern San Diego County during the dry (tourist) season (Feddersen et al., 2021). Eliminating or dramatically reducing these inflows would strongly benefit water quality and public health at beaches in the City of Imperial Beach, Silver Strand State Beach, and the City of Coronado. Poor coastal water quality also contributes to the relocation, rescheduling, and cancellation of in-water Navy training and activities (Navy Region Southwest, 2022).

Figure 1-7. Locations of Coastal Communities and U.S. Navy Facilities in the South Bay Area



Source: (City of Imperial Beach, 2022).

Figure 1-8. Annual Beach Closures in Southern San Diego County (2003–2021)

In addition to the transboundary maritime flows described above, transboundary flows in the Tijuana River and its canyon tributaries routinely bring untreated wastewater, trash, and sediment into the U.S. These contaminated flows negatively impact CBP personnel and can reach the Pacific Ocean through the Tijuana River Valley and Estuary and migrate north along the coast, compounding the impacts of coastal discharges from the Tijuana area described above. Contaminated flows from the Tijuana River, when they reach coastal areas, cause numerous beach closures, and recent ocean modeling simulations indicate that these flows pose a substantial health risk to swimmers at beaches in southern San Diego County during the wet (non-tourist) season (Feddersen et al., 2021). Untreated wastewater contributes to high bacterial concentrations in the Tijuana River and tributaries, creating health risks for recreational users, and introduces other pollutants of concern (see Section 3.1.2 [Surface Water Quality]) that have led to the Tijuana River being listed as an impaired water body under Section 303 of the CWA. Trash accumulation presents human health concerns by way of exposures to toxic substances and ponding that can encourage spread of disease vectors, diminish aesthetics, and contribute to odor issues. Sediment deposition reduces the flow capacity of the river and tidal flow exchange in the estuary. Despite repeated efforts to mitigate transboundary wastewater flows, the Tijuana River remains the most polluted river in the San Diego region (HDR, 2020a).

1.4 Purpose and Need for Action

The Proposed Action, as summarized in Section 2.2 (Proposed Action and Range of Alternatives Evaluated in This PEIS), is the funding and implementation of water infrastructure projects using U.S. appropriations, including but not limited to USMCA Implementation Act appropriations. In accordance with the CWA and the USMCA Implementation Act, the purpose and need of the Proposed Action is to reduce transboundary flows from Tijuana that convey pollutants, sewage, and/or trash into the U.S. and cause adverse public health and environmental impacts in the Tijuana River watershed and adjacent coastal areas as described in Section 1.3 (Causes and Impacts of Contaminated Transboundary Flows from Tijuana).

1.5 Purpose and Scope of the Programmatic EIS

EPA and USIBWC are joint lead agencies, in accordance with 40 CFR § 1501.7, for preparation of this PEIS. On May 26, 2021, USIBWC sent a letter to EPA requesting to be joint lead agencies. Previously, USIBWC had been intricately involved through various other interagency coordination efforts, such as the Eligible Public Entities Coordinating Group (EPECG). On October 28, 2021, EPA replied with a letter formalizing the agreement to be joint lead agencies. USIBWC contributed to prepare and develop this Draft PEIS and participated in public outreach efforts. In the arrangement, EPA serves as the final authority on issues to be resolved between the agencies.

Jointly, EPA and USIBWC have prepared this Draft PEIS to support an informed decision-making process, consider reasonable alternatives to and review the environmental impacts of the Proposed Action, and identify and support applicable consultations. The Draft PEIS was based, in part, on preliminary research and analysis in the *Environmental Information Document (EID) USMCA Mitigation of Contaminated Transboundary Flows Project,* an EPA-prepared document that was finalized in December 2021. The EID supported the Proposed Action by providing EPA and USIBWC with existing conditions and baseline information to inform the Draft PEIS.

The Draft PEIS is a *Programmatic* NEPA document, meaning it addresses an initial programmatic decision to be made and establishes a tiering process for subsequent decisions to be made that are supported, in part, by the analysis detailed in the *Programmatic* NEPA document. The initial programmatic decision to be made involves which approach EPA and USIBWC should take in funding and implementing water infrastructure projects: no disbursement of funding and continuation of current wastewater management practices (No-Action Alternative), a limited approach (Alternative 1), or a more comprehensive solution (Alternative 2). The Core Projects found in Alternative 1 are sufficiently evolved to be ready for decision making and, after completing the NEPA process, would be considered analyzed in sufficient detail for action to be taken immediately. In contrast, the comprehensive solution (Alternative 2) includes a larger range of projects known as the Supplemental Projects, several of which are not yet ready for decision making. These Supplemental Projects require additional consideration in subsequent tiered NEPA documents before a decision can be made and action can be taken (for additional information on tiering, see 40 CFR § 1501.11). Only the specific Supplemental Projects identified in this PEIS shall be covered under this *programmatic* framework; no additional projects would be added after the fact (i.e., after a decision has been made) unless addressed by a supplement to this PEIS. By establishing this tiering framework, EPA and USIBWC aim to accomplish the following:

- Make a broad programmatic decision about which funding approach to take.
- Provide a comprehensive baseline analysis from which subsequent site-specific proposals (Supplemental Projects) can be tiered.
- Efficiently analyze and make decisions on funds for Core Projects that are more evolved in planning and design than Supplemental Projects and thus ready for decision making.
- Avoid repetition by using the PEIS as a foundation for the environmental review in subsequent tiered NEPA documents.
- Streamline the later environmental review processes of Supplemental Projects so that they may move forward as soon as they are sufficiently evolved for decision making and action.

Following completion of this PEIS (after issuance of a Final PEIS), EPA and USIBWC intend to issue and sign a joint ROD that identifies the decision on the Proposed Action by selecting an alternative. The joint ROD will include committed mitigation measures and will establish the framework for completing additional subsequent NEPA reviews to be tiered to the PEIS, if applicable.

The scope of the Draft PEIS consists of a description of the alternatives to address transboundary wastewater flows, a description of the affected environment, a discussion of the environmental consequences of the Proposed Action, an analysis of the cumulative effects of the Proposed Action, a discussion of compliance with applicable environmental regulations, a list of possible measures to mitigate the environmental consequences of the Proposed Action, and a summary of public and interagency coordination.

The Draft PEIS covers the resource areas listed below.

- Water resources
- Geological resources
- The coastal zone
- Air quality
- Climate
- Biological resources
- Cultural resources
- Land use
- Visual resources
- Solid and hazardous waste
- Energy
- Public services and utilities
- Public health and safety
- Transportation
- Noise
- Socioeconomics
- Environmental justice

Although this environmental review focuses on impacts in the U.S. resulting from projects with components located in the U.S., transboundary impacts (i.e., those occurring in one country because of an action in a different country) were considered to the extent appropriate and consistent with applicable guidance. For projects located in the U.S., this analysis includes consideration of those transboundary impacts extending into Mexico that are reasonably foreseeable, consistent with *CEQ Guidance on NEPA Analyses for Transboundary Impacts* (CEQ, 1997a). For projects located entirely in Mexico, this analysis includes consideration of reasonably foreseeable impacts that would affect the U.S. For projects located entirely in Mexico, resulting impacts located entirely in Mexico were not included for consideration in this Draft PEIS. This approach is consistent with the following EPA guidance memoranda for border infrastructure grant programs: *Guidance for EPA Environmental Review of NADBank Projects* (EPA, 1997) and *National Environmental Policy Act (NEPA) Application to Mexican Border Infrastructure Grants Program* (EPA, 1997). Mexico authorities would be responsible for preparing environmental impact analyses for actions in Mexico pursuant to Mexican laws and authorities. Additional information may become available during public review and after stakeholder coordination that pertains to transboundary effects and may be included in a later environmental analysis of the Proposed Action. EPA has relied on reasonably available information to date to determine transboundary impacts. The environmental review for Supplemental Projects receiving U.S. funds that are located entirely in Mexico should, at a minimum, include discussion of effects on the U.S. and should include effects in Mexico as appropriate. The tiered subsequent NEPA analysis for these projects should re-evaluate transboundary effects as necessary.

2. DESCRIPTION OF ALTERNATIVES CONSIDERED

2.1 Formulation of Alternatives

2.1.1 Identification of Projects to Undergo Feasibility Analysis

EPA's technical evaluation began with the identification of an initial set of 10 projects with potential to address the public health and environmental concerns caused by transboundary flows into the U.S. from the Tijuana River and Pacific Ocean. These 10 projects would then undergo the feasibility analysis summarized in Section 2.1.2 (Project Feasibility Analysis).

Over the past decades, various parties and stakeholders have gathered data and prepared studies to further characterize the nature and causes of contaminated transboundary flows in the Tijuana River watershed and propose conceptual solutions. In particular, the following recent key studies presented project concepts and other data that informed EPA's identification of this initial set of 10 projects:

- NADBank is a binational financial institution established by the U.S. and Mexican governments to provide financing in support of infrastructure projects and technical assistance for environmental protection for both countries. NADBank contracted Arcadis to prepare a Tijuana River Diversion Study (Arcadis, 2019), analyzing various diversion management capabilities for northbound flows in the Tijuana River watershed. The study included a transboundary flow analysis, a diagnostic evaluation of diversion infrastructure and operations, and an assessment of potential infrastructure investment alternatives in Mexico and the U.S. to address transboundary flows. EPA relied on this study to provide diagnostic information for diversion infrastructure including the International Collector, the Tijuana River diversion structure, and pump stations including PB-CILA. This information was further used to define and evaluate components of several projects to undergo feasibility analysis.

- USIBWC contracted Stantec to develop a feasibility study (Stantec, 2020a, 2020b) focusing on sediment basin project concepts in the Tijuana River immediately downstream of the border. The project concepts regarding river restoration, sedimentation basins, and trash booms served as the basis for components of one project to undergo feasibility analysis.

- The County of San Diego utilized grant funding under Senate Bill (SB) 507 (enacted by the State of California) to contract HDR to prepare a Needs and Opportunities Assessment (HDR, 2020c), which built upon the Arcadis (Arcadis, 2019) and Stantec (Stantec, 2020a, 2020b) studies to identify U.S.-based project concepts to address transboundary flows into the Tijuana River Valley. The project concepts in the Needs and Opportunities Assessment served as the basis for components of two projects to undergo feasibility analysis.

Based on these studies and other available information, EPA identified a set of seven projects and presented these projects for consideration and discussion via the EPECG in the fall of 2020. Additionally, during this period, the Scripps Institution of Oceanography released the draft results of a modeling study that provided additional clarity on the relationship between coastal discharges of untreated wastewater via SAB Creek at Punta Bandera, Mexico, and the resultant impacts to beaches in southern San Diego County (Feddersen et al., 2020). EPA also learned of the potential availability of the City of San Diego–owned SBWRP parcel and facilities as siting options to be considered for providing additional wastewater treatment capacity. Based on this new information and stakeholder input, EPA adjusted the scopes of the initial seven project options and identified three additional project options to be further evaluated.

This process resulted in the following set of 10 projects to undergo feasibility analysis, many of which include multiple components and sub-projects:

- Project 1: New Tijuana River Diversion System in the U.S. and Treatment in the U.S.
- Project 2: Expand and Upgrade Tijuana River Diversion System in Mexico and Provide Treatment in the U.S.
- Project 3: Treat Wastewater from the International Collector at the ITP.
- Project 4: Shift Wastewater Treatment of Canyon Flows to U.S. (via Expanded ITP or SBWRP) to Reduce Flows to the SABTP.
- Project 5: Enhance Mexico Wastewater Collection System to Reduce Flows into the Tijuana River.
- Project 6: Construct New Infrastructure to Address Trash and Sediment.
- Project 7: Divert or Reuse Treated Wastewater from Existing Wastewater Treatment Plants in Mexico to Reduce Flows into the Tijuana River.
- Project 8: Upgrade the SABTP to Reduce Untreated Wastewater to Coast.
- Project 9: Treat Wastewater from the International Collector at the SBWRP.
- Project 10: Sediment and Trash Source Control.

Fact sheets, maps, and links to the feasibility analysis (with more detailed project descriptions) for each of these 10 projects are available on EPA's website.[3] These 10 projects constituted the Proposed Action identified in EPA's NOI to prepare an EIS, which initiated the public scoping period for this PEIS as discussed in Sections 1.5 (Purpose and Scope of the Programmatic EIS) and 7.3.4 (NEPA Public Scoping).

2.1.2 Project Feasibility Analysis

Building on past studies and consultation with stakeholders, EPA evaluated each of the 10 projects identified in Section 2.1.1 (Identification of Projects to Undergo Feasibility Analysis) for technical, economic, and environmental feasibility. The feasibility analyses also documented engineering, regulatory, and implementation issues and presented capital and 40-year life cycle cost estimates.

The results of the feasibility analysis, which EPA documented in a series of 10 memoranda and related addenda (PG Environmental, 2021a, 2021b, 2021c, 2021d, 2021e, 2021h, 2021i, 2021j, 2021k, 2021l, 2021m), were then used to inform the creation of several alternatives to proceed through an alternatives analysis, as described in the next section.

[3] See https://www.epa.gov/sustainable-water-infrastructure/tijuana-river-watershed-technical-evaluation-infrastructure.

2.1.3 Alternatives Analysis

After completing the project feasibility analysis, EPA defined a set of alternatives—each consisting of an assemblage of projects and their individual components and sub-projects—based on individual project purposes, impacts, environmental benefits, capital costs, and O&M costs. Next, they were scored using a systematic, replicable, and transparent evaluation tool developed by EPA called the Augmented Alternatives Analysis. This analysis considered each alternative's feasibility; cost of construction and O&M; and social, environmental, and economic benefits.

As a result of the alternatives analysis, EPA announced in November 2021 that it had selected the Comprehensive Infrastructure Solution (Alternative I-2) to move forward through the NEPA process. This highest-scoring alternative, while exceeding the budget provided by USMCA Implementation Act appropriations ($300 million), represents the most comprehensive solution to both transboundary river wastewater flows and coastal wastewater flows. The alternatives analysis and scopes of the evaluated alternatives, including the Comprehensive Infrastructure Solution, are described in more detail in the Water Infrastructure Alternatives Analysis report (PG Environmental, 2021f) and on EPA's website.[4]

The projects constituting the Comprehensive Infrastructure Solution formed the basis for the alternatives evaluated in this PEIS, as described in Section 2.2 (Proposed Action and Range of Alternatives Evaluated in this PEIS).

2.2 Proposed Action and Range of Alternatives Evaluated in This PEIS

EPA's Proposed Action evaluated in this PEIS is the issuance of U.S. appropriations (including but not limited to USMCA Implementation Act appropriations) for implementation of projects to address impacts from transboundary flows in the Tijuana River watershed and adjacent coastal areas. USIBWC's Proposed Action evaluated in this PEIS is the implementation (i.e., design and construction) of water infrastructure projects funded by EPA in accordance with the strategy developed[5] in this PEIS and selected in the ROD. Because of the programmatic nature of the decisions to be made, only certain projects would be able to be implemented by USIBWC at the completion of this NEPA process. Other projects would require additional tiered review before USIBWC would be able to implement them.

Capital costs for the implementation of the projects would be funded through a combination of USMCA Implementation Act appropriations ($300 million), existing programs such as EPA's Border Water Infrastructure Program (BWIP), additional funds from Mexico, and (if necessary) additional not-yet-identified federal and/or state appropriations. The cost sharing agreement between the U.S. and Mexico is currently under negotiation in parallel with this NEPA process.

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[4] See https://www.epa.gov/sustainable-water-infrastructure/tijuana-river-watershed-technical-evaluation-infrastructure.

[5] EPA would not fund and USIBWC would not implement projects outside their federal jurisdictions, which is to be determined by binational negotiations.

This PEIS evaluates a No-Action Alternative and two alternatives for implementing the Proposed Action:

- **No-Action Alternative.** See Section 2.3. This alternative would not implement the Proposed Action. NEPA requires that a No-Action Alternative be analyzed to determine the environmental consequences of not undertaking the Proposed Action, and thereby providing a baseline against which the potential beneficial and adverse environmental impacts of action alternatives can be evaluated and compared.

- **Alternative 1: Core Projects.** See Section 2.4. Under this alternative, EPA would use U.S. appropriations to fund (and USIBWC would implement) *some components* of the Comprehensive Infrastructure Solution that are the responsibility of the U.S., per the terms of the final cost sharing agreement between the U.S. and Mexico. This approach would fund and implement only those projects that are sufficiently evolved to be ready for decision making and *is not expected* to require substantial additional U.S. appropriations beyond the USMCA Implementation Act appropriations and funds from existing programs such as EPA's BWIP.

- **Alternative 2: Core and Supplemental Projects.** See Section 2.5. Under this alternative, EPA would use U.S. appropriations to fund (and USIBWC would implement) *all components* of the Comprehensive Infrastructure Solution that are the responsibility of the U.S., per the terms of the final cost sharing agreement between the U.S. and Mexico. This more comprehensive approach *is expected* to require substantial additional U.S. appropriations beyond the USMCA Implementation Act appropriations and funds from existing programs such as EPA's BWIP. EPA is in the process of identifying additional opportunities for federal and/or state appropriations that could be used to fully implement the Comprehensive Infrastructure Solution.

Table 2-1 identifies the projects that constitute Alternatives 1 and 2. See Sections 2.4 and 2.5 for detailed descriptions and figures.

Section 2.7 (Alternatives Eliminated from Evaluation in This PEIS) summarizes additional projects and alternatives that were considered but eliminated from further analysis in this PEIS.

Table 2-1. Projects Constituting Alternatives 1 and 2

<table>
<tr><th colspan="2">Alternative</th><th>Project Title</th><th>Project Location</th></tr>
<tr><td rowspan="4">Alternative 1: Core Projects</td><td rowspan="10">Alternative 2: Core + Supplemental Projects</td><td>A. Expanded ITP
Option A1: Expand to 40 MGD
Option A2: Expand to 50 MGD
Option A3: Expand to 60 MGD</td><td>U.S. only</td></tr>
<tr><td>B. Tijuana Canyon Flows to ITP
Option B1: Trenching via Smuggler's Gulch and Monument Rd
Option B2: Trenchless via Smuggler's Gulch and Under Mesa
Option B3: Connect to Existing Canyon Collector System</td><td>U.S. and Mexico</td></tr>
<tr><td>C. Tijuana Sewer Repairs</td><td>Mexico only</td></tr>
<tr><td>D. APTP Phase 1</td><td>U.S. and Mexico</td></tr>
<tr><td rowspan="6"></td><td>E. APTP Phase 2</td><td>U.S. only</td></tr>
<tr><td>F. U.S.-side River Diversion to APTP</td><td>U.S. only</td></tr>
<tr><td>G. New SABTP</td><td>Mexico only</td></tr>
<tr><td>H. Tijuana WWTP Treated Effluent Reuse</td><td>Mexico only</td></tr>
<tr><td>I. ITP Treated Effluent Reuse</td><td>U.S. and Mexico</td></tr>
<tr><td>J. Trash Boom(s)</td><td>U.S. only</td></tr>
</table>

2.3 No-Action Alternative

The PEIS must include “No Action” as an alternative to the Proposed Action (40 CFR § 1502.14(c)). Although the No-Action Alternative does not meet the purpose and need of the Proposed Action, it is carried forward in this PEIS to provide a means by which to compare the potential environmental impacts of not proceeding with the Proposed Action to the effects of the other action alternatives. Thus, under the No-Action Alternative, EPA would not issue USMCA Implementation Act appropriations and other U.S. appropriations to fund components of the Comprehensive Infrastructure Solution.

The river diversion and wastewater treatment operations described in Sections 1.2 (Existing Diversion and Treatment Infrastructure) would continue as-is unless modified through separate, less-comprehensive projects and funding mechanisms that may prove insufficient to address the existing and projected deficiencies. The impacts described in Section 1.3 (Causes and Impacts of Contaminated Transboundary Flows from Tijuana) would persist unabated and would worsen over time as wastewater infrastructure in Tijuana continues to deteriorate and the population continues to grow without access to adequate wastewater treatment infrastructure.

The No-Action Alternative would not allow EPA to meet the goals and objectives of the USMCA Implementation Act. Specifically, EPA would not be in compliance with Section 821 of the Act, which gives authority and direction to the EPA Administrator to “carry out the planning, design, construction, and operation and maintenance of high priority treatment works in the covered area to treat wastewater (including stormwater), nonpoint sources of pollution, and related matters resulting from international transboundary water flows originating in Mexico.”

2.4 Alternative 1: Core Projects

For consideration in the environmental review, EPA and USIBWC have developed a solution to address transboundary flows that consists of four Core Projects identified as Projects A, B, C, and D. These four projects, in total, constitute Alternative 1 and are analyzed in detail in this PEIS.

Some components of Alternative 1 would take place in Mexico. As described in Section 2.2 (Proposed Action and Range of Alternatives Evaluated in This PEIS), binational negotiations are underway regarding the scope, funding, and implementation of projects in Mexico being contemplated as part of the USMCA Mitigation of Contaminated Transboundary Flows Project. EPA and USIBWC would move forward with funding and/or implementing projects in Mexico only if such projects have support and funding contributions from appropriate Mexican authorities.

2.4.1 Projects A, B, and C: Improve Collection and Treatment of Wastewater

Alternative 1 includes three Core Projects (Projects A, B, and C) that are intended to improve collection and treatment of wastewater from Tijuana. Project A involves expanding wastewater treatment capacity at an existing facility in the U.S. (the ITP). Projects B and C are focused on modifying and improving wastewater collection systems to ensure that more wastewater is conveyed to treatment, rather than released directly to the Tijuana River or the Pacific Ocean without treatment.

2.4.1.1 Project A: Expanded ITP

Project A includes the expansion of the 25-MGD ITP for secondary treatment of wastewater at one of three different average daily flow capacity options, 40 MGD (Option A1), 50 MGD (Option A2), or 60 MGD (Option A3); construction of a new solids processing facility; installation of other new supporting facilities; and associated site modifications. The primary purpose of expanding the ITP is to reduce impacts to the U.S. coast by treating wastewater from the International Collector that otherwise would be discharged to the Pacific Ocean via SAB Creek without adequate treatment, or any treatment at all. The expanded ITP may also reduce untreated wastewater overflows from the sanitary sewer to the Tijuana River caused by mechanical failures at PB1-B. Depending on the proposed capacity of the plant, the expanded ITP may also provide treatment for sewage collected in the canyons (Project B), as well as for additional sewage flows produced by the future population of Tijuana. Project A construction is estimated to be completed by no later than 2027.

The proposed new and expanded facilities and processes for Project A are described below. Additionally, USIBWC is in the process of initiating a plant-wide condition assessment of existing ITP components, the results of which could identify additional upgrades necessary to support expanded operations (e.g., rehabilitation of valves, junction boxes, and piping).

- **Preliminary treatment.** Upgrades would include replacing and/or installing new raw wastewater pumps to increase capacity, replacing influent screens at the ITP headworks, and renovating the existing grit chamber. Renovations to the grit chamber, depending on final design, could include installation of a more advanced automatic pump sequencing system, upgrading the grit pumps, and expanding the grit basin itself.

- **Primary treatment.** Upgrades would include installing new primary clarifiers, contiguous with and west of the existing primary clarifiers. The new clarifiers would be built to the same dimensions as the existing ones.

- **Secondary treatment.** Upgrades would include adding new biological reactors south of the seven existing reactors; constructing a new, centrally located blower building with new centrifugal blowers and decommissioning equipment in the existing blower building; installing new sludge storage tanks immediately west of the two existing sludge storage tanks; and installing new rectangular secondary sedimentation tanks south of the existing secondary settling tanks, with new pumps to support operations.

- **Discharge.** The capacity of the effluent metering pipe would increase, and treated effluent would continue to be discharged through the SBLO, which then discharges into the SBOO and then into the Pacific Ocean. Modifications to the wye diffuser array on the SBOO could be necessary to promote dispersal of the increased loadings (e.g., opening ports on existing capped risers and/or installing new diffuser heads and ports to existing closed, blind flanged risers).

- **Solids processing.** Upgrades would include new equipment to process the increased amount of solids produced by primary and secondary wastewater treatment. This would include new dissolved air flotation (DAF) units to thicken sludge from secondary treatment, new belt filter presses for additional dewatering of waste solids, expansion of the existing dewatering building to accommodate new equipment, and expansion or replacement of solids handling facilities. Project A would also incorporate anaerobic digestion of primary and secondary sludge to substantially reduce the amount of waste solids produced per gallon of wastewater treated at the ITP. Reducing solids is necessary due to anticipated logistical challenges with securing enough trucks and drivers to transport sludge offsite for disposal; however, incorporating anaerobic digestion increases the complexity of plant operations and necessitates the installation of air pollution control equipment. This could include, among other controls, installation of an electric generator to combust biogas emissions and produce electricity to offset a portion of the ITP's energy demand.

- **Other improvements.** The ITP expansion would include auxiliary facilities to provide support functions such as office space, a control room, and restrooms. This would involve constructing at least one new building and/or renovating the existing office building used by contract staff. Other improvements would include additional roads and parking within the ITP parcel; new utility connections, such as electrical (including a backup electrical generator) and communications; and expanded security fencing and lighting around the ITP.

Site modifications would be necessary to accommodate the new and expanded facilities. This would include providing fill material to create a level foundation for the proposed secondary reactors and clarifiers, as the areas southwest of Dairy Mart Road are approximately 10 feet lower in elevation than the rest of the ITP parcel. Fill material would be sourced from elsewhere within the Tijuana River Valley, such as the transboundary sediment deposits in Goat Canyon or Smuggler's Gulch. Other site modifications would include relocating the portion of Dairy Mart Road that crosses through the ITP parcel by demolishing it and paving a replacement road along the western boundary of the ITP parcel, and enclosing or relocating the stormwater swale that runs alongside this portion of Dairy Mart Road. Construction activities would also potentially involve temporary work (e.g., material/equipment staging and stormwater management) throughout the undeveloped 25-acre southwest quadrant of the ITP parcel and in portions of the 4-acre parcel northwest of the ITP.

The infrastructure at the expanded ITP would require regular and ongoing O&M activities to ensure operational reliability and efficiency. Additional staff members would also be required to accommodate the anticipated increase in O&M needs. As part an agreement between the U.S. and Mexico (Minute 283), long-term recurring operations would include hauling of sludge produced by the treatment process to Mexico for disposal. The pumps and equipment supporting the ITP would also require regular and ongoing O&M activities such as rehabilitation and replacement at varying time intervals.

Figure 2-1 provides a schematic of the proposed treatment train at the expanded ITP. Figure 2-2 depicts the anticipated general locations of project elements and construction activities for Project A. Figure 2-3 provides an example conceptual site plan of the individual facilities that would be constructed for Project A.

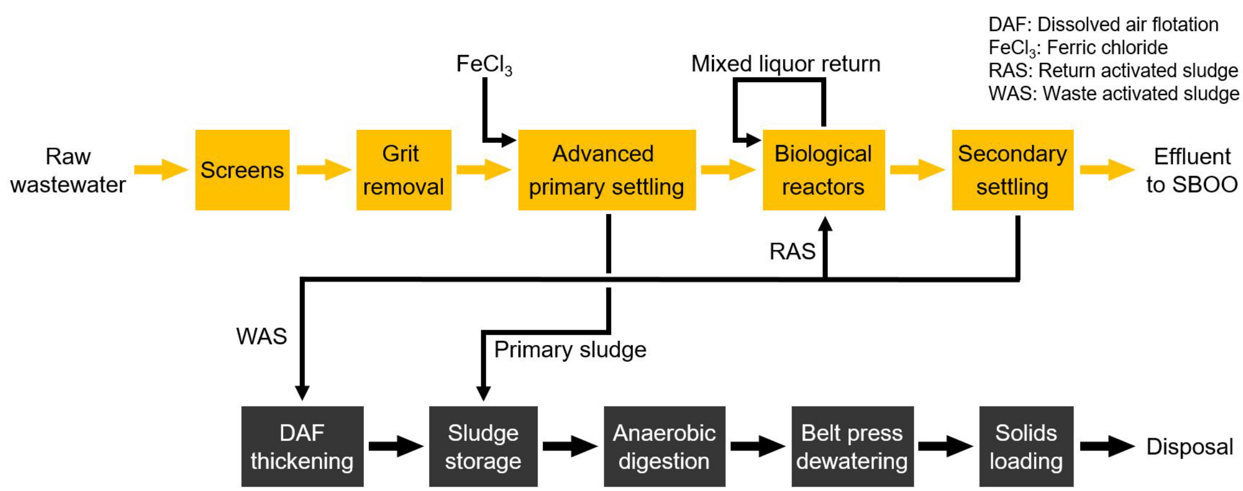


Figure 2-1. Project A – Schematic of Expanded ITP Treatment Train

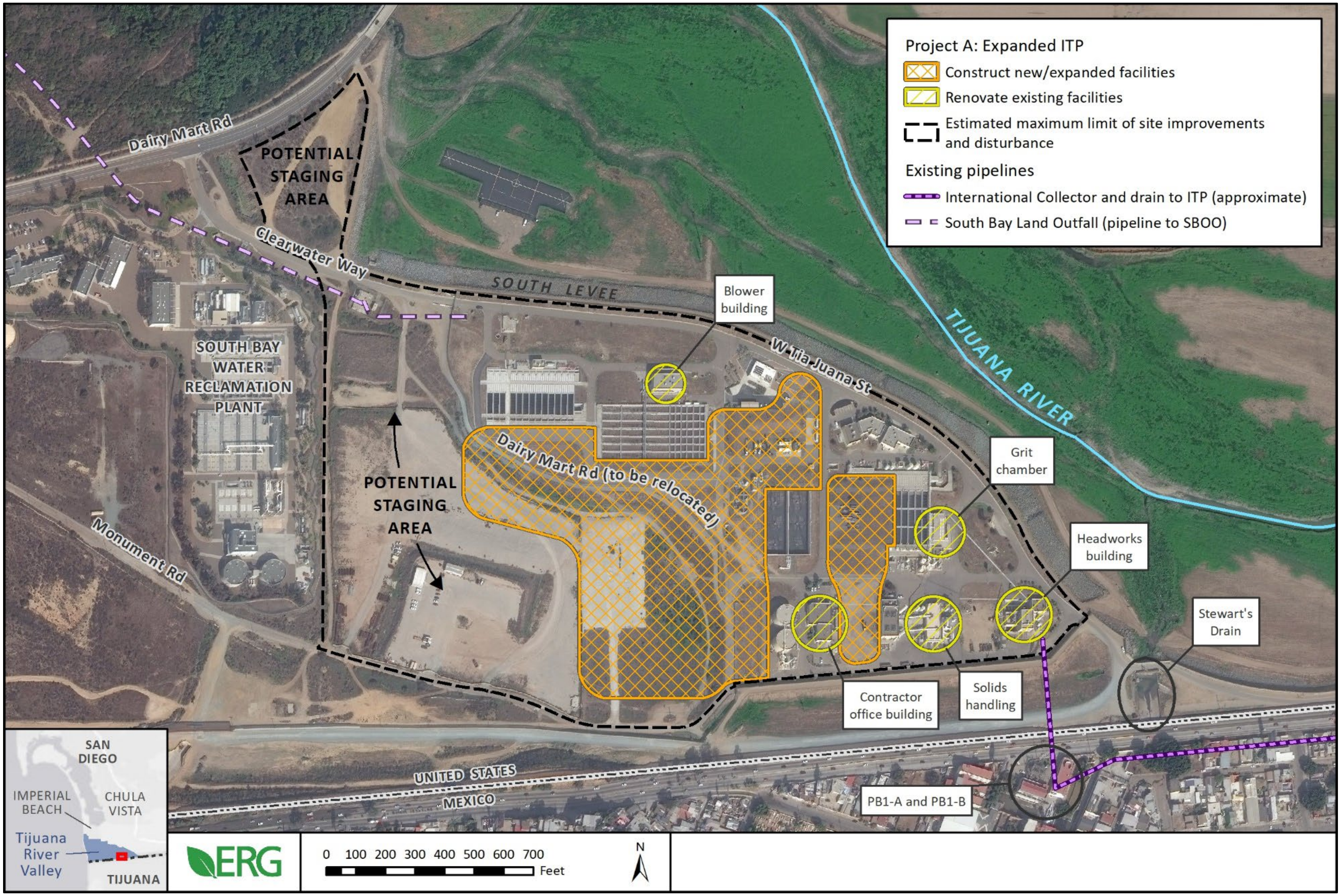


Figure 2-2. Project A (Expanded ITP) – Locations of Project Components

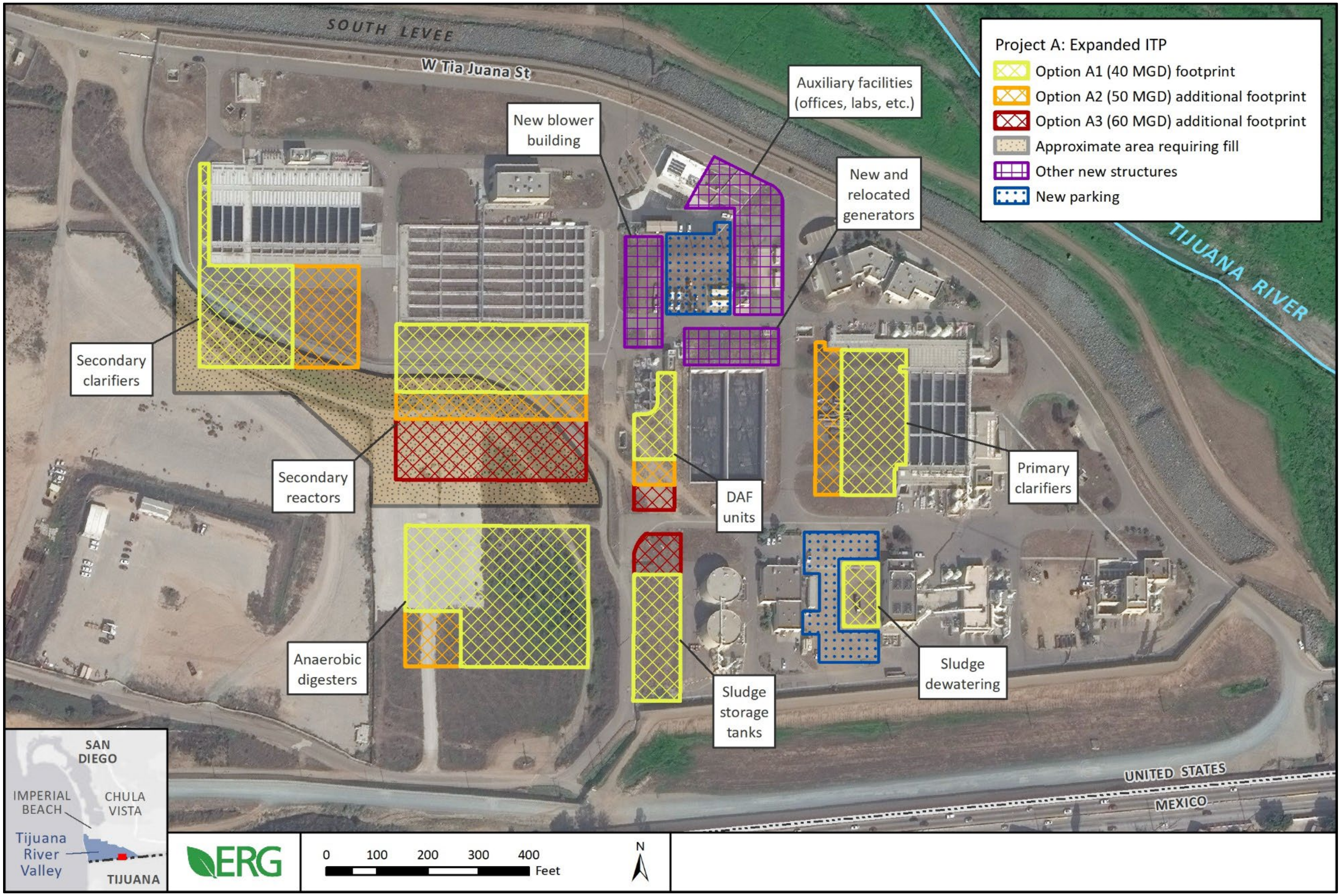


Figure 2-3. Project A (Expanded ITP) – Conceptual Site Plan of Proposed Facilities

Project A includes three proposed average daily flow capacity options for the proposed ITP expansion from the current 25-MGD capacity: Options A1, A2, and A3. The differences between the three options are summarized below and in Table 2-2.

- **Option A1: Expand to 40 MGD.** Expanding the ITP to a design treatment capacity of 40 MGD (average daily flow) would enable the plant to treat all wastewater in the International Collector and wastewater that would be collected by the rehabilitated sewer collectors in Tijuana (see Project C). However, the 40-MGD option would have minimal if any reserve capacity for future population growth.
- **Option A2: Expand to 50 MGD.** Expanding the ITP to a design treatment capacity of 50 MGD (average daily flow) would provide the same treatment capabilities as the 40-MGD option (see Option A1) while also accommodating wastewater collected in the canyons in Mexico (see Project B) and providing capacity for current and projected wastewater flows through 2030.
- **Option A3: Expand to 60 MGD.** Expanding the ITP to a design treatment capacity of 60 MGD (average daily flow) would provide the same treatment capabilities as the 50-MGD option (see Option A2) while providing capacity for current and projected wastewater flows through 2050.

The estimated capital costs for each option are shown in Table 2-2. In addition to capital costs for construction, operation of the expanded ITP would require additional recurring O&M funds. Annual O&M is funded through appropriations to USIBWC. For an expanded ITP, USIBWC would request additional resources needed for increased O&M activities as part of its annual request to the Office of Management and Budget through the Department of State.

Table 2-2. Comparison of Project A Options

Component [a]	Option A1	Option A2	Option A3
ITP treatment capacity (average daily flow)	40 MGD	50 MGD	60 MGD
ITP treatment capacity (peak daily flow)	100 MGD	100 MGD	100 MGD
New primary clarifiers (#)	5	8	8
New secondary reactors (#)	5	7	10
New centrifugal blowers (#)	5	5	6
New secondary clarifiers (#)	7	12	12
New DAF units (#)	4	5	6
New anaerobic digestors (#)	5	6	6
New sludge storage tanks (#)	2	2	3
New facility footprint, total (approximate)	400,000 SF	475,000 SF	530,000 SF
New ITP employees (#)	30	40	50
Estimated capital cost for construction [b, c]	$227 million	$299 million	$372 million

a – All scope estimates presented in this PEIS are based on feasibility-level engineering and are subject to refinement during the design process.
b – Cost estimates do not include renovations to the existing grit chambers and solids handling facilities.
c – All cost estimates were developed with an estimated accuracy of +50%/-25% for U.S.-side projects and +100%/-50% for Mexico-side projects. See Section B.7 of the Water Infrastructure Alternatives Analysis (PG Environmental, 2021f) for more information on how the cost estimates were developed.

2.4.1.2 Project B: Tijuana Canyon Flows to ITP

Project B includes the installation of a wastewater conveyance system from Matadero Canyon and Los Laureles Canyon in Mexico to the expanded ITP for treatment (see Project A for details on the ITP expansion); decommissioning of three pump stations in the canyons; and associated temporary construction activities. Following treatment, these flows would be discharged to the Pacific Ocean through the SBLO/SBOO as described for Project A. Three configurations and/or installation methods of the conveyance line are being considered: trenching through Smuggler's Gulch and Monument Rd (Project B1), trenchless installation in Smuggler's Gulch and under the mesa (Project B2), and connection to the existing canyon collector system (Project B3). The primary purpose of the proposed conveyance system is to reduce the amount of dry-weather wastewater flows that are currently discharged with little to no treatment to the Pacific Ocean via SAB Creek. As a secondary benefit, Project B would potentially reduce the volume and frequency of dry-weather transboundary flows in Goat Canyon and Smuggler's Gulch by eliminating the reliance on pump stations whose mechanical issues may cause occasional wastewater overflows into the canyons in Mexico (see Section 1.3 [Causes and Impacts of Contaminated Transboundary Flows from Tijuana]).

Up to 12.7 MGD (peak daily) of wastewater from the canyons would be collected by the new conveyances and transported to the ITP for treatment. The current wastewater flow from the canyons is 6.3 MGD, so the new conveyances would have available capacity to accommodate flow increases over time.

The new wastewater conveyance system would include new pipelines (Reaches 1–4) in Mexico that use gravity to convey wastewater to the U.S., which would allow the existing pump stations in the canyons to be decommissioned—specifically, the Matadero pump station in Matadero Canyon and the Los Laureles 1 and Los Laureles 2 pump stations in Los Laureles Canyon. The new Reach 5 pipeline in the U.S. is described later in this section. The new conveyance lines in Mexico would consist of the following:

- **Reach 1:** A 15-inch nominal diameter gravity sewer that would flow directly east from the Los Laureles 2 pump station and connect to Reach 2. Reach 1 would be approximately 2,000 feet long, would pass underneath the high ground between the two canyons, and would be installed using directional drilling.
- **Reach 2:** A 15-inch nominal diameter gravity sewer that would flow generally north from the eastern end of Reach 1 to the Matadero pump station. Reach 2 would be approximately 1,700 feet long and would be installed using conventional open-cut trenching methods.
- **Reach 3:** A 21-inch nominal diameter gravity sewer that would flow generally north along Matadero Canyon from the Matadero pump station until it intersects Reach 4 approximately 150 feet south of the border. Reach 3 would be about 3,500 feet long and would be installed using conventional open-cut trenching methods (except for approximately 700 feet passing beneath the International Highway, which would be installed using micro-tunneling).
- **Reach 4:** A 15-inch nominal diameter gravity sewer that would flow generally east from the Los Laureles 1 pump station until it intersects with Reach 3. Reach 4 would be approximately 4,000 feet long, would pass beneath the high ground between the canyons, and would be installed using directional drilling.

The sections of the proposed conveyance line that would be installed using open-cut trenching (Reach 2 and a part of Reach 3) would occur in undeveloped areas in Matadero Canyon and would require temporary land disturbance and lighting along the proposed route during construction, as well as for staging areas. The sections of the proposed conveyance line that would be installed using micro-tunnelling or directional drilling (Reach 1, 4, and part of Reach 3) would require temporary pits at each end of the micro-tunnel or drilling location with construction staging areas to feed the pipe sections underground. The construction areas on each side of the micro-tunnel or drilling operation would require temporary fencing, lighting, a truck-mounted generator to run equipment, and other construction equipment. The pipes would have shallow installation, so dirt would be backfilled following installation.

In the U.S., Project B includes three proposed configurations of Reach 5 to convey flows from the end of Reach 4 to the expanded ITP: Options B1, B2, and B3. The differences between the three options are summarized below.

- **Reach 5, Option B1: Trenching via Smuggler's Gulch and Monument Road.** Option B1 includes installing Reach 5 using open-cut trenching methods through Smuggler's Gulch and along Monument Road. Reach 5 would consist of a 24-inch nominal diameter force main that would run from 150 feet south of the border in Matadero Canyon to the headworks of the ITP. This sewer would run north beneath the border for approximately 1,000 feet; north under the Smuggler's Gulch access road for approximately 1,300 feet; east under Monument Road for approximately 6,100 feet; and east/southeast adjacent to Clearwater Way and West Tia Juana Street for approximately 3,600 feet before reaching the headworks of the ITP.

  Reach 5 would be installed using conventional open-cut trenching methods except for the section beneath the U.S.-Mexico border, which would be installed using micro-tunneling. Temporary pits would be required at each end of the micro-tunnel section and may require additional security during construction due to their proximity to the border. Depending on the results of utility surveys, open-cut trenching would be confined to the existing roadway in Smuggler's Gulch and along Monument Road and would be confined to the undeveloped strip of land adjacent to Clearwater Way and West Tia Juana Street. Unvegetated areas would be used for construction staging activities, as necessary.
- **Reach 5, Option B2: Trenchless installation via Smuggler's Gulch and under mesa**. Option B2 includes installing Reach 5 using a combination of open-cut trenching and trenchless methods to avoid or minimize disturbances within Smuggler's Gulch and along Monument Road. Reach 5 would be a 24-inch nominal diameter polyvinyl chloride (PVC) force main that starts 150 feet south of the border and runs approximately 1,000 feet north into Smuggler's Gulch; east underneath the mesa for approximately 5,000 feet; and east/southeast along Dairy Mart Road, Clearwater Way, and West Tia Juana Street for approximately 4,500 feet before reaching the headworks of the ITP.

  The sections of Reach 5 underneath the border, Smuggler's Gulch, and the mesa between Smuggler's Gulch and the ITP would be installed using directional drilling. These sections would require three temporary pits: one located 150 feet south of border in Smuggler's Gulch, one located approximately 900 feet north of the border in Smuggler's Gulch (adjacent to the canyon flow diversion structure), and one located near the intersection of Dairy Mart Road and Monument Road. The temporary construction pits in Smuggler's Gulch may require additional security during construction due to their proximity to the border. Open-cut trenching would be used for the final section to the ITP headworks (identical to that for Option B1).
- **Reach 5, Option B3: Connect to existing canyon collector system**. Option B3 includes installation of Reach 5 beneath the border to connect to the existing canyon collector

pipeline in Smuggler's Gulch (part of the existing canyon collector system described in Section 1.2 [Existing Diversion and Treatment Infrastructure]) for conveyance to the ITP. This option would minimize disturbances and leverage existing infrastructure. Reach 5 would be a 24-inch nominal diameter high-density polyethylene (HDPE) gravity pipe that runs north beneath the border for approximately 1,000 feet and connects to the existing 30-inch gravity sewer ("canyon collector") that currently conveys flows from the Smuggler's Gulch canyon flow diversion structure to the Hollister Street pump station. The existing equipment at the pump station would be used to pump these combined flows (from Reach 5 and the U.S.-side canyon flow diversion structures) to the ITP using the existing 16-inch and 30-inch force mains.[6]

Reach 5 would be installed using micro-tunnelling underneath the border. The U.S.-side micro-tunnelling pit would also be used to connect Reach 5 to the existing canyon collector. Temporary pits would be required at each end of the micro-tunnel section and may require additional security during construction due to their proximity to the border.

The estimated capital costs for Project B are $30.8 million, $44.7 million, and $22.3 million for Options B1, B2, and B3, respectively. Project B construction activities, including components in Mexico, are projected to take approximately two years to complete following mobilization but the specific schedule for starting and completing construction is not known at this time.

The infrastructure proposed for Project B would be expected to require regular and ongoing O&M activities to ensure operational reliability and efficiency. Maintenance on the U.S. side would generally consist of inspecting the ground along the sections of pipe installed using open-cut trenching to look for potential leaks. The new conveyance pipelines would use gravity to transport wastewater; therefore, minimal mechanics would be involved, reducing the overall maintenance requirements, and decommissioning the Matadero, Los Laureles 1, and Los Laureles 2 pump stations would reduce maintenance requirements as only access points would remain. Maintenance of the new gravity pipelines in Mexico would generally consist of routine CCTV inspections, cleaning, and leak repairs. Binational negotiations regarding O&M responsibilities and funding for Project B are ongoing.

Figure 2-4, Figure 2-5, and Figure 2-6 depict the anticipated general locations of project elements and construction activities for Options B1, B2, and B3, respectively, of Project B.

[6] Depending on the results of the USIBWC condition assessment of existing ITP components, the scope of Option B3 could also include rehabilitation of the Hollister Street pump station and associated force mains.

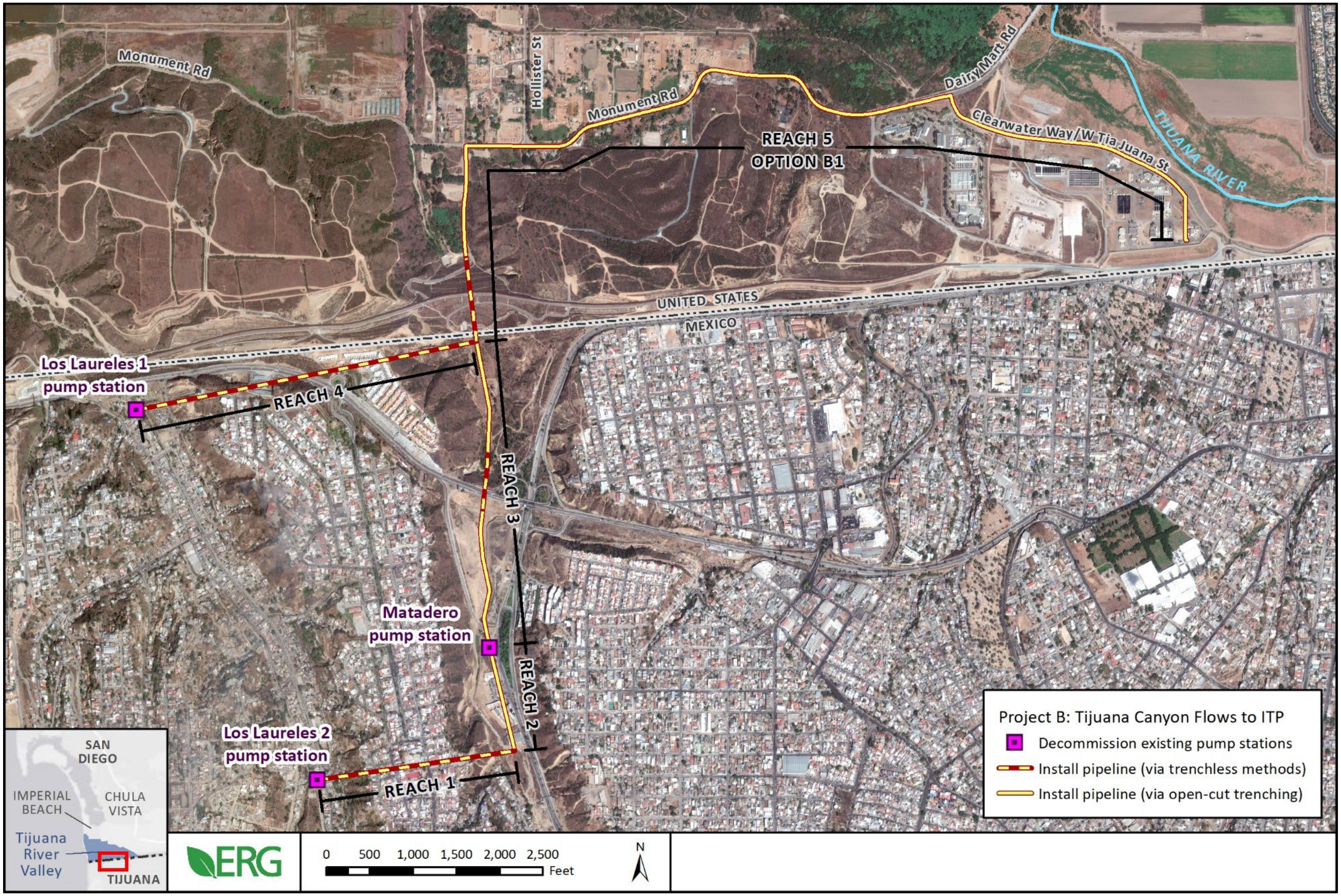


Figure 2-4. Project B (Tijuana Canyon Flows to ITP), Option B1 – Locations of Project Components

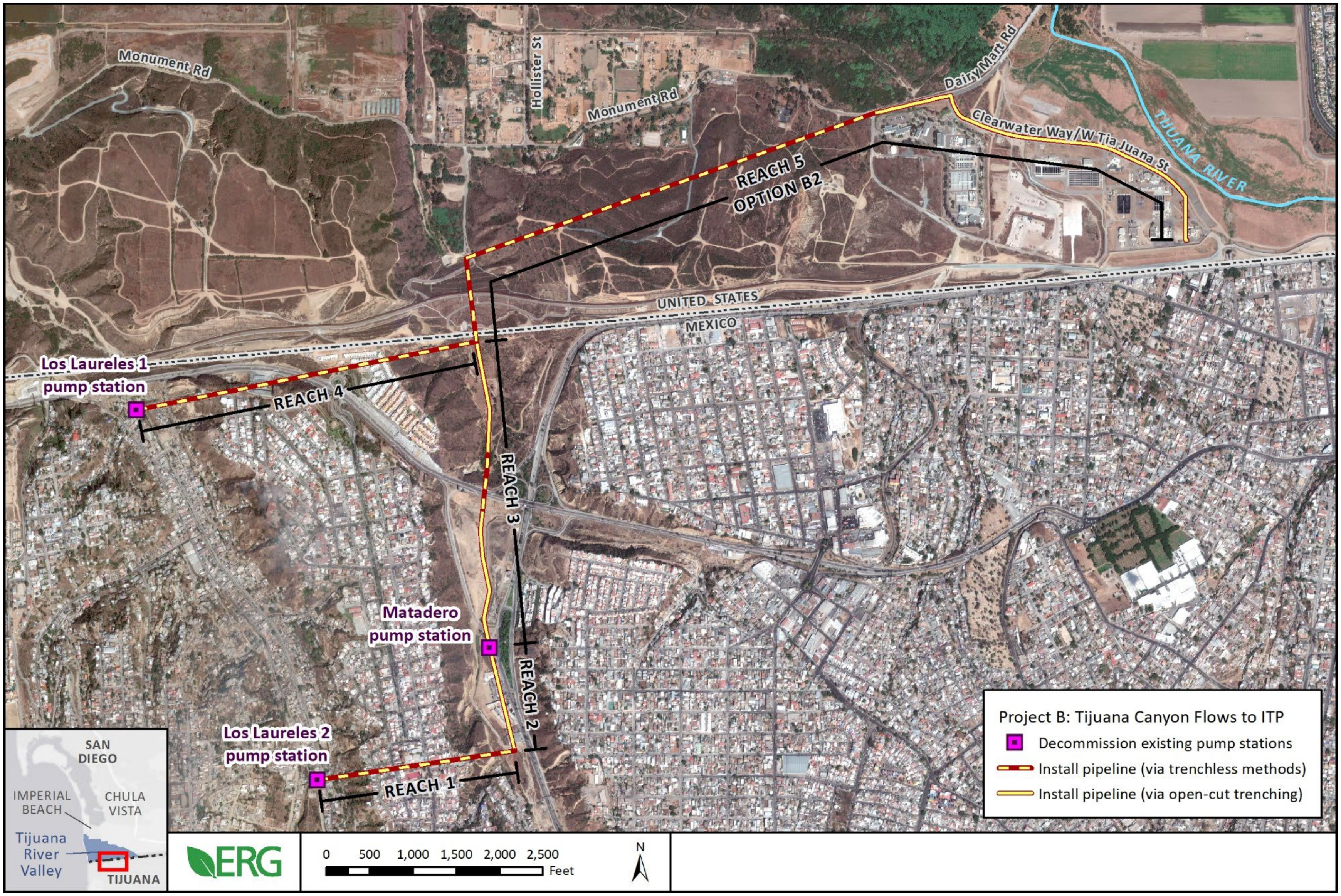


Figure 2-5. Project B (Tijuana Canyon Flows to ITP), Option B2 – Locations of Project Components

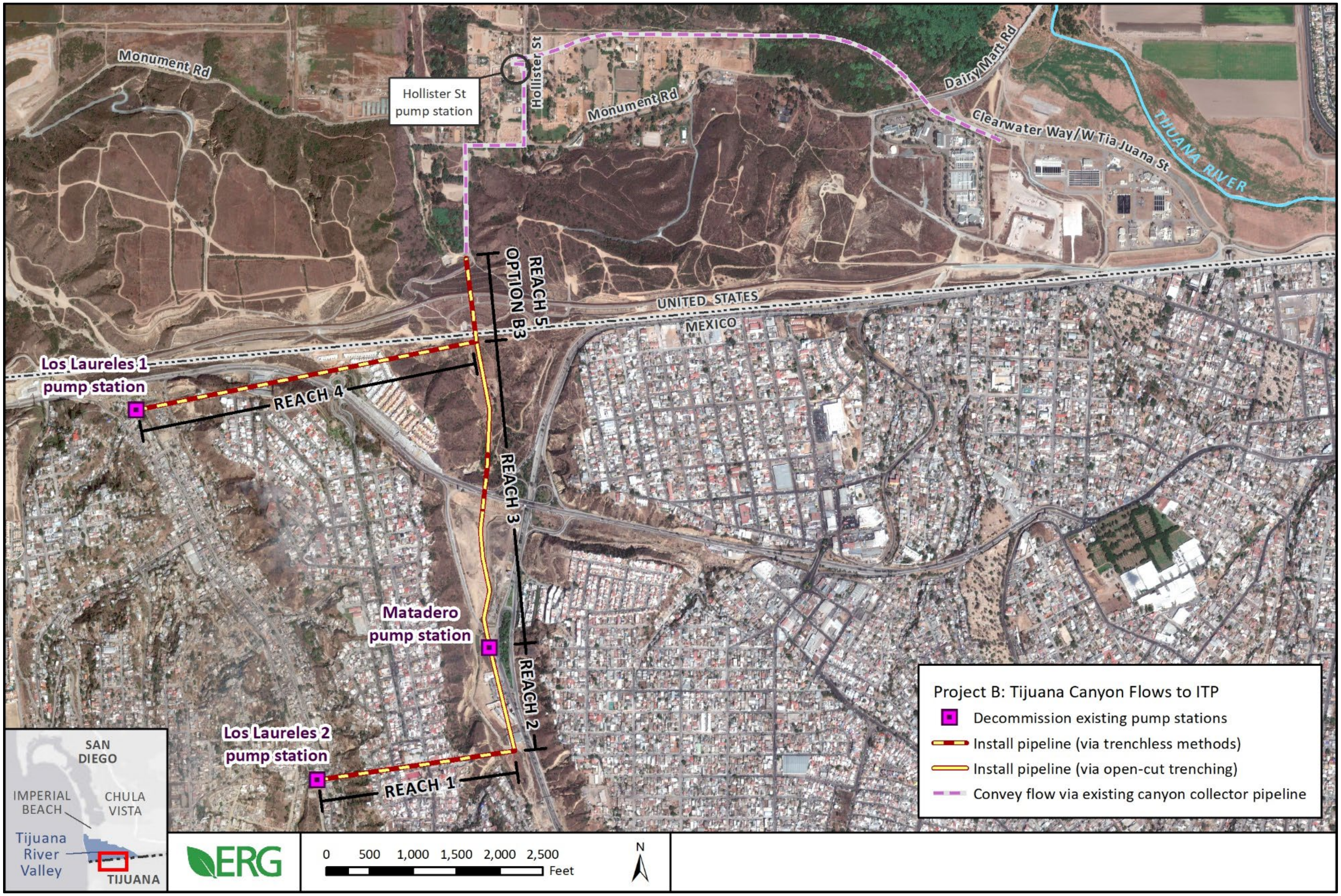


Figure 2-6. Project B (Tijuana Canyon Flows to ITP), Option B3 – Locations of Project Components

2.4.1.3 Project C: Tijuana Sewer Repairs

Project C includes rehabilitating or replacing targeted sewer collectors in the Tijuana metropolitan area in order to reduce the amount of untreated wastewater that currently leaks from the sanitary sewer system in Tijuana and enters the Tijuana River. By reducing wastewater leaks to the river in Tijuana, Project C would improve downstream water quality in the Tijuana River Valley and Estuary by both 1) reducing overall river flow volumes, and thus reducing the frequency of dry-weather transboundary flows caused by river flow rates that exceed the PB-CILA diversion capacity, and 2) ensuring that more wastewater in the Tijuana sewer system is successfully conveyed to the expanded ITP for treatment (see Project A) rather than entering the U.S. as a transboundary flow.

CESPT and CONAGUA, with concurrence from EPA and USIBWC, have identified seven sewer collectors to be rehabilitated or replaced using USMCA, BWIP, and/or Mexico funds as a Core Project under this PEIS. Most of the improvements would include replacement of old concrete pipes with new pipes made from more durable material (e.g., PVC or HDPE) to prevent the risk of leaks and collapses. Most of these collector rehabilitation and replacement projects, listed in Table 2-3, were selected with the goal of reducing existing wastewater leaks to the Tijuana River down to 5 MGD.[7] One project (Force Main Antiguo, project #7) was selected with the goal of reducing transboundary wastewater leaks that reach the U.S. and the Tijuana River via Los Laureles Canyon and Matadero Canyon. Figure 2-7 depicts a schematic of the wastewater collection system in Tijuana and the project locations.

Construction activities for rehabilitation or replacement of these sewer collectors would include the use of heavy construction equipment and open-cut trenching in most locations. In some cases (e.g., when sections of pipelines are particularly deep or would cross busy roadways), trenchless methods would be used. The targeted sewers are located in urban, developed areas predominantly within existing streets.

The estimated capital costs are $59 million for the targeted collector repairs. Project C construction activities are projected to take approximately one to three years to complete (per individual project) following mobilization but the specific schedule for starting and completing construction for all collector repairs is not known at this time. Binational negotiations regarding O&M responsibilities and funding for Project C are ongoing.

It is possible that funding through the BWIP program would allow some or all of these targeted sewer collector repair projects to proceed before completion of this PEIS. In this scenario, the repairs would still be considered as part of EPA's comprehensive solution to address transboundary flows but would receive separate NEPA review independent of this PEIS.

The sewer collector repair projects listed in Table 2-3 include current projects having priority for rehabilitation or repairs. While Mexico has the prerogative to modify the list to prioritize other repair projects, any such modifications to the list of projects would preserve the overall goal of

[7] In addition to the projects identified in Table 2-2, EPA is planning to provide BWIP funding for separate efforts (pursuant to separate NEPA reviews) that also would perform priority repairs to sewer infrastructure in Tijuana. See Section 2.8 (Related Projects).

reducing existing wastewater leaks to the Tijuana River down to 5 MGD. This would ensure that the transboundary impacts and improvements are similar to those of the projects listed in Table 2-3.

Table 2-3. Tijuana Sewer Collectors Included in Project C for Rehabilitation or Replacement

ID Number	Name	Description	Length to Be Rehabilitated (feet)	Existing Pipe	Proposed Pipe
Projects to Reduce Wastewater Leaks to Tijuana River in Mexico					
1	International Collector (Phase 2) [a]	Rehabilitate International Collector piping using trenchless methods due to location along a major highway.	8,200	72-inch concrete	72-inch PVC SPR (PVC spiral inside concrete pipe)
2	Rehabilitation of Insurgentes Collector	Replace Insurgentes Collector piping.	18,400	36-inch concrete	36-inch PVC
3	Rehabilitation of Poniente Collector (missing sections in col. 20 de Noviembre)	Rehabilitate Poniente Interceptor pipeline, which is old, at risk of collapse, and causes major spills and wastewater discharges to the Tijuana River.	2,300	42-inch concrete	42-inch and 48-inch PVC
4	Rehabilitation of Collector Carranza	Replace Carranza Collector piping in Colonia Carranza.	9,200	36-inch concrete	36-inch PVC
5	Rehabilitation of Interceptor Oriente	Replace the Oriente Collector in the eastern section of the Tijuana River.	22,800	42- and 48-inch concrete	42-inch and 48-inch PVC
6	Tijuana River Gates	Replace piping along the Alamar and Tijuana River wastewater collection system to reduce untreated wastewater discharges to the Tijuana River.	23,300	8- to 60-inch concrete	8-inch to 60-inch PVC
Project to Reduce Wastewater Leaks to Los Laureles Canyon and Matadero Canyon in Mexico					
7	Force Main Antiguo	Rehabilitate the force main section of the old conveyance from PB1 to SABTP.	14,400	42-inch steel core concrete	42-inch steel or PVC pipe

a – Phase 1 of the International Collector repairs, which includes construction of new alternative piping through the streets of Tijuana using 60-inch PVC, is being funded through BWIP and received a Categorical Exclusion in March 2022 to complete its NEPA review.

Figure 2-7. Project C – Schematic of Tijuana Sewer Collectors for Rehabilitation or Replacement

2.4.2 Project D: APTP Phase 1

Project D includes the construction and operation of a 35-MGD Advanced Primary Treatment Plant (APTP) for advanced primary treatment of diverted water from the existing PB-CILA diversion in Mexico, rehabilitation and extension of the existing force main from PB-CILA to the new APTP, installation of other new supporting facilities, and associated site modifications. The primary purpose of Phase 1 of the proposed APTP is to reduce impacts to the U.S. coast by treating diverted river water that otherwise would be discharged to the Pacific Ocean via SAB Creek without adequate treatment, or any treatment at all. This project would also reduce the frequency of transboundary river flows by eliminating the use of a pump station (PB1-A) whose mechanical issues indirectly cause occasional shutdowns of the PB-CILA diversion (see Section 1.2 [Existing Diversion and Treatment Infrastructure).

The APTP would operate independently of the existing ITP and would consist of the following treatment processes: screening, aerated grit removal, grit dewatering, a ballasted flocculation process, and sludge handling. Figure 2-8 provides a schematic of the treatment train at the proposed APTP.

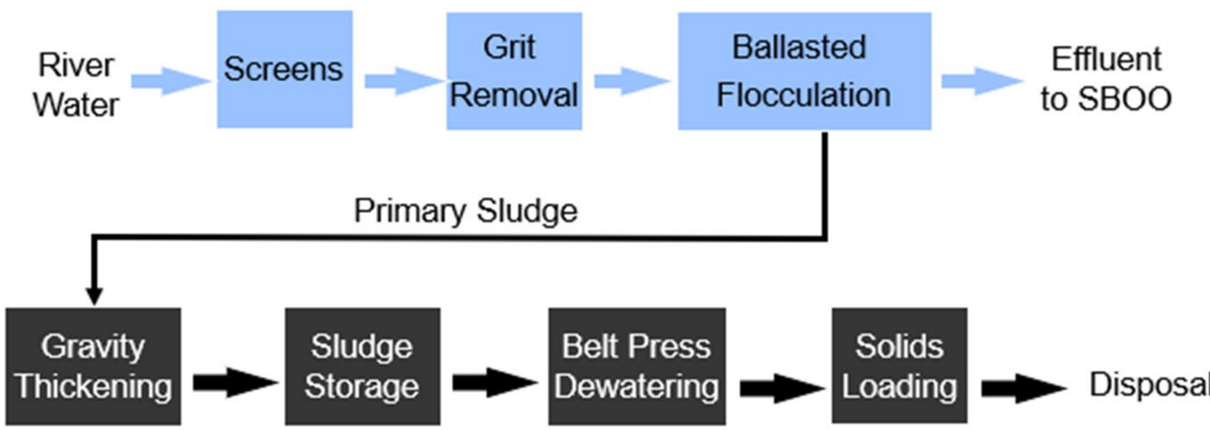


Figure 2-8. Project D – Schematic of APTP Treatment Train

The proposed 35-MGD APTP for Project D, which represents Phase 1, would be designed and constructed to allow for potential expansion under Phase 2. For example, concrete pads constructed under Phase 1 for ballasted flocculation, sludge storage, and other process units would be large enough to accommodate the potential installation of additional process units under Phase 2, and piping and stub-outs to convey flows between the units would be sized to accommodate the flow rates of a 60-MGD plant. While these expanded pads would not specifically support operation of the 35-MGD plant, this approach is necessary to ensure soil and foundation stability for the overall plant and to ensure that the siting of Phase 1 infrastructure does not inadvertently prevent potential future expansion under Phase 2. See Section 2.5.2.1 (Project E: APTP Phase 2) for additional information on the proposed Phase 2.

The proposed new facilities and processes for Project D are described below.

- **Preliminary treatment.** The preliminary treatment process would include conveying influent from the headworks through self-cleaning bar screens and an aerated grit removal tank. The screening process would protect the advanced primary treatment process from large solid waste, and the grit chambers would remove approximately 25 percent of the suspended solids from river water.

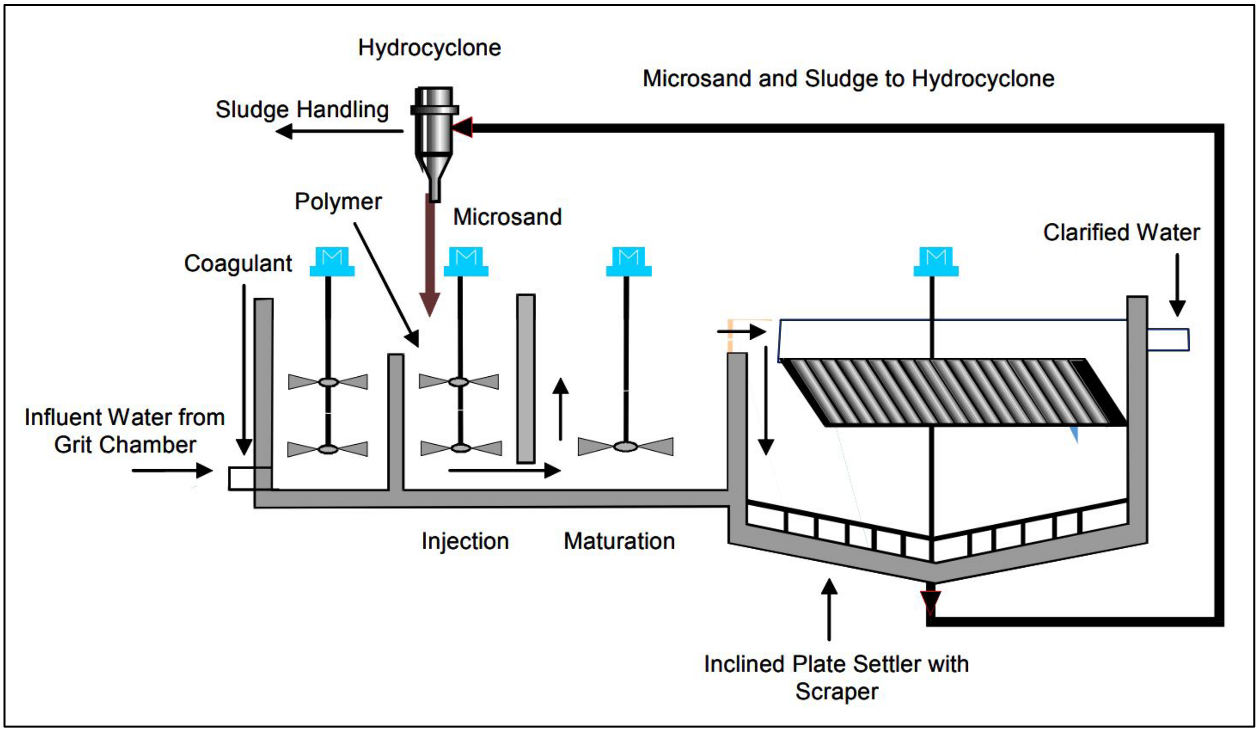
- **Primary treatment.** The APTP would include a ballasted flocculation treatment process. Ballasted flocculation is a physical chemical treatment process that uses recycled media, coagulants, and polymers to improve the settling properties of suspended solids. The ballasted flocculation process is estimated to achieve total suspended solids (TSS) and BOD_5[8] removals of 85 percent and 50 percent, respectively. Two ballasted flocculation treatment trains would be constructed, each with a 25-MGD design capacity. A flow schematic of the ballasted flocculation process is shown in Figure 2-9.

- **Discharge.** Treated effluent from the ballasted flocculation process would be conveyed through a new 300-foot pipeline located within the ITP parcel to tie into the existing ITP effluent structure and then discharged through the SBLO, which then discharges into the SBOO and then into the Pacific Ocean. Modifications to the wye diffuser array on the SBOO could be necessary to promote dispersal of the increased loadings (e.g., opening ports on existing capped risers and/or installing new diffuser heads and ports to existing closed, blind flanged risers).

- **Solids processing.** The APTP would include solids handling facilities to process the grit and sludge removed from the river water. The sludge handling process would include gravity thickening, sludge storage, and dewatering units. The sludge loading facilities would include conveyors and hoppers to load the sludge onto trucks to be hauled offsite for disposal.

- **Other improvements.** The new APTP would include facilities for offices, a control room, and restrooms to support operations. These facilities would potentially be co-located with similar proposed support facilities at the expanded ITP (Project A). The existing blower building at the ITP would be repurposed to house the controls for the APTP process. Electrical upgrades to the current system, including additional backup power, would support the pumps and equipment for the proposed APTP. The APTP site is enclosed by the existing ITP fence, but additional or upgraded lighting would potentially be required.

[8] BOD_5 is an indicator of the amount of organic pollution in wastewater.



Source: (EPA, 2003).

Figure 2-9. Ballasted Flocculation Process Flow Schematic

Site modifications for the proposed APTP would be necessary and would include grading and land disturbance for siting of the proposed APTP (shown in Figure 2-10) on the northern edge of the ITP property and for construction staging areas within the ITP parcel. The proposed APTP would be constructed in the north area of the ITP parcel, immediately north of the ITP secondary treatment units and south of West Tia Juana Street. Construction activities would also potentially involve temporary work (e.g., material/equipment staging and stormwater management) throughout the undeveloped 25-acre southwest quadrant of the ITP parcel.

In order to convey river water to the new APTP, the existing PB-CILA diversion in Mexico (which would operate when the instantaneous river flow rate is 35 MGD or less) would convey diverted river flows through an existing force main across the border to the APTP headworks. Project D would include the rehabilitation and extension of this existing force main from PB-CILA in Mexico to the new APTP in the U.S. PB-CILA currently conveys diverted river water to PB1-A through a 42-inch force main. This line would be rehabilitated and extended to direct flows from PB-CILA to the headworks of the new APTP, thus bypassing PB1-A and allowing it to be decommissioned. The section of the line proposed for rehabilitation runs from PB-CILA to Avenue M in Tijuana and is approximately 7,200 feet long. Rehabilitation of this section of existing pipe would involve installing mechanical joint restraints and applying corrosion protection. A new section of 42-inch HDPE force main, approximately 800 feet in total length, would be installed (using micro-tunneling) under the border from the PB1-A site in Mexico to a location west of Stewart's Drain on ITP property in the U.S. Finally, open-cut trenching in the U.S. would be used to construct an approximately 1,800-foot section of new 42-inch HDPE force main north to West Tia Juana Street and then to the headworks of the new APTP.

Rehabilitating and extending the existing force main line would involve temporary land disturbance during construction in both Tijuana and in the U.S. within the ITP parcel. In Tijuana, temporary pumps would re-route flow between PB-CILA and PB1-A while this portion of the force main is rehabilitated, and temporary fencing and lighting would be constructed to increase security and support operations. Micro-tunneling under the U.S.-Mexico border would require temporary pits at both ends, and open-cut trenching would involve land disturbance and additional lighting. A temporary shutdown of PB-CILA or bypass of the force main (e.g., by sending diverted river flows to the International Collector) would be necessary to allow for connection of the rehabilitated and new force main sections.

The proposed APTP would require regular and ongoing O&M activities to ensure operational reliability and efficiency. Approximately 30 additional staff members would be required to accommodate the anticipated increase in O&M needs. Long-term recurring operations would include hauling of solids produced by the treatment process to a local solid waste disposal site. The pumps and equipment supporting the APTP would also require regular and ongoing O&M activities such as rehabilitation and replacement at varying time intervals.

The estimated capital costs are $76.6 million for the 35-MGD APTP and $11.5 million for the force main rehabilitation and extension. Project D construction activities, including components in Mexico, are projected to take approximately two years to complete following mobilization but the specific schedule for starting and completing construction is not known at this time. Binational negotiations regarding O&M responsibilities and funding for Project D are ongoing.

Figure 2-10 and Figure 2-11 depict the anticipated general locations of project elements and construction activities for Project D. Figure 2-12 provides an example conceptual site plan of the individual facilities that would be constructed for Project D.

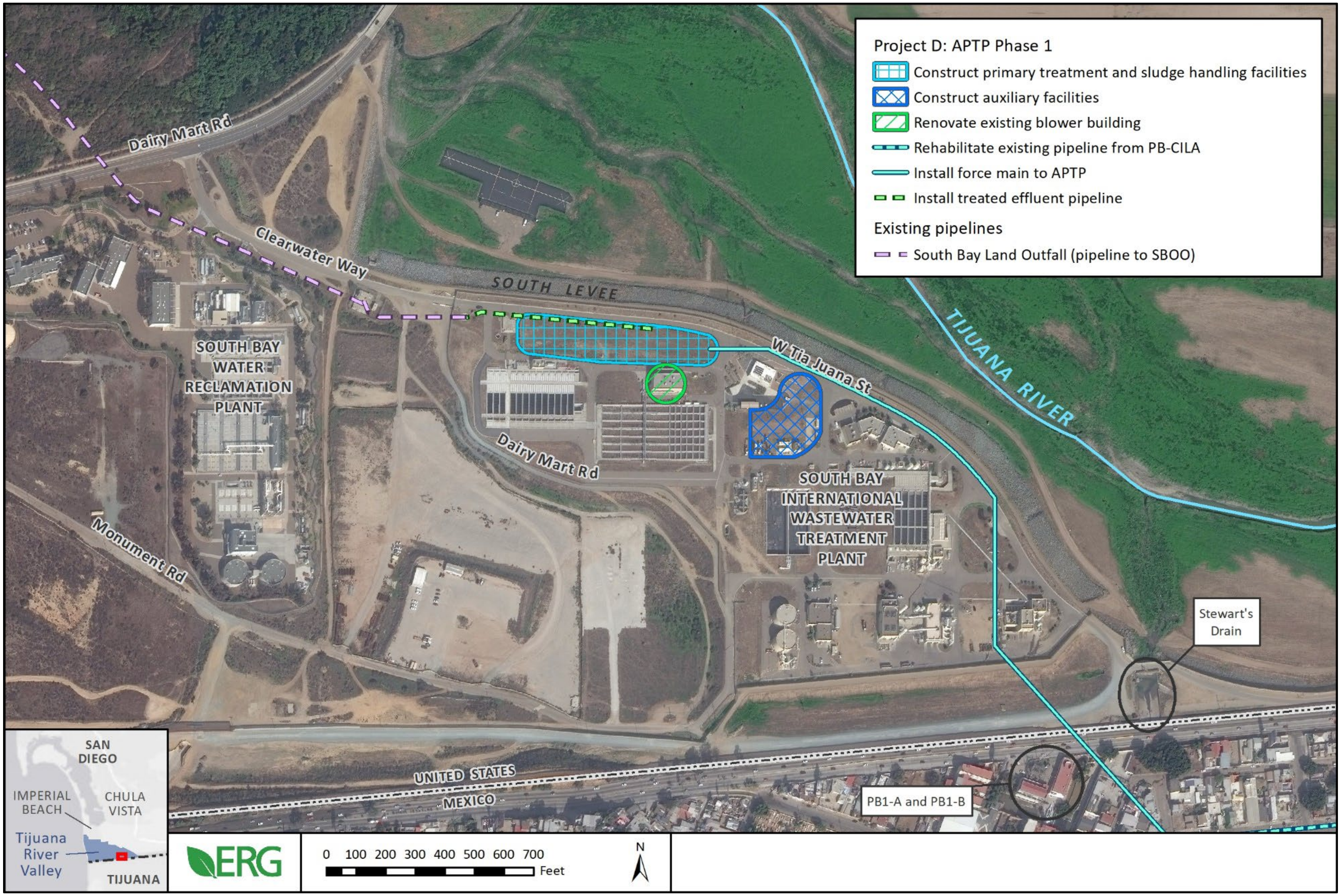


Figure 2-10. Project D (APTP Phase 1) – Locations of Project Components (1 of 2)

Figure 2-11. Project D (APTP Phase 1) – Locations of Project Components (2 of 2)

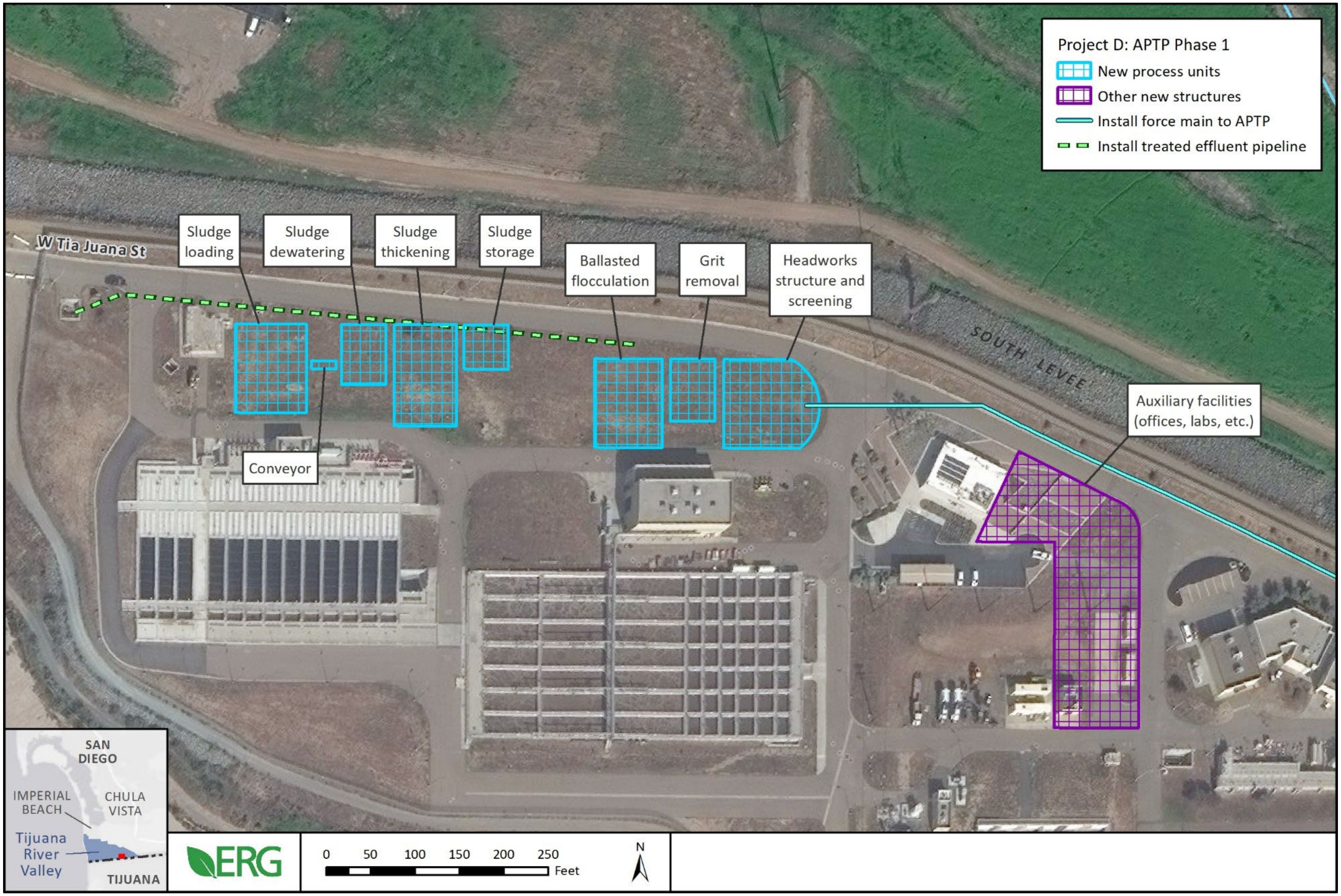


Figure 2-12. Project D (APTP Phase 1) – Conceptual Site Plan of Proposed Facilities

2.5 Alternative 2: Core and Supplemental Projects

For consideration in the environmental review, EPA and USIBWC have developed a comprehensive solution to address transboundary flows which consists of the four Core Projects described above and six Supplemental Projects that would also meet EPA's purpose and need for action. These 10 projects, in total, constitute Alternative 2 and the full scope of the Comprehensive Infrastructure Solution that EPA and USIBWC identified through the process described in Section 2.1 (Formulation of Alternatives).

As with Alternative 1, some components of Alternative 2 would take place in Mexico. As described in Section 2.2 (Proposed Action and Range of Alternatives Evaluated in This PEIS), binational negotiations are underway regarding the scope, funding, and implementation of projects in Mexico being contemplated as part of the USMCA Mitigation of Contaminated Transboundary Flows Project. EPA and USIBWC would move forward with funding and/or implementing projects in Mexico only if such projects have support and funding contributions from appropriate Mexican authorities.

2.5.1 Core Projects

Alternative 2 includes the four Core Projects (Projects A, B, C, and D) considered as part of Alternative 1 that are described in Section 2.4 (Alternative 1: Core Projects). Alternative 2 does not include any changes to the Core Projects.

2.5.2 Supplemental Projects

In addition to the Core Projects, Alternative 2 includes six Supplemental Projects (Projects E, F, G, H, I, and J) that are intended to provide a more comprehensive solution for reducing contaminated transboundary flows. The Supplemental Projects are still early in their planning phase and are not yet ready for detailed environmental review for the following reasons:

- Further studies and/or federal and binational coordination are needed to refine the scopes (including construction and long-term O&M) of the Supplemental Projects, which will allow for a meaningful review and consideration of each project's potential impacts.
- The need for certain components of the Supplemental Projects is still being assessed and may be dependent on the effectiveness of other recent and proposed upgrades.
- Complex and significant environmental impacts that could require intensive analyses, studies, and consultations could delay Core Projects that are further along in the planning process.

Therefore, these Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses. See Section 1.5 (Purpose and Scope of the Programmatic EIS).

The timing to begin and complete construction for Supplemental Projects is unknown at this time.

2.5.2.1 Project E: APTP Phase 2

Project E includes the expansion of the 35-MGD APTP (Phase 1; see Project D) to an average daily flow capacity of up to 60-MGD capacity (Phase 2). As described in Section 2.4.2 (Project D: APTP

Phase 1), Phase 1 would include the design and construction of concrete pads for both phases to ensure soil and foundation stability for the overall plant. These pads would be large enough to accommodate Phase 2 process units, and piping and stub-outs between the treatment units would be sized to accommodate the flow rates of a 60-MGD plant. Depending on operating conditions at the existing 35-MGD PB-CILA river diversion in Mexico, the expanded APTP would treat river water from PB-CILA (during dry-weather flows) and/or a new river diversion farther downstream in the U.S. (see Project F). The primary purpose of Phase 2 of the proposed APTP is to reduce downstream impacts in the Tijuana River and Estuary by providing additional capacity to treat contaminated river water.

Project E would include installing additional facilities and equipment (bar screens, grit removal, ballasted flocculation units, sludge storage units, screens, and belt filter presses) to expand the capacity of the treatment train illustrated in Figure 2-8 and Figure 2-9. New units would be installed between and immediately adjacent to units constructed under Phase 1 (see Figure 2-12). Treated effluent from the APTP would continue to be discharged through the SBLO/SBOO to the Pacific Ocean, though modifications to the wye diffuser array on the SBOO could be necessary to promote dispersal of the increased loadings (e.g., opening ports on existing capped risers and/or installing new diffuser heads and ports to existing closed, blind flanged risers). Some minor interior modifications to the APTP would potentially be required.

Concrete work, earthwork, and mobilization of construction equipment would be minimal, and the majority of construction activities would take place within the APTP facility and immediately adjacent areas.

The expanded APTP would require regular and ongoing O&M activities to ensure operational reliability and efficiency, similar to those required for Phase 1. However, the expanded APTP would produce more solids than Phase 1, resulting in greater long-term recurring truck hauling needs for disposal. Up to approximately 20 additional staff members would be required to accommodate the anticipated increase in O&M needs. Binational negotiations regarding O&M responsibilities and funding for Project E are ongoing.

Figure 2-13 depicts the anticipated general locations of project elements and construction activities for Project E.

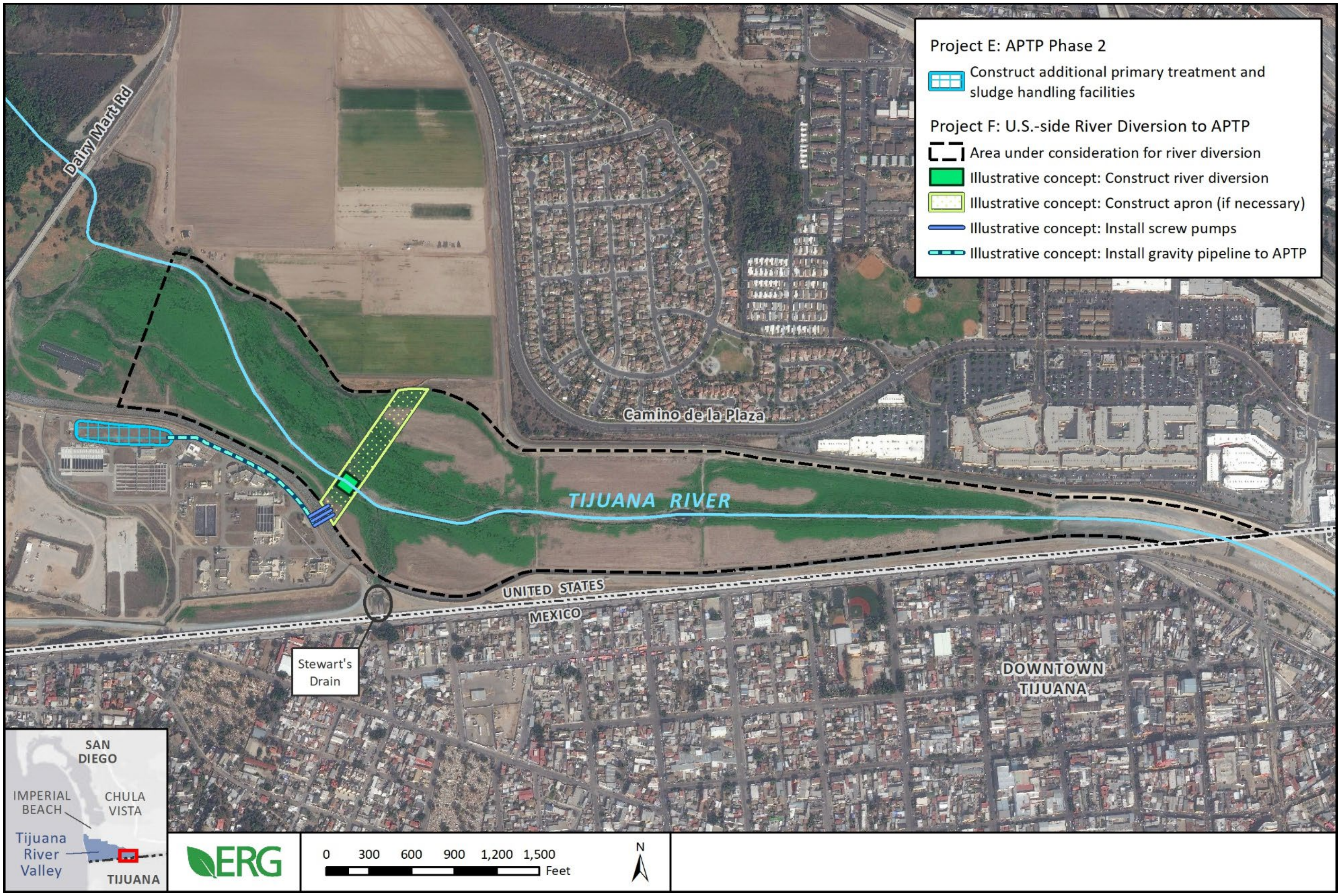


Figure 2-13. Projects E (APTP Phase 2) and F (U.S.-side River Diversion to APTP) – Conceptual Locations of Project Components

2.5.2.2 Project F: U.S.-side River Diversion to APTP

Project F includes construction of a U.S.-side diversion system in the Tijuana River to convey transboundary river flows[9] to the APTP for treatment. The primary purpose of Project F is to improve water quality in the Tijuana River Valley, the Tijuana River Estuary, and coastal communities in southern San Diego County by diverting transboundary river flows from the Tijuana River in the U.S. The capacity and operation of the river diversion, and thus the degree and extent of downstream water quality improvements, would depend on the capacity of the APTP that receives and treats the diverted flows. Specifically:

- If the U.S.-side river diversion is designed to divert 35 MGD to a 35-MGD APTP (Project D, i.e., Phase 1), the system would divert primarily dry-weather transboundary river flows (e.g., those that occur due to a PB-CILA diversion system shutdown in Mexico or a release via Stewart's Drain) and a portion of smaller wet-weather[10] transboundary river flows.

- If the U.S.-side river diversion is designed to divert 60 MGD to a 60-MGD APTP (Project E, i.e., Phase 2), the system would be capable of operating more frequently and diverting a larger portion of wet-weather transboundary river flows in addition to dry-weather flows.

The U.S.-side Tijuana River diversion would not operate during all wet-weather flow conditions to reduce the risk of system damage and avoid unnecessary O&M expenditures that do not result in significant environmental benefit. The 35-MGD diversion would shut off when the instantaneous flow rate exceeds approximately 60 MGD, and the 60-MGD diversion would shut off when the instantaneous flow rate exceeds approximately 120 MGD.[11,12]

While potential alternative locations for the diversion structure have not been identified, it would be located within the "area under consideration" that extends approximately 8,300 feet downstream of the U.S.-Mexico border as shown on Figure 2-13. Identifying an optimal location and design concept for the diversion structure requires additional engineering, hydrological, and environmental analyses and interagency consultation and coordination. The location and design should appropriately consider various performance and impact factors, which include but are not limited to the following:

- The ability to reliably intercept transboundary flows from a river channel whose position downstream of the energy dissipator is known to shift and bifurcate.

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[9] While Project F would not prevent river flows from entering the U.S., it would divert at least a portion of these river flows immediately downstream of the border for treatment and thus reduce contaminated flows affecting the Tijuana River Valley and downstream areas. Therefore, for purposes of this PEIS, diversion of these flows in the U.S. is considered to be a reduction in transboundary river flows.

[10] Wet weather is defined as 72 hours following a rainfall event of 0.1 inches or greater. See (PG Environmental, 2021g) for additional information.

[11] Implementing thresholds that are based on instantaneous flow rates (rather than average daily flow rates) would require real-time flow gauging.

[12] These thresholds were determined based on a feasibility-level engineering analysis of environmental benefits attained from continuing to operate at times of high flow. Actual operating procedures would be subject to refinement during both design and process optimization once the system is operational and may differ from the thresholds used in analyses supporting this PEIS.

- The potential benefits of placing the diversion structure downstream of Stewart's Drain (to capture additional transboundary flows) and the trash boom(s) proposed in Project J.
- The susceptibility of the river basin upstream of Dairy Mart Road to significant erosion and sedimentation during high-flow events.
- The potential for the diversion structure to affect the performance of existing flood protection structures.
- The potential for the diversion structure to interfere with CBP operations.
- The potential impacts to nearby residential areas.
- The potential environmental impacts from construction and operation.
- The projected capital and O&M costs.

The size of the diversion structure would likely depend on the location in future conceptual designs. For example, if necessary to prevent scouring around the diversion structure and ensure capture of bifurcated flows, the diversion structure would potentially incorporate a broad shotcrete apron that spans a substantial portion of the floodplain. This apron, if necessary, would cover an area of up to approximately 8 acres, depending on factors including the width of the river channel at the selected location. Diverted river flows would be conveyed to an intake channel that would be designed to promote separation of trash and sediment from the APTP influent, then through a combination of screw pumps and gravity pipelines to the APTP headworks.

Construction of the diversion system would require excavation, vegetation removal, grubbing, the use of temporary staging areas and access roads, and temporary damming and flow diversion of the river. The project would require connection to existing utilities, including electrical with backup generators for the pumps and communications.

The infrastructure proposed for Project F would be expected to require regular and ongoing O&M activities to ensure operational reliability and efficiency (e.g., rehabilitation and replacement of pump equipment, regular cleaning, and sediment removal from the intake structure). Up to approximately five additional staff members would be required to accommodate the anticipated increase in O&M needs. Binational negotiations regarding O&M responsibilities and funding for Project F are ongoing.

Figure 2-13 depicts the anticipated general locations of project elements and construction activities for Project F.

2.5.2.3 Project G: New SABTP

Project G includes the construction of a new 5-MGD conventional activated sludge plant at the existing SABTP site in Mexico for secondary treatment of untreated wastewater that is currently discharged to the Pacific Ocean via SAB Creek. The primary purpose of Project G is to improve the quality of wastewater discharged from SAB Creek and reduce the associated water quality impacts along the Pacific Ocean coastline near the international border. The proposed plant would be designed to produce a final effluent with BOD_5 and TSS less than 30 mg/L (monthly average).

The proposed new and expanded facilities and processes for Project G are described below.

- **Preliminary treatment.** Preliminary treatment would consist of mechanically cleaned coarse bar screens and vortex grit removal.

- **Primary treatment.** Primary treatment would consist of two rectangular primary settling tanks designed to remove approximately 50 percent of the influent BOD_5 loading and 30 percent of the influent TSS loading. Each primary tank would be approximately 20 feet wide, 120 feet long, and 15 feet deep.

- **Secondary treatment.** The new plant would include a step-feed activated sludge process consisting of two aeration tanks (reactors) and three rectangular secondary clarifiers. This process is estimated to achieve TSS and BOD_5 removals of 95 percent and would have the flexibility to adapt to different operating conditions. The step-feed process can be operated in three modes:

  - <u>Plug flow activated sludge</u>. If all influent is directed to the front of the aeration tanks, the process would operate in plug-flow activated sludge mode. This mode would provide the greatest BOD_5 removal efficiency if influent loadings are relatively consistent.

  - <u>Step-feed activated sludge</u>. If influent is distributed along the length of the reactor, it would operate in the step-feed mode. The main advantage of this mode is that it tends to even out the oxygen demand along the length of the reactor, enabling more efficient aeration.

  - <u>Contact stabilization activated sludge</u>. If high flows occur, all influent flows can be directed to the last of four quadrants in the reactor. This mode would prevent biomass washout when influent flow rates are high.

- **Disinfection and discharge.** Following secondary treatment, effluent would be disinfected (e.g., using ultraviolet light or chlorination) as the final step before discharge to the Pacific Ocean via SAB Creek.

- **Solids processing.** The new plant would also have onsite solids processing facilities, starting with a gravity thickening process. The thickened sludge would be stored in onsite sludge storage tanks before being pumped to belt filter presses in a dewatering building. The dewatered solids would be loaded into trucks for offsite disposal using a solids conveyor and loading bay.

- **Other improvements.** The project would require connections to utilities, including electricity with backup power and communications to support the pumps and equipment for the proposed treatment system. The existing lighting and fencing for security would be expanded around the proposed system.

Site modifications to accommodate construction of the new plant would include draining the existing lagoons and decommissioning the existing SABTP. Project G would also involve temporary land disturbance, including excavation and use of temporary staging areas, dredge pads, and access roads. Temporary pumping support and additional electrical supply would re-route wastewater during construction activities.

The proposed plant would require similar O&M activities to the ones described for Project D, including removal, processing, and disposal of sediment, sludge, and trash and occasional rehabilitation and replacement of the force main, pumps, and equipment at the plant. It is unknown how many staff the Mexican entities that would operate the new plant would require to accommodate the anticipated increase in O&M needs. Binational negotiations regarding O&M responsibilities and funding for Project G are ongoing.

Figure 2-14 depicts the anticipated general locations of project elements and construction activities for Project G.

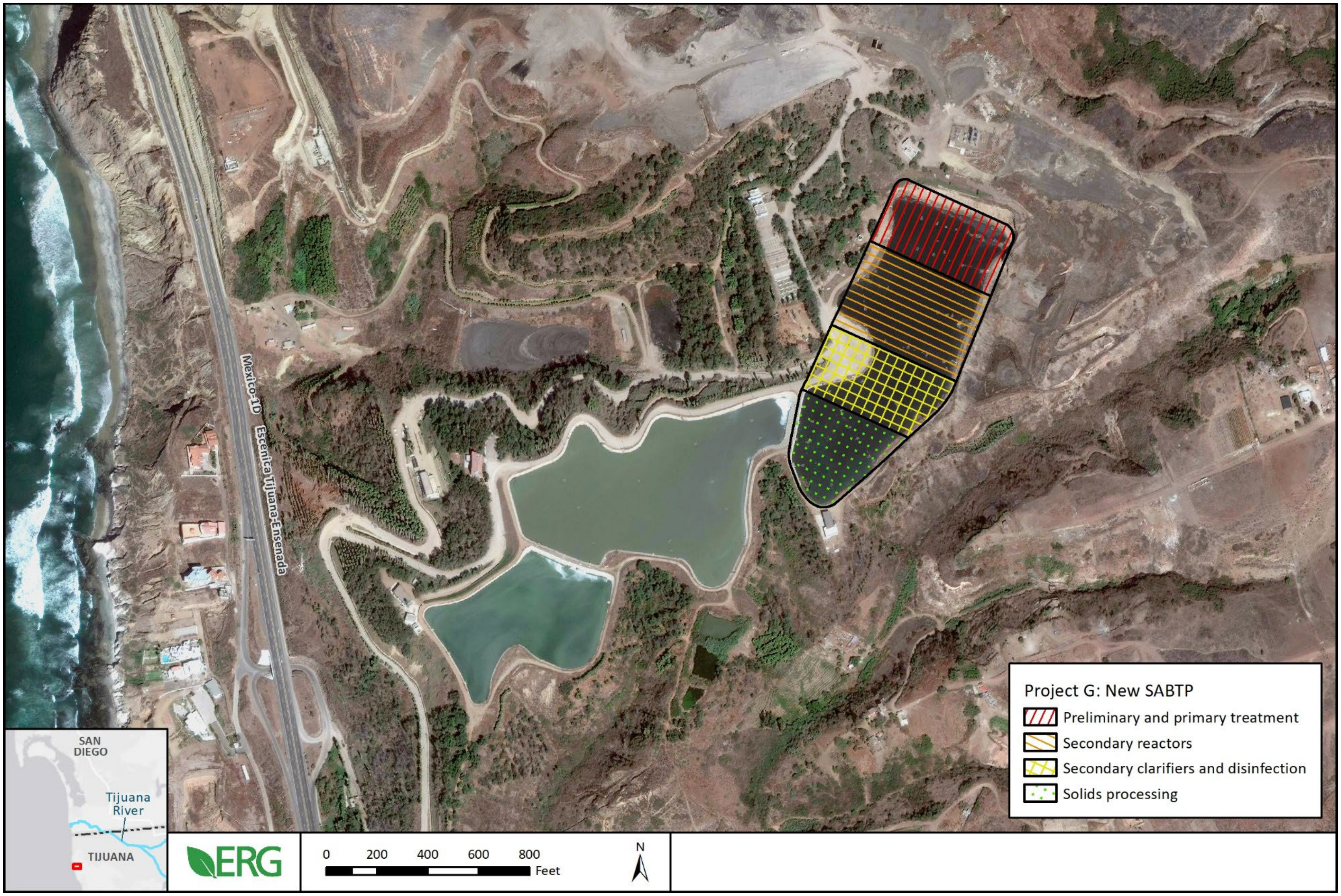

Figure 2-14. Project G (New SABTP) – Conceptual Locations of Project Components

2.5.2.4 Project H: Tijuana WWTP Treated Effluent Reuse

Project H includes installation of conveyance pipelines to route between 10.3 and 16.2 MGD of treated effluent from the Arturo Herrera and La Morita WWTPs (which currently discharge to the Tijuana River) in Mexico to the Rodriguez Dam impoundment. The primary purpose of Project H is to improve water quality in the Tijuana River Valley and Estuary by reducing the frequency of dry-weather transboundary flows caused by river flow rates that exceed the PB-CILA diversion capacity. Project H would effectively increase the available pumping and treatment capacity of the existing system by reducing the amount of treated effluent in the Tijuana River, thus reducing overall river flow volumes and enabling the downstream system to divert and treat a higher proportion of the remaining flow.

Treated effluent would be conveyed either directly to the Rodriguez Dam impoundment or to a location upstream of the impoundment. To route treated effluent directly to the impoundment, Project H would include the following (details would change if the effluent were instead to be conveyed upstream of the impoundment):

- Installation of a new pipeline from the Arturo Herrera WWTP to the Rodriguez Dam impoundment (approximately 5,900 feet of new force main) and a new 10.5-MGD pump station.
- Either of the following approaches for treated effluent from the La Morita WWTP:
  - Installation of an entirely new pipeline from the La Morita WWTP to the Rodriguez Dam impoundment (approximately 16,500 feet of new force main) and a new 5.8-MGD pump station.
  - Installation of a new pipeline from the La Morita WWTP (approximately 1,500 feet of new force main) to connect to an existing, unutilized 15,000-foot pipeline to the Rodriguez Dam impoundment, and a new 5.8-MGD pump station.

Further studies are needed to better define the scope of Project H, and EPA and USIBWC are engaged in binational discussions related to the specifics and limitations of this project. There are currently several unknowns about the scope, such as the conditions and need for structural analysis of the Rodriguez Dam impoundment, infiltration rates upstream of the impoundment, and opportunities for beneficial reuse of the effluent. The optimum location of the discharge (i.e., directly into the impoundment or somewhere upstream of it) would be analyzed in subsequent tiered NEPA analysis.

Installation of new pipelines and construction of the new pump stations would involve temporary land disturbance, including earth disturbance during trenching and construction activities. The sediment removed during pipeline installation would be backfilled, requiring temporary erosion control and staging areas around the active construction site. Most of the project construction area would be accessed using existing roadways, but new temporary, minor access roads would likely be required in some areas. Other improvements would include ancillary utilities such as electrical connections to provide power to the pump stations, backup generators, as well as fencing and lighting.

Project H is expected to require up to approximately two additional staff to support O&M of the proposed pipelines and pump stations. However, since Project H would involve separating the WWTP effluent from the Tijuana River, pumping and treatment requirements downstream as well as O&M requirements would be reduced in the Tijuana River diversion system (i.e., PB-CILA, PB1-A, PB1-B, and either the SABTP or the ITP). Binational negotiations regarding O&M responsibilities and funding for Project H are ongoing.

Figure 2-15 depicts the anticipated general locations of project elements and construction activities for Project H. This figure depicts conveyance of treated effluent directly into the impoundment. The proposed pipelines would follow a different path if the project would instead convey effluent to a location upstream of the impoundment.

Figure 2-15. Project H (Tijuana WWTP Treated Effluent Reuse) – Conceptual Locations of Project Components

2.5.2.5 Project I: ITP Treated Effluent Reuse

The purpose of Project I is to convey treated effluent from the ITP to Mexico for potential beneficial reuse.[13] This project involves constructing a new pump station in the northwest corner of the ITP parcel and a 42-inch diameter, 3,700-foot force main from the pump station to PB1-B in Mexico. The pump station would be designed to pump no greater than an average daily flow rate of 40 MGD, due to PB1-B's capacity limitations. Therefore, daily ITP effluent flow rates above 40 MGD would continue to be discharged to the Pacific Ocean via the SBOO.

The Project I feasibility analysis was limited to conveying the ITP's effluent to PB1-B. For the ITP effluent to be beneficially reused in Mexico, additional treatment and conveyance facilities may be necessary, depending on how and where the water will be reused. Further research and coordination are necessary to identify the specific beneficial reuse opportunities in Mexico that this project would enable, and to define the infrastructure upgrades in Mexico that are necessary to convey treated effluent to the appropriate destination. Examples of necessary upgrades in Mexico could include cleaning and rehabilitating pipelines (e.g., the parallel conveyance pipelines that currently convey flows from PB1-A and PB1-B to the SABTP and SAB Creek), rehabilitating the PB1-B pump station, and constructing new pipelines.

The force main would be installed via open-cut trenching in the U.S. and micro-tunneling under the U.S.-Mexico border. The force main would be fitted with intermediate pressure release valves to prevent pipe collapse and to enable preventative maintenance.

Binational negotiations regarding O&M responsibilities and funding for Project I are ongoing.

Figure 2-16 depicts the anticipated general locations of project elements and construction activities for Project I.

[13] Conveying treated effluent to Mexico for reuse, rather than keeping the effluent in the U.S. for reuse, is in accordance with the terms of Treaty Minute 283, which states that "both Governments reserve the right to return for reuse in their respective territories part or all of the [ITP] effluent corresponding to each country's sewage inflows."

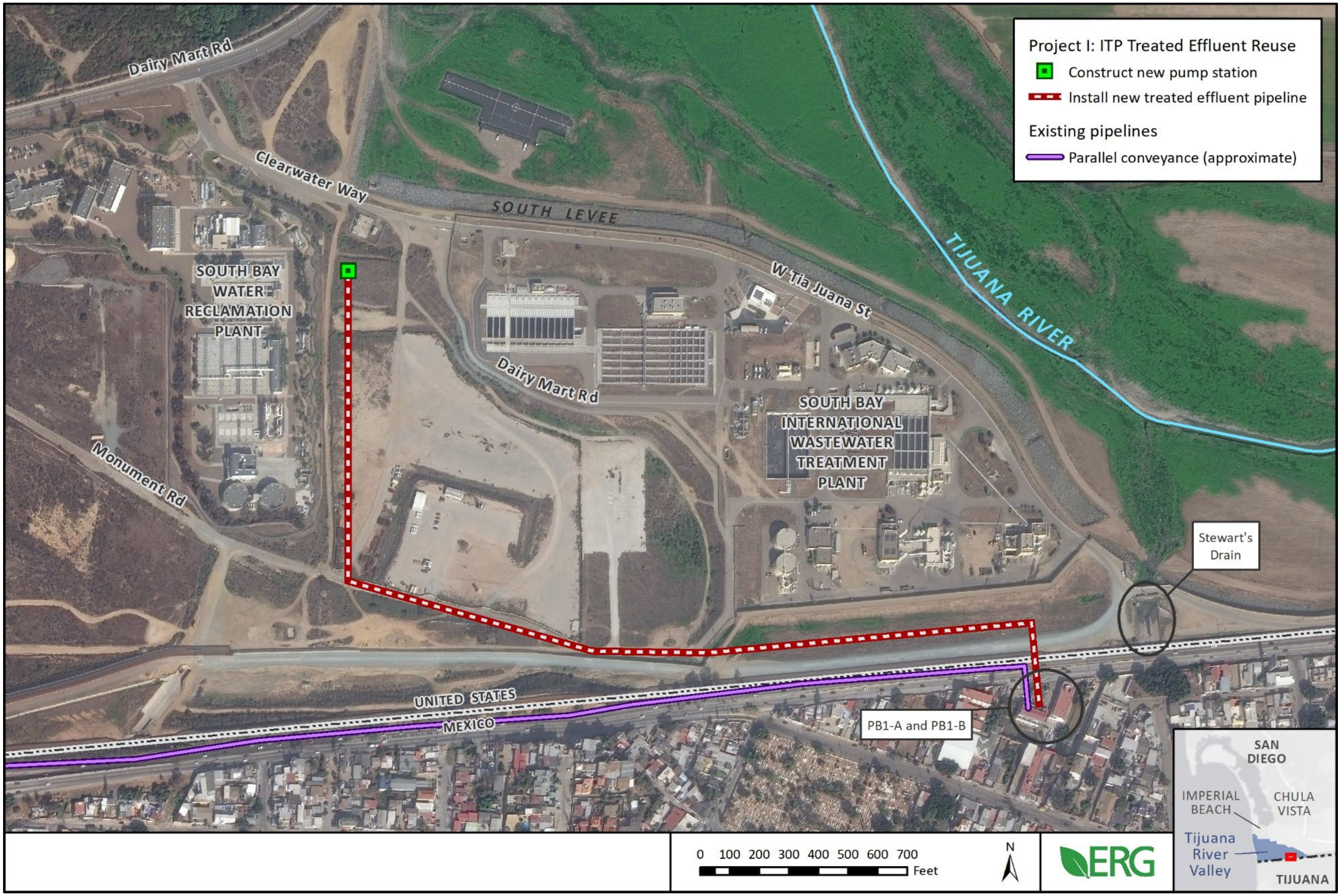

Figure 2-16. Project I (ITP Treated Effluent Reuse) – Conceptual Locations of Project Components

2.5.2.6 Project J: Trash Boom(s)

Project J includes the installation of one or more trash booms in the Tijuana River channel in the U.S., similar to those currently installed in Smuggler's Gulch and Goat Canyon, to capture trash and allow for its removal from the river. The purpose of the project is to reduce downstream trash-related impacts in the Tijuana River Valley and Estuary, particularly due to wet-weather transport of trash to downstream areas. The trash boom(s) would be installed in the river main channel between the U.S.-Mexico border and Dairy Mart Road and would be designed to float on the surface and capture floatable trash, such as plastics. Based on the performance of the boom in Goat Canyon, a trash boom in the river would be expected to capture approximately 75 percent of trash loads in transboundary river flows, with potentially higher capture efficiency if multiple booms are used in series.

The trash boom(s) would be located within the area shown in Figure 2-17, between approximately 3,200 and 8,300 feet downstream of the U.S.-Mexico border. The trash booms would likely be constructed downstream of the energy dissipation section of the channelized river (due to expected greater effectiveness in slower-flowing waters) and upstream of the river diversion system proposed in Project F (to reduce trash interference with the river intake). Depending on the location, a trash boom would cross a span of between approximately 700 and 870 feet. Potential trash processing area(s), if necessary, would be located either in the narrow parcel south of the south levee (and between the primary and secondary border fences) or in a narrow parcel outside the floodplain along the south boundary of the USIBWC-owned sod farm. Access to the processing area would be provided via existing access ramps and gates in the secondary border fence; depending on the location of the trash boom, new access ramps and gates may need to be built instead. Dump trucks would likely use existing paved and dirt roads to access the processing area and haul away trash for disposal.

Construction activities would require limited vegetation removal, grubbing, and grading in the main channel to promote contact between the trash boom and the river surface. Construction would also require localized excavation to construct the concrete footings that secure the ends of the trash boom.

Once the trash boom is constructed, it would require occasional maintenance to extract the captured trash (using equipment such as a bulldozer or front-end loader). Trash would accumulate upstream of the trash boom until conditions allow extraction to occur. The timing and frequency of trash extraction would depend on factors including site conditions, current and forecasted flow conditions, and equipment availability, but ideally extraction would take place shortly after wet-weather events that result in substantial trash capture. Extracted trash would potentially require temporary staging in a processing area until being loaded onto dump trucks and hauled to a local solid waste disposal site. The timing and frequency of trash hauling would depend on factors including availability of trucks and hauling crews, but ideally hauling would take place as soon as possible after trash is extracted from the river.

Binational negotiations regarding O&M responsibilities and funding for Project J are ongoing. EPA and USIBWC are exploring options for additional studies (e.g., trash boom pilot study) that would help to refine the scope, effectiveness estimates, and understanding of the operational impacts of this project.

Figure 2-17 depicts the anticipated general locations of project elements and construction activities for Project J.

Figure 2-17. Project J (Trash Boom(s)) – Conceptual Locations of Project Components

2.6 Identification of Preferred Alternative and Environmentally Preferable Alternative

EPA and USIBWC intend to identify their *preferred alternative* in the Final PEIS. No preferred alternative has been selected in this Draft PEIS. The preferred alternative, once identified, would fulfill the mission and responsibilities of both EPA and USIBWC in consideration of a variety of factors (e.g., economic, environmental, and technical). When issuing the ROD, EPA and USIBWC will also identify the *environmentally preferred alternative*, which may or may not be the same as the preferred alternative (40 CFR § 1505.2).

It is anticipated that the Proposed Action would be subject to review pursuant to the California Environmental Quality Act (CEQA), which requires the identification of the *environmentally superior alternative*. EPA and USIBWC would expect the environmentally preferred alternative to also be the environmentally superior alternative.

2.7 Alternatives Eliminated from Evaluation in This PEIS

2.7.1 Projects and Sub-projects from EPA's Initial Set of 10 Projects

As discussed in Section 2.1 (Formulation of Alternatives), EPA began with an initial set of 10 projects—identified as Projects 1 through 10 in Section 2.1.1 (Identification of Projects to Undergo Feasibility Analysis)—that were evaluated for technical, economic, and environmental feasibility. EPA then defined a set of alternatives, each consisting of an assemblage of projects and their individual components and sub-projects, and applied the Augmented Alternatives Analysis scoring process to eliminate alternatives based on consideration of their scores, estimated costs and benefits, and cost constraint assumptions (PG Environmental, 2021f).

As a result of this process, several individual projects or sub-projects from the initial set of 10 projects were not among the projects constituting the highest-scoring alternative, the Comprehensive Infrastructure Solution (Alternative I-2). See Section 2.1.3 (Alternatives Analysis), the Water Infrastructure Alternatives Analysis report (PG Environmental, 2021f), and EPA's website[14] for additional information. These projects and sub-projects were therefore eliminated from detailed study in this PEIS and are not represented in any of the evaluated alternatives. Additionally, based on further deliberation during the scoping phase of this PEIS, one sub-project in the Comprehensive Infrastructure Solution (Project 4, sub-project 2) was eliminated from detailed study in this PEIS. Each eliminated project and sub-project, and the reasons for elimination, are briefly summarized below:

- Project 1 (New Tijuana River Diversion System in the U.S. and Treatment in the U.S.):
  - Sub-project 1 (Tijuana River diversion system) and sub-project 3 (new APTP)—specifically, the 100-MGD and 163-MGD capacity options—were determined to be technically feasible but were eliminated from detailed study because of high expected O&M costs and limited benefits over the 35-MGD and 60-MGD sized diversions and treatment plants (PG Environmental, 2021a).

[14] See https://www.epa.gov/sustainable-water-infrastructure/tijuana-river-watershed-technical-evaluation-infrastructure.

  - Sub-project 2 (82-MG off-channel storage basin) was eliminated from detailed study because EPA determined it to be technically feasible but not practical, and various implementation and regulatory issues would delay, complicate, and potentially prevent its implementation (PG Environmental, 2021a). Stakeholder opposition and comments received during the public scoping period also contributed to the decision to eliminate this sub-project from detailed study.

- Project 3 (Treat Wastewater from the International Collector at the ITP), sub-project 3 (replace International Collector with a new pipeline in the U.S.) was eliminated from detailed study because CESPT is moving forward with a separate BWIP-funded effort to install a new redundant International Collector pipeline in Mexico to reduce the risk of line failures; see Section 2.8 (Related Projects). Rehabilitation of the existing International Collector pipeline in Mexico is part of the Proposed Action under Project C (Tijuana Sewer Repairs).

- Project 4 (Shift Wastewater Treatment of Canyon Flows to U.S. [via Expanded ITP or SBWRP] to Reduce Flows to the SABTP), sub-project 2 (upgrading the canyon flow diversion structures in Smuggler's Gulch and Goat Canyon) was eliminated from detailed study because, based on further coordination with USIBWC and CBP, EPA determined that the scope defined in the feasibility memorandum would result in operational impacts to the diversion and treatment processes. Specifically, modifying the diversion structure to prevent pooling of wastewater would reduce the settling of pollutants out of the pooled wastewater and potentially result in damage to the piping and pumping system. EPA is continuing to work with USIBWC and CBP to identify viable solutions, to be funded and implemented through a separate effort, to reduce CBP safety risks in these areas.

- Project 5 (Enhance Mexico Wastewater Collection System to Reduce Flows into the Tijuana River), sub-projects 2 through 6 involved extending wastewater collection facilities into developed but unsewered areas; rehabilitating or replacing existing local pump stations; rehabilitating or replacing the existing local sanitary sewer system; expanding the Tijuana sanitary sewer system to account for future growth; and renovating and expanding treatment capacity in Tijuana to treat the wastewater captured by the sanitary system to accepted pollutant removal standards. These sub-projects were eliminated from detailed study because, while they are technically feasible, implementation would collectively take decades to implement and would likely cost several billion dollars. Therefore, extending, rehabilitating, and upgrading the system is not feasible within the scope or current level of funding provided by the USMCA, although these upgrades should occur as part of the long-term infrastructure renewal plan for the City of Tijuana (PG Environmental, 2021j).

- Project 6 (Construct New Infrastructure to Address Trash and Sediment):

  - Sub-project 1 (restoration of the Tijuana River main channel to its original 1977 design configuration) was eliminated from detailed study because, while technically feasible to construct, the sediment disposal requirements may adversely impact the sub-project's overall feasibility. Specifically, annual cleaning of the channel would involve very high annual O&M costs and 40-year life cycle costs. Removing sediment from the restored channel would require a very high volume of truck traffic and thus present the logistical challenge of identifying a partner that could truck such a large volume of material (PG Environmental, 2021d).

- Sub-project 2 (U.S.-side sediment basin in Smuggler's Gulch immediately north of the border) was eliminated from detailed study because the County of San Diego is moving forward under a California Coastal Conservancy grant to fund design and construction of this project, including a trash boom, on an accelerated schedule; see Section 2.8 (Related Projects).
- Sub-project 3 (Mexico-side, in-channel sediment basin in Smuggler's Gulch immediately south of the border) was eliminated from detailed study because this project would be redundant with a recently constructed basin in Mexico, located upstream of the proposed location of this sub-project, that is likely to be effective at reducing sediment loads in flows through the canyon (PG Environmental, 2021d).
- Sub-project 4 (U.S.-side pilot channel in Yogurt Canyon and north of Monument Road) was eliminated from detailed study because EPA determined that the pilot channel would be ineffective at preventing flooding along Monument Road and, based on discussions with California State Parks, constructing the full pilot channel is unlikely to receive regulatory approval (PG Environmental, 2021d).
- Sub-project 5 (U.S.-side sub-project to raise Monument Road downstream of Yogurt Canyon) was eliminated from detailed study because EPA determined that California State Parks is considering implementing a similar project under a separate effort (PG Environmental, 2021d).

- Project 7 (Divert or Reuse Treated Wastewater from Existing Wastewater Treatment Plants in Mexico to Reduce Flows into the Tijuana River), sub-project 2 (piping of La Morita and Arturo Herrera WWTP treated effluent directly to the SBOO) was eliminated from detailed study due to its higher capital cost, potential challenges with U.S.-side permitting requirements, and uncertainty regarding treated effluent quality (PG Environmental, 2021k). Additionally, this sub-project would not provide potential for reuse of the treated effluent.
- Project 8 (Upgrade the SABTP to Reduce Untreated Wastewater to Coast) construction of a new 10-MGD or 40-MGD plant at the existing SABTP site was eliminated from detailed study because EPA determined that a 5-MGD conventional activated sludge plant would be sufficient to provide the level of treatment needed to treat flows from coastal communities in Mexico through the year 2050 (PG Environmental, 2021f). This assumes that wastewater flows from the International Collector, Los Laureles Canyon, and Matadero Canyon would be conveyed to the U.S. for treatment rather than to this new plant at the SABTP site.
- Project 9 (Treat Wastewater from the International Collector at the SBWRP) was eliminated from detailed study because the City of San Diego determined that it was not economically feasible to sell the plant due to of the cost of modifying infrastructure to reroute wastewater to the Point Loma WWTP for treatment (PG Environmental, 2021f).
- Project 10 (Sediment and Trash Source Control) included source control best management practices (BMPs) in Mexico—specifically, road paving; trash and tire collection, processing, and disposal; public education, outreach, and participation programs; land stabilization; and "green infrastructure" to reduce erosion and sedimentation. After further consideration, this project was eliminated from detailed study because funding and implementation of these types of source control practices may not be consistent with EPA's

authority to implement "high priority treatment works"[15] pursuant to the USMCA Implementation Act and "municipal drinking water and wastewater infrastructure project[s]" under BWIP. These types of source control projects have been, and may continue to be, funded under other EPA programs such as Border 2025.

2.7.2 Alternatives Other Than the Comprehensive Infrastructure Solution

As discussed in Section 2.1.3 (Alternatives Analysis) and the Water Infrastructure Alternatives Analysis report (PG Environmental, 2021f), EPA defined an initial set of 39 alternatives, with each alternative consisting of an assemblage of projects and their individual components and sub-projects. EPA eliminated alternatives that scored poorly based on evaluation of four environmental performance metrics (BOD_5 load reduction to the Tijuana River, BOD_5 load reduction to SAB Creek, sediment load reduction in the Tijuana River, and reduction of days with transboundary flows in the Tijuana River) and eliminated alternatives with redundant projects or incompatible elements (e.g., exceedance of the SBOO discharge capacity). Finally, EPA applied the Augmented Alternatives Analysis scoring process and eliminated alternatives based on consideration of their scores, estimated costs and benefits, and cost constraint assumptions, as documented in the Water Infrastructure Alternatives Analysis report (PG Environmental, 2021f).[16]

As a result of this process, EPA identified a highest-scoring alternative—the Comprehensive Infrastructure Solution (Alternative I-2)—and used the individual projects and sub-projects constituting the Comprehensive Infrastructure Solution to form the basis for the alternatives evaluated in this PEIS. All other alternatives defined during this process (i.e., all other combinations of individual projects and sub-projects) were therefore eliminated from detailed study in this PEIS, even if they do not include any of the individual eliminated projects and sub-projects identified in Section 2.7.1 (Projects and Sub-projects from EPA's Initial Set of 10 Projects). See the Water Infrastructure Alternatives Analysis report (PG Environmental, 2021f) for documentation of the alternatives development and scoring process.

2.7.3 Other Projects Identified Based on Public Scoping Comments

During the NEPA public scoping period for this PEIS, EPA and USIBWC received scoping comments from public citizens, federal and tribal representatives, non-governmental organizations, and a variety of other stakeholders. Some of these comments suggested projects to be considered as part of the range of alternatives evaluated in the PEIS. As summarized below, EPA and USIBWC considered all submitted projects but eliminated each from detailed study in the PEIS.

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[15] Section 821 of the USMCA Implementation Act gives authority and direction to the EPA Administrator to "carry out the planning, design, construction, and operation and maintenance of high priority treatment works in the covered area to treat wastewater (including stormwater), nonpoint sources of pollution, and related matters resulting from international transboundary water flows originating in Mexico."

[16] For example: Alternative G was one of the initial set of 39 alternatives identified by EPA. This alternative consisted of a 35-MGD APTP; expansion of the ITP to 60 MGD; and reuse of treated effluent from the Arturo Herrera and La Morita WWTPs. This specific combination of projects and sub-projects was eliminated following Round 1 of the Augmented Alternatives Analysis scoring process due to its relatively low score of 204 points as compared to 287 points for the highest-scoring alternative in Round 1 (Alternative I).

EPA and USIBWC determined that the following projects suggested by commenters during the PEIS scoping period are reasonable but decided to eliminate them from further study for the reasons stated below, in accordance with 40 CFR § 1502.14(a):

- EPA and USIBWC considered incorporating projects that would implement the reuse of ITP- and/or APTP-treated effluent in the U.S. (e.g., for aquifer replenishment or reintroduction into the riparian environment), in addition to the two projects (Supplemental Projects H and I) that would promote reuse of treated effluent in Mexico. EPA and USIBWC considered this as a reasonable alternative within the context of binational negotiations. However, reuse of ITP-treated effluent in the U.S. was eliminated from detailed study because, per Treaty Minute 283, Mexico reserves the right to return for reuse part or all of treated effluent from the ITP. Reuse of APTP-treated effluent in the U.S. was eliminated from detailed study because, at this time, EPA and USIBWC are not aware of suitable reuse opportunities for advanced primary treated effluent. However, the Proposed Action would not prevent the future implementation of water reuse projects for APTP-treated effluent, should a suitable reuse opportunity be identified in the future.

- EPA and USIBWC considered incorporating secondary treatment of diverted Tijuana River water, in addition to advanced primary treatment that is part of the Proposed Action under Projects D and E. Based on a preliminary capital cost estimate, incorporation of secondary treatment would cost an additional $375 million (35-MGD capacity) to $600 million (60-MGD capacity). EPA and USIBWC also considered incorporating tertiary treatment (with disinfection) of wastewater from Mexico, in addition to secondary treatment that is part of the Proposed Action under Project A. Based on a preliminary capital cost estimate, incorporation of tertiary treatment would cost an additional $800 million (50-MGD capacity). EPA and USIBWC therefore eliminated both approaches from detailed study due to prohibitive costs that would prevent USMCA and BWIP funds from being used for a larger range of reasonable alternatives that successfully reduce contaminated transboundary flows. These excessive costs would therefore hinder the ability to fully address the purpose and need for action. However, the Proposed Action would not prevent the eventual expansion of the APTP or ITP to include secondary or tertiary treatment (respectively), should sufficient funding and suitable reuse opportunities be identified in the future.

- EPA and USIBWC considered whether maintenance and operation of the PB-CILA river diversion could be shifted to the responsibility of the U.S. with the goal of improving operational reliability during dry-weather conditions. This was eliminated from detailed study because it would represent a significant shift in binational responsibilities under Treaty Minute No. 283 to prevent transboundary flows. However, as part of binational negotiations for the USMCA Mitigation of Contaminated Transboundary Flows Project, EPA and USIBWC are exploring other options to increase U.S. financial support for O&M activities in Mexico and thus improve the reliability of the river diversion system.

- EPA and USIBWC considered incorporating a project to install a trash boom in the Tijuana River in Mexico (i.e., upstream of the border) to intercept trash in wet-weather flows before it enters the U.S. This was eliminated from detailed study due to concerns about ensuring reliable O&M, limited effectiveness due to high flow rates in the concrete-lined channel, and security of this infrastructure (e.g., risk of vandalism or theft).

EPA and USIBWC determined that the following projects suggested by commenters are potentially technically and/or economically feasible but do not meet the purpose and need for action, may not be consistent with EPA's authority to implement "high priority treatment works" pursuant to the USMCA Implementation Act and "municipal drinking water and wastewater infrastructure project[s]" under BWIP, and/or involve broad, system-wide interventions that would take decades to implement and thus would not provide a timely solution for addressing contaminated transboundary flows. Therefore, these projects were not considered to be reasonable alternatives per 40 CFR § 1508.1(z) (2022) and were eliminated from detailed study. However, this assessment is based on limited information about the suggested projects and did not involve a detailed feasibility assessment.

- Separation of the stormwater and sewage systems in Tijuana.
- Utilization of a treatment plant in Mexico for reclamation and reuse of untreated wastewater and/or treated effluent.
- Installation of micro-treatment systems in Tijuana.
- Promotion of home (domestic) water reuse in Tijuana.
- Establishment of a recycling program in Tijuana to prevent solvents, detergents, and chemicals from entering the waste stream.
- Remediation and restoration of the Tijuana River Valley to its historical environmental conditions.
- Extension of the SBOO to deeper offshore waters.

EPA and USIBWC determined that the following projects suggested by commenters are not technically and/or economically feasible, do not meet the purpose and need for action, and may not be consistent with EPA's authority to implement "high priority treatment works" under the USMCA Implementation Act and "municipal drinking water and wastewater infrastructure project[s]" under BWIP. Therefore, these projects were not considered to be reasonable alternatives per 40 CFR § 1508.1(z) (2022) and were eliminated from detailed study. However, this assessment is based on very limited information about the suggested projects and did not involve a detailed feasibility assessment:

- Introduction of a continuous flow of water into the upper Alamar River in Mexico to allow stagnant pools of untreated wastewater to be conveyed downstream to the PB-CILA river diversion.
- Installation of 1,000-foot-long rock jetties at the U.S.-Mexico border to redirect contaminated longshore currents away from the U.S. shoreline.

2.8 Related Projects

The issues surrounding transboundary flows in the San Diego–Tijuana region, especially those related to untreated wastewater, trash, and sediment in the Tijuana River Valley, have the attention of various agencies and stakeholders in addition to EPA. Other international, federal, state, and local entities have proposed or recently implemented projects to improve the management of transboundary flows.

In 2009, various Tijuana River Valley agencies and interested parties convened to form the Tijuana River Valley Recovery Team. The team developed the *Tijuana River Valley Recovery Team Recovery Strategy: Living with the Water*, which identified 27 actions to clean up and restore the valley (Tijuana River Valley Recovery Team, 2012). Following the recovery strategy, the team developed a five-year action plan in 2015 containing 10 projects to move forward into implementation (Tijuana River Valley Recovery Team, 2015). Some of the projects in the five-year action plan have been implemented or are currently in progress and are considered here or in Section 4.21.5 (Cumulative Effects) as appropriate (i.e., reclamation of the Nelson Sloan Quarry, targeted sediment and trash removal projects, source reduction of sediment and trash).

Table 2-4 summarizes the projects in the area that are related to the Proposed Action in either purpose or need and provides information on their current implementation status. These projects and others are also discussed in Section 4.21.5 (Cumulative Effects).

Table 2-4. Related Projects to Mitigate Contaminated Transboundary Flows in the Tijuana Area

Project	Proponent	Description	Status
1. Smuggler's Gulch trash booms	County of San Diego	Installed trash booms across the drainage swale in Smuggler's Gulch, downstream of the existing collector structure.	Completed
2. Trash fence in Matadero Canyon	CESPT	Installed a trash wall/fence in Matadero Canyon roughly 2,000 feet south of the border to screen trash before it crosses the border into the U.S.	Completed
3. Rehabilitation of Collector Poniente Segment 1A	CESPT	Installed 1,928 meters of pipelines and rehabilitated the Cañon del Sainz–Los Reyes connection in Tijuana to reduce the risk of line failures and untreated wastewater discharges to the Tijuana River.	Completed
4. Sediment excavation in Smuggler's Gulch and the Tijuana River	City of San Diego	Dredging and excavation of sediment from the Smuggler's Gulch channel, downstream from Smuggler's Gulch to the pilot channel, and in portions of the Tijuana River.	Ongoing
5. Trash boom in Los Laureles Canyon	Wildcoast and City of Tijuana	Installed a trash boom in Los Laureles Canyon approximately 1.2 miles south of the border.	Completed
6. Rehabilitation of the Collector Oriente	CESPT	Rehabilitated the Buena Vista section of the Collector Oriente sewer main and installed 1,346 meters of pipelines in Tijuana to reduce the risk of line failures and untreated wastewater discharges that could affect the Tijuana River.	Completed
7. Repair ITP junction box 1 (JB-1)	USIBWC	Repair JB-1 to restore gates and flow control for influent from the International Collector to the ITP.	Planned
8. Smuggler's Gulch sediment and trash capture facility	County of San Diego	Install a sediment capture basin and trash boom in Smuggler's Gulch to trap large trash/sediment flows and reduce downstream impacts. Widen existing culvert under Monument Road to reduce flooding.	Planned
9. Tijuana River Barrier Project	CBP	Install a trash barrier across the Tijuana River along the U.S.–Mexico border between the existing concrete levees on either side of the main channel.	Planned
10. Continued operation of ITP and SBWRP	USIBWC and City of San Diego	Continued wastewater treatment operations at the ITP and SBWRP and discharge to the Pacific Ocean via the SBOO, in addition to any added capacity under the USMCA project.	Ongoing
11. Rehabilitation of the International Collector (Phase 1)	CESPT	Install a redundant line in Mexico to reduce the risk of line failures and untreated wastewater discharges that could affect the Tijuana River.	Planned
12. Tijuana River diversion rehabilitation	CONAGUA, CESPT, CILA, EPA	Rehabilitate pump station PB-CILA and construct a new Tijuana River intake (already completed as part of cost-sharing agreement with Mexico); rehabilitate PB1-A and PB1-B.	Planned

3. AFFECTED ENVIRONMENT

3.1 Freshwater and Estuarine Resources

3.1.1 Hydrology

3.1.1.1 Tijuana River in Mexico (Upstream of U.S.-Mexico Border)

The Tijuana River originates in Mexico, formed by its major tributaries the Río de las Palmas and the Cottonwood-Alamar system before crossing into the U.S. The watershed, shown in Figure 3-1, is bounded by the Laguna Mountains in the northeast, the Sierra Juárez Mountains in the south, and the Pacific Ocean to the west and covers approximately 1,750 square miles, approximately three-quarters of which are in Mexico. Nearly the entire length of the river in Tijuana is channelized in concrete downstream of the Rodriguez Dam.

Five dams regulate flow in the Tijuana River tributaries, including Barrett Dam and Morena Dam on Cottonwood Creek in the U.S. and Rodriguez Dam, Las Auras Dam, and El Carrizo Dam in Mexico. The Rodriguez Dam has the most significant influence on the volume in the Tijuana River, as it controls flows from approximately 56 percent of the watershed. There is no clear information on the frequency with which upstream dams reach capacity (USACE, 2018, 2020).

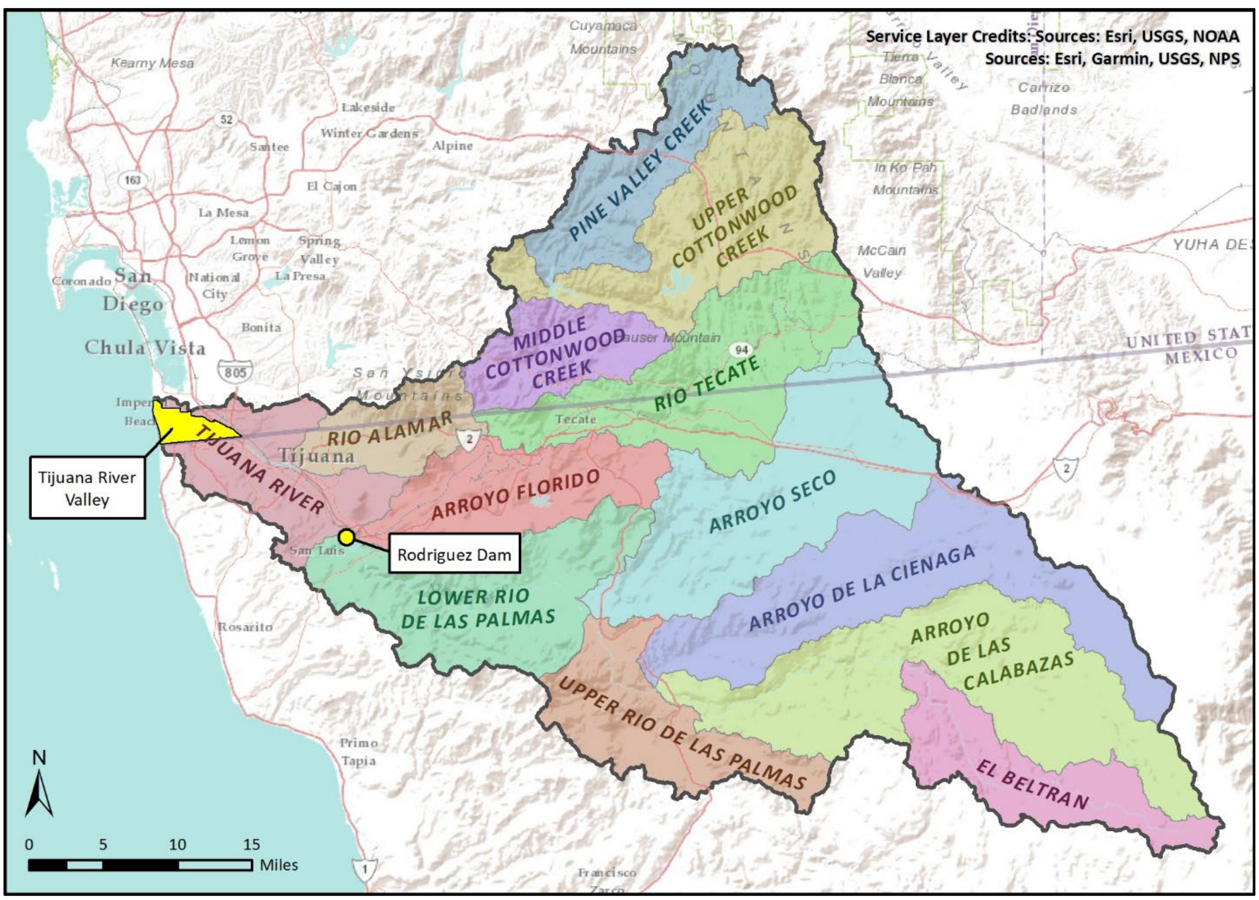


Figure 3-1. Tijuana River Watershed

3.1.1.2 Tijuana River in U.S. (Downstream of U.S.-Mexico Border)

Downstream of the border, the Tijuana River flows through a concrete-lined trapezoidal channel and levee system followed by an earthen-bottom channel with buried grouted riprap side slopes (PG Environmental, 2022). This energy dissipation structure was constructed in the late 1970s to reduce flow velocity, limit flooding, and promote sedimentation upstream of Dairy Mart Road. The river, along with any inflows from Stewart's Drain, then flows into a natural earthen-bottom braided alluvial channel system within a wide floodplain upstream of Dairy Mart Road and north of the ITP. Since the energy dissipator was constructed, deep sediment deposits—up to 6 to 8 feet deep in the main river channel—have accumulated in this section of the river and continue to accumulate (Stantec, 2020a). See Section 3.1.1.5 (Wetlands and Delineated Aquatic Resources) for more details on this section of the river. Downstream of Dairy Mart Road, the river flows generally northwest through dense riparian habitat in the Tijuana River Valley Regional Park and eventually to tidally influenced areas in the Tijuana Slough National Wildlife Refuge (NWR) and the Tijuana River National Estuarine Research Reserve (TRNERR).

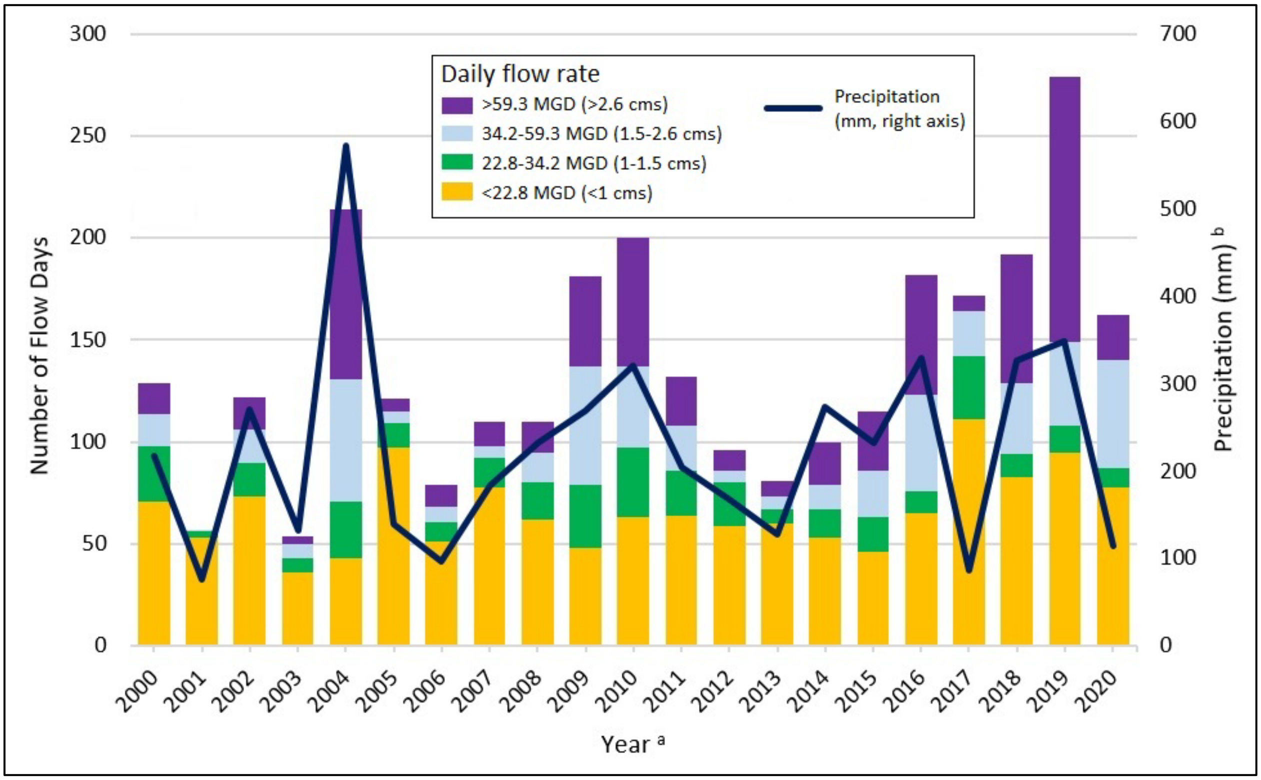
Over the past 150 years, the river channel has experienced numerous, and occasionally dramatic, avulsions (i.e., changes in course) in response to high-flow events. As recently as 1993, a flooding event resulted in the river establishing a new northern course downstream of Hollister Street (SFEI, 2017). In the early 1990s, a pilot channel stretching west from where the Tijuana River crosses under Hollister Street was created to help direct storm flows away from northern areas of the valley (see Figure 1-1).

The U.S. portion of the Tijuana River was historically intermittent, but transboundary flows have included more non-stormwater sources as the City of Tijuana has grown (City of Imperial Beach et al., 2016). In 1979, the river became perennial due to urban runoff and untreated wastewater releases occurring after the completion of the Tijuana River Flood Control Project, which channelized flows through Mexico (SFEI, 2017). The river became intermittent again in the early 1990s with the implementation of wastewater treatment and management (SFEI, 2017). Specifically, the PB-CILA diversion system located immediately upstream of the U.S.-Mexico border conveys all dry-weather river flows to PB1-A or to the International Collector, so transboundary river flows occur only during wet weather and during dry-weather shutdowns or malfunctions of the PB-CILA diversion system (see Figure 1-6 regarding the frequency of these dry-weather transboundary flows).

In the U.S., flows in the Tijuana River mainly occur during the rainy season, which begins as early as October and ends as late as April. During this period, intermittent but very large flows occur following storm events that typically result in a surge of peak flow that flushes through the estuary and out to the ocean, followed by days with sustained and subsiding flow. Based on USIBWC flow gage data collected just downstream of the U.S.-Mexico border since 2000, an average wet season has featured approximately 96 days with river flows (i.e., approximately 53 percent of wet-season days have flows) and approximately 9,000 million gallons (MG) of total flow over the course of the season. However, flows fluctuate greatly from season to season, with wet-season flows since 2000 ranging from less than 1,000 MG to greater than 25,000 MG. The two-, five-, and 10-year flood events are estimated to have peak flows of approximately 1,300; 5,400; and 11,000 cubic feet per second (cfs), respectively (PG Environmental, 2022).

However, for most of the year, conditions in the Tijuana River in the U.S. are characterized by prolonged dry periods of very low to zero surface water flows—particularly during the dry season commonly defined as spanning from Memorial Day to Labor Day. A typical dry season features fewer than 10 days with river flows (i.e., less than 10 percent of dry-season days have flows) and less than 100 MG of total flow over the course of the season. However, failures of the river diversion system in Tijuana can result in extended periods of flow, such as in 2020 when transboundary river flows occurred on nearly every day of the dry season.

Figure 3-2 depicts annual precipitation and the number of transboundary river flow days per year, with the flow days further categorized based on the flow rate per day (i.e., number of days with small flows versus large storm-driven flows). Table 3-1 shows the distribution of average days per year with transboundary flows of varying flow rates. This table shows that most cumulative river flows over a typical year occur during the small number of days with very high flow rates (i.e., while only 13 percent of flow days have flows exceeding 165 MGD, flows on these days these contribute 75 percent of the total annual flow volume). Table 3-2 shows rainfall measurements from Brown Field Municipal Airport with flow in the Tijuana River main channel. These exhibits are based on flow data from the USIBWC Tijuana River flow gage covering the four-year period from January 1, 2016, to December 31, 2019.



a – For purposes of this analysis, each year refers to the rainfall year, which EPA and USIBWC defined as spanning from August 1 to July 31 (e.g., “2020” refers to time spanning from August 1, 2020, through July 31, 2021).
b – Precipitation measurements collected at San Diego International Airport.

Figure 3-2. Annual Precipitation and Transboundary River Flow Days (by Daily Flow Rate), 2000–2020

Table 3-1. Average Annual Distribution of Transboundary Flows in the Tijuana River

Transboundary Flow Rate (Average Daily, MGD)	Average Number of Days Per Year	% of Total Annual Flow
0	212	0%
0.1–15.0	57	0.9%
15.1–30.0	19	2.5%
30.1–45.0	15	3.2%
45.1–60.0	16	4.9%
60.1–75.0	10	3.8%
75.1–90.0	5	2.4%
90.1–105.0	4	2.5%
105.1–120.0	1	0.6%
120.1–135.0	3	1.8%
135.1–150.0	2	0.6%
150.1–165.0	1	0.7%
>165.0	20	75%

Source: (PG Environmental, 2021g).

Table 3-2. Precipitation and Flow Correlation for the Tijuana River

Precipitation (Inches)	Days of Flow	Total Flow (Million Gallons)	Peak Instantaneous Flow (cfs)
0.1	1.5	33	296
0.25	2.7	107	747
0.33	3.3	159	993
0.5	4.7	298	1,526
0.66	6.0	465	2,041
0.75	6.7	574	2,336
1	8.7	933	3,176
1.25	10.7	1,376	4,048
1.33	11.3	1,535	4,332
1.5	12.7	1,902	4,950
1.75	14.6	2,513	5,883
2	16.6	3,208	6,848
2.25	18.6	3,986	7,843
2.5	20.6	4,849	8,869
2.75	22.6	5,795	9,926
3	24.6	6,826	11,013
3.25	26.6	7,940	12,132
3.5	28.6	9,138	13,283
3.75	30.5	10,420	14,464
4	32.5	11,786	15,675

Source: (PG Environmental, 2021g).

Semi-arid riverine environments such as the Tijuana River Valley can be defined by high variability in flow characteristics that may be influenced yearly, seasonally, or even daily. The Tijuana River experiences extreme annual variability that is driven in part by climate cycles such as the El Niño-Southern Oscillation and the Pacific Decadal Oscillation (SFEI, 2017). For example, gage data collected between 1937 and 2010 show that peak annual discharge has ranged from 0 to 30,088 cfs and that the river contains 630 times more water during wet years than dry years (SFEI, 2017). Mean peak annual discharge during that time was 2,407 cfs (SFEI, 2017). The largest flood on record occurred in January 1916 and had an estimated peak flow rate of 75,000 cfs, twice the flow rate of any flood since (SFEI, 2017). Seasonal variability in river flows is also significant. The river can experience very high flows during the wet season, and periods with low to no flows during the summer. Storm events in the watershed typically result in a surge of peak flow followed by days with sustained and subsiding flow. The flood control structures upstream of Dairy Mart Road, which are managed by USIBWC, can contain a 500-year flood event of up to 135,000 cfs (HDR, 2020a, 2020d). See Section 3.3 (Floodplains) for more information on flood control.

The United States Army Corps of Engineers (USACE) recently completed a hydrologic and hydraulic study of the Tijuana River watershed using sources including data from four stream gages, physical and operational data for four dams, and precipitation data, and calibrated the models to five storm events. The resulting hydrographs are expected to be more accurate than other recent studies of the watershed, although some uncertainty remains regarding the influence of the reservoirs during significant storm events (USACE, 2020).

The volume and downstream extent of flows within the Tijuana River Valley are driven by complex interactions with underlying geology, groundwater, vegetation, and climate. In general, surface flows can percolate into the ground quickly in sandy substrates (SFEI, 2017). Under certain lower flow conditions, the entire river flow infiltrates the ground before reaching the estuary. Additionally, there is an unconfined aquifer in the alluvial fill below the river valley, which is primarily refilled by direct rainfall, surface inflow, and intermittent flood events (CDPR, 2008). When the aquifer is full or overflowing, groundwater seeps into the Tijuana River and sustains flow, even during periods of low rain (USIBWC, 2008). Evapotranspiration, which is influenced by climate (e.g., humidity, solar radiation, temperature fluctuations), can influence the horizontal extent of stream flows in intermittent alluvial systems on a daily basis. This small-scale variability is likely tied to short-term fluctuations in groundwater that are influenced by evapotranspiration rates of groundwater-dependent vegetation (SFEI, 2017).

There are still several data gaps regarding the flow of the Tijuana River and the frequency with which the river discharges through the estuary to the Pacific Ocean. The range of flow rates that result in the Tijuana River passing through the estuary to the Pacific Ocean, the relative contributions of water from the river and the canyons to these instances, and the frequency with which this occurs are not well understood. Efforts to understand flow dynamics in the river are complicated by the annual and seasonal variability and the introduction of treated and untreated wastewater contributions as described earlier in this section. Furthermore, the river is diverted upstream of the U.S.-Mexico border for treatment, and there is a lack of *in situ* data on the U.S. side where there is currently only one stream flow gage, which has data from as early as 1962 (USACE, 2018). Some research suggests that precipitation and runoff are not well correlated in the river (Tijuana River Recovery Project, 2010), which also makes it more difficult to model expected flows.

3.1.1.3 Tijuana River Estuary

The Tijuana River Estuary is influenced by streamflow, tidal flux, wave action, and sediment flux. The Tijuana River main channel enters the estuarine environment in the northern portion of the valley along what is called the Tijuana River Slough. Various other “sloughs” are present in the estuary that were formed from abandoned river channels or from tidal channels. Sediment transport into and out of the estuary occurs near the ocean in the flood tidal deltas and from upstream river flows, especially as a result of flood events. Tidal influence historically extended inland as far as 1.5 miles. However, the tidal prism volume (volumetric difference between the mean high tide and the mean low tide) and the area of tidal influence has decreased in the late 20th century due to a number of factors, including sediment deposition from the Tijuana River and tributaries. The estuary transitions to upland and riparian habitat along ecological transition zones, which predominantly consist of Alkali Meadow Complex/High Marsh vegetation zones. These transition zones generally occur in areas to the south of the Naval Outlying Landing Field Imperial Beach and not any farther east (SFEI, 2017). See Section 3.1.1.5 (Wetlands and Delineated Aquatic Resources) for more background regarding the estuary.

3.1.1.4 Tributary Flows in the Tijuana River Valley

Smuggler's Gulch is west of the ITP and is referred to as Matadero Canyon south of the U.S.-Mexico border. It has a subwatershed area of 3,762 acres, including the portions in Mexico (HDR, 2020a). The ephemeral wash system that flows through Smuggler's Gulch collects stormwater and wastewater flows from parts of the City of Tijuana and receives drainage from the surrounding mesas. The canyon flow diversion structure (see Section 1.2 [Existing Diversion and Treatment Infrastructure]) intercepts dry-weather transboundary flows and conveys them to the ITP. During wet-weather flow conditions, the pump diversion is turned off and transboundary flows instead continue north through a natural channel and a culvert under Monument Road, ultimately discharging into the Tijuana River pilot channel.

Goat Canyon is located to the west of Smuggler's Gulch and is referred to as Los Laureles Canyon south of the U.S.-Mexico border. It has a subwatershed area of 2,941 acres, including the portions in Mexico, and is formed from Goat Canyon Creek, which is fed predominantly by runoff and other water sources in Mexico. The canyon flow diversion structure intercepts dry-weather transboundary flows and conveys them to the ITP. Wet-weather flows bypass the diversion structure and continue northwest into two sediment basins, which capture sediment and trash and are also intended to reduce flooding in downstream areas, including Monument Road (HDR, 2020d). Outflow from the sediment basins enters the Tijuana River Estuary.

Transboundary flows also occur at Cañón del Sol, Silva Drain, and Stewart's Drain, located along the border immediately south of the SBWRP and ITP (see Figure 1-2). Dry-weather flows at these locations are intercepted by the canyon flow diversion structures. Wet-weather flows from Cañón del Sol are conveyed to the Tijuana River via underground piping with an outfall located immediately northwest of the ITP. Wet-weather flows from Silva Drain flow overland into Stewart's Drain, which discharges to the Tijuana River immediately east of the ITP.

3.1.1.5 Wetlands and Delineated Aquatic Resources

The Tijuana River Valley contains numerous freshwater and estuarine wetlands—most notably the extensive, tidally flushed coastal salt marsh and saltpan habitat in the Tijuana River Estuary. In 1973, the Secretary of the Interior designated the Tijuana River Estuary as a National Natural Landmark (NNL) to highlight the site's importance as an endangered species habitat and as one of the finest saltwater marshes on the California coastline (National Park Service, 2020). In 2005, the TRNERR was further designated a Ramsar "Wetland of International Importance" for several criteria, including its value to supporting vulnerable and endangered species and critical habitats (Ramsar Sites Information Service, 2022). Over recent decades, increased sediment deposition and freshwater influence from the Tijuana River have affected wetlands in the estuary by decreasing salinity, burying tidal channels, and causing the salt marsh to transition to upland habitat (Nordby, 2018). However, the California Department of Parks and Recreation (CDPR) and United States Fish and Wildlife Service (USFWS) are currently implementing a multi-phased program to restore tidal exchange and wetland habitats in the estuary (TRNERR, 2022).

Other wetlands in the Tijuana River Valley include vernal pools, which form in topographic depressions above poorly draining soils and are seasonally inundated for a few weeks to several months by precipitation and/or overland flow. Vernal pools can provide habitat for a variety of endemic species, including protected specialist species such as the federally listed San Diego fairy shrimp (*Branchinecta sandiegonesis*), which is found in vernal pools in the TRNERR (CDPR, USFWS, and NOAA, 2010). Additionally, historical sand and gravel extraction from the river valley—particularly near Dairy Mart Road—impacted streamflow, sediment transport, and habitat mosaics, creating residual burrow pits that now support perennial ponds (SFEI, 2017). Freshwater ponds, wetlands, and riparian habitats in the Tijuana River Valley provide habitat for special-status[17] wildlife species, including the least Bell's vireo (*Vireo bellii pusillus*) and light-footed Ridgway's rail (*Rallus longirostris levipes*) (USIBWC, 2008).

PG Environmental performed a field delineation of wetlands and non-wetland waters within the project area on November 3 and 4, 2021, following the guidelines in the *1987 U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987), the Arid West Regional Supplement (USACE, 2008), and the *U.S. Army Corps of Engineers Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* ("OHWM Field Guide") (Lichvar & McColley, 2008). Wetlands and non-wetland waters were further classified by hydrogeomorphic class (Brinson, 1993) and Cowardin classification (Cowardin et al., 1979). The results of the field delineation are provided in Appendix A (Aquatic Resources Delineation Report), summarized in Table 3-3, and shown in Figure 3-3 through Figure 3-9. Based on the field investigations and supporting desktop analyses, PG Environmental ecologists identified 11 non-wetland waters (covering 122.09 acres and 12,431 linear feet), seven wetland features (8.56 acres), and 0.05 acres of other features in the surveyed area. These features may be subject to several jurisdictions (and their authorities) including: USACE (CWA Section 404); Regional Water Quality Control Board (RWQCB) (CWA Section 401 and the Porter-Cologne Water Quality Control Act); California Department of Fish and Wildlife (CDFW) (California Fish and Game Code Section 1600); and/or California Coastal Commission (CCC) (California Coastal Act (CCA)). Of the wetlands, all are potentially jurisdictional wetland waters per CCC jurisdiction but only a portion meet the USACE and state definitions. Non-wetland waters within the project area generally include intermittent and ephemeral streams and minor drainages, including the Tijuana River, Smuggler's Gulch, Goat Canyon Creek, and multiple unnamed tributary channels. Further, potentially jurisdictional non-wetland waters of the U.S. and state are those that meet USACE definitions; all waters and other isolated waters may also fall under CCC and state jurisdictions.

Within the project area, the variable hydrologic regime of the Tijuana River (characterized by periods of no flow, minor baseflows, and larger flashy flows) influences the channel morphology within the Tijuana River floodplain. Baseflows are primarily contained within a main low-flow channel, while larger magnitude discharges frequently inundate most of the surrounding floodplain, resulting in highly unstable channels that migrate within the boundaries of the active

[17] Special-status wildlife species are defined as those species listed, proposed, or under review as endangered or threatened under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA); designated by the CDFW as a Species of Special Concern or Fully Protected; or protected under the federal Bald and Golden Eagle Protection Act (BGEPA).

floodplain. The limits of the active floodplain, as defined by field indicators and hydrologic modeling, are potentially subject to jurisdiction under several federal and state agencies. Freshwater emergent wetlands within the Tijuana River floodplain are highly temporal and typically limited to low terraces within the main low-flow channel, which are subject to frequent sedimentation and erosion. Mature riparian forest and scrub-shrub communities near Dairy Mart Road Bridge are potentially subject to state jurisdictions as wetlands.

At the time of PG Environmental's site evaluation, wetland vegetation was present on alluvial deposits in Smuggler's Gulch at varying cover densities throughout the channel bed and was classified as a scrub-shrub wetland. In Goat Canyon, a short segment of incised channel on the downstream end of the debris flow area was mapped as USACE and state non-wetland waters based on presence of a bed and bank.

Other aquatic features in the project area include several small ephemeral drainages that cross under Dairy Mart Road and Monument Road and convey overland flows toward the Tijuana River Valley, erosional features/swales near the Tijuana River border, and V-shaped concrete ditches that convey roadside or surface runoff to stormwater capture systems.

See Section 6.1.2 (Freshwater and Estuarine Resources) for additional information on water resources permits and regulations.

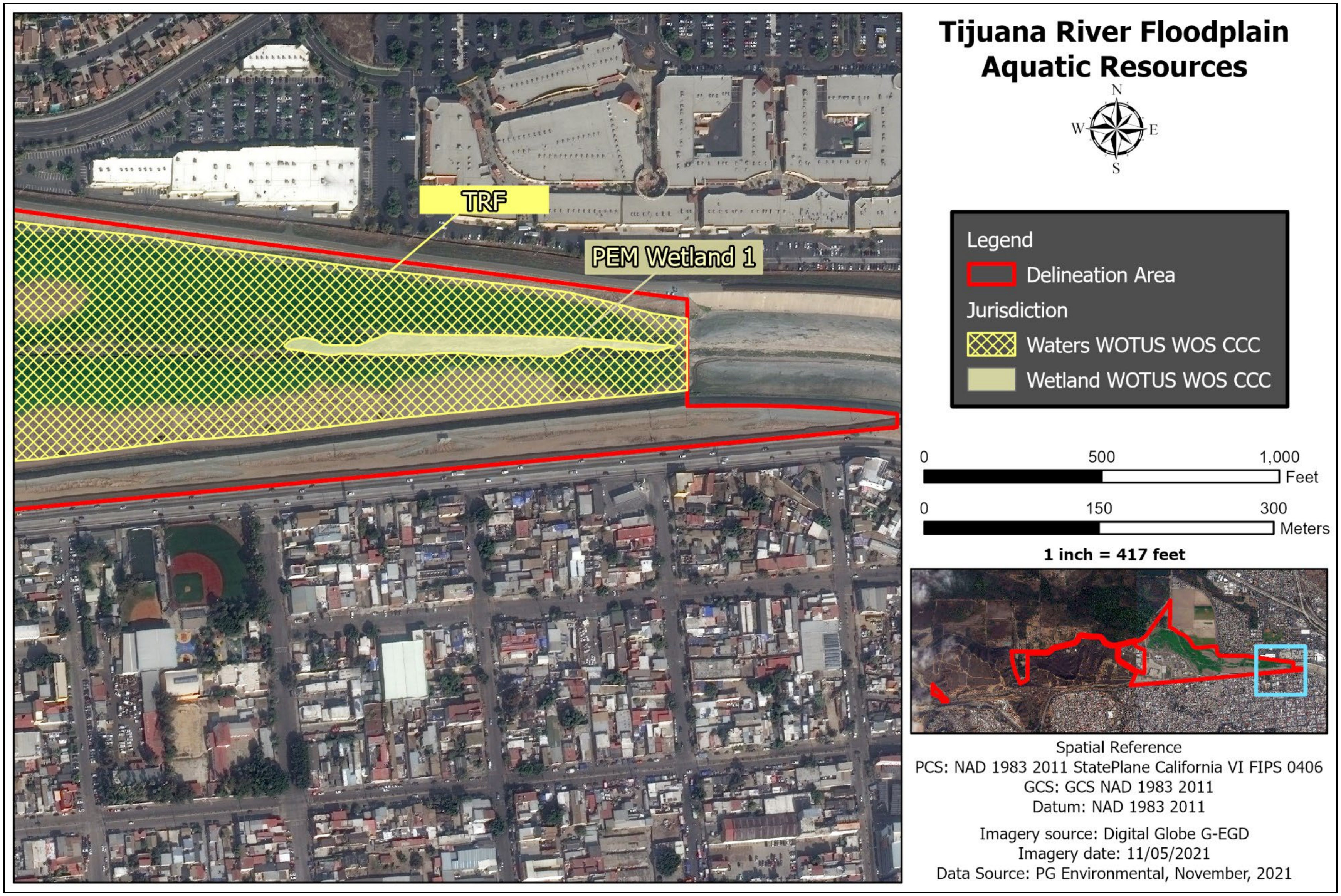


Figure 3-3. Aquatic Resources Near the Proposed Action in the U.S. (1 of 7)

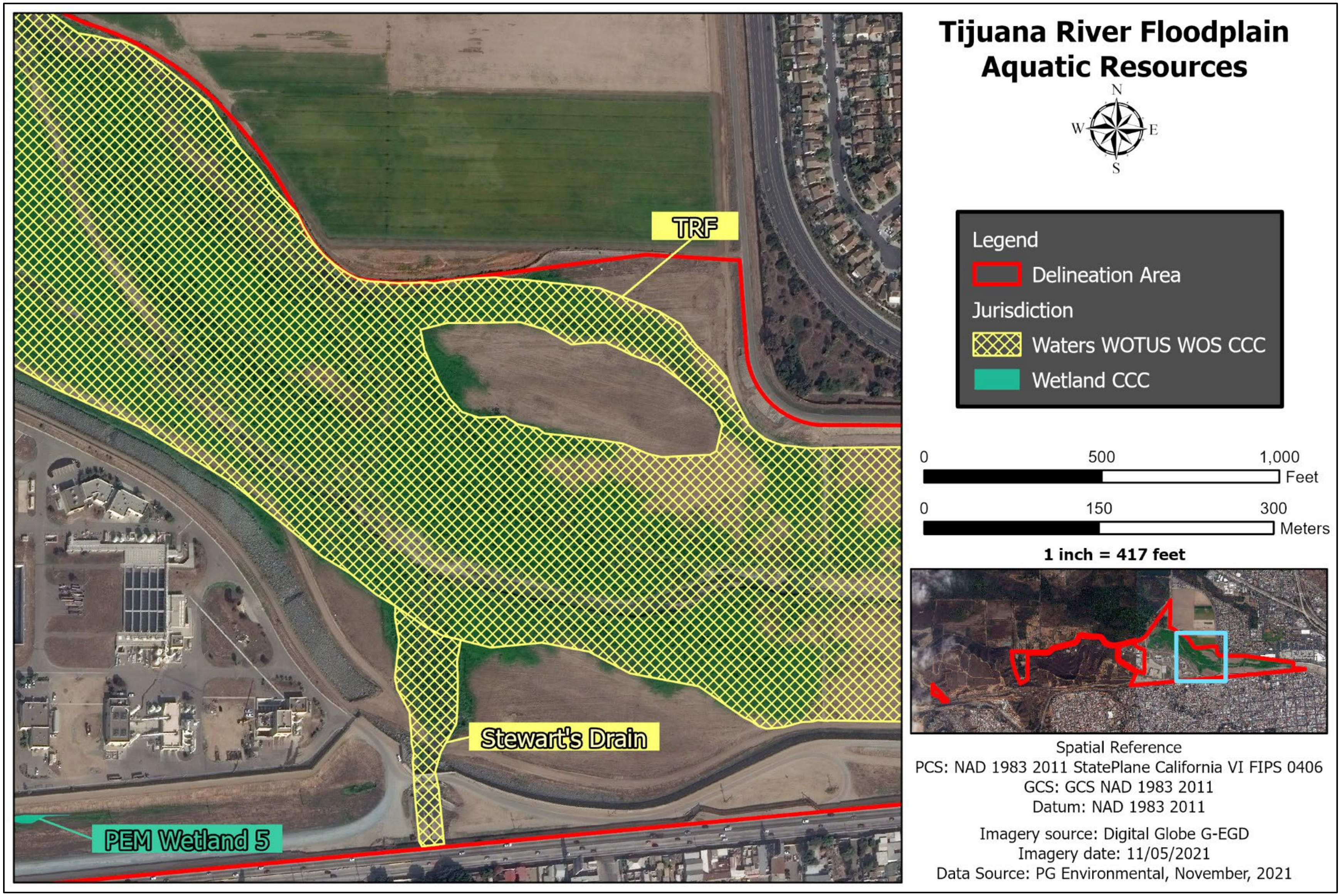


Figure 3-4. Aquatic Resources Near the Proposed Action in the U.S. (2 of 7)

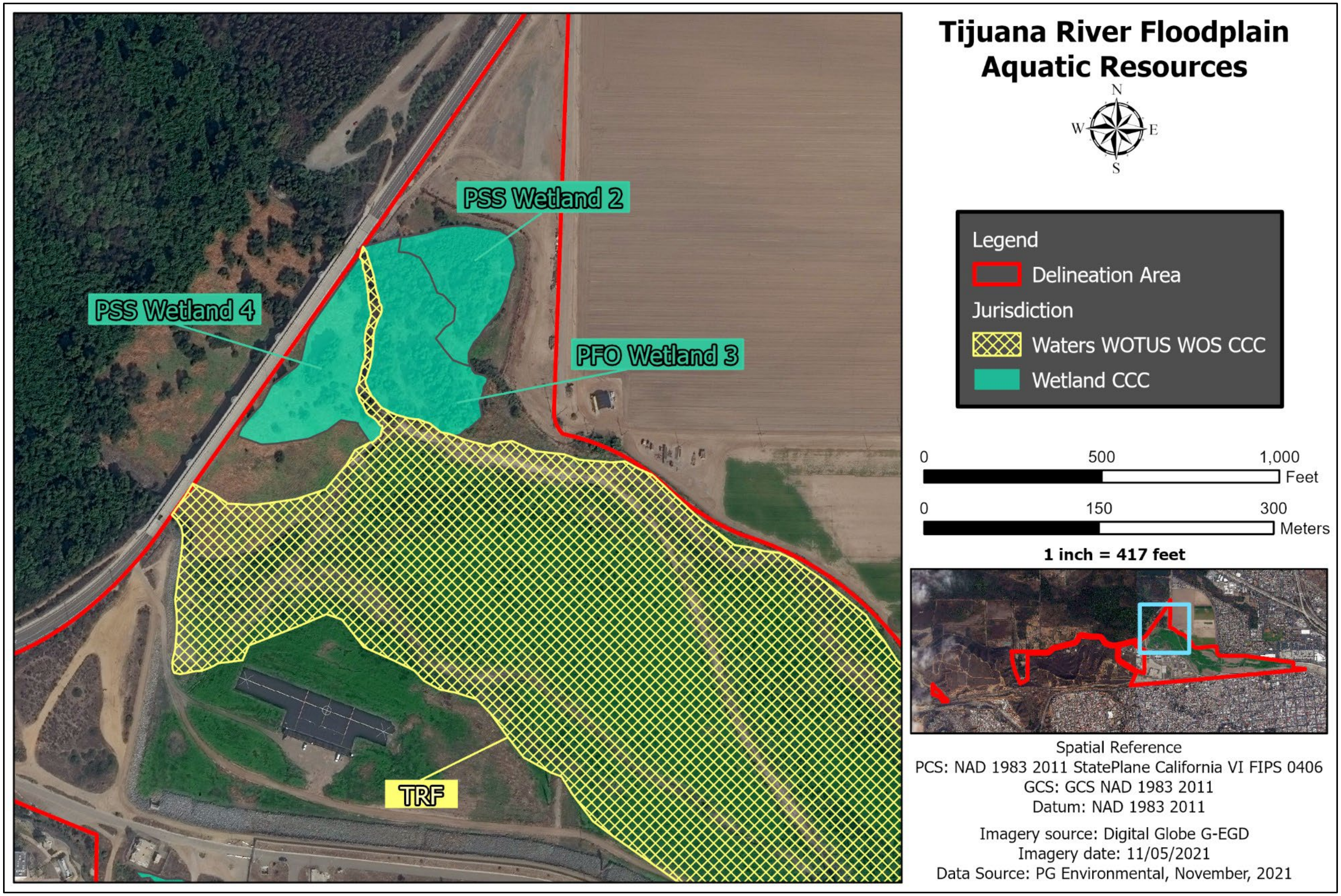


Figure 3-5. Aquatic Resources Near the Proposed Action in the U.S. (3 of 7)

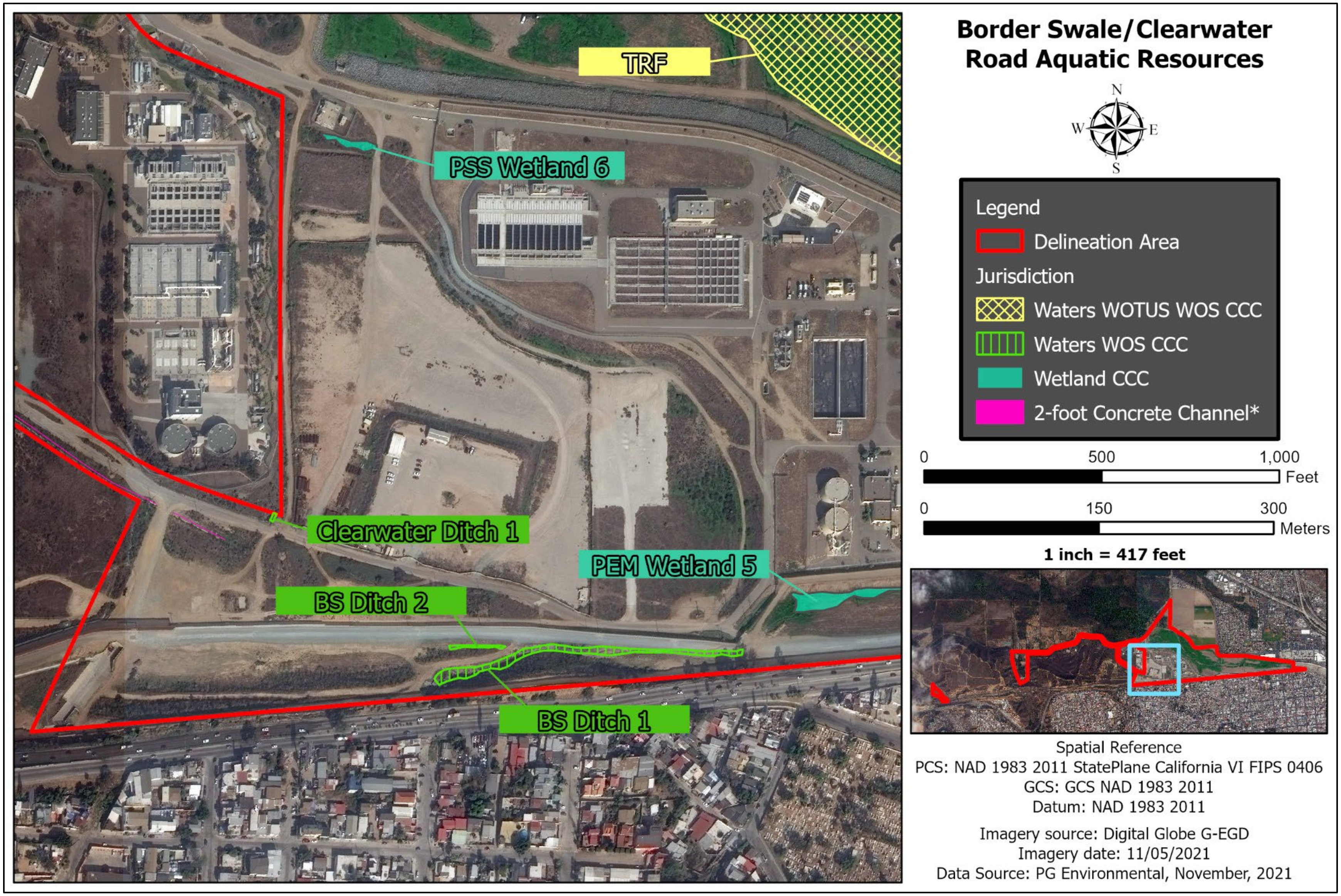


Figure 3-6. Aquatic Resources Near the Proposed Action in the U.S. (4 of 7)

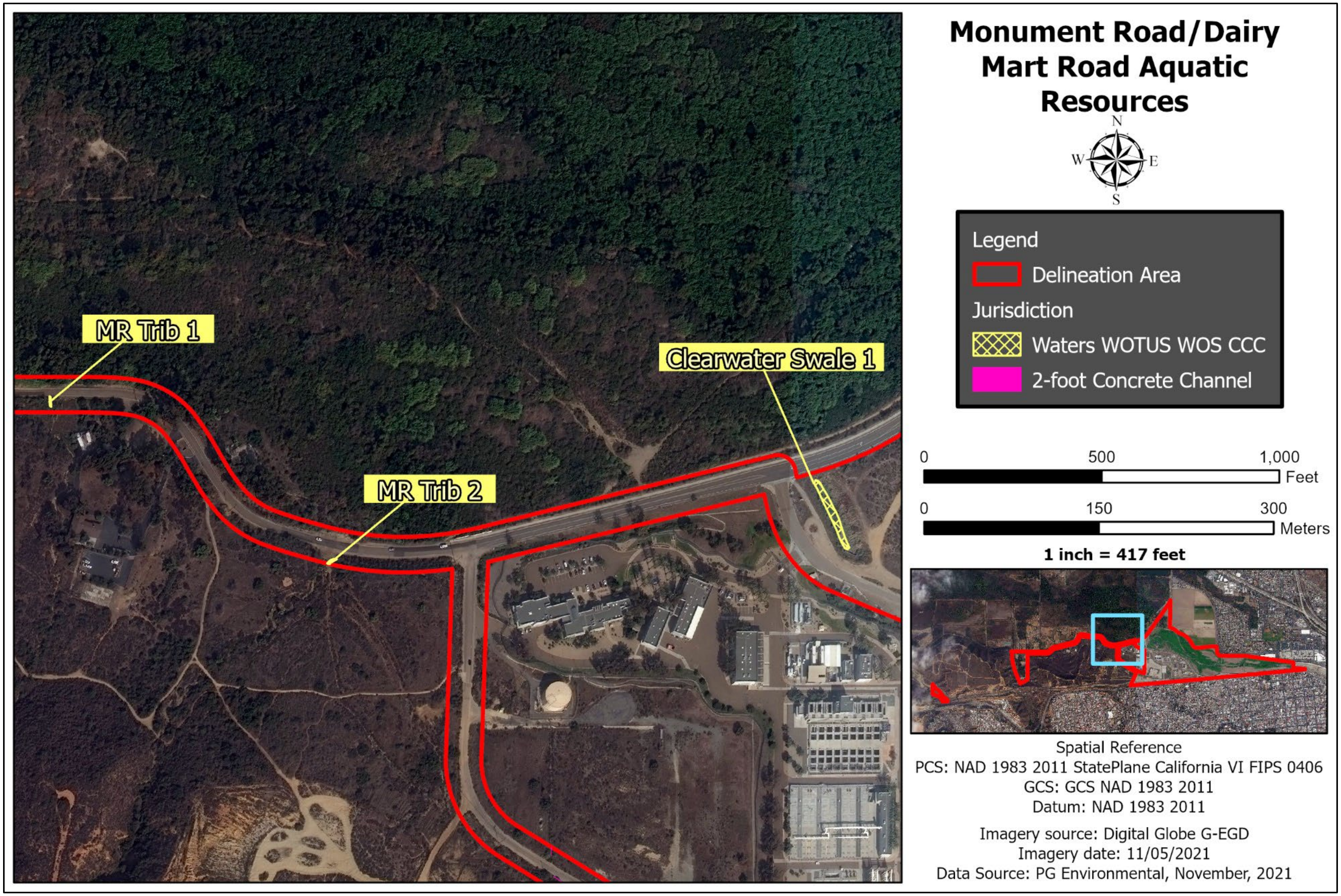


Figure 3-7. Aquatic Resources Near the Proposed Action in the U.S. (5 of 7)

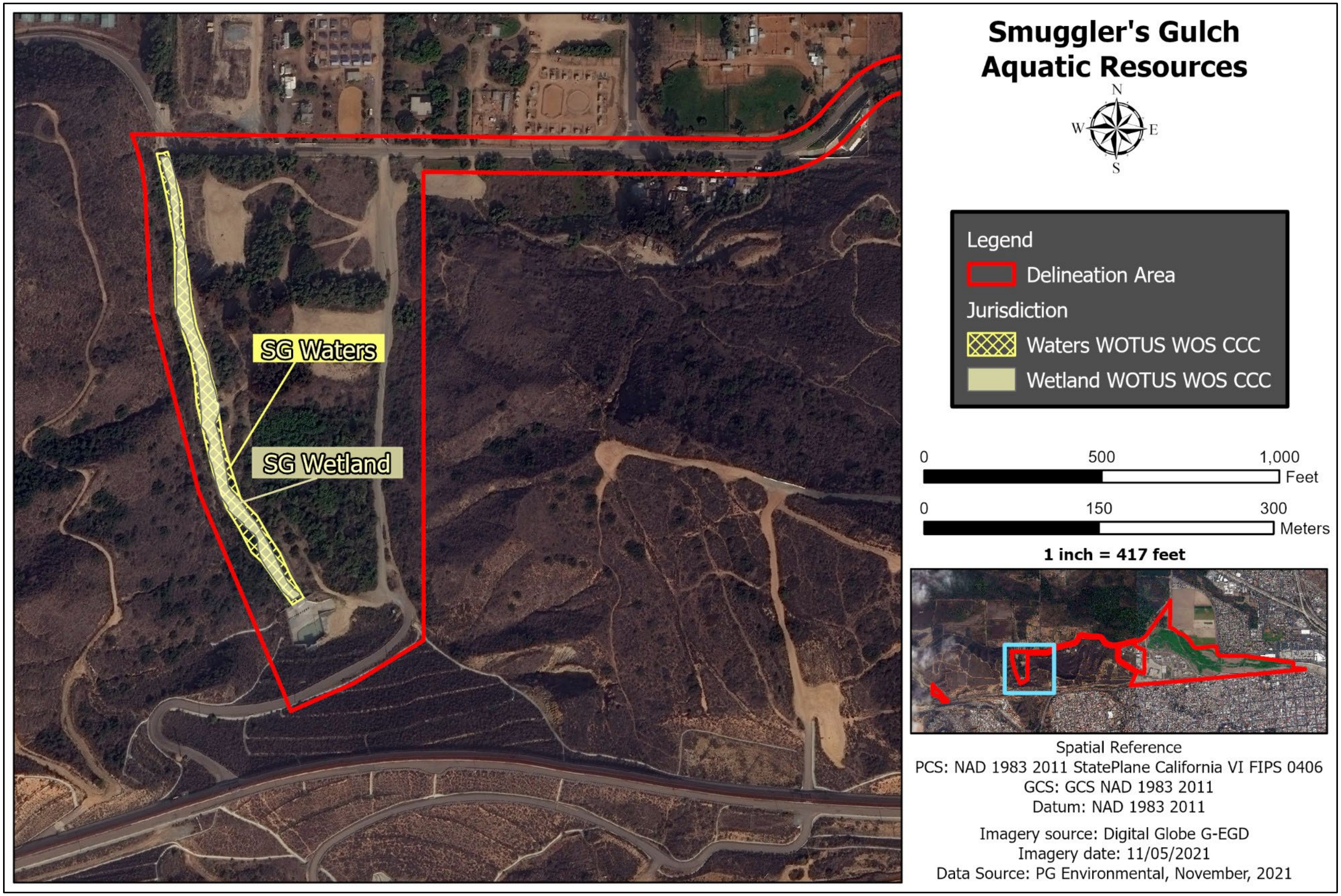


Figure 3-8. Aquatic Resources Near the Proposed Action in the U.S. (6 of 7)

Figure 3-9. Aquatic Resources Near the Proposed Action in the U.S. (7 of 7)

Table 3-3. Wetlands Mapped Within the Evaluated Areas

Name [a]	Cowardin Classification	Size (acres)	Length (linear feet)	Average Width (feet)	Jurisdiction
Wetland Waters					
PEM Wetland 1	Palustrine Emergent	1.00	N/A	N/A	USACE, state, CCC
PSS Wetland 2	Palustrine Scrub-Shrub	1.58	N/A	N/A	CCC
PFO Wetland 3	Palustrine Forested	2.56	N/A	N/A	CCC
PSS Wetland 4	Palustrine Scrub-Shrub	2.14	N/A	N/A	CCC
PEM Wetland 5	Palustrine Emergent	0.23	N/A	N/A	CCC
PSS Wetland 6	Palustrine Scrub-Shrub	0.07	N/A	N/A	CCC
SG Wetland	Palustrine Scrub-Shrub	0.98	N/A	N/A	USACE, state, CCC
	Total Wetlands	**8.56**	**N/A**	**N/A**	
Non-Wetland Waters and Other Waters					
TRF	Riverine-Intermittent (R4)	117.85	7,899	444.8	USACE, state, CCC
Stewart's Drain	Riverine-Intermittent (R4)	1.63	609	177.3	USACE, state, CCC
SG Waters	Riverine-Intermittent (R4)	1.40	1,342	44.0	USACE, state, CCC
GC Main	Riverine-Intermittent (R4)	0.73	694	50.2	USACE, state, CCC
GC Trib 1	Riverine-Intermittent (R4)	0.01	32	3.0	USACE, state, CCC
MR Trib 1	Riverine-Intermittent (R4)	0.01	27	3.5	USACE, state, CCC
MR Trib 2	Riverine-Intermittent (R4)	0.01	26	7.5	USACE, state, CCC
Clearwater Swale 1	Riverine-Intermittent (R4)	0.08	213	15.8	USACE, state, CCC
Clearwater Ditch 1	Riverine-Intermittent (R4)	0.01	23	6.5	State, CCC
BS Ditch 1	Riverine-Intermittent (R4)	0.34	152	18.8	State, CCC
BS Ditch 2	Riverine-Intermittent (R4)	0.02	880	4.5	State, CCC
	Total Waters	**122.09**	**11,897**		
Other Features					
Concrete channels	N/A	0.05	N/A	2	N/A
	Total Other Features	**0.05**			

a – PEM = Palustrine emergent, PSS = Palustrine scrub-shrub, PFO = Palustrine forested, TRF = Tijuana River floodplain, GC = Goat Canyon, SG = Smuggler's Gulch, MR = Monument Road, BS = border swale.

3.1.2 Surface Water Quality

Water quality in the Tijuana River is regulated by the federal government under the CWA and by the state government under the Porter-Cologne Act, which are described in more detail in Section 6.1.2 (Surface Water Quality).

The San Diego Regional Water Quality Control Board (SDRWQCB, or San Diego Water Board) has published a Basin Plan that establishes five points of its water quality management policy, which include goals for identifying and maintaining water quality objectives and beneficial uses. One of these policies specifies that "point sources and nonpoint sources of pollution shall be controlled to protect designated beneficial uses of water." Municipal and industrial point sources are required to meet treatment levels at least as stringent as those defined in the CWA, and nonpoint sources are required to be controlled in accordance with the CWA and the Coastal Zone Act Reauthorization Amendments (SDRWQCB, 2016). Beneficial uses are defined as water uses necessary for the survival or well-being of humans, plants, and wildlife (SDRWQCB, 2016). The Tijuana River watershed has the following beneficial uses:

- Tijuana Estuary Natural Preserve, the TRNERR, and the Tijuana Slough NWR have beneficial uses for the preservation of biological habitats of special significance.

- Smuggler's Gulch and Goat Canyon have beneficial uses of non-contact water recreation, warm freshwater habitat, and wildlife habitat.
- The main channel of the Tijuana River in the project area has beneficial uses of non-contact water recreation; preservation of biological habitats of special significance; warm freshwater habitat; wildlife habitat; and rare, threatened, or endangered species.
- The Tijuana River Estuary has beneficial uses of contact water recreation; non-contact water recreation; commercial and sport fishing; preservation of biological habitats of special significance; estuarine habitat; wildlife habitat; rare, threatened, or endangered species; marine habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and shellfish harvesting (SDRWQCB, 2016).

The Tijuana River is a CWA Section 303(d) impaired water body for the following: trash; solids; sedimentation/siltation; nutrient-related issues (specifically ammonia as Nitrogen, total nitrogen as N, phosphorus, low dissolved oxygen, and eutrophication); benthic community effects; indicator bacteria; toxicity; pesticides (e.g., chlorpyrifos, diazinon, malathion); surfactants; synthetic organics; and trace elements (e.g., cadmium, selenium) (SWRCB, 2018). The Tijuana River Estuary is a CWA Section 303(d) impaired water body for the following: trash, turbidity, nutrient-related issues (specifically, low dissolved oxygen and eutrophication), indicator bacteria, toxicity, pesticides, lead, nickel, and thallium (SWRCB, 2018). Total Maximum Daily Load (TMDL) is a management tool used to identify and regulate pollutant loads to impaired waters. The San Diego Water Board has initiated efforts to establish a TMDL for indicator bacteria and trash in the Tijuana River and Estuary, with adoption expected in early 2023 (SWRCB, 2022).

Dry-weather flows in the main channel of the Tijuana River south of the border (i.e., upstream) typically range between 20 to 30 MGD, including approximately 10 MGD of treated effluent from La Morita WWTP and Arturo Herrera WWTP and 4 to 5 MGD of flows from the Alamar River that mostly consist of treated effluent from Tecate. The remainder consists of urban runoff into storm drains and untreated wastewater that escapes the City of Tijuana's sanitary collection system. IBWC conducted a water quality study with samples collected from December 2018 to November 2019 at eight sites in the Tijuana River and its tributary canyons and drains and analyzed for a wide range of parameters. Based on the available data, current dry-weather transboundary flows in the Tijuana River are estimated to contain 100 mg/L BOD_5 on average and to convey an average of 1,590 tons per year (tons/yr) of BOD_5 into the U.S. (PG Environmental, 2021g).

3.1.2.1 Sediment

The Tijuana River watershed experiences substantial erosion during storm events, resulting in elevated sediment concentrations in the river and extensive sediment deposition within the Tijuana River Valley in the U.S. The combination of rapid urbanization in Tijuana and persistent soil exposure on steep slopes results in erosion that produces large volumes of sediment, which are transported into the watershed stream network (Nordby, 2018; URS, 2010; USACE, 2020). The upstream dams collectively help to reduce sediment loading in downstream portions of the river. Additional factors include sediment contributions from dirt roads and walking and horse trails. As the City of Tijuana develops, its roadways often remain unpaved, and they may erode and be repaired every year, contributing substantial volumes of sediment to the river in the process (Biggs et al., 2010; TRNERR, 2014). There are also several informal trails north of the U.S.-Mexico border used by CBP, although their use is discouraged for restoration purposes (Nordby, 2018). Dirt roads within the TRNERR could also contribute to sediment loading (TRNERR, 2014).

Much of this transboundary sediment in the river is deposited before it reaches the mouth of the Tijuana River Estuary. The most substantial sediment deposition occurs in the USACE-constructed basin between the U.S.-Mexico border and Dairy Mart Road Bridge, after which sediment scouring and erosion is more prominent until discharge via the estuary to the Pacific Ocean (Stantec, 2020a; USACE, 2018). The amount of sediment ultimately discharged into the Pacific Ocean is likely more related to the river's ability to scour the lower portions of the estuary, rather than to the watershed sediment yield (USACE, 2018). Sediment deposition spikes in months with the most precipitation (USACE, 2018).

A substantial proportion of sediment in the river is deposited along the floodplain in the estuary due to its flatter surface, width, and dense vegetation that can restrict sediment movement. The accumulated sediment reduces the flow capacity of the river and promotes the establishment of more vegetation, which combine to cause additional flooding and deposition of sediment and trash in the estuary (Tijuana River Valley Recovery Team, 2012). The majority of sediment transported by the river is carried during storm and flood events; moderate flood events can deposit sediment in the portions of the estuary such as mudflats, raising elevations and reducing intertidal areas, while the largest flood events can scour out mudflats and tidal channels and carry sediment all the way to the ocean (SFEI, 2017). During a 100-year storm event, the sediment flow capacity in the river immediately downstream of the U.S.-Mexico border can be as high as 1,821,000 tons per day, and as much as 73 percent of the sediment load to the Tijuana River is deposited in its overbank (HDR, 2020b; USACE, 2018). Based on available data on sediment concentrations, river flow rates, and precipitation, the sediment load in transboundary river flows during the four-year period between 2016 and 2019, including large storm events, is estimated to be 187,000 tons/yr (PG Environmental, 2021f; USACE, 2020). On average, an estimated 49,000 tons/yr of this sediment is deposited within the Tijuana River Valley, primarily upstream of Hollister Street (PG Environmental, 2021d; USACE, 2020).

Transboundary flows in the canyon tributaries along the U.S.-Mexico border also convey substantial amounts of sediment to the Tijuana River Valley and Estuary. Smuggler's Gulch frequently experiences high sedimentation rates during storms due to erosion and trash accumulation in its subwatershed. The City of San Diego periodically clears out sediment that accumulates in the Smuggler's Gulch channel and the downstream Tijuana River pilot channel, both of which require sediment removal for the other to work properly (HDR, 2020c). In late 2020, CESPT constructed a basin and weir to detain stormwater and trap sediment and trash in Matadero Canyon; this structure is reportedly effective at reducing trash in transboundary stormwater flows into Smuggler's Gulch. California State Parks maintains sediment basins in Goat Canyon to prevent sediment deposition in wetlands of the Tijuana River Valley and Estuary. The basins have been reported to catch the first flush of sediment during a wet-weather event (HDR, 2020b). In November 2004, the basins were filled and breached during a storm event before construction was completed, and up to 2 feet of sediment was discharged across approximately 20 acres of wetland west of Monument Road (Nordby, 2018).

3.1.2.2 Bacteria

Bacterial contamination is also a concern in the Tijuana River, although most studies have focused on bacterial concentrations in the estuary and coastline and the related beach closures as discussed in Section 3.2 (Marine Waters). High concentrations of bacteria can be indicative of pathogens that are harmful to human health, so water quality monitoring may attempt to quantify indicator bacteria such as total coliforms, fecal coliforms, Enterococci, and *E. coli* (IBWC, 2020).

Some studies have documented high concentrations of fecal indicator bacteria (FIB) in the Tijuana River Valley. CBP conducted a six-month monitoring program in the main channel of the Tijuana River near the U.S.-Mexico border and in the canyon flow diversion structures at Smuggler's Gulch and Goat Canyon. CBP identified elevated levels of FIB, indicating that transboundary flows include untreated domestic discharges (HDR, 2020a). IBWC measured high concentrations of FIB at the same locations and concluded that the presence of coliform bacteria in particular was likely due to non-point source pollution from the City of Tijuana's sewage system (IBWC, 2020). In another study, researchers found that Goat Canyon sediment contained concentrations of *Enterococcus* that exceeded acceptable public health standards (Nordby, 2018).

3.1.2.3 Trash

Trash in the Tijuana River Valley tends to accumulate along channels and in areas with vegetation or other physical barricades, where it can contribute to human health concerns and diminish aesthetics (HDR, 2020c; URS, 2010). See Section 3.13 (Solid and Hazardous Waste) for discussion of trash accumulation in the river and project areas and Section 3.16 (Public Health and Safety) for discussion of the public health implications of trash in the river.

3.1.2.4 Other Pollutants

As described earlier in this section, the Tijuana River and the Tijuana River Estuary are CWA Section 303(d)-impaired water bodies for additional parameters of concern that could have harmful impacts on wildlife and human health. Pollutants contributing to these impairments include nutrients (e.g., nitrogen, phosphorus), pesticides (e.g., chlorpyrifos, diazinon, malathion), surfactants, synthetic organics, cadmium, lead, nickel, selenium, and thallium. These pollutants may be introduced by untreated wastewater from the City of Tijuana, non-point source stormwater runoff throughout the watershed, or from agricultural activities in upstream portions of the Tijuana River watershed (HDR, 2020a).

Other pollutants of concern in the Tijuana River can have various deleterious impacts on wildlife and human health, as described below:

- **Excessive nutrient concentrations** (such as nitrate, ammonium as nitrogen, and phosphate) can cause eutrophication, which is an enrichment of nutrients that promotes excessive algal growth. Eutrophication can lead to hypoxia in the water column when algae die and decompose, possibly resulting in a fish kill, and contribute to formation of harmful algal blooms (HABs) that can sicken wildlife and humans (NOAA, 2021b).

- **Pesticides** (a type of synthetic organic compound) can have a range of human health impacts, depending on the type of pesticide. They may irritate skin or eyes, affect the nervous or endocrine systems, or act as carcinogens (EPA, 2017).

- **Surfactants** (including detergents and foaming agents) can be toxic for aquatic species and may form persistent degradation products (EPA, 2021b).

- **Cadmium** can readily bioaccumulate in aquatic organisms, especially mollusks, soil invertebrates, and microorganisms (WHO, 1992). Cadmium contamination can lead to skeletal malformations in fish (WHO, 1992), and cadmium is a probable human carcinogen (ATSDR, 2012).

- **Lead** contamination can delay embryonic development; suppress reproduction; and inhibit growth in fish, crab, and several other aquatic organisms (EPA, 1984). Lead is also a potent neurotoxin in humans (EPA, 2014; National Toxicology Program, 2012).

- **Nickel** can inhibit the growth of microorganisms (e.g., bacteria, protozoans) and algae (Eisler, 1998; EPA, 1986). Nickel toxicity can reduce fish growth and adversely impact the immune system, muscles, gills, and liver in fish and gastropods (Eisler, 1998; EPA, 1986; Min et al., 2015). In humans, nickel can have adverse effects on the blood and kidneys (ATSDR, 2005).

- **Selenium** bioaccumulates in the food web. High concentrations in fish may lead to reproductive impairments and larval mortality (EPA, 2016a). In humans, chronic oral exposure can lead to selenosis, which produces hair loss and neurological abnormalities (ATSDR, 2003). Acute exposure to elemental selenium via inhalation or oral consumption can adversely impact the respiratory, cardiovascular, gastrointestinal, and neurological systems (ATSDR, 2003; EPA, 2000). Selenium may be carcinogenic (Vinceti et al., 2017).

- **Thallium** bioaccumulates in aquatic organisms, possibly presenting a hazard for organisms at higher trophic levels (EPA, 2011). Thallium can lead to deleterious effects on the nervous system, lungs, heart, liver, and kidneys in humans from short-term exposure to high doses. Ingestion of as little as 1 gram of thallium can be lethal to humans (ATSDR, 2015). There is no definitive conclusion on long-term effects of thallium exposure in humans (ATSDR, 2015).

3.1.3 Stormwater Management

Stormwater discharges are regulated at the federal level under the CWA Section 402 NPDES program and the Energy Independence and Security Act (EISA); at the state level under several permitting requirements; and at the county level under the County of San Diego's Watershed Protection, Stormwater Management, and Discharge Control Ordinance. See Section 6.1.2 (Stormwater Management) for additional discussion of regulatory and permitting requirements.

In the City of San Diego, the Stormwater Standards Manual provides stormwater guidance for development projects (City of San Diego, 2018). The City of San Diego's municipal separate storm sewer system (MS4) runs throughout the city and includes drains, pipes, and engineered channels (City of San Diego, 2020c). As described in Section 3.2 (Marine Waters), previous studies have found that MS4 discharges are not a notable source of contamination in the Tijuana River.

Runoff from the ITP is conveyed via stormwater drains to the river. Runoff in the undeveloped southwest quadrant of the ITP parcel flows toward the river through a swale that runs generally northwest alongside the developed portion of the ITP parcel and through an outfall to the river.

See the Hydrology subsection 3.1.1 above for discussion of transboundary stormwater flows and related infrastructure in the Tijuana River and tributary canyons.

3.1.4 Groundwater and Drinking Water

The Tijuana Groundwater Basin, also known as the Lower Tijuana River Valley Basin, overlies a portion of the broader Coastal Plain of San Diego confined aquifer and is roughly coterminous with the Tijuana River Valley (City of San Diego, 2016a). The basin is managed by the San Diego County Water Authority and the California American Water Company but is not currently used as a drinking water source. The Tijuana Groundwater Basin has multiple barriers to use, including saltwater intrusion, exceedances of maximum contaminant levels for multiple pollutants, and contamination from sewage and untreated industrial discharges to the river (City of San Diego, 2016a). The Tijuana Groundwater Basin is not considered to be a major source of recharge to the San Diego coastal plain aquifer, the source of public water supply for the San Diego area. Rather, recharge occurs in regions of the San Diego basin to the east of the Tijuana River Valley that have higher elevation and more consolidated rock types (Flint et al., 2012). Groundwater from the Tijuana Groundwater Basin may be a source to surface flows in the Tijuana River (HDR, 2020a). Discussion of groundwater interactions with surface flows can be found in Section 3.1.1 (Hydrology).

Historically, groundwater in the valley was high in the estuarine areas and supported an extensive alkali meadow complex habitat. Perennial pools were formed from groundwater in areas carved out by scouring from floods. However, groundwater extraction in the Tijuana River Valley increased during periods of agricultural development, most recently peaking in the mid-20th century. By 1960, groundwater levels had dropped below sea level, leading to saltwater intrusion and increases in groundwater salinity. The increased salinity resulted in shutdown of most of the agricultural activity in the Tijuana River Valley, leading to a gradual recovery of groundwater levels. By the 1970s, the water table in the valley generally had recovered to close to historical levels (SFEI, 2017). Groundwater from the Tijuana Groundwater Basin continues to be used for irrigation of the USIBWC-owned sod farm at a rate of approximately 360 to 480 acre-feet per year (ac-ft/year) (M. Williams [West Coast Turf], personal communication, January 4, 2022), but it is unknown whether any other irrigation practices in the Tijuana River Valley continue to rely on this groundwater source.

Examination of natural groundwater inflows and outflows provides the basis for estimating the Natural Safe Yield of the Tijuana Groundwater Basin. Natural Safe Yield is defined as the amount of groundwater that can be used from an aquifer without long-term effects on the volume of groundwater and groundwater levels in the aquifer. In support of permitting for the ITP, the USIBWC estimated the Natural Safe Yield to be 5,500 to 6,000 ac-ft/year (USIBWC, 1976). A more recent study estimated the Natural Safe Yield to be 5,000 to 6,800 ac-ft/year (Metropolitan Water District of Southern California, 2007). If this water is not extracted, it will eventually flow into the Pacific Ocean through a combination of surface flow via the Tijuana River and subsurface flow. The substantial increase in dry-weather transboundary flows in the Tijuana River in recent years (see Figure 1-6) would be expected to provide additional recharge to the alluvial aquifer, suggesting that the current Natural Safe Yield of the Tijuana Groundwater Basin could be greater than the estimates shown above.

Depths to groundwater can be influenced by rainfall, topography, geological stratification, flooding, and groundwater removal (Stantec, 2019). During field excavation in the sediment basin along the main stem of the Tijuana River upstream of Dairy Mart Road, groundwater was encountered at 6 feet below ground surface (bgs), equivalent to 33 feet above mean sea level (MSL) (Stantec, 2019). In another excavation in the same area, groundwater was first encountered between approximately 6 and 15 feet bgs (URS, 2010). Within the ITP parcel, a geotechnical study for the recently constructed equalization tanks encountered groundwater at 28.5 feet bgs, equivalent to 26 feet above MSL, while previous explorations at the site encountered groundwater at elevations ranging between 29 and 37 feet above MSL (URS, 2015).

The City of San Diego purchases the majority of its water from the Colorado River and northern California (City of San Diego, 2020b). Based on available information, there is no evidence that the

Tijuana River is currently used as a drinking water resource. No sole source aquifers or drinking water wells exist in the area.

Recent archeological investigations in Smuggler's Gulch identified a capped artesian well and debris from a spring water bottling company that operated in the 1900s (see Appendix B). The Goat Canyon area may have had an artesian well that provided drinking water, according to a historical ecology study summarizing conditions in the estuary from 1976 to 2016 (Nordby, 2018). In other parts of the watershed, potable water may have been drawn from Moreno Reservoir and Barrett Lake, which are much farther upstream in the watershed. However, it appears that this may have ceased due to ongoing drought in recent years (City of San Diego, 2020c).

3.1.5 Recreational and Commercial Uses

The TRNERR, Tijuana Slough NWR, Tijuana River Valley Regional Park, and Border Field State Park offer recreational opportunities surrounding the river and estuary. Fishing is not allowed in the NWR, and Border Field State Park recommends against swimming or wading in the ocean due to hazardous conditions offshore (CDPR, USFWS, and NOAA, 2010).

The Tijuana River Estuary has been used for recreational shell fisheries and commercial bait fisheries in the past, but fishing is no longer allowed in the TRNERR. Fisheries within the NWR are located on state tidal lands and operate under California State Land Commission Lease No. Public Resources Code (PRC) 5938.9 (CDPR, USFWS, and NOAA, 2010).

3.2 Marine Waters

3.2.1 Physical Oceanography of Southern California

Along the Pacific Ocean coast in southern California, the southward California Current is the dominant oceanic circulation pattern. It flows adjacent to the continental shelf and moves eastward toward the coast near San Diego (Dailey et al., 1993). Seasonal countercurrents flow northward inshore of the California Current during the summer, fall, and winter (Kaplan et al., 2010).

The physical oceanography of coastal waters influences the transport and dispersion of Tijuana River discharges to the ocean. Depending on environmental conditions, a large area of counterclockwise circulation (eddy) extends south from Point Loma. According to radar measurements, this eddy is frequently located to the west of the SBOO or centered near the outfall. There may also be a smaller counterclockwise eddy south of Point Loma. These circulations are dependent on tides and diurnal (i.e., day-night) wind patterns (Largier et al., 2004). Water movement in the shallower nearshore regions is affected by the circulation patterns farther offshore, as well as tidal- and wave-driven currents (Largier et al., 2004). The flow rate of discharge from the Tijuana River is expected to determine whether the outflow is entrained in the nearshore region or pass through to areas farther offshore (Largier et al., 2004).

The San Diego region experiences a mixed semidiurnal tide consisting of two high and two low tides of different magnitudes (Jay & Largier, 2003). The water column is typically stratified to a depth of approximately 20 meters from May to October (Dailey et al., 1993). Seasonal upwelling along the California coast from March to July also impacts water quality conditions, although upwelling has been less pronounced in recent decades as the water temperature has increased. Upwelling occurs in response to currents and wind and causes deep, cold water, typically with more nutrients and less dissolved oxygen, to move to the surface (Kaplan et al., 2010).

3.2.2 Marine Water Quality

Physical and chemical water quality conditions in the ocean offshore of San Diego have been established through previous monitoring. Surface water temperatures are generally 19 °C from July to September, decreasing to approximately 14.5 °C in winter (Dailey et al., 1993). Temperature decreases deeper in the water column, to as low as approximately 10 °C in the winter (City of San Diego, 2020a). Nearshore salinity is between 33 and 34 parts per thousand, with slightly lower salinity in the spring (Dailey et al., 1993). Dissolved oxygen varies from approximately 3 to 12 mg/L, with higher values in the spring and summer, while pH values range from approximately 7.7 to 8.4 (City of San Diego, 2020a).

The Pacific Ocean along the Tijuana River Valley coastline receives flow from the Tijuana River itself, as well as discharges from point sources including the SABTP (and related discharges) to SAB Creek in Mexico, the SBOO near the international border, and the Point Loma Ocean Outfall (PLOO) near the Port of San Diego. Each of these sources has the potential to influence marine water quality. In Mexico, the approximately 35.5 MGD of mixed Tijuana River water and wastewater are discharged into the Pacific Ocean via SAB Creek at Punta Bandera. Shoreline sampling, dye studies, and models have demonstrated that nearshore currents can transport contaminants in these discharges up to 20 kilometers northward (Feddersen et al., 2021). The SBOO, operated and maintained by the City of San Diego, discharges treated effluent from the ITP and SBWRP to the Pacific Ocean at a distance of 3.5 miles offshore at 90 feet below sea level. Discharge from the ITP has been sent to the SBOO since 1999 (City of San Diego, 2020a).

Beaches in the County of San Diego are regularly required to close due to untreated wastewater discharges to the Pacific Ocean via SAB Creek and the Tijuana River. As discussed in Section 1.3.2 (Impacts of Contaminated Transboundary Flows), poor coastal water quality has contributed to frequent beach closures in southern San Diego County. The beaches at Imperial Beach Pier and Border Field State Park have averaged 66 and 170 closure days per year since 2003, respectively, with even more frequent closures at Border Field State Park in recent years (averaging 262 closure days per year since 2019) (City of Imperial Beach, 2022). The County of San Diego monitors the ocean water for FIB and closes beaches if the FIB concentration exceeds the threshold estimated to result in 32 illnesses per 1,000 primary contact recreators (known as the EPA beach action value). The City of Imperial Beach routinely struggles with elevated bacteria levels that result in beach closures. During wet-weather conditions, high flows in the Tijuana River transport polluted water and trash to the Imperial Beach shoreline (City of Imperial Beach, 2019). Segments of the Pacific Ocean shoreline near the mouth of the Tijuana River are impaired for bacteria and other microbes, per CWA Section 303(d) listings from 2016 (EPA, 2021a). According to a multi-year study of the Tijuana River watershed, 99 percent of the indicator bacteria entering the Pacific Ocean from the watershed during wet weather originate from Mexico, rather than from other sources such as municipal stormwater discharges in the U.S. (Weston Solutions, Inc, 2012). A recent modeling study by the Scripps Institution of Oceanography indicated that, while discharges via the Tijuana River and SAB Creek are contributors, discharges via SAB Creek are the predominant cause of modeled beach impacts[18] at Imperial Beach during the tourist (dry) season (Feddersen et al., 2021).

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[18] The cited study by the Scripps Institution of Oceanography estimates the "beach impact fraction" at four beach locations, including Imperial Beach, under varying discharge scenarios from the Tijuana River and SAB Creek. In this study, beach impact fraction is defined as the fraction of time that the modeled mean (expected)

Additionally, nutrient loadings from the Tijuana River watershed could contribute to the formation of HABs along the coastline. In California, HAB events are often related to large-scale oceanographic forcing, although studies have shown that local nutrient inputs are important when cells reach the shore. Effluent and riverine discharges may contribute more than 82 percent of the annual nitrogen input in the San Diego area (Howard et al., 2014). Howard et al. (2014) evaluated the sources of nitrogen loadings to nearshore coastal ecosystems in highly urbanized areas of southern California. They reported that wastewater discharges contribute similar amounts of nitrogen as wind-driven upwelling events, with wastewater contributions in the Tijuana River coastal area being nearly an order of magnitude higher than inputs from upwelling. Howard et al. (2014) estimate that upwelling contributes approximately 2,700 tons/yr of nitrogen in the San Diego area and that effluent, riverine runoff and atmospheric deposition contribute approximately 15,500 tons/yr of nitrogen. It is unclear if Howard et al. (2014) included an estimate of nitrogen flux to the area from SAB Creek. SAB Creek contributes approximately 4,000 tons of nutrients to the Pacific Ocean under current conditions Table 4-6, although this discharge does not reach the California coast unless south swell conditions drive the plume northward. However, the magnitude of nitrogen enrichment suggests it is a substantial source of nitrogen to the marine environment in the region and therefore may be contributing to increased HABs. It is unclear whether SBOO discharges influence the frequency or magnitude of HABs in the San Diego area. However, it seems highly likely that contributions of coastally trapped raw effluent discharged from SAB Creek do contribute to an increased likelihood of HAB events. Based on satellite imagery and water quality data, the presence of HAB events offshore of San Diego often seems to correlate with Tijuana River discharges (Ocean Imaging, 2021).

Through analyzing remote sensing data, researchers have found that satellite data can be used to characterize stormwater and wastewater plumes in the Tijuana River Estuary and along the coast (Ayad et al., 2020). These researchers noted that stormwater has higher turbidity than wastewater, and that flow rates were highest for stormwater and lower for wastewater. It may be possible to use specific statistical analyses to discern the two types of plumes, increasing the chances that researchers can identify plume behavior and better predict the influence of discharges from the river in the future (Ayad et al., 2020).

Limits on discharges to marine receiving waters are regulated under the CWA Section 402 NPDES program and are informed by the National Recommended Water Quality Criteria (NRWQC). See Section 6.1.3 (Marine Waters) for details about regulatory requirements for discharges.

The State Water Resources Control Board (SWRCB), part of the California Environmental Protection Agency (CalEPA), publishes water quality standards and methods for selecting assessment thresholds in a document entitled *A Compilation of Water Quality Goals*. This document references the NRWQCs as a metric that can be used to establish aquatic life protective numeric thresholds for toxicity in ocean waters (SWRCB, 2016).

The California Ocean Plan has been adopted by the SWRCB as part of its Water Quality Control Plan. The California Ocean Plan is intended to protect the quality of ocean waters for public use and enjoyment by controlling discharge of waste to ocean waters and intake of seawater. The California Ocean Plan therefore regulates discharges to the ocean from point source discharges such as the

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probability of swimmer illness exceeds 0.0036 (i.e., 36 per 1,000) due to exposure to norovirus pathogens in untreated wastewater discharges.

SBOO (SWRCB, 2019). The California Ocean Plan identifies water quality objectives, which include standards for bacterial, physical, chemical, and biological characteristics, as well as radioactivity. It also provides water quality objectives for protection of marine aquatic life (based on six-month median, daily maximum, and instantaneous maximum limiting concentrations) and protection of human health from carcinogens and non-carcinogens (based on 30-day average limiting concentrations).

RWQCBs develop Water Quality Control Plans to establish water quality standards for certain bodies of water and their tributaries (SWRCB, 2016). The Water Quality Control Plan of the San Diego Basin provides water quality objectives for dissolved oxygen and pH in ocean water (SDRWQCB, 2016).

The NPDES permits for SBOO discharges from the SBWRP (CA0109045) and the ITP (CA0108928) include both technology-based effluent limitations (TBELs) and water quality-based effluent limitations (WQBELs). WQBELs are in place for non-conventional and toxic pollutants, as listed in the California Ocean Plan (SWRCB, 2019). The NPDES permits were written to comply with the California Ocean Plan and the Water Quality Control Plan of the San Diego Basin.

Both USIBWC and the City of San Diego conduct monitoring pursuant to the terms of the SBOO NPDES permits. USIBWC monitors water quality along the Pacific Ocean coastline to comply with its NPDES permit for the ITP. As part of its monitoring program for the SBOO and PLOO, the City of San Diego Public Utilities monitors water quality, benthic characteristics, demersal fishes and invertebrates, and bioaccumulation of contaminants in fishes. They assess 60 locations for the SBOO and 82 for the PLOO, located along the shore to offshore at depths of approximately 200 feet (City of San Diego, 2020a). Water quality conditions at their testing sites are expected to be influenced by oceanographic currents, as well as point and non-point source pollution. Recent monitoring results show no evidence that treated effluent plumes from the SBOO and the PLOO are reaching nearshore waters (City of San Diego, 2020a). The City of San Diego Public Utilities also participates in a periodic regional monitoring program that measures a broader suite of parameters, such as habitats. Based on plume dispersion monitoring, there was no evidence that effluent from either outfall impacted shoreline water quality. The PLOO and SBOO generally complied with the California Ocean Plan based on monitoring at shoreline, kelp forest, or offshore locations (City of San Diego, 2020a).

3.2.3 Recreational and Commercial Uses

The State of California established the Tijuana River Mouth State Marine Conservation Area (SMCA), which is a type of Marine Protected Area (MPA), located along the coast of Border Field State Park, in January 2012 (City of Imperial Beach, 2019). MPAs are intended to protect marine ecosystems and conserve biodiversity (City of Imperial Beach, 2019). The Tijuana River Mouth SMCA is approximately 3 square miles and comprises 2.37 miles of shoreline (CDFW, 2016). Within the Tijuana River Mouth SMCA, fishing is limited to Coastal Pelagic Species (CPS) (except market squid) with additional restrictions (i.e., recreational fishing is limited to hand-held dip nets only and commercial fishing is limited to round haul nets only).

The coastal communities near the Tijuana River Valley contain numerous recreational opportunities in the Pacific Ocean. Visitors seek out the marine recreational resources along the coastlines of San Diego and Imperial Beach, contributing to ecotourism in the area (City of Imperial Beach, 2019). The City of Imperial Beach is popular for surfing and hosts surfing competitions and festivals, such as the Dempsey Holder Ocean Festival and Surf Contest, which attracted over 200 contestants in 2019 (WILDCOAST, 2021). Imperial Beach alone has over 400,000 beachgoers annually, many of whom engage in aquatic recreation activities such as surfing (City of Imperial Beach, 2019). Despite surfing's popularity, beach closures prevent surfers from enjoying the sport and negatively impact related businesses, such as local surf shops (Solis, 2018). See Section 3.2.2 (Marine Water Quality) regarding beach closures caused by poor water quality.

Sea kayaking and stand-up paddle boarding are popular along the coast (San Diego Tourism Authority, 2021). Boating is popular on San Diego Bay, which supports related businesses, such as fuel docks, boat repair, and waterfront restaurants. Local businesses rent and charter fishing boats and yachts and rent personal watercraft such as jet skis. Recreational fishers can fish from offshore boats or ocean piers for species such as bluefin, yellowtail, mahi-mahi, and mako. Companies offer tours for seasonal blue whale watching, and scuba diving and snorkeling are popular near Point Loma (San Diego Tourism Authority, 2021).

3.3 Floodplains

Flooding in the Tijuana River Valley regularly results in changes to the floodplain, topographic features, and the hydrology surrounding the river. The valley floor is relatively flat with low riverbanks, and therefore a rise in water level of a matter of feet can cause widespread flooding (SFEI, 2017). Flood events in the valley influence sediment transport and groundwater replenishment and also contribute to channel avulsions, or rapid lateral movements of the river channel, within the 100-year floodplain (SFEI, 2017). Large flood events, by clearing and scouring vegetation, also have impacts on habitat characteristics. For example, the flood events in early 1980 cleared the way for the establishment of current willow forest habitat marking a transition in valley habitats from riparian scrub to riparian forests (SFEI, 2017).

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps designate a large portion of the Tijuana River Valley as a Special Flood Hazard Area (SFHA)—also known as the 100-year floodplain (Zone A and Zone AE)—which indicates areas that would be inundated by the flood event having a 1 percent chance of being equaled or exceeded in any given year. The majority of the 100-year floodplain is also designated as a regulatory floodway, meaning the river and adjacent land must be able to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height (FEMA, 2020b).[19] FEMA-designated 500-year floodplains (Zone X, 0.2 percent Annual Chance Flood Hazard), which have a 0.2 percent chance of being equaled or exceeded in any given year, are present along the valley perimeter. Areas outside the 500-year floodplain (Zone X, Area of Minimal Flood Hazard) occur on the mesa landforms along the southern edge of the valley (FEMA, 2020a). The ITP parcel is partially within the mapped 500-year floodplain with the remaining portion in an area of minimal flood hazard. Smuggler's Gulch and Goat Canyon are predominantly mapped as an area of minimal flood hazard. See Figure 3-10 for FEMA flood zone information in the project areas.

Since 1980, large flood events have ranged between 17,500 and 30,000 cfs, none of which exceed the estimated discharge of 67,100 cfs necessary to be considered a 100-year flood (SFEI, 2017; USACE, 2018). The only documented flood event that had the capacity to exceed the 100-year floodplain was the 1916 flood, which produced an estimated 75,000 cfs peak discharge (SFEI, 2017).

[19] The main channel has a Base Flood Elevation (BFE) ranging from 40 feet near Dairy Mart Road Bridge to 56 feet near the border.

Flood control structures in the Tijuana River Valley include the north levee (approximately 2 miles) that extends to the north of the river and curves around the adjacent sod farm, and the south levee (approximately 1.9 miles) that parallels the U.S.-Mexico border and then curves along the northern boundary of the ITP parcel, ending at Dairy Mart Road. The levees, which were constructed in 1978, are maintained by CBP in accordance with a 1980 Memorandum of Understanding with USIBWC and are designed to protect adjacent properties from the 100-year flood (USIBWC, 2008). To protect the ITP, the south levee was enhanced along the border of the ITP parcel to protect the site from a 333-year flood elevation level and is designed with more than 3 feet of freeboard (IBWC, 2011, p. 7.1-13; Stantec, 2020b). Starting at the border, the river is contained in an approximately 1,200-foot-long concrete channel leading to a 3,700-foot-long energy dissipater constructed by USACE in 1978 (USIBWC, 2016). Recent hydraulic models show that the north levee near Dairy Mart Road would be overtopped during a 100-year flood event and fails to maintain the required minimum freeboard of 3 feet above the 100-year water surface elevation at three other locations (Stantec, 2020b). A USIBWC project to enhance the north levee and associated flood control structures to better withstand the 100-year flood is currently undergoing design (C. Cadillo, personal communication, April 4, 2022).

Federal, state, and county requirements are placed on actions occurring within floodplains, as described in Section 6.1.4 (Floodplains).

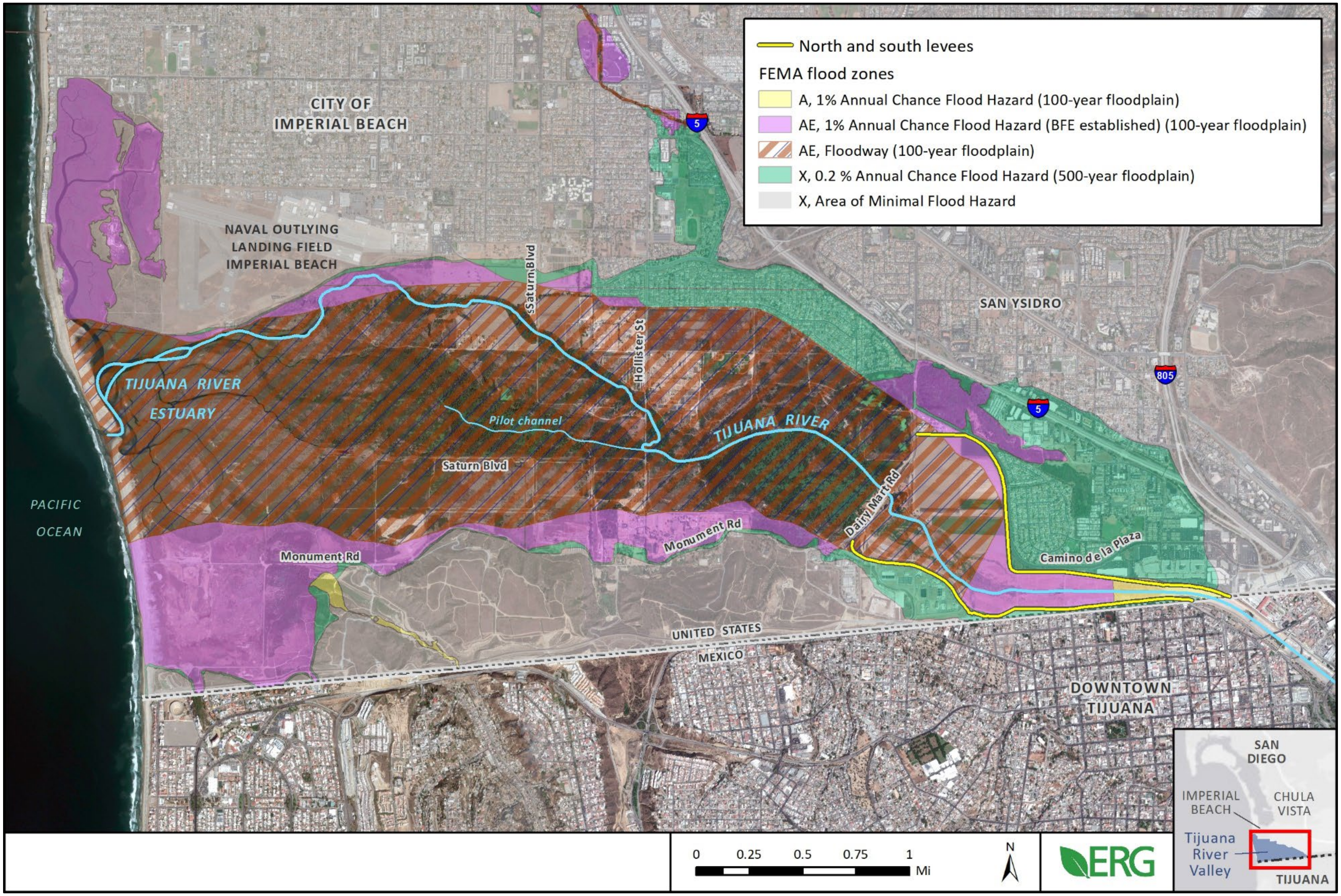

Figure 3-10. Floodplains in the Tijuana River Valley

3.4 Inland Biological Resources

3.4.1 Botanical Resources

Vegetation Communities Including Sensitive Natural Communities

A wide variety of vegetation communities occur in the Tijuana River Valley and provide habitat to many special-status species.[20] Figure 3-11, Figure 3-12, and Figure 3-13 display the vegetation communities, including sensitive natural communities,[21] that are present in the Tijuana River Valley near the Proposed Action, based on the Vegetation Classification and Mapping Program (VegCamp) data from 2016 (CDFW, 2021e); the Vegetation Classification Manual for Western San Diego County (SANDAG, 2011); and reconnaissance surveys conducted by Stillwater Sciences in April 2021 (see Appendix D) and February 2022 (a subsequent site visit with USFWS was conducted, in which these vegetation datasets were further refined to better match available aerial imagery).[22] Table 3-4 summarizes the mapped vegetation types that overlap with the evaluated areas.[23] The developed portion of the ITP parcel contains maintained and landscaped areas, and the undeveloped portion contains previously disturbed upland habitat that is partially revegetated; these areas were categorized as disturbed/non-native grassland or Mulefat scrub where appropriate. CBP conducts mechanical removal of vegetation along the Tijuana River Channel, though vegetation removal is restricted in areas that provide least Bell's vireo habitat (CBP, 2017). All other project areas are relatively undeveloped.

Based on the mapping efforts, the most common upland habitat types within the evaluated area are agriculture, disturbed non-native or planted grasslands, and California sagebrush-California Buckwheat Alliance. The most common wetland type is Naturalized Warm-Temperate Riparian and Wetland Semi-Natural Stands, which is dominated by non-native species. Lemonade berry Scrub and Gooding's willow-red willow Riparian Woodland and Forest are the only sensitive natural communities documented in the evaluated area (Table 3-4).

[20] Special-status plant species are defined as those species listed, proposed, or under review as endangered or threatened under the federal ESA or the CESA; listed as rare under the California Native Plant Protection Act; and/or included on CDFW's most recent *Special Vascular Plants, Bryophytes, and Lichens List* with a California Rare Plant Rank (CRPR) of 1, 2, 3, or 4 (CDFW, 2020c).

[21] Sensitive natural communities are defined as those natural community types with a state ranking of S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable) as listed in the most recent *California Natural Community List* (CDFW, 2020a).

[22] Stillwater Sciences conducted a reconnaissance survey on April 14–16, 2021, to review the evaluated area. During this effort, the vegetation mapping was adjusted in some areas; special-status plant and wildlife species that were incidentally observed were noted (with forms subsequently submitted to CNDDB); and notes were taken regarding potential habitat for all species (plants, wildlife, and fish).

[23] Habitat types excluded from the table include developed, graded/scraped/maintained, and open water.

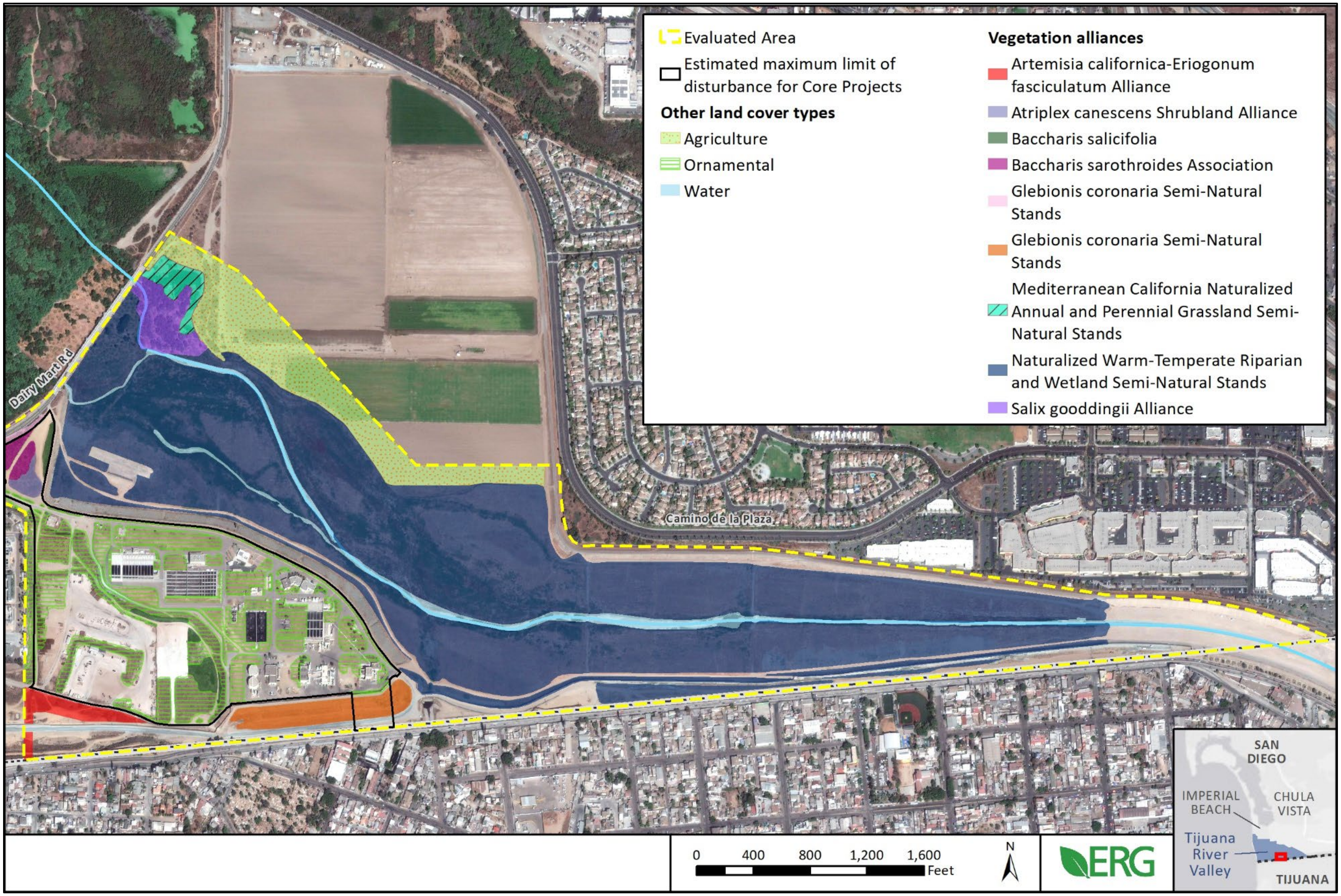

Figure 3-11. Vegetation Types in the Evaluated Area for the Proposed Action (Upstream of Dairy Mart Road Bridge)

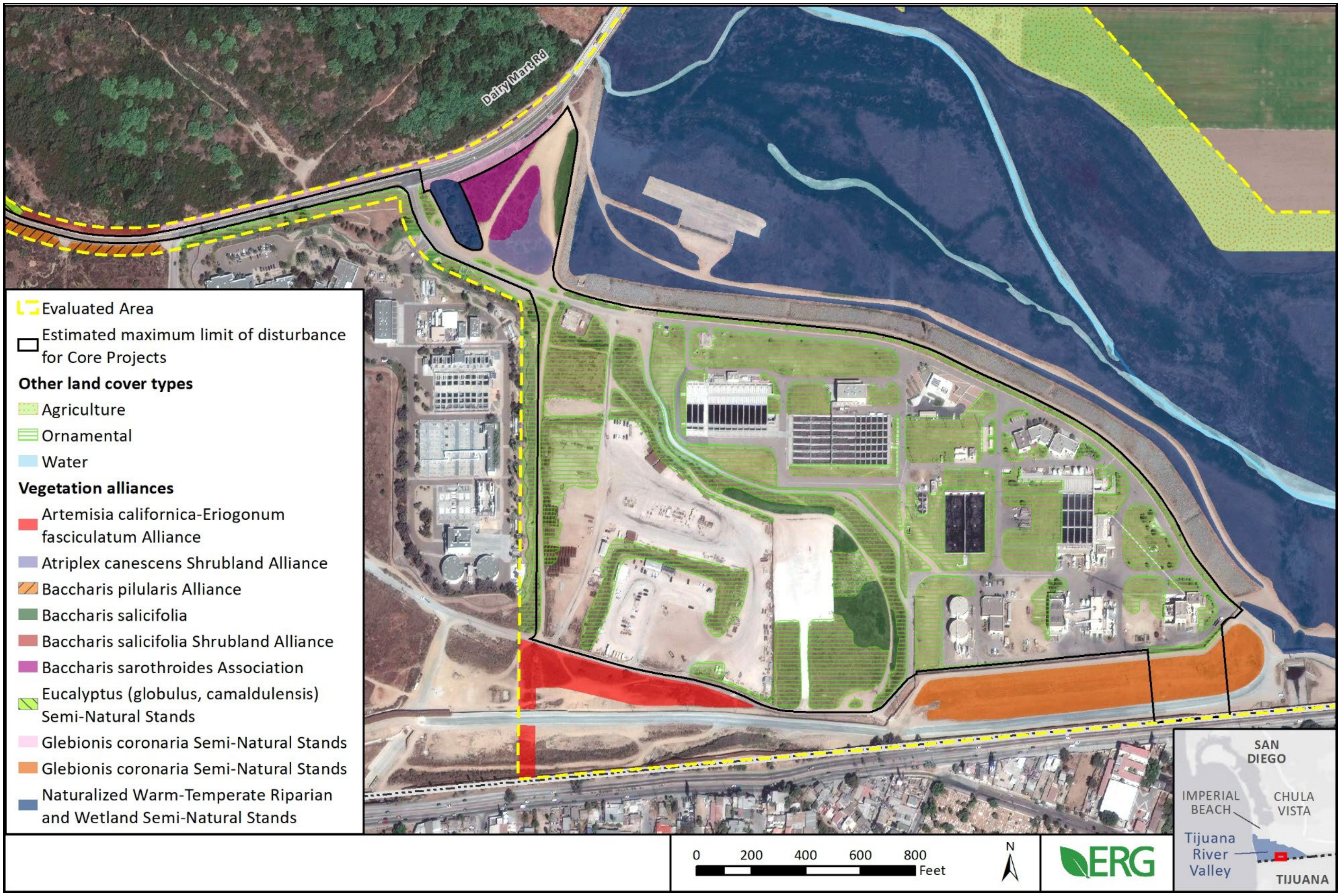

Figure 3-12. Vegetation Types in the Evaluated Area for the Proposed Action (Detail of ITP Parcel)

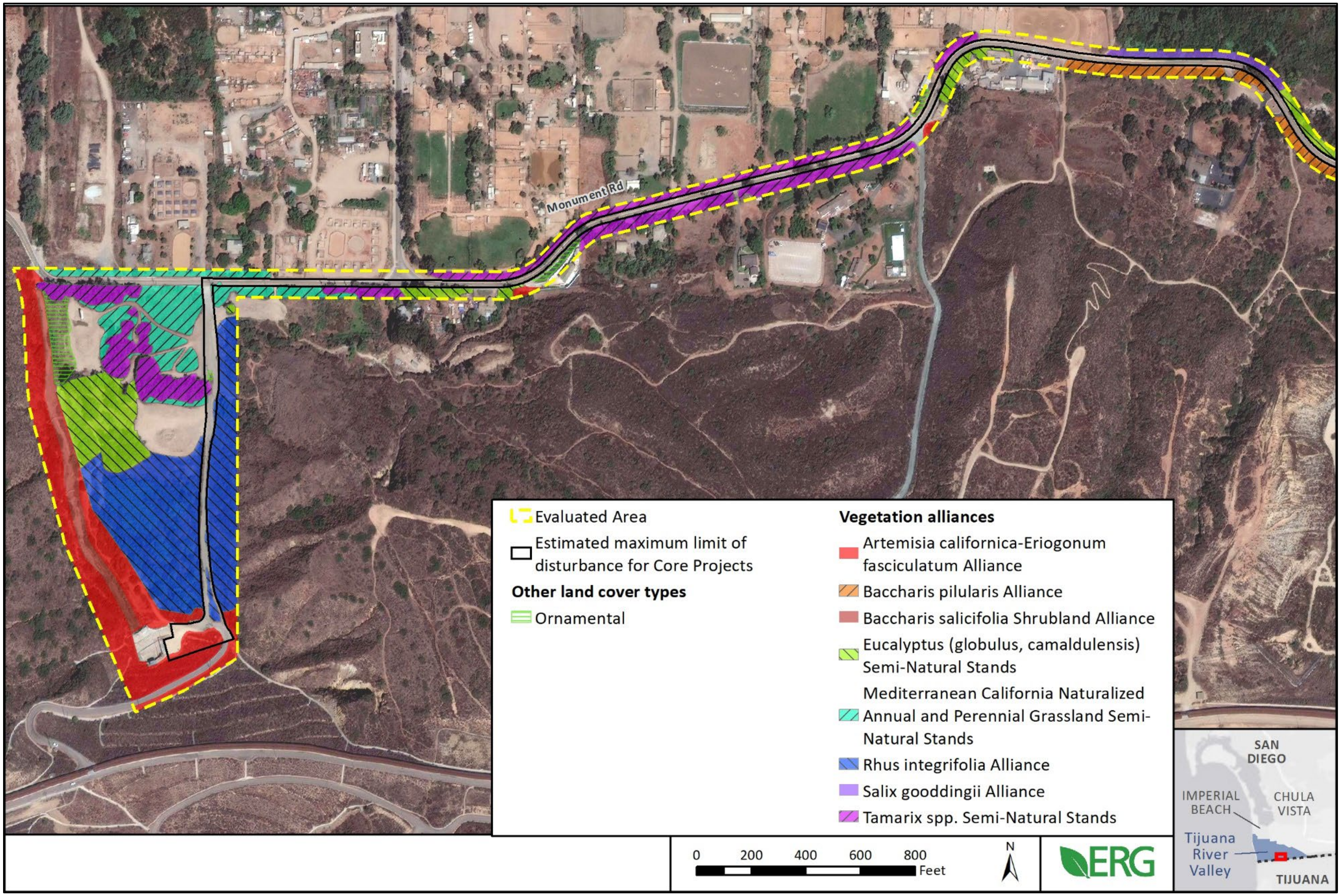

Figure 3-13. Vegetation Types in the Evaluated Area for the Proposed Action (Smuggler's Gulch and Monument Road)

Table 3-4. Vegetation Types Mapped Within the Alternative 1 and 2 Areas

Vegetation Types [a, b]	Corresponding Holland Type [d]	Total Acres [e]	Alternative Areas	
			Alternative 1	Alternative 2
Upland types				
Agriculture	None	18.79		✓
California sagebrush-California buckwheat Alliance (*Artemisia californica-Eriogonum fasciculatum-Opuntia littoralis/Dudleya* (*edulis*) Association) [c]	Maritime Succulent Scrub	7.40	✓	✓
Coyote brush scrub (*Baccharis pilularis* Alliance)	Diegan Coastal Sage Scrub: Baccharis-Dominated	1.42		✓
Crown daisy (*Glebionis coronaria*) Semi-Natural Stands	Disturbed Habitat	5.71	✓	✓
Disturbed, non-native grassland	None	14.07	✓	✓
Disturbed, planted grass	None	13.80	✓	✓
Broom baccharis scrub (*Baccharis sarothroides* Provisional Alliance	None	1.23	✓	✓
Eucalyptus (*globulus, camaldulensis*) Semi-Natural Stands	Eucalyptus Woodland	2.82		✓
Fourwing saltbush scrub *(Atriplex canescens* Shrubland Alliance)	Interior Coast Range Saltbush Scrub	0.74	✓	✓
Lemonade berry scrub (*Rhus integrifolia* Alliance)	Diegan Coastal Sage Scrub	6.48	✓	✓
Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands	Non-Native Grassland	4.81	✓	✓
Wetland types				
Gooding's willow-red willow Riparian Woodland and Forest (*Salix gooddingii*-Salix laevigata Forest and Woodland Alliance)	Southern Riparian Woodland	4.44		✓
Mulefat scrub (*Baccharis salicifolia* Alliance)	Mule Fat Scrub	3.21	✓	✓
Naturalized Warm-Temperate Riparian and Wetland Semi-Natural Stands	Non-Native Riparian	148.54		✓
Tamarisk thickets (*Tamarix* spp. Semi-Natural Stands)	Non-Native Riparian	4.58	✓	✓

a – Based on a combination of VegCamp data (CDFW, 2021e)), where available; the Vegetation Classification Manual for Western San Diego County (SANDAG, 2011); and reconnaissance surveys conducted by Stillwater Sciences in April 2021.
b – Bolded alliances are sensitive natural communities with a rank of S3 or higher.
c – The association is listed because it corresponds to a different Holland type (Maritime Succulent Scrub) than the alliance (Diegan Coastal Sage Scrub); the association correspondence is more accurate in this case.
d – (Holland, 1986).
e – Some portions of the project areas were not mapped.

Special-status plants

Lists of the special-status plant species and sensitive natural communities potentially occurring in the Alternative 1 and 2 areas were developed by querying the following resources:

- USFWS Information for Planning and Conservation (IPaC) portal for federally listed and proposed endangered, threatened, and candidate species (USFWS, 2022).
- CDFW's California Natural Diversity Database (CNDDB) (CDFW, 2022).
- California Native Plant Society's (CNPS's) online Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2022).
- VegCamp data from 2016 (CDFW, 2021e).

The CNDDB and CNPS queries were based on a search of the U.S. Geological Survey 7.5-minute quadrangle in which the Project is located (Imperial Beach) and the surrounding four quadrangles[24] (Point Loma, National City, Jamul Mountains, and Otay Mesa). Table C-1 in Appendix C (Database Query Results for Special-status Species and Sensitive Natural Communities) provides a summary of all special-status plant species that may have the potential to be present within the evaluated area, which includes 16 federally listed and 14 state-listed species. Table 3-5 provides a summary of special-status plant species with the potential to occur, including those species documented within the boundaries or in the vicinity (i.e., within 200 feet) of the evaluated area. Of the eight special-status species documented within or adjacent to the evaluated area, three (San Diego sand aster, slender cottonheads, and bottle liverwort) are documented within the Core Project Areas. Appendix C, Table C-2 provides a summary of all sensitive natural communities documented in CNDDB; Table 3-4 above summarizes vegetation types, including sensitive natural communities documented in the evaluated area.

[24] IPaC, CNDDB, and CNPS databases do not contain data for areas outside California and/or the U.S.

Table 3-5. Special-status Plant Species with the Potential to Occur Within the Evaluated Area of Each Alternative

Scientific Name	Common Name	Status [a] Federal/State/ CRPR/MSCP	Alternative 1	Alternative 2
Acanthomintha ilicifolia	San Diego thorn-mint	FT/CE/1B.1/MSCP	–	–
Acmispon prostratus	Nuttall's acmispon	–/–/1B.1/–	–	–
Adolphia californica	California adolphia	–/–/2B.1/–	–	–
Agave shawii var. shawii	Shaw's agave	–/–/2B.1/MSCP	–	–
Ambrosia chenopodiifolia	San Diego bur-sage	–/–/2B.1/–	–	–
Ambrosia monogyra	Singlewhorl burrobrush	–/–/2B.2/–	–	A
Ambrosia pumila	San Diego ambrosia	FE/–/1B.1/MSCP	–	–
Aphanisma blitoides	Aphanisma	–/–/1B.2/MSCP	–	–
Artemisia palmeri	San Diego sagewort	–/–/4.2/–	–	–
Atriplex coulteri	Coulter's saltbush	–/–/1B.2/–	–	–
Atriplex pacifica	South Coast saltscale	–/–/1B.2/–	–	–
Bergerocactus emoryi	Golden-spined cereus	–/–/2B.2/–	–	–
Bloomeria clevelandii	San Diego goldenstar	–/–/1B.1/MSCP	–	–
Brodiaea filifolia	Thread-leaved brodiaea	FE/CE/1B.1/MSCP	–	–
Brodiaea orcuttii	Orcutt's brodiaea	–/–/1B.1/MSCP	–	–
Calandrinia breweri	Brewer's calandrinia	–/–/4.2/–	–	–
Camissoniopsis lewisii	Lewis' evening-primrose	–/–/3/–	–	–
Chorizanthe orcuttiana	Orcutt's spineflower	FE/CE/1B.1/MSCP	–	–
Chorizanthe polygonoides var. longispina	Long-spined spineflower	–/–/1B.2/–	–	–
Cistanthe maritima	Seaside cistanthe	–/–/4.2/–	–	–
Convolvulus simulans	Small-flowered morning-glory	–/–/4.2/–	–	–
Corethrogyne filaginifolia var. incana	San Diego sand aster	–/–/1B.1/–	W[b]	W[b]
Cylindropuntia californica var. californica	Snake cholla	–/–/1B.1/MSCP	–	–
Deinandra conjugens	Otay tarplant	FT/CE/1B.1/MSCP	–	–
Deinandra paniculata	Paniculate tarplant	–/–/4.2/–	–	–
Dichondra occidentalis	Western dichondra	–/–/4.2/–	–	–
Dicranostegia orcuttiana	Orcutt's bird's-beak	–/–/2B.1/MSCP	–	–
Dudleya attenuata ssp. attenuata	Orcutt's dudleya	–/–/2B.1/–	–	–
Dudleya blochmaniae ssp. blochmaniae	Blochman's dudleya	–/–/1B.1/–	–	–
Dudleya brevifolia	Short-leaved dudleya	–/CE/1B.1/MSCP	–	–
Dudleya variegata	Variegated dudleya	–/–/1B.2/MSCP	–	–
Dudleya viscida	Sticky dudleya	–/–/1B.2/MSCP	–	–

Table 3-5. Special-status Plant Species with the Potential to Occur Within the Evaluated Area of Each Alternative

Scientific Name	Common Name	Status [a] Federal/State/ CRPR/MSCP	Alternative 1	Alternative 2
Ericameria palmeri var. *palmeri*	Palmer's goldenbush	–/–/1B.1/–	–	–
Eryngium aristulatum var. *parishii*	San Diego button-celery	FE/CE/1B.1/MSCP	–	–
Erysimum ammophilum	Sand-loving wallflower	–/–/1B.2/–	–	–
Euphorbia misera	Cliff spurge	–/–/2B.2/–	–	–
Ferocactus viridescens	San Diego barrel cactus	–/–/2B.1/MSCP	A	A
Harpagonella palmeri	Palmer's grapplinghook	–/–/4.2/–	–	–
Hesperevax caulescens	Hogwallow starfish	–/–/4.2/–	–	–
Heterotheca sessiliflora subsp. *sessiliflora*	Beach goldenaster	–/–/1B.1/–	–	W
Hordeum intercedens	Vernal barley	–/–/3.2/–	–	–
Isocoma menziesii var. *decumbens*	Decumbent goldenbush	–/–/1B.2/–	–	–
Iva hayesiana	San Diego marsh-elder	–/–/2B.2/–	A	W[b]
Juglans californica	Southern California black walnut	–/–/4.2/–	–	–
Lasthenia glabrata subsp. *coulteri*	Coulter's goldfields	–/–/1B.1/–	–	–
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	–/–/4.3/–	–	–
Leptosyne maritima	Sea dahlia	–/–/2B.2/–	–	–
Lilium humboldtii subsp. *ocellatum*	Ocellated Humboldt lily	–/–/4.2/–	–	–
Lycium californicum	California box-thorn	–/–/4.2/–	–	–
Microseris douglasii subsp. *platycarpha*	Small-flowered microseris	–/–/4.2/–	–	–
Monardella stoneana	Jennifer's monardella	–/–/1B.2/–	–	–
Monardella viminea	Willowy monardella	FE/CE/1B.1/MSCP	–	–
Mucronea californica	California spineflower	–/–/4.2/–	–	–
Myosurus minimus subsp. *apus*	Little mousetail	–/–/3.1/MSCP	–	–
Nama stenocarpa	Mud nama	–/–/2B.2/–	–	–
Navarretia fossalis	Spreading navarretia	FT/–/1B.1/MSCP	–	–
Navarretia prostrata	Prostrate vernal pool navarretia	–/–/1B.1/–	–	–
Nemacaulis denudata var. *gracilis*	Slender cottonheads	–/–/2B.2/–	W[b]	W[b]
Orcuttia californica	California Orcutt grass	FE/CE/1B.1/MSCP	–	–
Orobanche parishii subsp. brachyloba	Short-lobed broomrape	–/–/4.2/–	–	–
Phacelia stellaris	Brand's star phacelia	–/–/1B.1/–	–	–
Quercus dumosa	Nuttall's scrub oak	–/–/1B.1/–	–	–
Romneya coulteri	Coulter's matilija poppy	–/–/4.2/–	–	–
Selaginella cinerascens	Ashy spike-moss	–/–/4.1/–	–	–

Table 3-5. Special-status Plant Species with the Potential to Occur Within the Evaluated Area of Each Alternative

Scientific Name	Common Name	Status [a] Federal/State/ CRPR/MSCP	Alternative 1	Alternative 2
Senecio aphanactis	Chaparral ragwort	–/–/2B.2/–	–	–
Sphaerocarpos drewiae	Bottle liverwort	–/–/1B.1/–	W	W
Stipa diegoensis	San Diego County needle grass	–/–/4.2/–	–	–
Stylocline citroleum	Oil neststraw	–/–/1B.1/–	–	–
Viguiera laciniata	San Diego County viguiera	–/–/4.3/–	A[c]	A[c]
Non-vascular plants				
Geothallus tuberosus	Campbell's liverwort	–/–/1B.1/–	–	–
Mobergia calculiformis	Light gray lichen	–/–/3/–	–	–
Tortula californica	California screw-moss	–/–/1B.2/–	–	–

Source: (CDFW, 2022; CNPS, 2022; USFWS, 2022).

Note: W = Special-status plant species documented within the boundaries of each Alternative Area; A = Special-status plant species documented adjacent to each Alternative Area.

a – **Federal:** FE = Federally endangered, FT = Federally threatened, – = No federal listing; **State:** CE = California endangered, – = No California listing; **CRPR List Ranks:** List 1B = Plants rare, threatened, or endangered in California and elsewhere; List 2B = Plants rare, threatened, or endangered in California, but more common elsewhere; List 4 = Plants of limited distribution, a watch list; **CRPR Threat Ranks:** 0.1 = Seriously threatened in California (high degree/immediacy of threat); 0.2 = Fairly threatened in California (moderate degree/immediacy of threat); 0.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known); **MSCP:** Species covered under the Multiple Species Conservation Program (MSCP).

b – These occurrences as represented by large polygons as exact location are inaccurate; therefore, it is unclear if the species is within or adjacent to the evaluated areas.

c – Species documented during reconnaissance surveys in April 2021.

Habitat Conservation Plans

Biological resources management in the Tijuana River Valley is handled by various entities with applicable jurisdiction such as the City of San Diego and the USFWS. The MSCP is a cooperative regional conservation planning program whose goal is to balance protection of habitat and species with recreation, development, and agricultural activities within the San Diego region (County of San Diego, 2020a). The MSCP provides a means to comply with federal and state conservation laws; it establishes conservation guidelines and terms under which non-federal development may 'take'[25] covered species incidental to an otherwise lawful activity, including how the take will be minimized and mitigated to the maximum extent practicable (City of San Diego, 2021d). The Tijuana River Valley is located within the City of San Diego MSCP Subarea Plan boundaries, which also includes a Multi-Habitat Planning Area (MHPA) delineated by the City of San Diego to protect critical, sensitive biological resources (County of San Diego, 2007). A large portion of the Tijuana River Valley is included in this MHPA. Development may be subject to the guidelines established in the Subarea Plan for the MSCP. Plant species covered under this plan are described below, and wildlife species covered under this plan are described in Section 3.4.2 (Wildlife and Inland Fish Resources) below.

The MSCP covers 46 plant species and recognizes multiple other species (e.g., narrow endemic species). In addition to special-status plant species discussed above that may be covered under the MSCP, the following MSCP species do not meet the definition of special-status plant species above but are likely to use or are known to occur in the Tijuana River Basin or surrounding area: coast wallflower (*Erysimum ammophium*), Dean's milk vetch (*Astragalus deanei*), Del Mar Mesa sand aster (*Corethrogyne filaginifolia var. linifolia*), heart-leaved pitcher sage (*Lepechinia cardiophylla*), mission Canyon bluecup (*Githopsis diffusa subsp. filicaulis*), narrow-leaved nightshade (*Solanum tenuilobatum*), Nuttall's lotus (*lotus nuttallianus*), Palmer's ericameria (*Ericameria palmeri subsp. palmeri*), slender-pod jewelflower (*Caulanthus heterophyllus*), and dense pine-reed grass (*Calamagrostis koelerioides*).

3.4.2 Wildlife and Inland Fish Resources

General

The Tijuana River Valley is home to many wildlife and fish species. Habitats within the Tijuana River Valley provide foraging and nesting habitat for migratory and resident bird species, as well as cover and foraging opportunities for reptiles and mammals (County of San Diego, 2007). Fish have been observed in the small tidal creeks and channels found in the Tijuana River Valley, and anadromous fish species have historically used the Tijuana River as a migratory corridor to reach spawning and rearing habitat located in upstream perennial waters. The Tijuana River Estuary is designated an NNL due to its national significance, possessing one of the finest saltwater marshes on the California coastline, supporting endangered bird species, and providing important habitat for other wildlife, especially waterfowl (National Park Service, 2020).

Special-status wildlife and fish species are defined as: 1) listed, proposed for listing, or under review as rare, threatened, or endangered under the federal ESA or the CESA; 2) protected under the BGEPA; or 3) designated by CDFW as Fully Protected or a Species of Special Concern. See

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[25] In accordance with the ESA, the term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

Section 6.1.5 (Inland Biological Resources) for information on federal and state laws that protect species found in the Tijuana River Valley.

As discussed in Section 3.4.1 (Botanical Resources), development within the Tijuana River Valley may be subject to the guidelines established in the MSCP per the City of San Diego MSCP Subarea Plan. The MSCP, which covers 39 wildlife species, establishes conservation guidelines and terms under which non-federal development may take covered species incidental to an otherwise lawful activity, including how the take will be minimized and mitigated to the maximum extent practicable. The MSCP recognizes wildlife species, including a subset with no federal or state listing or status (e.g., Species of Special Concern), that could use habitats in the Tijuana River Basin. In addition to special-status wildlife species discussed in the sections below that may be covered under the MSCP, the following MSCP-covered species do not meet the definition of special-status wildlife above but are likely to use or are known to occur in the Tijuana River Basin or surrounding area: wandering (salt marsh) skipper butterfly (*Panoquina errans*), orange-throated whiptail (*Aspidoscelis hyperythra*),[26] Canada goose (*Branta canadensis*), reddish egret (*Egretta rufescens*), white-faced ibis (*Plegadis chihi*), Cooper's hawk (*Accipiter cooperii*),[27] ferruginous hawk (*Buteo regalis*), long-billed curlew (*Numenius americanus*), elegant tern (*Thalasseus elegans*), western bluebird (*Sialia mexicana*), rufous-crowned sparrow (*Aimophila ruficeps*), mountain lion (*Puma concolor*), and southern mule deer (*Odocoileus hemionus fuliginatus*).

USFWS practices predator management at the Tijuana River Slough NWR to increase the productivity of the California least tern, the light-footed Ridgway's rail, and the western snowy plover (CDPR, USFWS, and NOAA, 2010). Avian and mammalian predator monitoring is conducted to identify and control predators that pose a threat to these critical populations (CDPR, USFWS, and NOAA, 2010). In addition, physical devices such as tiles and exclosures are placed within California least tern and snowy plover colonies to help protect chicks and eggs from predation, and nesting platforms are installed in marsh habitats to help with enhanced light-footed Ridgway's rail protection from avian predators (CDPR, USFWS, and NOAA, 2010).

The Tijuana River Valley faces a number of threats from invasive species. For example, the shot hole borer beetle damages native plants by causing fungal infections and, following an outbreak in 2015, has impacted thousands of trees in the valley (SFEI, 2017). Additionally, the presence of brown-headed cowbirds in the Tijuana River Valley have impacted nesting success of special-status species, including the least Bell's vireo (Unitt, 2004). Human induced habitat modifications, such as the abandonment of previous sand and gravel burrow pits in the vicinity of Dairy Mart Road, create perennial ponds that support a variety of invasive species (R. Fisher, personal communication, April 2, 2021).

Wildlife

A list of the special-status wildlife species potentially occurring in or near the Alternative 1 and 2 areas was developed by querying the IPaC portal for federally listed and proposed endangered, threatened, and candidate species (USFWS, 2022); the CNDDB (CDFW, 2022); and available biological reports and literature from the region.

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[26] Observed in the Tijuana River Estuary during the April 2021 reconnaissance surveys by Stillwater Sciences.

[27] Call heard near gravel borrow pits during the April 2021 reconnaissance surveys by Stillwater Sciences.

To determine the likelihood of each special-status wildlife species (from the database queries) to occur in or near the evaluated areas, the habitat preferences and distributional range of each species was compared with existing information, results of prior surveys, and information collected from reconnaissance-level habitat assessments conducted by Stillwater Sciences in April 2021 and February 2022. The field assessments focused on areas along the Tijuana River Basin, including Tijuana River (from the international boundary to Dairy Mart Road), the ITP and surrounding infrastructure and staging areas, and Smuggler's Gulch. The field visits included examining the extent and quality of available habitat features and elements (e.g., habitat connectivity and suitable aquatic habitat) and noting all wildlife species observed, including special-status species.

The following describe the categories for likelihood of a special-status species to occur in or near the evaluated area:

- None (no potential to occur): the alternative area is outside of the species' known distribution or elevation range and/or the species' required habitat is lacking from the alternative area.
- Low (not expected to occur): the species' known distribution or elevation range overlaps with the alternative area and the species' required habitat is of very low quality or quantity in the alternative area; suitable key habitat or habitat elements may be present but may be of poor quality or isolated from the nearest extant occurrences.
- Moderate (may possibly occur): the species' known distribution or elevation range overlaps with the alternative area and the species' required habitat occurs in the alternative area. There may be documented extant occurrences nearby.
- High (present): the species has been documented in the alternative area and/or its required habitat occurs in the alternative area and is of high quality.

Fifty-seven special-status wildlife species were identified from the database queries as potentially occurring in the evaluated area (Appendix C). Of these, 15 species were determined to have no potential to occur in the project boundaries or be affected by the alternatives (Appendix C). Table 3-6 lists the 42 species with high, moderate, or low potential to be present in the project boundaries (of the Core Projects for Alternative 1) or, in the case of Alternative 2, to be present in areas potentially affected by predicted downstream effects in addition to the project boundaries. Effects on species with high or moderate potential to occur in the evaluated area are included in Section 4.4 (Inland Biological Resources). Species with low potential to occur are only evaluated for project-related effects (Section 4.4 [Inland Biological Resources]) if they are federally and/or state-listed under the ESA and/or CESA and where unavoidable impacts to the species would be potentially significant. Appendix C includes additional details for special-status wildlife species, including likelihood to occur, status, range, and closest documented occurrences (if any).

Table 3-6. Special-status Wildlife Species with Low, Moderate, or High Potential to Occur

Common Name *Scientific Name*	**Status (Federal/State/ MSCP) [a]**	**Habitat Associations**	**Likelihood to Occur**	
			Alternative 1	**Alternative 2**
Invertebrates				
San Diego fairy shrimp *Branchinecta sandiegonensis*	FE/–/MSCP	Coastal vernal pool complexes and similar ephemeral wetland types	Low	Low
Riverside fairy shrimp *Streptocephalus woottoni*	FE/–/MSCP	Vernal pools, ponds, and other ephemeral pools or pool complexes	None	Low [c]
Crotch's bumble bee *Bombus crotchii*	–/SCE/–	Open grassland and scrub habitats; nests are often located underground in abandoned rodent burrows, or above ground in tufts of grass, rock piles, or tree cavities	Low	Low
Monarch Butterfly (Western North American ACU) *Danaus plexippus*	FC/–/–	Coastal California groves of blue gum eucalyptus (Eucalyptus globulus), Monterey pine (Pinus radiata), and Monterey cypress (Cupressus macrocarpa); milkweed (Asclepias spp.) is a host plant required for species' breeding	Low	Low
Hermes copper butterfly *Lycaena Hermes*	FPT/–/–	Host plants include spiny redberry (*Rhamnus crocea*) in coastal sage scrub and chaparral vegetation; primary nectar source is California buckwheat (*Eriogonum fasciculatum*)	Low	Low
Quino checkerspot butterfly *Euphydryas editha quino*	FE/–/–	Grasslands, coastal sage scrub, chamise chaparral, red shank chaparral, juniper woodland, and semi-desert scrub; primary host plants are native species of plantain	Low/ Moderate	Low/ Moderate
Amphibians				
Western spadefoot *Spea hammondii*	Status Review [b]/ SSC/–	Areas with sparse vegetation and/or short grasses in sandy or gravelly soils; washes, river floodplains, alluvial fans, playas, alkali flats; breeds in ephemeral rain pools with no predators	None	Low [c]
Arroyo toad *Bufo californicus*	FE/SSC/ MSCP	Washes, arroyos, sandy riverbanks, riparian areas with willows, sycamores, oaks, cottonwoods; needs exposed sandy streamsides with stable terraces for burrowing, with scattered vegetation for shelter, and areas of quiet water or pools free of predatory fishes with sandy or gravel bottoms without silt for breeding	None	Low [c]
Reptiles				
Western pond turtle *Actinemys marmorata*	–/SCC/MSCP	Permanent, slow-moving fresh or brackish water with available basking sites and adjacent open habitats or forest for nesting	Low	Low [c]
Coast horned lizard *Phrynosoma blainvillii*	–/SCC/MSCP	Open areas with sandy soil and/or patches of loose soil and low/scattered vegetation in scrublands, grasslands, conifer forests, and woodlands; frequently found near ant hills	Moderate	Moderate

Table 3-6. Special-status Wildlife Species with Low, Moderate, or High Potential to Occur

Common Name *Scientific Name*	Status (Federal/State/ MSCP) [a]	Habitat Associations	Likelihood to Occur Alternative 1	Likelihood to Occur Alternative 2
Southern California legless lizard *Anniella stebbinsi*	–/SSC/–	Sparsely vegetated beaches, chaparral, pine-oak woodland, and streamside growth of sycamores, cottonwoods, and oaks; occasionally enters desert scrub; requires loose soil habitats for burrowing	Moderate	Moderate
California glossy snake *Arizona elegans occidentalis*	–/SSC/–	Most common in desert habitats, prefers scrub and grassland with loose or sandy soils	Low	Low
Baja California coachwhip *Masticophis fuliginosus*	–/SSC/–	Occupies a variety of habitats including desert, prairie, scrubland, juniper-grassland, woodland, thornforest, and farmland; usually avoids dense vegetation	Moderate	Moderate
Two-striped garter snake *Thamnophis hammondii*	–/SSC/–	In or near permanent fresh water, often along streams with rocky beds and riparian vegetation	Low	Low
Birds				
California brown pelican *Pelecanus occidentalis*	FD/SD, SFP/ MSCP	Nests on low rocky or brushy slopes of undisturbed islands; rarely seen inland or far out at sea; roost habitat includes islands, offshore rocks, beaches, mudflats, wharfs, piers, breakwaters, and jetties	High [d]	High [d]
Bald eagle *Haliaeetus leucocephalus*	FD, BGEPA/ SE, SFP/MSCP	Large bodies of water or rivers with abundant fish, uses snags or other perches; nests in advanced-successional conifer forest near open water	Low [d]	Low [d]
Northern harrier *Circus cyaneus*	–/SSC/MSCP	Nests, forages, and roosts in wetlands or along rivers or lakes, but also in grasslands, meadows, or grain fields	High	High
White-tailed kite *Elanus leucurus*	–/SFP/–	Lowland grasslands and wetlands with open areas; nests in trees near open foraging areas	High	High
Swainson's hawk *Buteo swainsoni*	–/ST/MSCP	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields	Low [d]	Low/ Moderate [d]
Golden eagle *Aquila chrysaetos*	BGEPA/–/MSCP	Open woodlands and oak savannahs, grasslands, chaparral, sagebrush flats; nests on steep cliffs or medium to tall trees	Low [d]	Low [d]
American peregrine falcon *Falco peregrinus anatum*	FD/SD, SFP/MSCP	Wetlands, woodlands, cities, agricultural lands, and coastal area with cliffs (and rarely broken-top, predominant trees) for nesting; often forages near water	Moderate [d]	Moderate [d]
California black rail *Laterallus jamaicenis coturniculus*	–/ST, SFP/–	Large tidally influenced marshes with saline to brackish water, typically with a high proportion of pickleweed (*Salicornia virginica*); also can be associated with bulrush (*Schoenoplectus* spp.), cattail (*Typha* spp.), or rushes (*Juncus* spp.)	None	Low [c]
Light-footed Ridgway's rail *Rallus obsoletus levipes*	FE/SE, SFP/–	Coastal salt marshes with tall dense California cordgrass, wrack deposits, and available high marsh zones to provide refugia during high tides	None	Moderate [c]

Table 3-6. Special-status Wildlife Species with Low, Moderate, or High Potential to Occur

Common Name *Scientific Name*	Status (Federal/State/ MSCP) [a]	Habitat Associations	Likelihood to Occur Alternative 1	Likelihood to Occur Alternative 2
Western snowy plover *Charadrius nivosus*	FT/SSC/MSCP	Barren to sparsely vegetated beaches, barrier beaches, salt-evaporation pond levees, and shores of alkali lakes; also nests on gravel bars in rivers with wide flood plains; needs sandy, gravelly, or friable soils for nesting	None	Low [c]
Mountain plover *Charadrius montanus*	–/SSC/MSCP	Occupies open plains or rolling hills with short grasses or very sparse vegetation; nearby bodies of water are not needed; may use newly plowed or sprouting grain fields	Low	Moderate [d]
California least tern *Sternula antillarum browni*	FE/SE, SFP/MSCP	Sparsely vegetated coastal beaches and estuaries near shallow waters, above high tide line	Low [d]	Low [c]
Western burrowing owl *Athene cunicularia hypugaea*	–/SSC/MSCP	Level, open, dry, heavily grazed, or low- stature grassland or desert vegetation with available burrows	Low	Low
Southwestern willow flycatcher *Empidonax traillii extimus*	FE/SE/MSCP	Riparian habitat, commonly wider than 10 meters; nesting occurs in native willow (*Salix* spp), non-native tamarisk (*Tamarix* spp.), and other riparian vegetation stands 4–7 meters high	Moderate [d]	High [d]
Least Bell's vireo *Vireo bellii pusillus*	FE/SE/MSCP	Nests in dense vegetative cover of riparian areas; often nests in willow or mulefat; forages in dense, stratified canopy	High	High
Coastal California gnatcatcher *Polioptila californica*	FT/SSC/–	Low, coastal sage scrub in arid washes, on mesas, and on slopes	High	High
Yellow warbler *Setophaga petechia*	–/SSC/–	Open canopy, deciduous riparian woodland close to water, along streams or wet meadows	High	High
Yellow-breasted chat *Icteria virens*	–/SSC/–	Early successional riparian habitats with a dense shrub layer and an open canopy	High	High
Belding's savannah sparrow *Passerculus sandwichensis beldingi*	–/SE/MSCP	Inhabits coastal salt marshes; nests in pickleweed (*Salicornia*) on and about margins of tidal flats	Low [d]	Moderate [c]
Large-billed savannah sparrow *Passerculus sandwichensis rostratus*	–/SSC/MSCP	Inhabits coastal salt marshes; breeds in salt marshes and alkaline sumps	Low [d]	Low [c, d]
Tricolored blackbird *Agelaius tricolor*	–/ST, SSC/MSCP	Feeds in grasslands and agriculture fields; nesting habitat components include open accessible water, a protected nesting substrate (including flooded or thorny vegetation), and a suitable nearby foraging space with adequate insect prey	None	Moderate [c]
Mammals				

Table 3-6. Special-status Wildlife Species with Low, Moderate, or High Potential to Occur

Common Name *Scientific Name*	Status (Federal/State/ MSCP) [a]	Habitat Associations	Likelihood to Occur Alternative 1	Likelihood to Occur Alternative 2
San Diego desert woodrat *Neotoma lepida intermedia*	–/SSC/–	Rocky areas within several habitats, including Joshua tree, pinyon-juniper, chaparral, sagebrush, and desert habitats	None	Low
Northwestern San Diego pocket mouse *Chaetodipus fallax*	–/SSC/–	Occurs mainly in arid coastal and desert borders; sandy herbaceous areas with rocks or coarse gravel within chaparral, coastal scrub, and grassland communities	Moderate	Moderate
San Diego black-tailed jackrabbit *Lepus californicus ssp. bennettii*	–/SSC/–	Open or sparse grasslands, coastal scrub, and agricultural fields; not typically found in high grass or dense brush	Moderate	Moderate
Mexican long-tongued bat *Choeronycteris mexicana*	–/SSC/–	Desert, montane, riparian, and pinyon-juniper habitats; roosts in desert canyons, deep caves, mines, rock crevices, or abandoned buildings (in urban environments)	Low	Low
Western red bat *Lasiurus blossevillii*	–/SSC/–	Riparian forests and woodlands near streams, fields, and orchards	None	Low [d]
Pallid bat *Antrozous pallidus*	–/SSC/–	Roosts in rock crevices, tree hollows, mines, caves, and a variety of vacant and occupied buildings; feeds in a variety of open woodland habitats	Low	Low
American badger *Taxidea taxus*	–/SSC/MSCP	Shrubland, open grasslands, fields, and alpine meadows with friable soils	Low	Low/ Moderate

a – **Federal:** FE = Listed as endangered under the federal ESA; FT = Listed as threatened under the federal ESA; FC = Federal candidate species; FPT = Federally proposed as threatened; FD = Federally delisted; BGEPA = Protected under the Bald and Golden Eagle Protection Act; **State:** SE = Listed as endangered under the CESA; ST = Listed as threatened under the CESA; SD = State delisted; SSC = CDFW Species of Special Concern; SFP = CDFW Fully Protected species; MSCP = Species covered under the Multiple Species Conservation Program.

b – In July 2015, after a 90-day review in response to a petition to list the western spadefoot toad, USFWS determined that there was sufficient evidence to support the potential listing of the species (USFWS-R8-ES-2015-0066). In January 2020, the USFWS initiated a status review (12-month finding), requesting information to support a Species Status Assessment and inform a possible future critical habitat designation.

c – While there is no or low potential to occur in the evaluated area for the Alternative, the species is known to or may occur in areas downstream of the evaluated area (e.g., in Tijuana River downstream of Dairy Mart Road and/or in Tijuana Estuary) and may be affected by flow effects from the Alternative.

d – Potential for foraging, loafing, fly-over, or stopover during migration; no potential for nesting because the Alternative is outside of species' nesting range, or there is a lack of suitable nesting habitat.

Several federally listed wildlife species are known to occur in the greater Tijuana River Valley, including San Diego fairy shrimp (*Branchinecta sandiegonensis*), Quino checkerspot butterfly (*Ephydryas editha quino*), light-footed Ridgway's rail (*Rallus obsoletus levipes*),[28] western snowy plover (*Charadrius alexandrinus nivosus*), California least tern (*Sternula antillarum browni*), southwestern willow flycatcher (*Empidonax traillii extimus*),[29] least Bell's vireo (*Vireo belli pusillus*), and coastal California gnatcatcher (*Polioptila californica californica*). As shown in Figure 3-14, USFWS has defined three federally designated critical habitat areas in the valley (San Diego fairy shrimp, least Bell's vireo, and western snowy plover). Of these, critical habitat for least Bell's vireo overlaps with the evaluated area.

In addition to those mentioned above that also have a federal listing, state-listed species that may be present in the alternative areas include Belding's savannah sparrow (*Passerculus sandwichensis beldingi*), tricolored blackbird (*Agelaius tricolor*), and Swainson's hawks (*Buteo swainsoni*). Swainson's hawks and mountain plovers (*Charadrius montanus*) have been documented in the region, though only as migrants (i.e., not breeding). Numerous state Species of Special Concern and/or Fully Protected species may also occur in the project areas, including birds (e.g., yellow warbler [*Setophaga petechia*], yellow-breasted chat [*Icteria virens*], white-tailed kite [*Elanus leucurus*], northern harrier [*Circus hudsonius*]), and mammals (e.g., San Diego black-tailed jackrabbit [*Lepus californicus bennettii*], American badger [*Taxidea taxus*], and various special-status bats) (Table 3-6).

ITP Parcel

The ITP parcel consists of all disturbed and developed land, with few wildlife species observed onsite. Federally listed wildlife species known to occur in the general vicinity include least Bell's vireo and coastal California gnatcatcher (Parsons, 2005). Least Bell's vireo is a federally and state-listed endangered species that nests in dense riparian vegetative cover, often in willow or mulefat, and forages in dense, stratified, overstory canopy. The coastal California gnatcatcher is federally listed as threatened and is a CDFW Species of Special Concern that is known to live in coastal scrub habitat with low-growing deciduous vegetation and with documented occurrences in the vicinity from 2016 (CDFW, 2020a).

Special-status white-tailed kite (Fully Protected) was observed in this area in 2004 (Parsons, 2005) and during the April 2021 reconnaissance surveys by Stillwater Sciences. Northern harrier (*Circus hudsonius*) (Species of Special Concern) are expected to forage in the disturbed areas.

[28] Formerly light-footed clapper rail (*Rallus longirostris levipes*) (CDFW, 2021c).

[29] As migrants only.

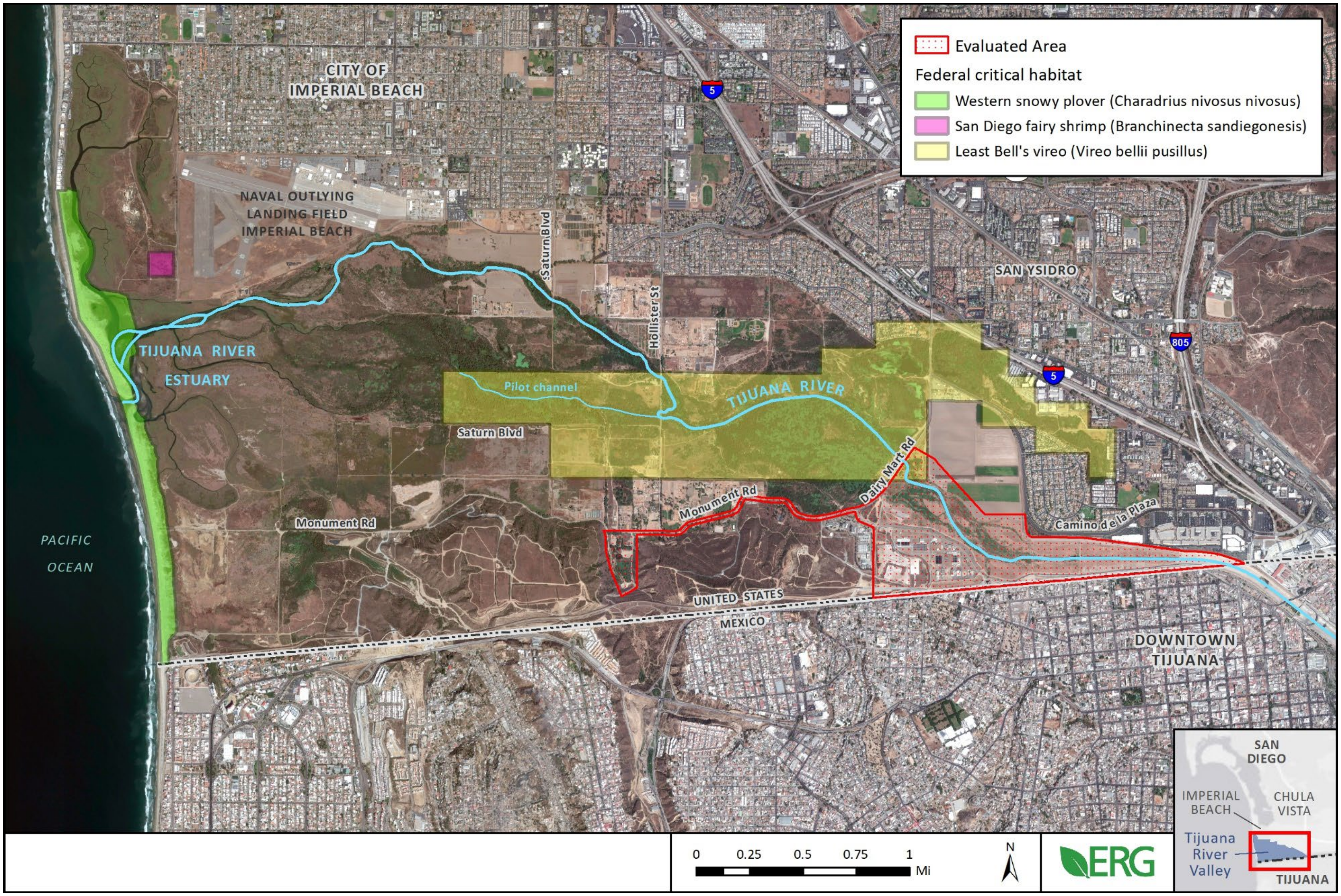

Figure 3-14. USFWS Critical Habitat in the Tijuana River Valley

Fish

Special-status fish species that could occur near or within project areas include:

- Steelhead (*Oncorhynchus mykiss*; federally endangered).
- Pacific lamprey (*Entosphenus tridentatus*; California State Species of Special Concern).

Below are descriptions of special-status fish species distribution and status, life histories and habitat requirements, and potential for occurrence within the Tijuana River. Descriptions of species composition in the Tijuana River Estuary are also provided.

Steelhead

Steelhead in the Tijuana River are considered a part of the Southern California steelhead Distinct Population Segment (DPS), which is listed as endangered by the federal ESA (NMFS, 2012). The Southern California DPS includes the areas of the coastal watersheds that are seasonally accessible to steelhead migrating upstream from the ocean (NMFS, 2012). Steelhead above impassable barriers are not listed under or afforded the protection of the federal ESA (NMFS, 2012). Of note, the Tijuana River is one of the southernmost watersheds that historically supported the federally endangered Southern California steelhead DPS (NMFS, 2012).

Southern California steelhead is a species of trout that can migrate to the ocean (referred to as anadromous) or complete its life cycle entirely in fresh water (referred to as resident). Steelhead is the term used to describe the anadromous life history type, whereas freshwater residents are generally referred to as rainbow trout. The two life history forms are capable of interbreeding, and one life history form can produce offspring that follows the alternate form. The decision for an individual to adopt a life history pathway, such as anadromy or residency, is influenced by a combination of genetics, fish condition, and environmental factors (Kendall et al., 2014).

Due to limited data specific to the Tijuana River, the presence of life history strategies and timing for steelhead life stages in the Tijuana River watershed are assumed to be similar to other populations within the Southern California steelhead DPS.

Southern California steelhead are considered a “winter-run” type, meaning they enter rivers from the ocean in the winter and spawn shortly thereafter. Winter-run adult steelhead along the California coast can enter rivers as early as October and as late as June, but most adult steelhead enter rivers between January and April with peak migration in February and March (Shapovalov & Taft, 1965). River entry and upstream migration of steelhead in southern California watersheds is dependent on high flow events that breach sandbars in the lagoon to provide upstream passage. These high flow events occur during the winter and spring months.

Spawning would occur in tributaries with suitable habitat and could occur anytime during the migration season and extending into May. In the Tijuana River, suitable habitat for steelhead spawning is limited to tributaries that exist above barriers and there is no suitable spawning habitat in the lower Tijuana River. Unlike anadromous Pacific salmon species (*Oncorhynchus* spp.), steelhead are iteroparous (i.e., they are capable of repeat spawning), and after spawning, adult steelhead can remain in fresh water or return to the ocean as “kelts.”

A freshwater resident steelhead may utilize tributaries or the mainstem within the watershed or may migrate between multiple tributaries and mainstem reaches to spawn as a “fluvial” life history variant. A steelhead unable or unwilling to access the ocean (e.g., because a barrier is present within the watershed) may migrate to a lake or reservoir to rear as an "adfluvial" variant.

Steelhead can spend one to seven years in fresh water before outmigrating to the sea and one to five years in the ocean before returning to the fresh water to spawn (Busby et al., 1996; Kendall et al., 2014). It is expected that juveniles would emigrate from the Tijuana River to the ocean at age one or two, and smolts are expected to migrate between March and May, with a few individuals observed as early as January and as late as July (Booth, 2020).

Smolts may also exhibit a "lagoon rearing" strategy where they rear in the brackish water of a lagoon prior to entering the marine environment or migrating back upstream (Hayes et al., 2011; Kendall et al., 2014). These smolts may remain in a lagoon or estuary for a short period of time or a whole season (Hayes et al., 2011; Shapovalov & Taft, 1965). There is no evidence of a lagoon rearing life history type in the Tijuana River despite historical monitoring in the lagoon. However, a lagoon rearing life history type could occur in the Tijuana River provided suitable conditions (e.g., downstream passage, suitable water quality) and the occurrence of emigrants from upstream populations.

Steelhead would have historically migrated in the main channel of the Tijuana River to move between perennial tributaries and the ocean. There is little historical or current information on steelhead in the Tijuana River watershed; surveys indicate the potential presence of resident steelhead populations in upstream perennial tributaries (NMFS, 2012), but barriers prevent these fish from migrating between ocean and freshwater. Despite the lack of information, specific recovery actions for steelhead are outlined within the National Marine Fisheries Service (NMFS) Southern California Steelhead Recovery Plan (2012), including those addressing urban effluent.

Downstream (north) of the U.S.-Mexico border, there is a lack of perennial habitat for steelhead except in the tidally influenced reaches of the Tijuana River (SFEI, 2017). Therefore, any locations upstream of the tidally influenced zones could only be seasonally occupied by steelhead or utilized for migration during high flow events that are typically short-lived. Some pools in the Tijuana River upstream of the tidally influenced reaches may hold perennial waters, but poor water quality in these pools would be expected to exclude steelhead. Off-channel, man-made ponds also occur, but would only be expected to support non-native fish species, not steelhead. Tributaries such as Smuggler's Gulch are likely unoccupied by fish regardless of flow because of their ephemeral nature. However, during a biological survey by Stillwater Sciences on April 14, 2021, water and the presence of tadpoles was noted in Smuggler's Gulch in a pool downstream from Monument Road. This reach is presumed to be seasonally intermittent and would not support fish unless perennial flows were provided. Within the lower Tijuana River, it is expected that poor water quality (e.g., low dissolved oxygen, pollution), high temperatures, and altered flows are limiting to steelhead.

Pacific Lamprey

Pacific lamprey is an anadromous fish species that can be present in the majority of coastal drainages along the Pacific coast of North America, from Alaska to Mexico (Goodman et al., 2006). According to Docker (2010), Pacific lamprey across the west coast of North America do not show major genetic differences between populations. This suggests a lack of natal homing in the species, meaning Pacific lamprey do not necessarily spawn in the stream where they were born (Docker, 2010). Pacific lamprey are classified as a CDFW Species of Special Concern.

There is limited information on Pacific lamprey within the Tijuana River watershed. Therefore, it is assumed that Pacific lamprey life history and habitat requirements in the Tijuana River would be similar to other rivers at the southern extent of their range.

Within southern California, Pacific lamprey adults typically enter fresh water to migrate upstream between December and May, with the peak migration occurring in March of most years, depending on water temperatures and local conditions such as seasonal flow regimes (Booth, 2016; Chase, 2001). Adult Pacific lamprey in the Santa Clara River watershed in southern California typically spend one year in fresh water prior to spawning (Booth, 2016; Chase, 2001), and it is likely the same would occur in the Tijuana River watershed. Spawning generally takes place between January and June, and downstream migrating adults (post-spawn) could occur as late as May. Redds are typically constructed by both males and females in gravel and cobble substrates within pools, run tailouts, and low gradient riffles (Brumo et al., 2009; Gunckel et al., 2009; Stone, 2006). During spawning, eggs are deposited into the redd and hatch after approximately 15 days, depending on water temperatures (Brumo, 2006; Meeuwig et al., 2005). Pacific lampreys typically die within a few days to two weeks after spawning (Brumo, 2006; Kan, 1975; Pletcher, 1963). The egg-sac larval stage, known as prolarvae, spend another 15 days in the redd gravels, during which time they absorb the remaining egg sac, until they emerge at night and drift downstream (Brumo, 2006).

After drifting downstream, the eyeless larvae, known as ammocoetes, settle out of the water column and burrow into fine silt and sand substrates that often contain organic matter. Within the stream network they are generally found in low-velocity, depositional areas such as pools, alcoves, and side channels (Torgersen & Close, 2004). Depending on factors influencing growth rates, they rear in these habitats from four to 10 years, filter-feeding on algae and detrital matter before metamorphosing into the adult form (Moore & Mallatt, 1980; Pletcher, 1963; van de Wetering, 1998). After metamorphosis, smolt-like individuals known as macropthalmia migrate to the ocean, typically in conjunction with high flow events between winter and spring, where they feed parasitically on a variety of marine fishes (Beamish & Levings, 1991; Richards & Beamish, 1981).

Pacific lampreys are thought to remain in the ocean for approximately 18 to 40 months before returning to fresh water as sexually immature adults, typically from late winter to early summer (Beamish, 1980; Kan, 1975).

Similar to steelhead, Pacific lamprey would have also historically migrated in the main channel of the Tijuana River to access perennial spawning habitat. There is little information available on Pacific lamprey in the Tijuana River. However, based on additional information received during the natural resource agency workshop held for the project on March 9, 2021, suitable habitat exists upstream of the project area that could accommodate Pacific lamprey spawning and rearing, as long as upstream passage was provided from the ocean (R. Fisher, personal communication, March 9, 2021) and water quality did not result in mortality of upstream migrants.

Estuarine Species

The estuary provides biological ecosystem services, primarily habitat for juvenile fish. Predominant fish species present in the estuary include topsmelt (*Atherinops affinis*), longjaw mudsucker (*Gillichthys mirabilis*), arrow goby (*Clevelandia ios*), California killifish (*Fundulus parvipinnis*), and striped mullet (*Mugil cepalus*) (USIBWC, 2016; Zedler et al., 1992). The estuary also provides nursery habitat for species caught for recreational fishing, such as the diamond turbot (*Hypsopetta guttulate*), California halibut (*Paralichthys californicus*), surfperches, anchovies, plueronectids, croakers, and sea bass (USIBWC, 2008; Zedler et al., 1992). Based on analysis of a long-term monitoring dataset from the estuary, Desmond et al. (2002) found that water temperature was the primary driver in patterns of fish observed in the estuary, but discharge was also important. There was also predictable seasonality observed in the estuarine fish assemblage, likely due to temperature variation. Peak abundance was in summer/fall when discharge was low, and interannual trends showed that periods of increased sewage input affected fish assemblage with more rapidly maturing fish (e.g., arrow goby) being more dominant under increased sewage inputs (Desmond et al., 2002).

Summary of Special-status Fish

Overall, there is limited biological survey information on the presence of fish species upstream of the tidally influenced reaches and near the project sites, but based on biological surveys conducted on April 14, 2021, these reaches are not expected to support special-status fish species except potentially during migration events. During migration events, poor water quality may limit fish migrations or prevent them altogether. Based on the information available and communications with regional stakeholders, federally endangered species have a very low potential to occur within the project sites but could occur throughout the year in downstream areas such as the estuary. The species occupying these areas could be affected by changes in flow, water quality, and/or sediment transport resulting from projects.

3.5 Marine Biological Resources

In defining the evaluated area for potential project effects under the Proposed Action, EPA and USIBWC considered the known extent of the SBOO discharge plume along with the locations of natural bounding features. The SBOO discharge plume monitoring program (City of San Diego, 2020a) has detected the influence of the discharge at stations located approximately 6.6 miles upcoast and 4.9 miles downcoast of the SBOO. Point Loma is approximately 10 miles to the north of the SBOO discharge and the continental shelf extends from the shoreline to the shelf break approximately 10 miles offshore (west) of the coastline. These two prominent natural features are convenient for defining the northern and across-shore (western) extents of the evaluated area. The southern extent is the U.S.-Mexico border. Figure 3-15 depicts the evaluated area[30] for potential project effects on marine biological resources.

[30] The evaluated area is called the "Action Area" in Appendix E (NMFS Biological Assessment and Essential Fish Habitat Assessment [Draft]). In addition, the Action Area described in Appendix E also includes the Tijuana River Estuary.

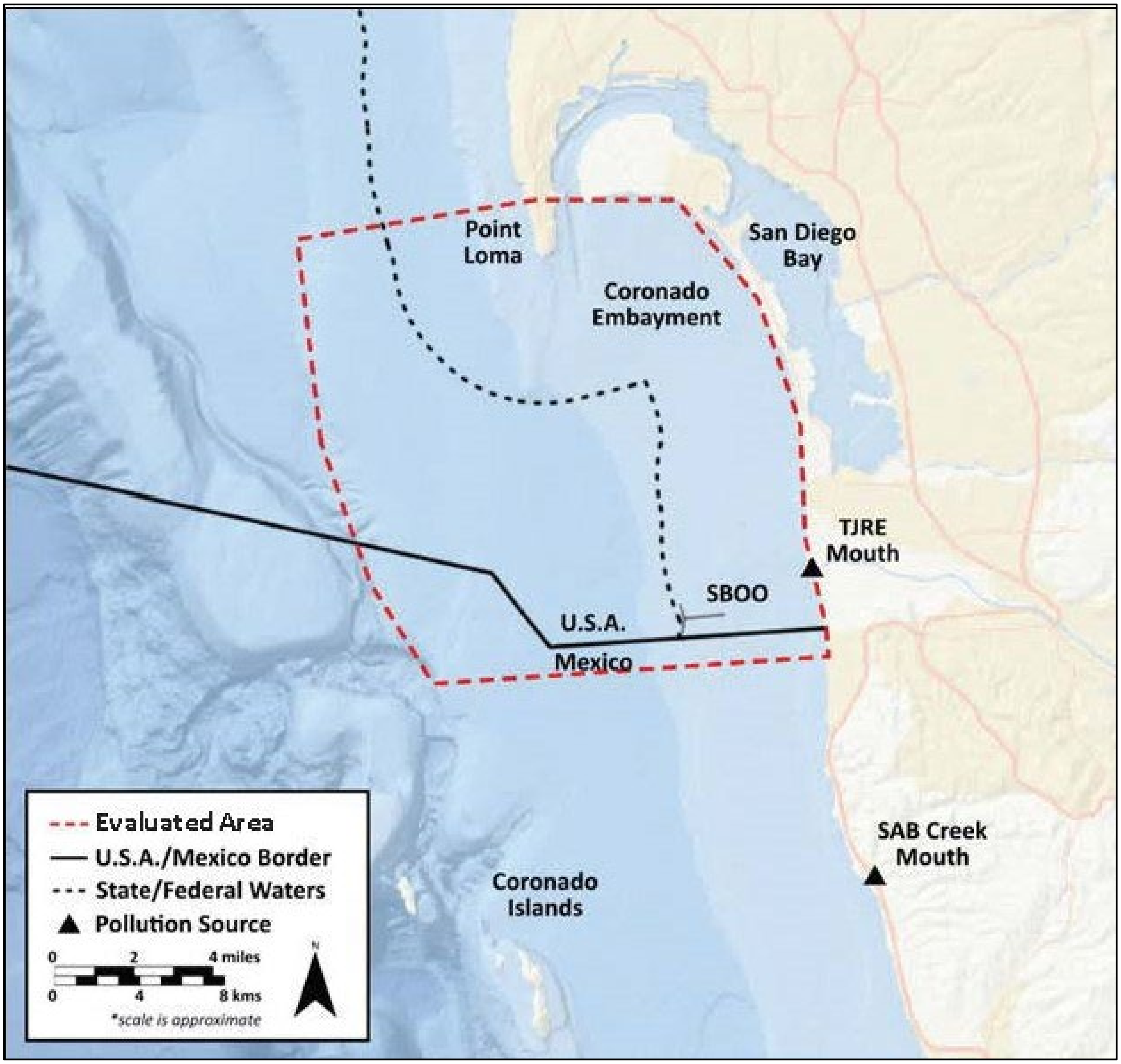

Figure 3-15. Evaluated Area for Potential Project Effects Under the Proposed Action

Habitats and Associated Species

A more detailed description of the general character of the marine environment in the evaluated area is described in Appendix E (NMFS Biological Assessment and Essential Fish Habitat Assessment [Draft]). The evaluated area is located near the southern limit of the geographic region known as the Southern California Bight (SCB). The SCB extends from Point Conception to the U.S.-Mexico border. The dramatic shift in coastline south of Point Conception affects ocean currents, resulting in a biogeographic transition zone in the SCB between cool-temperate water in the north and warm sub-tropical water in the south. In the ocean adjacent to and including the evaluated area, warm sub-tropical waters are entrained northward from the equator by the oceanography of the region throughout most of the year. Subsequently, the evaluated area experiences warmer water conditions relative to the remainder of the SCB region. Horn et al. (2006) refer to the warm-temperate ecology in the SCB, which extends into coastal Baja Mexico, as the San Diegan Province.

Historical surveys have indicated that at least 80 percent of the surveyed seabed in the evaluated area consists of soft sediment habitat. The remainder of seabed habitat consists of rocky reef habitat, portions of which support kelp forest habitat. Surveys throughout the evaluated area of the infaunal community, fishes, and macro-invertebrates inhabiting the soft sediment habitat have shown typical assemblages for healthy southern California sandy seafloor habitats. Benthic macrofauna has typically consisted of worms, crabs, clams, brittle stars, and other small invertebrates. These organisms play important ecological roles in coastal marine ecosystems off southern California, including as primary and secondary consumers that support higher trophic organisms such as fishes, larger invertebrates, and even marine mammals and other vertebrates such as birds. Annelid polychaete worms have been the dominant infaunal taxonomic group, constituting more than 80 percent of the total organisms collected in the region. They have been followed in abundance by crustaceans, mollusks, and echinoderms. Speckled and longfin sanddab have dominated the benthic associated fish assemblage that have also included many California lizardfish, California tonguefish, and white croaker. Common midwater and pelagic schooling fishes have included northern anchovy and Pacific sardine. Other species captured in trawl nets have included flatfishes such as California halibut, hornyhead turbot, English sole, fantail sole, and spotted turbot. Seabed-associated round fishes have included many species of rockfishes, pink seaperch, blacktip poacher, Pacific Argentine, spotted cusk-eel, yellowchin sculpin, longspine combfish, roughback sculpin, plainfin midshipman, queenfish, and California scorpionfish. Elasmobranchs have included round stingray, California skate, and shovelnose guitarfish.

The wye diffuser and main barrel of the SBOO are armored by rock and boulder that form an artificial reef in the otherwise sandy seabed of the evaluated area at the depth of the SBOO. Footage from a remotely operated vehicle (ROV) survey of this structure indicates a healthy reef community of invertebrates, understory seaweeds, and associated fishes. Encrusting organisms such as anemone and gorgonian corals are abundant, particularly on the open diffusers of the southern leg. Biological communities on the northern leg, which does not currently discharge effluent, are notably less diverse and abundant than on the southern leg. It is likely that the effluent contributes nutrients that increase the abundance and diversity of marine communities on the southern diffuser leg.

Inshore and to the north of the SBOO is a cobble and boulder reef that supports an intermittent kelp forest referred to in this assessment as Imperial Beach Kelp Forest. This feature is discussed in the Essential Fish Habitat section below. The coastline of the evaluated area consists predominantly of sandy beach intertidal habitat. The northern extent of the evaluated area includes the Point Loma headland, an area of extensive rocky intertidal habitat. This includes the Cabrillo State Marine Reserve (SMR) and is discussed in the Marine Protected Areas (MPAs) section below.

Phytoplankton blooms are a common feature of all ocean systems. HABs occur when populations of usually monospecific species of toxic phytoplankton rapidly increase in numbers. These toxin-producing algal blooms cause illness and death of fish, seabirds, mammals, and other marine life. Several species contribute to the formation of HABs, however the most common phytoplankton in southern California to form HABs is *Pseudo-nitzschia*. This taxon produces domoic acid and is responsible for frequent sea lion deaths, toxic blooms, and associated mammal and bird illnesses in California. Other species include *Alexandrium*, *Gymnodinium*, and *Pyrodinium*, all of which are associated with paralytic shellfish poisoning (PSP). These HABs result in concentrations of toxicants in shellfish and are a serious human health risk. The contaminated shellfish and other lower invertebrates that consume and concentrate the PSP toxins are generally unaffected. However, there is some evidence that PSPs, which transfer to higher invertebrates and vertebrates such as fishes, birds, marine mammals, and other animals, may cause harm to other marine life.

Protected Species

Marine species in California waters derive conservation protection from several legislative mechanisms. The following sections provide lists of species managed under the federal ESA of 1973 and the CESA of 1970. No critical habitat occurs in the marine evaluated area. Marine mammals managed under the federal Marine Mammal Protection Act of 1972 (MMPA) and that may occur in the evaluated area are also included below. These legislations protect their listed species from 'take' as discussed in further detail in Section 6.1.6 (Marine Biological Resources).[31] Both sections include the current designation for each species' management unit under these key marine conservation policies and their likelihood of occurrence in the evaluated area.

Listed Species

Table 3-7 identifies species and their management units (where applicable) that are listed under either ESA or CESA and are assessed as having a medium or high likelihood to occur in the evaluated area. Likelihood of occurrence is based primarily on known species distribution patterns published in peer-reviewed and academic literature, grey literature publications based on authoritative sources such as government agencies, and finalized planning documents. A full description of this assessment is included in the Appendix E (NMFS Biological Assessment and Essential Fish Habitat Assessment [Draft]).

The species identified in Table 3-7 as having a high likelihood of occurrence in the evaluated area are species of whales and sea turtles. These animals move over large areas to forage or migrate relative to the size of the evaluation area. The two anadromous fishes (steelhead trout and green sturgeon) and scalloped hammerhead sharks, which are less likely to occur in the area but may occur on occasion, also range over large areas.

White abalone may occur in rocky habitat on and around the discharge structure. These large grazing gastropods do not move more than several yards for long periods of their life. However, white abalone are assessed as having a low likelihood of occurrence in the area because they are rare throughout their range and there are no known occurrences in the evaluated area.

The northern extent of the known range of gulf grouper includes the evaluated area (Dennis, 2015). This species is currently rare in California (Love & Passarelli, 2020) and therefore is not highly likely to occur in the evaluated area. Little is known of the movement characteristics of gulf grouper; however, members of the large grouper family that are better studied typically spend periods of time resident on rocky reefs.

Based on a preliminary review of the 2019 SBOO ROV footage, there is a small potential for endangered white abalone and gulf grouper to be associated with the SBOO pipeline reef.

[31] Take is defined in the ESA as "harass, harm, pursue, hunt, shoot, wound, kill trap, capture, or collect, or to attempt to engage in any such conduct;" in the MMPA as "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal;" and in CESA as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Table 3-7. Species Listed Under the ESA or CESA with Medium to High Likelihood of Occurrence in the Evaluated Area

Species and Management Unit (DPS) [a]	Scientific Name	ESA	CESA	Likelihood of Occurrence [b]
Marine mammals [c]				
Blue whale	*Balaenoptera musculus*	FE	NL	High
Humpback whale (Central America DPS)	*Megaptera novaeangliae*	FE	NL	High
Humpback whale (Mexico DPS)		FT	NL	High
Fin whale	*Balaenoptera physalus*	FE	NL	High
Gray whale (Western North Pacific DPS)	*Eschrichtius robustus*	FE	NL	Medium
Guadalupe fur seal	*Arctocephalus townsendi*	FT	CT	Medium
Sea turtles				
Green sea turtle (East Pacific DPS)	*Chelonia mydas*	FT	NL	High
Leatherback sea turtle	*Dermochelys coriacea*	FE	NL	Medium
Fishes				
Shortfin mako or bonito shark	*Isurus oxyrinchus*	FPL	NL	High

Abbreviations: NL = not listed; T = threatened; E = endangered; F = federal; C = California; PL = petition to list.
a – DPS: Distinct Population Segment.
b – Likelihood of occurrence based on analysis described in Appendix E (NMFS Biological Assessment and Essential Fish Habitat Assessment [Draft]).
c – All marine mammal DPS listed under ESA are also 'depleted' stocks under the MMPA.

Marine Mammals

Table 3-8 identifies marine mammals not listed under ESA and CESA that may occur in the evaluated area and identifies the MMPA stock unit and the stock's status under the MMPA. Likelihood of occurrence is based on the same assessment provided for species in Table 3-7.

Several marine mammals that have a high likelihood of occurrence are pinnipeds and small cetaceans that may forage consistently in the evaluated area. These are California sea lion, harbor seal, bottlenose dolphin, and common dolphin. These animals typically have a localized 'home range' and are therefore likely to remain in the evaluated area for extended periods of time. Pacific white-sided dolphins are not particularly noted for having a localized home range. In addition, the entire evaluated area contains Biologically Important Areas for the gray whale for migration and feeding, and a smaller area off Point Loma is used for blue whale feeding. Gray whales are migratory, passing through the area twice per year when moving between northern-latitude, warm-season feeding grounds and southern-latitude, cool-season nursery grounds.

Table 3-8. Marine Mammal Species with a Medium or High Likelihood of Occurrence in the Evaluated Area and are Not Listed Under ESA or CESA

Species and Stock Unit	Scientific Name	MMPA Stock Status [a]	Likelihood of Occurrence
California sea lion (US stock)	*Zalophus californianus*	Non-strategic	High
Harbor seal (CA stock)	*Phoca vitulina*	Non-strategic	High
Gray whale (eastern north Pacific stock)	*Eschrichtius robustus*	Non-strategic	High
Pacific white-sided dolphin (CA/OR/WA stock)	*Lagenorhynchus obliquidens*	Non-strategic	High
Bottlenose dolphin (CA/OR/WA offshore stock)	*Tursiops truncatus*	Non-strategic	High
Bottlenose dolphin (CA coastal stock)		Non-strategic	High
Short-beaked common dolphin (CA/OR/WA stock)	*Delphinus delphis*	Non-strategic	High
Long-beaked common dolphin (CA stock)	*Delphinus capensis (bairdii)*	Non-strategic	High
Killer whale (eastern north Pacific offshore)	*Orcinus orca*	Non-strategic	Medium
Risso's dolphin (CA/OR/WA stock)	*Grampus griseus*	Non-strategic	Medium

a – Under the MMPA, stocks may be designated as 'strategic' if below the maximal population size or 'depleted' if below an optimal population size.

Essential Fish Habitat

There are four Fishery Management Plans (FMPs) on the Pacific coast of North America that include managed species with designated Essential Fish Habitat (EFH) that may occur in the evaluated area. These FMPs are the CPS FMP, the Pacific Coast Groundfish (PCG) FMP, the Pacific Coast Salmon (PCS) FMP, and the Highly Migratory Species (HMS) FMP. The following section lists species managed under these four FMPs, and habitat areas defined as EFH areas designated by the FMPs.

Most of the Pacific coastline of North America, including the evaluated area, is encompassed by PCG, CPS, and krill EFH. Two species of fishes protected under the HMS FMP, dorado and common thresher shark, have EFH that partially overlaps the evaluated area. No PCS FMP EFH is designated in the evaluated area. Within the category of EFH, regional Fishery Management Councils are entitled to identify Habitat Areas of Particular Concern (HAPCs). These subsets of EFH are either spatially explicit areas or habitat types that have been identified by regional Fishery Management Councils as having high priority for conservation, management, or research. Three categories of HAPC occur in the area: canopy kelp, rocky reefs, and estuary. The rocky reef HAPC consists of an area of cobble seabed to the northeast of the SBOO that provides hard substrate on which algal and invertebrate communities can attach and numerous other reef species can associate. This rocky reef also provides substrate for the attachment and growth of giant kelp (*Macrocystis pyrifera*). Given the correct ocean conditions, giant kelp plants can reach the sea surface and form a canopy structure. Canopy kelp and rocky reef habitat are both forms of HAPC recognized under the PCG FMP. This area is referred to in this assessment as the Imperial Beach Kelp Forest. Data showing the location of the Imperial Beach rocky reef and kelp forest in relation to the Point Loma kelp forest and other features in the region are shown in Appendix E (NMFS Biological Assessment and Essential Fish Habitat Assessment [Draft]).

Marine Protected Areas (MPAs)

Of the 124 MPAs managed under the Marine Life Protection Act that occur within California, two MPAs occur within the evaluated area. The Tijuana River Mouth SMCA encompasses approximately 3 square miles from the mean high tide line to approximately 1.4 miles offshore and extends approximately 2.3 miles upcoast from the U.S.-Mexico border. The MPA encompasses sandy beach and subtidal habitat, approximately 0.59 square miles of rocky reef that includes persistent kelp forest habitat, tidal flats, coastal marsh, and estuary habitat. The Cabrillo SMR is located at the northern extent of the evaluated area and encompasses waters adjacent to the Cabrillo National Monument at Point Loma. This MPA is approximately 0.39 square miles in size and encompasses approximately 0.97 miles of rocky intertidal shoreline, the entire shoreline extent of the MPA. The MPA extends out to sea through an extensive rocky reef habitat that encompasses at least 75 percent of the total area of the MPA. The MPA includes surfgrass, kelp, rocky reef, and a small amount of beach habitat.

The Cabrillo SMR restricts the take or possession of all living, geological, or cultural marine resources. The Tijuana River Mouth SMCA restricts most take or possession of marine resources but allows for certain recreational fishing for most CPS. The Tijuana River Mouth SMCA also allows for infrastructure-related activities and operations that include beach nourishment activities and the maintenance of existing artificial structures.

3.6 Geological Resources

3.6.1 Geology, Soils, and Topography

Geology

The Tijuana River flows from its headwaters in Mexico northwest into California, through urban Tijuana, Mexico, and into the undeveloped river valley within the coastal plain of San Diego. The Tijuana River Valley is located within the Peninsular Ranges Geomorphic Province, with the north- to northwest-trending Peninsular Ranges east of the watershed (SFEI, 2017). The coastal area mostly consists of Cenozoic sedimentary rocks with quaternary alluvium along the valley floors (SFEI, 2017). Mesas south of the valley along the U.S.-Mexico border consist of late Pliocene and early Pleistocene sedimentary rocks in the San Diego Formation with early to mid-Pleistocene sedimentary deposits (SFEI, 2017). The Tijuana River Valley formed over the past 10,000 to 12,000 years, with the river depositing sediments to form the alluvial fan delta in the past 5,000 years (SFEI, 2017).

Portions of the Tijuana River Valley have been used historically for sand and gravel extraction. The Nelson Sloan Quarry (also known as the Border Highlands Pit) is located immediately west of the SBWRP and east of Smuggler’s Gulch. See Section 3.9 (Land Use) for further discussion of mineral resource extraction in the valley.

See the Seismic Hazards subsection for discussion of landslide risks.

Soils

The Tijuana River traverses east to west through the valley and estuary, contributing alluvial material to the river valley. Soils in this region are primarily deposited particles from nearby bedrock sources, which can be unstable (Parsons, 2005).

The Natural Resources Conservation Service (NRCS), an agency of the U.S. Department of Agriculture (USDA), conducts soil surveys and produces soil maps for general use in characterizing soils (NRCS, 2020). The NRCS soil survey for the area characterizes the soil map units in the project area, shown in Figure 3-16, as follows:

- Soils at the ITP parcel include Visalia gravelly sandy loam (VbB), which is well drained with very low runoff and 2 to 5 percent slopes, and Chino fine sandy loam (ChA), which is moderately well drained with medium runoff and 0 to 2 percent slopes.

- Soils in the Tijuana River main channel are predominantly Chino silt loam, saline (CkA), which is moderately well drained with low runoff and 0 to 2 percent slopes. A small portion of the channel is mapped as ChA.

- Soils in Smuggler's Gulch include Riverwash (Rm), which is excessively drained with negligible runoff and 0 to 4 percent slopes; Visalia sandy loam (VaA), which is well drained with very low runoff and 0 to 2 percent slopes; and Terrace escarpments (TeF). Soils in Goat Canyon are also mapped as Rm.

- Soils along Monument Road include ChA and VaA in addition to the following: Olivenhain cobbly loam (OhF), which is well drained with very high runoff and 30 to 50 percent slopes; Olivenhain cobbly loam (OhE), which is well drained with very high runoff and 9 to 30 percent slopes; and Olivenhain cobbly loam (OhC), which is well drained with very high runoff and 2 to 9 percent slopes.

- The Border Highlands between Smuggler's Gulch and the ITP parcel include OhC, OhE, and OhF in addition to Huerhuero loam (HrC2), which is moderately well drained with very high runoff and 5 to 9 percent slopes, and TeF.

Fill, alluvium, alluvial fan deposits, and terrace deposits are found at the ITP parcel. These soils are fine-to-coarse sands with medium-to-low amounts of silts and clays. Gravels, cobbles, and boulders are found at irregular depths, creating rocky zones. Construction at the ITP parcel is limited by the loose alluvial deposit and by the elevated water table due to the proximity of the river (Parsons, 2005).

A geotechnical study was recently conducted in the Tijuana River main channel upstream of Dairy Mart Road. Soil in the main channel was characterized by approximately 4 feet of fill material that was moist, loose, poorly graded sand with silt layered over alluvium. Soils in the main channel are granular, subject to erosion, may be subject to caving or sloughing (Stantec, 2019).

Smuggler's Gulch and Goat Canyon soils are highly susceptible to erosion. Rilling is evident throughout the Tijuana River watershed, with an increase in sediment deposits and avulsion channels in the past century (Southwest Wetlands Interpretive Association, 2001).

Some of the soils in the river valley have characteristics that can support agriculture, and some are considered prime farmland. However, as discussed in Section 3.9 (Land Use), none of the project sites support agriculture or are considered prime farmland.

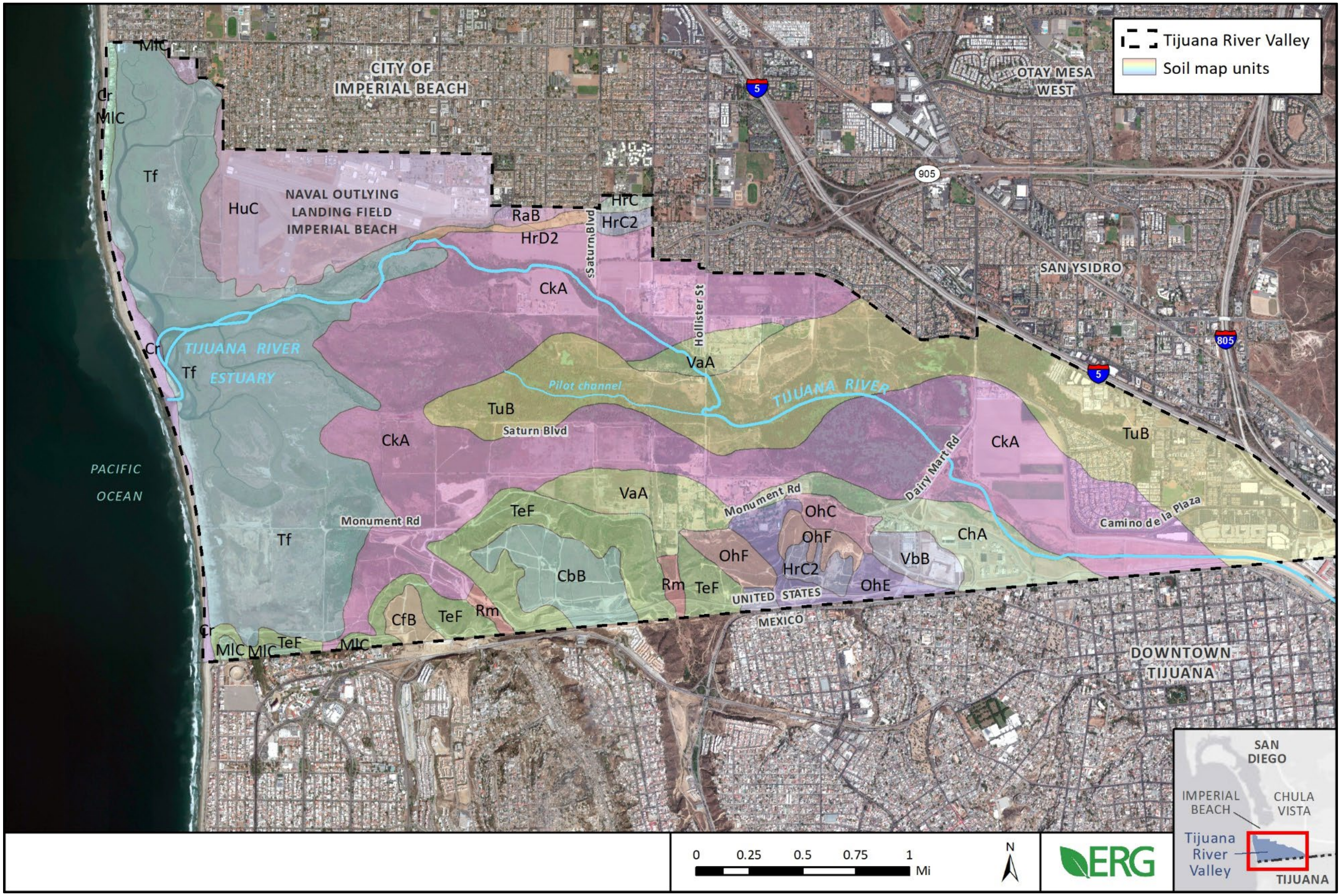

Figure 3-16. Soil Map Units in the Tijuana River Valley

Topography

The Tijuana River Valley consists of low-lying tidal marsh and wetlands bordered by mesa or terrace escarpments to the south and developed urbanized land to the north and east. Three tributary canyons—Smuggler's Gulch, Goat Canyon, and Yogurt Canyon—are present along the U.S.-Mexico border. Smuggler's Gulch and Goat Canyon extend for several miles into Mexico. These canyons are characterized by steep side slopes that contribute sediment-filled flows through the canyons and into the estuary. The mesa between Goat Canyon and Smuggler's Gulch is known as Spooner's Mesa. This and other neighboring mesas are known as the Border Highlands and provide prominent viewpoints overlooking the Tijuana River Valley, as discussed further in Section 3.8 (Visual Resources). The regional topography influences air quality and climate by driving winds inland to the mountains during the day and allowing winds to blow down the hills and valleys at night. This pushes pollutants to the north and then to the south to Mexico when wind shifts direction (City of San Diego, 2020c). See Section 3.11 (Air Quality) for additional information.

The Goat Canyon diversion structure is situated at a height of approximately 90 feet above MSL. The Smuggler's Gulch channel elevation decreases from approximately 56 feet at the diversion structure to 42 feet where it flows under Monument Road. ITP elevations range from 50 feet to 60 feet above MSL across the developed site. The Tijuana River main channel elevation decreases from approximately 50 feet at the U.S.-Mexico border to approximately 32 feet where it flows under the Dairy Mart Road Bridge (SANDAG, 2020).

3.6.2 Seismic Hazards

The Tijuana River Valley is not located in any Seismic Hazard Zones established by the state Seismic Hazard Mapping Act. However, the area is a seismically active region that is near several active regional faults. These include the La Nacion Fault approximately 5 miles inland from the coastline and the Newport-Inglewood/Rose Canyon Fault system in the northern portion of San Diego Bay and approximately two miles offshore, including numerous small- to medium-length faults likely in the area of the SBOO. In San Diego, the majority of earthquakes originate in the Imperial Valley which contains the Elsinore, San Jacinto, and San Andreas faults (City of San Diego, 2008d). Other major fault zones located farther off the coast include the San Clemente, the San Diego Trough, the Coronado Bank, and the Coronado Shelf, which is located 2.5 miles west of the SBOO.

The City of San Diego classifies the Tijuana River Valley and Estuary as having low to moderate geotechnical and relative risk (City of San Diego, 2008d; Parsons, 2005). A series of faults consisting of concealed zones, faults, and one inferred fault is located in the border highlands area just north of the border. The fault lines occur in north-south alignments across the terrace escarpments near the location of the ITP and between Goat Canyon and Smuggler's Gulch (SANDAG, 2020). These faults are listed as potentially active, presumed inactive, or activity unknown according to the San Diego Seismic Safety Study (City of San Diego, 2008b).

Landslide risks occur when people or structures are exposed to landslides that may involve loss, injury, or death. A landslide occurred at Smuggler's Gulch in 1992, resulting in erosion and deposition (Daniels et al., 2022). A portion of the terrace escarpments in the Tijuana River Valley is identified as a landslide geohazard; this includes areas on the western side of Goat Canyon and both sides of Smuggler's Gulch (SANDAG, 2020).

The Tijuana River, floodplains, and estuary are susceptible to liquefaction, which occurs when granular soils saturated with water reach a liquid state after being shaken. This can cause the ground to undergo lateral spreading, lose strength, and cause slope failures during seismic events. The river main channel has high potential for liquefaction while the bottom of Smuggler's Gulch and Goat Canyon have low potential, and the elevated portions of the mesas have no potential for liquefaction (City of San Diego, 2008b).

Figure 3-17 depicts geohazards in the vicinity of the project areas.

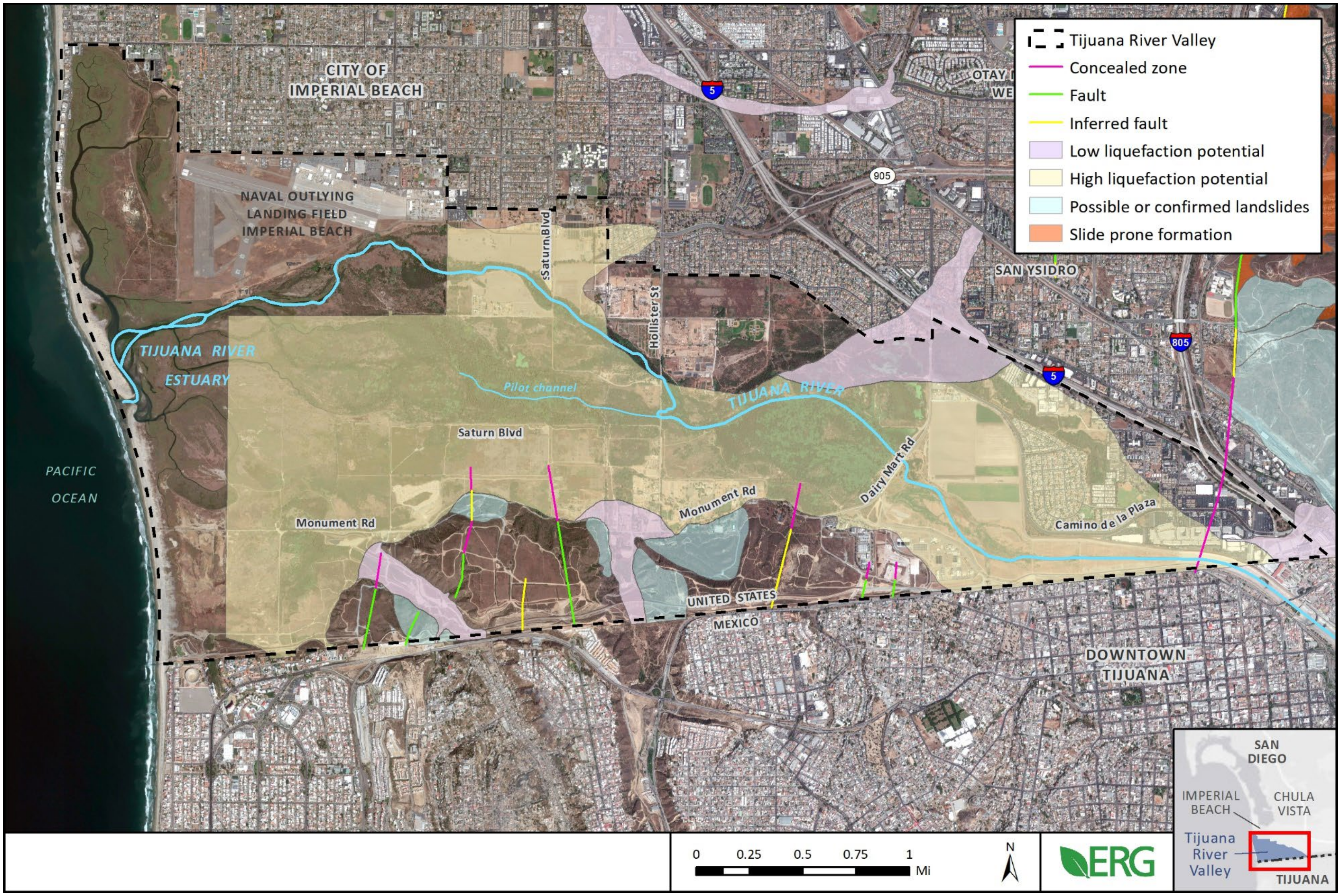

Figure 3-17. Geohazards in the Tijuana River Valley

3.7 Cultural Resources

3.7.1 Summary of Regional Context

The prehistory of San Diego County has most frequently been divided chronologically into three or four periods. The Terminal Pleistocene/Early Holocene period (ca. 12,000–6000 B.C.) encompasses the Clovis pattern dating elsewhere in North America to around 11,500 B.C. and is distinguished by large, fluted projectile points. The San Dieguito pattern (8500–6000 B.C.) includes large projectile points, bifaces, crescents, scraper planes, scrapers, hammers, choppers, and ground stone. The Middle/Late Holocene Period (ca. 6000 B.C.–A.D. 800), also known as the La Jolla pattern, includes extensive shell middens, portable ground stone metates and manos, crudely flaked cobble tools, expanding-stemmed projectile points (Pinto and Elko forms), and flexed human burials. The Late Prehistoric period (ca. A.D. 800–1769) is distinguished by small projectile points, brownware pottery, and the practice of human cremation. Traits characterizing the Late Prehistoric period include greater use of inland settlement locations, reliance on acorns, a greater emphasis on hunting, and interregional exchange.

European exploration of the San Diego area was initiated with the maritime expeditions of Juan Rodriguez Cabrillo in 1542 and Sebastián Vizcaíno in 1602. However, the historic period proper did not begin until 1769, when expeditions under the leadership of Gaspar de Portolá and Junípero Serra reached the region from Baja California. In that year, a royal presidio and the Misión San Diego de Alcalá were founded, and the incorporation of local Kumeyaay into the mission system was begun. The indigenous populations of the San Diego region encountered by early Spanish colonizers were speakers of a Yuman language or languages, variously referred to as Kumeyaay, Diegueño, Tipai, and Ipai. The Kumeyaay territory extended from south of Agua Hedionda Lagoon, Escondido, and Lake Henshaw to south of Ensenada in northern Baja California and east near the lower Colorado River. Above the family, the fundamental Kumeyaay social units were the *šimuł* (patrilineage) and the residential community or band. Leaders performed ceremonial, advisory, and diplomatic functions rather than judicial, redistributive, or military functions. Structures included houses with excavated floors, ramadas, sweathouses, ceremonial enclosures, and acorn granaries. A range of community ceremonies were performed, such as coming of age ceremonies and death and mourning ceremonies.

After Mexico's independence in 1821, the missions were secularized in 1833. Native Americans released from the San Diego mission returned to their native villages, moved east to areas lying beyond Mexican control, or sought work on *ranchos* or in the town of San Diego. The U.S.'s conquest and annexation of California in the Mexican-American War between 1846 and 1848 resulted in the Kumeyaay Indian nation being split between two countries. In the years after the U.S. annexed California, many Native Americans were displaced, and tens of thousands died from diseases, including smallpox. In the 1870s, President Ulysses S. Grant signed two Executive Orders (EOs) leading to the establishment of Indian reservations in San Diego for the San Pasqual, Pala, Santa Ysabel, Sycuan, La Jolla, Rincon, Viejas, and Capitan Grande bands of Kumeyaay. The Mesa Grande, Pauma, La Jolla, Campo, Cuyapaipe, La Posta, Manzanita, Rincon, Pauma, and Yuima reservations are all officially established under authorizing congressional legislation, the Relief for the Mission Indians Act of 1891 (Carter, 2022).

The region experienced cycles of economic and demographic booms and busts, with notable periods of growth in the mid-1880s, during World Wars I and II, and on a more sustained basis throughout the postwar decades. Aspects of development included the creation of transportation networks based on port facilities, railroads, highways, and airports; more elaborate systems of water supply and flood control; grazing livestock and growing a changing array of crops; limited amounts of manufacturing; and accommodating visitors and retirees. The region also developed several military facilities including the Border Field Auxiliary Naval Air Station's Aerial Target Bombing/Gunnery Range within the Border Field State Park, which was in operation between 1912 to 1961. After false starts, San Diego converted itself to a substantial city, and then into a metropolis, with exceptionally wide civic boundaries encompassing such suburbs as Ocean Beach, Pacific Beach, Clairemont, and La Jolla. Other cities were incorporated in the coastal region, including National City (1887), Coronado (1891), Chula Vista (1911), Imperial Beach (1956), Del Mar (1959), Solana Beach (1986), and Encinitas (1986).

A more detailed summary of the prehistoric and historic cultural setting of the Tijuana River Valley is presented in the Class III Cultural Resource Inventory conducted for the Proposed Action (Daniels et al., 2022), included as Appendix B of this PEIS.

3.7.2 Resources in the Tijuana River Valley

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effects of undertakings (i.e., actions) on any historic property and to consult with various parties, including the State Historic Preservation Officer (SHPO), on these effects. In California, the California Office of Historic Preservation (OHP) serves as the SHPO.

A Class III Cultural Resource Inventory was conducted for a 336-acre area encompassing the Area of Potential Effect (APE) of all project elements in the U.S. The investigation results are detailed in a technical report (Daniels et al., 2022), included as Appendix B of this PEIS. Table 3-9 lists the cultural resources identified during the Class III Cultural Resource Inventory that intersect the project area.

The study involved a records search from the South Coastal Information Center (SCIC), a Sacred Lands File search at the Native American Heritage Commission (NAHC), and an intensive pedestrian inventory. The SCIC records search indicated that a total of seven previously recorded cultural resources intersect the proposed APE, including four prehistoric sites (CA-SDI-4933, CA-SDI-8604, CA-SDI-8605, and CA-SDI-13486), two historic sites (CA-SDI-11096H and CA-SDI-11948H), and one prehistoric isolate (P-37-034104). During early conversations with OHP, a newly recorded multicomponent site (CA-SDI-23075) was also identified as intersecting the project area.

During the intensive pedestrian field survey, no artifacts were encountered within or immediately surrounding the previously defined boundaries of the four prehistoric sites or the multicomponent site. The four prehistoric sites have been formally evaluated for listing in the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR); they were recommended not eligible and have received OHP concurrence. The multicomponent site, CA-SDI-23075, underwent subsurface testing under a previous survey effort for a different project completed under contract for USIBWC; however, the testing was to determine the presence or absence of cultural deposits in that project's APE and was not considered sufficient to formally evaluate the site for NRHP eligibility.

Historic artifacts and features associated with CA-SDI-11096H were recorded outside the previously defined boundaries during the survey and correspond with the now demolished structures visible in the area's historic aerials. The site boundary was modified to reflect the actual location of the previously recorded house, a cobble wall, and historic/modern-period demolition debris. Multiple cobble wall sections associated with CA-SDI-11948H that had previously been recorded were identified along with a wire winch wheel and motor with a concrete foundation. The site boundary for CA-SDI-11948H was also revised to encompass the distribution of historic-period features more accurately. Formal evaluations of these sites have not yet been conducted.

One new cultural resource was identified just east of CA-SDI-11096H, consisting of a low cobble and mortar wall with two 4-ft.-tall pillars near the center that once served as the entrance to the Windover Ranch during the early to mid-twentieth century. A primary record for the resource was submitted to the SCIC and was assigned the permanent designation of P-37-39462. No other features or artifacts were identified in association with this resource.

The prehistoric isolate shell fragment, P-37-034104, was relocated during the pedestrian survey and was in the same condition as previously recorded. The shell was likely redeposited during previous flooding events. Isolated resources are categorically not eligible for listing in the NRHP, and P-37-034104 does not require further consideration.

Table 3-9. Summary of Cultural Resources Intersecting the Project Area

Primary No. P-37-	Trinomial No. CA-SDI-	Recording Archaeologist/Firm and Year Recorded or Updated	Description	NRHP Eligibility Status
P-37-004933	CA-SDI-4933	Higgins 1994; Carrico et al. 1996; Higgins et al. 1994; Widell 1994; Carrico and Serr 1996; Case 1996; Carrico et al. 1996b; Widell 1996; Polan 1981; Gallegos et al. 1986; Carrico 1996a; Carrico 1996b; SWCA 2004; Wilson et al. 2014; Anaya 2019	AP2 (Lithic scatter); AP15 (Habitation debris)	Recommended Ineligible for NRHP and CRHR
P-37-008604	CA-SDI-8604	ASM Affiliates 1989; Higgins 1994; Pigniolo and Baksh 1999; Higgins et al. 1994; USAC03 1992; Gallegos et al. 1986; Pigniolo et al. 2001; SWCA 2004; Wilson et al. 2014	AP2 (Lithic scatter)	Recommended Ineligible for NRHP and CRHR
P-37-008605	CA-SDI-8605	Cheever and Gallegos 1987; ASM Affiliates 1989; Higgins 1994; Higgins et al. 1994; Turnbow 1994; Turnbow et al. 1995; USAC03 1992; Polan 1981; Gallegos et al. 1986; Cook et al. 2003; SWCA 2004; Hector 2006; Becker 2011; Wilson et al. 2014; Foglia 2018	AP2 (Lithic scatter)	Recommended Ineligible for NRHP and CRHR
P-37-011096	CA-SDI-11096H	ASM Affiliates 1989; Manley 1993; City of San Diego 1994; Higgins 1994; Higgins et al. 1994; SWCA 2004; Hector 2006; Becker 2011; Wilson et al. 2014; Foglia 2018	HP2 (Single-family property)	Unevaluated
P-37-011948	CA-SDI-11948H	Higgins 1994; Higgins et al. 1994; Widell 1994; Cook et al 2003; SWCA 2004; Becker 2011; Hector 2006; Wilson et al. 2014	AH2 (Foundations); AH11 (Wall/fence)	Unevaluated
P-37-013486	CA-SDI-13486	Higgins 1994; Higgins et al. 1994; Turnbow 1994; Turnbow et al. 1995; Cook et al. 2003; SWCA 2004; Berryman and Rosenberg 2010a; Berryman and Rosenberg 2010b; Whitaker 2011; Wilson et al. 2014; Tennesen 2018; Anaya 2019	AP2 (Lithic scatter)	Recommended Ineligible for NRHP and CRHR
P-37-034104	N/A	ASM 2013	AP16 (Isolate shell)	Ineligible
P-37-039926	CA-SDI-23075	Sayre and Wesson 2020	AP2 (Lithic scatter); AH16 (Other)	Unevaluated
P-37-039462	N/A	ASM 2022	AH11 (Wall/fence)	Unevaluated

3.8 Visual Resources

The Tijuana River Valley is a scenic estuary area surrounded by urban area to the north, east, and south and the Pacific Ocean to the west. The valley is primarily undeveloped and includes several parks and hiking trails to promote enjoyment of the natural beauty. To the west of the Tijuana River Valley are undeveloped coastline and beaches with unobscured views of the ocean. The mesas along the border with Mexico afford desirable views across the varying landforms, including views of the ocean and beaches to the west, the Tijuana River Valley to the north, and neighboring mesas.

The City of San Diego General Plan and neighboring San Ysidro and Tijuana River Valley Community Plans work together to provide general guidance and address more specific issues at a community level, including visual resource considerations (City of San Diego, 2021c). The San Ysidro Community Plan and Local Coastal Program Land Use Plan identifies five scenic overlooks along or near Camino de la Plaza, close to the sod farm, which all look towards the Tijuana River Valley, a designated open space, and the Pacific Ocean (City of San Diego, 2017).

Other state laws focus on protecting visual and scenic resources by regulating development in areas considered to be of high scenic quality. These include the CCA, which includes provisions about protecting visual or scenic resources within the Coastal Zone. Steep hillsides, which are potential visual resources,[32] are present in Smuggler's Gulch, around the mesas, along Monument Road, and along portions of the U.S.-Mexico border. Additionally, the portion of Interstate 5 that is northeast of the project area is eligible to be, but not yet designated, a State Scenic Highway per the California Department of Transportation (Caltrans) under the California Scenic Highway Program (Caltrans, 2018).

Light sources in the area include nearby residential and commercial lights, with street lighting present along roadways and in parking lots. Lights are present in the parking lots at the ITP and SBWRP. There is limited lighting in Smuggler's Gulch and Goat Canyon. Lights are also managed by CBP as part of the border wall infrastructure in the region (CBP, 2018).

The ITP parcel and the Tijuana River main channel are surrounded by residential urban areas to the east and south and by natural, open space areas to the north and west. The scenic Tijuana River and Tijuana River Valley downstream of Dairy Mart Road are generally not visible from the ITP and SBWRP parcels. Mesa landforms are visible to the west of this area. Smuggler's Gulch and Goat Canyon are surrounded by natural areas, with steep hillsides characteristic of mesa landforms to the east and west. North of Smuggler's Gulch is private land that is primarily used for agriculture.

See Section 6.1.8 (Visual Resources) for information about regulations protecting visual and scenic resources.

[32] The Tijuana River Valley Local Coastal Program Land Use Plan identifies steep hillsides as potential visual resources. The San Diego Environmentally Sensitive Lands Regulations regarding steep hillsides apply to proposed development on a site containing portions with 1) a natural gradient of at least 25 percent and a vertical elevation of at least 50 feet, or 2) a natural gradient of at least 200 percent and a vertical elevation of at least 10 feet (City of San Diego, 2004).

3.9 Land Use

The Tijuana River Valley is surrounded by developed, urbanized areas that are part of the City of Imperial Beach to the north, the City of San Diego to the north and east, and the City of Tijuana, Mexico to the south. San Ysidro, a district of San Diego, is located to the northeast of the Tijuana River main channel. The majority of the developed land in the U.S. bordering the open space of the valley is occupied by single-family residential buildings to the north, northeast, and east. Multi-family residential dwellings and other mixed uses are located along Interstate 5. Immediately to the east of the north levee is Coral Gate, a single-family residential community, and the Las Americas Premium Outlets, a regional shopping center. Bordering the south of the valley are communities in Tijuana called *delegaciones*, which include Playas de Tijuana, Centro, and Otay-Centenario (from west to east). These are highly populated areas consisting of mixed residential and commercial uses. Industrial areas along the border in Mexico are concentrated around the port of entry and the Tijuana River.

Within the Tijuana River Valley, which is predominantly used for recreational purposes, there are three parks: Border Field State Park, Tijuana River Valley Regional Park, and the USFWS Tijuana Slough NWR. Border Field State Park, owned and managed by the CDPR, is located along the coast and encompasses a portion of Goat Canyon. The Tijuana Slough NWR, also located along the coastline, is bordered by the City of Imperial Beach to the north and encompasses the majority of the Tijuana River Estuary. Most of the rest of the valley downstream of Dairy Mart Road, including Smuggler's Gulch, is part of the Tijuana River Valley Regional Park, which is owned and managed by the County of San Diego Department of Parks and Recreation with some exclusions for private property scattered throughout. Within all three parks, trails (i.e., multi-use trails, equestrian trails, pedestrian trails, seasonal trails) and various access roads allow the public to access recreational opportunities such as hiking, horseback riding, biking, wildlife viewing, sightseeing, and picnicking. A recently opened 79-acre campground in the Tijuana River Valley Regional Park provides the public with 51 primitive campsites and 10 yurts in addition to a nature center and associated facilities. There are no parks or trails in the valley upstream of Dairy Mart Road. The Chula Vista Model Airplane and Radio Control Club leases approximately 20 acres of land owned by USIBWC just north of the ITP on the floodplain of the main channel. Figure 1-1 in Section 1.1 (Background) shows the park boundaries.

The TRNERR, a part of the National Estuarine Research Reserve System established by the National Oceanic and Atmospheric Administration (NOAA), is situated in the valley and serves important research and educational purposes. The TRNERR overlaps all three parks mentioned above and is managed through cooperation with California State Parks, USFWS, the City of San Diego, the County of San Diego, and the U.S. Navy. Policy related to the reserve is coordinated by the TRNERR Advisory Council (TRNERR, 2020). The TRNERR has participated in activities with the North American Marine Protected Area Network (NAMPAN) and was a pilot site for a "vital signs" assessment conducted by NAMPAN (CDPR, USFWS, and NOAA, 2010).

Several privately owned parcels in the valley are used for agricultural purposes, including some located just north of Smuggler's Gulch along Monument Road and several parcels adjacent to the City of Imperial Beach to the east of the Naval Outlying Landing Field Imperial Beach. The IBWC-owned parcel includes approximately 130 acres between Dairy Mart Road, the Tijuana River, and the north levee that are currently used as a sod farm. The California Farmland Mapping and Monitoring Program has designated this sod farm as prime farmland (California Department of Conservation, 2016). The Tijuana River Community Garden, managed by the Resource Conservation District (RCD) of Greater San Diego County, is located within the Tijuana River Valley

Regional Park just north of the river at the corner of Hollister Street and Sunset Avenue (RCD of Greater San Diego County, 2020). The river main channel, Smuggler's Gulch, and Goat Canyon contain no agricultural uses.

The Tijuana River Valley has historically been used for sand and gravel extractive operations, specifically in areas east of Border Field State Park and south of Monument Road (Parsons, 2005). The Mineral Land Classification system established by the California Surface Mining and Reclamation Act of 1975 designates the Tijuana River Valley as a combination of Mineral Resource Zones (MRZ) 2 and 3. MRZ-2 designates areas where adequate information indicates significant mineral deposits are present or there is a high likelihood of presence; MRZ-3 designates areas containing mineral deposits for which significance has not been evaluated (City of San Diego, 2008c). The Nelson Sloan Quarry (also known as the Border Highlands Pit) is located on county land immediately west of the SBWRP and east of Smuggler's Gulch on the mesa landform. The quarry is no longer active and has undergone reclamation. The CDPR is planning to restore this site to a natural landform and habitat for beneficial reuse/disposal of excess sediment excavated from flood control facilities and disturbed habitats in the Tijuana River Valley (CDPR, 2021). The southwest quadrant of the ITP parcel was previously used as a sand and gravel quarry (Parsons, 2005) but is currently used by CBP as a construction staging area for border infrastructure projects.

Portions of the Tijuana River Valley and nearby coastal areas also support Navy operations and border protection. The Naval Outlying Landing Field Imperial Beach is located north of the TRNERR, within the city limits of Imperial Beach. The landing field, part of Naval Base Coronado, handles overflow helicopter squadrons from Naval Air Station North Island in San Diego and conducts much of the Navy's West Coast helicopter training (City of Imperial Beach, 2019). Navy facilities along the coastline north of the Tijuana River, including Naval Base Coronado, support SEAL training activities. CBP maintains the border fence and shares responsibilities with USIBWC for maintaining the canyon flow diversion structures. CBP utilizes informal trails to conduct patrols in the Tijuana River Valley (Nordby, 2018). In accordance with a 1980 Memorandum of Understanding with IBWC, CBP also maintains property along the Tijuana River channel by conducting mechanical removal of vegetation to preserve line of sight (CBP, 2017).

The Tijuana River and adjacent floodplains upstream of Dairy Mart Road and the ITP parcel are owned by USIBWC, a federal entity. Smuggler's Gulch is located on land owned by the County of San Diego, and a small portion by the border is federally owned land. Goat Canyon is located on land owned by the State of California, the County of San Diego, and the federal government (small portion by the border). Figure 3-18 shows the land ownership in the Tijuana River Valley.

Land use plans that have been established in Tijuana River Valley and/or the vicinity include the following:

- **City of San Diego Multiple Species Conservation Program Subarea Plan (1997)**. The areas affected by the Proposed Action are located within the Southern Area of the MSCP Subarea Plan and are within the MHPA. Utility lines and roads, limited water facilities, and other essential public facilities are considered conditionally compatible with the biological objectives of the MSCP and thus would be allowed within the city's MHPA. The plan also identifies water quality, including sewage, as a priority issue for the Tijuana River Valley. See Section 3.4 (Inland Biological Resources) for additional information about MSCP species.

Policies and guidelines in this plan (e.g., Construction and Maintenance; Fencing, Lighting, and Signage; Materials Storage Policies; Land Use Adjacency Guidelines) may apply to the Proposed Action depending on coordination with the City of San Diego.

- **Tijuana River Valley Local Coastal Program Land Use Plan (2007).** The areas affected by the Proposed Action are covered by this plan and are designated as either Utility or as Multi-Species Conservation Open Space land uses. The activities associated with the Proposed Action generally fit within approved uses and even help support some of the management goals identified in the plan.

  Policies and guidelines in this plan (e.g., wetland protection, temporary construction areas, wildlife corridors, storage of materials, lighting, utilities located South of Monument Road, sediment control measures, grading) may apply to the Proposed Action, depending on coordination with the Local Coastal Program (LCP).

- **City of San Diego General Plan (2008a).** The General Plan designates areas affected by the Proposed Action as Park, Open Space, & Recreation; Agriculture; and Institutional & Public and Semi-Public Facilities. The Tijuana River Valley is in Planning Area 50 and is specified as a Proposition A land where a Managed Growth Initiative applies. The activities associated with the Proposed Action generally fit within approved uses, support many of the identified goals, and even help address some of the management issues identified in the various elements within the General Plan.

- **County of San Diego General Plan: A Plan for Growth, Conservation, and Sustainability (2011) (Chapter 3: Land Use Element).** This plan only applies to unincorporated areas in the County of San Diego. The Proposed Action is outside the boundaries of the land covered in this plan.

- **San Ysidro Community Plan and Local Coastal Program Land Use Plan (2017).** This plan covers the San Ysidro Community, which is located to the east of areas affected by the Proposed Action. While the Proposed Action does not take place within the borders of the San Ysidro community, this plan identifies scenic overlooks and vistas that overlook the Tijuana River Valley and areas affected by the Proposed Action. See Section 3.8 (Visual Resources) for more information on the overlooks.

- **County of San Diego Local Coastal Program Land Use Plan (2018).** This plan only applies to a narrow strip of land within the coastal zone that is also located within unincorporated areas in the County of San Diego. All project areas are outside the boundaries of the land covered in this plan.

- **City of Imperial Beach General Plan/Local Coastal Program Land Use Plan (2019).** This plan area is located downstream of the project area in the City of Imperial Beach. The Proposed Action does not take place directly on land covered by the plan; however, beach and ocean areas in Imperial Beach are downstream of the Proposed Action and would be impacted by the Proposed Action. The activities associated with the Proposed Action generally fit within the guidance of the plan and help address some of the management issues identified in the plan.

  Policies and guidelines in this plan (e.g., water quality polices, wastewater services policies) may apply to the Proposed Action after coordination with the LCP.

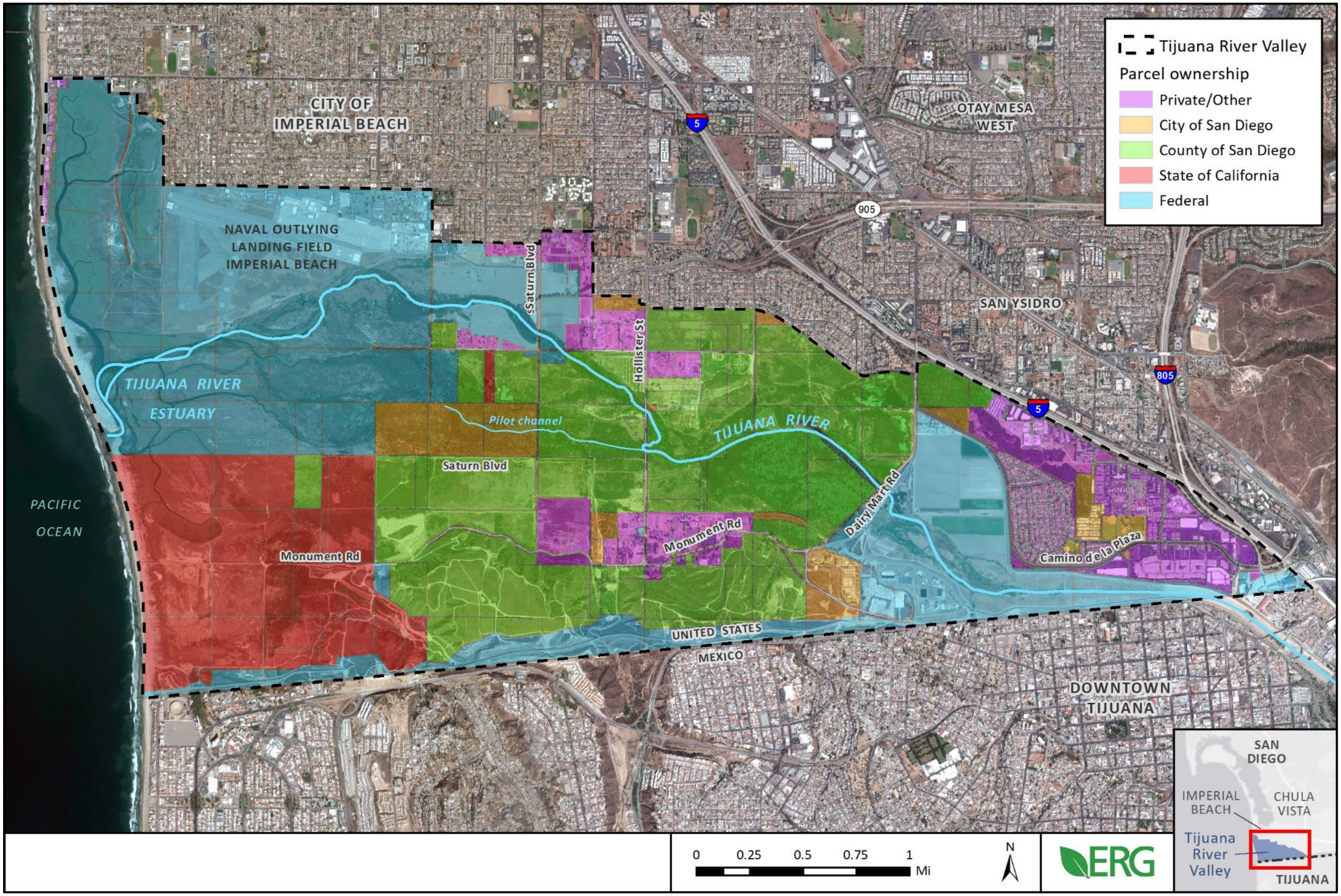

Figure 3-18. Land Ownership in the Tijuana River Valley

3.10 Coastal Zone

Per the CCA, the California coastal zone "is a distinct and valuable natural resource of vital and enduring interest to all the people and exists as a delicately balanced ecosystem" (PRC § 30001(a)). The CCA defines the coastal zone as "extending seaward to the state's outer limit of jurisdiction, including all offshore islands, and extending inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine, habitat, and recreational areas it extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less, and in developed urban areas the zone generally extends inland less than 1,000 yards" (PRC § 30103).

As shown in Figure 3-19, the coastal zone encompasses the entire Tijuana River Valley, adjacent coastal areas, and additional portions of the City of Imperial Beach and San Ysidro. The policies of the CCA shape the conservation and management of many resources and features in the Tijuana River Valley, including (but not limited to) wetlands, estuaries, shorelines, wildlife habitat, recreational areas, and scenic vistas. Specific coastal resources in the vicinity of the project areas, and the baseline impacts to these resources caused by contaminated transboundary flows, are discussed throughout relevant subsections of Section 3 (Affected Environment) of this PEIS.

Federal lands, including the ITP parcel and the flood control areas upstream of Dairy Mart Road, are excluded from the coastal zone (16 U.S.C. § 1453).

See Section 6.1.9 (Coastal Zone) for additional details about the federal Coastal Zone Management Act (CZMA), federal consistency determinations, the CCC authority, regulations, and review processes for development in coastal zones, including Coastal Development Permits (CDPs) and LCPs.

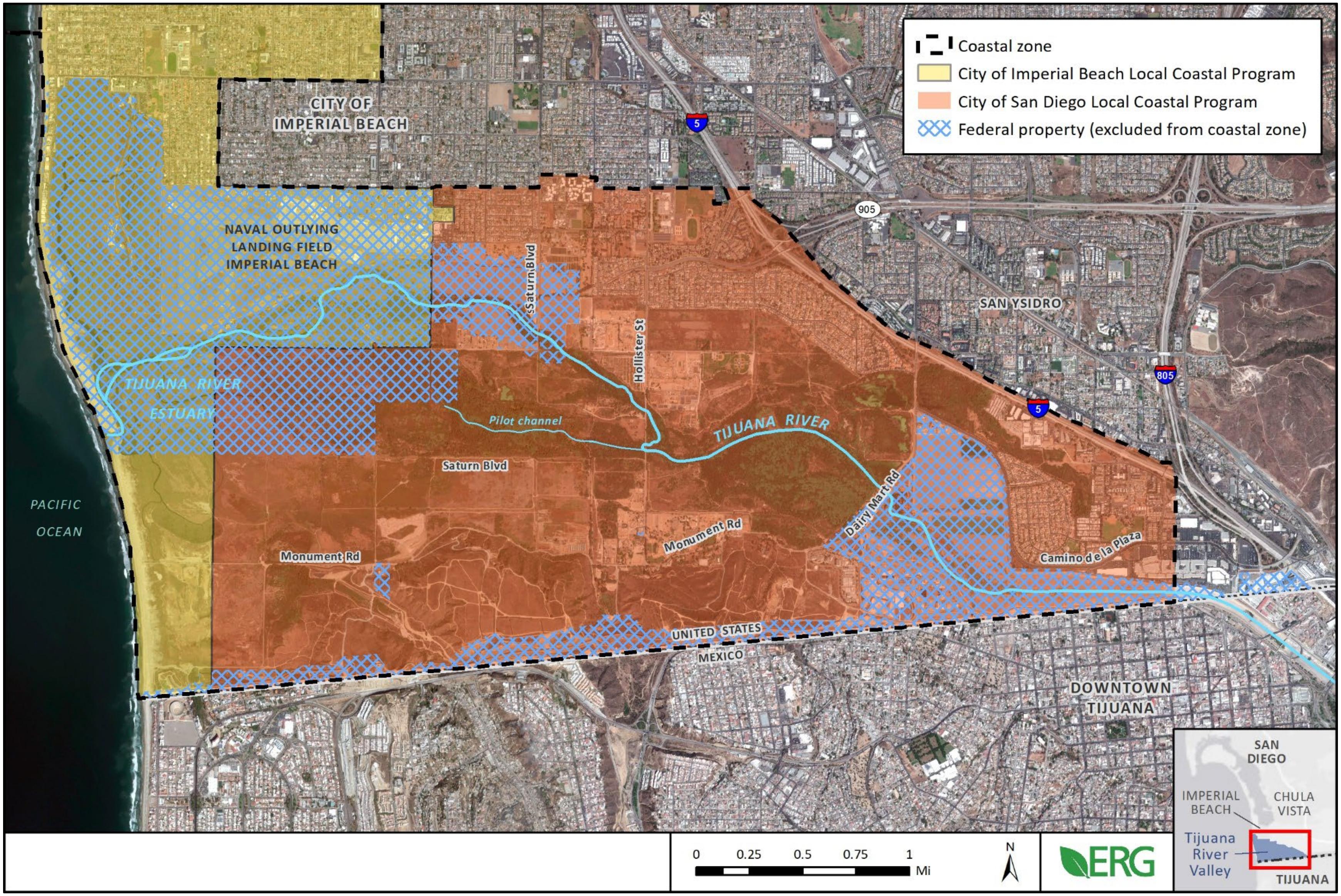

Figure 3-19. Coastal Zone Boundary and LCP Jurisdictions in the Tijuana River Valley

3.11 Air Quality and Odor

Regional Air Quality

Air quality in the San Diego region is variable and is dependent on factors including meteorological conditions, local pollutant emissions, and transported pollution from adjacent regions. Photochemical smog, including ozone (O_3), can occur as a result of vehicular emissions of nitrogen oxides (NOx) and volatile organic compounds (VOCs), particularly during periods of warm, sunny weather and during temperature inversions that reduce pollutant dispersion in the atmosphere. Temperature inversions occur in both winter and summer months when warm dry inland air overlies cool moist marine air, preventing pollutants from rising. Winds blow predominantly from the west, particularly during summer months. Santa Ana winds (dry downslope winds originating inland from the east/northeast) can occur, particularly during autumn months. Santa Ana winds typically blow pollutants out to the ocean, resulting in clear days. Transported pollution from both the South Coast Air Basin to the north (which includes Los Angeles) and Tijuana, Mexico, to the south can significantly contribute to ozone levels in San Diego County (SDAPCD, 2020).

The Clean Air Act established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare from the effects of air pollution. California maintains their own set of air quality standards (California Ambient Air Quality Standards [CAAQS]) that predate the NAAQS and are, in some cases, more restrictive than the national standards. Table 3-10 summarizes the NAAQS and CAAQS. National primary standards are levels of air quality necessary to protect public health, and national secondary standards are levels of air quality necessary to protect public welfare from any known or anticipated adverse effects of a pollutant. While ozone pollution levels and days of air quality exceedances in the San Diego region have declined significantly since 1990, San Diego County is categorized as a *severe nonattainment* area for ozone (per both the 2008 eight-hour standard and the 2015 eight-hour standard) and a *maintenance* area for carbon monoxide (CO) (EPA, 2022f). See Section 6.1.10 (Air Quality and Odor) for additional information on air quality regulations.

Table 3-10. Federal and California Ambient Air Quality Standards

Pollutant	Averaging Time	National Standard		California Standard
		Primary	Secondary	
Ozone (O_3)	1-hour	—	—	0.09 ppm (180 μg/m^3) [a]
	8-hour	0.070 ppm (137 μg/m^3) [b]	Same as primary	0.070 ppm (137 μg/m^3)
Respirable particulate matter (PM_{10})	24-hour	150 μg/m^3	Same as primary	50 μg/m^3
	Annual	—	—	20 μg/m^3
Fine particulate matter ($PM_{2.5}$)	24-hour	35 μg/m^3 [c]	Same as primary	—
	Annual	12.0 μg/m^3 [d]	15.0 μg/m^3	12 μg/m^3
Carbon monoxide (CO)	1-hour	35 ppm (40 mg/m^3)	—	20 ppm (23 mg/m^3)
	8-hour	9 ppm (10 mg/m^3)	—	9.0 ppm (10 mg/m^3)
Nitrogen dioxide (NO_2)	1-hour	100 ppb (188 μg/m^3)	—	0.18 ppm (339 μg/m^3)
	Annual	53 ppb (100 μg/m^3)	Same as primary	0.030 ppm (57 μg/m^3)
Sulfur dioxide (SO_2)	1-hour	75 ppb (196 μg/m^3)	—	0.25 ppm (665 μg/m^3)
	3-hour	—	0.5 ppm (1300 μg/m^3)	—
	24-hour	0.14 ppm (370 μg/m^3)	—	0.04 ppm (105 μg/m^3)
	Annual	0.030 ppm (79 μg/m^3)	—	—
Lead	30-day	—	—	1.5 μg/m^3
	Quarter	1.5 μg/m^3	Same as primary	—
	3-month	0.15 μg/m^3	Same as primary	—
Visibility reducing particles	8-hour	No national standard		See footnote e
Sulfates	24-hour	No national standard		25 μg/m^3
Hydrogen sulfide (H_2S)	1-hour	No national standard		0.03 ppm (42 μg/m^3)
Vinyl chloride (C_2H_3Cl)	24-hour	No national standard		0.01 ppm (26 μg/m^3)

Source: (CARB, 2021a); 40 CFR § 50.5.
a – ppm = parts per million; μg = microgram.
b – In 2015, EPA strengthened the previous 2008 ground-level ozone standard from 0.075 ppm to 0.070 ppm.
c – In 2006, EPA strengthened the previous 1997 24-hour $PM_{2.5}$ standard from 65 μg/m^3 to 35 μg/m^3.
d – In 2012, EPA strengthened the previous 1997 annual $PM_{2.5}$ primary standard from 15.0 μg/m^3 to 12.0 μg/m^3. The secondary standard was left unchanged.
e – 10-mile visibility standard equal to "extinction of 0.23 per kilometer."

Local Air Quality

As of 2020, the San Diego County Air Pollution Control District (SDAPCD) operated a network of nine air monitoring stations throughout the county. Two additional monitors, including one in San Ysidro immediately northeast of Interstate 5, are still in the permitting process (SDAPCD, 2021).

Air quality in the San Ysidro district is known to be greatly impacted by emissions from queues of idling vehicles at the San Ysidro point of entry (SDAPCD, 2021). This community is also affected by transboundary air pollution from Mexico, with air quality monitoring showing elevated particulate levels in the community when downwind of Tijuana (SDAPCD, 2019a). Several efforts—funded and supported by agencies and organizations including the California Office of Environmental Health Hazard Assessment (OEHHA), the California Air Resources Board (CARB), EPA Region 9, and NADBank—have been implemented in recent years to expand and improve air quality monitoring in San Ysidro and Tijuana near the border. Goals of these efforts include measuring changes in pollutant levels, identifying highly affected areas in San Ysidro, and identifying potential mitigation strategies through community engagement. Additionally, in response to Assembly Bill (AB) 617, CARB established the Community Air Protection Program (CAPP) with the goal of reducing pollutant exposure in communities that are heavily impacted by air pollution. In 2022, CARB added the San Diego International Border Community (encompassing parts of San Ysidro and Otay Mesa East) to the CAPP and is currently in the process of forming a steering committee to develop and advise on air quality improvement strategies in this community.

CalEPA's CalEnviroScreen 4.0 tool incorporates available air monitoring data and emissions estimates to summarize and illustrate, at the census tract level, community exposure to air pollutants including ozone (based on 2017–2019 monitoring data), $PM_{2.5}$ (based on 2015–2017 monitoring data), and diesel PM (based on emissions estimates) (CalEPA, 2021b). Estimated $PM_{2.5}$ exposures in the Tijuana River Valley and San Ysidro areas are among the highest in the state, with estimated exposures to diesel PM also being elevated in San Ysidro and eastern portions of the Tijuana River Valley. See Section 3.20 (Environmental Justice) and Appendix F (Supplemental Data for Environmental Justice Analysis) for additional information. However, while the county is a nonattainment area for ozone, the CalEnviroScreen tool identifies the Tijuana River Valley and adjacent areas to the north as having relatively low exposure to ozone as compared to the county and state as a whole.

The aerosolization of estuary and ocean water also presents air quality concerns, as contaminated water can migrate inland, carrying pathogens and other impurities along with it. While primarily a public health concern, the aerosolization can affect air quality along the coast. This is an emerging area of research, and EPA and USIBWC are continuing to investigate this topic.

Odor

Under Regulation IV Rule 51 of the SDAPCD, the discharge of air contaminants is prohibited if such as discharge would cause "injury, detriment, nuisance or annoyance to any considerable number of persons or to the public." Under this rule, an odor is considered a nuisance based on the number of complaints received by the SDAPCD. Odor from WWTPs is caused primarily by H_2S gas, which is created from sulfide-containing compounds under anaerobic conditions and characterized by a distinctive "rotten egg" smell.

Odor studies were conducted in 1997 and 2002. The 1997 study assessed odor-producing sources within the Tijuana River Valley, including the ITP, the buffer area between Mexico and the U.S., Stewart's Drain, and the Coral Gate development. The ITP was found to be operating well within the SDAPCD H_2S permit limit of 42 $\mu g/m^3$. Strong odors were detected at Stewart's Drain (east of the ITP), the intersection of Dairy Mart Road and Camino de la Plaza, and several areas of standing water (Parsons, 2005). The 2002 study found that H_2S concentrations at all sampling locations were within SDAPCD limits. One odor complaint was filed with the SDAPCD in May 2003 concerning the operation of the ITP, but upon investigation, the source of the odor was determined to be the Tijuana River, caused by the pump station at the U.S.-Mexico border that had been malfunctioning for five months (Parsons, 2005). EPA and USIBWC do not have any records of more recent odor studies or public complaints of odor originating from the ITP. The main cause of odor complaints within the Tijuana River Valley appears to be the Tijuana River itself, rather than the WWTPs. Odor concerns due to untreated wastewater and standing water in the Tijuana River persist among residents and researchers.

Sensitive Receptors

The City of San Diego's CEQA Significance Determination Thresholds for air quality and odor define a sensitive receptor as "a person in the population who is particularly susceptible to health effects due to exposure to an air contaminant than is the population at large." These guidelines identify long-term care facilities (e.g., hospitals, convalescent centers, retirement homes), residences (e.g., medical patients in homes), schools, playgrounds, childcare centers, and athletic facilities as examples of sensitive receptors (City of San Diego, 2016b).

No long-term care facilities or public or private schools are located within the Tijuana River Valley. Several parks, playgrounds, and athletic facilities are located within approximately 1 mile of the ITP parcel. It is unknown whether sensitive receptors occupy any of the few residences along Monument Road or Dairy Mart Road south of Interstate 5.

ITP Operations

Permitted emission units at the ITP include two diesel engines: one 3,057-horsepower (hp) engine driving a 2,000-kW electric generator and one 2,151-hp engine, also driving an electric generator. The generators are for emergencies only and are not to be operated for non-emergency events such as demand response (SDAPCD, 2011b, 2019b). The ITP has not experienced any unplanned power outages within the past five years requiring use of the emergency generators. The ITP also includes four odor control scrubbers (SDAPCD, 2011a).

3.12 Climate

Regional Climate

Coastal portions of the San Diego region feature a mild Mediterranean regional climate influenced by the Pacific High, a semi-permanent, high-pressure area in the eastern Pacific Ocean that causes summer storms to be directed north, allowing for clear skies in the summer months. Summers are warm and dry with moderate temperatures ranging from 61 to 79 °F with a seasonal mean of 70 °F. Fog forms regularly during the night and early morning over the coast, often penetrating inland. Winters are mild and wet with temperatures ranging from 45 to 67 °F with a seasonal mean of 56 °F. Highest precipitation occurs from November through March. Annual precipitation over the past 20 years has averaged 9.6 inches (NOAA, 2021a). Table 3-11 summarizes precipitation and temperature data over the past five years for the closest weather station.

Table 3-11. Summary of Weather Data for Brown Field Municipal Airport

Year	Annual Average Precipitation (Inches)	Temperature		
		Annual Average (°F)	Average Daily Max (°F)	Average Daily Min (°F)
2016	11.23	64.5	74.7	54.4
2017	10.1	64.4	74.8	54.0
2018	7.01	64.6	74.5	54.7
2019	18.48	62.2	72.0	52.5
2020	9.67	64.1	75.1	53.3

Source: (NOAA, 2021a).

Climate Change and Greenhouse Gas (GHG) Emissions

Global climate change has led to several trends in the southwestern U.S., including rising temperatures, more frequent and severe droughts and wildfires, and sea level rise (USGCRP, 2018). Climate change concerns in southern California include more frequent and prolonged droughts; more frequent and severe wildfires; rising temperatures and more frequent extreme heat episodes; competing water demands; sea level rise; and ocean changes including ocean warming, ocean acidification, and reduced ocean oxygen (USGCRP, 2018). Climate change is reducing renewable surface water and groundwater resources along the U.S.-Mexico border, and much of northern and central Mexico are currently under high or very high levels of water stress (Good Neighbor Environmental Board, 2016). Additionally, in the U.S.-Mexico border region, impoverished communities are especially vulnerable to climate change impacts such as drought, rising temperatures that intensify health effects of air pollution, and extreme weather events (Good Neighbor Environmental Board, 2016).

Coastal vegetative ecosystems, such as the Tijuana River Estuary, naturally sequester large quantities of carbon. Due to their high productivity and rapid sedimentation, ecosystems including mangroves, salt marshes, and sea grass beds can sequester more carbon per unit area than terrestrial forests, while providing co-benefits such as protection from sea level rise. The conservation and restoration of coastal marine ecosystems has emerged as a prominent strategy for mitigating and adapting to climate change.

Greenhouse gases (GHGs), which trap heat in the atmosphere, are emitted from a wide variety of natural and anthropogenic sources, including burning of fossil fuels and other materials and methane emissions from agricultural practices or decay of organic materials. GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases (hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride). In California, total 2019 emissions equaled 418.2 million metric tons of carbon dioxide equivalent (CO_2e). Major emission sources include the transportation (41 percent), industrial (24 percent), and electric power sectors (9 percent) (CARB, 2021b).

The City of San Diego is in the process of developing a new Climate Action Plan and released a draft for public review in 2021. The recent draft sets an ambitious goal of achieving net-zero GHG emissions by 2035 and identifies six strategies to achieve this goal: Decarbonization of the Built Environment, Clean and Renewable Energy, Land Use and Mobility, Circular Economy, Resilient Infrastructure and Ecosystems, and Emerging Climate Action. As part of these strategies, the plan sets goals for diverting waste streams to landfills and acknowledges the GHG contributions of WWTPs in the city's Metropolitan Sewerage System.[33] In the current plan (adopted in 2015), the city established a 2050 GHG reduction goal of 80 percent below 2010 levels and an interim 2035 target of 51 percent below 2010 levels. San Diego's 2010 baseline emissions were estimated at 13.0 million metric tons of CO_2e. Major emission sources in 2010 included transportation (55 percent), electricity generation (24 percent), and direct natural gas combustion (16 percent) (City of San Diego, 2015). See Section 6.1.11 (Climate) for information about requirements for analyzing the impact of GHGs as directed under EO 14008, *Tackling the Climate Crisis at Home and Abroad* (86 FR 7619), under CEQA, and in consistency with local climate action plans.

Existing sources of GHG emissions in the project area include Scope 1 emissions from operation of emergency generators at the ITP (see Section 3.11 [Air Quality]); Scope 2 emissions associated with electricity use (see Section 3.14 [Energy]); and Scope 3 mobile source emissions from ITP employee commuting and hauling of dry solids waste by truck (see Section 3.17 [Transportation]).[34]

[33] The ITP is not part of the city's municipal sewer system, but the neighboring SBWRP is included.

[34] GHG emissions are classified as Scope 1 (direct emissions), Scope 2 (indirect emissions from purchased energy), and Scope 3 (other indirect emissions). Scope 1 emissions include emissions from direct fossil fuel

3.13 Solid and Hazardous Waste

Solid waste includes trash; garbage; refuse; sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility; and other discarded material resulting from household, government, industrial, medical, commercial, mining, and agricultural operations, and from community activities. Hazardous waste is defined as a solid waste or combination of solid wastes which 1) may cause or significantly contribute to an increase in mortality or illness or 2) may pose a substantial present or potential hazard to human health or the environment when improperly managed (42 U.S.C § 6903). Hazardous and nonhazardous solid wastes are regulated by federal, state, and local laws, as described in Section 6.1.12 (Solid and Hazardous Waste).

Trash and Debris

Trash is a major human health and environmental concern in the Tijuana River Valley. Trash impairs the beneficial uses of the watershed, including fishing and water recreation. Some trash can be a significant source of bacteria, viruses, and toxic substances, which can result in beach closures. Broken glass or sharp metal fragments can cause puncture or laceration injuries. Trash can also impair and clog drainage infrastructure contributing to flood and human hazards. Trash in the Tijuana River Valley also threatens wildlife by impairing aquatic and wetland habitats; disrupting spawning, reproduction, and/or early development of aquatic organisms; and inhibiting growth of aquatic and wetland vegetation (Tetra Tech, 2009).

In 2009, URS Corporation conducted a physical survey of trash in the current and historical channels of the Tijuana River and its floodplain and tributaries. Across the entire survey area, trash tended to accumulate in areas where other trash or vegetation served as physical barricades to surface water flow or in areas where decreased flow velocity allowed debris to drop out of suspension (URS, 2010). Surveyed areas with the highest density of surface trash included the high-water area just east of Dairy Mart Road, particularly at the northeast corner of the Dairy Mart Road Bridge. The most prevalent types of trash and debris by weight were tires (30 percent); organic debris, including leaves, grass, sediment, branches, stumps, and textiles (19 percent); lumber (17 percent); and plastic (15 percent) (URS, 2010). Plastics generally have low density, making their weight contribution particularly notable. URS also found evidence of illegal dumping in the valley along residential and commercial areas at the northern edge of the floodplain, particularly near Dairy Mart Road (URS, 2010).

While the study described above surveyed quantities of trash accumulated in selected locations, no studies have yet focused on estimating quantities of trash conveyed across the border during wet- and dry-weather flows (HDR, 2020c). To approximate the annual trash load in transboundary flows, HDR applied the volumetric fraction of trash in the dredged sediment from the Goat Canyon sediment basins to the annual sediment yield to both sources. HDR developed a very conservative estimate that 10 percent of the dredged sediment by volume is trash (HDR, 2020c). This estimate,

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combustion, such as in the operation of boilers, generators, incinerators, and vehicles operated by the organization, as well as fugitive emissions of refrigerants and other GHGs (e.g., fire suppressants). Scope 2 emissions include upstream emissions from purchased electricity, steam, heating, and cooling. Scope 3 emissions include all other indirect emissions not included in Scope 2, such as emissions from employee commuting and business travel, transmission and distribution losses associated with purchased electricity, methane emissions from contracted solid waste disposal, methane and nitrous oxide emissions from contracted wastewater treatment, and upstream emissions associated with purchased products and services.

when applied to the Tijuana River main channel and Smuggler's Gulch sediment yields estimated by PG Environmental (PG Environmental, 2021f), produces annual trash load estimates of 15,000 cubic yards and 1,800 cubic yards, respectively.

Trash accumulation patterns in both Smuggler's Gulch and Goat Canyon are influenced by existing infrastructure in the canyons. Trash booms were installed in Smuggler's Gulch in 2019 (HDR, 2020c). In addition, CBP has identified concerns with the amount of trash that accumulates in the canyon flow diversion structures during wet-weather conditions. Thin layers of trash, likely deposited during storm events, were also observed in the sidewalls of the excavation of Smuggler's Gulch in 2009. During a subsequent field study, trash was found in Smuggler's Gulch in sediment cores collected below the water table (deeper than 12 feet) (URS, 2010). In Goat Canyon, substantial densities of trash were observed in the sediment basins during a previous trash survey (URS, 2010). Existing trash booms in Goat Canyon capture the majority of floating trash, which is removed during sediment removal operations at the nearby sediment basins (HDR, 2020c).

Ground Contamination and Cleanup

One soil contamination site, located in the southwest quadrant of the ITP parcel, is within the immediate vicinity of the Proposed Action. This portion of the ITP parcel includes the 43-acre former Hofer site purchased by USIBWC in 1999, which was used as a dairy farm and later for game bird ranching, scrap metal salvage, auto repair, feed storage, and fertilizer processing. Former uses of the site contaminated the soil in some areas with lead, and in one area with polychlorinated biphenyls. In 1997, a Phase II Environmental Site Assessment found that soil contaminants were not above hazardous waste levels. Groundwater sampling at various locations on the property identified low concentrations of heavy metals and VOCs, but none were detected at levels above state action levels for drinking water (Parsons, 2005). Following the assessment, contaminated soils were removed from the site, and four monitoring wells and one water production well were removed. The SWRCB California GeoTracker database identifies the former Hofer property as the site of a spill of unspecified contaminants reported in December 1991 to the San Diego Local Oversight Program. According to GeoTracker, the contamination event has been cleaned up, and the case has since been closed (SWRCB, 2020).

Wastewater Treatment Process Solids

Existing wastewater treatment processes at the ITP produce solid waste. The ITP is designed to treat an average daily flow of 25 MGD (30 MGD peak), and treated secondary effluent is discharged via the SBLO/SBOO to the Pacific Ocean. The ITP produces an average of 11,000 tons/yr of primary sludge dry solids—including approximately 600 tons/yr of sediment and trash by way of screening and grit removal—and 8,000 tons/yr of secondary (waste activated) sludge dry solids (PG Environmental, 2021c). These solid wastes are trucked to a disposal facility in Punta Bandera, Mexico, approximately 4.2 miles (10 miles by road) south of the international border. The disposal facility includes eight sludge disposal cells, each with a capacity of 23,700 cubic meters per year (EPA, 2009). It is EPA's understanding that these disposal cells are currently being operated at near capacity, and that logistical difficulties with transporting sludge to Mexico via truck are limiting the plant's ability to effectively remove sludge from the site. Authorities in Mexico are currently investigating disposal site alternatives to replace the Punta Bandera disposal facility once it ceases operations.

Solid waste disposal facilities in the region that can accept solids from wastewater facilities include those listed in Table 3-12. The Miramar Landfill, located approximately 25 miles from the ITP and north of the City of San Diego, currently serves as the disposal site for sediment removed from the

Goat Canyon sediment basins managed by California State Parks. Of the five facilities considered below, two were determined early on to be not viable options for accepting additional waste from the Proposed Action: Miramar Landfill because of expected impacts to its anticipated closure date and East Otay Mesa Recycling Collections Center and Landfill because it is not yet approved and operational.

Table 3-12. Regional Disposal Facility Information

Disposal Facility	Owner/Operator	Driving Distance from ITP (Miles)	Remaining Capacity [a]	Projected Cease Operation Date	Considered for the Proposed Action
Punta Bandera (Punta Bandera, MX)	CESPT	10	Unknown	Estimated 2024	Yes
Miramar Landfill (San Diego, CA) [b]	U.S. Department of the Navy/City of San Diego	25	11,080,871 cubic yards (2020)	1/1/2031	Yes, but not viable
Sycamore Landfill (Santee, CA)	Republic Services	29	113,972,637 cubic yards (2016) [b]	Estimated 2072	Yes
Otay Landfill (Chula Vista, CA)	Republic Services	9	21,194,008 cubic yards (2016) [b]	Estimated 2032	Yes
East Otay Mesa Recycling Collection Center and Landfill (San Diego County, CA) (Proposed) [c]	Not yet determined	11.5	180 million tons	N/A	Yes, but not viable

a – Year in parentheses indicates the date of the most recent available estimate.
b – Source: (CalRecycle, 2022).
c – Source: (County of San Diego, 2022).

3.14 Energy

The Tijuana River Valley, including the ITP, is served by San Diego Gas & Electric (SDG&E). SDG&E provides natural gas and electricity to San Diego County and southern Orange County in California. SDG&E's 2018 electric power mix consisted of 43 percent renewable energy (21 percent wind, 20 percent solar, 2 percent biomass and biowaste), 29 percent natural gas, 27 percent unspecified sources of power,[35] and less than 1 percent other sources. Baja California and California share two cross-border electrical interconnection lines, including a connection between Tijuana and Otay Mesa (Good Neighbor Environmental Board, 2019).

The ITP is connected to the existing power grid and purchases power from SDG&E. The ITP used 9.99 gigawatt-hours (GWh) at a total cost of $1.96 million during the six-month period from February 25, 2020, to August 25, 2020 (SDG&E, 2020). Using this example timeframe, the annual electricity demand of the ITP is estimated to be approximately 20.0 GWh/year. The ITP obtains backup power from two diesel engines: one 3,057-hp engine driving a 2,000-kW electric generator and one 2,151-hp engine, also driving an electric generator. The generators are for emergencies only and are not to be operated for non-emergency events such as demand response (SDAPCD,

[35] "Unspecified sources of power" refers to electricity from transactions that are not traceable to specific generation sources (California Energy Commission, 2019). This could include purchased/imported power.

2011b, 2019b). The ITP has not experienced any unplanned power outages within the past five years requiring use of the emergency generators. The ITP does not use any natural gas.

There are no electric substations or high voltage transmission lines in the Tijuana River Valley. There are distribution lines that feed the ITP and SBWRP, including lines that run along Dairy Mart Road and Monument Road.

3.15 Public Services and Utilities

The Tijuana River Valley area is serviced by utilities from the City of San Diego. The emergency services that serve the Tijuana River Valley are located in the adjacent communities of Imperial Beach, Otay Mesa, and San Ysidro. Two major roads, Hollister Street and Dairy Mart Road, provide emergency vehicle access for the Tijuana River Valley. Monument Road traverses the Tijuana River Valley east to west and provides the areas west of Smuggler's Gulch with access to emergency services. During wet-weather events, flooding overtops Monument Road in Smuggler's Gulch and Yogurt Canyon, which can restrict emergency vehicle access to areas west of the flooded section of the road.

Emergency Services

The Tijuana River Valley is currently serviced by the Southern Division of the City of San Diego Police Department. The department headquarters is located east of the Tijuana River Valley, in the Otay Mesa West Area.

The Tijuana River Valley is currently serviced by the City of San Diego Fire Department and is split between two fire districts. Fire District E29 services areas east of Camino de la Plaza, including San Ysidro. Fire District E30 services areas west of Camino de la Plaza and the Nestor/South San Diego areas.

The Tijuana River Valley is currently served by two area hospitals, San Ysidro Health Otay and Sharp Chula Vista Medical Center, which are located northeast of the Tijuana River Valley area in the San Ysidro and Chula Vista communities. Two urgent care facilities, South Bay Urgent Care and U.S. Healthworks-Chula Vista, are located north of the Tijuana River Valley in the Imperial Beach and Chula Vista communities. Most of the Tijuana River Valley is serviced by the San Diego Ambulance Service, with the South 5 Ambulance Service Area servicing areas near Yogurt Canyon.

Binational emergency services, those that address responses to hazardous materials incidents within a two-mile radius of the U.S.-Mexico border, are coordinated in cooperation between the cities of San Diego and Tijuana and the County of San Diego in accordance with a Binational Hazardous Materials Prevention and Emergency Response Plan. The plan includes hazards identification along the border, an incident notification system, and procedures for emergency response operations (County of San Diego, City of San Diego, and City of Tijuana, 2013).

Navy Operations and Border Protection

As discussed in Section 3.9 (Land Use), portions of the Tijuana River Valley and nearby coastal areas support Navy operations and border protection. Navy operations in this area include those at Naval Base Coronado, Naval Outlying Landing Field Imperial Beach, and Silver Strand Training Complex. Under current conditions, contaminated transboundary flows hinder Navy activities and infrastructure as described in Section 1.3.2 (Impacts of Contaminated Transboundary Flows).

The San Diego Division of CBP conducts Tijuana River Valley operations from the Imperial Beach Station, located immediately east of the Naval Outlying Landing Field Imperial Beach. CBP conducts routine patrols across the span of the border fence, including the canyons and the Tijuana River where it crosses the border. CBP also monitors and maintains the integrity of the grates in the Goat Canyon, Smuggler's Gulch, and Stewart's Drain culverts underneath the border fence. Under current conditions, CBP's ability to safely perform these duties in the canyons is hindered by the frequent presence of pooled dry-weather transboundary flows (including trash and sediment) around the grates and in the canyon flow diversion structures, particularly in Goat Canyon.

Public Schools and Districts

One public school, Willow Elementary School, is located within the Tijuana River Valley, approximately 1 mile northeast of the ITP. Surrounding neighborhoods are serviced by public school districts including the South Bay Union School District and San Ysidro School District. In addition to public schools, several private schools are located north of the Tijuana River Valley.

Other Public Community Facilities

Other public facilities in the area include libraries, recreation centers, and parks. The closest library to the Tijuana River Valley is the Imperial Beach Library, approximately 2 miles north of the TRNERR. Several recreation centers are located in San Ysidro and Imperial Beach. The open space of the Tijuana River Valley contains several recreational parks under varying jurisdictions (i.e., state, local, and federal). These include the Tijuana Slough NWR, Border Field State Park, Tijuana River Valley Regional Park, the TRNERR, and Friendship Park. See Section 3.9 (Land Use) for additional information about these parks.

Utilities

The City of San Diego Public Utilities Department operates the Point Loma WWTP and the SBWRP, the latter of which provides local wastewater treatment services and reclaimed water to the South Bay area. However, most properties within the Tijuana River Valley are not served by city sewers and instead rely on septic systems. The ITP treats transboundary wastewater flows from Tijuana, including flows from the canyon collector system, but does not provide wastewater treatment for communities in the U.S. The residents and businesses in the Tijuana River Valley, including USIBWC (for ITP operations), purchase and receive potable water from the City of San Diego Public Utilities Department and electricity from SDG&E. See Section 3.1 (Freshwater and Estuarine Resources) for additional information on drinking water and Section 3.14 (Energy) for additional information on energy use. Information is limited on communication infrastructure and service providers that service the Tijuana River Valley.

3.16 Public Health and Safety

In the Tijuana River Valley and neighboring coastal areas, existing sources of public health and safety concerns include transboundary flows of untreated wastewater and trash from Mexico and the subsequent contamination concerns. In February 2021, the San Diego County Board of Supervisors declared pollution in the Tijuana River Valley a public health crisis (City News Service, 2021). Additional topics relevant to discussion of public health and safety include the management of and exposure to hazardous materials, waste sites, and areas susceptible to hazardous conditions.

Untreated wastewater enters the Pacific Ocean in transboundary flows through the Tijuana River and discharges via SAB Creek. Once in the ocean, contaminants in the wastewater—including bacteria (e.g., *Enterococcus* and *E. coli*) and norovirus—can pose human health risks to those who work and recreate along the coastline in southern San Diego County. These affected groups primarily include beachgoers, surfers, U.S. Navy SEALs training facility personnel (located in Coronado, California), and CBP personnel. The County of San Diego monitors the ocean water for FIB and closes beaches if the FIB concentration exceeds the EPA beach action value (an "FIB exceedance"). As discussed in Section 1.3.2 (Impacts of Contaminated Transboundary Flows), poor coastal water quality has contributed to frequent beach closures in southern San Diego County. The beaches at Imperial Beach Pier and Border Field State Park have averaged 66 and 170 closure days per year since 2003, respectively, with even more frequent closures at Border Field State Park in recent years (averaging 262 closure days per year since 2019). Historical monitoring data collected at nearshore kelp stations near the Tijuana River mouth show that elevated FIB levels occur more frequently in wet-weather conditions, typically due to heavy storm activity and river runoff (City of San Diego, 2020a; City of San Diego Public Utilities, 2016). Studies have shown increased risk of gastrointestinal or other acute illness in surfers within three days after a rain event (Arnold et al., 2017; Schiff et al., 2016). However, a recent modeling study by the Scripps Institution of Oceanography indicated that human health risk during the dry season may be greater than previously understood, due to transport of norovirus from coastal discharges in Mexico (Feddersen et al., 2021). Exposure to pathogens from fecal matter while swimming can cause gastrointestinal illness such as vomiting, diarrhea, stomachache, nausea, and sometimes fever (EPA, 2012). Non-gastrointestinal adverse health effects can include upper respiratory illness, rash, eye ailments, earache, or infections (EPA, 2012). Residents of the City of Imperial Beach have reported illnesses and ear infections as a result of exposure to the contaminated ocean water.

Aerosolization of microbes in contaminated coastal water can potentially lead to airborne exposure to pathogens among beachgoers and residents in coastal areas. The Scripps Institution of Oceanography is currently performing air quality monitoring to inform assessment of these potential public health impacts (Scripps Institution of Oceanography, 2021).

CBP routinely conducts activities that result in exposure of their agents to polluted water at the border, such as cleaning and removing debris from culverts, operating gates during high-flow events, monitoring access points in the canyons, and performing other basic security functions. CBP agents maintain the in-culvert grates in Goat Canyon, Smuggler's Gulch, and Stewart's Drain, resulting in exposure to contaminated pools of dry-weather transboundary flows around the grates and in the canyon flow diversion structures, particularly in Goat Canyon. Exposure to these conditions has led to epidermal rashes in CBP agents performing their duties. CBP has also reported agents who have endured stomach issues, and one agent who nearly lost an arm to a flesh-eating bacteria infection (CBS News, 2020). Additionally, Navy personnel who train in the Pacific Ocean have reportedly endured gastrointestinal illnesses, and even some more serious cases of infection such as cellulitis (CBS News, 2020).

Trash in the Tijuana River Valley often includes items such as lumber, tires, plastics, textiles, paper, bottles, and metal and originates from upstream areas in Mexico. The total weight of ground surface trash in the valley has been estimated at approximately 5.9 million pounds (2,950 tons) (URS, 2010). See Section 3.13 (Solid and Hazardous Waste) for further details on trash in the valley. Public health concerns about trash accumulation in the valley include exposure to bacteria, viruses, and toxic substances from trash such as diapers, medical and household waste, and chemicals; puncture and laceration injuries resulting in microbial exposure that can cause illness; and ponding of water in containers and tires, which provides mosquito breeding areas and can increase the risks of diseases such as encephalitis and the West Nile virus (Tetra Tech, 2009). Vector-borne diseases have been associated with the accumulation of solid waste in urban areas—particularly garbage and trash accumulations, which can provide food sources and breeding and burrowing sites for animal disease vectors such as canines and rodents (Krystosik et al., 2020). Accumulation of solid waste, such as tires, creates harborage that provides shelter and food for rodents (Quinn et al., 2019). In California, rats and mice persist in almost all cities, and the presence of these rodents around human infrastructure may increase human exposure to allergens, infectious organisms, and parasites that may transmit other diseases (Quinn et al., 2019).

Development in areas susceptible to hazardous conditions (e.g., wildfire risk areas, coastal zones, landslides, floodplains) can create public health and safety concerns unless managed and planned carefully. The City of San Diego, in accordance with state law, has designated Very High Fire Hazard Severity Zones. Building standards in these areas may specifically include measures to reduce the rate of fire spread, such as through vegetation management. The Tijuana River Valley is located entirely within a Very High Fire Hazard Severity Zone (City of San Diego, 2009). In addition, some portions of the valley are characterized as landslide hazard areas, such as those with steep slopes. The Tijuana River Valley is also located within a coastal zone subject to sea level rise and contains a regulatory floodway and 100-year floodplains. See Sections 3.1 (Freshwater and Estuarine Resources), 3.3 (Floodplains), 3.6 (Geological Resources), and 3.12 (Climate) for more information about development in these areas.

3.17 Transportation

The Tijuana River Valley is a relatively undeveloped region and has limited transportation infrastructure. There are no public transportation routes (e.g., buses, light rail) or freeways. Several rural two-direction, one-lane roads traverse the Tijuana River Valley, most notably Dairy Mart Road, Hollister Street, and Monument Road. Only two bridges cross the Tijuana River in the U.S. at Dairy Mart Road and Hollister Road. The Tijuana River Valley region is accessed by Interstate 5, which extends to the San Ysidro Port of Entry just east of the Tijuana River.

Roads in San Diego County near the U.S.-Mexico border are heavily congested in the vicinity of the San Ysidro Port of Entry, which is the busiest land port of entry in the Western Hemisphere (GSA, 2021). Lines of vehicles waiting for entry can extend for several miles on local freeways and total as many as 70,000 vehicles per day. The Port of Entry was recently modernized and expanded to include additional inspection booths, Interstate 5 highway realignment, and additional pedestrian infrastructure, with construction completed in 2019 (GSA, 2021). The San Ysidro Port of Entry is located less than 1,000 feet to the east of where the Tijuana River crosses the border. The southbound side of Interstate 5 leading up to the Port of Entry is considered one of the top 10 bottleneck areas in Caltrans District 11 during peak a.m. and/or p.m. periods (Caltrans, 2021a). The ITP parcel is accessed near the intersection of Dairy Mart Road and Monument Road. Asphalt and gravel roads encircle the perimeter of the complex, and there is a loose grid of paved and unpaved roads throughout the site, including the lower unpaved portion of Dairy Mart Road. Access to the ITP facility is controlled.

Authorized vehicles can access Goat Canyon and Smuggler's Gulch from dirt roads by way of Monument Road. Maintenance roads along the north and south levees, and on top of the north levee, are used by USIBWC and CBP. CBP also uses Border Road, which runs along the U.S.-Mexico border from the Pacific Ocean to the south levee.

The managers at the TRNERR have identified the following as primary roads that are important to maintain for emergency vehicles, community evacuations, border security, and public access: Dairy Mart Road, Hollister Street, Monument Road, Seacoast Drive, roads on the north and south levees, access to Imperial Beach Border Patrol Station from Saturn Boulevard, Border Road, the Smuggler's Gulch access road, and dirt roads crisscrossing the TRNERR.

Traffic volumes in the Tijuana River Valley are low. Table 3-13 summarizes the annual average daily traffic (AADT) counts at several locations along Dairy Mart Road, Monument Road, and Interstate 5. The data represent two-way (except for ramp segments which are one-way), 24-hour volumes. However, during site visits in 2021, traffic congestion during rush hour was occasionally observed on Dairy Mart Road near the Interstate 5 interchange, including at the three-way intersection with Servando Avenue.

The stretch of Monument Road and Dairy Mart Road from the entrance to Border Field State Park all the way to Interstate 5 is designated as a bike route.

Portions of Monument Road are affected by flooding due to transboundary flows through the border canyons. Flows entering the U.S. from Mexico at Smuggler's Gulch frequently exceed the capacity of the existing culvert under Monument Road. During these conditions, Monument Road can become unpassable, greatly limiting vehicular access to areas in the valley west of this point.

As discussed in Section 3.13 (Solid and Hazardous Waste), existing operations at the ITP produce waste that is trucked to a disposal facility in Punta Bandera, Mexico. This facility is approximately 4.2 miles south of the international border or approximately 10 miles from the ITP by road. However, logistical difficulties regarding access to hauling services are currently limiting the plant's ability to effectively remove sludge from the site. Other regional disposal facilities in the U.S. that are being considered for wastewater treatment process sludge waste include Otay and Sycamore Landfills.

Table 3-13. AADT Counts for Selected Roads Within and Near the Tijuana River Valley

Street	Segment	Count	Year of Data [a]
Dairy Mart Road	San Ysidro Blvd West to Interstate 5 Ramp	18,800	2016
	Interstate 5 Ramp to Servando Avenue	12,700	2016
	Servando Avenue to Camino De La Plaza	10,000	2016
Monument Road	Hollister Street to Clearwater Way	2,100	2016
Interstate 5	Northbound at Dairy Mart Road	51,000	2020
	Northbound at Via San Ysidro	38,000	2020
Interstate 5 (ramp volume)	Northbound on from West San Ysidro Boulevard	14,100	2017
	Northbound off to West San Ysidro Boulevard	2,541	2021
	Southbound on from Dairy Mart Road	2,050	2017
	Southbound off to Dairy Mart Road	11,400	2017
	Northbound off to State Route 905	2,700	2017
	Southbound on from State Route 905	2,200	2017
State Route 905 (between Interstates 5 and 805)	Eastbound at Interstate 5 junction	29,000	2020
	Eastbound San Diego Freeway at I-5 junction	31,000	2020
	Eastbound at Beyer Boulevard	56,000	2020
	Eastbound at Picador Boulevard	56,000	2020
	Eastbound at Interstate 805 junction	74,000	2020
	Westbound at Interstate 805 junction	56,000	2020
	Westbound at Picador Boulevard	56,000	2020
	Westbound at Beyer Boulevard	50,000	2020
	Westbound San Diego Freeway at Interstate 5 junction	11,400	2020
	Westbound at Interstate 5 junction	11,000	2020
State Route 905 (ramp volume)	Eastbound off to Interstate 805 northbound	15,000	2016
	Westbound on from Interstate 805 southbound	18,700	2019
Interstate 805 (north of State Route 905)	Northbound at State Route 905 junction	128,000	2020
	Northbound at Palm Avenue	150,000	2020
	Northbound Auto Parkway Drive/Main Street	154,000	2020
	Southbound Auto Parkway Drive/Main Street	150,000	2020
	Southbound at Palm Avenue	128,000	2020
	Southbound at State Route 905 junction	61,000	2020
Interstate 805 (ramp volume)	Northbound off to Auto Park/Main Street	8,300	2020
	Southbound on from Auto Park/Main Street	11,200	2014
Main Street	Between ramp Interstate 805 northbound and Main Court	35,700	2016
	Between Oleander Avenue and Brandywine Avenue	22,400	2016
Maxwell Road	Between Main Street and landfill	2,800	2016

Source: (Caltrans, 2020b, 2020a; SANDAG, 2022a)
a – Where AADT counts were available from multiple sources, the most recent data points were used for this table.

3.18 Noise

Noise is unwanted or disturbing sound that can interfere with normal activities or disrupt quality of life. Noise sources (e.g., highways, airports) exist within or near the Tijuana River Valley, and new noise sources can be introduced during construction and operation of new facilities. Excessive noise refers to sound levels that would endanger public safety or cause discomfort or annoyance to a person of normal sensitivity. Impulsive noise refers to a single noise event that causes a high peak noise level lasting less than one second (e.g., a gunshot, explosion, or sudden noise created from construction activities). Excessive noise or impulsive noise can affect nearby noise-sensitive receptors such as schools, neighborhoods, and habitats.

Noise levels are typically measured as decibels (dB) or A-weighted decibels (dBA) and are often regulated under state or local ordinances. Noise decreases with distance from the noise source at a rate between approximately 3 dBA to 6 dBA per doubling of distance due to cylindrical spreading of energy from line sources (e.g., roadways) or spherical spreading of energy from point sources over an increasing area (Caltrans, 2013). Table 3-14 compares the perception of noise levels associated with common noise sources.

Table 3-14. Perception of Typical Noise Levels

Noise Level (dB)	Example Common Noise Source	Subjective Evaluation
140	Fireworks, gun shot	Painful and dangerous
130	Ambulance siren	
120	Jet plane taking off	Uncomfortable; dangerous after 30 seconds of exposure
110	Concert, sporting event	Very loud; dangerous after 30 minutes of exposure
100	Music player at full volume, snowmobile	
90	Blender, lawnmower, power tools	
80	Alarm clock	Loud
70	Vacuum, vehicle traffic	
60	Normal speech, dishwasher	Moderate
50	Rainfall	
40	Library	Soft
30	Whisper	
20	Leaves rustling	Faint

Source: (American Academy of Audiology, 2010).

Local ordinances regulate noise by establishing acceptable noise thresholds and potentially requiring permits and noise mitigation for construction activities and noise-producing equipment, as described in Section 6.1.13 (Noise). Table 3-15 compares the county and city sound level limitations.

Table 3-15. San Diego County and San Diego City Sound Level Limits

Land Use	Time of Day	County One-Hour Average Sound Level (dB) [a]	City One-Hour Average Sound Level (dB) [b]
Single family residential	7 a.m. to 7 p.m.	50	50
	7 p.m. to 10 p.m.	50	45
	10 p.m. to 7 a.m.	45	40
Multi-family residential	7 a.m. to 7 p.m.	55	55
	7 p.m. to 10 p.m.	55	50
	10 p.m. to 7 a.m.	50	45
All other residential	7 a.m. to 7 p.m.	60	60
	7 p.m. to 10 p.m.	60	55
	10 p.m. to 7 a.m.	55	50
Commercial	7 a.m. to 7 p.m.	55–70	65
	7 p.m. to 10 p.m.	55–70	60
	10 p.m. to 7 a.m.	50–65	60
Industrial or agricultural (including operational activities)	Any time	70–75	75

a – San Diego County Code § 36.404.
b – San Diego Municipal Code § 59.5.0401.

In San Diego County, transportation is the most significant source of noise, including noise from motor vehicle traffic, as well as aircrafts and railroads in certain portions of the county (County of San Diego, 2011). Interstate 5 is an eight-lane highway just northeast of the Tijuana River Valley and connects the metropolitan areas of San Diego and Tijuana. In Mexico, México 1D and Vía Internacional are highways that parallel portions of the U.S.-Mexico border. México 1D is a tolled six-lane highway, and Vía Internacional is a four-lane freeway in Tijuana. These highways generate typical transportation-related noise on the edges of the Tijuana River Valley.

The Tijuana River Valley is predominantly open space consisting of parks with trails for residents and visitors, which do not generate substantial background noise. Major sources of noise in the Tijuana River Valley and neighboring areas include military and commercial airports. The Naval Outlying Landing Field Imperial Beach, located directly north of the TRNERR, handles overflow helicopter squadrons and conducts helicopter training in addition to serving as an airport (City of Imperial Beach, 2019). Brown Field Municipal Airport is located approximately four miles northeast of the project area in the Otay Mesa community and is used as a public airport (City of San Diego, 2021a). Tijuana International Airport is south of Brown Field Municipal Airport, located just across the U.S.-Mexico border. The Tijuana International Airport is a public airport, handling up to 10 million passengers a year (Grupo Aeroportuario del Pacífico, 2015). Other minor noise sources within the Tijuana River Valley and near the project site include traffic along Monument Road and Dairy Mart Road (including heavy vehicles such as dump trucks), CBP use of off-road vehicles, and wastewater treatment operations at the ITP and SBWRP, including use of emergency generators and pump stations. The ITP and SBWRP are not known to be substantial existing noise sources in the area since publicly owned treatment works are typically designed to operate adjacent to residential areas and are well insulated. Based on a recent noise survey, exterior locations at the ITP registering the highest noise levels were at the emergency generators (106–110 dB, when generator is running) and above the secondary reactors (115–128 dB). These locations are each at least 300 feet from the nearest ITP property boundary.

Noise-sensitive receptors in the vicinity of the Tijuana River Valley include schools, residential areas, recreational parks, and wildlife habitats. Table 3-16 and Figure 3-20 identify noise-sensitive receptors located within 0.5 miles from U.S.-side project components. In addition, the Tijuana River Valley provides valuable habitat for protected avian species such as the least Bell's vireo and western snowy plover, which can be sensitive to noise as discussed in Section 3.4.2 (Wildlife and Inland Fish Resources).

Airborne sound with a very low frequency and sufficient amplitude can sometimes be felt before it is heard, and may therefore be confused with ground-borne vibration (Caltrans, 2013). Ground-borne vibration occurs when energy excites the adjacent ground, causing vibration waves to oscillate and spread rapidly through the ground. Ground-borne vibration can be caused by heavy vehicle traffic, trains, and construction activities. Vibrations can propagate through the earth to the foundations of buildings, and, in extreme cases, can cause structural damage.

Table 3-16. Noise-Sensitive Receptors in the Vicinity of Project Areas

Noise-Sensitive Receptor	Receptor Type	Distances to Example Nearby Project Elements
Tijuana River Valley Regional Park	Recreational	▪ 0 feet (from Project B trenching or trenchless entry/exit point) ▪ 450 feet (from Project A potential staging activities at ITP)
Least Bell's vireo critical habitat	Wildlife	▪ 0 feet (from common construction vehicle route) ▪ 400 feet (from Option B1 trenching) ▪ 400 feet (from Project A potential staging activities at ITP
Potential least Bell's vireo habitat	Wildlife	▪ 0 feet (from Project B trenching or trenchless entry/exit point)
Potential coastal California gnatcatcher habitat	Wildlife	▪ 0 feet (from Project B trenching or trenchless entry/exit point)
Residences along Monument Road	Residential	▪ 20 feet (from common construction vehicle route and Option B1 trenching)
Residences along Dairy Mart Road, San Ysidro Blvd W, and near Interstate 5 interchange	Residential	▪ 20 feet (from common construction vehicle route)
Residences in Tijuana near the U.S.-Mexico border	Residential	▪ 0 feet (from Project C potential sewer repair locations) ▪ 90 feet (from Project J potential trash processing area) ▪ 170 feet (from Project D trenching) ▪ 350 feet (from Project A construction at ITP) ▪ 150 feet (from Project F and J areas under consideration)
Coral Gate neighborhood	Residential	▪ 230 feet (from Project F and J areas under consideration)
Willow Elementary School	Educational	▪ 0.5 miles (from Project F and J areas under consideration)

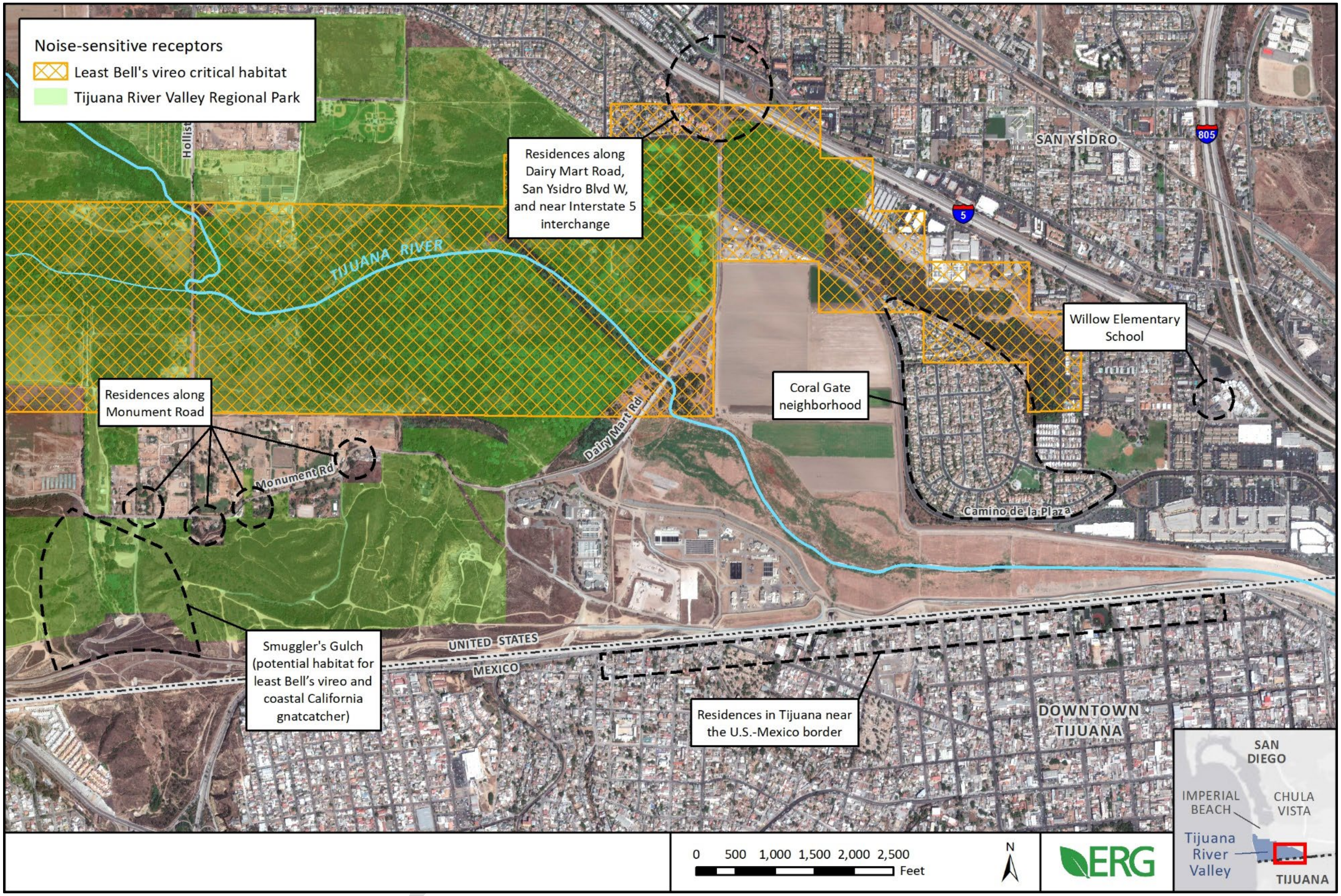

Figure 3-20. General Locations of Noise-Sensitive Receptors in the Vicinity of Project Areas

3.19 Socioeconomics

This section describes the existing social and economic resources—including population, employment, income, and housing—in San Diego County, the City of San Diego (including the district of San Ysidro), the City of Imperial Beach, and communities in Tijuana near the U.S.-Mexico border.

See Section 3.20 (Environmental Justice) and Appendix F (Supplemental Data for Environmental Justice Analysis) for additional demographic information regarding communities in the vicinity of the Proposed Action, including analyses at the census tract and census block group level.

Population

Table 3-17 summarizes population data for the U.S. jurisdictions in the vicinity of the Proposed Action. The population of San Diego County is estimated to be over 3.3 million as of April 2020 and is expected to grow to over 4 million by mid-century, an increase of just over 20 percent. The City of Imperial Beach and the district of San Ysidro are roughly equal in population (roughly 28,000 and 26,000, respectively). Population growth forecasts are based on a combination of economic and demographic projections, existing land use plans and policies, and potential land use plan changes. San Ysidro's population is particularly young, with roughly 30 percent of the population 18 years of age and under. San Ysidro is expected to undergo increased development intensity and significant population growth, including the addition of housing units near transit stations (City of San Diego, 2017; SANDAG, 2021d). The population of San Ysidro is expected to grow significantly, with a projected growth of 37 percent between 2020 and 2035. The population of Tijuana is currently estimated to be 1.6 million and is growing at a rate of approximately 2.5 percent per year. However, this may be an underrepresentation of population due to the high numbers of unregulated tenants in Tijuana who do not hold legal land titles, who are not likely listed in official population statistics.

Table 3-17. Current and Projected Population of U.S. Communities in Vicinity of Proposed Action

Jurisdiction	2020 Population	2035		2050	
		Population	% Change from 2020	Population	% Change from 2020
County of San Diego	3,343,349	3,853,698	+15%	4,068,759	+22%
---City of San Diego	1,430,483	1,665,609	+16%	1,777,936	+24%
------District of San Ysidro	26,082	35,797	+37%	39,367	+51%
---City of Imperial Beach	28,055	30,369	+8%	31,691	+13%

Source: (SANDAG, 2013a, 2013b, 2013c, 2013d, 2021a, 2021b, 2021c, 2021d).

Table 3-18 summarizes the racial demographics for the U.S. jurisdictions in the vicinity of the Proposed Action. San Diego County, the City of San Diego, the district of San Ysidro, and the City of Imperial Beach are all majority-minority jurisdictions, with 54 percent, 56 percent, 88 percent, and 68 percent of the population represented by non-white demographic groups, respectively. The most common minority group is Hispanic, particularly in San Ysidro and the City of Imperial Beach, where they represent a majority of the population (83 percent and 51 percent, respectively). See Figure 3-21, Section 3.20 (Environmental Justice), and Appendix F (Supplemental Data for Environmental Justice Analysis) for additional information. In Mexico, there are 68 indigenous communities and one Afro-Mexican community. There is a relatively large indigenous population in the Baja California border region (which includes Tijuana) compared to other Mexican states that share a border with the U.S. Additionally, there is one national coordination center for indigenous peoples (*Centro Coordinadores de Pueblos Indígenas*) located in the border region of Baja California.

Table 3-18. Racial Demographics of U.S. Communities in Vicinity of Proposed Action, 2020

Jurisdiction	Hispanic	White	Black	American Indian	Asian and Pacific Islander	All Other
County of San Diego	1,142,875 (34%)	1,536,268 (46%)	159,320 (5%)	15,153 (<1%)	369,059 (11%)	120,674 (4%)
---City of San Diego	441,621 (31%)	630,962 (44%)	83,222 (6%)	5,211 (<1%)	213,858 (15%)	55,609 (4%)
------District of San Ysidro	21,532 (83%)	3,250 (12%)	341 (1%)	62 (<1%)	705 (3%)	192 (1%)
---City of Imperial Beach	14,432 (51%)	8,923 (32%)	1,240 (4%)	155 (1%)	2,052 (7%)	1,253 (4%)

Source: (SANDAG, 2021a, 2021b, 2021c, 2021d).

Data on English-speaking ability and limited English-speaking households, or households experiencing "linguistic isolation," are collected in the American Community Survey (ACS) and are available for the study region. A linguistically isolated household is described as "a household in which all members age 14 years and over speak a non-English language and also speak English less than 'very well' (have difficulty with English)" (EPA, 2022d). In the City of San Diego, 40 percent of the population five years of age and over speak a language other than English in their households (either partially or entirely), and 15 percent of the population five years of age and over speak English "less than very well." The most common language spoken in the household other than English is Spanish, representing 23 percent of the population 5 years of age and over, followed by Asian and Pacific Islander languages at 12 percent (Census Bureau, 2019b). The City of Imperial Beach has similar language statistics: 45 percent of the population five years of age and over speak a language other than English in their households, and 14 percent of the population five years of age and over speak English "less than very well." The most common language spoken in the household other than English is Spanish, representing 39 percent of the population five years of age and over, followed by Asian and Pacific Islander languages at 5 percent (Census Bureau, 2019f). Language statistics specific to the district of San Ysidro and the Coral Gate neighborhood are not readily available; however, 90 percent of residents in the census tract containing Coral Gate and portions of San Ysidro speak Spanish at home (Census Bureau, 2019c). Additionally, in the census block group encompassing the ITP parcel (Block Group 060730100091), 47 percent of the population speaks English "less than very well," and 100 percent of linguistically isolated households speak Spanish (EPA, 2022a). Many communities throughout the South Bay area are characterized as "linguistically isolated" as documented in Appendix F (Supplemental Data for Environmental Justice Analysis).

Employment and Income

The major employment sectors in the San Diego region are military, tourism, international trade, and manufacturing (City of San Diego, 2021b). With many military installations in the county, the U.S. Navy is one of the largest employers in the region (City of San Diego, 2019).

Table 3-19 summarizes the total current and projected employment statistics across all sectors in the U.S. jurisdictions in the vicinity of the Proposed Action. Each jurisdiction is projected to have an approximately 30 percent increase in available jobs from 2012 to 2050.

The unemployment rate in the San Diego region has been negatively impacted by COVID-19 closures and job losses. As of August 2021, the unemployment rate in the San Diego region was 6.6

percent, twice as high as the pre-pandemic rate of 3.2 percent, but less than the 15.9 percent peak in April 2020 (SANDAG, 2021e). However, in February 2022, unemployment reached a post-pandemic low rate of 4.0 percent, marking a 50 percent decrease from February 2021 (SANDAG, 2022b). While unemployment rates have decreased since April 2020, the current unemployment rate in the region continues to be slightly higher than recent historical rates due to COVID-19. See Section 3.20 (Environmental Justice) and Appendix F (Supplemental Data for Environmental Justice Analysis) for additional unemployment data.

Table 3-19. Current and Projected Employment of U.S. Communities in Vicinity of Proposed Action

Jurisdiction	2012	2050	Percentage Change 2012–2050
County of San Diego	1,450,913	1,911,405	+32%
---City of San Diego	780,252	1,008,793	+29%
------District of San Ysidro	7,322	9,800	+34%
---City of Imperial Beach	3,665	4,857	+33%

Source: (SANDAG, 2013a, 2013b, 2013c, 2013d).

Beach closures due to poor water quality are likely to have adversely affected employment and income in the City of Imperial Beach and adjacent coastal communities; however, specific data regarding the degree of these economic impacts are not readily available.

Table 3-20 summarizes the median household income of U.S. jurisdictions in the vicinity of the Proposed Action. A projected median household income is not available because the San Diego Association of Governments' (SANDAG's) income forecast is under review. Of the adjacent communities, the City of San Diego has the highest median household income, followed closely by San Diego County. The City of Imperial Beach median household income is approximately 30 percent lower than that of San Diego County as a whole, and San Ysidro has the lowest median household income of the nearby jurisdictions.

In the City of San Diego, 8.3 percent of families (representing 12.8 percent of people) have household incomes that fall below poverty level. In the City of Imperial Beach, 13.8 percent of families (representing 18.9 percent of people) have household incomes that fall below poverty level (Census Bureau, 2019a, 2019e). In the Coral Gate neighborhood, 6.1 percent of families have household incomes that fall below poverty level (Census Bureau, 2019d). Many communities throughout the South Bay area—not including the Coral Gate neighborhood—have relatively high prevalence of low-income households, as shown in Figure 3-22 and documented in Section 3.20 (Environmental Justice) and Appendix F (Supplemental Data for Environmental Justice Analysis).

Table 3-20. Median Household Income of U.S. Communities in Vicinity of Proposed Action

Jurisdiction	2018 $
County of San Diego	$82,538
---City of San Diego	$83,543
------District of San Ysidro	$47,972
---City of Imperial Beach	$57,545

Source: (SANDAG, 2019a, 2019b, 2019c, 2019d).

Housing

Table 3-21 summarizes the current housing inventories in U.S. jurisdictions in the vicinity of the Proposed Action. The total number of housing units in San Diego County is just over 1.2 million, 60 percent of which are single-family units. Multi-family units account for 37 percent, with the remainder consisting of mobile homes and other types. By 2050, total housing units in San Diego County, the City of San Diego, the district of San Ysidro, and the City of Imperial Beach are expected to increase by 23, 28, 31, and 15 percent from 2020 levels, respectively, based on data from SANDAG (2013a, 2013b, 2013c, 2013d, 2021a, 2021b, 2021c, 2021d).

In the southern urban areas of San Diego County, a high proportion of housing units are occupied and overcrowded (i.e., with more than one occupant per room). Overcrowded housing exists in all census tracts in the Tijuana River Valley and is especially prevalent in areas along the Interstate 5 corridor through Chula Vista and National City (Public Health Alliance, 2022). In the census tract containing the ITP parcel (6073010009) which has a population of 6,978, only 29.4 percent of people own their own home (17th percentile in the state) compared to a 53.3 percent homeownership rate in the county. This census tract scored well in housing habitability, meaning households have basic kitchen facilities and plumbing (Public Health Alliance, 2022). The significant majority of housing units in this tract are fully occupied (only 20 out of 1,722 were unoccupied, according to 2015–2019 ACS data) (EPA, 2022b).

The Coral Gate neighborhood is made up of 477 housing units, 98 percent of which are single-family detached homes (Census Bureau, 2019d). The remainder are three- or four-unit apartments. Ninety-four percent of households are owner occupied, and 6 percent are renter occupied. The median real estate property value of homes in the neighborhood is $470,600. The median age of the real estate in the neighborhood is 23 years (Census Bureau, 2019d).

Table 3-21. Total Current Housing Units of U.S. Communities in Vicinity of Proposed Action, 2020

Jurisdiction	Single-Family, Detached	Single-Family, Attached	Multi-Family	Mobile Home and Other	Total Housing Units
County of San Diego	613,492	114,398	446,029	42,120	1,216,039
---City of San Diego	237,494	49,240	253,453	4,962	545,149
------District of San Ysidro	2,234	430	4,673	508	7,845
---City of Imperial Beach	4,406	1,408	4,006	185	10,005

Source: (SANDAG, 2021a, 2021b, 2021c, 2021d).

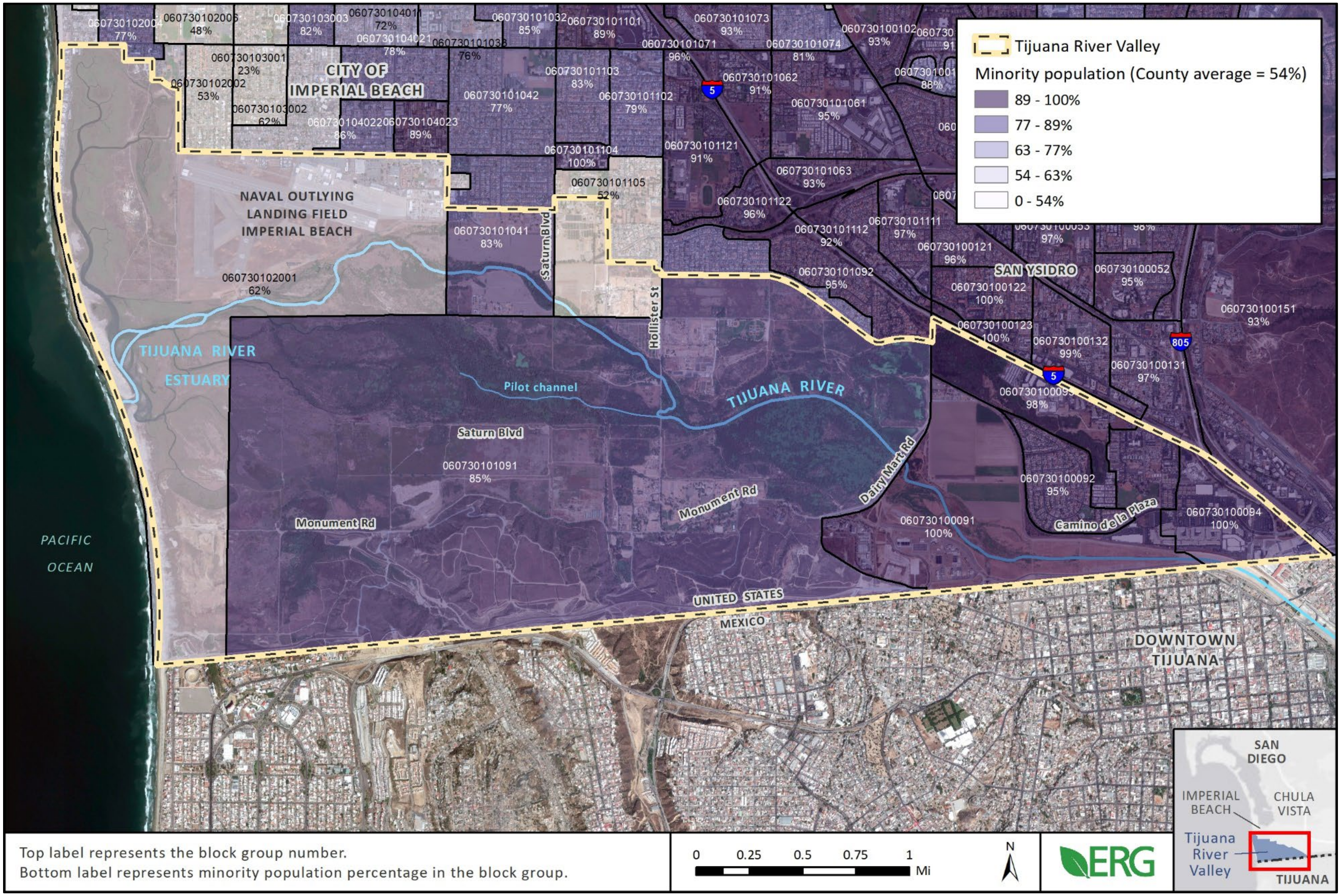

Figure 3-21. Minority Percent of Population for Census Block Groups in San Diego County, Based on EJScreen 2.0 Data

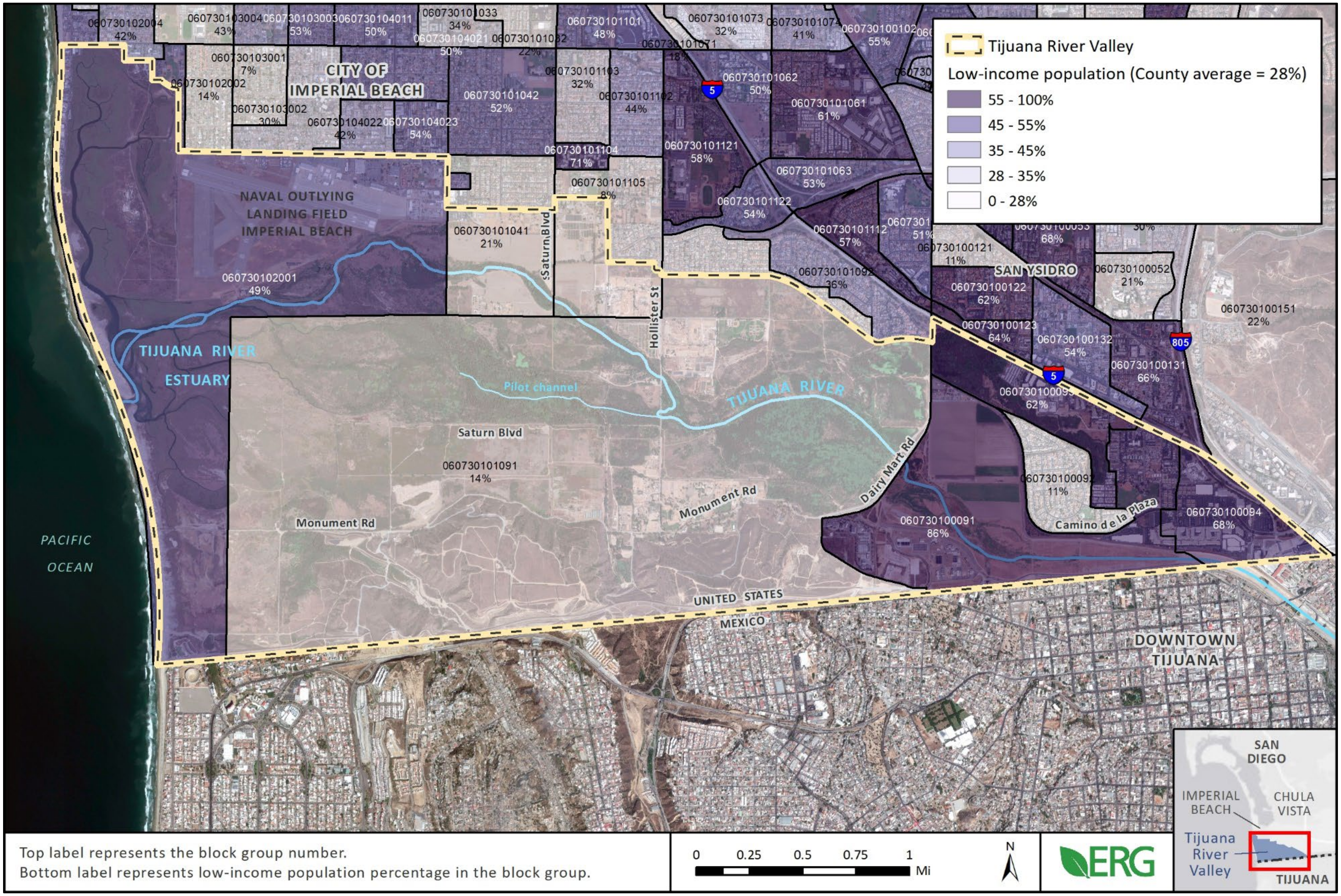

Figure 3-22. Low-Income Percent of Population for Census Block Groups in San Diego County, Based on EJScreen 2.0 Data

3.20 Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 7629), directs federal agencies to make environmental justice part of their missions by "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations…" CEQ has oversight of the federal government's compliance with EO 12898 and NEPA, and developed *Environmental Justice Guidance Under the National Environmental Policy Act* in 1997 to help federal agencies identify and address environmental justice concerns when conducting NEPA assessments (CEQ, 1997b). When determining whether effects stemming from proposed actions are disproportionately high and adverse, CEQ's guidance directs agencies to consider each of the following three factors to the extent practicable (CEQ, 1997b):

- Whether there is, or will be, an effect on the natural or physical environment that significantly (as defined by NEPA) and adversely affects a minority or low-income population or Indian tribe. Such effects may include ecological, cultural, human health, economic, or social impacts that are linked to impacts on the natural or physical environment.
- Whether existing environmental effects are significant (as defined by NEPA) and currently or could in the future have an adverse impact on minority or low-income populations or Indian tribes. Such effects may include any environmental effects that would appreciably exceed, or are likely to appreciably exceed, those on the general population or other appropriate comparison groups.
- Whether environmental effects occur, or would occur, in a minority or low-income population or Indian tribe affected by cumulative or multiple adverse exposures from environmental hazards.

When incorporating environmental justice into the NEPA process, EPA also analyzed impacts and determined significance in accordance with *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses* (EPA, 1998).

Beyond CEQ and EPA guidance, more recent efforts under the Biden administration have placed a renewed focus on environmental justice considerations. The recent EO 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government* (86 FR 7009), directs federal agencies to assess whether, and to what extent, underserved communities face systemic barriers in accessing opportunities and benefits available pursuant to the agency's policies and programs. EO 13985 also requires federal agencies to develop a plan for addressing barriers. EPA's *E.O. 13985 Equity Action Plan* identifies six priority actions that form the foundation for achieving equity, environmental justice, and civil rights (EPA, 2022g).

Recent federal mandates related to climate change impacts also provide guidance regarding environmental and climate justice considerations. EO 14008, *Tackling the Climate Crisis at Home and Abroad* (86 FR 7619), directs agencies to "make achieving environmental justice part of their missions by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities (DACs), as well as the accompanying economic challenges of such impacts." EO 14008 also established the White House Environmental Justice Advisory Council within EPA to advise on how to increase the federal government's efforts to address environmental injustice.

EPA is also guided by its own definition of environmental justice, which reflects federal priorities and guidance. EPA defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies" (EPA, 2021c). EPA has the goal of ensuring environmental justice for all communities across the U.S.

Additionally, EPA and USIBWC reviewed *Promising Practices for EJ Methodologies in NEPA Reviews*, which provides methods for incorporating robust environmental justice considerations into NEPA processes (IWG on Environmental Justice & NEPA Committee, 2016). This report does not establish new requirements for NEPA analysis and is intended to provide flexibility for agencies as they examine environmental justice during NEPA reviews.

As described in the following subsections, EPA and USIBWC evaluated whether environmental inequities exist in communities in the vicinity of construction and operational activities under the Proposed Action. Section 4.20 (Environmental Justice) discusses the potential impacts of the Proposed Action, including the potential for disproportionately high and adverse effects on minority and/or low-income populations, such as potential exacerbation of existing social, economic, health, or environmental burdens. A more detailed description of the environmental justice review and analyses for the Proposed Action is described in Appendix F (Supplemental Data for Environmental Justice Analysis).

Geographic Scope of Analysis

EPA and USIBWC defined the geographic scope of the environmental justice analysis in the U.S. (EJ Study Area) for the Proposed Action as a polygon that includes all census block groups and tracts falling within one of two areas (EJ Study Area 1 or EJ Study Area 2). The geographic extents of EJ Study Areas 1 and 2 are defined as follows and illustrated in Figure 3-23:

- **EJ Study Area 1** includes all census block groups located (entirely or partially) within 0.5 miles of the edge of a polygon encompassing the locations of potential construction activities under the Proposed Action, excluding on-road vehicle use.[36] Communities in this area are more likely to be affected by short-term construction and long-term O&M of new infrastructure under the Proposed Action. EJ Study Area 1 covers approximately 6.36 square miles, encompassing five block groups and two census tracts.

[36] The communities located east of Interstate 5 along the U.S.-Mexico border (Block Group 060730100151; Tract 6073010015) was excluded from EJ Study Area 1. This community is, at its closest, approximately 0.3 miles from the easternmost U.S. project element under the Proposed Action—specifically, the areas under consideration for the U.S.-side river diversion (Project F; see Figure 2-13). This community was excluded because 1) only a very small portion of the areas under consideration for the U.S.-side river diversion is located within 0.5 miles of this community; 2) the intervening area includes dense residential and commercial development, Interstate 5, and the San Ysidro Port of Entry, which would likely obscure the effects of any activities associated with the river diversion; and 3) this community area is more than 10 miles wide and encompasses areas with environmental and social conditions that could substantially differ from those of the communities close to the Proposed Action.

- **EJ Study Area 2** includes all additional block groups adjacent to the potential truck hauling route to and from Otay Landfill.[37] Communities in this area would potentially be affected by increased vehicle use along highways and local roads during short-term construction and long-term O&M of new infrastructure under the Proposed Action. EJ Study Area 2 covers approximately 30 square miles, including 20 block groups and 13 census tracts.

Coastal communities were excluded from the geographic scope of analysis because the Proposed Action is expected to result in significant long-term environmental benefits for coastal communities, with no adverse construction-related impacts, due to significantly reduced marine discharges of untreated wastewater. Additionally, a rapid review of demographic and environmental burden indicators from the available screening tools (discussed below) indicates that coastal communities in southern San Diego County are generally exposed to fewer and less intense existing social and environmental burdens than the communities closer to the location of the Proposed Action.

EPA and USIBWC selected San Diego County as the comparison population—i.e., for each indicator, this analysis considers whether conditions within the EJ Study Area are higher or lower compared to the county as a whole. San Diego County was used as a reference point to ensure communities are adequately examined in comparison to local conditions, rather than using the state as a reference point which could over- or underestimate the context of local burdens. Using the county as the reference point also enables comparison between the areas in the county that will accrue benefits and those that are likely to experience negative impacts. All statistics reported as percentiles in this section are relative to San Diego County as a whole.

EPA and USIBWC also considered reasonably foreseeable transboundary impacts to communities in Tijuana along the U.S.-Mexico border that are in the vicinity of potential U.S.-side construction and operation activities. As described in Section 1.5 (Purpose and Scope of the Programmatic EIS), this Draft PEIS does not evaluate potential impacts to communities in Mexico that would result from actions in Mexico. Mexico authorities would be responsible for preparing environmental impact analyses for actions in Mexico pursuant to Mexican laws and authorities as discussed in Section 6.2 (Mexican Regulations and Permits).

[37] The route to Otay Landfill was chosen, rather than the route to Sycamore Landfill, because Otay Landfill is much closer and therefore a more likely destination for construction debris and other solids waste. Analyzing block groups adjacent to the route to Otay Landfill ensures impacts to the local community are appropriately considered, rather than having an overly broad analysis that examines all communities— including several non-burdened communities—between the Proposed Action and Sycamore Landfill. For example, the census block group that includes Sycamore Landfill is 42 percent minority and 11 percent low income, whereas the census block group that includes Otay Landfill is 85 percent minority and 14 percent low income.

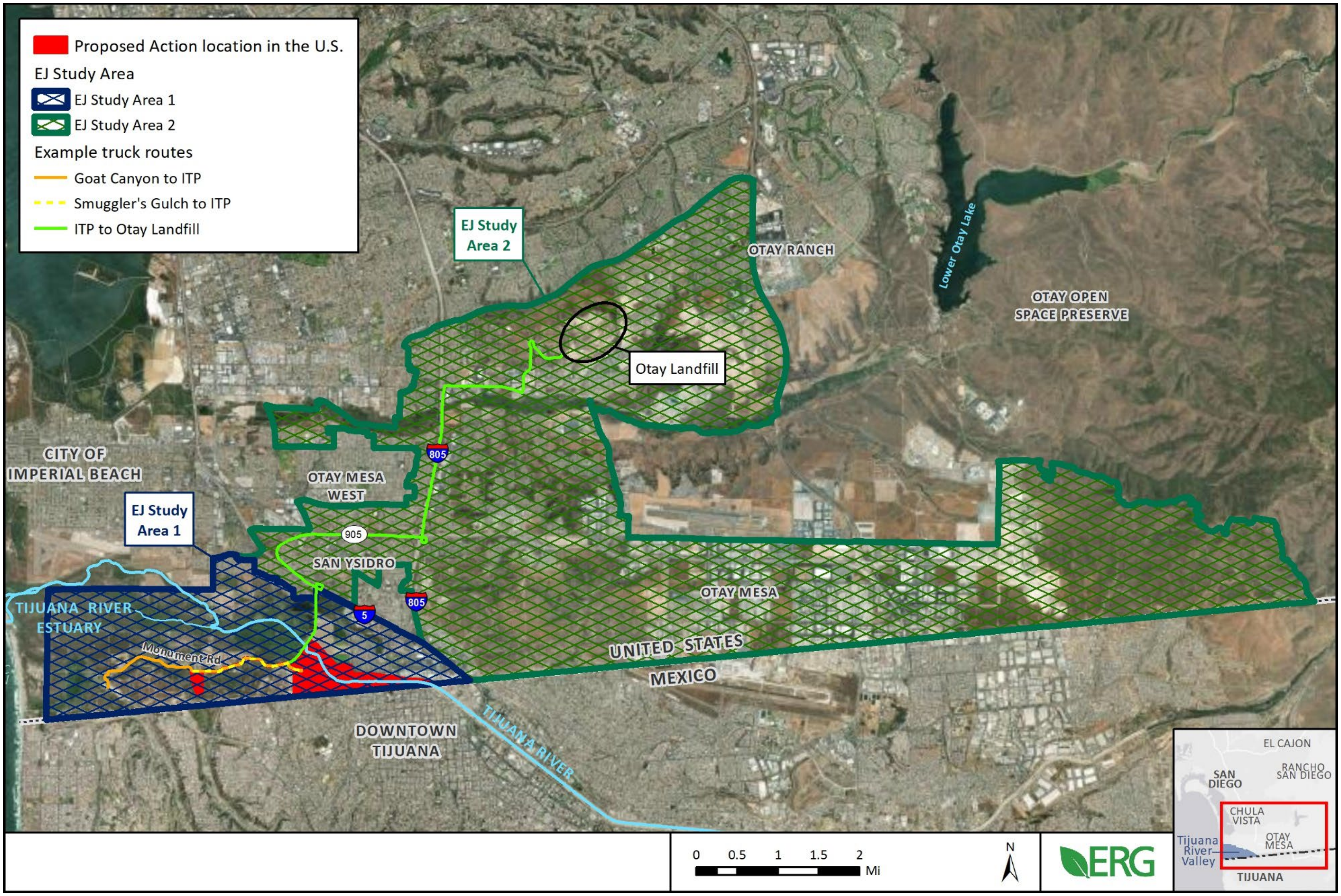

Figure 3-23. Boundaries of the EJ Study Area for the Proposed Action

Data Sources

EPA's Environmental Justice Screening and Mapping Tool (EJScreen 2.0)[38] and CalEPA's CalEnviroScreen 4.0[39] tools are available to assist the public, planners, and decision makers with identifying U.S. communities that are disproportionately affected or burdened by environmental, social, public health, and demographic indicators.

- EJScreen is EPA's web-based application that provides EPA and the public with a nationally consistent environmental justice screening and mapping dataset and approach for combining environmental and demographic indicators into Environmental Justice Indexes (EJ Indexes). EJScreen combines environmental, demographic, and geographic data to highlight areas where vulnerable populations (as determined based on a series of demographic indicators) may be disproportionately impacted by pollution and other environmental stressors. EJScreen assesses potential disproportionate environmental burdens on and harms to vulnerable populations. It provides a broad and flexible platform for screening and visualization of potential environmental justice issues at a fine community scale (census block group).

- CalEnviroScreen 4.0 is a California-specific screening tool based on publicly available data that is used to identify communities disproportionately burdened by multiple pollution sources or that exhibit population characteristics that make them more sensitive to pollution. CalEnviroScreen 4.0 provides data at the scale of census tracts. While some indicators are similar to those used in EJScreen, CalEnviroScreen 4.0 includes some California-specific indicators and also enables users to make comparisons between regions in the state.

EPA and USIBWC used EJScreen 2.0 and CalEnviroScreen 4.0 as primary screening tools to assess social, economic, environmental, and demographic data for block groups and census tracts in the geographic scope of analysis. EPA and USIBWC also reviewed additional data sources and reports to supplement the screening-level analysis:

- The Public Health Alliance of Southern California's Healthy Places Index 3.0 (HPI)[40] evaluates socioeconomic and environmental indicators that may affect human health and life expectancy. Based on these indicators, an HPI score is generated that indicates the overall community health conditions compared to other communities in California (Public Health Alliance, 2022). EPA and USIBWC examined the HPI scores and certain indicators for census tracts located within the geographic scope of analysis. EPA and USIBWC did not examine indicators provided through HPI 3.0, for which related data is available through EJScreen 2.0 or CalEnviroScreen 4.0.

- The Good Neighbor Environmental Board's 17th Report (*Climate Change and Resilient Communities Along the U.S.-Mexico Border: The Role of the Federal Agencies*)[41] was also

[38] See https://ejscreen.epa.gov/mapper/.

[39] See https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40.

[40] See https://map.healthyplacesindex.org/?redirect=false.

[41] See https://19january2017snapshot.epa.gov/sites/production/files/2016-12/documents/17th_gneb_report_publication_120516_final_508.pdf.

reviewed to help characterize vulnerable populations near the U.S.-Mexico border, water issues, air pollution and traffic, energy resources, public health, and existing climate change impacts on the natural and human environment (Good Neighbor Environmental Board, 2016).

- The SDAPCD's AB 617: Community Air Protection Program Submittal for San Diego International Border Community (*Community Air Monitoring and Emission Reduction Plan*)[42] was presented to CARB in 2019 and identifies and provides socioeconomic and environmental information on DACs in San Diego County (SDAPCD, 2019a).

- OEHHA identified DACs pursuant to SB 535.[43] DACs are those census tracts that receive the highest 25 percent of overall scores in CalEnviroScreen 4.0 (in addition to census tracts identified in a previous 2017 designation as disadvantaged, regardless of their scores in CalEnviroScreen 4.0[44]); census tracts that receive the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores where no overall CalEnviroScreen 4.0 score is available; and lands under the control of federally recognized tribes (OEHHA, 2022). DACs receive investments of proceeds from the California cap-and-trade program as directed by SB 535 and AB 1550, which sets minimum funding levels to DACs.

Potentially Affected Communities in the U.S.

All population statistics reported as percentiles in this section are relative to San Diego County as a whole (i.e., for each indicator and community, the percentiles represent the degree of burden relative to that of all communities in the county for that particular indicator).[45] See Appendix F (Supplemental Data for Environmental Justice Analysis) for additional information on the methodology used by EPA and USIBWC to calculate and evaluate county percentiles.

Both minority (people of color) and, to a lesser extent, low-income populations are prevalent throughout the EJ Study Area. Minority and low-income population statistics and figures by community within the EJ Study Area are provided in Table 3-22 and in Figure 3-24 through Figure 3-32. All communities within the EJ Study Area are above the 80th percentile for minority populations, with several having extremely high values above the 90th percentile. In particular, 14 block groups and seven census tracts are in or above the 95th percentile—including four block groups and one census tract in the 99th percentile and one census tract in the 100th percentile—for minority populations, all of which are located within approximately 0.65 miles of the Proposed Action, with one encompassing the ITP parcel and one overlapping the boundaries of the area

[42] See https://www.sdapcd.org/content/dam/sdapcd/documents/capp/San-Diego-International-Border-Community-Monitoring-CERP-Year-2-Submittal-092619.pdf.

[43] See https://oehha.ca.gov/calenviroscreen/sb535.

[44] CalEPA recently released CalEnviroScreen 4.0 and revised their approach to identifying SB 535 communities as of May 2022.

[45] EPA and USIBWC evaluated demographic and environmental indicators individually rather than using the EJ Indexes pre-calculated by EJScreen 2.0, which combine single environmental indicator values with the demographic index for the block group in order to allow for comparisons of potential exposure and susceptibility to pollution across all block groups in the U.S.

under consideration for the U.S.-side river diversion. Block groups in the 90th percentile for minority populations are located throughout the EJ Study Area.

Several communities within the EJ Study Area are above the 65th percentile for low-income populations, with some having extremely high values above the 90th percentile. In particular, two block groups are in the 99th percentile for low-income populations, one of which encompasses the ITP parcel and is located adjacent to the U.S.-Mexico border, while the other is located adjacent to California State Route 905. Communities that have low percentiles for low-income populations are typically—with some exceptions—those that are large in geographic size and thus include populations far from the areas that would potentially be affected by the Proposed Action. One exception is the block group that encompasses the Coral Gate neighborhood, which is below the 20th percentile for low-income populations.

EPA and USIBWC assessed whether communities in the EJ Study Area experience disproportionate environmental burdens. Based on a review of available data obtained through the websites for the EJScreen and CalEnviroScreen tools, EPA and USIBWC determined that many communities in the EJ Study Area are currently overburdened[46] by one or more environmental indicators. Many communities in the EJ Study Area experience **extremely high burdens** (i.e., above the 90th percentile, for purposes of this analysis) for one or more of the following indicators: lifetime cancer risks from inhalation of air toxics (all 25 block groups), $PM_{2.5}$ levels (all 15 census tracts),[47] toxic air chemical releases (all 15 census tracts), less than high school education (11 block groups and five census tracts), linguistic isolation (11 block groups and five census tracts), unemployment (nine block groups and seven census tracts), wastewater discharges (11 block groups), solid waste facilities (six census tracts), traffic impacts (five census tracts), populations of youth (five block groups), impaired water bodies (four block groups), traffic proximity (four block groups), risks for cardiovascular disease (four census tracts), diesel PM levels (three census tracts),[47] and risks for asthma (three census tracts).

- Communities experiencing certain extremely high social and health burdens (i.e., low education levels, linguistic isolation, risks for asthma and cardiovascular disease) tend to be located within or adjacent to the portion of San Ysidro bordered by Interstates 5/805 and California State Route 905.

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[46] Overburdened communities are considered minority, low-income, tribal, or indigenous populations or geographic locations in the U.S. that potentially experience disproportionate environmental harms and risks. This disproportionality can be as a result of greater vulnerability to environmental hazards, lack of opportunity for public participation, or other factors. Increased vulnerability may be attributable to an accumulation of negative or lack of positive environmental, health, economic, or social conditions within these populations or places. The term describes situations where multiple factors, including both environmental and socio-economic stressors, may act cumulatively to affect health and the environment and contribute to persistent environmental health disparities (EPA, 2016b).

[47] EJScreen and CalEnviroScreen present sharply contrasting percentiles for both $PM_{2.5}$ values and Diesel PM values. For example, EJScreen indicates that all $PM_{2.5}$ values for the EJ Study Area are below the 25th percentile while CalEnviroScreen indicates $PM_{2.5}$ values in the EJ Study Area are all above the 95th percentile. Similarly with Diesel PM, EJScreen and CalEnviroScreen report values in the EJ Study Area are below 70th percentile and up to the 94th percentile, respectively. The updates made in CalEnviroScreen 4.0 (released October 2021) incorporated several improvements to the $PM_{2.5}$ and Diesel PM indicators resulting in changes to the data along the border (i.e., the Diesel PM indicator now reflects emissions from sources in Mexico).

- Communities experiencing certain extremely high water quality-related burdens (i.e., wastewater discharges, impaired water bodies) tend to be located near the U.S.-Mexico border and in the Tijuana River Valley.

- Communities experiencing extremely high burdens due to Diesel PM tend to be located immediately west of Interstate 805.

- Communities experiencing extremely high burdens associated with traffic tend to be located in census tracts along the U.S.-Mexico border and near the San Ysidro Port of Entry (per CalEnviroScreen).

- Communities experiencing extremely high burdens associated with solid waste facilities are all located in EJ Study Area 2 east of Interstate 805 and/or north of California State Route 905 (i.e., in the vicinity of Otay Landfill).

- For most of these indicators, there are additional communities that experience these burdens in the 65th–89th percentile range.

Some communities may also experience **high burdens** (i.e., between the 65–89th percentiles, for purposes of this analysis) for additional indicators not described above, including: exposure to cleanup sites (e.g., Superfund sites) (four census tracts, plus one census tract above the 90th percentile, located throughout the EJ Study Area), hazardous waste facilities (four census tracts, plus one census tract above the 90th percentile, all located in EJ Study Area 2), groundwater threats (three census tracts, plus one census tract above the 90th percentile, all located in EJ Study Area 2), low birth weight (four census tracts, plus one census tract above the 90th percentile, all located in EJ Study Area 2), and housing burdens (three census tracts, all located in EJ Study Area 2 west of Interstate 805).

Because several communities in both EJ Study Areas 1 and 2 experience multiple social and environmental burdens, there is potential for these burdens to result in cumulative impacts that could further increase burdens felt by the community. These cumulative impacts and burdens may not be captured by examining single indicators on their own but are important to consider in determining potential strategies to mitigate impacts to communities. Population statistics for certain indicators are provided in Table 3-22 and Table 3-23.

The review of other data sources described earlier in this section provided additional information regarding social and environmental burdens within the EJ Study Area:

- Based on the review of HPI data, communities within the EJ Study Area may have unhealthier conditions than other census tracts in San Diego County. For example, for the following indicators that have been positively associated with life expectancy, some census tracts in the EJ Study Area are below the 35th percentile, meaning that they have less healthy conditions for these indicators than other areas: active commuting, tree canopy, voting, homeownership, uncrowded housing, insured adults, and overall HPI score, in addition to health-related indicators identified through EJScreen 2.0 and CalEnviroScreen 4.0 (Public Health Alliance, 2022).

- Based on the review of the Good Neighbor Environmental Board's 17th Report, communities within the EJ Study Area may be especially vulnerable to climate change impacts including drought, rising temperatures, and extreme weather events. In addition, the proximity of vulnerable populations to the San Ysidro Port of Entry (located at the U.S.-

Mexico border where EJ Study Areas 1 and 2 meet) may exacerbate the adverse health effects posed by traffic exposure. As described in Sections 3.11 (Air Quality and Odor) and 3.17 (Transportation), the San Ysidro Port of Entry is the busiest port of entry in the U.S. for both private vehicles and pedestrians. It is located within the EJ Study Area, close to the border between EJ Study Area 1 and EJ Study Area 2. Proximity to large numbers of idling vehicles can cause exposure to toxic air pollutants. Both short-term high exposures in near-traffic environments (e.g., pedestrians in wait lines adjacent to vehicular traffic) and longer-term exposures in more remote environments (e.g., nearby schools and housing units) have been linked to harmful health effects. Rising temperatures associated with climate change will only exacerbate these air quality issues (Good Neighbor Environmental Board, 2016).

- Based on the review of SDAPCD's AB 617: Community Air Protection Program Submittal, the San Diego International Border Community, which surrounds the San Ysidro Port of Entry, is identified as a priority area for a monitoring and emission reductions program (SDAPCD, 2019a). The SDAPCD identifies the census tract containing the ITP parcel (06073010009) as low income and low access to grocery stores, based on the 2015 USDA Food Access Research Atlas. The SDAPCD identified and prioritized the San Diego International Border Community because of significant socioeconomic factors, such as existing burdens that negatively affect their ability to protect themselves from pollution exposure. The community is also subject to elevated PM levels due to its location downwind from Tijuana (SDAPCD, 2019a).

- Three census tracts in the vicinity of the ITP (06073010009, 6073010013, and 6073010111) are identified as DACs per SB 535 with CalEnviroScreen 4.0 percentiles of 74.7, 82.8, and 76.5, respectively (OEHHA, 2022). The census tract containing the ITP parcel (06073010009) is under the 75 percent threshold but was previously designated as a DAC in the 2017 version, which relied on the CalEnviroScreen 3.0 data, and therefore remains designated as disadvantaged per the new definitions released in May 2022. Figure 3-33 shows the DACs in the vicinity of the Tijuana River Valley.

Table 3-22. Communities in the EJ Study Area with Potential Environmental Justice Concerns Based on EJScreen 2.0 Data

Census Block Group Number	Minority		Low-Income		County Percentiles for Other Selected Indicators of Overburden [c, d]			
	Percent of Population [a]	County Percentile	Percent of Population [b]	County Percentile	Unemployment	Air Toxics Cancer Risk	Traffic Proximity	Wastewater Discharge
EJ Study Area 1								
060730100091	100%	99th	86%	99th	78th	94th	78th	91st
060730100092	95%	95th	11%	19th	50th	94th	59th	91st
060730100093	98%	98th	62%	94th	39th	94th	71st	91st
060730100094	100%	99th	68%	96th	90th	94th	85th	91st
060730101091	85%	84th	14%	27th	57th	99th	60th	91st
EJ Study Area 2								
060730100012	82%	81st	17%	35th	68th	94th	42nd	0th
060730100031	97%	98th	16%	32nd	62nd	94th	91st	0th
060730100041	92%	91st	48%	83rd	71st	99th	69th	84th
060730100042	97%	97th	37%	71st	94th	99th	79th	87th
060730100051	98%	98th	30%	63rd	91st	99th	81st	86th
060730100053	97%	97th	68%	96th	72nd	99th	70th	88th
060730100054	96%	96th	79%	99th	97th	99th	80th	89th
060730100121	96%	96th	11%	19th	41st	99th	55th	90th
060730100122	100%	99th	62%	93rd	96th	99th	74th	90th
060730100123	100%	99th	64%	94th	80th	99th	81st	90th
060730100142	88%	87th	17%	36th	50th	99th	68th	0th
060730100151	93%	93rd	22%	47th	46th	100th	80th	87th
060730101063	93%	93rd	53%	88th	97th	94th	94th	89th
060730101092	95%	96th	36%	70th	92nd	99th	84th	91st
060730101111	97%	97th	51%	86th	79th	99th	83rd	90th
060730101112	92%	91st	57%	91st	81st	99th	90th	90th
060730133061	91%	90th	28%	59th	91st	94th	89th	0th
060730133081	89%	89th	48%	83rd	96th	94th	93rd	0th
060730133121	87%	86th	24%	53rd	83rd	94th	87th	0th
060730133131	85%	84th	14%	26th	74th	94th	44th	0th

Source: (EPA, 2022e).

a – San Diego County has a minority population of 54 percent (EPA, 2022c).

b – San Diego County has a low-income population of 28 percent (EPA, 2022c).

c – For each indicator and census block group, the percentiles indicate the degree of burden relative to that of all census block groups in San Diego County for that indicator. For example, if a census block group is 48 percent minority and is at the 69th county percentile, this means that 48 percent of the population within the census block group is minority, and that is an equal or higher percent minority than 69 percent of all census block groups in the county.
d – County percentiles for environmental indicators were calculated from the raw environmental indicator values (not the EJ Index values).

Table 3-23. Communities in the EJ Study Area with Potential Environmental Justice Concerns Based on CalEnviroScreen 4.0 Data

Census Tract Number	Percentiles for Other Selected Indicators of Overburden [a]		
	$PM_{2.5}$	Diesel PM	Toxic Air Chemical Releases from Facilities
EJ Study Area 1			
6073010009	100th	78th	97th
6073010109 [b]	99th	19th	92nd
EJ Study Area 2			
6073010001	97th	61st	98th
6073010003	98th	90th	99th
6073010004	99th	81st	98th
6073010005	99th	92nd	97th
6073010012	99th	82nd	96th
6073010014	98th	41st	99th
6073010015	98th	39th	99th
6073010106	97th	77th	95th
6073010111	99th	85th	95th
6073013306	96th	94th	99th
6073013308	95th	86th	98th
6073013312	96th	63rd	99th
6073013313	96th	25th	99th

Source: (CalEPA, 2021a).

a – For each indicator and census tract, the percentiles indicate the degree of burden relative to that of all census tracts in San Diego County for that indicator.

b – A portion of Census Tract 6073010109 also falls within the boundaries of EJ Study Area 2.

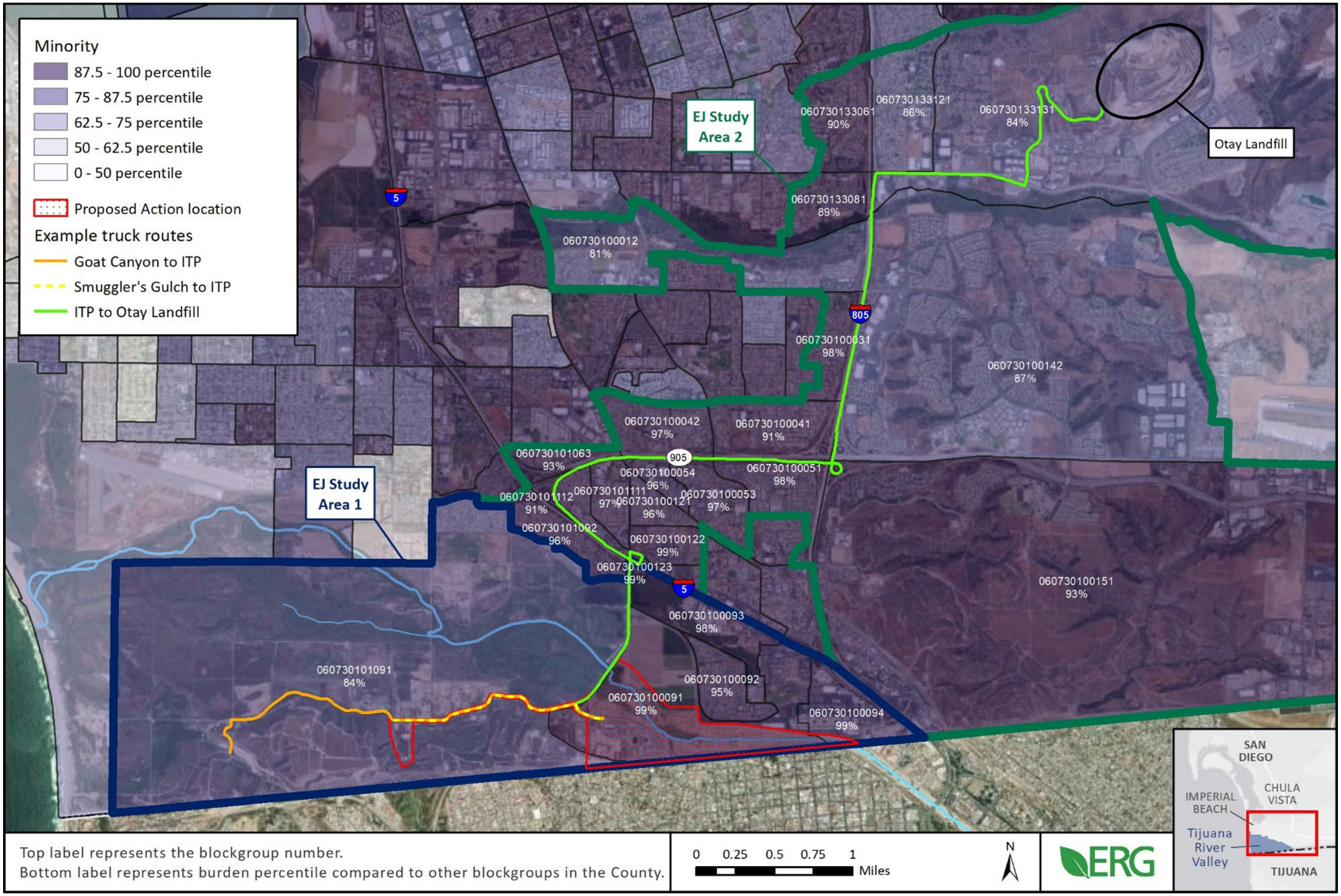


Figure 3-24. Minority Percentile (County) for Block Groups in EJ Study Area, Based on EJScreen 2.0 Data

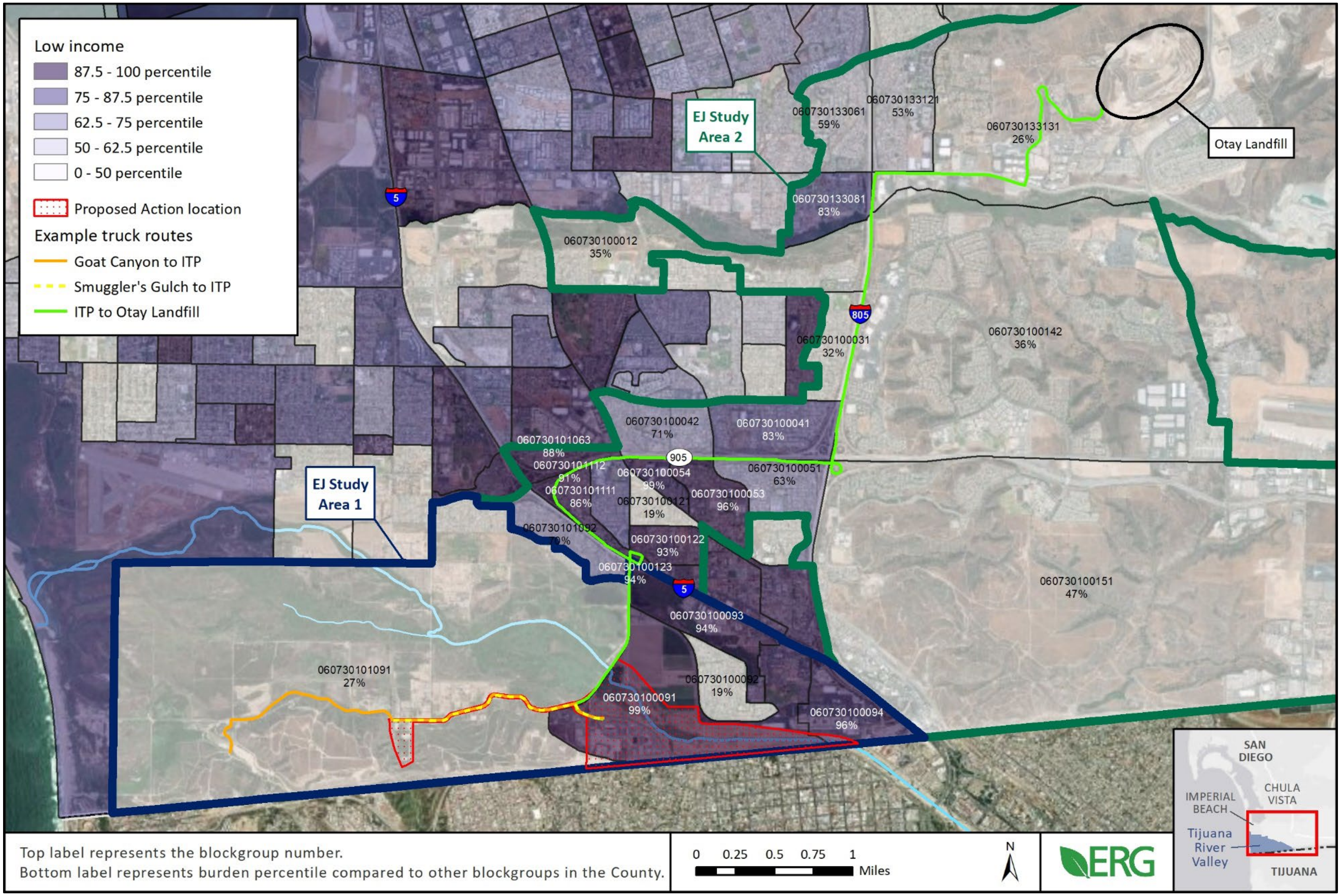


Figure 3-25. Low-Income Percentile (County) for Block Groups in EJ Study Area, Based on EJScreen 2.0 Data

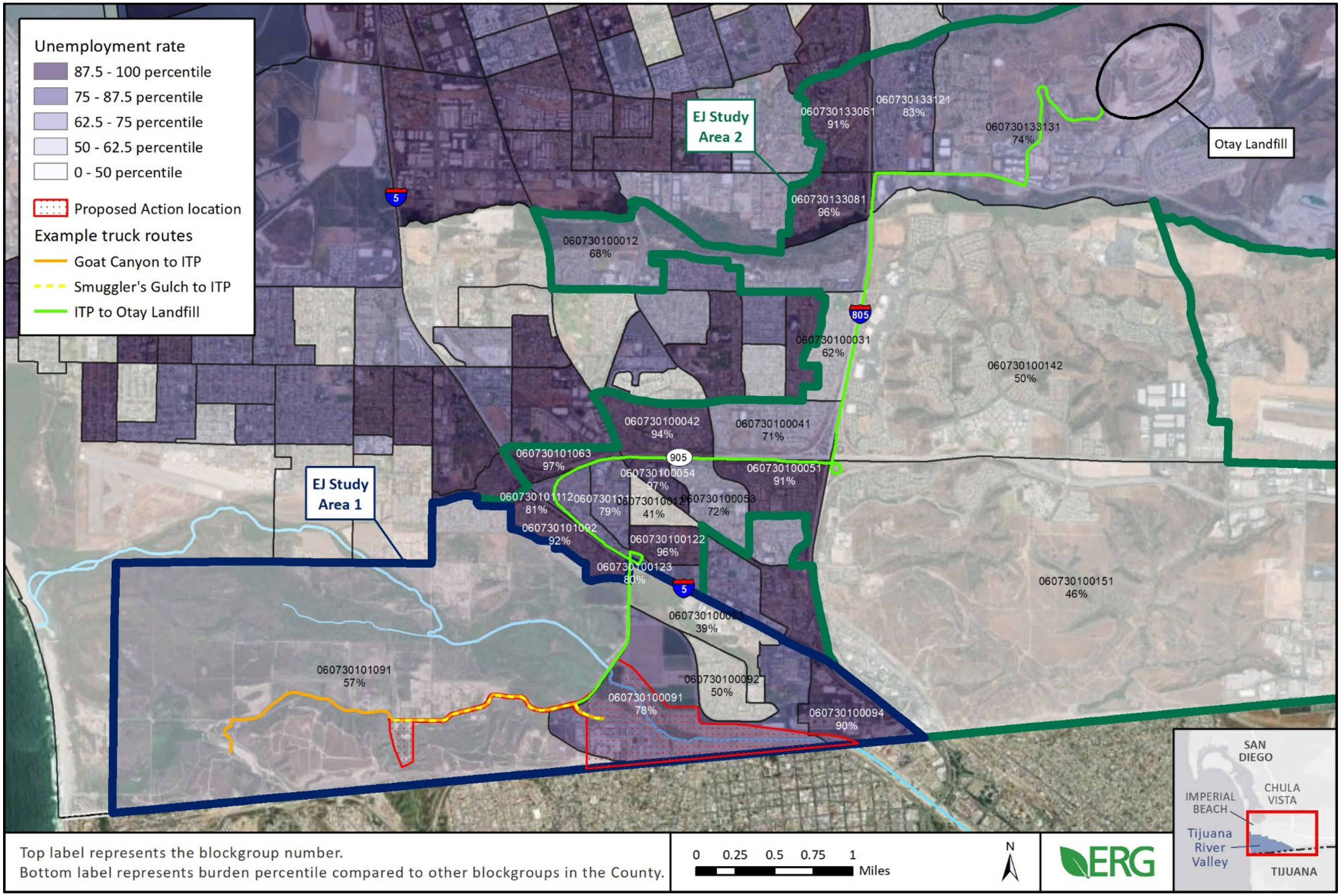


Figure 3-26. Unemployment Percentile (County) for Block Groups in EJ Study Area, Based on EJScreen 2.0 Data

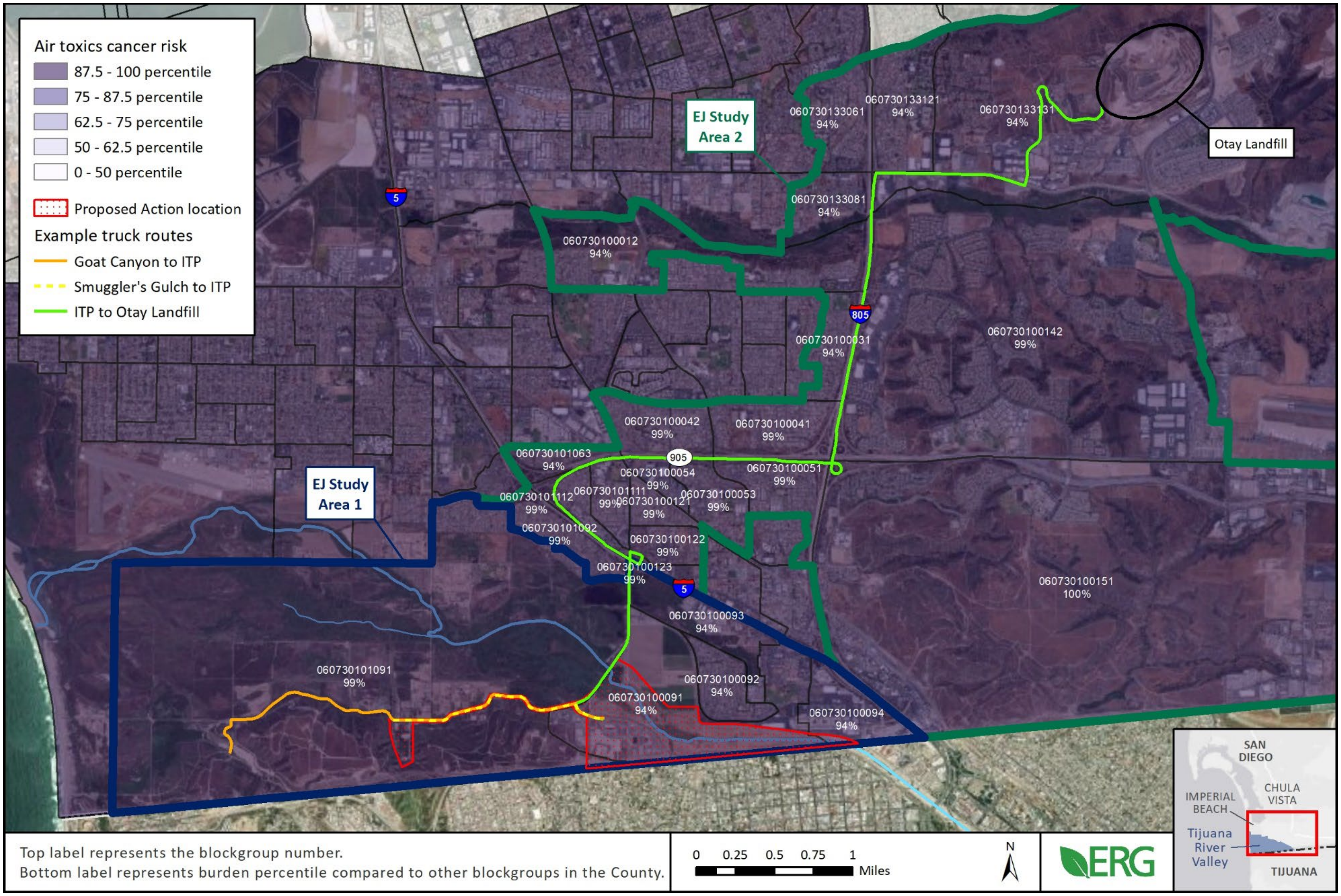


Figure 3-27. Air Toxics Cancer Risk Percentile (County) for Block Groups in EJ Study Area, Based on EJScreen 2.0 Data

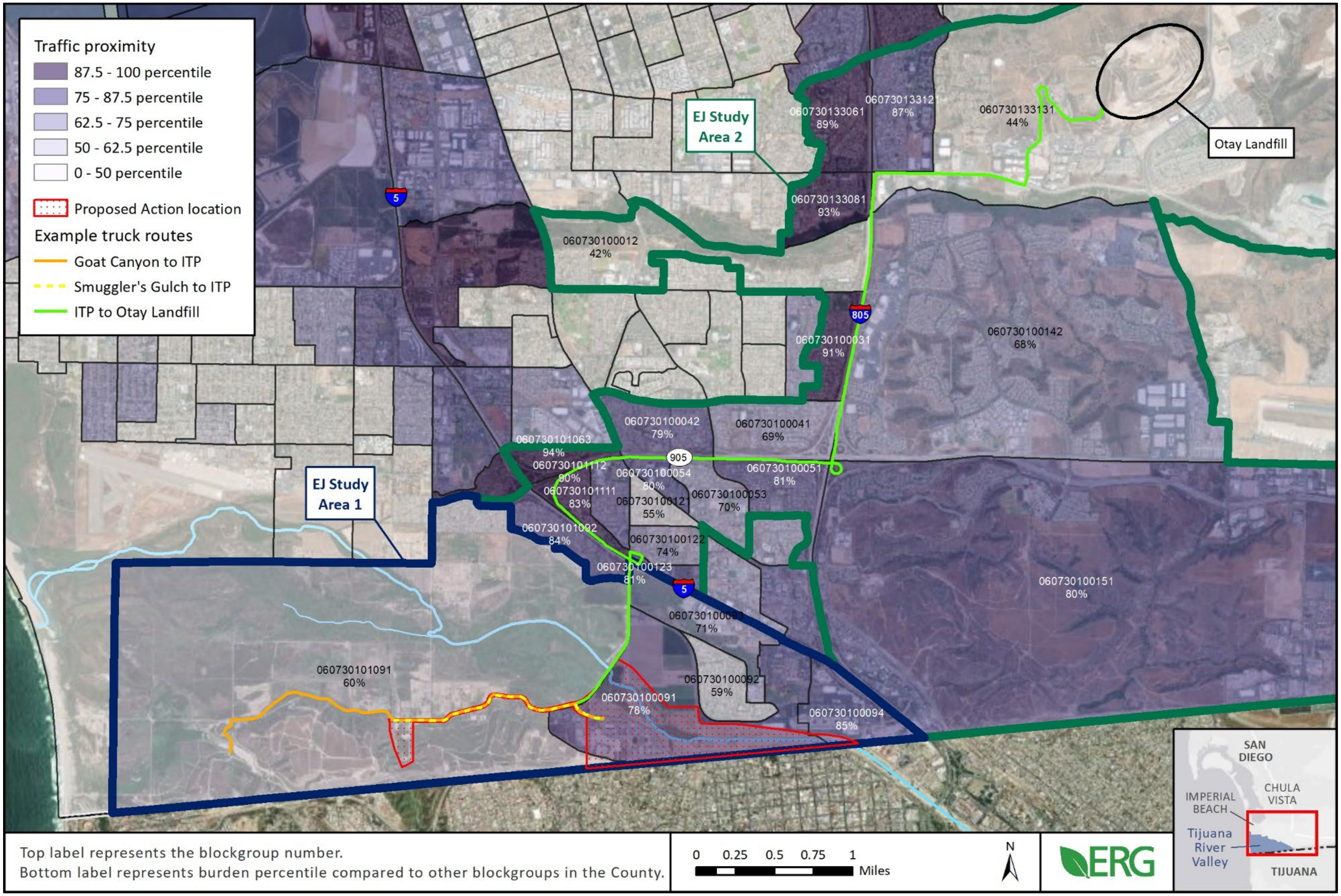


Figure 3-28. Traffic Proximity Percentile (County) for Block Groups in EJ Study Area, Based on EJScreen 2.0 Data

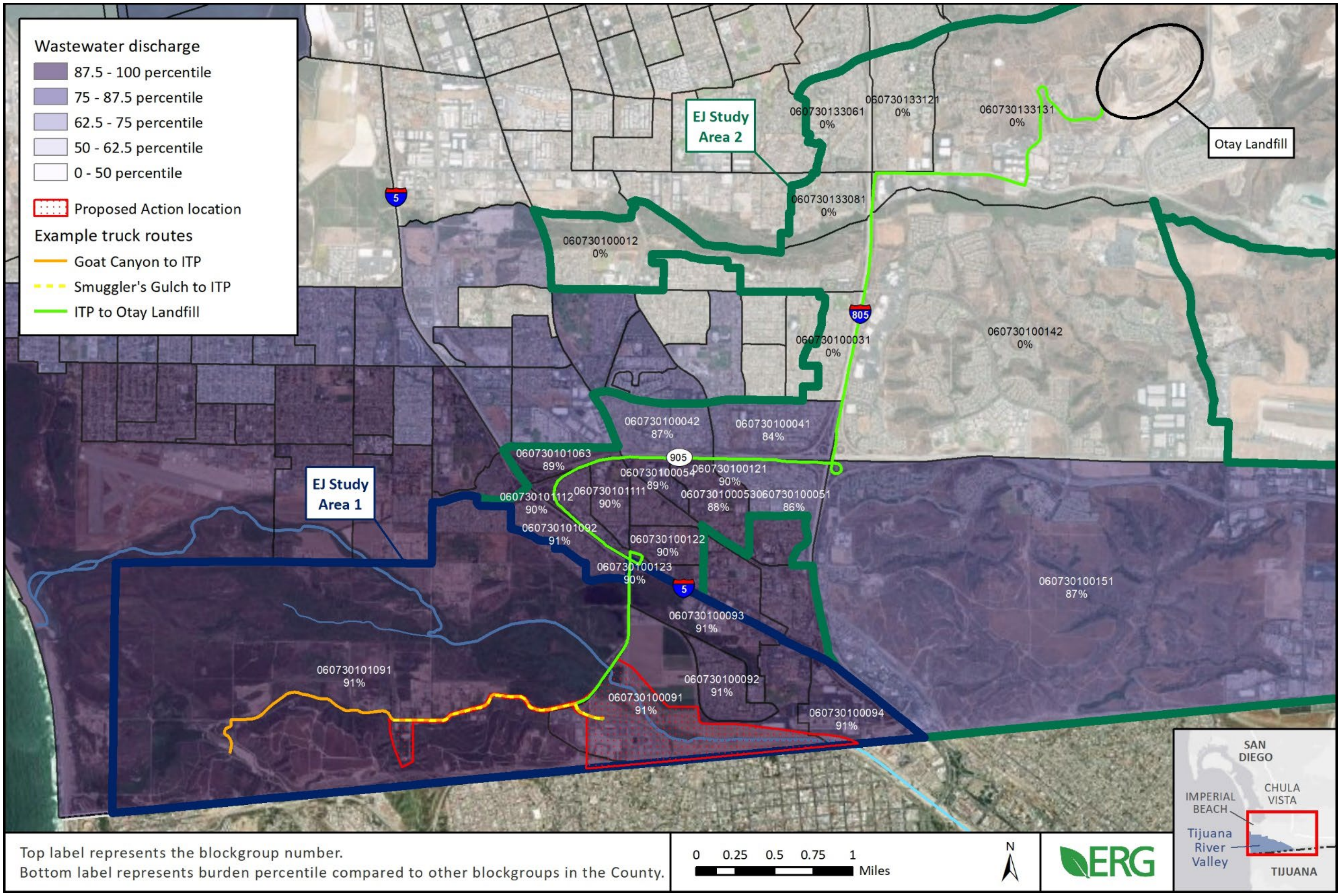


Figure 3-29. Wastewater Discharge Percentile (County) for Block Groups in EJ Study Area, Based on EJScreen 2.0 Data

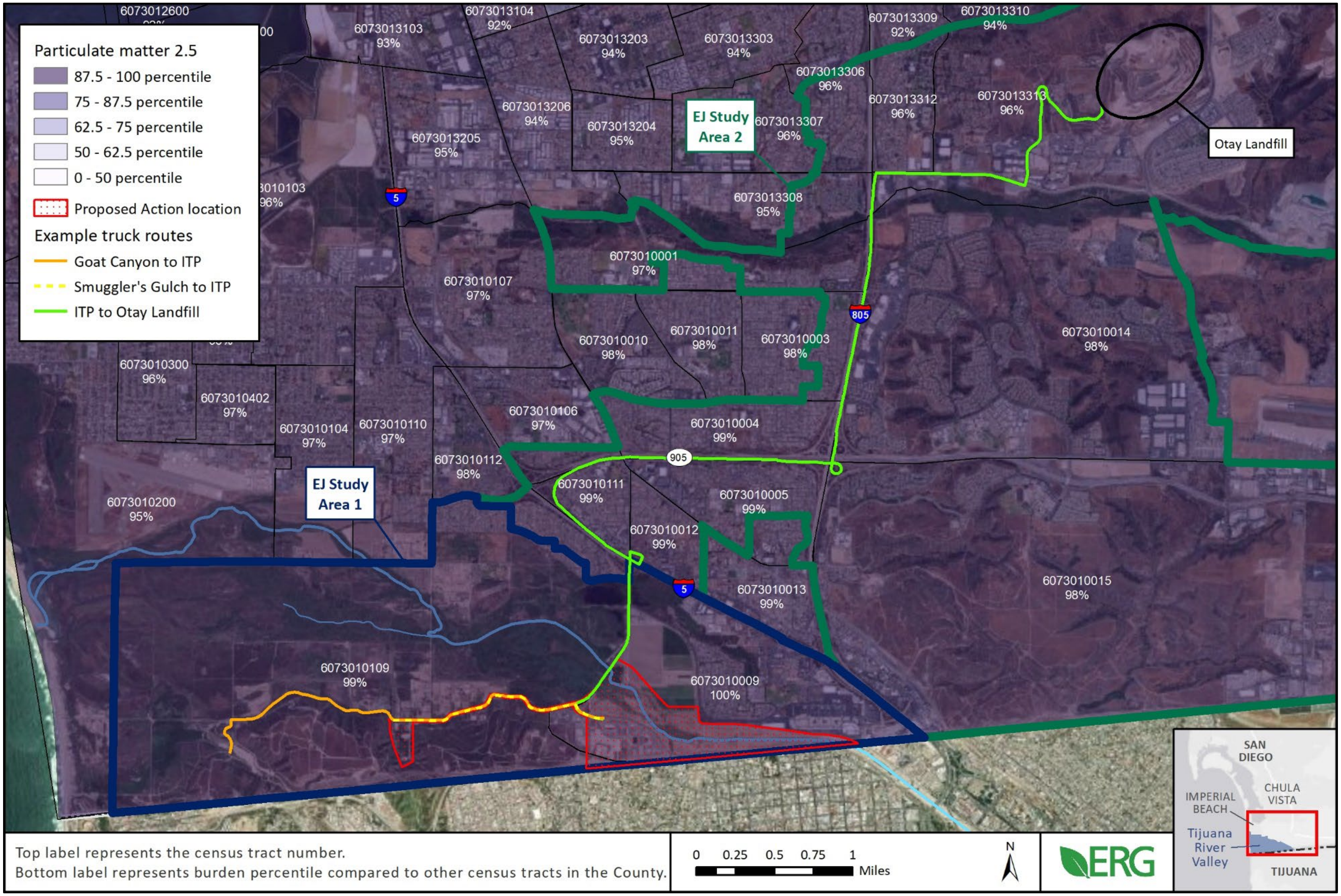


Figure 3-30. $PM_{2.5}$ Percentile (County) for Census Tracts in EJ Study Area, Based on CalEnviroScreen 4.0 Data

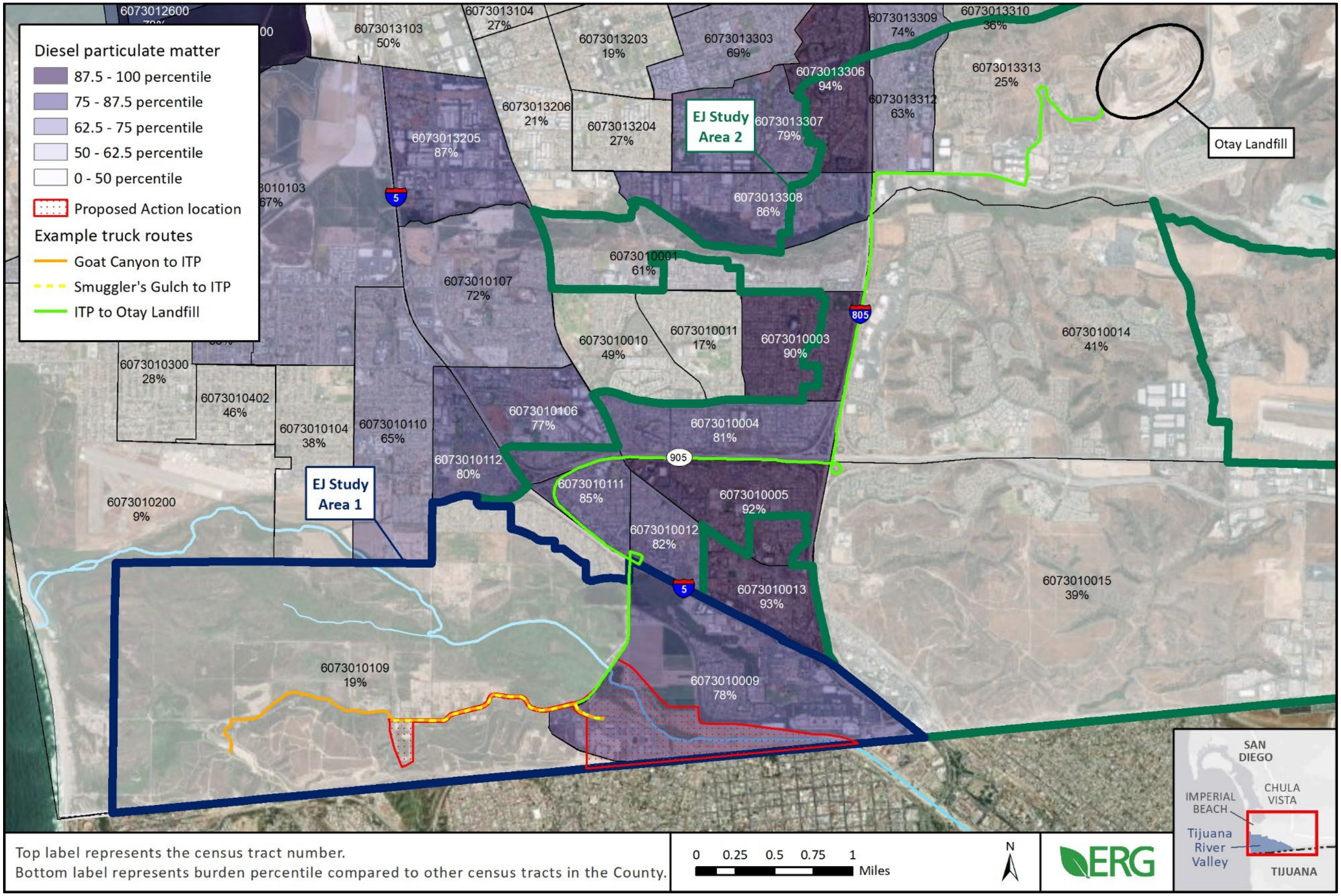


Figure 3-31. Diesel PM Percentile (County) for Census Tracts in EJ Study Area, Based on CalEnviroScreen 4.0 Data

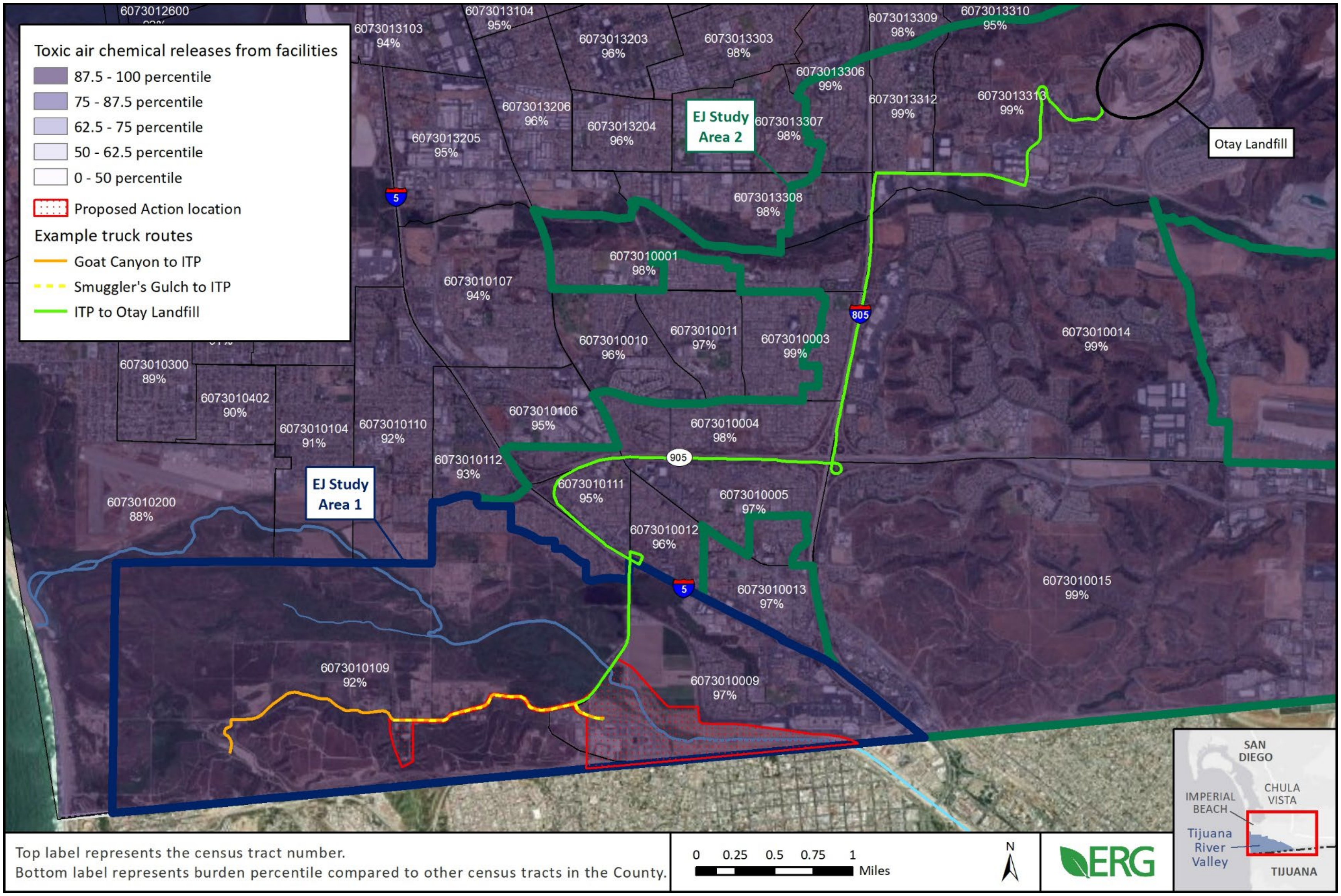


Figure 3-32. Toxic Air Chemical Releases Percentile (County) for Census Tracts in EJ Study Area, Based on CalEnviroScreen 4.0 Data

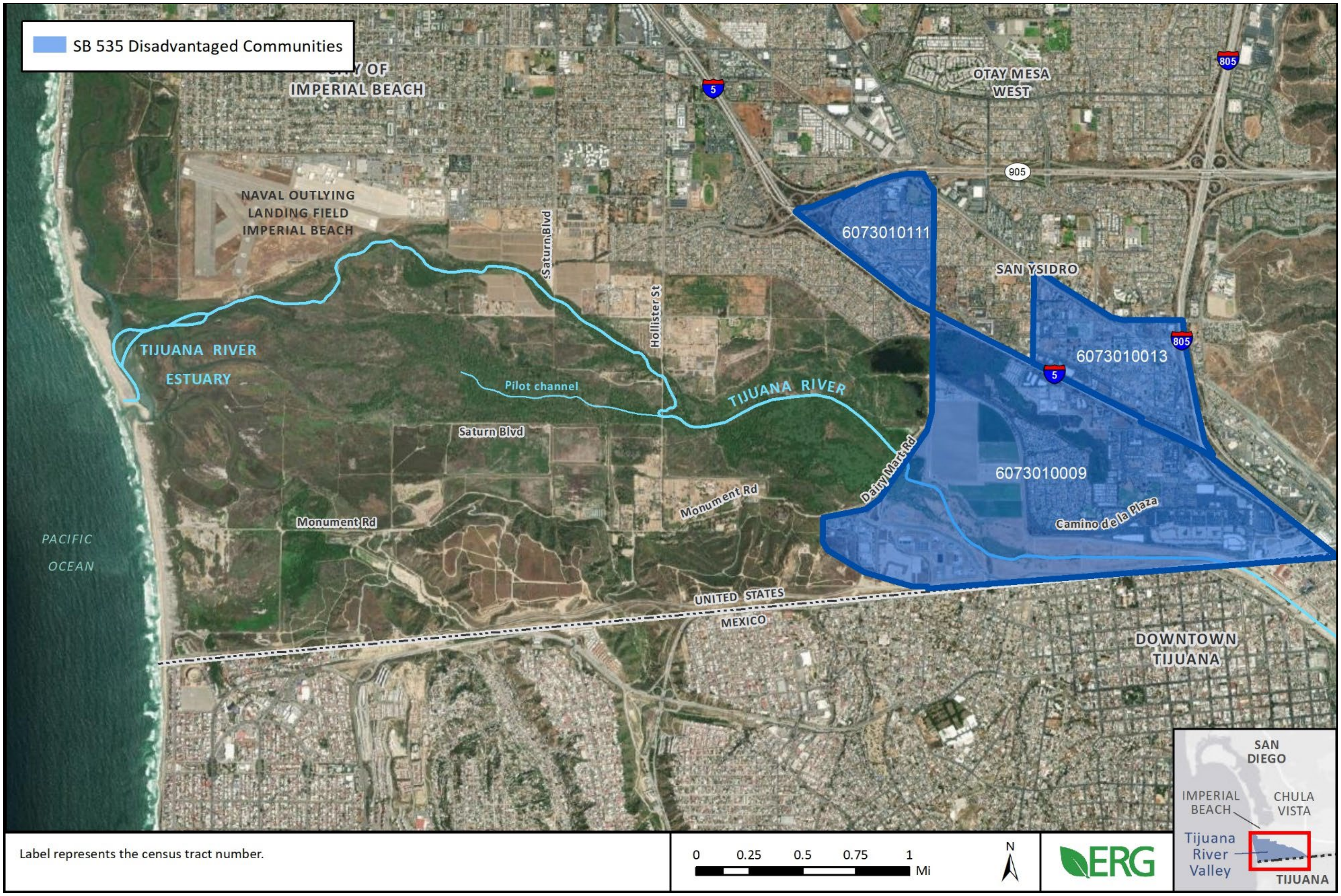


Figure 3-33. SB 535 DACs

Potentially Affected Communities in Mexico

Vulnerable communities in Mexico exist along the U.S.-Mexico border in Tijuana. The ATLAS report developed by the Secretaria de Desarrollo Territorial, Urbano y Ambiental presented a socio-environmental vulnerability index for Tijuana, Mexico, based on indicators such as social (e.g., level of education, access to health services), economic (e.g., employment), quality of living and housing, infrastructure, and environment (Secretaría de Desarrollo Territorial, Urbano y Ambiental, 2022). Based on the vulnerability index, the neighborhoods near where the Tijuana River crosses the U.S.-Mexico border have mid-high, high, and very high index scores. Neighborhoods with the highest levels of poverty in Tijuana include Aeropuerto, Libertad, Zona Norte, Los Laureles, and Zona Centro, all of which are located along the U.S.-Mexico border and near where the Tijuana River crosses the border.

In addition, in Mexico, indigenous groups and Afro-Mexican communities face disproportionate exposure to environmental harms based on their demographics and lack of sociopolitical power. Lastly, vulnerable communities in Mexico include migrants in refugee settlements that await asylum processing in informal housing in Tijuana.

See Section 6.1.14 (Environmental Justice) for additional information about EO requirements.

4. ENVIRONMENTAL CONSEQUENCES

This section includes an analysis of the environmental consequences, or impacts, of the Proposed Action. Impacts of the Proposed Action described in each of the following resource sections are considered significant in the context of NEPA if they meet the standards for significance defined for each resource. As discussed in Section 1.5 (Purpose and Scope of the Programmatic EIS), this analysis includes disclosure of transboundary effects between the U.S. and Mexico. Transboundary effects are discussed in each of the following resource sections and are summarized in Table 4-1 below.

Table 4-1. Summary of Potential Transboundary Effects Under the Proposed Action

Alternative		Project Title	Project Location	Transboundary Effects	
				From Action in U.S.	From Action in Mexico
Alternative 1: Core Projects	Alternative 2: Core + Supplemental Projects	A. Expanded ITP	U.S. only	Short-term construction impacts; long-term impacts from ITP operation	N/A [a]
Alternative 1: Core Projects	Alternative 2: Core + Supplemental Projects	B. Tijuana Canyon Flows to ITP	U.S. and Mexico	Short-term construction impacts	Short-term construction impacts [a]
Alternative 1: Core Projects	Alternative 2: Core + Supplemental Projects	C. Tijuana Sewer Repairs	Mexico only	N/A	Short-term construction impacts [a]
Alternative 1: Core Projects	Alternative 2: Core + Supplemental Projects	D. APTP Phase 1	U.S. and Mexico	Short-term construction impacts; long-term impacts from APTP operation	Short-term construction impacts [a]
	Alternative 2: Core + Supplemental Projects	E. APTP Phase 2	U.S. only	Short-term construction impacts; long-term impacts from APTP operation	N/A [b]
	Alternative 2: Core + Supplemental Projects	F. U.S.-side River Diversion to APTP	U.S. only	Short-term construction impacts	N/A [b]
	Alternative 2: Core + Supplemental Projects	G. New SABTP	Mexico only	N/A	Short-term construction impacts [a]
	Alternative 2: Core + Supplemental Projects	H. Tijuana WWTP Treated Effluent Reuse	Mexico only	N/A	Short-term construction impacts [a]
	Alternative 2: Core + Supplemental Projects	I. ITP Treated Effluent Reuse	U.S. and Mexico	Short-term construction impacts	Short-term construction impacts
	Alternative 2: Core + Supplemental Projects	J. Trash Boom(s)	U.S. only	Short-term construction impacts; long-term impacts from trash extraction and processing	N/A [b]

a – Project would change transboundary effects by reducing contaminated transboundary flows from Mexico to the U.S. In some cases, these transboundary effects would be due to actions in the U.S. that result in operational changes in Mexico (e.g., sending more wastewater to the U.S. for treatment).
b – Project would address contaminated river flows after they have entered the U.S. Therefore, for purposes of this table, this is not considered a transboundary effect to the U.S.

4.1 Freshwater and Estuarine Resources

4.1.1 Standards of Significance

Impacts to freshwater and estuarine resources would be significant if they were to include any of the following:

- Dredge, fill, or removal or other hydrological disruption of wetlands or jurisdictional waters of the U.S. resulting in the need for an individual CWA 404 permit.
- Drawdown of groundwater by a substantial amount to the detriment of groundwater-dependent habitat.
- Substantial degradation of water quality.
- Creation of substantial erosion or runoff either on or off site and/or contribution of runoff that would exceed the capacity of existing or planned stormwater drainage systems.

4.1.2 No-Action Alternative

The No-Action Alternative would include the continuation of existing impacts to freshwater and estuarine resources that are currently resulting from contaminated transboundary flows from Tijuana (see Section 1.3 [Causes and Impacts of Contaminated Transboundary Flows from Tijuana] and Section 3.1 [Freshwater and Estuarine Resources]). These impacts would persist unabated and would worsen over time as wastewater infrastructure in Tijuana continues to deteriorate and the population continues to grow without access to adequate wastewater treatment infrastructure.

4.1.3 Alternative 1: Core Projects

Temporary Effects

Under Alternative 1, construction activities for the Core Projects would include potential minor, short-term impacts to water resources as described below. However, Alternative 1 would not result in significant impacts to freshwater and estuarine resources per the criteria in Section 4.1.1 (Standards of Significance).

Projects A (Expanded ITP) and/or D (APTP Phase 1) at the ITP parcel would potentially involve temporary construction activities (e.g., staging) in the vicinity of two features identified as potential wetlands under CCC jurisdiction (PEM Wetland 5 and PSS Wetland 6), a drainage channel identified as a potential jurisdictional water of the U.S. (Clearwater Swale 1), and a small ditch identified as a potential jurisdictional water of the state (Clearwater Ditch 1). Project B (Tijuana Canyon Flows to ITP) would include temporary construction activities in Smuggler's Gulch that would occur in the vicinity of the Palustrine Scrub-Shrub wetland and intermittent stream channel that were delineated as potential jurisdictional waters of the U.S. These projects would incorporate BMPs (e.g., spill prevention and erosion and sediment control measures) to mitigate the minor, short-term impacts to water quality from construction-related activities.

Project B, Option B1 would result in temporary open-cut trenching along Monument Road that would cross and thus result in direct and temporary impacts to two potentially jurisdictional waters of the U.S. (MR Trib 1 and MR Trib 2). Activities associated with this construction would likely fall under a Section 404 Nationwide Permit 58 for Utility Line Activities for Water and Other Substances and may be eligible for enrollment under a RWQCB General Order to meet Section 401

Water Quality Certification and Waste Discharge Requirements. The activities may also require an LSA Agreement with the CDFW, and a CDP may be required. The minor, short-term impacts on water quality associated with construction-related activities from the Core Projects would be minimized through implementation of construction BMPs.

No discharges to groundwater would occur during construction, and all activities would be handled pursuant to spill prevention procedures so as to avoid impacts to groundwater. Construction activities would not impact drinking water resources because none are present within the affected area.

Construction activities would adhere to the stormwater management permitting requirements described in Section 6.1.2 (Freshwater and Estuarine Resources).

Construction activities would not be expected to affect any water-dependent recreational activities.

Construction and pipeline repair activities in Mexico under Projects B, C (Tijuana Sewer Repairs), and D would not result in direct or indirect transboundary impacts to freshwater or estuarine resources in the U.S. since minor construction impacts would be limited to the areas of construction in Mexico.

Permanent Effects

Under Alternative 1, implementation of the Core Projects would be expected to eliminate dry-weather transboundary flows and pollutant loadings in the Tijuana River and substantially reduce the number of days per year with transboundary river flows, while resulting in only minor reductions in the total volume of transboundary river flows over the course of a typical year. These impacts are presented in detail below. Alternative 1 would not result in significant impacts to freshwater and estuarine resources per the criteria in Section 4.1.1 (Standards of Significance) and is anticipated to have long-term beneficial impacts on water quality and wetlands in the Tijuana River and the Tijuana River Estuary.

Table 4-2 summarizes the estimated impacts that Alternative 1 would have on transboundary flows and pollutant loadings in the Tijuana River.

Table 4-2. Impacts on Transboundary Flows in the Tijuana River – Alternative 1

Projects [a]	Flow Days		Flow Volume		BOD_5 Load	
	Days/yr	Percent Change	Billion gal/yr	Percent Change	Tons/yr	Percent Change
Current conditions [b]	153	N/A	17.5	N/A	1,670	N/A
Project C only [c]	79	-48%	16.9	-3%	660	-60%
Project D only [d]	73	-52%	16.7	-5%	1,210	-28%
Alternative 1 maximum (Projects C + D)	**68**	**-56%**	**16.5**	**-6%**	**562**	**-66%**

a – Projects A and B would result in negligible or no changes to transboundary river flows.
b – Current conditions were calculated using Tijuana River flow data from January 2016 through January 2022, during a period when PB-CILA capacity was 23 MGD. This analysis assumes that future baseline transboundary river flow conditions will be similar to those represented in this historical period of flow data and estimates the projects' effectiveness at reducing transboundary flows under these future baseline conditions.
c – Assumes Project C reduces untreated wastewater in the Tijuana River in Mexico down to 5 MGD. Reflects PB-CILA reliably diverting flows up to 23 MGD. Impact of Project C on transboundary river flows would be less if PB-CILA is capable of reliably diverting more than 23 MGD with the recent (2021–22) upgrades.
d – Reflects PB-CILA, with new/rehabilitated conveyance line, reliably diverting flows up to 35 MGD (bypassing PB-1A).

As summarized above, implementation of the Core Projects—specifically, Projects C (Tijuana Sewer Repairs) and D (APTP Phase 1), whether performed independently or in combination—would substantially decrease the frequency of transboundary river flows (by 56 percent) and the associated pollutant loadings to the Tijuana River in the U.S. Nutrient loadings in transboundary river flows would be reduced by up to approximately 439 tons/yr if only Project C were implemented; 203 tons/yr if only Project D were implemented; and 467 tons/yr if both projects were implemented. Loadings of numerous other pollutants to the Tijuana River in the U.S. would also be reduced—including ammonia, bacteria, BOD_5, phosphorous, surfactants, and various metals including copper, nickel and zinc, all of which are present at elevated levels in the Tijuana River in Mexico (IBWC, 2020). The reduction in pollutant loadings from untreated wastewater would potentially help alleviate impaired water listings for the Tijuana River and the Tijuana River Estuary (e.g., due to removal of nutrients and BOD_5); would potentially help the Tijuana River meet the beneficial uses listed in the San Diego Water Board's Basin Plan; would be expected to improve groundwater quality in the Tijuana Groundwater Basin; and would be expected to improve downstream conditions for water-dependent recreational activities in the Tijuana River and the Tijuana River Estuary. However, these projects would result in a negligible reduction in transboundary sediment loads (less than 1 percent) and only incidental trash removal, and thus would not substantially change sediment or trash volumes in the Tijuana River Valley. Implementation of Projects C and D would decrease the cumulative volume of transboundary river flows by up to approximately 1.00 billion gallons per year (BGY) (3,070 ac-ft/year), which equates to a 6 percent reduction in annual flow.

EPA and USIBWC conducted an additional analysis to illustrate the potential impacts of the Core Projects on transboundary river flows during different portions of the rainfall season. The analysis used historical stream gage data from the 2016 through 2019 rainfall years (i.e., May 1, 2016, through April 30, 2020)[48] to represent future baseline transboundary river flow conditions and estimated the projects' effectiveness at reducing transboundary flows under these future baseline conditions. The following assumptions were made to define seasons, rainfall year, and dry weather for the analysis:

- The *wet season* is defined as October 1 through the following March 31.
- The *dry season* is defined as May 22 through September 7 (to approximate Memorial Day and Labor Day, respectfully).
- The full *rainfall year* is defined as May 1 through the following April 30.
- *Dry-weather days* are defined as the periods occurring at least five days after the most recent precipitation registered at San Diego International Airport and during which the river flow rate does not exceed 23 MGD (as higher flow rates are potentially indicative of stormwater in the river, potentially due to precipitation elsewhere in the watershed). Flows on dry-weather days can occur at any time of the year when the river diversion and pumping system is not functioning as designed.

The results of this analysis are presented in Table 4-3. Additionally, EPA and USIBWC created a series of charts that 1) depict historical transboundary river flows from the 2000 through 2020 rainfall years, categorized by season and dry weather conditions, and 2) illustrate the portion of those transboundary flows that could have been prevented if the Core Projects were retroactively implemented (this is applied only to the more recent 2016 through 2020 rainfall years). These charts, which are presented in Figure 4-1, Figure 4-2, and Figure 4-3, help to illustrate how the expected frequency and volume of future transboundary river flows (following implementation of the Core Projects) would compare to historical transboundary flows during different portions of the rainfall season.

During the dry season, implementation of the Core Projects would eliminate transboundary river flows other than the occasional wet-weather flow that exceeds 35 MGD. By preventing the types of dry-season flows that have become more frequent since the 2017 rainfall year, implementation of the Core Projects would be expected to result in future dry-season flow conditions that more closely resemble historical conditions since 2000, as depicted in Figure 4-1 and Figure 4-2. During most of this 21-year period, a typical dry season has featured fewer than 10 days with river flows (i.e., less than 10 percent of dry-season days have flows) and less than 100 MG of total flow over the course of the season.

During the wet season, implementation of the Core Projects would allow for the diversion of dry-weather flows and very small wet-weather flows of up to 35 MGD. This would be expected to reduce wet-season transboundary river flow days by approximately 32 percent (37 fewer days of wet-season flows, on average). However, this change equates to only a 3 percent reduction in total wet-season flow volume because it would not affect wet-weather flows that exceed 35 MGD, which

[48] This analysis and the analysis presented in Table 4-2 are based on different ranges of historical stream gage data. The two analyses therefore result in different characterizations of current conditions (which also represent assumed future baseline conditions) and slightly different estimates of the Core Projects' potential impacts on those future baseline conditions (e.g., 6 percent versus 4 percent reduction in total annual flow volume).

contribute the significant majority of annual flows in the Tijuana River (see Table 3-1). The reduced wet-season flows following implementation of the Core Projects would be expected to be generally consistent, in terms of frequency and volume, with historical conditions since 2000 as depicted in Figure 4-1 and Figure 4-2. Because of the shutoff protocols for the PB-CILA river diversion under Project D, implementation of the Core Projects would not mitigate impacts to the river or estuary resulting from extreme weather events.

During a typical rainfall year, implementation of the Core Projects would reduce transboundary river flow days by approximately 46 percent (80 fewer days of flows, on average), equating to a 4 percent reduction in total annual flow volume. The reduced flows following implementation of the Core Projects would be expected to be generally consistent, in terms of frequency and volume, with historical conditions since 2000 as depicted in Figure 4-1 and Figure 4-2.

As shown in Table 4-3 and Figure 4-3, implementation of the Core Projects would be expected to eliminate dry-weather transboundary flows (approximately 43 days per year, on average) and the associated pollutant loadings in the Tijuana River.

Table 4-3. Impacts on Transboundary Flows in the Tijuana River, by Portion of Rainfall Year (Annual Averages, Based on Data for 2016 Through 2019 Rainfall Years) – Alternative 1

Portion of Rainfall Year	Flow Days			Flow Volume (MG)		
	Current Conditions [a]	Alternative 1 Maximum (Projects C + D) [b,c,d]	Percent Change	Current Conditions [a]	Alternative 1 Maximum (Projects C + D) [b,c,d]	Percent Change
Full rainfall year	171	91	-46%	20,848	20,033	-4%
Wet season only	118	81	-32%	17,643	17,072	-3%
Dry season only	17	0.5	-97%	99	24	-76%
"Dry weather" conditions only [e]	43	0	-100%	167	0	-100%

a – Calculations are based on Tijuana River stream gage data from the 2016 through 2019 rainfall years (i.e., May 1, 2016, through April 30, 2020), during a period when PB-CILA capacity was 23 MGD. These calculations exclude stream gage data from the outlier 2020 rainfall year due to the near-constant shutdown of the PB-CILA river diversion throughout the 2020 dry season. This analysis assumes that future baseline transboundary river flow conditions would be similar to those represented in this historical period of flow data and estimates the projects' effectiveness at reducing transboundary flows under these future baseline conditions.
b – Projects A and B would result in negligible or no changes to transboundary river flows.
c – Assumes Project C reduces untreated wastewater in the Tijuana River in Mexico down to 5 MGD. Reflects PB-CILA reliably diverting flows up to 23 MGD. Impact of Project C on transboundary river flows would be less if PB-CILA is capable of reliably diverting more than 23 MGD with the recent (2021–2022) upgrades.
d – Reflects PB-CILA, with new/rehabilitated conveyance line, reliably diverting flows up to 35 MGD (bypassing PB-1A).
e – For purposes of this analysis, "dry weather" conditions indicate that the flow occurred at least five days after the most recent precipitation registered at San Diego International Airport, and that the flow rate did not exceed 23 MGD. A select few flow events that exceeded the 23-MGD threshold were considered dry weather because they occurred at a time of year with no registered precipitation, and/or because they varied only slightly above 23 MGD during a period that was predominantly dry weather.

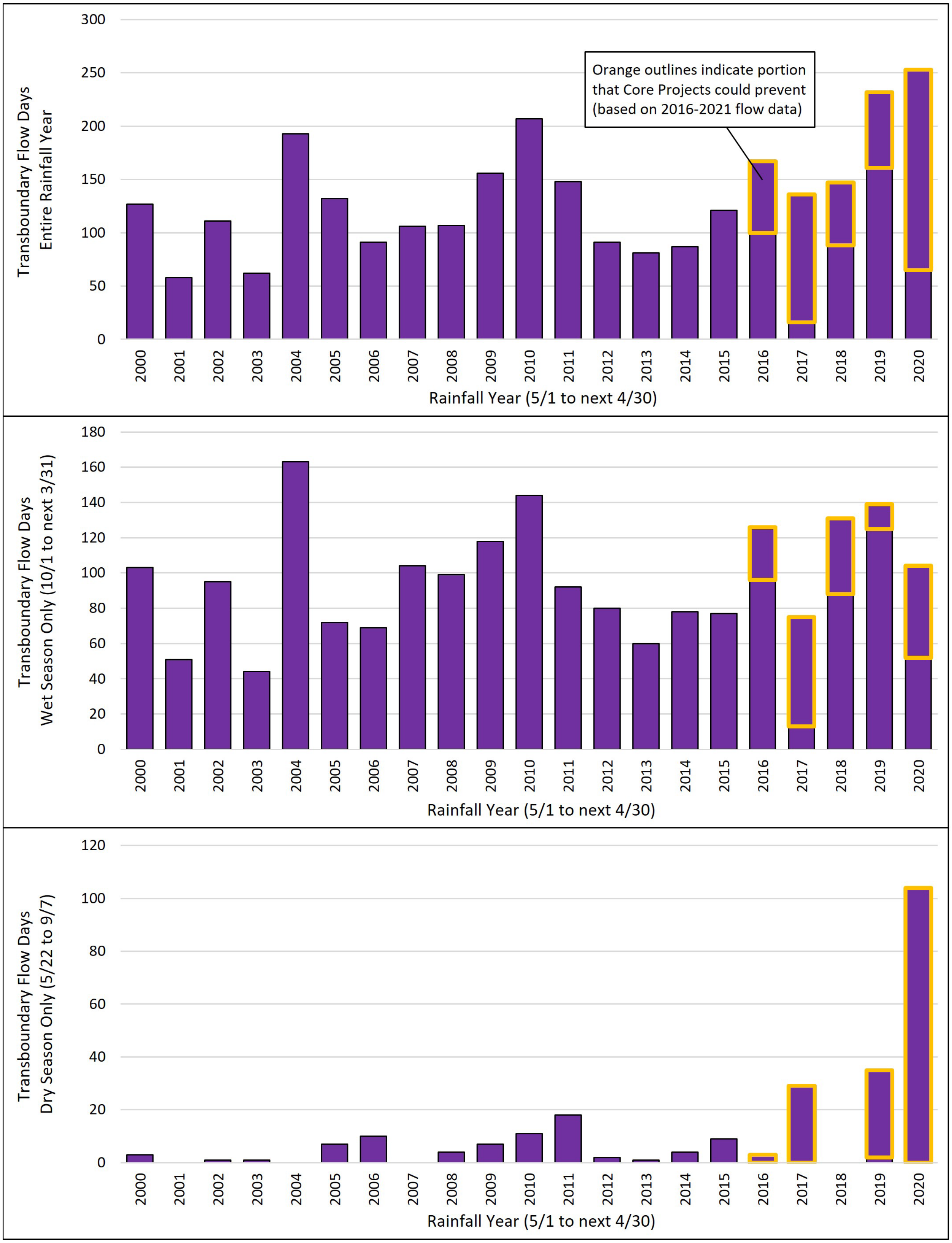


Figure 4-1. Transboundary Flow Days in the Tijuana River per Rainfall Year (2000–2020) and Portion Targeted by Alternative 1

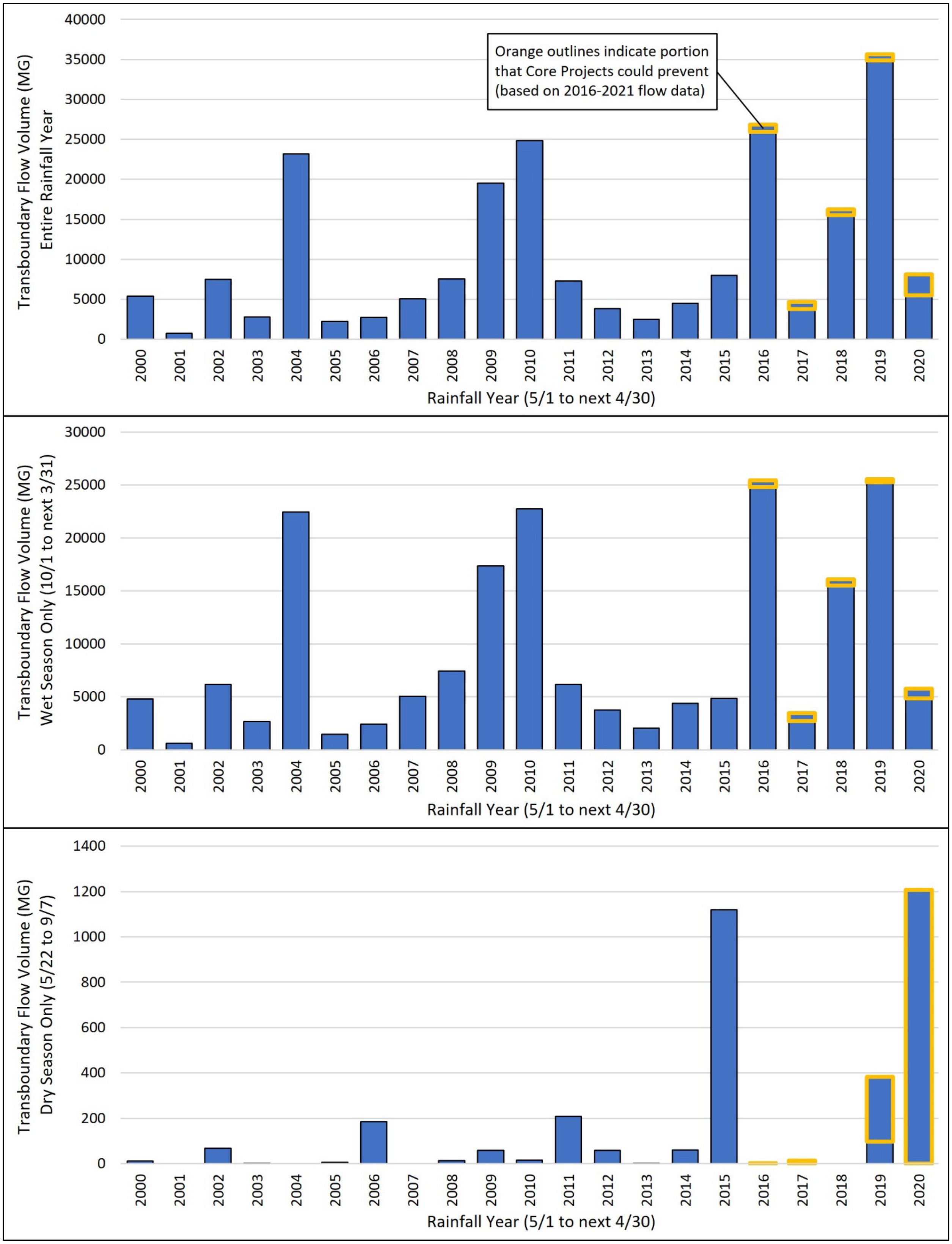
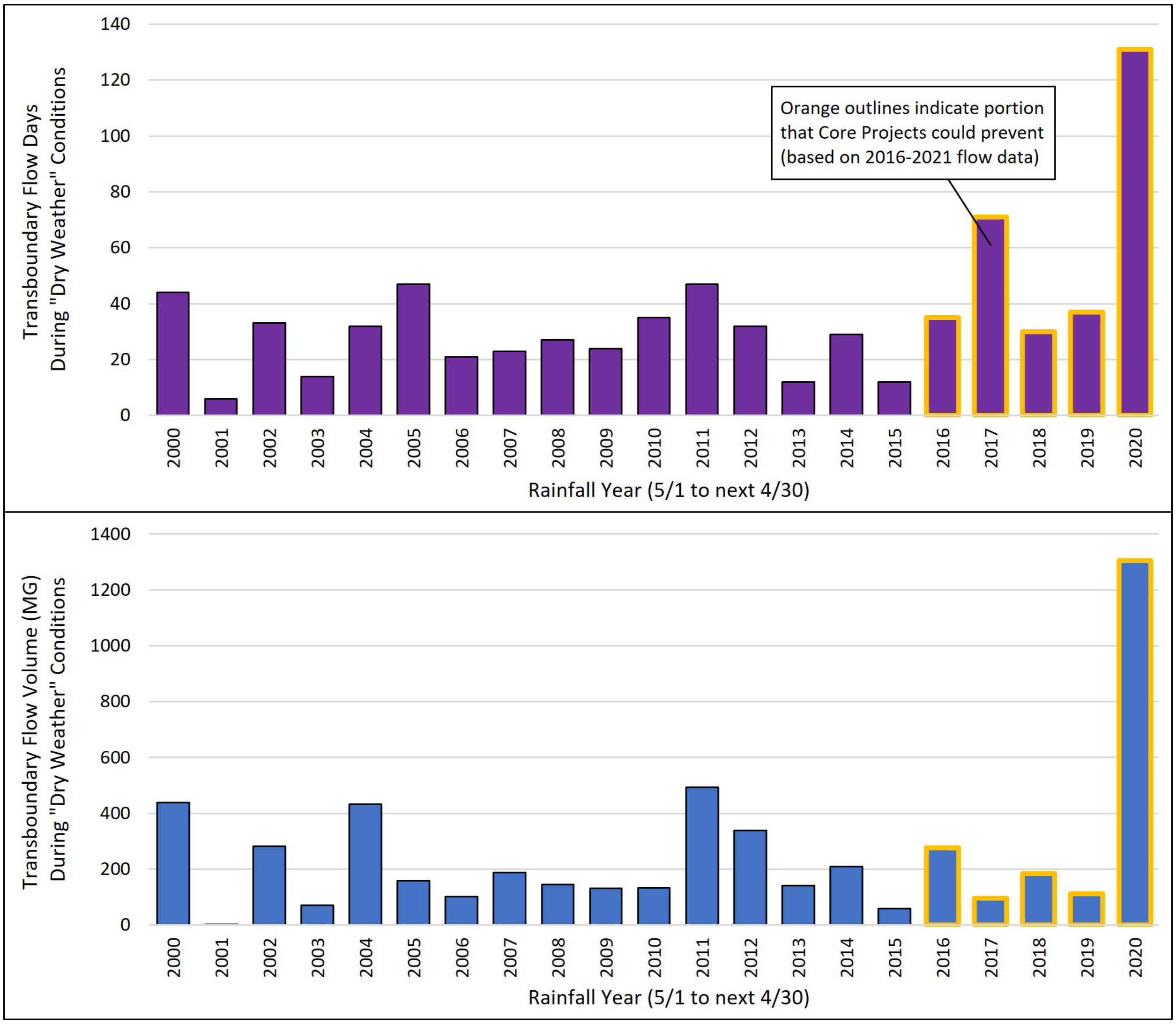


Figure 4-2. Transboundary Flow Volume in the Tijuana River per Rainfall Year (2000–2020) and Portion Targeted by Alternative 1



Note: For purposes of this analysis, “dry weather” conditions indicate that the flow occurred at least five days after the most recent precipitation registered at San Diego International Airport, and that the flow rate did not exceed 23 MGD. A select few flow events that exceeded the 23-MGD threshold were considered dry weather because they occurred at a time of year with no registered precipitation, and/or because they varied only slightly above 23 MGD during a period that was predominantly dry weather.

Figure 4-3. Dry-Weather Transboundary Flow Days and Volume in the Tijuana River per Rainfall Year (2000–2020) and Portion Targeted by Alternative 1

The overall reduction in transboundary river flow volume, while modest (4- to 6-percent reduction, depending on the period of stream gage data used for the analysis), would likely have a beneficial impact on downstream efforts to counteract the increasing freshwater influence on salt marsh habitat in the Tijuana River Estuary, as discussed in Section 3.1.1 (Hydrology).

EPA and USIBWC also considered whether the estimated surface flow reductions in the river would potentially have an effect on groundwater levels and riparian vegetation and habitat. The Core Projects would target the diversion of dry-weather flows and a very small portion of wet-weather flows (i.e., when PB-CILA is operational), a substantial portion of which would otherwise be expected to infiltrate to the alluvial aquifer before reaching the estuary, depending on the flow rate and saturation conditions. The surface flow reduction would take place over the course of several years as pipeline repairs are performed in Tijuana under Project C and as the reliability and capacity of the river diversion system increases under Project D. As discussed in Section 3.1.1 (Hydrology), the Natural Safe Yield for the Tijuana Groundwater Basin has been estimated at approximately 5,000–6,800 ac-ft/year. However, EPA and USIBWC understand that these estimates do not account for contributions from untreated transboundary sewage flows (Rempel, 1992). The Natural Safe Yield of the Tijuana Groundwater Basin following implementation of the Core Projects is therefore expected to remain similar to past estimates, indicating a surplus of groundwater that would continue supporting baseflows in reaches of the Tijuana River downstream of Dairy Mart Road Bridge. Also, as noted above, implementation of the Core Projects would not affect wet-weather transboundary river flow events that saturate the wider floodplain, fill ponds and other depressions, and gradually recharge the aquifer. Transboundary river flow conditions after Core Project implementation would be expected to be generally consistent, in terms of frequency and volume, with historical conditions since 2000 (excepting the 2017 and 2020 rainfall years, which had unusually frequent dry-weather transboundary flows). EPA and USIBWC are consulting with USFWS regarding this potential impact. See Section 4.4 (Inland Biological Resources) for further discussion.

Projects A (Expanded ITP) and B (Tijuana Canyon Flows to ITP) would result in negligible or no changes to transboundary river flows. Project A would potentially reduce untreated wastewater overflows from the sanitary sewer to the Tijuana River caused by mechanical failures at PB1-B; however, its primary purpose is to provide additional treatment capacity for flows that otherwise would discharge to the coast via SAB Creek. Project B would result in no changes in transboundary river flows but would potentially reduce the amount of contaminated transboundary dry-weather flows in Goat Canyon and Smuggler's Gulch by eliminating the reliance on pump stations whose mechanical issues may cause occasional wastewater overflows into the canyons in Mexico.

Operations under the Core Projects would not result in any impacts to wetlands or other delineated aquatic resources other than through the changes in the frequency, magnitude, and pollutant loadings of transboundary river flows described above. Operations would not introduce a new demand for groundwater and would not impact drinking water resources because none are present within the affected area.

Projects A and D would construct up to approximately 12.3 acres of new impervious surfaces at the ITP parcel and would thus increase stormwater runoff from the site to the Tijuana River. Per the requirements of the County of San Diego BMP Design Manual (County of San Diego, 2020c) and EISA, both projects would be required to incorporate design measures to prevent any net increase in stormwater runoff and maintain predevelopment hydrology to the maximum extent technically feasible. This requirement could potentially result in inclusion of a small retention basin within the

ITP parcel or low-impact design alternatives such as pervious pavements, bioretention areas, rain gardens, and swales.

4.1.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Under Alternative 2, construction activities for the Core Projects would result in the same minor, short-term impacts to freshwater and estuarine resources from construction-related activities as would occur under Alternative 1. Construction activities for the Supplemental Projects would include temporary construction activities in the Tijuana River main channel and floodplain, resulting in temporary impacts to potential jurisdictional aquatic resources as described below and resulting in at least one significant impact on freshwater and estuarine resources per the criteria in Section 4.1.1 (Standards of Significance). Construction-related impacts would be mitigated through the use of BMPs. (See the "Permanent Effects" discussion below regarding potential permanent construction-related impacts to these aquatic features.)

Project E (APTP Phase 2) would involve construction activities in the vicinity of a potential CCC jurisdictional wetland (PSS Wetland 6), and the current conceptual location for the treated effluent pipeline under Project I (ITP Treated Effluent Reuse) runs through the site of a potential CCC jurisdictional wetland (PEM Wetland 5). These projects would incorporate water quality BMPs (e.g., spill prevention and erosion and sediment control measures) to mitigate the potential minor, short-term indirect impacts to these hydrologic features. The pipeline segment under Project I would be installed via trenchless methods or, if this is not feasible, the location would be adjusted to avoid direct impacts to this wetland.

Projects F (U.S.-side River Diversion to APTP) and J (Trash Boom[s]) would include temporary construction activities in the Tijuana River main channel and the surrounding floodplain, which is identified as a potential jurisdictional water of the U.S. For the river diversion, construction would require temporary damming and flow diversion of the river. Flows associated with the Tijuana River in this area are characterized as intermittent to ephemeral; therefore, the diversion is not anticipated to result in downstream impacts on the river, as the features and resources associated with the river are subject to long periods of zero flow. The specific construction-related impacts to aquatic resources and the associated permitting and review requirements (e.g., CWA Section 404 permit authorization, RWQCB 401 Water Quality Certification, LSA Agreement, and CDP) would be evaluated in subsequent tiered NEPA analyses.

No discharges to groundwater would occur during construction, and all activities would be handled pursuant to spill prevention procedures so as to avoid impacts to groundwater. Construction activities would not impact drinking water resources because none are present within the affected area.

Construction activities would adhere to the stormwater management permitting requirements described in Section 6.1.2 (Freshwater and Estuarine Resources).

Construction activities would not be expected to affect any water-dependent recreational activities because water-based recreation is not present in the construction area or prevalent in the estuary.

Construction activities in Mexico would not result in transboundary impacts to freshwater or estuarine resources in the U.S. because any effects on these resources would be localized to the construction area in Mexico.

Permanent Effects

Under Alternative 2, implementation of the Core Projects would result in the same long-term beneficial impacts to freshwater and estuarine resources as would occur under Alternative 1. Implementation of the Supplemental Projects would further reduce transboundary flows and pollutant loadings in the Tijuana River, as described below. Certain Supplemental Projects would also directly impact potential jurisdictional aquatic resources. These impacts would potentially result in significant, long-term impacts to freshwater and estuarine resources per the criteria in Section 4.1.1 (Standards of Significance).

Table 4-4 summarizes the estimated impacts that Alternative 2 would have on transboundary flows and pollutant loadings in the Tijuana River. This includes the impacts of Core Projects C (Tijuana Sewer Repairs) and D (APTP Phase 1).

Table 4-4. Impacts on Transboundary Flows in the Tijuana River – Alternative 2

Projects [a]	Flow Days		Flow Volume		BOD_5 Load	
	Days/yr	Percent Change	Billion gal/yr	Percent Change	Tons/yr	Percent Change
Current conditions [b]	153	N/A	17.5	N/A	1,670	N/A
Alternative 1 maximum [c]	68	-56%	16.5	-6%	562	-66%
Alternative 1 + Project F (35 MGD diversion) [d]	68	-56%	15.5	-11%	398	-76%
Alternative 1 + Projects E + F (60 MGD diversion) [e]	43	-72%	14.1	-19%	238	-86%
Alternative 1 + Project H [f]	55	-64%	16.0	-9%	458	-73%
Alternative 2 maximum (Alternative 1 + Projects E + F [60 MGD diversion] + H)	**36**	**-76%**	**13.8**	**-21%**	**214**	**-87%**

a – Projects A, B, G, I, and J would result in negligible or no changes to transboundary river flows.
b – Current conditions were calculated using Tijuana River flow data from January 2016 through January 2022, during a period when PB-CILA capacity was 23 MGD. This analysis assumes that future baseline transboundary river flow conditions will be similar to those represented in this historical period of flow data and estimates the projects' effectiveness at reducing transboundary flows under these future baseline conditions.
c – See Table 4-2.
d – Reflects 35-MGD diversion in U.S. operating at river flows up to 60 MGD.
e – Reflects 60-MGD diversion in U.S. operating at river flows up to 120 MGD, paired with Project E to provide capacity to treat these flows.
f – Assumes Project H reduces Tijuana River flow in Mexico by 10.3 MGD, and Project C reduces untreated wastewater in the Tijuana River in Mexico down to 5 MGD. Reflects PB-CILA reliably diverting river flows up to 35 MGD under Project D.

As summarized above, full implementation of the Supplemental Projects—specifically, Projects E (APTP Phase 2), F (U.S.-side River Diversion to APTP), and H (Tijuana WWTP Treated Effluent Reuse)—would result in a substantial further reduction in the frequency of transboundary river flows and the associated pollutant loadings to the Tijuana River in the U.S., beyond what would be achieved under Core Projects C and D. Nutrient loadings in transboundary river flows would be further reduced by up to approximately 147 tons/yr if only Project F were implemented (35-MGD option); 324 tons/yr if only Projects E and F were implemented (60-MGD option); 255 tons/yr if only Project H were implemented; and 445 tons/yr if each project were implemented in addition to the Core Projects. Loadings of numerous other pollutants to the Tijuana River in the U.S. would also be reduced—including ammonia, bacteria, BOD_5, phosphorous, surfactants, and various metals including copper, nickel and zinc, all of which are present at elevated levels in the Tijuana River in Mexico (IBWC, 2020). This further reduction in pollutant loadings from untreated wastewater would potentially help alleviate impaired water listings for the Tijuana River and the Tijuana River Estuary (e.g., due to removal of nutrients and BOD_5); would potentially help the Tijuana River meet the beneficial uses listed in the San Diego Water Board's Basin Plan; would be expected to improve groundwater quality in the Tijuana Groundwater Basin; and would be expected to improve downstream conditions for water-dependent recreational activities in the Tijuana River and the Tijuana River Estuary. However, these projects would result in a negligible reduction in transboundary sediment loads (less than 2 percent) and thus would not substantially change sediment volumes in the Tijuana River Valley.

As discussed in Section 4.13 (Solid and Hazardous Waste), the trash boom(s) under Project J would be expected to substantially reduce the amount of floatable trash in transboundary river flows. This would potentially help alleviate impaired water listings (for trash) for the Tijuana River and the Tijuana River Estuary and would potentially help the Tijuana River meet the beneficial uses listed in the San Diego Water Board's Basin Plan. However, further studies are necessary in support of the subsequent tiered analyses to refine the estimates of how much trash would be successfully removed from transboundary river flows.

Implementation of the Supplemental Projects would further decrease the cumulative volume of transboundary flows in the river, particularly during smaller wet-weather events when a portion of the flow would otherwise be expected to infiltrate to the alluvial aquifer before reaching the estuary, depending on the flow rate and saturation conditions. Specifically (each of these represents the additional, incremental reduction beyond the impacts of the Core Projects):

- Project F would further reduce transboundary river flows by up to approximately 2.40 BGY (7,370 ac-ft/year) under the 60-MGD diversion option, assuming it is paired with the 60-MGD treatment capacity at the APTP provided by Project E.
- Project H (Tijuana WWTP Treated Effluent Reuse) would further reduce transboundary river flows by approximately 0.50 BGY (1,530 ac-ft/year).
- Full implementation of the Supplemental Projects would further reduce transboundary river flows by up to approximately 2.70 BGY (8,290 ac-ft/year).

EPA and USIBWC do not have sufficient information at this time to estimate the extent to which these transboundary wet-weather flow reductions would result in reduced infiltration to the aquifer. Further hydrogeologic assessment is necessary to characterize the potential impacts to factors including groundwater levels, groundwater-dependent vegetation, river baseflow in downstream reaches, and saltwater intrusion. These impacts would be evaluated in subsequent tiered NEPA analyses and related consultations. However, as noted below, implementation of the Supplemental Projects would not affect larger wet-weather transboundary river flow events that saturate the wider floodplain, fill ponds and other depressions, and gradually recharge the aquifer.

Implementation of the Supplemental Projects would not affect wet-weather transboundary river flows that exceed the shutoff threshold of the Project F river diversion, other than through the 10.3-

MGD reduction of treated effluent in the river under Project H. Implementation of the Supplemental Projects would not mitigate impacts to the river or estuary from extreme weather events, despite the substantial reduction in the frequency of dry-weather and wet-weather transboundary river flows.

Projects G (New SABTP) and I (ITP Treated Effluent Reuse) would result in no changes to transboundary river flows because they would not affect volumes of river flows in Mexico or change the operation of the river diversion system.

The implementation of Projects F and J (Trash Boom[s]) would potentially result in a permanent reduction in acreage of potential jurisdictional aquatic resources in the Tijuana River floodplain, which may require an individual CWA 404 permit. Additionally, recurring O&M of these features (e.g., extraction of trash using heavy mobile equipment) would potentially result in further disturbances to aquatic resources in the floodplain. The construction activities are not anticipated to result in the relocation of the Tijuana River channel or a reduction in the primary functions of the river. The specific impacts and associated mitigation requirements would be evaluated in subsequent tiered NEPA analyses. Operations under the other Supplemental Projects would not result in any impacts to wetlands or other delineated aquatic resources other than through the changes in transboundary river flows described above. Operations would not introduce a new demand for groundwater and would not impact drinking water resources because none are present within the affected area.

Projects E, F, and J would potentially involve construction of new impervious surfaces in the U.S. and, if so, would increase stormwater runoff to the Tijuana River. Applicability of County of San Diego BMP Design Manual and EISA stormwater management requirements would be evaluated in subsequent tiered NEPA analyses.

4.1.5 Comparative Analysis of the Alternatives

Table 4-5 provides a summary comparison of the impacts described above for the three evaluated alternatives.

Two of the alternatives would result in a significant, or potentially significant, impact on freshwater and estuarine resources per the criteria in Section 4.1.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-5. Comparative Analysis of Effects – Freshwater and Estuarine Resources

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Potential minor, short-term impacts from open-cut trenching along Monument Road to cross two potentially jurisdictional waters of the U.S.; these impacts would not require an individual CWA 404 permit ▪ No impacts to groundwater, drinking water resources, or water-dependent recreational activities ▪ No exceedance of stormwater drainage systems	Same as Alternative 1, plus the following: ▪ Potential minor, short-term impacts to potentially jurisdictional waters of the U.S. from construction of U.S.-side river diversion and trash boom(s) in Tijuana River main channel and floodplain **(see Section 5 for potential mitigation measures)**
Permanent effects	▪ Continuation of significant impacts to freshwater and estuarine resources and continuation of water quality degradation **(see Section 5 for potential mitigation measures)**	▪ Long-term beneficial effects from substantial reductions in pollutant loadings and frequency of dry-weather transboundary river flows ▪ Potential alleviation of impaired water listings, assistance in meeting the San Diego Water Board's Basin Plan, improvements to groundwater quality, and improvements to water-dependent recreational activities ▪ Potential reductions in contaminated transboundary dry-weather flows in Goat Canyon and Smuggler's Gulch ▪ No change in groundwater demand and no impacts to drinking water resources ▪ Increase in stormwater runoff from new impervious footprint	Same as Alternative 1, plus the following: ▪ Potentially significant, long-term reduction in acreage of potentially jurisdictional waters of the U.S. in the Tijuana River floodplain for the U.S.-side river diversion and trash boom[s], requiring an individual CWA 404 permit **(see Section 5 for potential mitigation measures)** ▪ Long-term beneficial effects from increased reductions in pollutant loadings and frequency and volume of transboundary river flows ▪ Substantial reduction in floatable trash in transboundary river flows ▪ Increase in water quality-related benefits

4.2 Marine Waters

4.2.1 Standards of Significance

Impacts to marine waters would be significant if they were to include any of the following:

- Inconsistency with the California Ocean Plan.
- Inability to meet discharge requirements or obtain NPDES permits for proposed discharges to the ocean.
- Substantial increase in pollutant loadings discharged to the ocean from point or non-point sources.
- Disruption of recreational and/or commercial activities that are dependent on marine waters.

4.2.2 No-Action Alternative

The No-Action Alternative would result in the continuation of existing impacts to marine waters that are currently resulting from the discharge of untreated wastewater into the Pacific Ocean (see Section 1.3 [Causes and Impacts of Contaminated Transboundary Flows from Tijuana] and Section 3.2 [Marine Waters]). The amount of effluent treated at the ITP and discharged from the SBOO would not substantially change as the ITP is already operating near capacity. Pollutant loadings to the Pacific Ocean via SAB Creek and via transboundary river and canyon flows would persist unabated and would worsen over time as wastewater infrastructure in Tijuana continues to deteriorate and the population continues to grow without access to adequate wastewater treatment infrastructure. This would worsen water quality and increase HAB events, beach closures, and negative public health impacts.

4.2.3 Alternative 1: Core Projects

Temporary Effects

Under Alternative 1, construction activities for the Core Projects would result in minor, short-term impacts to marine waters from activities associated with modifications to the wye diffuser array on the SBOO for Projects A (Expanded ITP) and D (APTP Phase 1) as described in Section 4.5.3 (Marine Biological Resources). Vessels required for these modifications would likely carry hydraulic fluids and fuel, thus vessel activities would bring a small risk of oil spill and water pollution. Assuming mitigation measures are maintained (see Section 5 [Mitigation Measures]), the likelihood of an oil spill occurring would be negligible. Additionally, vessel operation and diver activity would potentially result in minor inconveniences to recreational and commercial fishing activities. However, construction activities would occur over a relatively short period of time (a few hours each day for a few weeks) and would be localized to the area around the southern leg of the SBOO. No other components of the Core Projects would result in temporary effects on marine waters because they would not involve disturbance or activities in the marine environment. Based on this and the minor nature of impacts mentioned above, construction activities for Alternative 1 would not result in significant impacts to marine waters per the criteria in Section 4.2.1 (Standards of Significance).

Permanent Effects

Under Alternative 1, implementation of the Core Projects would provide long-term beneficial impacts from treatment of wastewater flows that would otherwise be discharged without treatment to the Pacific Ocean via SAB Creek. Core Projects would also reduce the frequency of and pollutant loadings from dry-weather transboundary river flows, some of which would otherwise reach the Pacific Ocean via the Tijuana River Estuary. Overall, operation of all Core Projects would result in a significant net reduction in pollutant loadings discharged to the Pacific Ocean. Core Projects would be expected to meet discharge requirements and be able to obtain NPDES permits and would not be expected to disrupt recreational or commercial activities dependent on marine waters.

The following subsections discuss how implementation of the Core Projects would potentially impact marine waters by reducing discharges of untreated wastewater to the Pacific Ocean via SAB Creek; increasing discharges of treated effluent to the Pacific Ocean via the SBOO; and reducing pollutant loadings that are conveyed to the Pacific Ocean via the Tijuana River and Estuary. This is followed by a discussion of expected overall marine water quality improvements and the associated reductions in beach impacts. While implementation of the Core Projects would result in overall long-term benefits to marine water quality, the substantial increase in pollutant loadings discharged via the SBOO would be considered a significant impact per the criteria in Section 4.2.1 (Standards of Significance).

Reduced Discharges of Untreated Wastewater via SAB Creek

Implementation of the Core Projects would immediately lead to significant reductions in discharges of untreated wastewater to the Pacific Ocean via SAB Creek, as summarized in Table 4-6. The majority of these improvements would be accomplished through Projects A (Expanded ITP), B (Tijuana Canyon Flows to ITP), and C (Tijuana Sewer Repairs) by improving the collection and treatment of wastewater in Tijuana.

Table 4-6. Impacts on Discharges to the Pacific Ocean via SAB Creek (Initial Operations) – Alternative 1

Projects	Untreated Wastewater Flow Volume		BOD_5 Load		Nutrient Load	
	Million gallons/day	Percent Change	Tons/yr	Percent Change	Tons/yr	Percent Change
Current conditions [a]	28.2	N/A	17,200	N/A	3,916	N/A
Project A, Option A1 (Expand to 40 MGD) only [c]	13.4	-52%	8,175	-52%	1,763	-55%
Project A, Option A2 (Expand to 50 MGD) only [b,c,d]	6.5	-77%	3,950	-77%	931	-76%
Project A, Option A3 (Expand to 60 MGD) only [b,c,d]	6.5	-77%	3,950	-77%	931	-76%
Project D (35 MGD) only [c]	22.7	-20%	13,800	-20%	2,835	-28%
Alternative 1 maximum (Projects A [Option A3] + D)	**2.2**	**-92%**	**1,340**	**-92%**	**275**	**-93%**

a – Current conditions were calculated using Tijuana River flow data from January 2016 through January 2022, during a period when PB-CILA capacity was 23 MGD.
b – Reflects ITP treatment of inflows resulting from Project B (Tijuana Canyon Flows to ITP).
c – Reflects ITP treatment of inflows resulting from Project C (Tijuana Sewer Repairs).
d – Reflects changes in discharges and loadings that would be achieved upon startup of new treatment facilities (i.e., before the full treatment capacity comes into service in response to population growth in Tijuana).

As shown above, implementation of the Core Projects would nearly eliminate discharges of untreated wastewater to the Pacific Ocean via SAB Creek. This would result in substantial regional coastal water quality improvements, leading to reduced negative impacts to beaches and public health as discussed below (see Improvements in Marine Water Quality and Reduced Beach Impacts) and in Section 4.16 (Public Health and Safety).

Implementation of the Core Projects would also reduce (by up to 93 percent) the portion of sediment loads via SAB Creek that come from untreated wastewater or river water. These projects would not affect sediment loads to the Pacific Ocean resulting from stormwater and erosion within the SAB Creek watershed.

Table 4-6 identifies the improvements that would occur upon startup of the new treatment facilities. However, the 50-MGD and 60-MGD options of Project A provide additional treatment capacity to accommodate projected population growth in Tijuana through the years 2030 and 2050, respectively, assuming Tijuana canyon flows are treated at the ITP (Project B). The full water quality benefits of these options would be realized once this additional treatment capacity comes into service in response to population growth. To estimate these future improvements relative to baseline conditions, EPA and USIBWC projected 2050 baseline conditions for discharges to SAB Creek (i.e., assuming no infrastructure improvements are made) and estimated the impacts of the Core Projects on this projected baseline. Table 4-7 summarizes these projected (2050) reductions in discharges of untreated wastewater to the Pacific Ocean via SAB Creek.

Table 4-7. Impacts on Discharges to the Pacific Ocean via SAB Creek (Projected 2050 Conditions) – Alternative 1

Projects	Untreated Wastewater Flow Volume		BOD_5 Load		Nutrient Load	
	Million gallons/day	Percent Change	Tons/yr	Percent Change	Tons/yr	Percent Change
Projected 2050 baseline conditions [a]	44.6	N/A	27,200	N/A	5,980	N/A
Project A, Option A1 (Expand to 40 MGD) only [c]	28.1	-37%	17,200	-37%	4,230	-29%
Project A, Option A2 (Expand to 50 MGD) only [b,c,d]	18.3	-59%	11,200	-59%	2,980	-50%
Project A, Option A3 (Expand to 60 MGD) only [b,c,e]	9.3	-79%	5,680	-79%	1,880	-69%
Project D (35 MGD) only [c]	37.8	-15%	23,100	-15%	4,750	-21%
Alternative 1 maximum (Projects A [Option A3] + D)	**5.4**	**-88%**	**3,310**	**-88%**	**674**	**-89%**

a – Projected conditions in 2050 reflect estimates of additional wastewater generated due to projected population growth in Tijuana with no corresponding improvements to wastewater treatment infrastructure.
b – Reflects ITP treatment of inflows resulting from Project B (Tijuana Canyon Flows to ITP).
c – Reflects ITP treatment of inflows resulting from Project C (Tijuana Sewer Repairs).
d – Reflects projected operations in 2030, when the 50-MGD ITP would be operating at full capacity based on estimated population growth in Tijuana.
e – Reflects projected operations in 2050, when the 60-MGD ITP would be operating at full capacity based on estimated population growth in Tijuana.

As shown above, implementation of Project A, Option A2 or Option A3 in particular, would be projected to substantially reduce future discharges of untreated wastewater to the Pacific Ocean via SAB Creek. The added capacity provided under Option A3 would help prepare for projected conditions in 2050 and provide additional coastal water quality improvements through 2050, achieving more than double the pollutant loading reductions that would occur under Option A1. Implementation of Option A3 would also be projected to reduce (by up to 88 percent) the portion of projected sediment loads via SAB Creek that would come from untreated wastewater or river water. These projects would not affect sediment loads to the Pacific Ocean resulting from stormwater and erosion within the SAB Creek watershed.

Increased Discharge of Treated Effluent via the SBOO

Implementation of the Core Projects would increase discharges of treated effluent to the Pacific Ocean via the SBOO. The increase in discharges via the SBOO would consist of 1) additional discharges of secondary-treated wastewater from the expanded ITP (Project A), with the volume of discharged effluent depending on the capacity option, and 2) new discharges of primary-treated river water from the new APTP Phase 1 (Project D). These increases in SBOO discharges would be in addition to the current discharges of secondary-treated effluent from the existing ITP and SBWRP.

Table 4-8 identifies the estimated changes in discharges via the SBOO that would occur upon startup of the new treatment facilities. Table 4-9 identifies the estimated changes in discharges via the SBOO as projected for the year 2050, when the 60-MGD expanded ITP (Project A, Option A3) is projected to be at full capacity based on estimated population growth in Tijuana. In addition to reflecting changes in discharges expected from the Proposed Action, these 2050 projections also reflect an assumed increase in discharges from the SBWRP over this period.

Full implementation of the Core Projects (including the 60-MGD expanded ITP) would result in the following changes to the flow rate, nutrient loadings, and BOD_5 loadings of discharges via the SBOO:

- **Flow Rate:** The average daily SBOO effluent flow rate would immediately increase from approximately 28.8 MGD under current conditions to approximately 65.2 MGD under initial operating conditions of the expanded ITP and new 35-MGD APTP. The average daily SBOO effluent rate would then gradually increase (over the course of the 20-year period from 2030 to 2050) to approximately 84.7 MGD by 2050 as the full capacity of the 60-MGD expanded ITP comes into service in response to population growth in Tijuana. This discharge would remain well below the SBOO design capacity of 174 MGD average daily flow rate.

- **BOD_5:** The annual BOD_5 loadings in SBOO discharges would immediately increase from approximately 533 tons/yr under current conditions to approximately 2,270 tons/yr under initial operating conditions of the expanded ITP and new 35-MGD APTP. Annual BOD_5 loadings would then gradually increase (over the course of the 20-year period from 2030 to 2050) to approximately 2,640 tons/yr by 2050.

- **Nutrients:** The total annual nutrient loadings (including total annual nitrogen and phosphorous loadings) in SBOO discharges would immediately increase from approximately 1,670 tons/yr under current conditions to approximately 4,240 tons/yr under initial operating conditions of the expanded ITP and new 35-MGD APTP. The total annual nutrient loadings would then gradually increase (over the course of the 20-year period from 2030 to 2050) to approximately 5,280 tons/yr by 2050.

Table 4-8. Impacts on Discharges to the Pacific Ocean via the SBOO (Initial Operations) – Alternative 1

Parameter	Units	Current Conditions, Annual Avg [a]	Project A, Option A1 (Expand to 40 MGD) Only [c]		Project A, Option A2 (Expand to 50 MGD) Only [b,c,d]		Project A, Option A3 (Expand to 60 MGD) Only [b,c,d]		Project D (35 MGD) Only [c]		Alternative 1 Maximum (Projects A [Option A3] + D)	
			Annual Avg	% Change	Annual Avg	% Change	Annual Avg	% Change	Annual Avg	% Change	Annual Avg	% Change
Effluent flow rate	MGD	28.8	43.8	52%	48.8	69%	48.8	69%	45.2	57%	65.2	126%
Temperature	deg C	23.4	23.3	0%	23.3	-1%	23.3	-1%	22.7	-3%	22.9	-2%
Total nutrients	mg/L	38.0	39.3	3%	39.6	4%	39.6	4%	43.0	13%	42.6	12%
	tons/yr	1,670	2,620	57%	2,940	76%	2,940	76%	2,960	78%	4,240	154%
Total dissolved solids (TDS)	mg/L	1,320	1,330	1%	1,340	1%	1,340	1%	1,360	4%	1,360	4%
	tons/yr	57,700	88,900	54%	99,300	72%	99,300	72%	93,900	63%	135,000	135%
Fecal coliform	MPN/ 100 mL	387,000	391,000	1%	392,000	1%	392,000	1%	433,000	12%	423,000	9%
Selenium (total recoverable)	µg/L	5.11	5.35	5%	5.39	6%	5.39	6%	4.69	-8%	5.03	-2%
	lb/yr	448	713	59%	802	79%	802	79%	646	44%	1,000	123%
Lead (total recoverable)	µg/L	0.121	0.126	5%	0.127	6%	0.127	6%	0.212	76%	0.189	57%
	lb/yr	10.6	16.9	59%	19.0	79%	19.0	79%	29.3	177%	37.6	256%
Nickel (total recoverable)	µg/L	22.7	22.4	-1%	22.6	0%	22.6	0%	16.4	-28%	18.8	-17%
	lb/yr	1,990	2,990	50%	3,360	69%	3,360	69%	2,270	14%	3,740	88%
Thallium (total recoverable)	µg/L	2.07	2.08	1%	2.09	1%	2.09	1%	2.09	1%	2.10	1%
	lb/yr	181	278	53%	310	71%	310	71%	288	59%	417	130%
Cadmium (total recoverable)	µg/L	0.117	0.122	4%	0.123	5%	0.123	5%	0.0816	-31%	0.0969	-17%
	lb/yr	10.3	16.3	58%	18.3	78%	18.3	78%	11.2	9%	19.3	87%
BOD_5	mg/L	12.1	13.7	13%	13.7	13%	13.7	13%	26.6	119%	22.9	88%
	tons/yr	533	912	71%	1,020	92%	1,020	92%	1,830	244%	2,270	326%
TSS	mg/L	11.2	10.7	-5%	10.7	-4%	10.7	-4%	10.6	-5%	10.8	-4%
	tons/yr	427	712	67%	797	87%	797	87%	731	71%	1,070	151%

a – Current conditions (25 MGD for the ITP and 3.8 MGD for the SBWRP) were calculated using 2015–2020 effluent monitoring data.
b – Reflects ITP treatment of inflows resulting from Project B (Tijuana Canyon Flows to ITP).
c – Reflects ITP treatment of inflows resulting from Project C (Tijuana Sewer Repairs).
d – Reflects changes in discharges and loadings that would be achieved upon startup of new treatment facilities (i.e., before the full treatment capacity comes into service in response to population growth in Tijuana).

Table 4-9. Impacts on Discharges to the Pacific Ocean via the SBOO (Projected 2050 Conditions) – Alternative 1

Parameter	Units	No Action, Annual Avg [a]	Project A, Option A1 (Expand to 40 MGD) Only [c]		Project A, Option A2 (Expand to 50 MGD) Only [b,c,d]		Project A, Option A3 (Expand to 60 MGD) Only [b,c,e]		Project D (35 MGD) Only [c]		Alternative 1 Maximum (Projects A [Option A3] + D)	
			Annual Avg	% Change	Annual Avg	% Change	Annual Avg	% Change	Annual Avg	% Change	Annual Avg	% Change
Effluent flow rate	MGD	33.2	48.2	45%	58.2	75%	68.2	105%	49.7	49%	84.7	155%
Temperature	deg C	23.7	23.5	-1%	23.4	-1%	23.4	-1%	23.0	-3%	23.0	-3%
Total nutrients	mg/L	34.8	36.9	6%	37.8	9%	38.4	10%	40.4	16%	40.9	18%
	tons/yr	1,760	2,710	54%	3,350	90%	3,990	126%	3,050	74%	5,280	200%
TDS	mg/L	1,270	1,300	2%	1,310	3%	1,320	4%	1,330	4%	1,340	6%
	tons/yr	64,500	95,700	48%	116,000	81%	137,000	113%	101,000	56%	173,000	169%
Fecal coliform	MPN/ 100 mL	375,000	383,000	2%	386,000	3%	388,000	3%	421,000	12%	412,000	10%
Selenium (total recoverable)	µg/L	4.50	4.90	9%	5.06	13%	5.17	15%	4.31	-4%	4.93	10%
	lb/yr	455	721	58%	897	97%	1,070	136%	653	43%	1,270	179%
Lead (total recoverable)	µg/L	0.106	0.116	9%	0.119	13%	0.122	16%	0.194	84%	0.171	62%
	lb/yr	10.7	17.0	59%	21.2	98%	25.4	137%	29.4	175%	44.0	312%
Nickel (total recoverable)	µg/L	20.1	20.6	3%	21.2	6%	21.7	8%	15.3	-24%	19.0	-5%
	lb/yr	2,030	3,030	49%	3,770	86%	4,510	122%	2,310	14%	4,890	141%
Thallium (total recoverable)	µg/L	2.02	2.05	1%	2.06	2%	2.07	2%	2.06	2%	2.08	3%
	lb/yr	205	302	47%	366	79%	431	110%	311	52%	537	162%
Cadmium (total recoverable)	µg/L	0.105	0.113	8%	0.116	11%	0.119	13%	0.0764	-27%	0.0992	-5%
	lb/yr	10.6	16.6	57%	20.6	94%	24.6	132%	11.6	9%	25.6	141%
BOD_5	mg/L	11.3	13.0	15%	13.2	17%	13.4	18%	24.8	118%	20.5	81%
	tons/yr	574	953	66%	1,170	104%	1,390	143%	1,870	227%	2,640	360%
TSS	mg/L	9.67	10.1	5%	10.3	7%	10.5	8%	10.1	4%	10.6	9%
	tons/yr	490	746	52%	916	87%	1,090	122%	765	56%	1,360	178%

a – Projected 2050 conditions under the No-Action Alternative (25 MGD for the ITP and 8.26 MGD for the SBWRP) were calculated using 2015-2020 effluent monitoring data. The projected SBWRP effluent flow rate to the SBOO assumes operations will increase to use the plant's full 15 MGD capacity by 2050, while continuing to reuse the same percentage of treated effluent as they do under current operations (approximately 55 percent).

b – Reflects ITP treatment of inflows resulting from Project B (Tijuana Canyon Flows to ITP).

c – Reflects ITP treatment of inflows resulting from Project C (Tijuana Sewer Repairs).

d – Reflects projected operations in 2030, when the 50-MGD ITP would be operating at full capacity based on estimated population growth in Tijuana.

e – Reflects projected operations in 2050, when the 60-MGD ITP would be operating at full capacity based on estimated population growth in Tijuana.

These tables are not a comprehensive list of all potential pollutants of concern that could be discharged via the SBOO. For example, because the APTP would provide primary treatment of diverted dry-weather flows from the Tijuana River, the range and concentrations of pollutants in the treated effluent via the SBOO would be influenced by factors including industrial discharges and agricultural runoff within and upstream of Tijuana. These are pollutants that, in the absence of the proposed APTP, would have otherwise been discharged (untreated) to the Pacific Ocean via SAB Creek, or would have potentially reached the Tijuana River Estuary and Pacific Ocean via transboundary river flows. Examples could include surfactants, pesticides, and phthalates. Of note, IBWC conducted water quality sampling in the Tijuana River and Alamar River in 2019 and identified elevated levels of bis (2-ethylhexyl) phthalate at all monitoring sites, possibly due to chemical leaching from plastics and solid waste discarded in the river (IBWC, 2020). However, the river samples had low levels of organics and pesticides, and none of the river samples had detectable levels of toxic parameters of concern such as hexavalent chromium or the carcinogenic pesticides DDT and Aldrin (IBWC, 2020).

EPA and USIBWC conducted outfall plume transport modeling using the UM3 nearfield model coupled with the Brook's far-field dispersion model from the Visual Plumes software suite to analyze the differences in potential pollutant transport from SBOO discharges under current and future conditions. For purposes of this modeling effort, EPA and USIBWC assumed average daily flows of 35 MGD for the baseline scenario and 110 MGD for future conditions (which is considerably higher than the average daily flow rate projected for 2050 in Table 4-9),[49] with modifications to the SBOO diffuser ports to accommodate the increased flow. This effort produced both nearfield dilution estimates and estimates of potential far-field transport processes over a longer time-period. The results, presented in Appendix G (South Bay Ocean Outfall Plume Transport Modeling), indicate that pollutant concentrations in far-field environments following implementation of the Core Projects would increase relative to baseline conditions, but that—depending on the specific number and configuration of open diffuser ports—pollutant concentrations would potentially *decrease* within a limited nearfield area around the SBOO (e.g., within approximately 300 to 500 meters of the point of discharge, based on the specific port configuration modeled for this effort). This phenomenon could be due, in part, to the increase in effective length of the diffuser achieved by bringing more ports into service to accommodate additional flow. See Appendix G and Section 4.5 (Marine Biological Resources) for additional discussion.

Reduced Loadings via the Tijuana River and Estuary

As discussed in Section 4.1 (Freshwater and Estuarine Resources), implementation of the Core Projects would substantially reduce dry-weather transboundary flows and pollutant loadings in the Tijuana River. For example, BOD_5 loadings in these transboundary flows would be reduced from approximately 1,670 tons/yr to 562 tons/yr with full implementation of the Core Projects.

[49] This modeled alternative scenario of 110 MGD represents a 214 percent increase in average daily flow above the assumed baseline of 35 MGD. After the completion of model runs under this effort, EPA refined its estimate of current SBOO discharges to 28.8 MGD (instead of 35 MGD) and refined its estimate of projected 2050 discharges under the Core Projects to 84.7 MGD (instead of 110 MGD). This refined estimate represents a 194 percent increase in projected average daily flow above the baseline. The modeled scenarios therefore represent a conservative model construction that likely overestimates the expected changes in the SBOO effluent plume under the Core Projects.

EPA and USIBWC assume that these improvements would result in reduced pollutant loadings to the Pacific Ocean via the Tijuana River. However, due to the complex hydrogeologic processes in the Tijuana River and Estuary described in Section 3.1 (Freshwater and Estuarine Resources), EPA and USIBWC are not able to estimate the proportion of these reduced pollutant loadings that would have otherwise eventually been transported to the Pacific Ocean (e.g., through groundwater or wet-weather flows).

Improvements in Marine Water Quality and Reduced Beach Impacts

The estimated decreases in pollutant loadings to the Pacific Ocean via SAB Creek and the Tijuana River described above far outweigh the estimated increases in loadings from discharge of treated effluent via the SBOO. Implementation of the Core Projects would therefore be expected to result in significant marine water quality benefits in the Pacific Ocean. Net reductions in nutrient loadings to the Pacific Ocean would potentially reduce the formation of HABs along the coastline and the associated health risks to wildlife and humans.

In particular, reducing discharges of untreated wastewater via SAB Creek is expected to result in substantial improvements to coastal water quality and reduced beach impacts during the tourist (dry) season—i.e., Memorial Day to Labor Day. In a recent modeling study, the Scripps Institution of Oceanography examined the frequency and causes of water quality–driven human health impacts at four beaches along the U.S. and Mexican coasts, based on four[50] wastewater input scenarios representing different combinations of untreated wastewater contributions from SAB Creek and the Tijuana River (Feddersen et al., 2021). In this study, the authors estimated the following for each beach and input scenario:

- Shoreline norovirus concentrations.
- Number of ill swimmers (N_{ill}) due to exposure to norovirus pathogens in untreated wastewater discharges.
- Beach impact fraction (BIF), which is the fraction of time that the modeled mean (expected) probability of swimmer illness exceeds 0.036 (i.e., 36 per 1,000) due to exposure to norovirus pathogens in untreated wastewater discharges (Feddersen et al., 2021).

The model results indicate that untreated wastewater from SAB Creek is the dominant cause of swimmer illness at regional beaches during the tourist (dry) season (Feddersen et al., 2021). Drawing from the modeled relationship between discharges of untreated wastewater via SAB Creek and the resulting beach impacts, EPA and USIBWC interpolated the expected tourist (dry) season impacts at regional beaches that would result from implementation of the Core Projects. See Appendix H (Interpolation of Modeled Beach Impacts) for the interpolation methodology. The results are presented in Table 4-10 and Table 4-11. These results demonstrate that full implementation of the Core Projects would immediately lead to significant reductions in water quality–driven human health impacts at regional beaches.

[50] At EPA's request, the Scripps Institution of Oceanography also performed a supplemental model run to calculate beach impact fraction for a fifth scenario that is not documented in the published report. See Appendix H (Interpolation of Modeled Beach Impacts) for more information.

Table 4-10. Impacts on Tourist (Dry) Season N_{ill} at Imperial Beach (Initial Operations) – Alternative 1

Project	Untreated Wastewater from SAB Creek (MGD)	Imperial Beach	
		N_{ill} [e]	Percent Change
Current conditions [a]	28.2	21,352	N/A
Project A, Option A1 (Expand to 40 MGD) only [c]	13.4	11,779	-45%
Project A, Option A2 (Expand to 50 MGD) only [b,c,d]	6.5	7,315	-66%
Project A, Option A3 (Expand to 60 MGD) only [b,c,d]	6.5	7,315	-66%
Project D (35 MGD) only [c]	22.7	17,794	-17%
Alternative 1 maximum (Projects A [Option A3] + D)	**2.2**	**4,534**	**-79%**

a – Current conditions were calculated using Tijuana River flow data from January 2016 through January 2022, during a period when PB-CILA capacity was 23 MGD.
b – Reflects ITP treatment of inflows resulting from Project B (Tijuana Canyon Flows to ITP).
c – Reflects ITP treatment of inflows resulting from Project C (Tijuana Sewer Repairs).
d – Reflects changes in discharges and loadings that would be achieved upon startup of new treatment facilities (i.e., before the full treatment capacity comes into service in response to population growth in Tijuana).
e – N_{ill} is defined as the number of ill swimmers due to exposure to norovirus pathogens in untreated wastewater discharges. Results are interpolated from those of two scenarios in Feddersen et al. (2021) representing 0 MGD and 35 MGD of untreated wastewater from SAB Creek. See Appendix H (Interpolation of Modeled Beach Impacts) for additional information, including discussion of how this interpolation potentially overestimates N_{ill} reductions for certain projects.

Table 4-11. Impacts on Tourist (Dry) Season Beach Impact Fraction (Initial Operations) – Alternative 1

Project	Untreated Wastewater from SAB Creek (MGD)	Playas Tijuana		Imperial Beach		Silver Strand Beach		Hotel del Coronado	
		BIF [e]	% Change	BIF [e]	% Change	BIF [e]	% Change	BIF [e]	% Change
Current conditions [a]	28.2	0.576	N/A	0.396	N/A	0.292	N/A	0.212	N/A
Project A, Option A1 (Expand to 40 MGD) only [c]	13.4	0.490	-15%	0.297	-25%	0.193	-34%	0.099	-53%
Project A, Option A2 (Expand to 50 MGD) only [b,c,d]	6.5	0.330	-43%	0.178	-55%	0.110	-62%	0.047	-78%
Project A, Option A3 (Expand to 60 MGD) only [b,c,d]	6.5	0.330	-43%	0.178	-55%	0.110	-62%	0.047	-78%
Project D (35 MGD) only [c]	22.7	0.544	-6%	0.359	-9%	0.255	-13%	0.170	-20%
Alternative 1 maximum (Projects A [Option A3] + D)	**2.2**	**0.156**	**-73%**	**0.060**	**-85%**	**0.037**	**-87%**	**0.016**	**-92%**

a – Current conditions were calculated using Tijuana River flow data from January 2016 through January 2022, during a period when PB-CILA capacity was 23 MGD.
b – Reflects ITP treatment of inflows resulting from Project B (Tijuana Canyon Flows to ITP).
c – Reflects ITP treatment of inflows resulting from Project C (Tijuana Sewer Repairs).

d – Reflects changes in discharges and loadings that would be achieved upon startup of new treatment facilities (i.e., before the full treatment capacity comes into service in response to population growth in Tijuana).
e – BIF is defined as the fraction of time that the modeled mean (expected) probability of swimmer illness exceeds 0.036 (i.e., 36 per 1,000) due to exposure to norovirus pathogens in untreated wastewater discharges. Results are interpolated from those of two scenarios in Feddersen et al. (2021) representing 0 MGD and 35 MGD of untreated wastewater from SAB Creek and a third scenario (F. Feddersen, personal communication, April 23, 2022) representing 10 MGD of untreated wastewater from SAB Creek. See Appendix H (Interpolation of Modeled Beach Impacts) for additional information.

4.2.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Under Alternative 2, construction activities for the Core Projects would result in the same minor, short-term impacts to marine waters as would occur under Alternative 1. Most construction activities for the Supplemental Projects would not result in impacts to marine waters. One exception is the potential modifications to the wye diffuser array on the SBOO for Project E (APTP Phase 2), which would have the same impacts as described for the Core Projects. Additionally, it is possible that the scope of Project G (New SABTP) could be modified to include installation of a subaquatic discharge pipe. In that scenario, the subsequent tiered NEPA analysis for Project G would assess the potential for transboundary effects on marine waters. These actions would not be expected to result in significant impacts to marine waters per the criteria in Section 4.2.1 (Standards of Significance).

Permanent Effects

Under Alternative 2, implementation of the Core Projects would result in the same long-term beneficial impacts to marine waters as would occur under Alternative 1—specifically, a significant net reduction in pollutant loadings to the Pacific Ocean, but with a substantial increase in loadings discharged via the SBOO.

As discussed below, implementation of the Supplemental Projects would expand these impacts and improvements by:

- Providing additional treatment capacity for wastewater flows that would otherwise be discharged without treatment to the Pacific Ocean via SAB Creek.
- Further reducing pollutant loadings from transboundary river flows, some of which would otherwise reach the Pacific Ocean via the Tijuana River Estuary.
- Further increasing pollutant loadings from treated effluent discharged via the SBOO.

The substantial increase in pollutant loadings discharged via the SBOO would be considered a significant, long-term impact per the criteria in Section 4.2.1 (Standards of Significance). Supplemental Projects would be expected to meet discharge requirements and be able to obtain NPDES permits and therefore would not be expected to disrupt recreational or commercial activities dependent on marine waters.

Reduced Discharges of Untreated Wastewater via SAB Creek

Under Alternative 2, implementation of the Core Projects would result in the same reductions in discharges via SAB Creek as would occur under Alternative 1. Implementation of Supplemental Project G would provide treatment capacity for the remainder of untreated wastewater flows that are not addressed by the Core Projects, resulting in the additional improvements shown in Table 4-12.

No other Supplemental Projects would impact discharges of untreated wastewater to the Pacific Ocean via SAB Creek because they are instead focused on addressing other transboundary flows.

Table 4-12. Impacts on Discharges to the Pacific Ocean via SAB Creek – Alternative 2

Projects [a]	Untreated Wastewater Flow Volume		BOD_5 Load		Nutrient Load	
	Million gallons/day	Percent Change	Tons/yr	Percent Change	Tons/yr	Percent Change
Current conditions [b]	28.2	N/A	17,200	N/A	3,916	N/A
Alternative 1 maximum [c]	2.2	-92%	1,340	-92%	275	-93%
Alternative 2 (Alternative 1 + Project G)	**0.1**	**-100%**	**54**	**-100%**	**131**	**-97%**

a – Project G is the only Supplemental Project that would result in non-negligible changes to discharges via SAB Creek.
b – Current conditions were calculated using Tijuana River flow data from January 2016 through January 2022, during a period when PB-CILA capacity was 23 MGD.
c – See Table 4-6.

Increased Discharge of Treated Effluent via the SBOO

Under Alternative 2, implementation of the Core Projects would result in the same increases in discharges via the SBOO as would occur under Alternative 1. Implementation of Supplemental Projects E and F (U.S.-side River Diversion to APTP) would result in the diversion and treatment of additional Tijuana River flows and would therefore result in a further increase (beyond that of the Core Projects) in the amount of primary-treated effluent discharged to the Pacific Ocean via the SBOO. In the absence of the proposed APTP, the pollutants in this effluent would have otherwise potentially reached the Tijuana River Estuary and Pacific Ocean via transboundary river flows. Implementation of Supplemental Project H (Tijuana WWTP Treated Effluent Reuse) in addition to Projects E and F would help to offset some of this projected increase in treated effluent discharges via the SBOO.

Table 4-13 identifies the estimated changes in discharges via the SBOO that would occur upon startup of the new treatment facilities. Table 4-14 identifies the estimated changes in discharges via the SBOO as projected for the year 2050, when the 60-MGD expanded ITP (Project A, Option A3) is projected to be at full capacity based on estimated population growth in Tijuana. In addition to reflecting changes in discharges expected from the Proposed Action, these 2050 projections also reflect an assumed increase in discharges from the SBWRP over this period.

Full implementation of the Core and Supplemental Projects (including the 60-MGD expanded ITP) would result in the following changes to the flow rate, nutrient loadings, and BOD_5 loadings of discharges via the SBOO:

- **Flow Rate:** The average daily SBOO effluent flow rate would immediately increase from approximately 28.8 MGD under current conditions to approximately 62.5 MGD under initial operating conditions of the expanded ITP and new 60-MGD APTP—a slightly smaller increase than under the Core Projects alone. The average daily SBOO effluent rate would then gradually increase (over the course of the 20-year period from 2030 to 2050) to approximately 86.6 MGD by 2050 as the full capacity of the 60-MGD expanded ITP comes into service in response to population growth in Tijuana—a slightly greater increase than under the Core Projects alone. This discharge would remain well below the SBOO design capacity of 174 MGD average daily flow rate.

- **BOD_5:** The annual BOD_5 loadings in SBOO discharges would immediately increase from approximately 533 tons/yr under current conditions to approximately 2,440 tons/yr under initial operating conditions of the expanded ITP and new 60-MGD APTP—a slightly greater increase than under the Core Projects alone. Annual BOD_5 loadings would then gradually increase (over the course of the 20-year period from 2030 to 2050) to approximately 2,810 tons/yr by 2050—a slightly greater increase than under the Core Projects alone.

- **Nutrients:** The total annual nutrient loadings (including total annual nitrogen and phosphorous loadings) in SBOO discharges would immediately increase from approximately 1,670 tons/yr under current conditions to approximately 3,940 tons/yr under initial operating conditions of the expanded ITP and new 60-MGD APTP—a slightly smaller increase than under the Core Projects alone. The total annual nutrient loadings would then gradually increase (over the course of the 20-year period from 2030 to 2050) to approximately 5,050 tons/yr by 2050—a slightly smaller increase than under the Core Projects alone.

The subsequent tiered NEPA analyses for these projects would evaluate the specific estimated changes in loadings and marine water quality impacts resulting from these increases in SBOO discharges.

Table 4-13. Impacts on Discharges to the Pacific Ocean via the SBOO (Initial Operations) – Alternative 2

Projects [a]	Effluent Flow Volume		BOD_5 Load		Nutrient Load	
	Million gallons/day	Percent Change	Tons/yr	Percent Change	Tons/yr	Percent Change
Current conditions [b]	28.8	N/A	533	N/A	1,670	N/A
Alternative 1 maximum [b]	65.2	126%	2,270	326%	4,240	154%
Alternative 1 + Project F (35 MGD diversion) [c]	67.7	135%	2,350	341%	4,330	160%
Alternative 1 + Projects E + F (60 MGD diversion) [d]	71.3	148%	2,420	355%	4,450	167%
Alternative 1 + Project H [e]	57.7	100%	2,320	335%	3,810	128%
Alternative 2 maximum (Alternative 1 + Projects E + F [60 MGD diversion] + H)	**62.5**	**117%**	**2,440**	**358%**	**3,940**	**136%**

a – Projects G, I, and J would result in no changes to discharges via the SBOO.
b – See Table 4-8.
c – Reflects 35-MGD diversion in U.S. operating at river flows up to 60 MGD.
d – Reflects 60-MGD diversion in U.S. operating at river flows up to 120 MGD, paired with Project E to provide capacity to treat these flows.
e – Assumes Project H reduces Tijuana River flow in Mexico by 10.3 MGD, and Project C reduces untreated wastewater in the Tijuana River in Mexico down to 5 MGD. Reflects PB-CILA reliably diverting river flows up to 35 MGD under Project D.

Table 4-14. Impacts on Discharges to the Pacific Ocean via the SBOO (Projected 2050 Conditions) – Alternative 2

Projects [a]	Effluent Flow Volume		BOD_5 Load		Nutrient Load	
	Million gallons/day	Percent Change	Tons/yr	Percent Change	Tons/yr	Percent Change
No action [b]	33.2	N/A	574	N/A	1,760	N/A
Alternative 1 maximum [b]	84.7	155%	2,640	360%	5,280	200%
Alternative 1 + Project F (35 MGD diversion) [c]	87.2	162%	2,720	374%	5,380	206%
Alternative 1 + Projects E + F (60 MGD diversion) [d]	90.8	173%	2,790	387%	5,490	212%
Alternative 1 + Project H [e]	80.8	143%	2,690	368%	4,900	178%
Alternative 2 maximum (Alternative 1 + Projects E + F [60 MGD diversion] + H)	**86.6**	**161%**	**2,810**	**389%**	**5,050**	**187%**

a – Projects G, I, and J would result in no changes to discharges via the SBOO.
b – See Table 4-9.
c – Reflects 35-MGD diversion in U.S. operating at river flows up to 60 MGD.
d – Reflects 60-MGD diversion in U.S. operating at river flows up to 120 MGD, paired with Project E to provide capacity to treat these flows.
e – Assumes Project H reduces Tijuana River flow in Mexico by 10.3 MGD, and Project C reduces untreated wastewater in the Tijuana River in Mexico down to 5 MGD. Reflects PB-CILA reliably diverting river flows up to 35 MGD under Project D.

Reduced Loadings via the Tijuana River and Estuary

Under Alternative 2, implementation of the Core Projects would result in the same reductions in transboundary pollutant loadings to the Tijuana River as would occur under Alternative 1. As discussed in Section 4.1 (Freshwater and Estuarine Resources), implementation of Supplemental Projects E, F, and H would result in a substantial further reduction in the frequency of transboundary river flows and the associated pollutant loadings to the Tijuana River in the U.S.

EPA and USIBWC assume that these improvements would result in reduced pollutant loadings to the Pacific Ocean via the Tijuana River. However, due to the complex hydrogeologic processes in the Tijuana River and Estuary described in Section 3.1 (Freshwater and Estuarine Resources), EPA and USIBWC are not able to estimate the proportion of these reduced pollutant loadings that would have otherwise eventually been transported to the Pacific Ocean (e.g., through groundwater or wet-weather flows).

Improvements in Marine Water Quality and Reduced Beach Impacts

Implementation of Supplemental Project G would result in further reductions in water quality–driven human health impacts at regional beaches by providing treatment capacity for all remaining wastewater discharges via SAB Creek. Specifically, EPA and USIBWC estimate that implementation of all Core Projects plus Project G would eliminate more than 99 percent of the modeled BIF for beaches in southern San Diego County.

Subsequent tiered NEPA analyses would further assess the relationships of the changes in pollutant loadings via SAB Creek, via the SBOO, and to the Tijuana River to determine whether those changes would constitute a net reduction in loadings to the marine environment and therefore a benefit to marine water quality.

4.2.5 Comparative Analysis of the Alternatives

Table 4-15 provides a summary comparison of the impacts described above for the three evaluated alternatives.

All three alternatives would result in significant impacts to marine water resources per the criteria in Section 4.2.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-15. Comparative Analysis of Effects – Marine Waters

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Potential for minor, short-term impacts from pollution associated with vessel activities during modifications to SBOO ▪ Minor, short-term localized inconveniences to fishing activities during modifications to SBOO ▪ No inconsistencies with California Ocean Plan, exceedances of discharge requirements, or increase in pollutant loadings to the ocean	Same as Alternative 1
Permanent effects	▪ Continuation, and worsening over time, of significant existing marine water quality impacts **(see Section 5 for potential mitigation measures)**	▪ Significant, long-term impacts from substantial increase in pollutant loadings to Pacific Ocean via the SBOO, due to expanded wastewater treatment capacity in U.S. **(see Section 5 for potential mitigation measures)**; expected to be consistent with the California Ocean Plan ▪ Long-term beneficial effects from reduction in pollutant loadings to Pacific Ocean via SAB Creek and Tijuana River Estuary ▪ Overall net reduction in pollutant loadings discharged to the Pacific Ocean ▪ Significant, long-term benefits to marine water quality, marine wildlife health, human health, and beaches ▪ No exceedances of discharge requirements or disruptions to recreational/commercial activities that depend on marine waters	Same as Alternative 1, plus the following: ▪ Significant, long-term impacts from additional increases in pollutant loadings to Pacific Ocean via the SBOO **(see Section 5 for potential mitigation measures)**; expected to be consistent with the California Ocean Plan ▪ Substantial beneficial reductions in pollutant loadings to Pacific Ocean via SAB Creek and Tijuana River Estuary

4.3 Floodplains

4.3.1 Standards of Significance

Impacts to floodplains would be significant if they were to include any of the following:

- Permanent obstruction or redirection of floodwaters.
- Development of structures in a floodway that are for human habitation.
- Increase in surface water elevation of the Tijuana River or increase in flood levels during the occurrence of the base flood discharge.

4.3.2 No-Action Alternative

The No-Action Alternative would have no impacts to floodplains, floodways, or flood control structures. Existing operations at the ITP would continue to occur outside the 100-year floodplain and regulatory floodway.

4.3.3 Alternative 1: Core Projects

Under Alternative 1, construction and implementation of the Core Projects would include installation of permanent aboveground features (e.g., wastewater treatment process infrastructure, administrative buildings, and parking areas) in the 500-year floodplain and in areas outside the 500-year floodplain (Zone X, Area of Minimal Flood Hazard). All construction would take place outside of the Tijuana River levee system, which protects the ITP infrastructure from a 333-year flood event at the south levee and has greater than 3 feet of freeboard. No permanent features would be installed or erected in the 100-year floodplain, other than a short segment of the underground conveyance line along Monument Road near Clearwater Way under Project B (Tijuana Canyon Flows to ITP), Options B1 and B2. Installation of this conveyance line is not expected to alter elevations or change gradients and therefore no impacts to the 100-year floodplain are expected. Alternative 1 would have no other short- or long-term impacts to mapped floodplains or existing flood control structures (i.e., the north and south levees) and would not result in significant impacts to floodplains per the criteria in Section 4.3.1 (Standards of Significance). Alternative 1 would result in no permanent transboundary impacts to floodplains since effects from projects in Mexico would not extend into the floodplain in the U.S. (other than reduction of transboundary river flows, which would not affect flood events) and effects from projects in the U.S. would not extend to floodplains in Mexico.

4.3.4 Alternative 2: Core and Supplemental Projects

Under Alternative 2, construction and implementation of the Core Projects would result in the same impacts to floodplains as would occur under Alternative 1. Under Alternative 2, implementation of the Supplemental Projects would include installation of permanent aboveground features (e.g., wastewater treatment process infrastructure, a diversion system, and trash boom[s]) and construction and staging activities in the following FEMA floodplain zones: 100-year floodplain (Zone AE, 1 Percent Annual Chance Flood Hazard), 500-year floodplain (Zone X, 0.2 Percent Annual Chance Flood Hazard), and areas outside the 500-year floodplain (Zone X, Area of Minimal Flood Hazard). Alternative 2 would not result in significant impacts to floodplains per the criteria in Section 4.3.1 (Standards of Significance). Permanent features installed for Projects E and I would be located outside of the Tijuana River levee system which protects the ITP infrastructure from a 333-year flood event at the south levee and has greater than 3 feet of freeboard. Alternative 2 would result in no permanent transboundary impacts to floodplains since effects from projects in Mexico would not extend into the floodplain in the U.S. (other than reduction of transboundary river flows, which would not affect flood events) and effects from projects in the U.S. would not extend to floodplains in Mexico.

Supplemental Projects F (U.S.-side River Diversion to APTP) and J (Trash Boom[s]) would require temporary construction activities in the regulatory floodway within the existing levee system but these construction activities would not take place during flood events. Project F would require the installation of screw pumps and a conveyance line from the river diversion to the new APTP. Although these installations would cross the south levee, impacts to the levee would be temporary and construction would be completed during the dry season to avoid flood events. The levee would be returned to existing conditions after the diversion system was installed. These projects are subject to the requirements of EO 11988, *Floodplain Management* (42 FR 26951) (see Section 6.1.4 [Floodplains] for more information).

Projects F and J would require permanent development in the 100-year floodplain and regulatory floodway but would be designed consistent with the County of San Diego Flood Damage Prevention Ordinance and any other applicable requirements and guidelines for construction in a regulatory floodway. The U.S.-side river diversion under Project F would not operate during flood events (shutting off at a river flow rate of either 60 MGD or 120 MGD, depending on the design capacity) and would not be expected to raise the surface water elevation or increase flood levels during the occurrence of the base flood discharge. This would be further evaluated in a subsequent tiered NEPA analysis. During operation, Project J would have potential upstream impacts to the 100-year floodplain and the regulatory floodway by impeding trash and debris flow during storm events; a pilot study and further hydrologic modeling may be necessary to assess this potential impact in support of a subsequent tiered NEPA analysis. Trash processing areas for Project J, if necessary, would potentially be located within the 100-year floodplain and within the regulatory floodway but would be maintained in accordance with a trash management plan so as not to result in unintended releases of processed trash during flood events.

Maintenance for Projects F and J would potentially require workers to be present in the floodway during or after storm events (e.g., to resolve trash or sediment buildup at the influent screens or wet well and in the trash boom[s]). Incorporation of remote assessment tools would reduce the need for onsite human inspections in the floodway and the associated safety hazards.

4.3.5 Comparative Analysis of the Alternatives

Table 4-16 provides a summary comparison of the impacts described above for the three evaluated alternatives.

None of the evaluated alternatives would result in significant impacts to floodplains per the criteria in Section 4.3.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-16. Comparative Analysis of Effects – Floodplains

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Minor, short-term impacts from construction and staging activities in 100- and 500-year floodplain and in areas outside the 500-year floodplain	Same as Alternative 1, plus the following: ▪ Minor, short-term impacts from construction activities in the regulatory floodway ▪ Minor, short-term impact on flood control structures (i.e., the south levee) from construction activities
Permanent effects	▪ None	▪ Installation of permanent aboveground features in the 500-year floodplain (outside the levee system, which provides 3 feet of freeboard) and in areas outside the 500-year floodplain	Same as Alternative 1, plus the following: ▪ Additional permanent development in the 100-year floodplain and regulatory floodway for Projects F and J ▪ Minor, recurring impacts from trash boom obstruction of trash and debris flow during storm events ▪ Minor, recurring impacts from maintenance work for Projects F and J in the floodway during or after storm events

4.4 Inland Biological Resources

4.4.1 Standards of Significance

Impacts to inland biological resources would be significant if they were to include any of the following:

- Substantial disturbances to a special-status species either through direct mortality or damage or substantial loss or degradation of their habitat.
- Substantial disruption of nesting migratory birds (e.g., nest disturbance, noise, grading/clearing) during the breeding season.
- Removal, destruction, fragmentation, or degradation of environmentally sensitive habitats (defined here as wetlands, including vernal pools, riparian areas, sensitive natural communities, or MHPA lands).

4.4.2 No-Action Alternative

The No-Action Alternative would include the continuation of existing impacts to inland biological resources that currently result from contaminated transboundary flows from Tijuana (see Section 1.3 [Causes and Impacts of Contaminated Transboundary Flows from Tijuana] and Section 3.4 [Inland Biological Resources]).

The No-Action Alternative would have no effects on special-status plant species that occur outside of riparian habitats (i.e., outside of those areas that are currently subject to contaminated transboundary flows). Contaminated transboundary flows in the Tijuana River would continue to lower the quality of the riparian habitats and adjacent upland habitats in these areas and downstream. The No-Action Alternative would include the continuation of trash accumulation in the Tijuana River Valley and Estuary. Trash accumulation presents ecosystem concerns because it can expose wildlife to toxic substances and increase ponding opportunities, which can encourage spread of disease vectors. These impacts would persist unabated and would worsen over time as wastewater infrastructure in Tijuana continues to deteriorate resulting in potential impacts on federally listed wildlife species using riparian habitats and marsh and estuary habitats downstream of the project areas (e.g., light-footed Ridgway's rail, snowy plover, least tern, Belding's savannah sparrow, and tricolored blackbird).

4.4.3 Alternative 1: Core Projects

Temporary Effects

Under Alternative 1, short-term impacts from construction activities for implementation of the Core Projects would occur within the footprint of the existing ITP parcel, along Monument Road, and within Smuggler's Gulch. The vegetated areas within the ITP parcel are highly disturbed through routine maintenance (i.e., mowing) and degraded with non-native plant species, which limits the habitat value for wildlife. However, there is still potential for special-status species to be disturbed during construction. Mitigation measures would be implemented to avoid or reduce potential negative effects and thus the Core Projects would not result in significant impacts to inland biological resources per the criteria in Section 4.4.1 (Standards of Significance).

A full list of recommended best practices and potential mitigation measures is provided in Section 5 (Mitigation Measures).

Botanical Resources

Implementation of Projects A (Expanded ITP), B (Tijuana Canyon Flows to ITP), and D (APTP Phase 1) would include construction within the ITP parcel. Within the ITP parcel, there is potential for some special-status plant species to occur. Some species have been documented within the ITP parcel (i.e., *Corethrogyne filaginifolia* var*. incana, Nemacaulis denudata* var. *gracilis,* and *Sphaerocarpos drewiae*) or adjacent to the ITP parcel (i.e., *Ferocactus viridescens, Iva hayesiana,* and *Viguiera laciniata*) (Table 3-5). Moreover, one sensitive natural community, Lemonade berry scrub, has been documented within the project area (Table 3-4). Therefore, if no mitigation were implemented, construction for Projects A, B, and D would potentially result in short-term disturbances of special-status plant species or sensitive natural communities, either through direct mortality or through damage or indirect damage caused by degrading special-status plant or sensitive natural community habitat.

Implementation of the Core Projects would include protocol-level surveys for special-status plant species and sensitive natural communities that have the potential to occur in the evaluated area (Mitigation Measure BR-25). For special-status species or sensitive natural communities documented during the protocol-level surveys, Mitigation Measure BR-26 (establish a no-work buffer) would be implemented, if feasible, to avoid loss of identified special-status plant species or sensitive natural communities. If the special-status plant or sensitive natural community cannot be avoided, a mitigation and monitoring plan would be developed in coordination with USFWS and CDFW (Mitigation Measure BR-27). Therefore, with implementation of mitigation, construction for Core Projects would not result in short-term substantial disturbances of special-status plant species.

Construction activities in Mexico would have no transboundary impact on botanical resources in the U.S. since any potential impacts would be limited to the area of construction in Mexico.

Wildlife Resources

Construction activities for Projects A (Expanded ITP), B (Tijuana Canyon Flows to ITP), and D (APTP Phase 1) would potentially result in short-term disturbances of special-status wildlife species if no mitigation were implemented. Short-term disturbances could result from interference with foraging/feeding behavior, interference with migration and reproduction, direct injury or mortality, and/or damage or indirect damage by degrading suitable habitat, as discussed below.

Construction for Projects A and D would potentially affect San Diego fairy shrimp, if present, if construction activities or staging areas were sited on an occupied vernal pool, even if dry (dry occupied vernal pools contain cyst banks for the species). Focused vernal pool surveys have not been conducted for the Proposed Action, and San Diego fairy shrimp may inhabit shallow and relatively temporary vernal pools. There is a small chance that small vernal pools may occur in the ITP where suitable clay or poor draining soils are found. However, San Diego fairy shrimp do not likely occur in the project areas as no evidence of vernal pools or vernal pool complexes has been identified to date, and field observations suggest there is a low probability that vernal pools occur within the ITP. Surveys for vernal pool habitat would be performed prior to project construction (Mitigation Measure BR-13) and subsequently during final siting. If found, vernal pools would be avoided. If vernal pools cannot be completely avoided and protocol-level surveys detect the presence of San Diego fairy shrimp in vernal pools located on the ITP parcel, or within disturbance areas, Section 7 consultation with USFWS would be reinitiated, and a mitigation and monitoring plan would be developed. Therefore, with implementation of mitigation (avoidance), the Core Projects would not result in short-term substantial disturbances of San Diego fairy shrimp.

Construction for Projects A and D would potentially affect Quino checkerspot butterflies if no mitigation were implemented by resulting in any of the following: loss of (e.g., removal), reduction in, or damage to (e.g., disturbance to roots or limbs) occupied host plants; disruption of essential behaviors (e.g., feeding, pupation, diapause periods); crushing, killing, or injuring individual eggs, pre- or post-diapause larvae, or butterflies; or production of excessive dust that would impact respiration by the adults or cover the eggs and larvae, leading to death by smothering or reducing their lifecycle. However, Quino checkerspot butterflies have a relatively low potential to occur in the vicinity of construction activities due to marginally suitable habitat. Primary host plants may occur in small numbers in the proposed staging area between Dairy Mart Road and Clearwater Way, or could become established in relatively small, fragmented areas within the ITP where Project A or Project D may be implemented. Mitigation Measures BR-14, BR-15, and BR-20 include focused surveys for Quino checkerspot butterfly primary host plants (regardless of occupation by species) during the appropriate bloom time; flagging for avoidance (if found); and fugitive dust prevention during construction activities. If host plants were found during focused surveys, they would be flagged and avoided to ensure that no suitable habitat for the species would be disturbed or impacted. Additionally, Mitigation Measures BR-11, BR-17, and BR-18 (worker environmental awareness training, equipment checks, and allowing animals to leave the area of their own volition) would further reduce potential impacts to dispersing adult Quino checkerspot butterflies. Therefore, with implementation of mitigation, the Core Projects would not result in short-term substantial disturbances of Quino checkerspot butterflies.

Construction activities for Projects A, B, and D would potentially affect special-status reptiles if no mitigation were implemented. Specifically, construction activities would potentially affect coast horned lizards, southern California legless lizards, and/or Baja California coachwhips, all of which may occur in Smuggler's Gulch, and to a lesser extent in the ITP, as the ITP is marginally suitable for these species. Temporary disturbances would occur if special-status reptiles were to enter the project areas during construction activities. Potential direct effects include disruption of behavior and movement caused by visual disturbance, noise/vibration from equipment, and/or general presence of humans. Direct effects would potentially include injury or mortality of individuals resulting from entrapment or collisions with construction vehicles or equipment and/or entrapment in steep-sided excavations. Potential for injury or mortality is low as reptiles typically flee to avoid people, and the areas within the construction footprint have limited suitable habitat. In addition, suitable coastal scrub habitat in Smuggler's Gulch would not be directly removed as part of the construction of any of the options under Project B. Measures to avoid or minimize direct effects on reptiles include worker environmental awareness training, targeted pre-construction surveys, speed limits, letting wildlife move from the work area on their own, prohibiting use of monofilament netting and instead using tightly woven fiber netting or similar material for erosion control, and covering or installing a ramp for steep-sided excavations (Mitigation Measures BR-11, BR-12, BR-16, BR-17, BR-18, BR-20, and BR-21). Indirect impacts from habitat removal would not be expected, as no core habitat for special-status reptiles would be removed as part of the Core Projects. Therefore, with implementation of mitigation, the Core Projects would not result in short-term effects on special-status reptiles.

Construction for Projects A, B, and D would potentially result in short-term disturbances of nesting birds if construction activities were to occur during the breeding seasons and if no mitigation were implemented. Construction for Project B would occur in the vicinity of special-status bird species that may nest in the coastal sage scrub on the slopes associated with Smuggler's Gulch (i.e., California coastal gnatcatcher). Construction activities for Project B, Options B1 (Trenching via Smuggler's Gulch and Monument Road) and B2 (Trenchless via Smuggler's Gulch and Under Mesa), would also occur in the vicinity of special-status bird species that may nest in the small riparian area within Smuggler's Gulch (i.e., white-tailed kite, least Bell's vireo, yellow warbler, and/or yellow-breasted chat). Other migratory birds may nest within, or in the vicinity of, the ITP. Proposed construction activities would be unlikely to affect special-status birds that may only use the area for foraging (e.g., Swainson's hawk, American peregrine falcon, and southwestern willow flycatcher), as foraging birds can easily disperse away from project-related disturbance. Potential short-term effects on nesting special-status or other migratory birds include the disturbance (e.g., harassment) of an individual and actions that could lead to the abandonment or failure of a nest (e.g., damage to the nest and/or the vegetation containing the nest). Noise and vibration associated with the use of heavy equipment during construction may lead to effects by disrupting or masking intraspecific communication and/or startling birds nesting in adjacent habitat. Continued disturbance from construction noise could result in displacement, nest abandonment, and/or reproductive loss. Displaced birds could have increased risk of predation, death, or injury, or could be unable to find nearby suitable and/or available nesting habitat (i.e., habitat that does not overlap with the nesting territories of other birds). In addition, an increase in fugitive dust from construction activities could temporarily degrade surrounding suitable nesting habitat. Implementation of preconstruction nest surveys for nesting birds, including special-status species (e.g., least Bell's vireo, California coastal gnatcatcher, white-tailed kite, yellow warbler, and yellow-breasted chat) (Mitigation Measure BR-23), would ensure that any active nest found would be given an appropriate no-disturbance buffer to prevent disturbance or abandonment resulting from construction activities. Additionally, Mitigation Measures BR-11, BR-18, and BR-20 (worker environmental awareness training, letting wildlife move from the work area on their own, speed limits) would further reduce short-term effects on nesting special-status or migratory birds.

There are no anticipated indirect effects on any special-status birds from the loss or reduction of preferred habitat and/or food sources, as suitable riparian or coastal sage scrub habitats are not proposed for removal or alteration. Open-cut trenching for Project B would be confined to the existing roadway in Smuggler's Gulch and along Monument Road, as well as the undeveloped strip of land adjacent to Clearwater Way and West Tia Juana Street. These areas do not provide any high-value nesting habitat for special-status birds. Therefore, with implementation of mitigation, the Core Projects would not result in short-term effects on special-status or other migratory nesting birds.

Construction for Projects A, B, and D would potentially result in short-term disturbances of Northwestern San Diego pocket mice and San Diego black-tailed jackrabbits if they were to enter the project areas during construction activities and if no mitigation were implemented. Northwestern San Diego pocket mice and San Diego black-tailed jackrabbit may occur in Smuggler's Gulch, and to a lesser extent in the ITP. Potential effects include disruption of behavior and movement caused by visual disturbance, noise/vibration from equipment, or general presence of humans. Direct effects would potentially include injury or mortality of individuals resulting from entrapment or collisions with construction vehicles or equipment and/or entrapment in steep-sided excavations. Potential for injury or mortality is low as these mammals typically flee to avoid people and equipment, and the construction areas have limited suitable habitat. In addition, suitable coastal scrub habitat in Smuggler's Gulch would not be directly removed as part of the construction of any of the options under Project B. Measures to avoid or minimize direct impacts on mammals include worker environmental awareness training, targeted pre-construction surveys, speed limits, letting wildlife move from the work area on their own, prohibiting use of monofilament netting and instead using tightly woven fiber netting or similar material for erosion control, and covering or installing a ramp for steep-sided excavations (Mitigation Measures BR-11, BR-12, BR-16, BR-17, BR-18, BR-20, and BR-21). Therefore, with implementation of mitigation, the Core Projects would not result in short-term effects on special-status mammals.

The Core Projects would not result in short-term effects on special-status amphibians, as there is no potential for occurrence in the area affected by the Core Projects. Construction activities in Mexico would not be expected to affect wildlife resources in the U.S. since any potential impacts would be limited to the area of construction in Mexico.

Inland Fish Resources

Construction activities for Core Projects would occur in areas that provide no habitat for special-status fish species. Construction activities for Core Projects would potentially result in temporary effects on special-status fish, such as sediment runoff and hydrocarbon contamination of aquatic habitats. Increased sediment inputs into the Tijuana River would coincide with rain events during or following construction activities that disturb soils. Hydrocarbon contamination could result from leaking fuel or hydraulic lines on heavy equipment, improper fuel handling practices, or spills during refueling or lubrication operations. Specifically, Projects A (Expanded ITP) and D (APTP Phase 1) would involve construction activities within the existing ITP parcel that is adjacent to the Tijuana River. Project B (Tijuana Canyon Flows to ITP), Option B1 (Trenching via Smuggler's Gulch and Monument Road), would have the largest potential impacts due to aboveground effects from the use of trenching that would result in the disturbance to soils and the largest potential for sediment runoff. Implementation of Options B2 (Trenchless via Smuggler's Gulch and Under Mesa) and B3 (Connect to Existing Canyon Collector System) would reduce potential impacts from sediment runoff by using trenchless methods. All Core Projects could result in hydrocarbon contamination associated with construction operations.

Increased sediment runoff and hydrocarbon contamination would predominantly occur during wet-season rain events, which coincide with the potential presence of migrating special-status species (i.e., steelhead and Pacific lamprey). However, elevated concentrations of sediment and contaminants already occur during high flow events from natural and non-natural processes within the watershed, and it is unlikely that additional inputs from construction would result in large proportional increases such that concentrations would increase beyond biological tolerance thresholds for special-status fish. The potential effects of increased sediment runoff and hydrocarbon contamination on special-status fish would be minimized through implementation of Mitigation Measures BR-28 and BR-29 (erosion reduction measures and hydrocarbon contamination BMPs), respectively. With implementation of mitigation, the Core Projects would not result in short-term substantial disturbances of on special-status fish species.

Construction activities in Mexico would not be expected to affect inland fish resources in the U.S. since any potential impacts would be limited to the area of construction in Mexico.

Permanent Effects

Under Alternative 1, implementation of the Core Projects would provide long-term water quality benefits that could potentially improve conditions for inland biological resources in downstream areas in the Tijuana River and Estuary. The Core Projects would result in minor reductions in sediment loads and incidental trash removal but would not substantially change sediment or trash volumes in the Tijuana River Valley and Estuary. These water quality improvements described in Section 4.1 (Freshwater and Estuarine Resources) would likely have beneficial permanent effects on inland biological resources. Implementation of the Core Projects would not result in significant impacts to inland biological resources per the criteria in Section 4.4.1 (Standards of Significance).

Through coordination with USFWS, EPA has prepared a draft biological assessment to determine whether this project would be likely to result in adverse effects on species protected under the ESA. In accordance with Section 7 of the ESA, EPA is requesting USFWS concurrence with a *may affect but is not likely to adversely affect* determination for the species specified in the draft biological assessment and for least Bell's vireo critical habitat as discussed in Sections 6.1.5 (Inland Biological Resources) and 7.2.1 (Endangered Species Act Section 7 Consultation). See Appendix D (USFWS Biological Assessment [Draft]).

Botanical Resources

As indicated in Section 4.1 (Freshwater and Estuarine Resources), transboundary river flow conditions after Core Project implementation would be expected to be generally consistent, in terms of frequency and volume, with historical conditions since 2000 (excepting the 2017 and 2020 rainfall years, which had unusually frequent dry-weather transboundary flows). Therefore, any changes to surface water and groundwater interactions as a result of the implementation of the Core Projects would not substantially disturb special-status plant species that are associated with riparian habitat: *Artemisia palmeri, Juglans californica, Lilium humboldtii* subsp. *ocellatum, Monardella stoneana,* and *Monardella viminea*. Moreover, water quality improvements from implementation of Core Projects would likely have long-term beneficial effects on those same species.

No other components of Core Projects would result in long-term effects on botanical resources in the U.S.

Wildlife Resources

Implementation of the Core Projects would improve downstream water quality, thus reducing wildlife exposure to toxic substances and ponding that can encourage spread of disease vectors. This would likely provide associated long-term benefits to special-status wildlife species using the Tijuana River Estuary downstream of the project areas (e.g., light-footed Ridgway's rail, Belding's savannah sparrow, and tricolored blackbird). As indicated above (see Botanical Resources) and in Section 4.1 (Freshwater and Estuarine Resources), transboundary river flow conditions after Core Project implementation would be expected to be generally consistent, in terms of frequency and volume, with historical conditions since 2000 (excepting the 2017 and 2020 rainfall years, which had unusually frequent dry-weather transboundary flows). Therefore, any changes to surface water and groundwater interactions as a result of the implementation of the Core Project would not result in long-term substantial disturbances of special-status plant species that are associated with riparian habitat and thus would not result in substantial long-term disturbances of special-status wildlife species that are using associated downstream riparian habitats (e.g., least Bell's vireo, light-footed Ridgway's rail, Belding's savannah sparrow, and tricolored blackbird). EPA and USIBWC are coordinating with USFWS and will be coordinating with CDFW regarding potential effects pursuant to ESA and CESA.

No other components of Core Projects would result in long-term effects on wildlife resources in the U.S.

Inland Fish Resources

Contaminated transboundary flows are likely a critical limiting factor for special-status fish species in the Tijuana River and the Tijuana River Estuary. Thus, water quality improvements associated with implementation of Core Projects would likely improve conditions for special-status fish in downstream areas of the Tijuana River and Estuary.

Specifically, Projects C (Tijuana Sewer Repairs) and D (APTP Phase 1) would be the only Core Projects that affect transboundary river flows by reducing contaminated dry-weather flows. Under existing conditions, dry weather flows are likely elevated above natural levels from urban runoff and wastewater discharge. Furthermore, special-status fish species are not expected to be present in the Tijuana River downstream of the U.S.-Mexico border during the dry season. Therefore, any reduction in transboundary flows during the dry season would not result in long-term disturbances of special-status fish species in the Tijuana River downstream of the U.S.-Mexico border and would potentially improve conditions in the estuary due to reduced input of contaminated flows. Implementation of the Core Projects would not affect wet-weather transboundary river flows (other than through the reduction of untreated wastewater in the river under Project C) and thus would not decrease migration opportunities for special-status fish species. Because of the shutoff protocols for the PB-CILA river diversion under Project D, implementation of the Core Projects would not mitigate impacts to the river or estuary from extreme weather events.

Due to the reduction in transboundary flows largely occurring during dry-season, when special status fish are not reliant on flows in the Tijuana River, implementation of Core Projects would not result in long-term effects on special-status fish species.

No other components of Core Projects would result in long-term effects on inland fish resources in the U.S.

4.4.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Under Alternative 2, implementation of the Core Projects would result in the same short-term impacts to inland biological resources as would occur under Alternative 1.

Implementation of Supplemental Projects in the U.S. would include short-term construction activities within the same locations used for Core Projects, in addition to construction activities in the Tijuana River main channel and floodplain for Projects F (U.S.-side River Diversion to APTP) and J (Trash Boom[s]). Construction in the Tijuana River main channel and floodplain would potentially result in short-term substantial disturbances of special-status species or sensitive natural communities (in addition to those identified for Alternative 1) if no mitigation were implemented. These effects would be further defined and analyzed in subsequent tiered NEPA analyses. Construction activities in Mexico would not result in transboundary effects on inland biological resources in the U.S. Mitigation measures would be implemented to avoid or reduce potential negative effects and thus the Supplemental Projects would not result in significant impacts to inland biological resources per the criteria in Section 4.4.1 (Standards of Significance).

Botanical Resources

Implementation of Projects F (U.S.-side River Diversion to APTP) and J (Trash Boom[s]) would include construction activities in the Tijuana River main channel, where there would be potential for some special-status plant species to occur (see Appendix C). Some species have been documented within the main channel (i.e., *Heterotheca sessiliflora* subsp. *sessiliflora* and *Iva hayesiana*) or adjacent to the main channel (i.e., *Ambrosia monogyra*) (Table 3-5). Moreover, one sensitive natural community, Gooding's willow-red willow Riparian Woodland and Forest, has been documented within the Supplemental Project area (Table 3-4). Therefore, construction of the U.S.-side river diversion and trash boom(s) would potentially result in substantial disturbances of special-status plant species or sensitive natural communities, either through direct mortality or damage or through indirect damage caused by degradation of special-status plant or sensitive natural community habitat. Potential effects and the need for mitigation would be dependent on the location of the proposed river diversion and trash boom(s), which would be further defined and analyzed in subsequent tiered NEPA analyses.

Protocol-level surveys would be conducted for special-status plant species and sensitive natural communities that have the potential to occur in construction areas (Mitigation Measure BR-25). For special-status species or sensitive natural communities documented during protocol-level surveys, Mitigation Measure BR-26 (establish a no-work buffer) would be implemented, if feasible, to avoid loss of identified special-status plant species or sensitive natural communities. If the special-status plants cannot be avoided, a mitigation and monitoring plan would be developed in coordination with USFWS and CDFW (Mitigation Measure BR-27). Therefore, with implementation of mitigation, Supplemental Projects would not result in short-term substantial disturbances of special-status plant species.

Wildlife Resources

Construction activities in the Tijuana River main channel for Projects F (U.S.-side River Diversion to APTP) and J (Trash Boom[s]) would be expected to have few, if any, short-term effects on special-status wildlife species. Habitat value along the Tijuana River upstream of Dairy Mart Road is marginally suitable and limited for special-status wildlife species, as riparian vegetation along this section of the Tijuana River is regularly managed (e.g., by mowing, discing, cutting) to maintain a line-of-sight for CBP agents and reduce hiding opportunities within the Tijuana River Floodway (CBP, 2017). Therefore, there would be low potential for short-term substantial disturbances of wildlife resources. Potential effects and the need for mitigation would be dependent on the location of the proposed river diversion and trash boom(s), which would be further defined and analyzed in subsequent tiered NEPA analyses.

Inland Fish Resources

Construction activities in the Tijuana River main channel for Projects F (U.S.-side River Diversion to APTP) and J (Trash Boom[s]) would potentially result in short-term disturbances of special-status fish by altering flows and channel morphology, as well as through increases in sediment and hydrocarbon inputs into the Tijuana River and Estuary. Increased sediment and hydrocarbon inputs would result in the same short-term effects on special-status fish as described for construction activities in Alternative 1. These effects could be similarly mitigated using Mitigation Measures BR-28 and BR-29 (erosion reduction measures and hydrocarbon contamination BMPs). Altered flows and channel morphology during construction would potentially result in short-term substantial disturbances of migration of special-status fish if passage were not provided during construction activities that coincided with migration season, which extends from approximately December to July for steelhead and Pacific lamprey. These effects on migration would be mitigated through implementation of Mitigation Measure BR-30 (limiting in-water work to the dry-season). Potential effects and the need for mitigation would be dependent on the location of the proposed river diversion and trash boom(s), which would be further defined and analyzed in subsequent tiered NEPA analyses.

Permanent Effects

Under Alternative 2, implementation of the Core Projects would result in the same long-term impacts to inland biological resources as would occur under Alternative 1. Operational effects of the Supplemental Projects, including additional transboundary water quality improvements and additional reductions in contaminated transboundary flows, would result in additional benefits to special-status species. However, by decreasing the cumulative volume of transboundary flows in the Tijuana River, the Supplemental Projects would potentially result in at least one of the significant impacts to inland biological resources per the criteria in Section 4.4.1 (Standards of Significance). Potential effects and the need for mitigation would be further defined and analyzed in subsequent tiered NEPA analyses.

Botanical Resources

Implementation of the Supplemental Projects would further decrease the cumulative volume of transboundary flows in the river, particularly during smaller wet-weather events as described in Section 4.1 (Freshwater and Estuarine Resources). Additional decreases in contaminated transboundary flows would potentially result in permanent benefits to special-status plant species through reduced contaminants. Reductions in trash, resulting from implementation of Project J (Trash Boom[s]), could also result in long-term benefits to special-status plant species.

Implementation of Projects F (U.S.-side River Diversion to APTP) and H (Tijuana WWTP Treated Effluent Reuse) would result in a reduction in transboundary river flows. Reductions in transboundary river flows would potentially result in long-term substantial disturbances of special-status plant species that are associated with riparian habitat (i.e., *Artemisia palmeri, Juglans californica, Lilium humboldtii* subsp. *ocellatum, Monardella stoneana,* and *Monardella viminea*) resulting in a potentially significant impact. In addition, changes in transboundary flows could impact the physical, chemical, and biological properties in the Tijuana River Estuary, which could affect special-status plant species in the estuary. These potential effects and the need for mitigation would be analyzed in further detail in subsequent tiered NEPA analyses.

Wildlife Resources

Implementation of the Supplemental Projects would further decrease the cumulative volume of transboundary flows in the river, particularly during smaller wet-weather events as described in Section 4.1 (Freshwater and Estuarine Resources). Additional decreases in contaminated transboundary flows would potentially result in long-term benefits to special-status wildlife species through reduced exposure to contaminants and disease vectors. Reductions in trash and debris, resulting from implementation of Project J (Trash Boom[s]), would also result in permanent benefits to special-status wildlife species by limiting exposure to harmful debris and/or limiting potential buildup leading to ponding water that promotes disease vectors. Operation of Projects F (U.S.-side River Diversion to APTP) and J would result in a reduction in transboundary flows. These changes in flows would potentially result in long-term substantial disturbances of special-status wildlife species that may occur in downstream river or estuarine habitats (e.g., least Bell's vireo, light-footed Ridgway's rail, Belding's savannah sparrow, and tricolored blackbird) resulting in a significant impact. These potential effects and the need for mitigation would be analyzed in further detail in subsequent tiered NEPA analyses.

Inland Fish Resources

Implementation of the Supplemental Projects would further decrease the cumulative volume of transboundary flows in the river, particularly during smaller wet-weather events as described in Section 4.1 (Freshwater and Estuarine Resources). Additional decreases in contaminated transboundary flows would potentially result in long-term benefits to special-status fish species through reduced exposure to contaminants. Reductions in trash, resulting from implementation of Project J (Trash Boom[s]), would also potentially result in long-term benefits to special-status fish species.

Implementation of Projects F (U.S.-side River Diversion to APTP) and H (Tijuana WWTP Treated Effluent Reuse) would result in a reduction in transboundary river flows, which could potentially affect the ability of special-status fish to migrate in the Tijuana River. Reduced flows could have the effect of reducing the frequency of migration opportunities (e.g., there could be fewer sandbar-breaching events that provide connectivity with the ocean). Reduced flows could also limit passage due to the formation of riffles that lack sufficient water depth for passage. In addition, changes in transboundary flows would potentially impact the physical, chemical, and biological properties in the Tijuana River Estuary, which would potentially substantially disturb steelhead individuals with a lagoon rearing life history type if steelhead with this life history type occurred in the watershed resulting in a significant impact. However, implementation of the Supplemental Projects would not affect larger wet-weather transboundary river flow events when migration of special-status fish is expected. Potential effects and the need for mitigation would be analyzed in further detail in subsequent tiered NEPA analyses.

4.4.5 Comparative Analysis of the Alternatives

Table 4-17 provides a summary comparison of the impacts described above for the three evaluated alternatives.

One of the evaluated alternatives would potentially result in significant impacts to inland biological resources per the criteria in Section 4.4.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-17. Comparative Analysis of Effects – Inland Biological Resources

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ No short-term substantial disturbances of special-status species, migratory birds, or environmentally sensitive habitats during construction in the ITP parcel, Smuggler's Gulch, and along Monument Road with implementation of mitigation ▪ No short-term substantial disturbance of San Diego fairy shrimp with implementation of mitigation ▪ No short-term substantial disturbance of Quino checkerspot butterfly with implementation of mitigation	Same as Alternative 1, plus the following: ▪ Potential short-term substantial disturbances of special-status wildlife and fish species during construction in the Tijuana River main channel and floodplain depending on the location of the proposed river diversion and trash boom(s) **(see Section 5 for potential mitigation measures)**
Permanent effects	▪ Continuation of negative effects on inland biological resources resulting from contaminated transboundary flows	▪ Potential long-term beneficial effects on inland biological resources due to improved water quality ▪ No long-term substantial disturbances of special-status plant and wildlife species associated with downstream riparian habitat (pending consultation with USFWS regarding potential effects) ▪ EPA and USIBWC are requesting USFWS concurrence with a *may affect but is not likely to adversely affect* determination in accordance with Section 7 ESA Consultation	Same as Alternative 1, plus the following: ▪ Potential significant, long-term substantial disturbances of special-status plant and wildlife species associated with downstream riparian habitat due to reduced wet-weather transboundary flows **(see Section 5 for potential mitigation measures)** ▪ Potential significant, long-term substantial disturbances from reduction in special-status fish migration ability and/or degradation of estuarine rearing conditions due to reduced wet-weather transboundary flows **(see Section 5 for potential mitigation measures)** ▪ Increase in water quality-related long-term beneficial effect on inland biological resources

4.5 Marine Biological Resources

4.5.1 Standards of Significance

Impacts to marine biological resources would be significant if they were to include a substantial disturbance[51] to a species or habitat protected or conserved under federal, state or local legislation and regulations.

4.5.2 No-Action Alternative

Under the No-Action Alternative, the ITP would continue discharging treated effluent via the SBOO at a level similar to current practices, and the marine habitat conditions described in Section 3.5 (Marine Biological Resources) would, at first, remain similar to existing conditions. However, pollutant loadings to the Pacific Ocean via SAB Creek and via transboundary river and canyon flows would persist unabated and would worsen over time as wastewater infrastructure in Tijuana continues to deteriorate and the population continues to grow without access to adequate wastewater treatment infrastructure. This would be expected to contribute to more frequent and intense HAB events and general degradation of marine habitat.

4.5.3 Alternative 1: Core Projects

Temporary Effects

Under Alternative 1, implementation of the Core Projects would result in minor, short-term impacts to marine biological resources from activities associated with modifications to the wye diffuser array on the SBOO for Projects A (Expanded ITP) and D (APTP Phase 1). Currently, 18 of the 165 risers are open, with operating diffusers and ports. A further 16 risers are currently capped, consisting of a diffuser head with four temporarily closed ports. The remaining 131 risers are blind flanged and would require the installation of a diffuser head to be operational. To accommodate the increase in effluent discharge volume for the Core Projects, up to 55 risers on the southern leg of the SBOO wye diffuser would be recommissioned (e.g., by uncapping the 16 capped risers/diffusers and installing new diffusers/ports on up to 39 blind flanged risers). This would involve physical modifications as described below.

It is anticipated that the recommissioning of a capped/plugged or a blind-flanged diffuser port would result in minor disturbance to marine wildlife and habitat. Specifically, divers would likely disturb or remove a relatively small area of habitat and species on and around a diffuser head that requires modification. At each modified diffuser head, it is assumed that this may result in the disruption of no more, and in most circumstances considerably less, than a 6-ft-by-6-ft area of artificial reef habitat. This disturbance would be necessary to allow divers to access bolts, blind flanges, and other parts of the diffuser ports with hand tools to make the modifications likely to be required to recommission these features. Following completion of the diver activity, natural

[51] A substantial disturbance would be a high likelihood of causing a substantial decline in the local population of a species or extent and/or health of a habitat. 'Likelihood' is a judgment or assertion reasonably supported by evidence, precedent, or reasoned assessment of other established information. In this context, 'substantial' is defined as any change that could be detected over natural variability and occurs for more than six months, while 'local' is used to define any population or habitat occurring within the Area of Interest of the Proposed Project area and activities on a permanent or intermittent basis.

ecological-succession processes would be highly likely to gradually replace the lost habitat over time. The affected habitat represents a very small proportion of reef habitat on the SBOO, and because the reef is artificial reef habitat it does not qualify as EFH. Therefore, there are no impacts to habitat protected as EFH.

Marine life may be disturbed by noise and activity during vessel use and diver activity. Diver activity is unlikely to include activities that generate very high noise levels, such as powered cutting or hammering. Direct disturbance of marine wildlife due to construction activities is discussed in the Draft NMFS Biological Assessment and Essential Fish Habitat Assessment (Appendix E). Impacts would be highly unlikely because the activity would occur over a relatively short period of time (a few hours each day for a few weeks), animals would be unlikely to regularly occur in the immediate vicinity of the SBOO wye diffuser, and these animals would easily move a short distance away if disturbed.

Vessel activities bring a small risk of grounding or oil spill. However, spilled fluids from a grounded or stricken vessel can have serious environmental consequences for marine habitats and associated species. Vessels would be likely to carry hydraulic fluids and fuel that would be toxic to marine life if spilled. The Tijuana River Estuary and Imperial Beach Kelp Forest would be the most vulnerable EFH to spilled oil or hydraulic fluids. Assuming mitigation measures are maintained (see Section 5 [Mitigation Measures]), the likelihood of substantial disturbance of EFH from oil spill or grounding is negligible.

Anchor deployment carries some risk of collision with marine mammals, sea turtles, and benthic invertebrates and is discussed in the Draft NMFS Biological Assessment and Essential Fish Habitat Assessment (Appendix E). However, assuming mitigation measures are applied (see Section 5 [Mitigation Measures]), the likelihood of an anchor striking a protected animal would be so small that the risk of a substantial disturbance would be negligible.

Alternative 1 would not result in significant impacts to marine biological resources per the criteria in Section 4.5.1 (Standards of Significance).

Permanent Effects

Under Alternative 1, implementation of the Core Projects would have long-term beneficial effects by reducing untreated wastewater contamination in transboundary flows in the Tijuana River and in flows that would have otherwise been discharged untreated to the Pacific Ocean via SAB Creek. This would be accompanied by an increase in the discharge of primary and secondary treated effluent to the ocean via the SBOO. The net reduction in pollutant loadings to marine waters is expected to improve water quality conditions in the evaluated area and result in a net beneficial impact on marine wildlife. Alternative 1 would not result in significant impacts to marine biological resources per the criteria in Section 4.5.1 (Standards of Significance).

Certain Core Projects (Projects A [Expanded ITP] and D [APTP Phase 1]) include volume scenarios for the treatment of transboundary flows that would cumulatively result in an increase of up to approximately 55.7 MGD of effluent being discharged from the SBOO, in addition to baseline discharges of up to 28.8 MGD from the ITP and SBWRP combined, for a total discharge of up to 84.7

MGD.[52] To assess the potential for negative effects, the magnitude of change in SBOO discharge extent has been estimated using a mixing model. Modeling was performed with the UM3 model from the Visual Plumes software suite (Plumes18 edition[53]). Results of the plume modelling discussed in Section 4.2 (Marine Waters) predict that an increase in volume of effluent from 35 MGD to 110 MGD[54] would result in an approximate doubling in the overall modeled plume extent, with less of an increase in the plume extent in areas closer to the SBOO where concentrations are higher. It is important to consider that these results reflect a highly idealized comparison between two discharge volume scenarios and are not expected to represent actual plume positions in relation to the SBOO terminus. Rather, the results demonstrate the approximate change in magnitude of the discharge in relation to dispersal potential.

In evaluating the Proposed Action, EPA and USIBWC considered whether the Proposed Action would result in either of the following potential consequences of polluted nearshore waters to ESA-listed species that could occur due to discharge of wastewater (treated and untreated) to the Pacific Ocean:

1. The direct ingestion, or indirect ingestion via prey, of chemicals toxic to the animals that occur in the polluted discharges.
2. An increase in the likelihood of HABs, which in turn produce toxins that directly harm animals or their prey, due to increased nutrient enrichment and other less direct ecological consequences of reduced water quality.

For additional information and analysis on constituents and pollutants of wastewater discharges and their effects on marine wildlife in the evaluated area, see Appendix E (NMFS Biological Assessment and Essential Fish Habitat Assessment [Draft]). The NPDES program seeks to ensure that these pollutants will not degrade marine communities. However, the continued discharge of untreated wastewater from SAB Creek and through other transboundary flows into the marine environment (if not addressed through the Proposed Action) would result in a higher loading of metals, nutrients, BOD_5, TSS, and other potential pollutants in the marine environment of the evaluated area, and therefore the implementation of Alternative 1 would result in a net decrease in the release of metals and other pollutants to the marine environment.

It is unclear whether the relative increase in the SBOO discharge would increase the frequency or magnitude of HABs in the evaluated area. However, it seems highly likely that contributions of coastally trapped raw effluent discharged from SAB Creek do contribute to an increased likelihood

[52] The average daily SBOO effluent flow rate would immediately increase from approximately 28.8 MGD under current conditions to approximately 65.1 MGD under initial operating conditions of the expanded ITP and new 35-MGD APTP. The average daily SBOO effluent rate would then gradually increase (over the course of the 20-year period from 2030 to 2050) to approximately 84.7 MGD by 2050 as the full capacity of the 60-MGD expanded ITP comes into service in response to population growth in Tijuana.

[53] Visual Plumes is a free outfall modeling software suite developed by EPA and currently distributed in partnership between the SWRCB and Walter Frick, the lead software developer/maintainer. Plumes18 edition retrieved on January 5, 2021, from: https://www.waterboards.ca.gov/water_issues/programs/ocean/

[54] As discussed in Section 4.2 (Marine Waters), the modeled scenarios represent a conservative model construction that likely overestimates the expected changes in the SBOO effluent plume under the Core Projects.

of HAB events. The Proposed Action seeks to reduce or eliminate this polluting feature. If the enrichment of coastal waters due to transboundary flows does result in increased frequency of HABs, there would likely be a net reduction in this negative consequence of pollution from Mexico. This would benefit ESA-listed species in the evaluated area.

The extensive environmental monitoring program conducted by the City of San Diego on the ongoing SBOO discharge has, to date, not identified any effects on EFH, including the Imperial Beach Kelp Forest. The expansion of discharge volume through the SBOO under Alternative 1 would result in an increase in the likelihood that the SBOO discharge plume could impact EFH such as the Imperial Beach Kelp Forest. However, the increase in the treated effluent plume extent would be a direct result of the effort to decrease nearshore pollution from transboundary flows. The potential for ongoing transboundary flows originating from SAB Creek and the Tijuana River Estuary to impact the Imperial Beach Kelp Forest is currently uncertain. However, the sizeable, persistent flows originating at SAB Creek of untreated wastewater that includes raw sewage have been shown to envelop the Imperial Beach Kelp Forest on a regular basis, and discharges from the Tijuana River Estuary are a major source of nearshore pollution, particularly during wet-season outflows from the estuary. It is highly likely that these polluting waters impact the quality of kelp canopy HAPC at the Imperial Beach Kelp Forest. The Proposed Action is intended to reduce these polluting events and therefore would be likely to result in a net beneficial impact on EFH in the evaluated area.

Through consultation with NMFS, EPA has prepared a draft biological assessment and EFH assessment to determine whether this project would be likely to result in adverse effects on EFH and species protected under the ESA. EPA is seeking NMFS concurrence with a *may affect, not likely to adversely affect* determination in accordance with Section 7 ESA Consultation as discussed in Sections 6.1.6 (Marine Biological Resources), 7.2.1 (Endangered Species Act Section 7 Consultation), and 7.2.2 (Magnuson-Stevens Fishery Conservation and Management Act Consultation (Essential Fish Habitat)]). See Appendix E (NMFS Biological Assessment and Essential Fish Habitat Assessment [Draft]).

4.5.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Under Alternative 2, implementation of the Core Projects would result in the same minor, short-term impacts to marine biological resources as would occur under Alternative 1. Of the Supplemental Projects, only Project E (APTP Phase 2) would require modifications to the diffusers for additional discharges via the SBOO. The impacts associated with this additional modification would be similar to those described above for Alternative 1. Additionally, it is possible that the scope of Project G (New SABTP) could be modified to include installation of a subaquatic discharge pipe. In that scenario, the subsequent tiered NEPA analysis for Project G would assess the potential for transboundary effects on marine biological resources. These actions would not be expected to result in significant impacts to marine biological resources per the criteria in Section 4.5.1 (Standards of Significance).

Permanent Effects

Under Alternative 2, implementation of the Core Projects would result in the same long-term beneficial impacts to marine biological resources as would occur under Alternative 1.

Implementation of Supplemental Project G would further decrease discharges of untreated effluent to the Pacific Ocean via SAB Creek, while Supplemental Projects E, F (U.S.-side River Diversion to APTP), and H (Tijuana WWTP Treated Effluent Reuse) would result in increased discharges of primary-treated effluent to the Pacific Ocean via the SBOO. These increased discharges via the SBOO are pollutants that, in the absence of the proposed APTP, would have potentially reached the Tijuana River Estuary and Pacific Ocean via transboundary river flows.

Subsequent tiered NEPA analyses would further assess the relationships of these changes in pollutant loadings to determine whether they would constitute a net reduction in loadings to the marine environment and therefore a benefit to marine biological resources.

4.5.5 Comparative Analysis of the Alternatives

Table 4-18 provides a summary comparison of the impacts described above for the three evaluated alternatives.

None of the evaluated alternatives would result in significant impacts to marine biological resources per the criteria in Section 4.5.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-18. Comparative Analysis of Effects – Marine Biological Resources

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Potential minor, short-term effects from noise and activity during vessel use and diver activity ▪ Potential negligible impacts to marine species due to collision risk from vessel traffic and anchor deployment ▪ Potential negligible impacts to marine species or habitat due to risk of spill or grounding from vessel accident	Same as Alternative 1
Permanent effects	▪ Over time, expected contribution to more frequent and intense HAB events and general degradation of marine habitat	▪ Long-term beneficial effects from net improvement to coastal water quality and marine habitat due to pollutant loading reductions, despite increased loadings via SBOO ▪ Net beneficial impact on EFH ▪ EPA and USIBWC anticipate seeking NMFS concurrence with a *may affect, not likely to adversely affect* determination for ESA Section 7	Same as Alternative 1, plus the following: ▪ Additional long-term beneficial effect from decrease in nearshore pollution, along with additional increase in pollutant loadings via SBOO; subsequent tiered NEPA analyses would be required to assess the resulting potential effects on marine biological resources

4.6 Geological Resources

4.6.1 Standards of Significance

Impacts to geological resources would be significant if they were to include any of the following:

- Exacerbation of, and/or exposure to, adverse conditions due to liquefaction, liquefiable soils, unstable soils, or landslide potential.
- Modification of local topography such that it concentrates uncontrolled runoff or causes major erosion.
- Adverse conditions affecting the stability of bedrock or the underlying geology.
- Extensive modification or destruction of unique geological or topographical features.
- High-occupancy development over a major fault such that risk to humans or structures would incur.

4.6.2 No-Action Alternative

The No-Action Alternative would have no impacts to geology, soils, or topography and would have no change in risk of seismic hazards.

4.6.3 Alternative 1: Core Projects

Temporary Effects

Under Alternative 1, construction activities for the Core Projects would disturb soils as a result of site preparation, grading and/or filling, trenching, and other construction activities primarily within the ITP parcel, creating the potential for minor, short-term impacts from soil runoff and erosion. As summarized in Table 4-19, Alternative 1 would result in a total of up to approximately 33 acres of temporary surface disturbance (portions of which would potentially be disturbed multiple times by different, non-concurrent projects), 321,000 SF of open-cut trenching, and 6,200 linear feet of micro-tunneling for all Core Projects combined. Projects with micro-tunneling (Projects B [Tijuana Canyon Flows to ITP] and D [APTP Phase 1]) would potentially result in impacts to the underlying geology, including transboundary impacts for work under the border, and would result in soil disturbance for temporary pits at each end of the micro-tunnel ground entrances. No other Core Projects would result in impacts to the underlying geology or transboundary impacts. Alternative 1 would not result in significant impacts to geological resources per the criteria in Section 4.6.1 (Standards of Significance).

For all Core Projects, use of temporary equipment staging areas would create areas of compacted soil. Most of this would occur under Project A (Expanded ITP), which would result in moderate compaction due to staging activities in the undeveloped 25-acre southwest quadrant of the ITP parcel.

In Smuggler's Gulch, personnel and infrastructure for Project B (Tijuana Canyon Flows to ITP) would be exposed to potential landslide risks during construction activities; however, personnel would only be onsite during construction and during limited O&M activities and therefore would have extremely low potential to risk loss of life or injury should a landslide event occur. No other Core Projects would involve exposure to landslide risks during either construction or operation.

Table 4-19. Temporary Ground Disturbance in the U.S.

Project	Open-Cut Trenching	Micro-tunneling or Directional Drilling	Surface Disturbance
Project A	None	None	Up to 18.6 acres
Project B [a]	Up to 276,000 SF [b] (Option B1)	Up to 6,000 linear feet (Option B2)	Up to 6.4 acres (Option B1)
Project C	N/A	N/A	N/A
Project D	Up to 45,000 SF [b]	Up to 200 linear feet	Up to 8.3 acres
Total	**Up to 321,000 SF [b]**	**Up to 6,200 linear feet**	**Up to 33.2 acres**

a – Option with the largest impact is specified.
b – Assumes a 25-foot-wide area for trenching activities.

Permanent Effects

Under Alternative 1, implementation of the Core Projects would result in a total of up to approximately 12.3 acres of permanent development for all Core Projects combined. The Core Projects are located near to known but likely inactive faults along the border but would not be exposed to the substantial earthquake hazards of major fault zones due to their distance from these zones. Core Projects would not be anticipated to impact underlying geology; however, geotechnical studies would be needed during project design to confirm that no bedrock modifications would be necessary to support new structures. The Core Projects would not result in any transboundary effects on geological resources. Alternative 1 would not result in significant impacts to geological resources per the criteria in Section 4.6.1 (Standards of Significance).

Project A (Expanded ITP) would require the import of up to 40,000 cubic yards of fill material to provide a level foundation for new treatment infrastructure, potentially raising ground surface elevations by up to approximately 10 feet in some areas within the ITP parcel and resulting in a minor modification of local topography. To the extent feasible, the project would reuse excess spoils generated during construction within the ITP parcel, such as from excavation to build subsurface portions of the secondary clarifiers and reactors. Additional fill material, if needed, would be sourced from elsewhere within the Tijuana River Valley, such as the transboundary sediment deposits in Goat Canyon or Smuggler's Gulch. No other Core Projects would modify topography.

Project A would result in permanent development (conversion to impervious surface area) of up to approximately 11.3 acres of the undeveloped 25-acre southwest quadrant of the ITP parcel for construction of new facilities and pavement. The larger expansion of the ITP (Option A3) would require more development (i.e., closer to the approximate 11.3-acre estimate) than the smaller expansion (Options A1 and A2) to accommodate additional treatment infrastructure. Additionally, Project D (APTP Phase 1) would result in the permanent development (conversion to impervious surface area) of approximately 2 acres of ground surface. No other Core Projects would involve permanent development resulting in conversion of soil and ground surface to impervious surfaces.

Project A development at the ITP parcel and Project B (Tijuana Canyon Flows to ITP) pipe installation along Monument Road would occur in areas mapped as having high liquefaction potential, while Project B construction in Smuggler's Gulch would occur in an area mapped as having low liquefaction potential; project components in areas subject to liquefaction would be designed to be seismically resistant in accordance with applicable seismic design standards, and all project components would be designed to reflect the findings and recommendations of future project-specific geotechnical studies. No other Core Projects would involve constructing new infrastructure in areas mapped as having high liquefaction potential.

4.6.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Under Alternative 2, implementation of the Core Projects would result in the same minor, short-term impacts to geological resources as would occur under Alternative 1. However, the total acreage of temporary surface disturbance, open-cut trenching, and micro-tunneling for Supplemental Projects is indeterminable at this time and would be characterized in subsequent tiered NEPA analyses. The general construction activities (e.g., site preparation, grading and/or filling, trenching, temporary pits for micro-tunneling, and temporary staging areas) and their related impacts described above for Core Projects would be applicable to similar construction activities for the Supplemental Projects. Projects with micro-tunneling (Project I [ITP Treated Effluent Reuse]) would potentially result in impacts to the underlying geology and would result in soil disturbance for temporary pits at each end of the micro-tunnel ground entrances. No other Supplemental Projects would result in impacts to the underlying geology, and none would result in transboundary impacts. Alternative 2 would not result in significant impacts to geological resources per the criteria in Section 4.6.1 (Standards of Significance).

Project F (U.S.-side River Diversion to APTP) would require soil excavation and temporary damming and flow diversion of the Tijuana River and open-cut trenching for installation of pipeline from the diversion to the APTP. However, Project F would have no impacts to topography or the underlying geology because localized topographical conditions would be restored to pre-construction conditions and excavations would not reach bedrock under the deep alluvial sediment of the main channel. Project I would include open-cut trenching in the ITP parcel for installation of a new treated effluent pipeline, which would temporarily disturb soils. The extent and degree of impact would be dependent on future design and placement of the pipeline (to be evaluated in tiered NEPA analyses). Project J (Trash Boom[s]) would temporarily disturb soils for limited grading in the Tijuana River main channel and would also require localized excavation to construct the concrete footings that would secure the ends of the trash boom. Project J would have no impacts to topography or the underlying geology for the same reasons described above for Project F.

Permanent Effects

Under Alternative 2, implementation of the Core Projects would result in the same impacts to geological resources as would occur under Alternative 1. However, the total acreage of permanent development for all Supplemental Projects is indeterminable at this time and would be characterized in subsequent tiered NEPA analyses. Similar to the Core Projects, the Supplemental Projects are located near to known but likely inactive faults along the border but would not be exposed to the substantial earthquake hazards of major fault zones due to their distance from these zones. Except for Project I, which includes micro-tunneling at the border and which has the potential to impact bedrock if present, Supplemental Projects would have no permanent impacts to underlying geology or topography due to lack of permanent surface modifications and lack of drilling or excavation activities that might affect bedrock. Alternative 2 would not result in significant impacts to geological resources per the criteria in Section 4.6.1 (Standards of Significance).

Project E (APTP Phase 2) would potentially include a minor increase from Project D (APTP Phase 1) in the amount of permanent development (conversion to impervious surface area), though Phase 1 is expected to include all concrete pads necessary to support process units under both phases and thus ensure soil and foundation stability for the overall plant. Project F (U.S.-side River Diversion to APTP) would result in permanent development of up to approximately 8 acres of the Tijuana River main channel, depending on final siting location and whether a concrete apron is necessary to ensure capture of flows. Project J (Trash Boom[s]) would result in minor amounts of permanent development that would be further characterized in subsequent tiered NEPA analyses.

It is not known whether operation of the river diversion under Project F would affect downstream soils by modifying sediment deposition patterns during certain transboundary flow conditions. Additionally, during operations for Project J, extracted trash would potentially require a designated processing area near to the boom. This processing area would require a permanent access road and would experience repeated heavy equipment traffic and potential soil compaction. These unknown and potential impacts would require evaluation in subsequent tiered NEPA analyses.

Project E development in the northern portion of the ITP parcel, along with Projects F and J, would occur in areas mapped as having high liquefaction potential; project components in areas subject to liquefaction would be designed to be seismically resistant in accordance with applicable seismic design standards, and all project components would be designed to reflect the findings and recommendations of future project-specific geotechnical studies. No other Supplemental Projects would involve constructing new infrastructure in areas mapped as having high liquefaction potential.

4.6.5 Comparative Analysis of the Alternatives

Table 4-20 provides a summary comparison of the impacts described above for the three evaluated alternatives.

None of the evaluated alternatives would result in significant impacts to geological resources per the criteria in Section 4.6.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-20. Comparative Analysis of Effects – Geological Resources

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Minor, short-term impacts from disturbance of up to 33.2 acres of soil due to site preparation, grading, and/or filling; up to 321,000 SF of open-cut trenching; and up to 6,200 linear feet of micro-tunneling or directional drilling (includes disturbance for staging activities and stormwater management in the southwest quadrant of the ITP parcel) ▪ Exposure to potential landslide risks during construction activities in Smuggler's Gulch	Same as Alternative 1, plus the following: ▪ Additional short-term impacts from disturbance of soils in the Tijuana River main channel (acreage undetermined) for damming and flow diversion of the river, pipeline trenching, and trash boom installation ▪ Additional minor, short-term impacts from soil disturbance within ITP parcel
Permanent effects	▪ None	▪ Minor, localized long-term effects from modification to topography within ITP parcel ▪ Permanent impacts from development (conversion to impervious surface area) of up to approximately 12.3 total acres ▪ Construction (in accordance with applicable seismic design standards) in areas mapped as having high liquefaction potential at the ITP and low liquefaction potential in Smuggler's Gulch	Same as Alternative 1, plus the following: ▪ Potential long-term impacts from permanent development (conversion to impervious surface area) of up to approximately 8 acres of the riverbed, plus other minor, long-term impacts from development for the trash boom(s) and APTP Phase 2

4.7 Cultural Resources

4.7.1 Standards of Significance

Impacts to cultural resources would be significant if they were to include any of the following:

- Substantial disturbance or destruction of a property or site that is eligible for listing in the NRHP and/or the CRHR.
- Interference with tribal religious or sacred uses of the affected property.
- Disturbance of Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony.

4.7.2 No-Action Alternative

The No-Action Alternative would have no impacts to cultural resources.

4.7.3 Alternative 1: Core Projects

Implementation of Core Projects under Alternative 1 would have no impacts on cultural resources as there are no resources located in the vicinity of the project areas listed or eligible for listing in the NRHP or CRHR. The Project APE does not include any properties of known religious or sacred significance to Native American tribes, nor does it include any known or suspected Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony. Therefore, Alternative 1 would not result in significant impacts to cultural resources per the criteria in Section 4.7.1 (Standards of Significance). Project components in Mexico would have no effect on cultural resources in the U.S. because their impacts would be limited to construction in their immediate vicinity and would not extend across the border.

Alternative 1 intersects four prehistoric sites (CA-SDI-4933, CA-SDI-8604, CA-SDI-8605, and CA-SDI-13486) that have previously been evaluated as not significant and recommended as not eligible for listing in the NRHP and CRHR. Thus, the Proposed Action would not have an adverse effect on the sites. The Project APE also intersects four formally unevaluated cultural resources. The cultural resources consist of one heavily disturbed but inadequately defined multicomponent site (CA-SDI-23075) and three historic sites whose built components have all been destroyed except for a few remnants of cobble walls. Based on the current survey results and previous investigations, these sites are preliminarily recommended as not significant and therefore not eligible for listing in the NRHP. Construction for Core Projects would not intersect with the unevaluated site (CA-SDI-23075). Construction activities in Smuggler's Gulch and along Monument Road for Project B (Tijuana Canyon Flows to ITP) would potentially intersect with three unevaluated cultural resources (CA-SDI-11096H, CA-SDI-11948H, and P-37-039462) that would require avoidance. Avoidance of these resources would likely be feasible for the Core Projects. Should the Core Project plans change and avoidance become infeasible, a formal evaluation for eligibility to the NRHP is recommended for these resources prior to their destruction.

Operational activities associated with Alternative 1 would not have any effects on cultural resources.

The Class III Cultural Resource Inventory results can be found in Appendix B (Class III Cultural Resource Inventory [Public Draft]). EPA is seeking OHP concurrence with this determination in accordance with Section 106 of the NHPA as discussed in Sections 6.1.7 (Cultural Resources) and 7.2.3 (National Historic Preservation Act Section 106 Consultation). EPA is also conducting outreach to Native American tribes to ensure that ground-disturbing activities during construction would not affect cultural resources, as discussed in Section 7.2.4 (Government-to-Government Consultation with Native American Tribes).

4.7.4 Alternative 2: Core and Supplemental Projects

Under Alternative 2, implementation of Core Projects would result in the same impacts on cultural resources as would occur under Alternative 1. Implementation of Supplemental Projects under Alternative 2 would intersect only one cultural resource, which is also intersected by the Core Projects as discussed above. The affected area does not include any properties of known religious or sacred significance to Native American tribes, nor does it include any known or suspected Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony. Alternative 2 would not result in any significant impacts to cultural resources per the criteria in Section 4.7.1 (Standards of Significance). Project components in Mexico would have no effect on cultural resources in the U.S. because their impacts would be limited to construction in their immediate vicinity and would not extend across the border.

Construction activities for Projects E (APTP Phase 2) and I (ITP Treated Effluent Reuse) would intersect with one of the prehistoric sites discussed above for the Core Projects. The site (CA-SDI-13486) does not require avoidance. Construction for Supplemental Projects would not intersect with any other cultural resources. Thus, the construction of Supplemental Projects would not have an adverse effect on the sites.

Operational activities associated with Alternative 2 would not have any effects on cultural resources.

The Class III Cultural Resource Inventory results can be found in Appendix B (Class III Cultural Resource Inventory [Public Draft]). EPA is seeking OHP concurrence with this determination in accordance with NHPA Section 106 as discussed in Sections 6.1.7 (Cultural Resources) and 7.2.3 (National Historic Preservation Act Section 106 Consultation). EPA is also conducting outreach to Native American tribes to ensure that ground-disturbing activities during construction would not affect cultural resources, as discussed in Section 7.2.4 (Government-to-Government Consultation with Native American Tribes).

4.7.5 Comparative Analysis of the Alternatives

Table 4-21 provides a summary comparison of the impacts described above for the three evaluated alternatives.

None of the evaluated alternatives would result in significant impacts to cultural resources per the criteria in Section 4.7.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-21. Comparative Analysis of Effects – Cultural Resources

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ No adverse effects on cultural resources ▪ Potential for construction to intersect with four resources determined ineligible for listing in the NRHP ▪ Potential for construction to intersect with three unevaluated cultural resources that would require avoidance	▪ Same as Alternative 1
Permanent effects	▪ None	▪ None	▪ None

4.8 <u>Visual Resources</u>

4.8.1 Standards of Significance

Impacts to visual resources would be significant if they were to result in any of the following:

- Introduction of features that would detract from or contrast with the existing visual character or quality of the localized area (e.g., by resulting in bulk, scale, materials, or style that would be incompatible with surrounding development).
- Substantial obstruction, interruption, or detraction from a valued focal and/or panoramic vista from a public road, trail within an adopted county or state trail system, scenic vista or highway, recreational area, or public vantage point as identified in a community plan.

- Removal or adverse change of one or more designated features that contribute to the visual character or image of the localized area (e.g., designated landmarks, historic resources, a landmark tree, a stand of mature trees, and rock outcroppings).
- Substantial change to the existing landform, natural topography, or other ground surface relief features through landform alteration.
- Emission or reflection of a significant amount of light or glare.

Regulations and requirements to protect visual resources are described in Section 6.1.8 (Visual Resources).

4.8.2 No-Action Alternative

The No-Action Alternative would have no impacts to visual resources. Transboundary flows would continue to carry visible trash from Mexico to downstream areas in the U.S.

4.8.3 Alternative 1: Core Projects

Temporary Effects

Under Alternative 1, Core Projects would result in a minor, short-term impact from diminishment of views to accommodate construction activities that may be partially visible from recreational areas, public roads, scenic overlooks, and limited areas in Tijuana. However, construction activities for Core Projects would be short-term and would not result in significant impacts to visual resources per the criteria in Section 4.8.1 (Standards of Significance).

Specifically, construction activities and staging areas for Projects A (Expanded ITP) and D (APTP Phase 1) would potentially be visible from portions of Dairy Mart Road, Monument Road, Camino de la Plaza, the scenic overlook adjacent to Bibler Drive, and certain public roads and properties in Tijuana adjacent to the U.S.-Mexico border. Construction activities for Project B (Tijuana Canyon Flows to ITP) would potentially be visible from recreational areas (e.g., trails in Smuggler's Gulch) and Monument Road. However, construction would be short-term, would not obstruct views, and would not alter the visual character. Construction activities viewed from areas east and north of Camino de la Plaza would be at least partially obscured by an existing fence that extends the length of the road. Transboundary visual impacts would be at least partially obscured by the border fence.

During construction for all Core Projects, lighting would be minimized when practicable, would be consistent with applicable lighting regulations and ordinances, and would not produce excessive light pollution or glare.

Construction of project components in Mexico would have no transboundary impacts to visual resources in the U.S. because any visual impacts would be limited to the immediate vicinity of the project and would not extend across the border.

Permanent Effects

Under Alternative 1, new infrastructure and minor landform alterations associated with implementation of the Core Projects would potentially be visible from public roads, scenic overlooks, and limited areas in Tijuana. However, implementation of the Core Projects would not result in significant impacts to visual resources per the criteria in Section 4.8.1 (Standards of Significance).

Specifically, new infrastructure built for Projects A (Expanded ITP) and D (APTP Phase 1) would have potential minor visibility from Dairy Mart Road, Monument Road, Camino de la Plaza, the scenic overlook adjacent to Bibler Drive, and certain public roads and properties in Tijuana adjacent to the U.S.-Mexico border. New infrastructure would be built with a similar style, size, and height as the immediately adjacent existing wastewater treatment facilities and would thus be consistent with the existing visual character of the localized area. New infrastructure viewed from areas east and north of Camino de la Plaza would be at least partially obscured by an existing fence that extends the length of the road. Transboundary visual impacts would be at least partially obscured by the border fence.

Minor topographic changes and/or land conversion would occur to accommodate implementation of Projects A and D. However, any topographic or landform alteration would be limited to the ITP parcel, would not affect scenic views of mesas, and would be consistent with the existing visual character. See Section 4.6 (Geological Resources) for additional information about potential impacts to the existing landform and topography.

Operational lighting for Projects A and D would be installed and operated in accordance with applicable regulations and ordinances and would not produce excessive light pollution or glare.

No other components of Core Projects would result in permanent effects on visual resources in the U.S.

4.8.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Under Alternative 2, construction activities would result in minor, short-term effects on visual resources similar to those that would occur under Alternative 1; however, Alternative 2 would require a greater amount of construction for implementation of Supplemental Projects. Implementation of the Core Projects would result in the same impacts to visual resources as described above for Alternative 1. Construction of certain Supplemental Projects would also potentially result in temporary alterations to landform or ground surface relief features. However, construction activities for Alternative 2 would be short-term and would not result in significant impacts to visual resources per the criteria in Section 4.8.1 (Standards of Significance).

Construction activities and staging areas for Projects E (APTP Phase 2), F (U.S.-side River Diversion to APTP), I (ITP Treated Effluent Reuse), and J (Trash Boom[s]) would potentially be visible from portions of Dairy Mart Road, Monument Road, Camino de la Plaza, the scenic overlook adjacent to Bibler Drive, and certain public roads and properties in Tijuana adjacent to the U.S.-Mexico border. However, construction would be short-term, would not obstruct views, and would not alter the visual character. Construction activities viewed from areas east and north of Camino de la Plaza would be at least partially obscured by an existing fence that extends the length of the road. Transboundary visual impacts would be at least partially obscured by the border fence.

As described in Section 4.6 (Geological Resources), Project F would potentially result in temporary minor changes in the visual characteristics of the landform due to short-term damming of the Tijuana River during construction of the river diversion structure. However, construction activities would be short-term and localized, and would not be expected to permanently alter the visual landform or topography. Impacts from Project F would be dependent on the location and design of the river diversion structure, which would be further defined and analyzed in subsequent tiered NEPA analyses.

During construction for Alternative 2, lighting would be minimized when practicable, would be consistent with applicable lighting regulations and ordinances, and would not produce excessive light pollution or glare.

No other components of Alternative 2 would result in temporary effects on visual resources in the U.S.

Permanent Effects

Under Alternative 2, Core Projects would have the same permanent effects as described above for Alternative 1. Alternative 2 would not remove or change designated features that contribute to the visual character and would not produce excessive light or glare. However, certain Supplemental Projects implemented under Alternative 2 would potentially alter the landform and introduce features that would detract from or contrast with the existing visual character of the localized area.

New infrastructure built for Projects E (APTP Phase 2) and I (ITP Treated Effluent Reuse) would have potential minor visibility from Dairy Mart Road, Monument Road, Camino de la Plaza, the scenic overlook adjacent to Bibler Drive, and certain public roads and properties in Tijuana adjacent to the U.S.-Mexico border. New infrastructure would be built with a similar style, size, and height as the immediately adjacent existing wastewater treatment facilities and would thus be consistent with the existing visual character of the localized area.

Implementation of Projects F (U.S.-side River Diversion to APTP) and J (Trash Boom[s]) would result in the potential visibility of the river diversion structure, trash boom(s), and maintenance equipment from Dairy Mart Road, Monument Road, Camino de la Plaza, and certain public roads and properties in Tijuana adjacent to the U.S.-Mexico border.[55] The trash boom(s) and maintenance activities for Project J would also have potential visibility from the scenic overlook adjacent to Bibler Drive. As discussed in Section 4.6 (Geological Resources), Projects F and J would also require permanent land conversion, which would alter the local appearance. The diversion of a portion of wet-weather flows under Project F would have the potential to influence the visual characteristics of downstream areas with groundwater-dependent riparian vegetation and habitat. In addition, O&M for Project J would result in the accumulation of trash upstream of the trash boom(s) and in trash processing area(s) that may be visible. These features would potentially detract from the existing visual character or quality of the localized area. However, by decreasing the amount of trash in downstream portions of the Tijuana River, Project J would also potentially improve the visual character of the Tijuana River Valley and Estuary. Potential impacts to visual resources would be dependent on the location and design of the river diversion, trash boom(s), and trash

[55] See Section 4.15 (Public Services and Utilities) regarding potential impacts of these projects to CBP surveillance activities.

processing area(s), and on the capture efficiency of the trash boom(s), which would be further defined and analyzed in subsequent tiered NEPA analyses with input from the local community.

For all projects, new infrastructure and maintenance activities viewed from areas east and north of Camino de la Plaza would be at least partially obscured by an existing fence that extends the length of the road. Transboundary visual impacts would be at least partially obscured by the border fence.

Operational lighting for Supplemental Projects would be installed and operated in accordance with applicable regulations and ordinances and would not produce excessive light pollution or glare.

No other components of Alternative 2 would result in permanent effects on visual resources in the U.S.

See Section 4.20 (Environmental Justice) regarding disproportionately high and adverse effects due to impacts to visual resources under Alternative 2.

4.8.5 Comparative Analysis of the Alternatives

Table 4-22 provides a summary comparison of the impacts described above for the three evaluated alternatives.

Certain components of the evaluated alternatives would, in the absence of mitigation, potentially result in significant impacts to visual resources per the criteria in Section 4.8.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-22. Comparative Analysis of Effects – Visual Resources

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Minor, short-term impacts to visual resources from construction activities, involving: − No detraction from the visual character or quality of the localized area − No visibility from Interstate 5 − No substantial landform alteration ▪ Potential minor, short-term impacts from diminishment of views from recreational areas, public roads, scenic overlooks, and Tijuana ▪ Minor, short-term impacts from construction lighting that would not produce excessive light pollution or glare (consistent with applicable regulations and ordinances)	Same as Alternative 1, plus the following: ▪ Slight increase in the duration and visibility of construction activities ▪ Potential minor, short-term impacts from changes in visual characteristics of the landform during construction of the U.S.-side river diversion

Table 4-22. Comparative Analysis of Effects – Visual Resources

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Permanent effects	▪ None ▪ No reduction in impacts of trash in transboundary flows on downstream visual resources	▪ Minor, long-term impacts to visual resources from new infrastructure and minor landform alterations, involving: − No detraction from the visual character or quality of the localized area − No visibility from Interstate 5 ▪ Minor, long-term impacts from the introduction of infrastructure and minor landform alterations on the ITP parcel potentially visible from public roads, scenic overlooks, and Tijuana (consistent with visual character) ▪ Minor, long-term impacts from operational lighting that would not produce excessive light pollution or glare (consistent with applicable regulations and ordinances)	▪ Potential significant, long-term impact from detraction of the visual character or quality of the localized area due to introduction of physical structures, land conversion, and O&M associated with the U.S.-side river diversion and trash boom(s) **(see Section 5 for potential mitigation measures)** ▪ No visibility from Interstate 5 ▪ Minor, long-term impacts from the introduction of infrastructure and minor landform alterations on the ITP parcel potentially visible from public roads, scenic overlooks, and Tijuana (consistent with visual character) ▪ Minor, long-term impacts from potential downstream changes to visual character or quality of the Tijuana River Valley and Estuary due to reduced wet-weather flows and trash deposition ▪ Minor, long-term impacts from operational lighting that would not produce excessive light pollution or glare (consistent with applicable regulations and ordinances)

4.9 Land Use

4.9.1 Standards of Significance

Impacts to land use would be significant if they were to result in any of the following:

- Change or modification to land use in a way that is inconsistent with previously designated land uses.
- Required changes to existing land use plans in order for the project to be implemented.
- Widespread changes in land ownership.
- Use of eminent domain.

4.9.2 No-Action Alternative

The No-Action Alternative would have no impacts to land use.

4.9.3 Alternative 1: Core Projects

Temporary Effects

Certain projects in Alternative 1 would result in minor, short-term effects on land use to accommodate construction activities. Specifically, Projects A (Expanded ITP) and D (APTP Phase 1) would result in temporary use (e.g., material/equipment staging and stormwater management) of the undeveloped 25-acre southwest quadrant of the ITP parcel. Use of this area would require coordination with CBP to avoid conflicts with future CBP construction staging needs. No other Core Projects would result in temporary effects on land use. While construction activities under any of the Core Projects could temporarily impact site access in certain areas, this would not affect how sites are actively used other than as described above for construction within the ITP parcel.

Alternative 1 would result in no short-term changes to agricultural, military, or mineral land uses because these land uses are not present in the construction area. Short-term transboundary effects from actions in Mexico (e.g., due to construction noise) under Alternative 1 would not affect access to, or use of, land in the U.S.

See Section 4.15 (Public Services and Utilities) for discussion of impacts to CBP ability to perform patrols and execute their mission.

Permanent Effects

Certain projects in Alternative 1 would result in minor, long-term effects on land use. Specifically, Project A (Expanded ITP) would result in conversion of up to approximately 10 acres of the undeveloped 25-acre southwest quadrant of the ITP parcel to land permanently used for wastewater infrastructure, which would be consistent with the surrounding land use. This land use conversion would preclude continued or future use of this area by CBP for border operations such as construction staging. The larger expansion of the 60-MGD ITP (Option A3) would likely require more land (i.e., closer to the approximate 11.3-acre estimate) in the southwest quadrant of the ITP parcel than the smaller expansion (Option A1) to accommodate additional treatment infrastructure. Project A would include no long-term changes to any other recreational, agricultural, military, mineral, or other land uses. Additionally, Project D (APTP Phase 1) would include the development of a small portion of the ITP parcel (approximately 2–4 acres) to land permanently used for wastewater infrastructure, which would be consistent with surrounding land use.

No other components of Alternative 1 would result in long-term effects on land use.

Alternative 1 would result in no changes in land ownership, no use of eminent domain, and no long-term changes to agricultural, military, or mineral land uses because these land uses are not present in the project area. Long-term transboundary effects from actions in Mexico (e.g., reductions in contaminated transboundary flows) under Alternative 1 would not affect access to, or use of, land in the U.S. but would potentially benefit recreational use of parks and beaches in a manner consistent with existing land use designations.

No land use plan changes would need to occur to allow Alternative 1 to move forward (see land use plans listed in Section 3.9 [Land Use]).

4.9.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Under Alternative 2, Core Projects would have the same minor, short-term effects on land use as described above for Alternative 1. The Supplemental Projects would not result in any additional temporary effects on land use. While construction activities for Supplemental Projects could temporarily impact site access in certain areas, this would not affect how sites are actively used other than as described above for construction within the ITP parcel.

Alternative 2 would result in no short-term changes to agricultural, military, or mineral land uses because these land uses are not present in the project area. Short-term transboundary effects from actions in Mexico (e.g., due to construction noise) under Alternative 2 would not affect access to, or use of, land in the U.S.

Permanent Effects

Under Alternative 2, Core Projects would have the same minor, long-term effects as described above for Alternative 1. Certain Supplemental Projects in Alternative 2 would result in permanent effects on existing land uses. Specifically, Project E (APTP Phase 2) would expand the treatment footprint further for the APTP within the ITP parcel; similar to Project D (APTP Phase 1), this would be consistent with the surrounding land use. Project F (U.S.-side River Diversion to APTP) would involve permanent installation of wastewater infrastructure (i.e., the Tijuana River diversion system) on land primarily used for flood control but would otherwise result in no land use changes. Project J (Trash Boom[s]) would involve the addition of trash collection, processing, and disposal operational activities in the Tijuana River main channel on land primarily used for flood control but would otherwise result in no land use changes.

No other components of Alternative 2 would result in long-term effects on land use.

Alternative 2 would result in no changes in land ownership; no use of eminent domain; and no long-term changes to agricultural, military, or mineral land uses because these land uses are not present in the construction area. Long-term transboundary effects from actions in Mexico (e.g., reductions in contaminated transboundary flows) under Alternative 2 would not affect access to, or use of, land in the U.S. but would potentially benefit recreational use of parks and beaches in a manner consistent with existing land use designations.

No land use plan changes would need to occur to allow Alternative 2 to move forward (see land use plans listed in Section 3.9 [Land Use]).

4.9.5 Comparative Analysis of the Alternatives

Table 4-23 provides a summary comparison of the impacts described above for the three evaluated alternatives.

None of the evaluated alternatives would result in significant impacts to land use per the criteria in Section 4.9.1 (Standards of Significance).

Table 4-23. Comparative Analysis of Effects – Land Use

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Minor, short-term impacts from the use of the undeveloped 25-acre southwest quadrant of the ITP parcel	Same as Alternative 1
Permanent effects	▪ None	▪ Minor, long-term impacts to land use (conversion of undeveloped land) in a manner consistent with applicable land use plans ▪ No land ownership changes or use of eminent domain ▪ Minor, long-term impact from conversion/development of up to approx. 14 acres of land to wastewater infrastructure use	Same as Alternative 1, plus the following: ▪ Minor, long-term impact from installation of wastewater infrastructure (i.e., the Tijuana River diversion system) on land primarily used for flood control ▪ Minor, long-term impact from the addition of trash-related infrastructure and operations on land primarily used for flood control

4.10 Coastal Zone

4.10.1 Standards of Significance

Impacts to the coastal zone would be significant if they were found to be inconsistent with the enforceable policies of the CCMP.

4.10.2 No-Action Alternative

The No-Action Alternative would include the continuation of existing impacts to freshwater, estuarine, and coastal resources that are currently resulting from contaminated transboundary flows from Tijuana (see Section 1.3 [Causes and Impacts of Contaminated Transboundary Flows from Tijuana] and Section 3.1 [Freshwater and Estuarine Resources]). These impacts would persist unabated and would worsen over time as wastewater infrastructure in Tijuana continues to deteriorate and the population continues to grow without access to adequate wastewater treatment infrastructure.

4.10.3 Alternative 1: Core Projects

Under Alternative 1, long-term impacts resulting from construction and operation of the Core Projects—including transboundary water quality improvements from Mexico—are expected to be consistent with the enforceable policies of the CCMP. This anticipated determination is based on the fact that the Core Projects would result in beneficial impacts to downstream and coastal water quality which would promote protection of water-oriented recreational activities and oceanfront land. The Core Projects also exhibit a lack of adverse impacts to cultural resources, agricultural lands, scenic areas, and air quality; a lack of significant impacts (following mitigation) to environmentally sensitive areas, including wildlife habitat; and a lack of growth-inducing effects. The Core Projects therefore would not result in significant coastal zone impacts per the criteria in Section 4.10.1 (Standards of Significance).

As discussed in Section 6.1.9 (Coastal Zone), consistency with the CCMP will be further evaluated through the preparation and submittal of a CZMA consistency determination and, if necessary, a CDP application.

4.10.4 Alternative 2: Core and Supplemental Projects

Under Alternative 2, long-term impacts resulting from construction and operation of the Core Projects would be the same as those under Alternative 1. However, construction and operation of the Supplemental Projects—including additional transboundary water quality improvements from Mexico—would result in additional impacts and benefits to resources of the coastal zone. These additional impacts and benefits require further evaluation through the preparation and submittal of a CZMA consistency determination (to be prepared and submitted during the subsequent tiered NEPA analyses) and, if necessary, CDP applications. For example, the consistency evaluation for Project F (U.S.-side River Diversion to APTP) would need to evaluate the potential for the partial reduction in wet-weather river flows to affect downstream habitat and local coastal currents, while accounting for projected sea level rise; and would need to consider the potential reuse of sediments extracted from these diverted river flows (e.g., for beach replenishment).

4.10.5 Comparative Analysis of the Alternatives

Table 4-24 provides a summary comparison of the impacts described above for the three evaluated alternatives.

None of the evaluated alternatives would be expected to result in significant impacts to the coastal zone per the criteria in Section 4.10.1 (Standards of Significance), pending further evaluation in consistency determinations pursuant to the CZMA.

Table 4-24. Comparative Analysis of Effects – Coastal Zone

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Anticipated effects to be consistent with enforceable policies of the CCMP (to be evaluated in a consistency determination)	▪ Anticipated effects to be consistent with enforceable policies of the CCMP (to be evaluated in a consistency determination)
Permanent effects	▪ None ▪ No reduction in current impacts of contaminated transboundary flows on coastal resources	▪ Anticipated effects to be consistent with enforceable policies of the CCMP (to be evaluated in consistency determination) ▪ Long-term beneficial effects from the reduction in impacts of contaminated transboundary flows on coastal resources	Same as Alternative 1, plus the following (to be evaluated in a consistency determination): ▪ Additional long-term beneficial effects from the reduction in impacts of contaminated transboundary flows on coastal resources ▪ Potential long-term effect on downstream and coastal resources due to partial reduction in wet-weather river flows

4.11 Air Quality and Odor

4.11.1 Standards of Significance

Impacts to air quality or odor would be significant if they were to result in any of the following:

- Total direct and indirect emissions of nonattainment criteria pollutants at levels that meet or exceed the applicable Clean Air Act General Conformity Rule (GCR) *de minimis* thresholds (40 CFR § 93.153), thus requiring a conformity determination.
- Emissions that exceed the Air Quality Impact Assessment (AQIA) trigger levels as presented in the City of San Diego's CEQA Significance Determination Thresholds for air quality and odor (City of San Diego, 2016b).
- Exposure of sensitive receptors to substantial pollutant concentrations, including air toxics such as diesel particulates.
- Creation of objectionable odors affecting a substantial number of people.

4.11.2 No-Action Alternative

The No-Action Alternative would have no impacts to air quality or odor. The existing ITP and its odor control scrubbers would continue to operate, occasionally producing emissions from operation of the emergency generators. The No-Action Alternative would not achieve any reduction in odor from contaminated transboundary flows in the Tijuana River, estuary, and coastal areas.

4.11.3 Alternative 1: Core Projects

EPA used CalEEMod (California Air Pollution Control Officers Association, 2022) and a variety of emission factors to estimate direct and indirect emissions from Core Project construction activities and operations in the U.S. Criteria pollutant emissions in the U.S. under Alternative 1 are summarized in Table 4-25, with comparisons to applicable screening thresholds. Documentation of these model outputs and emissions estimates is provided in Appendix I (Emissions Calculations).

Table 4-25. Summary of Estimated Criteria Pollutant Emissions in the U.S. (Construction and Operation) – Alternative 1

Pollutant	Emissions (tons/yr) [a]				Screening Thresholds		Threshold(s) Exceeded?
	2024	2025	2026	2027-Future Years	GCR *De Minimis* Level	AQIA Trigger Level [b]	
VOC [c]	0.2	0.3	10.3	5.5	25	15	No
NOx	1.8	2.5	9.2	11.3	25	40	No
CO	1.4	3.6	16.8	28.2	100	100	No
SO_2	<0.01	0.01	0.02	<0.01	--	40 [d]	No
PM_{10}	0.7	0.6	0.7	0.3	--	15	No
$PM_{2.5}$	0.4	0.2	0.3	0.1	--	--	No

a – Estimated emissions are based on completion of all construction activities for Core Projects in the U.S. by no later than 2026, with plant operations under both Projects A and D beginning in 2026 and continuing in future years. Estimates account for mobile source emissions, including on-road and non-road construction vehicles, truck hauling of fill material and solids waste, and staff commuting. Estimates represent post-control emissions and assume the use of selective catalytic reduction and catalytic oxidation at the anaerobic digestion facility under Project A.
b – Per the City of San Diego's CEQA Significance Determination Thresholds for air quality and odor (City of San Diego, 2016b).
c – Includes reactive organic gases, as calculated by CalEEMod.
d – Screening threshold is based on sulfur oxide emissions.

Temporary Effects

Under Alternative 1, as described below, construction activities for the Core Projects would result in temporary emissions but would not result in significant impacts to air quality or odor per the criteria in Section 4.11.1 (Standards of Significance).

Construction activities for the Core Projects would result in direct emissions of criteria air pollutants (e.g., VOCs, NOx, PM, and CO) due to factors including combustion of fossil fuels by on-road and non-road vehicles and equipment (including, but not limited to, dump trucks, tractors, excavators, backhoes, dozers, and paving equipment), dust and soil disturbance, asphalt paving, and painting. The significant majority of these construction activities would take place at the ITP parcel, where construction for Projects A (Expanded ITP) and D (APTP Phase 1) would be expected to take approximately two years and one year, respectively. Project A would introduce new mobile source emissions to and from the ITP parcel for truck hauling of imported fill material from fill source locations in the Tijuana River Valley. Construction for Project B (Tijuana Canyon Flows to ITP), depending on the selected option, would result in temporary PM and VOC emissions due to open-cut trenching and asphalt pavement repairs along roads leading to the ITP, including Monument Road.

Based on the estimates presented in Appendix I for emissions in the U.S., construction emissions for the Core Projects would be well below the GCR *de minimis* levels and AQIA trigger levels. This reflects a worst-case assumption that construction under Projects A and D would take place concurrently. There are no known sensitive receptors in the vicinity of the ITP parcel or along Monument Road or Dairy Mart Road south of Interstate 5, and construction activities would not be expected to create objectionable odors.

Due to the proximity to the U.S.-Mexico border and residential areas in Tijuana, construction activities at the ITP parcel—particularly under Project A—would potentially result in minor transboundary air quality effects on receptors in Mexico. Construction and sewage collector repair activities under Projects B and C (Tijuana Sewer Repairs) that take place in Mexico near the U.S.-Mexico border would have the potential to result in minor, temporary transboundary impacts to air quality in the U.S. Construction activities in Mexico under Project D would not be expected to result in transboundary impacts to air quality in the U.S. due to the limited scope of construction activities.

See Section 4.20 (Environmental Justice) regarding disproportionately high and adverse effects due to air emissions under Alternative 1. See Section 4.21.5 (Cumulative Effects) regarding significant cumulative air quality impacts that require mitigation, based on a review of the impacts of other past, present, or reasonably foreseeable actions.

Permanent Effects

Under Alternative 1, as described below, operational activities for the Core Projects would result in recurring emissions, some of which would require emissions and odor controls. Incorporation of these required controls would ensure that emissions of criteria pollutants or air toxics would not result in significant impacts to air quality per the criteria in Section 4.11.1 (Standards of Significance). However, the expanded wastewater treatment processes would potentially result in significant odor impacts per the criteria in Section 4.11.1 (Standards of Significance).

Under Project A (Expanded ITP), incorporation of anaerobic digestion, and the associated requirement to combust the generated biogas (e.g., via flare, engine, or turbine), would drastically increase the ITP's potential-to-emit (PTE) for regulated pollutants including NOx, non-methane hydrocarbons/VOCs, and hazardous air pollutants (HAPs) including formaldehyde, as well as the odorous compound H_2S. Based on the PTE calculations provided in Appendix I, all three ITP capacity options under Project A would trigger best available control technology (BACT) requirements pursuant to SDAPCD Rule 20.2. Based on a review of control systems in place at other WWTPs in California that feature anaerobic digestion, BACT emission controls for the expanded ITP would most likely be required to incorporate biogas pretreatment to remove formaldehyde and H_2S; selective catalytic reduction to remove NOx; catalytic oxidation to remove VOCs; and combustion of biogas in a reciprocating engine, which could then be used to generate electricity to help offset indirect emissions from electricity consumption at the expanded ITP. Incorporation of BACT emission controls would render federal New Source Review (NSR) permitting requirements not applicable. A more detailed analysis of the expanded ITP's potential emissions, the associated control and permitting requirements, and additional best design practices to limit emissions (e.g., fugitive air emissions containment system to reduce H_2S leaks) would be performed in coordination with the SDAPCD during the project's design phase. Occasional operation of new emergency generators at the expanded ITP would not generate substantial emissions. See Section 6.1.10 (Air Quality and Odor) for additional discussion of potential permitting requirements. Despite the incorporation of odor controls and engineering measures to minimize fugitive emissions, H_2S emissions from the anaerobic digestion process under Project A—which would operate on a continuous (or near-continuous) basis—would have the potential to create objectionable odors affecting nearby communities.

Projects B (Tijuana Canyon Flows to ITP) and C (Tijuana Sewer Repairs) would not generate operating emissions. The emissions estimates for Project A account for the additional wastewater conveyed by these projects to the expanded ITP.

Under Project D (APTP Phase 1), new stationary source emissions would generally be limited to occasional operation of new emergency generators, which would not generate substantial emissions. Due to the relatively low BOD concentrations in the influent water to the APTP, substantial odors are not expected.

Operations under Projects A and D would increase recurring mobile source emissions to and from the ITP parcel (e.g., along portions of Dairy Mart Road and through the Interstate 5 interchange) due to increases in staff commuting and truck hauling of solid waste. As discussed in Section 4.17 (Transportation), these increases in traffic volume in the U.S. would be negligible compared to existing levels. Operation of the new and expanded treatment plants under Projects A and D would also generate indirect emissions due to factors including energy consumption, landfill use, and water consumption.

Overall, based on the estimates presented in Table 4-25 and Appendix I for emissions in the U.S., the combined direct (post-control) and indirect emissions due to operations under the Core Projects would be well below the GCR *de minimis* levels and AQIA trigger levels. There are no known sensitive receptors in the vicinity of the ITP parcel on the U.S. side or along Monument Road or Dairy Mart Road south of Interstate 5, and the nearest residential community in the U.S. is located approximately 0.4 miles from the ITP. Operations would therefore not be expected to expose sensitive receptors to substantial pollutant concentrations, but as noted above, would potentially create objectionable odors affecting a substantial number of people.

By reducing transboundary river flows that are contaminated with untreated wastewater, the Core Projects would be expected to reduce odors from untreated wastewater and standing water in the Tijuana River, estuary, and coastal areas.

Due to the proximity of the proposed anaerobic digestion facility to the U.S.-Mexico border and residential areas in Tijuana, operations under Project A would potentially result in transboundary air quality effects, including nuisance odors, to receptors in Mexico. Under Project A, truck hauling of solid waste to a disposal site in Mexico (though a dedicated ITP gate in the border fence) would increase mobile source emissions in Mexico, which in turn could potentially contribute to existing transboundary air quality impacts from Mexico to the U.S.

See Section 4.20 (Environmental Justice) regarding disproportionately high and adverse effects due to air emissions and odor under Alternative 1. See Section 4.21.5 (Cumulative Effects) regarding significant cumulative air quality impacts that require mitigation, based on a review of the impacts of other past, present, or reasonably foreseeable actions.

4.11.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Under Alternative 2, as described below, construction activities would result in temporary emissions but would not result in significant impacts to air quality or odor per the criteria in Section 4.11.1 (Standards of Significance), pending further review in subsequent tiered NEPA analyses.

Under Alternative 2, construction activities for the Core Projects would result in the same impacts to air quality and odor as would occur under Alternative 1. Construction activities for Supplemental Projects E (APTP Phase 2), F (U.S.-side River Diversion to APTP), I (ITP Treated Effluent Reuse), and

J (Trash Boom[s]) would result in direct emissions of criteria air pollutants (e.g., VOCs, NOx, PM, and CO) due to factors including combustion of fossil fuels and dust and soil disturbance. The magnitude of these construction-related emissions in the U.S. would likely be similar to or less than the magnitude of emissions from the Core Projects, which are estimated to be well below the GCR *de minimis* levels and AQIA trigger levels. This would be characterized in subsequent tiered NEPA analyses.

There are no known sensitive receptors in the vicinity of the ITP parcel or along Monument Road or Dairy Mart Road south of Interstate 5, and the nearest residential community in the U.S. is located approximately 0.4 miles from the ITP. Construction activities would not be expected to create objectionable odors. However, construction for Projects F and J would potentially take place in closer proximity to residential communities such as the Coral Gate neighborhood. A more thorough identification of nearby sensitive receptors and assessment of air quality impacts to those receptors would be performed in subsequent tiered NEPA analyses.

Due to the proximity to the U.S.-Mexico border and residential areas in Tijuana, construction activities at the ITP parcel would potentially result in minor transboundary air quality effects on receptors in Mexico. Construction for Projects G (New SABTP) and H (Tijuana WWTP Treated Effluent Reuse) would not result in transboundary impacts to air quality in the U.S., as these projects are several miles from the border and impacts would be expected to be localized.

See Section 4.20 (Environmental Justice) regarding disproportionately high and adverse effects due to air emissions under Alternative 2. See Section 4.21.5 (Cumulative Effects) regarding significant cumulative air quality impacts that require mitigation, based on a review of the impacts of other past, present, or reasonably foreseeable actions.

Permanent Effects

Under Alternative 2, as described below, operations would potentially trigger significant impacts to air quality or odor per the criteria in Section 4.11.1 (Standards of Significance), specifically with regards to objectionable odors and potential impacts to sensitive receptors from Project J (Trash Boom[s]). This would require further review in subsequent tiered NEPA analyses.

Under Alternative 2, operations for the Core Projects would result in the same impacts to air quality and odor as would occur under Alternative 1. The Supplemental Projects would not involve any new stationary sources in the U.S. other than possibly an additional emergency generator at the APTP under Project E (APTP Phase 2)—which would not generate substantial emissions—and potential for increased odor emissions from the expanded APTP.

Projects E, F (U.S.-side River Diversion to APTP), and H (Tijuana WWTP Treated Effluent Reuse) would increase recurring mobile source emissions to and from the ITP parcel (e.g., along portions of Dairy Mart Road and through the Interstate 5 interchange) due to increases in staff commuting and truck hauling of solid waste. As discussed in Section 4.17 (Transportation), these increases in traffic volume in the U.S. would be minor compared to existing levels.

Project J would increase recurring mobile source emissions for extraction of trash from the booms, followed by truck hauling of the extracted trash for disposal. As discussed in Section 4.17 (Transportation), the volume, timing, and frequency of the hauling activities (e.g., several small hauling events versus one large hauling event) are indeterminable at this point. Depending on these factors, Project J would potentially cause substantial localized increases in traffic volumes, congestion, and the resulting emissions of air toxics such as diesel particulates, which could affect nearby sensitive receptors if they are present. Project J would also result in the accumulation of trash upstream of the trash boom(s) and in trash processing area(s), which could produce objectionable odors that affect nearby communities. A more thorough assessment of these potentially significant impacts would be performed in subsequent tiered NEPA analyses.

Overall, the combined direct and indirect emissions in the U.S. due to operations under the Supplemental Projects are not expected to exceed GCR *de minimis* levels or AQIA trigger levels; however, this would require more thorough assessment in subsequent tiered NEPA analyses.

By reducing transboundary river and marine flows that are contaminated with untreated wastewater, the Supplemental Projects—including Projects G (New SABTP) and H in Mexico—would be expected to reduce odors from untreated wastewater and standing water in the Tijuana River, estuary, and coastal areas.

The potential truck emissions and odor concerns resulting from trash management activities under Project J could result in transboundary air quality effects on nearby communities in Mexico. A more thorough assessment would be performed in subsequent tiered NEPA analyses. Otherwise, operations for the Supplemental Projects in the U.S. would not be expected to result in transboundary air quality effects on Mexico. Operations for Projects G and H in Mexico would not be expected to result in transboundary air quality effects on the U.S. other than as described above.

See Section 4.20 (Environmental Justice) regarding disproportionately high and adverse effects due to air emissions and odor under Alternative 2. See Section 4.21.5 (Cumulative Effects) regarding significant cumulative air quality impacts that require mitigation, based on a review of the impacts of other past, present, or reasonably foreseeable actions.

4.11.5 Comparative Analysis of the Alternatives

Table 4-26 provides a summary comparison of the impacts described above for the three evaluated alternatives.

Two of the evaluated alternatives would result in significant impacts to air quality and odor per the criteria in Section 4.11.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-26. Comparative Analysis of Effects – Air Quality and Odor

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Minor, short-term impacts from construction emissions (below GCR *de minimis* and AQIA levels) ▪ No objectionable odors or known impacts to sensitive receptors	Same as Alternative 1, plus the following: ▪ Minor, short-term impacts due to increased construction emissions (below GCR *de minimis* and AQIA levels)
Permanent effects	▪ None ▪ No reduction in odor from contaminated transboundary flows	▪ Potential significant, long-term impacts from objectionable odor emissions from ITP anaerobic digestor process, requiring odor controls **(see Section 5 for potential mitigation measures)** ▪ Minor, long-term impacts from new criteria pollutant and toxics emissions from the ITP anaerobic digestor process, requiring BACT ▪ Minor, long-term impacts from new stationary source and odor emissions at the APTP ▪ Minor, long-term increase in mobile source emissions from commuting and hauling of waste from ITP and APTP ▪ Overall emissions below GCR *de minimis* and AQIA levels ▪ No known impacts to sensitive receptors ▪ Long-term beneficial impacts due to reduced odor from contaminated transboundary flows	Same as Alternative 1, plus the following: ▪ Potential significant, long-term effects from objectionable odors and/or impacts to sensitive receptors due to trash boom operations **(see Section 5 for potential mitigation measures)**

4.12 Climate

4.12.1 Standards of Significance

Impacts to climate would be significant if they were to result in any of the following:

- Inconsistency with the City of San Diego Climate Action Plan.
- Adverse impacts by the project to a specific resource, ecosystem, human community, or structure, where those impacts would be exacerbated by the foreseeable adverse effects of climate change.

4.12.2 No-Action Alternative

The No-Action Alternative would have no impacts to regional climate. The existing ITP operations would continue to generate Scope 1 emissions from emergency generators, Scope 2 emissions associated with electricity use, and Scope 3 mobile source emissions from employee commuting and solids waste hauling by truck. The No-Action Alternative would not provide any potential water reuse opportunities to help reduce competition for increasingly scarce water resources.

4.12.3 Alternative 1: Core Projects

Under Alternative 1, implementation of Core Projects would have no impacts to regional climate. All Core Projects would increase Scope 3 emissions from construction vehicles. Additionally, construction in Mexico for Projects B (Tijuana Canyon Flows to ITP), C (Tijuana Sewer Repairs), and D (APTP Phase 1) would result in Scope 3 emissions that would create transboundary effects for GHG emissions. During operation, Project A (Expanded ITP), Options A1 and A2 would decrease Scope 3 emissions from truck hauling activities associated with solids disposal while Project A, Option A3 and Project D would increase Scope 3 emissions. Projects A and D would result in increases in Scope 2 emissions from electricity use and would slightly increase Scope 3 emissions from increased use of commuter vehicles.

For all Core Projects combined, construction emissions in the U.S. would be no greater than approximately 3,000 ton/yr CO_2e with construction activities in Mexico expected to contribute a much lower amount of CO_2e. Operational emissions., including Scope 1, 2, and 3 emissions as estimated using CalEEMod (California Air Pollution Control Officers Association, 2022), would eventually increase by up to approximately 30,000 ton/yr CO_2e. The significant majority (96 percent) of this increase would come from combustion of biogas generated by anaerobic digestion under the 60-MGD design option (Project A, Option A3). That increase would gradually take place through approximately 2050 as the full capacity of the 60-MGD ITP expansion comes into service in response to population growth in Tijuana.

Anaerobic digestion of primary and secondary sludge for Project A would generate substantial amounts of GHG emissions through combustion of produced biogas. Combustion of biogas would result in increased Scope 1 carbon dioxide emissions and potential emissions of fugitive methane. Requirements under the State of California GHG cap and trade program could apply if the design were to incorporate electricity generation and the potential to emit (PTE) associated with onsite electricity generation were to exceed 25,000 metric ton/yr CO_2e.

The Core Projects would be inconsistent with the City of San Diego Climate Action Plan because they would increase GHG emissions directly and through energy use, transportation, and waste generation. Industrial and wastewater sectors were not specifically addressed in the Climate Action Plan.

The Core Projects would have a small to negligible potential to exacerbate drought conditions in downstream portions of the Tijuana River by reducing the frequency and volume of dry-weather transboundary river flows to a level that would be more consistent with historical dry-weather flow patterns (see Section 4.1 [Freshwater and Estuarine Resources]). New infrastructure associated with Alternative 1, while in the coastal zone, would be far from shore and well upstream of tidally influenced areas and therefore would not be expected to be affected by sea level rise.

4.12.4 Alternative 2: Core and Supplemental Projects

Under Alternative 2, implementation of the Core Projects would result in the same impacts to climate as would occur under Alternative 1. Alternative 2 would have no impacts to regional climate. All Supplemental Projects would increase Scope 3 emissions from construction vehicles. Additionally, construction in Mexico for Projects G (New SABTP), H (Tijuana WWTP Treated Effluent Reuse), and I (ITP Treated Effluent Reuse) would result in Scope 3 emissions that would create transboundary effects for GHG emissions. Operation of Projects E (APTP Phase 2) and J (Trash Boom[s]) would increase Scope 3 emissions from truck hauling for solids waste and trash disposal. Projects E and F would result in an increase in Scope 2 emissions associated with electricity use and would increase Scope 3 emissions from increased use of commuter vehicles.

Similar to Alternative 1, Alternative 2 would be inconsistent with the City of San Diego Climate Action Plan because it would increase GHG emissions directly and through energy use, transportation, and waste generation. Industrial and wastewater sectors were not specifically addressed in the Climate Action Plan.

In addition to the impact on dry-weather transboundary river flows described for the Core Projects, the Supplemental Projects would decrease the cumulative volume of transboundary flows in the Tijuana River, particularly during smaller wet-weather events (see Section 4.1 [Freshwater and Estuarine Resources]). Additional study would be needed in subsequent tiered NEPA analyses to assess whether this could exacerbate saltwater intrusion caused by sea level rise.

Alternative 2 would provide potential water reuse opportunities under Projects H and I (ITP Treated Effluent Reuse) to help reduce competition for increasingly scarce water resources. New infrastructure associated with Alternative 2, while in the coastal zone, would be far from shore and well upstream of tidally influenced areas and therefore would not be expected to be affected by sea level rise.

4.12.5 Comparative Analysis of the Alternatives

Table 4-27 provides a summary comparison of the impacts described above for the three evaluated alternatives.

Two of the evaluated alternatives would result in significant impacts to climate per the criteria in Section 4.12.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-27. Comparative Analysis of Effects – Climate

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary and permanent effects	▪ Continuation of GHG emissions generation at current levels ▪ No opportunities for water reuse to reduce competition for water resources	▪ Increases in GHG emissions from construction and operational activities of approximately 3,000 ton/yr CO_2e and 30,000 ton/yr CO_2e, respectively (plus minor CO_2e emissions from construction in Mexico) ▪ Generation of substantial amounts of GHG emissions through combustion of produced biogas for Project A ▪ Inconsistent with the City of San Diego Climate Action Plan **(see Section 5 for potential mitigation measures)** ▪ Small to negligible potential to exacerbate drought conditions in downstream portions of the Tijuana River	Same as Alternative 1, plus the following: ▪ Additional GHG emissions from the Supplemental Projects ▪ Inconsistent with the City of San Diego Climate Action Plan **(see Section 5 for potential mitigation measures)** ▪ Removal of a portion of wet-weather flows for Project F with unknown effects on saltwater intrusion downstream

4.13 Solid and Hazardous Waste

4.13.1 Standards of Significance

Impacts to solid and hazardous waste would be significant if they were to result in any of the following:

- Generation, handling, or storage of hazardous waste in a manner that does not comply with applicable regulations.
- Disposal of wastes to a public or private landfill that would detrimentally affect the ability of the facility to serve existing customers or substantially affect the anticipated lifespan of the facility.
- Exposure to hazards created by disturbance of an existing contaminated site.

4.13.2 No-Action Alternative

The No-Action Alternative would have no impacts to solid and hazardous waste and would not reduce quantities of trash and debris deposited in the Tijuana River Valley due to transboundary flows. The existing ITP would continue to operate and generate approximately 118,100 cubic yards of solids from wastewater processes that require disposal annually.

4.13.3 Alternative 1: Core Projects

Temporary Effects

Under Alternative 1, implementation of the Core Projects would result in minor, short-term impacts from construction wastes (e.g., packaging materials, worker refuse) but would be unlikely to generate any hazardous building materials (e.g., materials contaminated with lead, asbestos, or polychlorinated biphenyls). Alternative 1 would not result in significant impacts to solid and hazardous wastes per the criteria in Section 4.13.1 (Standards of Significance). Alternative 1 would result in no temporary transboundary impacts to solid and hazardous wastes.

Under Project A (Expanded ITP) and, if necessary, Project D (APTP Phase 1), construction activities and ground disturbance would occur in the southwest corner of the ITP parcel, in an area that was previously known as the Hofer property. This property once contained contaminated soil, as discussed in Section 3.13 (Solid and Hazardous Waste). The contaminated soil was cleaned up in 1997 before USIBWC acquired this portion of the ITP parcel. Therefore, Projects A and D would not result in exposure to known soil contaminants at this site during construction.

Permanent Effects

Under Alternative 1, implementation of the Core Projects would not be expected to generate hazardous waste aside from typical cleaning and equipment maintenance wastes (e.g., solvents, oils, and greases), which would be managed and disposed of in accordance with applicable requirements. As summarized in Table 4-28 and discussed below, operation of expanded wastewater treatment processes would eventually (by 2050) increase solids waste production by up to 23,700 cubic yards/yr (80 percent) over existing ITP operations, approximately half of which would require disposal in the U.S. Alternative 1 would not result in significant impacts to solid and hazardous wastes per the criteria in Section 4.13.1 (Standards of Significance). Alternative 1 would result in a recurring transboundary impact on solid and hazardous wastes for disposal of sludge in Mexico under Project A (Expanded ITP; see following discussion).

For Projects A and D (APTP Phase 1), the wastewater treatment processes would produce sludge that would require processing, hauling, and disposal, resulting in recurring effort and cost. Estimated solids production per year for Projects A and D and the change in solids production per year from the existing conditions are presented in Table 4-28. For Project A, expansion of the ITP from 25 MGD to 40 MGD (Option A1) or 50 MGD (Option A2) would decrease solids waste production by approximately 29,200 and 4,800 cubic yards/yr, respectively. For Option A3 (60 MGD), initial operating conditions would result in the same decrease in solids waste production as would occur under Option A2 (decrease of 4,800 cubic yards/yr); however, by approximately 2050, plant operations would gradually increase solids waste production by approximately 13,400 cubic yards/yr as the additional treatment capacity comes into service in response to population growth. These estimates include incorporation of anaerobic digestion of primary and secondary sludge which would result in a 46 percent reduction in TSS. This TSS reduction would lead to a decrease in the amount of solids waste produced under the 40- and 50-MGD design options. Trucks would transfer the solids to Mexico for either beneficial reuse (e.g., land application) or landfill disposal in accordance with binational agreements with Mexico. The Punta Bandera disposal facility (where existing ITP solids waste is disposed of) is nearing capacity and Mexico is evaluating sites for a new landfill to receive solids waste following closure of the Punta Bandera facility, but information on specific candidate landfill sites is not available at this time. This waste would not be incinerated. EPA and USIBWC anticipate that evolving binational discussions would influence the disposal location for solids waste from Project A.

For Project D, construction of the new APTP (Phase 1) would increase solids waste production by approximately 10,300 cubic yards/yr. Solids would be disposed of at a viable regional disposal facility in the U.S., such as Sycamore Landfill or Otay Landfill, which are both operated by Republic Services (see Table 3-12 in Section 3.13 [Solid and Hazardous Waste]). Both these facilities are expected to have capacity to receive annual loads of approximately 10,000 to 16,000 cubic yards of solids for disposal without impacting the long-term operation of the facilities. Disposal of wastes at these landfills would not detrimentally affect the ability of the facilities to serve existing customers or affect the lifespan of the facilities. It is possible that the solids from Project D would be split between the two facilities, depending on discussions with Republic Services when negotiating a disposal agreement. The solids waste would be subject to sampling requirements in accordance with the applicable acceptance guidelines of the facility.

While implementation of the Core Projects would be expected to reduce the frequency of dry-weather transboundary river flows, it would not reduce the frequency of wet-weather transboundary river flows that convey substantial amounts of trash and debris into the Tijuana River Valley. Therefore, Core Projects would not reduce trash and debris during these wet-weather conditions. See Section 4.1 (Freshwater and Estuarine Resources) for further discussion.

Table 4-28. Summary of Estimated Changes in Wastewater Process Solids Production under Alternative 1

Project	Plant	Landfill Location	Solids Production (cubic yards/yr) [f]	
			Total	Change from Current Conditions
Current conditions [a]	ITP	Mexico	118,100	N/A
Project A, Option A1 (Expand to 40 MGD) only [c]	ITP	Mexico	88,900	-29,200
Project A, Option A2 (Expand to 50 MGD) only [b,c,d]	ITP	Mexico	113,300	-4,800
Project A, Option A3 (Expand to 60 MGD) only [b,c,e]	ITP	Mexico	131,500	13,400
Project D (35 MGD) only [c]	APTP (Phase 1)	U.S.	10,300	10,300
Alternative 1 maximum (Projects A [Option A3] + D)	-	-	**141,800**	**23,700**

a – Current conditions were calculated using data from January 2016 through January 2022.
b – Reflects ITP treatment of inflows resulting from Project B (Tijuana Canyon Flows to ITP).
c – Reflects ITP treatment of inflows resulting from Project C (Tijuana Sewer Repairs).
d – Reflects projected operations in 2030, when the 50-MGD ITP would be operating at full capacity based on estimated population growth in Tijuana.
e – Reflects projected operations in 2050, when the 60-MGD ITP would be operating at full capacity based on estimated population growth in Tijuana.
f – Represents sediments and sludge dry solids.

4.13.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Under Alternative 2, implementation of the Core Projects would result in the same minor, short-term impacts to solid and hazardous waste as would occur under Alternative 1. The general solid and hazardous waste impacts discussed above for Core Projects (e.g., that the Core Projects would be expected to produce minor construction wastes but no hazardous building materials) would be applicable to the Supplemental Projects. Alternative 2 would not result in significant impacts to solid and hazardous wastes per the criteria in Section 4.13.1 (Standards of Significance). Alternative 2 would result in no temporary transboundary impacts to solid and hazardous wastes.

Permanent Effects

Under Alternative 2, implementation of the Core Projects would result in the same impacts to solid and hazardous waste as would occur under Alternative 1. Implementation of the Supplemental Projects would not be expected to generate hazardous waste aside from typical cleaning and equipment maintenance wastes (e.g., solvents, oils, and greases), which would be managed and disposed of in accordance with applicable requirements. As discussed below, implementation of the Supplemental Projects would create additional solid waste disposal requirements in both the U.S. and Mexico. Alternative 2 would not result in significant impacts to solid and hazardous wastes per the criteria in Section 4.13.1 (Standards of Significance). Alternative 2 would result in the same recurring transboundary impact on solid and hazardous waste as described for Alternative 1 (expanded ITP solids disposal in Mexico).

Supplemental Projects with wastewater treatment processes that would produce solids include Projects E (APTP Phase 2) and G (New SABTP). For Project E, expanding the APTP (Phase 2) would increase solids waste production by approximately 5,700 cubic yards/yr over Phase 1 solids waste production, for a total of 16,000 cubic yards/yr. For Project E, solids waste would likely be disposed of in the U.S. at the same regional disposal facility identified for Project D (Phase 1): that is, at either Sycamore Landfill or Otay Landfill (see potential facilities in Table 3-12 in Section 3.13 [Solid and Hazardous Waste]). The solids waste disposal for Project E would not detrimentally affect the ability of either facility to serve existing customers or affect the lifespan of the facility. Project G would include production of solids waste at the new SABTP in Mexico. Solids waste from Project G would be disposed of either at Punta Bandera or at a viable regional facility in Mexico (not incinerated); it would not be disposed of in the U.S.

Project J (Trash Boom[s]) would capture floatable trash in the main channel and would reduce trash and debris deposits in the Tijuana River Valley. Based on available information on the performance of similar existing trash booms in Goat Canyon, it is assumed that the trash boom(s) would trap 75 percent of the trash load in the main channel. This trapping efficiency, when applied to the annual trash load discussed in Section 3.13 (Solid and Hazardous Waste) (15,000 cubic yards), results in an estimate that the trash boom(s) would capture 11,300 cubic yards of trash annually. The trash boom(s) in the main river channel would not be able to capture trash or debris that is deposited farther upstream or that flows under or over the trash boom(s) and would not be effective in capturing any trash entering the Tijuana River Valley downstream of the boom location(s), such as at illegal dumping sites near Dairy Mart Road. In subsequent tiered NEPA analyses, further studies would be needed to refine the estimates of trash loads in wet-weather transboundary flows in the main channel; the expected trapping efficiency of the engineered boom(s); and the resulting amount of trash and debris requiring extraction, processing, hauling, and disposal at an appropriate disposal facility in the U.S., such as Sycamore Landfill or Otay Landfill (see Table 3-12 in Section 3.13 [Solid and Hazardous Waste]).

4.13.5 Comparative Analysis of the Alternatives

Table 4-29 provides a summary comparison of the impacts described above for the three evaluated alternatives.

None of the evaluated alternatives would result in significant impacts to solid and hazardous waste per the criteria in Section 4.13.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-29. Comparative Analysis of Effects – Solid and Hazardous Waste

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Minor, short-term impacts from production of construction waste ▪ Unlikely to generate any hazardous building materials	Same as Alternative 1
Permanent effects	▪ None ▪ No reduction in quantities of trash and debris deposited in the Tijuana River Valley	▪ Minor, long-term impacts from typical cleaning and equipment maintenance wastes, managed in accordance with applicable requirements ▪ Long-term effects from increase in solids production of up to 23,700 cubic yards/yr over existing ITP operations, including: − 10,300 cubic yards/yr requiring disposal in the U.S. − Long-term effects from transboundary impact: substantial decrease or minor increase (depending on Project A design option) in solids requiring disposal in Mexico ▪ No reduction in quantities of trash and debris deposited in the Tijuana River Valley	Same as Alternative 1, plus the following: ▪ Long-term impacts from additional increase in solids production of up to 5,700 cubic yards/yr requiring disposal in the U.S. ▪ Long-term impacts from capture of approximately 11,300 cubic yards of trash and debris per year requiring disposal in the U.S., and associated long-term beneficial effects from reduction in trash and debris deposited in the Tijuana River Valley

4.14 Energy

4.14.1 Standards of Significance

Impacts to energy would be significant if they were to result in any of the following:

- Exceedance of existing electrical infrastructure capacity, resulting in the demand for new or altered public electrical service facilities or utilities that would have significant environmental impacts.
- Use of excessive amounts of fuel, energy, or power that would negatively affect the availability of resources for public services and utilities.

4.14.2 No-Action Alternative

The No-Action Alternative would not have any impacts on energy.

4.14.3 Alternative 1: Core Projects

Implementation of Core Projects under Alternative 1 would result in increased energy use associated with construction and O&M activities. Operation of all Core Projects would potentially increase electricity demand by approximately 26.9 GWh/yr in the U.S. but would include the opportunity to offset a portion, or all, of this increase through electrical generation using biogas, as discussed below. Core Projects would not be expected to negatively affect energy availability for public services. Operation of certain Core Projects may require upgrades to electrical utilities, but modifications would be minor and would not be expected to have significant environmental impacts. Therefore, implementation of Core Projects would not result in significant impacts to energy resources per the criteria in Section 4.14.1 (Standards of Significance).

Construction of all Core Projects would result in direct consumption of fossil fuels associated with construction equipment (e.g., gasoline, diesel) as well as other irretrievable uses of energy such as the embodied energy of construction materials. However, construction activities would be short-term and would not be expected to exceed electrical infrastructure capacity or negatively affect the availability of energy resources for public services and utilities.

Project A (Expanded ITP) operations under initial operating conditions would increase electrical demand by approximately 12 to 19 GWh/yr, depending on the design option. However, eventual operating conditions for Option A3 would include treatment of up to 60 MGD (over the course of a 20-year period from 2030 to 2050) as the full expansion capacity comes into service to treat additional sewage from population growth in Tijuana. Expansion to 60 MGD would increase electrical demand by an additional 6 GWh/yr over this time period. Project D (APTP Phase 1) operations would increase electrical demand by approximately 1.9 GWh/yr. Table 4-30 summarizes the estimated changes in electricity demand for Projects A and D. As discussed in Section 4.15 (Public Services and Utilities), potential minor, localized modifications to electricity lines and transformers near the ITP may be required to service new facilities constructed under Projects A and D, but modifications would not result in adverse environmental impacts. EPA and/or USIBWC would coordinate with SDG&E to confirm the necessary scope of these upgrades. The designs for Projects A and D would also include flexibility for incorporating energy conservation equipment.

The proposed conveyance pipelines for Project B (Tijuana Canyon Flows to ITP) would be gravity-fed and require minimal or no electrical demand. Project B, Option B3 (Connect to Existing Canyon Collector System) would potentially result in a slight increase in the electrical demand at Hollister Street pump station needed to pump additional flows to the ITP.

The proposed anaerobic digestion of primary and secondary sludge under Project A would provide an opportunity to offset grid electricity through biogas combustion. Depending on the design option, anaerobic digestion would produce approximately 0.89 to 1.22 million cubic feet per day (Mcf/day) of biogas. This corresponds to 0.58 to 0.79 Mcf/day of methane with an energy equivalent of 760 to 1,040 million British thermal units per day and a capacity of 2.6 to 3.4 megawatts (PG Environmental, 2021c). Biogas from the anaerobic digester would be produced on a continuous basis—i.e., up to 8,760 hours per year without accounting for occasional pauses during maintenance of the digesters or process upsets. At this rate, with a biogas-fueled reciprocating engine also operating continuously to generate electricity, this system would be capable of generating a theoretical maximum of approximately 23 GWh/yr (for the 40-MGD expanded ITP) or 29 GWh/yr (for the 60-MGD expanded ITP). This system would have the potential to fully offset the increased electricity demand at the ITP and APTP shown in Table 4-30, with the possibility of also generating surplus electricity to offset a portion of the electricity demand from continued operation of the existing ITP facilities.

Fossil fuel consumption for trucking of solids waste for disposal would decrease under implementation of Project A, Options A1 (Expand to 40 MGD) and A2 (Expand to 50 MGD). Fossil fuel consumption for trucking of solids waste for disposal would increase under implementation of

Project A, Option A3 (Expand to 60 MGD), and Project D. Negligible increases in staff commuting from implementation of Alternative 1 would also result in negligible to minor increases in fossil fuel consumption. See Sections 4.13 (Solid and Hazardous Waste) and 4.17 (Transportation) for additional discussion.

Implementation of the Core Projects would reduce energy use in Mexico due to decommissioning of pump stations under Projects B and D. By improving the collection of wastewater in Mexico and providing increased treatment capacity in the U.S., the Core Projects would reduce the volume of wastewater requiring treatment at SABTP and thus reduce electricity demand at SABTP.

Construction and O&M of project components in Mexico would have no transboundary effects on energy in the U.S. because components in Mexico would obtain electricity and any required energy demands from sources in Mexico.

Table 4-30. Summary of Estimated Increases in Electricity Demand for Core Projects

Project	Plant	Electricity Demand (GWh/yr) [f]
Current conditions [a]	ITP	20
Project A, Option A1 (Expand to 40 MGD) only [c]	ITP	+12
Project A, Option A2 (Expand to 50 MGD) only [b,c,d]	ITP	+19
Project A, Option A3 (Expand to 60 MGD) only [b,c,e]	ITP	+25
Project D (35 MGD) only [c]	APTP (Phase 1)	+1.9
Alternative 1 maximum (Projects A [Option A3] + D)	**-**	**+26.9**

a – Current conditions were calculated using electrical demand data from February 25, 2020, to August 25, 2020.
b – Reflects ITP treatment of inflows resulting from Project B (Tijuana Canyon Flows to ITP).
c – Reflects ITP treatment of inflows resulting from Project C (Tijuana Sewer Repairs).
d – Reflects projected operations in 2030, when the 50-MGD ITP would be operating at full capacity based on estimated population growth in Tijuana.
e – Reflects projected operations in 2050, when the 60-MGD ITP would be operating at full capacity based on estimated population growth in Tijuana.
f – Values do not reflect the energy savings to Mexico resulting from having to treat less wastewater at the SABTP.

4.14.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Implementation of Alternative 2 would result in effects on energy similar to those under Alternative 1; however, Alternative 2 would require a greater amount of energy for construction and O&M of Supplemental Projects. Alternative 2 would not be expected to require any upgrades to electrical utilities that would have significant environmental impacts or result in negative effects on energy availability for public services and utilities. Therefore, Alternative 2 would not result in significant impacts to energy resources per the criteria in Section 4.14.1 (Standards of Significance).

For Project E (APTP Phase 2), expansion of the APTP from 35 MGD to 60 MGD would increase electricity demand to power additional treatment processes. The new screw pumps required for operation of Project F (U.S.-side River Diversion to APTP) and the new pump station required for operation of Project I (ITP Treated Effluent Reuse) would also create additional electricity demand. However, the designs for Projects E and F would include flexibility for incorporating energy conservation equipment and strategies, such as shutting down when not providing sufficient benefits. Providing electrical utility services to the new facilities constructed under Projects E and F, if necessary, would potentially require modifications to electrical lines and/or transformers that serve the ITP area. Any public utility modification would be minor and localized, and would not result in adverse physical impacts.

The Supplemental Projects would lead to increased fossil fuel consumption from trucking of the following wastes: solids waste generated from operation of Project E, sediments removed from the intake structure during maintenance of Project F, and trash removed during O&M of Project J (Trash Boom[s]). Project J would potentially result in substantial increases in fossil fuel consumption from trucking. The magnitude of the increases would be dependent on the trash capture efficiency of the boom(s) and the frequency of hauling activities, which would be further defined and analyzed in subsequent tiered NEPA analyses. Minor increases in staff commuting under implementation of Alternative 2 would also result in minimal increases in fossil fuel consumption. Fossil fuel use from Alternative 2 would not be expected to affect the availability of energy resources for public services and utilities since fossil fuel sources are readily available in the region. See Sections 4.13 (Solid and Hazardous Waste) and 4.17 (Transportation) for additional discussion.

Project G (New SABTP) would potentially reduce energy use in Mexico by shutting down the existing ineffective SABTP and replacing it with a smaller, more efficient operation. Project I would also potentially offset the existing use of potable water, thus also offsetting the associated energy use required for the treatment of this potable water in Mexico. Project H (Tijuana WWTP Treated Effluent Reuse) would also potentially offset energy use by reducing the amount of treated effluent undergoing an unnecessary second round of treatment. By reducing the amount of treated effluent in the Tijuana River, Project H would increase the energy efficiency of downstream components of the Tijuana River diversion system (i.e., PB-CILA, PB1-A, PB1-B, and either the SABTP or ITP) by freeing up energy to treat the remaining flows.

No other components of Alternative 2 would result in effects on energy in the U.S.

4.14.5 Comparative Analysis of the Alternatives

Table 4-31 provides a summary comparison of the impacts described above for the three evaluated alternatives.

None of the evaluated alternatives would result in significant impacts to energy per the criteria in Section 4.14.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-31. Comparative Analysis of Effects – Energy

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Minor, short-term impacts from direct consumption of fossil fuels associated with construction equipment and direct use of embodied energy of construction materials ▪ No exceedance of electrical infrastructure capacity or negative effects on energy availability for public services and utilities	Same as Alternative 1, plus the following: ▪ Minor, short-term impact from slight increase in energy use due to construction of additional infrastructure
Permanent effects	▪ None	▪ Minor, long-term impacts from increasing electricity demand by 26.9 GWh/yr under eventual operating conditions ▪ Potential minor, localized modifications to electrical utilities near the ITP that would not result in adverse environmental impact ▪ No negative effects on energy availability for public services and utilities ▪ Potential beneficial impact from opportunity to offset grid electricity through biogas combustion ▪ Potential minor, long-term effect from minimal increase in fossil fuel consumption for hauling solids waste and staff commuting ▪ Potential reductions in energy use and electrical demand in Mexico	Same as Alternative 1, plus the following: ▪ Minor, long-term impact from increase in electricity demand for expanded APTP, plus additional electricity demand for new screw pumps and pump station ▪ Minor, long-term impact from increase in fossil fuel consumption for staff commuting and extracting and hauling solids waste, sediments, and trash, but with no associated effect on energy availability for public services and utilities ▪ Potential long-term beneficial effects from energy offsets through reuse of treated effluent

4.15 Public Services and Utilities

4.15.1 Standards of Significance

Impacts to public services and utilities would be significant if they were to result in any of the following:

- Exceedance of existing public infrastructure capacity, resulting in the demand for new or altered public service facilities or utilities that would have adverse physical impacts or conflict with the community plans or goals.

- Use of excessive amounts of fuel, energy, power, or water that would negatively affect the availability of resources for public services and utilities (e.g., water use that results in insufficient water supplies available to serve reasonably foreseeable future development during normal, dry, and multiple dry years).

- Introduction of an activity or infrastructure modification that impedes or conflicts with existing public services.

4.15.2 No-Action Alternative

The No-Action Alternative would have no impacts to public services and utilities. Transboundary flows would continue to hinder CBP and Navy activities as described in Section 1.3.2 (Impacts of Contaminated Transboundary Flows).

4.15.3 Alternative 1: Core Projects

Temporary Effects

Under Alternative 1, implementation of certain Core Projects would result in minor, short-term effects on public services and utilities to accommodate construction activities. However, construction-related impacts to public services and utilities, if they could not be avoided, would be short-term and localized. In addition, construction activities for the Core Projects would not use excessive amounts of fuel, energy, power, or water and thus would not affect the availability of resources for public services and utilities.

As discussed in Section 4.13 (Solid and Hazardous Waste), waste generated from construction activities would require short-term use of public landfill(s), but sufficient capacity would be available and this increase in demand would not require the construction of new disposal facilities.

As discussed in Section 4.17 (Transportation), Projects A (Expanded ITP), B (Tijuana Canyon Flows to ITP), and D (APTP Phase 1) would incorporate traffic control measures during temporary road closures or detours. These measures would ensure that construction activities would not impede or conflict with emergency services, CBP activities, or public access to community facilities.

Pipeline installation under the U.S.-Mexico border in Smuggler's Gulch for Project B and from PB-CILA to the new APTP for Project D would be coordinated with CBP to ensure construction activities would not affect CBP operations (e.g., monitoring access points in the canyons and performing security functions).

Construction activities in Mexico under Alternative 1 would not use public services or utilities in the U.S., and short-term transboundary impacts from construction in Mexico would not impede or conflict with emergency services, CBP activities, or public access to community facilities.

Permanent Effects

Under Alternative 1, implementation of the Core Projects would not be expected to exceed existing infrastructure capacity, result in the demand for new public services or utilities, or result in population growth that would strain the services of, or public access to, emergency services, school systems, or other community facilities. Operation of infrastructure associated with Core Projects would not result in the use of excessive amounts of fuel, energy, power, or water and thus would not affect the availability of resources for public services and utilities.

As discussed in Section 4.13 (Solid and Hazardous Waste), solid waste produced under Project D operations (APTP Phase 1) would require long-term use of public landfill(s), but sufficient capacity would be available and this increase in demand would not require the construction of new disposal facilities. Solid waste produced under Project A operations (Expanded ITP) would be hauled to Mexico for disposal and therefore would not impact public landfill availability in the U.S.

Wastewater treatment operations under Projects A and D would result in minor long-term increases in water and energy use, traffic along Dairy Mart Road, and employment. These increases would be well within the capacity of existing utility infrastructure and would not be expected to impact public access to emergency services (e.g., by hindering emergency vehicles) or strain the services of school systems or other community facilities. See Sections 4.1 (Freshwater and Estuarine Resources), 4.14 (Energy), 4.17 (Transportation), and 4.19 (Socioeconomics) for additional discussion.

Providing utility services to the new facilities constructed under Projects A and D would potentially require modifications to electrical lines, transformers, and other localized public utilities that serve the ITP area. Any public utility modification would be minor and localized, and would not result in adverse physical impacts.

Alternative 1 would support the public service missions of CBP and the Navy by reducing impacts to their operations caused by contaminated transboundary flows. Specifically, Projects B and C (Tijuana Sewer Repairs) would potentially reduce the volume and frequency of dry-weather transboundary flows in Goat Canyon and Smuggler's Gulch. Project C would also potentially reduce transboundary flows of untreated wastewater in Stewart's Drain. Therefore, these projects would potentially improve CBP's ability to safely monitor and maintain infrastructure in these areas. By reducing discharges of untreated wastewater to the Pacific Ocean, Core Projects would help to reduce the frequency of coastal water advisories and the associated impacts to Navy training activities described in Section 1.3.2 (Impacts of Contaminated Transboundary Flows).

No other components of Core Projects would result in permanent effects on public services and utilities in the U.S.

4.15.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Under Alternative 2, construction activities would result in minor, short-term effects on public services and utilities similar to those under Alternative 1; however, Alternative 2 would require a greater amount of construction for implementation of Supplemental Projects. Implementation of the Core Projects would result in the same impacts to public services and utilities as would occur under Alternative 1. Construction-related impacts to public services and utilities, if they could not be avoided, would be short-term and localized. Construction activities for Alternative 2 would not use excessive amounts of fuel, energy, power, or water and thus would not affect the availability of resources for public services and utilities.

As discussed in Section 4.13 (Solid and Hazardous Waste), waste generated from construction activities would require short-term use of public landfill(s)—slightly more than for Core Projects, due to the greater amount of construction—but sufficient capacity would be available and this increase in demand would not require the construction of new disposal facilities.

As discussed in Section 4.17 (Transportation), construction activities in the U.S. would incorporate traffic control measures if temporary public road closures or detours were required. These measures would ensure that construction activities would not impede or conflict with emergency services or public access to community facilities.

Certain construction activities would be coordinated with CBP to ensure that the activities do not affect CBP operations (e.g., performing security functions and conducting vegetation management). These construction activities include pipeline installation under the U.S.-Mexico border from the ITP to PB1-B for Project I (ITP Treated Effluent Reuse), installation of the river diversion structure for Project F (U.S.-side River Diversion to APTP), and installation of the trash boom(s) for Project J (Trash Boom[s]) in the Tijuana River main channel near the U.S.-Mexico border. Impacts to CBP operations from Projects F and J would be dependent on the location and design of the river diversion and trash boom(s), which would be further defined and analyzed in subsequent tiered NEPA analyses.

Construction activities in Mexico under Alternative 2 would not use public services and utilities in the U.S., and short-term transboundary impacts from construction in Mexico would not impede or conflict with emergency services, CBP activities, or public access to community facilities.

Permanent Effects

Under Alternative 2, implementation of the Core Projects would result in the same minor, long-term effects as would occur under Alternative 1. Alternative 2 would not be expected to exceed existing infrastructure capacity, result in the demand for new public services or utilities, or result in population growth that would strain the services of, or public access to, emergency services, school systems, or other community facilities. Operation of infrastructure associated with Alternative 2 would not result in the use of excessive amounts of fuel, energy, power, or water and thus would not affect the availability of resources for public services and utilities. Certain Supplemental Projects could significantly affect CBP operations if their impacts were not appropriately considered in coordination with CBP during project planning and design.

As discussed in Section 4.13 (Solid and Hazardous Waste), Alternative 2 would require long-term use of public landfill(s) due to solid waste produced under Project E operations (APTP Phase 2), Project F maintenance (U.S.-side River Diversion to APTP), and Project J maintenance (Trash Boom[s]), in addition to the Core Projects. Sufficient capacity would be expected to be available, and the increase in demand would not require the construction of new disposal facilities.

Wastewater treatment operations under Project E and maintenance activities under Project J would result in minor long-term increases in water and energy use, traffic along Dairy Mart Road, and/or employment. These increases, in addition to those of the Core Projects, would be well within the capacity of existing utility infrastructure and would not be expected to impact public access to emergency services (e.g., by hindering emergency vehicles) or strain the services of school systems or other community facilities. See Sections 4.1 (Freshwater and Estuarine Resources), 4.14 (Energy), 4.17 (Transportation), and 4.19 (Socioeconomics) for additional discussion.

Providing utility services to the new facilities constructed under Projects E and F, if necessary, would potentially require modifications to electrical lines, transformers, and other localized public utilities that serve the ITP area. Any public utility modification would be minor and localized, and would not result in adverse physical impacts.

Certain Supplemental Projects, if not properly planned and designed, would potentially interfere with CBP's ability to perform patrols and execute their mission. Specifically, Projects F and J would include new infrastructure and O&M activities in the Tijuana River main channel in an area where CBP currently performs regular vegetation maintenance. To conduct maintenance activities near the U.S.-Mexico border for Project J, heavy vehicles would require access to the trash boom(s) and trash processing area(s) on a recurring basis, which would potentially interfere with CBP operations. Implementation of Project J would result in the accumulation of trash upstream of the boom(s) or in the trash processing area(s), and these accumulations of trash would potentially affect field conditions, cause occupational safety concerns, and cause surveillance and access issues for CBP personnel. To minimize impacts to CBP operations and mission, coordination would be required, potentially including revisions to the 1980 Memorandum of Understanding between USIBWC and CBP. Potential impacts to CBP operations, and the design considerations necessary to reduce these potential impacts, would be dependent on the location and design of the river diversion, trash boom(s), and trash processing area(s), and on the capture efficiency of the trash boom(s), all of which would be further defined and analyzed in subsequent tiered NEPA analyses with input from CBP.

The public service mission benefits to CBP and the Navy under Alternative 2 would include those described for the Core Projects, plus further benefits to Navy training activities due to reductions in discharges of untreated wastewater to the Pacific Ocean as described in Section 1.3.2 (Impacts of Contaminated Transboundary Flows).

No other components of Alternative 2 would result in permanent effects on public services and utilities in the U.S.

4.15.5 Comparative Analysis of the Alternatives

Table 4-32 provides a summary comparison of the impacts described above for the three evaluated alternatives.

One of the evaluated alternatives would, in the absence of mitigation, potentially result in significant impacts to public services and utilities per the criteria in 4.15.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-32. Comparative Analysis of Effects – Public Services and Utilities

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Minor, short-term impacts to public services and utilities (in coordination with CBP) to accommodate construction activities ▪ No public infrastructure capacity exceedance, excessive use of public resources, or impedance of public services ▪ No short-term impacts from public landfill use (within capacity) ▪ Minor, short-term impacts due to potential road closures or detours during construction	Same as Alternative 1, plus the following: ▪ No short-term impacts from additional public landfill use (within capacity) ▪ Additional minor, short-term impacts due to potential road closures or detours during construction ▪ Additional potential for localized interference with CBP operations during construction

Table 4-32. Comparative Analysis of Effects – Public Services and Utilities

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Permanent effects	▪ None ▪ No reduction in impacts of contaminated transboundary flows on CBP and Navy public service missions	▪ Minor, long-term impacts to public services and utilities to accommodate O&M activities ▪ No public infrastructure capacity exceedance, excessive use of public resources, or impedance of public services ▪ No long-term impacts from public landfill use (within capacity) ▪ Potential minor, localized modifications to existing public utilities that would have no adverse physical impacts ▪ Long-term beneficial impacts from reduction in contaminated transboundary flows that interfere with CBP and Navy public service missions	Same as Alternative 1, plus the following: ▪ Potential significant, long-term impact from impedance to CBP operations due to U.S.-side river diversion and trash boom(s) **(see Section 5 for potential mitigation measures)** ▪ No long-term impacts from additional public landfill use (within capacity) ▪ Long-term beneficial effect from further reductions in contaminated transboundary flows that interfere with CBP and Navy public service missions

4.16 Public Health and Safety

4.16.1 Standards of Significance

Impacts to public health and safety would be significant if they were to include any of the following:

- Increase in risk of wildland fires or inability to meet applicable fire codes.
- Increase in unsafe field conditions for CBP personnel.
- Exacerbation of water quality issues at public beaches in the U.S.
- Introduction of new environments (e.g., standing water) that could increase human exposure to vectors that are capable of transmitting diseases.

4.16.2 No-Action Alternative

The No-Action Alternative would include the continuation of existing impacts to public health and safety that are currently resulting from contaminated transboundary flows from Tijuana (see Section 1.3 [Causes and Impacts of Contaminated Transboundary Flows from Tijuana] and Section 3.1 [Freshwater and Estuarine Resources]). These impacts include coastal discharges of largely untreated wastewater (sewage) along the Pacific Ocean coast in the U.S. that expose public beaches and recreational users to unsafe conditions and result in beach closures. Transboundary flows currently carry trash from Tijuana throughout the Tijuana River Valley, which presents human health concerns by way of exposures to toxic substances and ponding that can encourage spread of disease vectors. These conditions also present health risks to U.S. military and border security personnel.

These impacts would persist unabated and would worsen over time as wastewater infrastructure in Tijuana continues to deteriorate and the population continues to grow without access to adequate wastewater treatment infrastructure. The No-Action Alternative would therefore exacerbate current unsafe field conditions for CBP personnel and water quality issues at public beaches, which would be a significant impact per the criteria in Section 4.16.1 (Standards of Significance).

4.16.3 Alternative 1: Core Projects

Under Alternative 1, implementation of the Core Projects would include development in areas susceptible to hazardous conditions, such as in Very High Fire Hazard Severity Zones and areas susceptible to landslides. Development in these areas would be consistent with applicable design codes to reduce risks. For additional information associated with these individual hazard areas, see Sections 4.1 (Freshwater and Estuarine Resources), 4.6 (Geological Resources), and 4.12 (Climate). A discussion of water quality impacts that affect beach closures and a discussion of impacts to CBP ability to perform patrols and execute their mission can be found in Sections 4.2 (Marine Waters) and 4.15 (Public Services and Utilities), respectively. Construction activities would not result in any public health and safety impacts. Alternative 1 would not result in significant impacts to public health and safety per the criteria in Section 4.16.1 (Standards of Significance).

Drawing from the modeled relationship (presented in Feddersen et al. (2021)) between discharges of untreated wastewater via SAB Creek and resulting beach impacts, EPA and USIBWC interpolated the expected tourist (dry) season impacts at regional beaches that would result from implementation of the Core Projects (see Section 4.2 [Marine Waters]). Based on EPA's analysis, full implementation of the Core Projects would immediately lead to significant reductions in water quality–driven human health impacts at regional beaches. The Core Projects would be expected to reduce N_{ill} at Imperial Beach by up to 79 percent upon startup of the new treatment facilities. The Core Projects would be expected to reduce public health and safety impacts at the beaches and at Naval facilities in San Diego County, including the Navy SEALs training facility in Coronado, California.

Projects A and C would also improve field conditions for CBP personnel by reducing contaminated transboundary flows near canyon flow diversion structures, the border fence, and other border infrastructure that are patrolled and maintained by CBP personnel. Construction and operation of the Core Projects would not increase standing water that could provide breeding areas for mosquitoes.

4.16.4 Alternative 2: Core and Supplemental Projects

Under Alternative 2, implementation of the Core Projects would result in the same impacts to public health and safety as would occur under Alternative 1. Implementation of the Supplemental Projects would include development in the same areas susceptible to hazardous conditions that are identified above for the Core Projects, with the addition of development in a floodway for Projects F (U.S.-side River Diversion to APTP) and J (Trash Boom[s]). For additional information associated with this individual hazard area, see Section 4.3 (Floodplains). Construction activities would not result in any public health and safety impacts.

Implementation of Project G would result in further reductions in water quality–driven human health impacts at regional beaches by providing treatment capacity for all remaining wastewater discharges via SAB Creek (see Section 4.2 [Marine Waters]). EPA and USIBWC estimate that implementation of all Core Projects plus Project G would eliminate more than 99 percent of the modeled BIF for beaches in southern San Diego County. This would substantially improve water quality and thus reduce public health and safety impacts at the beaches and at Naval facilities in San Diego County, including the Navy SEALs training facility in Coronado, California.

Project J would introduce a new feature (trash boom[s]) near the border that requires regular security inspections by CBP personnel. Exposure to trash, which may contain toxic substances, wastes, or chemicals, would potentially present health and safety risks to CBP personnel during border security activities, resulting in a significant impact per the criteria in Section 4.16.1 (Standards of Significance). Coordination with CBP during subsequent tiered NEPA analyses for Project J would be needed to identify ways to reduce CBP health risks associated with maintaining security at the trash boom(s).

Construction and operation of Projects F and J would introduce new environments that could contain standing water and create conditions conducive to the breeding and multiplication of disease vectors (e.g., mosquitoes, rodents, stray dogs) that could impact public health, resulting in a significant impact per the criteria in Section 4.16.1 (Standards of Significance).

See Section 4.20 (Environmental Justice) regarding disproportionately high and adverse effects due to public health and safety impacts under Alternative 2.

4.16.5 Comparative Analysis of the Alternatives

Table 4-33 provides a summary comparison of the impacts described above for the three evaluated alternatives.

Two of the evaluated alternatives would potentially result in significant impacts to public health and safety per the criteria in Section 4.16.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-33. Comparative Analysis of Effects – Public Health and Safety

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ No short-term impacts from construction activities	Same as Alternative 1
Permanent effects	▪ Significant, long-term impact from exacerbation of unsafe field conditions for CBP personnel **(see Section 5 for potential mitigation measures)** ▪ Significant, long-term impact from exacerbation of water quality issues at public beaches **(see Section 5 for potential mitigation measures)**	▪ Minor, long-term impacts from increasing staff/facilities in areas susceptible to very high fire severity and landslides ▪ Long-term beneficial effects from improvement of water quality and thus reduction of public health and safety impacts at the beaches and at Naval facilities ▪ Long-term beneficial effects from improvement in field conditions for CBP personnel operating in the Tijuana River, Goat Canyon, and Smuggler's Gulch	Same as Alternative 1, plus the following: ▪ Additional minor, long-term impacts from increasing staff/facilities in areas susceptible to high fire severity and landslides ▪ Additional long-term beneficial effects from additional improvement of water quality and thus reduction of public health and safety impacts at the beaches and at Naval facilities ▪ Significant, long-term impact from increase in unsafe field conditions for CBP personnel due to trash boom(s) **(see Section 5 for potential mitigation measures)** ▪ Significant, long-term impact from the introduction of breeding areas for disease-spreading vectors due to U.S.-side river diversion and trash boom(s) **(see Section 5 for potential mitigation measures)**

4.17 Transportation

4.17.1 Standards of Significance

Impacts to transportation would be significant if they were to include any of the following:

- Permanent road closures that prevent access to public or recreational areas or public services.
- Creation of dangerous or degrading conditions to existing transportation infrastructure or routes.
- Substantial increases in traffic volumes in residential or congested areas.

4.17.2 No-Action Alternative

The No-Action Alternative would have no impacts to transportation. The ITP would continue to operate under current conditions, disposing of solids to Punta Bandera in Mexico (see Section 4.13, Solid and Hazardous Waste). The estimated annual truckloads for ITP solids disposal is 4,724, which results in approximately 94,480 vehicle miles traveled (VMT) annually.

4.17.3 Alternative 1: Core Projects

Temporary Effects

Under Alternative 1, implementation of the Core Projects would result in minor, short-term impacts from increases in vehicle traffic to and from the sites of construction. Construction vehicles would access the project areas from public roads such as Interstate 5, Monument Road, and Dairy Mart Road. Construction wastes (e.g., packaging materials and worker refuse) for the Core Projects (excluding Project C) would be sent to an appropriate regional disposal facility (e.g., Sycamore Landfill or Otay Landfill), resulting in minor truck traffic impacts. Alternative 1 would not result in significant impacts to transportation per the criteria in Section 4.17.1 (Standards of Significance). Alternative 1 would result in no temporary transboundary impacts to transportation.

Construction of Project A (Expanded ITP) would require the import of up to approximately 40,000 cubic yards of fill material to the ITP parcel. The fill would be hauled by truck from a suitable source within the Tijuana River Valley such as the Goat Canyon sediment basins or Smuggler's Gulch, both of which undergo sediment extraction as part of their regular maintenance. For purposes of conducting truck hauling estimates and estimating VMT, the fill source location farthest from the ITP parcel was used: the Goat Canyon sediment basins, which are approximately 3 miles distant. It was also assumed that trucks used for the hauling would have a capacity of 16 cubic yards of material. During construction, it is conservatively estimated that the hauling of fill material to the ITP parcel would result in up to approximately 15,000 VMT. Figure 4-4 shows the expected truck routes from candidate fill source locations in the Tijuana River Valley to the ITP parcel.

Construction activities along Monument Road for Project B (Tijuana Canyon Flows to ITP), Option B1, would likely result in temporary traffic reconfigurations and/or road closures. Monument Road is the primary access route to Border Field State Park and is a designated bike route, so traffic disruptions could affect local recreational users in addition to residents of private property situated along Monument Road. On-road construction vehicles for Project B would park in staging areas in Smuggler's Gulch on county-owned land. All other temporary construction vehicle staging areas in the U.S. would be located on USIBWC-owned land at the ITP parcel or near the corner of Dairy Mart Road and Clearwater Way.

See Section 4.20 (Environmental Justice) regarding disproportionately high and adverse effects due to traffic impacts under Alternative 1.

Figure 4-4. Truck Routes Between ITP Parcel and Candidate Fill Source Locations

Permanent Effects

Under Alternative 1, implementation of Projects A (Expanded ITP), B (Tijuana Canyon Flows to ITP), and D (APTP Phase 1) would result in minor increases in trucking volumes and commuter traffic volumes in the U.S. Alternative 1 would not result in significant impacts to transportation per the criteria in Section 4.17.1 (Standards of Significance). Alternative 1 would result in transboundary transportation impacts due to increased waste hauling requirements in Mexico. Information regarding truckloads and estimated VMT is summarized in Table 4-34.

The wastewater treatment processes for Projects A and D would produce solids waste that would require hauling by truck along public transportation routes for disposal at an appropriate regional disposal facility (see Section 4.13 [Solid and Hazardous Waste]). All solids waste produced for Projects A would be transported to Punta Bandera in Mexico, where the existing ITP solids waste is currently disposed.[56] All solids waste produced for Project D would be transported to a viable regional disposal facility in the U.S. Expansion of the ITP from 25 MGD to 40 MGD (Project A, Option A1) or 50 MGD (Project A, Option A2) would <u>reduce</u> the number of truckloads for solids waste disposal by approximately 1,168 per year and 192 per year, respectively. Expansion of the ITP to 60 MGD would eventually <u>increase</u> the number of truckloads for solids waste disposal by approximately 536 per year as the full capacity of the plant comes into service by approximately 2050.[57] For Project A, the incorporation of anaerobic digestion into the wastewater processes at the ITP would significantly reduce the quantity of solids waste produced and thus limit the truckloads required for disposal. Project D would increase truckloads in the U.S. by approximately 644 truckloads of solid wastes per year.[58] Solids waste hauling requirements for the two plants combined would therefore increase by up to 1,180 truckloads and 48,058 VMT (round trip) per year compared to current conditions. This represents an increase of no more than approximately four truckloads per day, even under peak operating conditions in response to wet-weather flows.

The truck hauling route for Project A to Punta Bandera in Mexico would traverse south across the border through a dedicated gate in the border fence (as is the current practice at the ITP) and would not pass residential areas in the U.S. or increase traffic in the U.S. The truck route for Project D would traverse north up Dairy Mart Road and likely onto Interstate 5 towards one of the regional disposal facilities specified in Section 3.13 (Solid and Hazardous Waste). Approximately two truckloads per day during peak solids waste production would enter/exit the Interstate 5 interchange, resulting in a negligible increase in AADT counts for the on/off ramps, which currently have AADTs of 14,100 (on ramp from San Ysidro Blvd.) and 2,500 (off ramp onto Dairy Mart Road) (see Section 3.17 [Transportation]). Figure 4-5 and Figure 4-6 show the expected truck routes from the ITP parcel to Punta Bandera and to the candidate regional disposal facilities in the U.S.

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[56] Or to a beneficial reuse site or new landfill in Mexico, as discussed in Section 4.13 (Solid and Hazardous Waste).

[57] Based on current practices at the ITP, truck trip estimates assume that a single truck to Mexico hauls 25 cubic yards of material.

[58] Truck trip estimates for projects that dispose of wastes at regional facilities in the U.S. assume that a single truck hauls 16 cubic yards of material, which is the size of a typical dump truck.

Projects A, B, and D would require approximately 82 additional staff for facility O&M, resulting in a negligible increase in AADT counts on roads in the ITP vicinity. All staff would utilize parking lots located at the ITP facility, some of which may be expanded to accommodate the staff increases.

Expansion of the ITP would require the permanent relocation of the lower portion of Dairy Mart Road from its current location to the west perimeter of the ITP parcel. The road at this location is an internal service road that is not typically traveled by the public, so minimal disruptions to traffic are expected.

See Section 4.20 (Environmental Justice) regarding disproportionately high and adverse effects due to traffic impacts under Alternative 1.

Table 4-34. Summary of Estimated Changes in Truckloads and VMT for Solids Waste Disposal

Project	Origin	Destination	Truckloads			VMT		
			Peak Daily [a]	Average Daily	Annual	Peak Daily	Average Daily	Annual
Current conditions (ITP operations)	ITP	Punta Bandera	19	13	4,724	388	259	94,500
Project A, Option A1 (Expand to 40 MGD) only [c]	ITP	Punta Bandera	-5	-3	-1,168	-96	-64	-23,360
Project A, Option A2 (Expand to 50 MGD) only [b, c]			-1	-1	-192	-16	-11	-3,840
Project A, Option A3 (Expand to 60 MGD) only [b, c, d]			+2	+1	+536	+44	+29	+10,720
Project D (35 MGD) only [c]	APTP	Sycamore Landfill [e]	+2	+2	+644	+112	+102	+37,340
Alternative 1 maximum (Projects A [Option A3] + D)			**+4**	**+3**	**+1,180**	**+156**	**+132**	**+48,060**

a – A peaking factor of 1.5 was used to calculate the peak daily solids waste production and truckloads, based on the expected peak daily flow rate and TSS loads in the untreated wastewater and stormwater.
b – Reflects ITP treatment of inflows resulting from Project B (Tijuana Canyon Flows to ITP).
c – Reflects ITP treatment of inflows resulting from Project C (Tijuana Sewer Repairs).
d – Represents eventual operating conditions of 60 MGD (rather than initial operating conditions of 50 MGD), which is expected to be achieved by 2050 as the population in Tijuana expands.
e – The distance to the farthest regional disposal facility (Sycamore Landfill; see Table 3-12 in Section 3.13) was used to calculate VMT for this project.

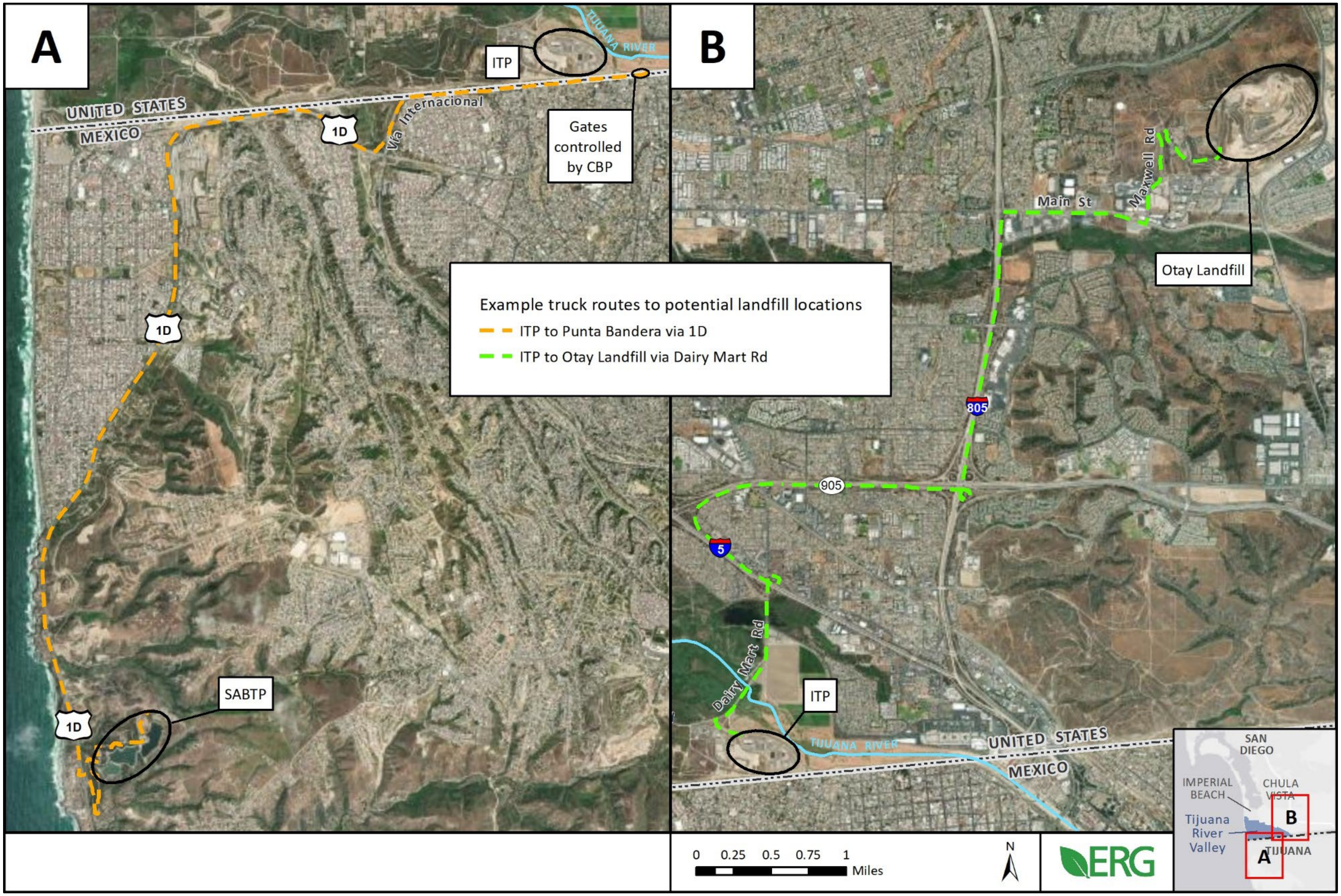

Figure 4-5. Truck Routes Between ITP Parcel and Candidate Regional Disposal Facilities (1 of 2)

Figure 4-6. Truck Routes Between ITP Parcel and Candidate Regional Disposal Facilities (2 of 2)

4.17.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Under Alternative 2, implementation of the Core Projects would result in the same minor, short-term impacts to transportation as would occur under Alternative 1. The general transportation impacts discussed above for Core Projects (e.g., minor increase in construction vehicle traffic, transportation impacts to staging areas on USIBWC-owned land) would be applicable to the Supplemental Projects located in the U.S. Alternative 2 would not result in significant impacts to transportation per the criteria in Section 4.17.1 (Standards of Significance). Alternative 2 would result in no temporary transboundary impacts to transportation since vehicles associated with construction would not cross the border.

See Section 4.20 (Environmental Justice) regarding disproportionately high and adverse effects due to traffic impacts under Alternative 2.

Permanent Effects

Under Alternative 2, implementation of the Core Projects would result in the same impacts to transportation as would occur under Alternative 1. Implementation of Project E (APTP Phase 2) would result in minor increases in commuter traffic volumes beyond those specified for the Core Projects. As described below, Alternative 2 would result in an additional 1,700 truckloads annually beyond those specified for the Core Projects (a total of up to 2,880 truckloads annually for Core and Supplemental Projects), which would translate to an additional 99,000 VMT annually (a total of 147,023 VMT annually for Core and Supplemental Projects combined) for disposing of solids waste and trash. Alternative 2 would result in one potentially significant impact on transportation per the criteria in Section 4.17.1 (Standards of Significance). Alternative 2 would result in no recurring transboundary impacts to transportation since vehicles associated with construction would not cross the border.

Project E (APTP Phase 2) would increase truckloads by approximately 1,000 per year beyond the number expected for Project D (APTP Phase 1) and would follow the same truck hauling route as Project D. This represents a negligible increase in AADT counts for the Interstate 5 on/off ramps at Dairy Mart Road. During peak solids waste production, however, up to approximately 10 additional truckloads per day would pass through the interchange, resulting in a minor increase in truck traffic on those days. Project E would result in approximately 58,000 VMT annually for disposal of solids waste.

Based on currently available data, Project J (Trash Boom[s]) would result in approximately 700 truckloads annually for disposal of trash extracted from the booms during operations, translating to up to 41,000 VMT annually (assuming trash would be hauled to a disposal facility in San Diego County). Depending on the location of the trash processing area(s), these truck trips would potentially occur near residential areas. However, this estimate is based on very limited data regarding the expected volume of trash requiring disposal. Additional studies (e.g., a trash boom pilot study) and stakeholder coordination are needed to determine the anticipated frequency of extraction and cleaning for the trash boom(s), which would influence the timing and frequency of truckloads traveling away from the site (e.g., several small hauling events versus one large hauling event). Depending on these factors, Project J would potentially result in a significant transportation impact during hauling activities by causing substantial localized increases in traffic volumes and congestion near residential areas.

See Section 4.20 (Environmental Justice) regarding disproportionately high and adverse effects due to traffic impacts under Alternative 2.

4.17.5 Comparative Analysis of the Alternatives

Table 4-35 provides a summary comparison of the impacts described above for the three evaluated alternatives.

One of the evaluated alternatives would potentially result in significant impacts to transportation per the criteria in Section 4.17.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-35. Comparative Analysis of Effects – Transportation

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Minor, short-term impacts from increases in vehicle traffic to and from the sites of construction ▪ Minor, short-term impacts from temporary traffic reconfigurations and/or road closures along Monument Road for Project B (Tijuana Canyon Flows to ITP), Option B1 ▪ Minor, short-term impacts to traffic from temporary staging areas in the U.S. (in Smuggler's Gulch, along Monument Road, and on USIBWC-owned land)	Same as Alternative 1
Permanent effects	▪ Continuation of current operations at the ITP, which produce an estimated 4,724 annual truckloads (94,480 VMT)	▪ Minor, long-term impact from increases in commuter traffic volumes resulting from the employment of additional staff needed during operations ▪ Minor, long-term impact from a total increase of up to 1,180 annual truckloads (approximately 48,058 VMT) − Transboundary impact: Minor, long-term impact from an estimated increase of up to 536 truckloads annually to Punta Bandera in Mexico (approximately 10,720 VMT) or other new/viable reuse or disposal facility in Mexico	Same as Alternative 1, plus the following: ▪ Minor, long-term impact from additional increase in commuter traffic volumes associated with Project E (APTP Phase 2) ▪ Potential significant, long-term impact from an additional increase of up to 1,700 annual truckloads (approximately 99,000 VMT), including: − Potential significant substantial localized increases in traffic volumes and congestion from Project J, depending on frequency of trash hauling **(see Section 5 for potential mitigation measures)**

4.18 Noise

4.18.1 Standards of Significance

Noise impacts would be significant if they were to involve any of the following:

- Generation of exterior noise that exceeds standards established by San Diego Municipal Code § 59.5.04.
- Generation of impulsive noise that exceeds standards established by San Diego County Code § 36.410.
- Exposure of buildings, including fragile buildings and buildings that require low ambient vibration for interior operations (e.g., research facilities), to excessive or substantial ground-borne vibration.
- A substantial increase in ambient noise levels perceived at noise-sensitive receptors.

Noise standards are described in more detail in Section 6.1.13 (Noise).

4.18.2 No-Action Alternative

The No-Action Alternative would result in no change in existing noise and ground-borne vibration impacts. Continued operation of the ITP at its existing capacity would continue to generate minor ambient noise and ground-borne vibration from equipment and waste hauling.

4.18.3 Alternative 1: Core Projects

Temporary Effects

Under Alternative 1, certain construction activities for implementation of the Core Projects would be reasonably likely to temporarily expose noise-sensitive receptors to noise levels, including impulsive noise levels, above city and county limits if no mitigation were implemented. In addition, ground-borne vibration from certain construction activities could result in minor annoyances, based on an evaluation using methodology from the *Transit Noise and Vibration Impact Assessment Manual* and comparison with construction vibration damage criteria (FTA, 2018).

Noise levels would vary depending on the type of construction equipment used. Common examples of equipment that could be used during construction of Core Projects and their associated noise levels include air compressors, backhoes, and loaders (approximately 80 dBA); compactors and generators (approximately 82 dBA); trucks (approximately 84 dBA); rollers, pavers, and dozers (approximately 85 dBA); and jack hammers (approximately 88 dBA) (FTA, 2018).[59] Noise from construction activities and vehicle traffic would attenuate at an approximate rate of 3 to 6 dBA per doubling of distance over open terrain. Noise would drop off over a shorter distance if obstructions were present that would block the path of propagation, which would decrease noise perceived at sensitive receptors the farther they are located from the noise source (Caltrans, 2013). For most

[59] The typical noise levels provided by the FTA (2018) use a measurement distance of 50 feet from the respective construction equipment noise source.

work associated with Core Projects, besides work in Smuggler's Gulch and along Monument Road, construction noise would be expected to attenuate below applicable noise limits before reaching noise-sensitive receptors in the U.S. and would not constitute a substantial increase in ambient noise levels.

Specifically, construction activities for Project A (Expanded ITP) would likely result in moderate temporary noise impacts to sensitive receptors if no mitigation were implemented. Receptors affected due to construction activities at the ITP parcel could include protected species habitat (depending on construction timing), a small portion of Tijuana River Valley Regional Park, and residences in Tijuana immediately across the U.S.-Mexico border from the site of the proposed ITP facilities (e.g., the anaerobic digester building). Construction would take place over a period of at least two years. At a distance of 350 feet, which is the approximate closest distance of residences (in Tijuana) to potential construction activity, the vibration levels of heavy construction equipment at the ITP could result in minor annoyances.

Construction activities for Project B (Tijuana Canyon Flows to ITP), Option B1 (Trenching via Smuggler's Gulch and Monument Rd), would potentially result in substantial temporary and localized noise impacts to protected species habitat (depending on construction timing), recreational areas (e.g., trails in Smuggler's Gulch), and residences immediately adjacent to portions of Monument Road. However, construction for Project B would be very short-term and would likely occur only during the day. As discussed in Sections 4.4 (Inland Biological Resources) and 5 (Mitigation Measures), to the greatest extent practicable, construction activities within 300 feet of suitable least Bell's vireo habitat and coastal California gnatcatcher habitat would be avoided during the vireo breeding season (March 15 to August 31) and the gnatcatcher breeding season (February 15 to August 31), respectively. If work were necessary during these breeding seasons, preconstruction surveys for least Bell's vireo and coastal California gnatcatchers would be conducted, and no-disturbance buffers would be implemented to reduce potential noise- and vibration-related disturbances. The topography of Smuggler's Gulch, particularly the fill material in the Gulch supporting the border wall, would potentially increase noise propagation to the north towards residences in the U.S. and decrease noise propagation to the south towards residences in Tijuana. Open-cut trenching, directional drilling, and pavement removal and replacement associated with Project B would generally not require the use of heavy vibration-producing equipment. Option B1 would have greater potential for vibration impacts to residences located in close proximity along Monument Road. However, vibration-generating work in these areas would likely be limited to small, handheld equipment such as jackhammers and compactors. At a distance of 20 feet, which is the approximate closest distance of residences to potential construction activity, the vibration levels of jackhammers could result in minor annoyances. Construction noise and vibration for Options B2 (Trenchless via Smuggler's Gulch and Under Mesa) and B3 (Connect to Existing Canyon Collector System) would be limited to areas surrounding micro-tunneling entry and exit points and would not constitute a substantial increase in ambient noise levels.

Certain construction activities for Project C (Tijuana Sewer Repairs) would occur directly south of the U.S.-Mexico border and would potentially result in minor localized transboundary noise impacts to protected species habitat (depending on construction timing) and recreational areas (e.g., trails in Smuggler's Gulch) in the U.S. However, construction-related noise and vibration would be short-term and much less extensive than required for other Core Projects; would not be perceptible at U.S. residential areas due to the distance to the U.S.-Mexico border; and would not be expected to constitute a substantial increase in ambient noise levels in the U.S.

Project D (APTP Phase 1) would require construction activities similar to those under Project A; however, construction of the new APTP would be much less extensive and would be performed over a shorter duration. Thus, noise impacts associated with Project D construction would be more temporary and minor in comparison to Project A. Construction noise and vibration from installation of the new force main, including transboundary effects to and from Mexico, would be limited to areas surrounding the micro-tunneling entry and exit points.

Construction vehicles traveling along Monument Road and through the Interstate 5 interchange for Core Projects would not be expected to generate a substantial increase in ambient noise levels. However, vibration associated with loaded trucks at a distance of 20 feet could result in minor annoyances.

See Section 4.4 (Inland Biological Resources) for discussion of the potential for construction noise to affect protected species.

Construction workers would also be exposed to high noise levels typically associated with construction activities and would be required to adhere to applicable safety measures (e.g., hearing protection).

Permanent Effects

Under Alternative 1, implementation of the Core Projects would likely result in changes in noise frequency and ground-borne vibration perceived at noise-sensitive receptors along waste hauling routes due to potential changes in heavy vehicle traffic associated with solids waste disposal during operation of Projects A (Expanded ITP) and D (APTP Phase 1). Specifically, Option A1 (Expand to 40 MGD) would decrease waste disposal requirements for the ITP and therefore reduce the frequency of noise and vibration-related annoyances generated from heavy vehicle traffic along Monument Road. Increased waste hauling under Options A2 (Expand to 50 MGD) and A3 (Expand to 60 MGD) and Project D would potentially result in a slight increase in these noise and vibration impacts. Noise generation from waste hauling would likely be below city and county limits at noise-sensitive receptors and would not constitute a substantial increase in ambient noise levels. See Section 4.17 (Transportation) for a more detailed discussion of transportation impacts.

Noise-producing equipment, such as emergency generators, installed for Projects A and D would result in minor noise generation that would likely attenuate below perceptible levels before escaping USIBWC property boundaries. Emergency generators would operate only during testing and unplanned electrical outages. In addition, new facilities would be designed consistent with standard building design codes and applicable noise codes and ordinances such that equipment would not create substantial noise that would escape the property boundaries. However, as discussed in Section 4.14 (Energy), Project A would potentially include continuous (or near-continuous) operation of a reciprocating engine to combust waste biogas from the anaerobic digester facility and generate electricity for use at the expanded ITP. Depending on the engine's capacity and its location within the ITP parcel, its operation would have the potential to exceed exterior noise standards (particularly during nighttime operation, when noise standards are lower) or result in increased ambient noise levels at noise-sensitive receptors. This impact would be mitigated through proper siting of the engine within the ITP parcel (e.g., away from the property boundaries) and incorporation of noise attenuation features.

No other components of Core Projects would be expected to increase ambient noise levels at noise-sensitive receptors, generate exterior or impulsive noise above city or county limits, or result in permanent or recurring noise or ground-borne vibration impacts.

4.18.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Construction activities for Alternative 2 would result in temporary effects similar to those under Alternative 1; however, implementation of Supplemental Projects under Alternative 2 would include the construction of additional infrastructure and would therefore potentially increase the duration of construction-related noise and ground-borne vibration annoyances. For Core Projects, temporary effects would be the same as those under Alternative 1. Certain construction activities for Supplemental Projects would be reasonably likely to temporarily expose noise-sensitive receptors to noise levels, including impulsive noise levels, above city and county limits during construction if no mitigation were implemented. In addition, ground-borne vibration from certain construction activities could result in minor annoyances.

Construction activities for Project E (APTP Phase 2) would likely result in minor, short-term, localized noise impacts to protected species habitat (depending on construction timing). Construction activities for Projects F (U.S.-side River Diversion to APTP) and J (Trash Boom[s]) would potentially result in minor construction noise impacts and vibration-related annoyances. These impacts could affect protected species habitat (depending on construction timing), residences in the U.S. immediately east and/or north from the potential U.S.-side river diversion and trash boom(s), and residences in Tijuana immediately across the U.S.-Mexico border from the potential U.S.-side river diversion and trash boom(s). Noise and vibration impacts and the need for mitigation would be dependent on the location of the proposed river diversion and trash boom(s), which would be further defined and analyzed in subsequent tiered NEPA analyses.

Construction activities for Project I (ITP Treated Effluent Reuse) would potentially result in minor, short-term noise impacts and vibration-related annoyance to protected species habitat (depending on construction timing) and residences in Tijuana immediately across the U.S.-Mexico border from the site of the proposed treated effluent reuse pipeline. Construction activities in Mexico near the border would potentially generate transboundary noise, but the noise impacts would be short-term and minor; would not be expected to affect noise-sensitive receptors in the U.S. due to the distance between these receptors and the U.S.-Mexico border; and would not constitute a substantial increase in ambient noise levels.

Construction activities for Projects G (New SABTP) and H (Tijuana WWTP Treated Effluent Reuse) would not be expected to have transboundary noise or ground-borne vibration impacts to the U.S. due to their distance from the U.S.

Construction vehicles traveling along Monument Road and through the Interstate 5 interchange for Supplemental Projects would not be expected to result in noise impacts to noise-sensitive receptors and would not constitute a substantial increase in ambient noise levels, but could result in minor vibration-related annoyances.

See Section 4.4 (Inland Biological Resources) for discussion of the potential for construction noise to affect protected species.

Construction workers would also be exposed to high noise levels typically associated with construction activities and would be required to adhere to applicable safety measures (e.g., hearing protection).

Permanent Effects

Under Alternative 2, implementation of the Core Projects would result in the same permanent effects as would occur under Alternative 1. Certain Supplemental Projects in Alternative 2 would result in minor additional permanent noise impacts to noise-sensitive receptors and vibration-related annoyances, but these impacts would not constitute a substantial increase in ambient noise levels. Specifically, Projects E (APTP Phase 2) and J (Trash Boom[s]) would increase waste disposal requirements for the APTP and trash boom(s) and therefore would potentially result in a slight increase in the frequency of noise and minor vibration-related annoyances generated from heavy vehicle traffic along Monument Road. Noise generation from waste hauling would likely be below city and county limits at noise-sensitive receptors and would not constitute a substantial increase in ambient noise levels. See Section 4.17 (Transportation) for a more detailed discussion of transportation impacts.

Maintenance activities for Project J would require the occasional use of heavy equipment, such as a bulldozer or front-end loader, for trash extraction. Trash extraction would potentially result in minor, localized noise impacts and vibration-related annoyances. Therefore, maintenance for Project J could affect protected species habitat (depending on maintenance timing), residences in the U.S. immediately east and/or north from the potential trash boom(s), and residences in Tijuana immediately across the U.S.-Mexico border from the potential trash boom(s) if no mitigation were implemented. Noise and vibration impacts and the need for mitigation would be dependent on the location of the proposed trash boom(s), which would be further defined and analyzed in subsequent tiered NEPA analyses.

Project F (U.S.-side River Diversion to APTP) would potentially result in a minor increase in operational noise from pumps that would be perceptible at noise-sensitive receptors if no mitigation were implemented. These impacts and the need for mitigation would be dependent on the location of the diversion, which would be further defined and analyzed in subsequent tiered NEPA analyses. Noise-producing equipment, such as generators, installed for Projects E and I (ITP Treated Effluent Reuse) would result in minor noise generation that would likely attenuate below perceptible levels before escaping USIBWC property boundaries. In addition, new facilities would be designed consistent with standard building design codes and applicable noise codes and ordinances such that equipment would not create substantial noise that would escape the property boundaries.

No other components of Alternative 2 would be expected to increase ambient noise levels at noise-sensitive receptors, generate exterior or impulsive noise above city or county limits, or result in permanent noise or ground-borne vibration impacts.

4.18.5 Comparative Analysis of the Alternatives

Table 4-36 provides a summary comparison of the impacts described above for the three evaluated alternatives.

Two of the evaluated alternatives would, in the absence of mitigation, potentially result in significant impacts to noise per the criteria in Section 4.18.1 (Standards of Significance). Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core

Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-36. Comparative Analysis of Effects – Noise

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Potential significant, short-term impacts from localized, short-term exceedances of city and county noise levels **(see Section 5 for potential mitigation measures)** ▪ Potential significant, short-term impacts from substantial increases in noise levels in specific areas near noise-sensitive receptors (e.g., protected species habitat and recreational areas in Smuggler's Gulch; residences immediately adjacent to portions of Monument Road) **(see Section 5 for potential mitigation measures)** ▪ Minor to moderate, short-term impacts from increases in noise levels perceived at recreational areas and residences in the U.S. and Tijuana ▪ Potential minor, short-term impacts to residential buildings from exposure to ground-borne vibration annoyances ▪ Minor, short-term impacts to construction workers from typical occupational noise exposure	Same as Alternative 1, plus the following: ▪ Potential minor, short-term impacts from increase in duration of construction-related noise and ground-borne vibration annoyances due to construction of additional infrastructure
Permanent effects	▪ None	▪ Potential significant, long-term impacts from increase in noise due to continuous (or near-continuous) operation of biogas-fired engine and electrical generator **(see Section 5 for potential mitigation measures)** ▪ Minor, long-term impacts from increase in noise and ground-borne vibration impacts perceived at protected species habitat (depending on construction timing), recreational areas, and residences in the U.S. and Tijuana due to increases in heavy vehicle traffic; however, this would not constitute a substantial increase in ambient noise levels	Same as Alternative 1, plus the following: ▪ Potential minor, long-term impacts from increase in operational noise from new equipment under Projects F and J that would potentially be perceptible at noise-sensitive receptors if no mitigation were implemented

4.19 Socioeconomics

4.19.1 Standards of Significance

Impacts to social and economic resources would be significant if they were to result in any of the following:

- Substantial increase in poverty or unemployment levels.
- Substantial reduction in housing availability, housing affordability, or property values.
- Substantial reduction in access, availability, or affordability of public services and utilities.
- Increase in job growth, population growth, or population concentration to an extent that requires substantial increases in housing, public services, public utilities, or the costs for local governments to provide these services.

4.19.2 No-Action Alternative

Under the No-Action Alternative, coastal communities in San Diego County, including the City of Imperial Beach, and communities near the Tijuana River would continue to experience adverse socioeconomic impacts due to water quality-related beach closures and poor water quality in the river. The No-Action Alternative would not result in any changes in population, housing, employment, economic activity, or other socioeconomic factors.

4.19.3 Alternative 1: Core Projects

Temporary Effects

Construction for Core Projects implemented under Alternative 1 would potentially result in benefits to social and economic resources through minor short-term increases in employment and economic activity during construction (e.g., meals and incidentals for construction workers). Construction activities would also potentially result in minor short-term increases in population and demand for rental housing for non-local workforce; but it is not known from which locations in the region the construction workforce would travel to be employed on the project. Based on a review of EJScreen and the California Healthy Places Index, residential housing within the census tract containing the ITP has a high percentage of rental properties, relative to the county as a whole (Public Health Alliance, 2022). While this suggests that rental properties may be available to regional workforce interested in living immediately adjacent to the construction site, housing in this tract—and in several other tracts surrounding the ITP parcel—is typically completely occupied or overcrowded (e.g., 500 of 522 units are occupied in the block group downstream of Dairy Mart Road Bridge). This could influence the non-local construction workforce to look elsewhere in the San Diego region for short-term housing. Available unoccupied housing units are assumed to exist within reasonable commuting distance elsewhere in the San Diego region. The Core Projects therefore would not be expected to substantially reduce housing availability, affordability, or property values immediately adjacent to the construction sites (at the ITP parcel and in Smuggler's Gulch). Short-term job and population growth would not strain existing housing or public services and utilities to an extent that would increase costs to local governments. Construction for Alternative 1 would not result in significant impacts to socioeconomics per the criteria in Section 4.19.1 (Standards of Significance).

Permanent Effects

Under Alternative 1, implementation of the Core Projects would create minor new employment opportunities—specifically, the hiring of up to approximately 82 new O&M staff—and would create potential indirect socioeconomic benefits due to improved water quality in downstream portions of the Tijuana River Valley and adjacent coastal areas. These potential benefits could include improved recreational conditions, reduced risks to human health, and reduction of water quality-related barriers to tourism and related economic activity in coastal communities (e.g., City of Imperial Beach). It is unknown how many of the new O&M staff would relocate to southern San Diego County and would thus require housing. To the extent that new staff do require housing, available unoccupied housing units are assumed to exist within reasonable commuting distance elsewhere in the San Diego region despite the limited housing availability in the immediate vicinity of the ITP parcel. Implementation of the Core Projects therefore would not be expected to substantially reduce housing availability, affordability, or property values. See Sections 4.1 (Freshwater and Estuarine Resources), 4.2 (Marine Waters), and 4.16 (Public Health and Safety) for additional discussions.

The anaerobic digestion process that would be used for Project A (Expanded ITP) would produce solids with a higher organic content. These solids could be suitable for beneficial reuse, such as land application, which could enhance agricultural production. Pathogen reduction and vector attraction reduction would need to be ensured so that land application of biosolids does not threaten human health and the environment.

These socioeconomic benefits from implementation of the Core Projects would not be expected to affect long-term population trends or demand for public services and utilities. Alternative 1 would not result in significant impacts to socioeconomics per the criteria in Section 4.19.1 (Standards of Significance).

4.19.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Under Alternative 2, implementation of the Core Projects would result in the same impacts to socioeconomics as would occur under Alternative 1. However, Alternative 2 would require a greater amount of construction for implementation of Supplemental Projects, resulting in minor increases in employment and economic activity (e.g., meals and incidentals for construction workers). Similar to Alternative 1, construction activities would also potentially result in minor short-term increases in population and demand for rental housing for non-local workforce; but it is not known from which locations in the region the construction workforce would travel to be employed on the project. For the same reasons as stated under Alternative 1, the Supplemental Projects therefore would not be expected to substantially reduce housing availability, affordability, or property values immediately adjacent to the construction sites (at the ITP parcel and in Smuggler's Gulch). Short-term job and population growth would not strain existing housing or public services and utilities to an extent that would increase costs to local governments. Construction for Alternative 2 would not result in significant impacts to socioeconomics per the criteria in Section 4.19.1 (Standards of Significance).

Permanent Effects

Under Alternative 2, implementation of the Core Projects would result in the same impacts to socioeconomics as would occur under Alternative 1. Alternative 2 would result in slightly more employment opportunities than Alternative 1—specifically, the hiring of up to approximately 27 additional O&M staff for Supplemental Projects—and would create additional potential indirect socioeconomic benefits due to greater improvements to water quality in downstream portions of the Tijuana River Valley and adjacent coastal areas. These potential benefits could include improved recreational conditions, reduced risks to human health, and reduction of water quality-related barriers to tourism and related economic activity in coastal communities (e.g., City of Imperial Beach). Similar to Alternative 1, available unoccupied housing units would be assumed to exist within reasonable commuting distance elsewhere in the San Diego region despite the limited housing availability in the immediate vicinity of the ITP parcel. Implementation of the Supplemental Projects therefore would not be expected to substantially reduce housing availability, affordability, or property values. The total social and economic impacts for Supplemental Projects are indeterminable at this time and would be analyzed in subsequent tiered NEPA analyses.

Implementation of Project J (Trash Boom[s]) would substantially reduce floatable transboundary trash in the Tijuana River Valley and Estuary, which would improve access to recreational resources, improve the visual quality of downstream areas, and reduce public health risks and odors.

Implementation of Projects H (Tijuana WWTP Treated Effluent Reuse) and I (ITP Treated Effluent Reuse) would potentially have beneficial socioeconomic impacts in Tijuana by helping to satisfy the increasing water demand.

The socioeconomic benefits from implementation of Alternative 2 would not be expected to affect long-term population trends or demand for public services and utilities.

See Sections 4.1 (Freshwater and Estuarine Resources), 4.2 (Marine Waters), 4.8 (Visual Resources), 4.11 (Air Quality and Odor), 4.16 (Public Health and Safety), and 4.17 (Transportation) for additional discussions.

4.19.5 Comparative Analysis of the Alternatives

Table 4-37 provides a summary comparison of the impacts described above for the three evaluated alternatives.

None of the evaluated alternatives would result in significant impacts to socioeconomic resources per the criteria in Section 4.19.1 (Standards of Significance).

Table 4-37. Comparative Analysis of Effects – Socioeconomics

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Minor increase in employment due to hiring of construction workers ▪ Minor increase in economic activity during construction (e.g., meals and incidentals for construction workers) ▪ No reduction in access to housing or public services and utilities	Same as Alternative 1, plus the following: ▪ Additional minor increases in employment and economic activities due to construction of additional infrastructure
Permanent effects	▪ None ▪ No reduction in adverse socioeconomic impacts due to water-quality related beach closures and public health concerns	▪ Increase in employment from the hiring of up to 82 new O&M staff ▪ Improved recreational conditions, reduced risks to human health, and reduction of water quality-related barriers to tourism and related economic activity in coastal communities ▪ Potential increases in agricultural productivity through beneficial reuse of solids for land application ▪ No reduction in access to housing or public services and utilities	Same as Alternative 1, plus the following: ▪ Additional increases in employment from the hiring of up to 27 new O&M staff ▪ Additional socioeconomic benefits associated with water quality improvements ▪ Potential alleviation of water demand by providing treated effluent reuse

4.20 Environmental Justice

4.20.1 Standards of Significance

Per CEQ guidance regarding environmental justice (1997b), significance of impacts of the Proposed Action—including consideration of context (e.g., an incremental increase in impacts to a highly overburdened community) and intensity as defined by NEPA—is a factor for determining whether the impacts are disproportionately high and adverse. EPA and USIBWC, in accordance with CEQ and EPA environmental justice guidance, analyzed whether impacts would be disproportionately high and adverse, recognizing that impacts may be both disproportionately high and adverse and significant per NEPA depending on the context and intensity most relevant to the communities with environmental justice concerns that are affected (those identified in Section 3.20 [Environmental Justice]).

As described in Section 3.20 (Environmental Justice), EPA and USIBWC evaluated whether environmental inequities exist in communities in the EJ Study Area, which includes communities in the vicinity of construction and operational activities under the Proposed Action. This analysis determined that minority and, to a lesser extent, low-income populations are prevalent throughout the EJ Study Area, including several communities in the immediate vicinity of the ITP with extremely high (90th percentile and higher) minority and low-income population percentiles relative to the County of San Diego overall. Additionally, many communities in the EJ Study Area currently experience extremely high (90th percentile and higher) burdens for multiple environmental indicators, including poor air quality (e.g., $PM_{2.5}$ and diesel PM) and traffic-related impacts, among others. The multiple social and environmental burdens in these communities contribute stressors that can amplify impacts of the Proposed Action and further increase overburdens felt by the community. See Section 3.20 (Environmental Justice) and Appendix F

(Supplemental Data for Environmental Justice Analysis) for additional information. EPA and USIBWC considered this context in determining whether specific impacts under the Proposed Action should be considered significant (within the meaning of NEPA) and/or disproportionately high and adverse.

4.20.2 No-Action Alternative

Under the No-Action Alternative, the existing ITP would continue to exist with no changes in operation, meaning contaminated transboundary flows would continue to result in impacts to the surrounding community that currently experiences high social and environmental burdens. The No-Action Alternative would not achieve the desired environmental improvements to the surrounding community because this alternative does not reduce contaminated transboundary flows in the Tijuana River, estuary, and coastal areas.

4.20.3 Alternative 1: Core Projects

Temporary Effects

Construction for Core Projects implemented under Alternative 1 would result in temporary impacts to communities with environmental justice concerns due to construction-related emissions and traffic. As described below, construction for Alternative 1 would result in disproportionately high and adverse effects on minority, low-income, and/or overburdened communities. EPA and USIBWC would incorporate mitigation measures as described in Section 5 (Mitigation Measures) to avoid, minimize, or compensate for these effects.

Construction for Projects A (Expanded ITP) and D (APTP Phase 1) would result in extended periods of construction activity at the ITP parcel, including use of heavy trucks along roads between the ITP parcel, fill source locations in the Tijuana River Valley, and landfills (e.g., Otay Landfill) for disposal of construction debris. These construction activities would therefore result in temporary increases in criteria air pollutant emissions (including $PM_{2.5}$ and diesel PM) and traffic. As discussed in Sections 4.11 (Air Quality and Odor) and 4.17 (Transportation), all criteria pollutant emissions from construction (including PM) would be very low compared to both GCR *de minimis* thresholds and San Diego AQIA trigger levels, and the expected increase in counts of vehicles during construction would be very low compared to existing average daily traffic volumes. However, these impacts would occur in communities that currently experience high (between the 65–89th percentiles) and/or extremely high (90th percentile or higher) burdens for these specific environmental indicators in addition to other social and environmental burdens—e.g., 95th percentile or higher for $PM_{2.5}$ in all portions of the EJ Study Area and 65th percentile or higher for Diesel PM in more than half of the census tracts in the EJ Study Area (CalEPA, 2021a). Therefore, these construction-related impacts under Projects A and D would be significant when considered within the context of the impacted communities. Additionally, because these impacts would occur predominantly within minority, low-income, and/or overburdened communities, impacts to these communities would appreciably exceed those to the general population (e.g., San Diego County as a whole). EPA and USIBWC therefore considered these air quality and traffic-related impacts under Projects A and D to be disproportionately high and adverse effects.

Construction for Project B (Tijuana Canyon Flows to ITP), depending on the option selected, would also result in temporary construction activity in the U.S. between Smuggler's Gulch and the ITP parcel to install underground pipelines. While these activities would generate temporary air emissions and vehicle use, work would involve small construction crews and equipment fleets and would not involve prolonged use of heavy trucks along local roads and highways. Construction-related impacts under Project B would therefore not be significant when considered within the context of the impacted communities and would not be disproportionately high and adverse.

Construction and sewage collector repair activities in Mexico under Projects B, C (Tijuana Sewer Repairs), and D would not result in temporary transboundary impacts to air quality in the U.S. due to their distance from the U.S.-Mexico border and/or limited scope of construction activities, and would not result in any temporary traffic impacts in the U.S. These activities would therefore not be significant when considered within the context of the impacted communities and would not be disproportionately high and adverse.

Due to the proximity to the U.S.-Mexico border and communities in Tijuana, construction activities at the ITP parcel—particularly under Project A—would potentially result in temporary minor to moderate transboundary air quality and noise effects on receptors in Mexico. These temporary impacts could contribute to existing socio-environmental vulnerabilities in Mexico communities along the border.

See Sections 4.11 (Air Quality and Odor), 4.17 (Transportation), 4.18 (Noise), and 4.19 (Socioeconomics) for additional discussion of temporary construction-related impacts. See Section 4.21.5 (Cumulative Effects) regarding significant cumulative environmental justice impacts that require mitigation, based on a review of the impacts of other past, present, or reasonably foreseeable actions.

Permanent Effects

Under Alternative 1, implementation of the Core Projects would result in long-term impacts to communities with environmental justice concerns due to operational emissions, odor, and traffic. As described below, Alternative 1 would result in disproportionately high and adverse effects on minority, low-income, and/or overburdened communities. EPA and USIBWC would incorporate mitigation measures as described in Section 5 (Mitigation Measures) to avoid, minimize, or compensate for these effects.

Operations under Projects A (Expanded ITP) and D (APTP Phase 1) would result in long-term operational emissions, a long-term increase in employee commuting to the ITP parcel due to staff increases, and a long-term increase in the use of heavy trucks along roads between the ITP parcel and landfills (e.g., Otay Landfill) for disposal of solids waste. These operations would therefore result in long-term increases in criteria air pollutant emissions (including $PM_{2.5}$ and diesel PM) and traffic. As discussed in Sections 4.11 (Air Quality and Odor) and 4.17 (Transportation), all criteria pollutant emissions from operations (including PM) would be very low compared to both GCR *de minimis* thresholds and San Diego AQIA trigger levels, with the incorporation of pollution controls as described in Section 4.11 (Air Quality and Odor), and the expected increase in counts of vehicles during operation would be very low compared to existing average daily traffic volumes. However, these impacts would occur in communities that currently experience extremely high burdens for these specific environmental indicators in addition to other social and environmental burdens. Therefore, these operational impacts under Projects A and D would be significant when considered within the context of the impacted communities. Additionally, as described in Section 4.11 (Air Quality and Odor), H_2S emissions from the anaerobic digestion process under Project A—which would operate on a continuous (or near-continuous) basis—would have the potential to create objectionable odors affecting nearby communities, thus resulting in a significant impact. Because these impacts would occur predominantly within minority, low-income, and/or overburdened communities, impacts to these communities would appreciably exceed those to the general population (e.g., San Diego County as a whole). EPA and USIBWC therefore considered these air quality, odor, and traffic-related impacts under Projects A and D to be disproportionately high and adverse effects.

Projects B (Tijuana Canyon Flows to ITP) and C (Tijuana Sewer Repairs) would not generate operating emissions and would involve minimal or no traffic impacts associated with O&M. Operational impacts from these projects would therefore not be significant when considered within the context of the impacted communities and would not be disproportionately high and adverse.

Due to the proximity to the U.S.-Mexico border and communities in Tijuana, the operational activities described above at the ITP parcel—particularly under Project A—would potentially result in long-term minor to moderate transboundary air quality, odor, and noise impacts to receptors in Mexico. Additionally, under Project A, increased truck hauling of solid waste to a disposal site[60] in Mexico (through a dedicated ITP gate in the border fence) would increase the associated air quality, noise, and traffic impacts in Mexico.[61] These long-term impacts could contribute to existing socio-environmental vulnerabilities in Mexico communities along the border. EPA and USIBWC are available to support the Mexican government in conducting targeted community outreach and engagement, should the Mexican government request support.

See Sections 4.11 (Air Quality and Odor), 4.13 (Solid and Hazardous Waste), 4.17 (Transportation), and 4.19 (Socioeconomics) for additional discussion. See Section 4.21.5 (Cumulative Effects) regarding significant cumulative environmental justice impacts that require mitigation, based on a review of the impacts of other past, present, or reasonably foreseeable actions.

4.20.4 Alternative 2: Core and Supplemental Projects

Supplemental Projects are included in this PEIS at a programmatic level and are intended to be analyzed further in subsequent tiered NEPA analyses.

Temporary Effects

Under Alternative 2, implementation of the Core Projects would result in the same impacts to communities with environmental justice concerns as would occur under Alternative 1. However, Alternative 2 would require a greater amount of construction for implementation of Supplemental Projects, resulting in slight increases in temporary impacts to communities with environmental justice concerns that would be further analyzed in subsequent tiered NEPA analyses. Construction for Alternative 2 would result in disproportionately high and adverse effects on minority, low-income, and/or overburdened communities. EPA and USIBWC would perform additional public outreach as necessary during the subsequent tiered NEPA analyses to explore and incorporate appropriate mitigation measures to avoid, minimize, or compensate for these effects.

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[60] As discussed in Section 3.13 (Solid and Hazardous Waste), disposal site alternatives to Punta Bandera have not been identified by Mexico yet. EPA may coordinate with Mexico to ensure mitigation measures are identified once Mexico selects an alternative disposal site.

[61] Options A1 and A2 would decrease solids waste production. For Option A3, initial operating conditions would also result in a decrease in solids waste production; however, between approximately 2030 and 2050, plant operations would gradually increase solids waste production as the additional treatment capacity comes into service in response to population growth.

Construction for certain Supplemental Projects would result in extended periods of construction activity in the vicinity of the ITP parcel, including use of heavy trucks along roads between the ITP parcel and landfills (e.g., Otay Landfill) for disposal of construction debris. Specifically, construction for Projects E (APTP Phase 2), F (U.S.-side River Diversion to APTP), and J (Trash Boom[s]) would result in temporary increases in criteria air pollutant emissions (including $PM_{2.5}$ and diesel PM) and traffic. As discussed in Sections 4.11 (Air Quality and Odor) and 4.17 (Transportation), criteria pollutant emissions from construction for the Supplemental Projects (including PM) are estimated to be similar to or less than those for the Core Projects, which are well below both GCR *de minimis* thresholds and San Diego AQIA trigger levels, and the expected increase in counts of vehicles during construction would be very low compared to existing average daily traffic volumes. However, these impacts would occur in communities that currently experience extremely high burdens for these specific environmental indicators in addition to other social and environmental burdens. Additionally, some areas under consideration for the U.S.-side river diversion and trash boom(s) are located in very close proximity (approximately 230 feet) to residential developments, such as those in the Coral Gate neighborhood. Therefore, these construction-related impacts under Projects E, F, and J would be potentially significant when considered within the context of the impacted communities. Additionally, because these impacts would occur predominantly within minority, low-income, and/or overburdened communities, impacts to these communities would appreciably exceed those to the general population (e.g., San Diego County as a whole). EPA and USIBWC therefore considered these air quality and traffic-related impacts under Projects E, F, and J to be potentially disproportionately high and adverse effects.

Construction for Project I (ITP Treated Effluent Reuse) would involve temporary, limited activity in the ITP parcel along a narrow linear footprint for installation of a treated effluent pipeline. While this activity would generate temporary air emissions and result in vehicle use, work would be limited to a small construction footprint and would not involve prolonged use of heavy vehicles. Construction-related impacts under Project I would therefore not be significant when considered within the context of the impacted communities and would not be disproportionately high and adverse.

Construction activities in Mexico under Project I would result in temporary transboundary impacts to air quality in the U.S. due to the distance from the U.S.-Mexico border. However, due to the limited scope of construction activities (i.e., less than 300 feet of pipeline installation to cross the border), these impacts would not be significant when considered within the context of the impacted communities and would not be disproportionately high and adverse. Construction for Projects G (New SABTP) and H (Tijuana WWTP Treated Effluent Reuse) in Mexico would not result in any temporary impacts to minority, low-income, and/or overburdened communities in the U.S. because these projects are substantially removed in distance from U.S. communities.

Due to the proximity to the U.S.-Mexico border and communities in Tijuana, construction activities at the ITP parcel for Projects E and I would potentially result in temporary minor transboundary air quality effects on receptors in Mexico. In addition, Projects E, F, I, and J would potentially result in temporary minor transboundary noise effects on receptors in Mexico. These temporary impacts could contribute to existing socio-environmental vulnerabilities in Mexico communities along the border.

See Sections 4.11 (Air Quality and Odor), 4.17 (Transportation), 4.18 (Noise), and 4.19 (Socioeconomics) for additional discussion of temporary construction-related impacts. See Section 4.21.5 (Cumulative Effects) regarding significant cumulative environmental justice impacts that require mitigation, based on a review of the impacts of other past, present, or reasonably foreseeable actions.

Permanent Effects

Under Alternative 2, implementation of the Core Projects would result in the same impacts to communities with environmental justice concerns as would occur under Alternative 1. Alternative 2 would potentially result in disproportionately high and adverse effects on minority, low-income, and/or overburdened communities. EPA and USIBWC would perform additional public outreach as necessary during the subsequent tiered NEPA analyses to explore and incorporate appropriate mitigation measures to avoid, minimize, or compensate for these effects.

Operations under Projects E (APTP Phase 2), F (U.S.-side River Diversion), and J (Trash Boom[s]) would result in long-term operational emissions, a long-term increase in employee commuting to the ITP parcel due to staff increases (for Project E), and a long-term increase in the use of heavy trucks along roads between the ITP parcel and landfills (e.g., Otay Landfill) for disposal of solids waste and/or trash. Project E would also include a new stationary source of emissions (occasional operation of new emergency generator), which would not generate substantial emissions. These operations would therefore result in long-term increases in criteria air pollutant emissions (including $PM_{2.5}$ and diesel PM) and traffic. As discussed in Sections 4.11 (Air Quality and Odor) and 4.17 (Transportation), all criteria pollutant emissions from operations (including PM) would be very low compared to both GCR *de minimis* thresholds and San Diego AQIA trigger levels, with the incorporation of pollution controls as described in Section 4.11 (Air Quality and Odor), and the expected increase in counts of vehicles during operation would be very low compared to existing average daily traffic volumes (with the potential exception of Project J, depending on the timing and frequency of trash hauling activities). However, these impacts would occur in communities that currently experience extremely high burdens for these specific environmental indicators in addition to other social and environmental burdens. Therefore, these operational impacts under Projects E, F, and J would be potentially significant when considered within the context of the impacted communities. Additionally, because these impacts would occur predominantly within minority, low-income, and/or overburdened communities, impacts to these communities would appreciably exceed those to the general population (e.g., San Diego County as a whole). EPA and USIBWC therefore considered these air quality and traffic-related impacts under Projects E, F, and J to be potentially disproportionately high and adverse effects.

The U.S.-side river diversion for Project F and the trash boom(s) for Project J would potentially detract from the visual character of the surrounding area. Project J would also result in the accumulation of trash upstream of the trash boom(s) and in trash processing area(s) that may be visible and produce objectionable odors. Projects F and J would potentially create conditions conducive to the breeding and multiplication of disease vectors (e.g., mosquitoes, rodents, stray dogs) that could impact public health in nearby minority and/or low-income communities. Because these potentially significant impacts would occur predominantly within minority, low-income, and/or overburdened communities, impacts to these communities would appreciably exceed those to the general population (e.g., San Diego County as a whole). EPA and USIBWC therefore considered these odor, visual, and public health and safety impacts under Project F and J to be potentially disproportionately high and adverse effects.

Specific impacts to minority, low-income, and/or overburdened communities would be dependent on the location and design of the river diversion, trash boom(s), and trash processing area(s); the capture efficiency of the trash boom(s); and the frequency of trash extraction and disposal from the trash boom(s). The Supplemental Projects would be further defined, analyzed, and mitigated in subsequent tiered NEPA analyses with input from the local community. EPA and USIBWC are available to support the Mexican government in conducting targeted community outreach and engagement, should the Mexican government request support.

Due to the proximity to the U.S.-Mexico border and communities in Tijuana, the operational activities described above at the ITP parcel—particularly under Projects E, I, and J—would potentially result in long-term minor transboundary air quality and noise effects on receptors in Mexico. These long-term impacts could contribute to existing socio-environmental vulnerabilities in Mexico communities along the border.

Operations under Projects G (New SABTP) and H (Tijuana WWTP Treated Effluent Reuse) would not result in any long-term impacts to minority, low-income, and/or overburdened communities in the U.S. because these projects are substantially removed in distance from U.S. communities (approximately 4 to 12 miles away from the EJ Study Area).

See Sections 4.8 (Visual Resources), 4.11 (Air Quality and Odor), 4.16 (Public Health and Safety), 4.17 (Transportation), and 4.19 (Socioeconomics) for additional discussions. See Section 4.21.5 (Cumulative Effects) regarding significant cumulative environmental justice impacts that require mitigation, based on a review of the impacts of other past, present, or reasonably foreseeable actions.

4.20.5 Comparative Analysis of the Alternatives

Table 4-38 provides a summary comparison of the impacts described above for the three evaluated alternatives.

Two of the evaluated alternatives would, in the absence of mitigation, potentially result in disproportionately high and adverse effects on minority, low-income, and/or overburdened communities. Section 5 (Mitigation Measures) identifies the mitigation measures that would be implemented for the Core Projects and provides recommended mitigation measures for the Supplemental Projects (which would be further refined and developed in subsequent tiered NEPA analyses).

Table 4-38. Comparative Analysis of Effects – Environmental Justice

Effect Category	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Core and Supplemental Projects)
Temporary effects	▪ None	▪ Significant and disproportionately high and adverse effects due to minor increases in criteria air pollutant emissions (including $PM_{2.5}$ and diesel PM) and traffic associated with extended construction for the expanded ITP and new APTP in areas currently experiencing extremely high overburdens from $PM_{2.5}$, diesel PM, traffic impacts, and/or traffic proximity **(see Section 5 for potential mitigation measures)** ▪ Potential minor to moderate transboundary air quality and noise impacts to socio-environmentally vulnerable communities in Mexico due to construction at the ITP parcel	Same as Alternative 1, plus the following: ▪ Potential additional increases in significant and disproportionately high and adverse effects due to minor increases in $PM_{2.5}$, diesel PM, and traffic resulting from construction for the expanded APTP, U.S.-side river diversion, and trash boom(s) **(see Section 5 for potential mitigation measures)** ▪ Potential minor increases in transboundary air quality and/or noise impacts to socio-environmentally vulnerable communities in Mexico due to additional construction at the ITP parcel and/or for the U.S.-side river diversion and trash boom(s)
Permanent effects	▪ None	▪ Significant and disproportionately high and adverse effects due to minor increases in criteria air pollutant emissions (including $PM_{2.5}$ and diesel PM) and traffic associated with operations, commuting, and waste hauling in areas currently experiencing extremely high overburdens from $PM_{2.5}$, diesel PM, traffic impacts, and/or traffic proximity **(see Section 5 for potential mitigation measures)** ▪ Significant and disproportionately high and adverse effects due to objectionable odor emissions from the ITP anaerobic digestion process **(see Section 5 for potential mitigation measures)** ▪ Potential minor to moderate transboundary air quality, odor, noise, and/or traffic impacts to socio-environmentally vulnerable communities in Mexico due to operations at the ITP parcel and/or waste hauling and disposal	Same as Alternative 1, plus the following: ▪ Potential additional increases in significant and disproportionately high and adverse effects due to minor increases in $PM_{2.5}$, diesel PM, and traffic resulting from operation of the expanded APTP, U.S.-side river diversion, and trash boom(s) **(see Section 5 for potential mitigation measures)** ▪ Potential significant and disproportionately high and adverse effects due to visual intrusions from the U.S.-side river diversion and trash boom(s) **(see Section 5 for potential mitigation measures)** ▪ Potential significant and disproportionately high and adverse effects due to proximity to disease vectors from the U.S.-side river diversion and trash boom(s) **(see Section 5 for potential mitigation measures)** ▪ Potential minor increases in transboundary air quality and noise impacts to socio-environmentally vulnerable communities in Mexico due to additional operations at the ITP parcel

4.21 Other Sections Required by NEPA and CEQA

4.21.1 Unavoidable Adverse Effects

Unavoidable adverse effects are those that cannot be avoided should the Proposed Action be implemented (40 CFR § 1502.16(a)(2)). Where practicable, mitigation would be incorporated to reduce the adverse effects as specified in Section 5 (Mitigation Measures). Adverse impacts that cannot be eliminated through mitigation would be unavoidable.

Unavoidable adverse effects related to the Proposed Action would include the following:

- Reduction in surface water flows in the Tijuana River (Core and Supplemental Projects).
- Increased criteria pollutant and GHG emissions during construction and operations (Core and Supplemental Projects).
- Increased production of wastewater treatment solids waste and trash that require disposal at regional landfills (Core and Supplemental Projects).
- Increased traffic (i.e., commuter vehicles and trucks) on local roads during construction and operations (Core and Supplemental Projects).
- Disproportionately high and adverse effects due to increased criteria air pollutant emissions and traffic in communities currently experiencing extremely high overburdens (Core and Supplemental Projects).
- Transboundary air quality and noise impacts to socio-environmentally vulnerable communities in Mexico (Core and Supplemental Projects).
- Reduction in acreage of jurisdictional water resources (Supplemental Projects).

4.21.2 Relationship Between Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Productivity

Implementation of the Proposed Action would require short-term commitments of energy, raw materials, and other resources during construction to further the overall purpose of providing enduring, long-term enhancements to environmental quality and public health as described in Section 1.4 (Purpose and Need for Action).

The Proposed Action would not result in any disruptions to short-term uses of resources or negative effects on the long-term productivity of the Tijuana River Valley.

4.21.3 Irreversible and Irretrievable Commitment of Resources

The CEQ NEPA Implementing Regulations require that evaluation of environmental consequences include discussion of irreversible or irretrievable commitments of resources needed for implementation of the Proposed Action (40 CFR § 1502.16[a][4]).

According to the CEQA Guidelines, evaluation of irreversible and irretrievable commitments should be completed to ensure that consumption for the Proposed Action is justified (Cal. Code Regs. tit. 14, § 15126.2(d)). The irreversible and irretrievable commitment of resources refers to the use of non-renewable resources such that their future removal or nonuse would be unlikely. A commitment of resources would also be considered irreversible and irretrievable if the resource is consumed or destructed such that it could not be replaced, or if the resource is degraded to a point such that there would be little possibility for its restoration.

Implementation of the Proposed Action would result in the irreversible and irretrievable commitment of energy, material, human, and financial resources during construction and long-term operation as discussed below.

The consumption of non-renewable fossil fuels would occur during construction activities and long-term O&M of projects. Equipment and vehicles would use fossil fuels (e.g., gasoline, diesel) to operate. Electricity would also be generated in part by non-renewable energy sources. However, these energy sources would be readily available and their use for the Proposed Action would not substantially increase energy demand or preempt future energy development or energy conservation. Thus, the commitment of energy for the Proposed Action would have no adverse impacts and would not be significant. See Section 4.14 (Energy) for additional discussion.

Construction of proposed infrastructure would require the use of building and fill materials. The use of these materials would be irreversible and irretrievable. However, construction materials and fill would be readily available and their use for the Proposed Action would not inhibit construction for unrelated actions or substantially increase their demand. Therefore, the commitment of material resources for the Proposed Action would have no adverse impacts and would not be significant.

The use of human resources would be needed for construction activities, facility O&M, and truck hauling for disposal of wastes during operations. Increased staffing needs could potentially strain the availability of truck drivers for unrelated actions. However, the need for human resources could help alleviate economic burdens in the Tijuana River Valley by providing employment opportunities. Therefore, the commitment of human resources for the Proposed Action would have no adverse impacts and would not be significant. See Sections 4.17 (Transportation), 4.19 (Socioeconomics), and 4.20 (Environmental Justice) for additional discussion.

The expenditure of federal funding for implementation of the Proposed Action would commit funds that would not be able to be used for other projects. However, these financial resources would allow for a comprehensive solution to address transboundary pollution in the Tijuana River Valley. Less-comprehensive projects and funding mechanisms may not be sufficient to address existing and projected deficiencies described in Section 1.3 (Causes and Impacts of Contaminated Transboundary Flows from Tijuana). The expenditure of funds would allow for EPA to meet the goals and objectives of the USMCA Implementation Act and meet the purpose and need of the Proposed Action as described in Section 1.4 (Purpose and Need for Action). Therefore, the commitment of financial resources would not be considered significant.

As discussed above, the use of non-renewable energy sources would be required for implementation of the Proposed Action. However, the use of non-renewable energy would be considered minor in a regional context. In addition, the use of non-renewable energy would be potentially offset by energy-saving equipment and operating strategies, and potential installation of a biogas-fueled electric generator to offset other onsite energy consumption. See Section 4.14 (Energy) and Table 5-2 for additional discussion of energy use and conservation. Water would not be used as a consumable resource except for minor consumption from existing water utility connections required at proposed WWTPs for operations and thus the Proposed Action would not deplete water resources. Additionally, some components of the Proposed Action—specifically, Projects H (Tijuana WWTP Treated Effluent Reuse) and I (ITP Treated Effluent Reuse)—would help conserve water by providing opportunities for water reuse.

The Proposed Action would not require excessive use of natural resources. As an objective of the Proposed Action, both Alternative 1 and Alternative 2 would aim to protect natural resources from the negative effects of contaminated transboundary flows. Thus, the Proposed Action would help conserve natural resources throughout the Tijuana River Valley and the Pacific Ocean. See Sections 4.1 (Freshwater and Estuarine Resources), 4.2 (Marine Waters), 4.3 (Floodplains), 4.4 (Inland Biological Resources), 4.5 (Marine Biological Resources), 4.6 (Geological Resources), and 4.11 (Air Quality and Odor) for respective discussions on potential impacts to natural resources.

4.21.4 Growth-Inducing Impacts

The CEQA Guidelines require that evaluation of environmental consequences include discussion of growth-inducing impacts resulting from implementation of the Proposed Action (Cal. Code Regs. tit. 14, § Section 15126(e)). Growth-inducing impacts would be expected to occur if an action has indirect or direct effects that would foster economic or population growth. The Proposed Action would not result in direct growth-inducing impacts as it would not include construction or removal of housing, displacement of people, or changes in land use that would alter planned population densities.

As discussed in Section 4.19 (Socioeconomics), the Proposed Action would not be expected to have significant effects on population growth or housing in the U.S.

Improved water quality would potentially restore recreational resources and reduce water quality-related obstacles to economic growth in portions of the Tijuana River Valley and adjacent coastal areas. While these beneficial effects could help reduce barriers to economic growth, these changes would occur due to restoration of previously existing environmental conditions, rather than through creation of new economic opportunities. Therefore, improved water quality would not result in significant growth-inducing impacts.

Implementation of the Proposed Action would improve wastewater treatment capacity; however, this improved capacity would not serve communities in the U.S. Therefore, improved wastewater treatment capacity would not remove an obstacle to growth or foster economic or population growth in the U.S., and would thus not result in growth-inducing impacts in the U.S.

More specifically, for Project A (Expanded ITP), Option A3, the 60-MGD expanded plant would provide sufficient capacity to treat sewage from the Tijuana population under both initial operating conditions (projected as 50 MGD in 2030) and projected conditions in 2050 (projected as 60 MGD in 2050). While Option A3 would eventually provide sufficient reserve wastewater treatment capacity to account for future population growth, this would not be considered a significant growth-inducing impact given that insufficient treatment capacity does not currently inhibit population growth in Tijuana. The existing lack of sufficient treatment capacity for wastewater from Tijuana has proven to <u>not</u> be an obstacle to population growth, as the population in Tijuana has continued to grow beyond the capabilities of the existing collection and treatment system. Thus, providing additional capacity would not remove an obstacle to growth. Implementation of Option A3 would be intended to reduce the impacts of projected population growth in Tijuana, rather than fostering or promoting growth. Therefore, Option A3 would not result in significant growth-inducing impacts in Tijuana.

4.21.5 Cumulative Effects

The Proposed Action, in combination with other past, present, or reasonably foreseeable actions within or near the Tijuana River Valley, could contribute to cumulative effects on certain environmental resources. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.1(g) [2022]). The extent of the cumulative effects analysis is generally limited to the geographic/natural boundaries of the affected resource areas. CEQ indicates that the geographic extent for the analysis can be defined on a case-by-case basis and is dependent on the affected resources (CEQ, 1997c).

4.21.5.1 Past, Present, and Reasonably Foreseeable Actions within Geographic Scope of Analysis

Table 4-39 lists the past, present, and reasonably foreseeable actions that EPA and USIBWC considered in the cumulative effects analysis. These actions include those discussed in Section 2.8 (Related Projects), baseline conditions affecting existing communities, and additional projects or actions that are known to occur in the Tijuana River Valley area that are unrelated to the Proposed Action.

Table 4-39. Past, Present, and Reasonably Foreseeable Actions Considered for Cumulative Effects

Action	Proponent	Location	Description	Status
Related Projects to Mitigate Contaminated Transboundary Flows in the Tijuana Area				
1. Smuggler's Gulch trash booms	County of San Diego	U.S.	Installed trash booms across the drainage swale in Smuggler's Gulch, downstream of the existing collector structure.	Completed
2. Trash fence in Matadero Canyon	CESPT	Mexico	Installed a trash wall/fence in Matadero Canyon roughly 2,000 feet south of the border to screen trash before it crosses the border into the U.S.	Completed
3. Rehabilitation of Collector Poniente Segment 1A	CESPT	Mexico	Installed 1,928 meters of pipelines and rehabilitated the Cañon del Sainz–Los Reyes connection in Tijuana to reduce the risk of line failures and untreated wastewater discharges to the Tijuana River.	Completed
4. Sediment excavation in Smuggler's Gulch and the Tijuana River	City of San Diego	U.S.	Dredging and excavation of sediment from the Smuggler's Gulch channel, downstream from Smuggler's Gulch to the pilot channel, and in portions of the Tijuana River.	Ongoing
5. Trash boom in Los Laureles Canyon	Wildcoast and City of Tijuana	Mexico	Installed a trash boom in Los Laureles Canyon approximately 1.2 miles south of the border.	Completed
6. Rehabilitation of the Collector Oriente	CESPT	Mexico	Rehabilitated the Buena Vista section of the Collector Oriente sewer main and installed 1,346 meters of pipelines in Tijuana to reduce the risk of line failures and untreated wastewater discharges that could affect the Tijuana River.	Completed
7. Repair ITP junction box 1 (JB-1)	USIBWC	U.S.	Repair JB-1 to restore gates and flow control for influent from the International Collector to the ITP.	Planned
8. Smuggler's Gulch sediment and trash capture facility	County of San Diego	U.S.	Install a sediment capture basin and trash boom in Smuggler's Gulch to trap large trash/sediment flows and reduce downstream impacts. Widen existing culvert under Monument Road to reduce flooding.	Planned
9. Tijuana River Barrier Project	CBP	U.S.	Install a trash barrier across the Tijuana River along the U.S.–Mexico border between the existing concrete levees on either side of the main channel.	Planned
10. Continued operation of ITP and SBWRP	USIBWC and City of San Diego	U.S.	Continued wastewater treatment operations at the ITP and SBWRP and discharge to the Pacific Ocean via the SBOO, in addition to any added capacity under the USMCA project.	Ongoing
11. Rehabilitation of the International Collector (Phase 1)	CESPT	Mexico	Install a redundant line in Mexico to reduce the risk of line failures and untreated wastewater discharges that could affect the Tijuana River.	Planned
12. Tijuana River diversion rehabilitation	CONAGUA, CESPT, CILA, EPA	Mexico	Rehabilitate pump station PB-CILA and construct a new Tijuana River intake (already completed as part of cost-sharing agreement with Mexico); rehabilitate PB1-A and PB1-B.	Ongoing

Table 4-39. Past, Present, and Reasonably Foreseeable Actions Considered for Cumulative Effects

Action	Proponent	Location	Description	Status
Other Actions				
13. Tijuana River Valley Regional Park campground	County of San Diego Department of Parks and Recreation	U.S.	Constructed a 79-acre campground featuring dozens of tent, RV, yurt, and equestrian campsites, along with nature education opportunities, an amphitheater, and other amenities.	Completed
14. Replacement, Operation, and Maintenance of Tactical Infrastructure	CBP	U.S.	Replaced approximately 14 miles of primary pedestrian fence and made other infrastructure improvements along the southwestern border of the U.S. between the City of Tijuana, Mexico and the City of San Diego, California.	Completed
15. Rehabilitation of the levee system in the Tijuana River Flood Control Project	USIBWC	U.S.	Rehabilitate the levee system upstream of Dairy Mart Road to protect surrounding communities from a 100-year flood.	Planned
16. Continued operation of Point Loma WWTP	City of San Diego	U.S.	Continued wastewater treatment operations and discharge to the Pacific Ocean through the Point Loma Ocean Outfall.	Ongoing
17. Vegetation maintenance	CBP	U.S.	Regular vegetation maintenance upstream of Dairy Mart Road Bridge to ensure border security.	Ongoing
18. Tijuana Estuary Tidal Restoration Project II Phase I	USFWS	U.S.	Restore approximately 80–85 acres of disturbed uplands and degraded wetlands in the southern arm of the Tijuana Estuary within the Tijuana Slough NWR and Border Field State Park.	Planned (EIS NOI published in May 2021)
19. Nelson Sloan Quarry Restoration and Beneficial Reuse of Sediment Project	CDPR	U.S.	Consists of the beneficial re-use of excess sediment excavated from flood control facilities and disturbed habitats in the Tijuana River Valley towards the restoration of the Nelson Sloan Quarry.	Planned (Draft EIR published September 2021)
20. Tijuana River Valley Regional Park Trails and Enhancement Project	County of San Diego Department of Public Works	U.S.	Refine and permit a network of multi-use recreational trails, which would facilitate recreational access and allow for the rehabilitation of degraded natural habitats within the Tijuana River Valley Regional Park.	To be determined
21. Border wall remediation and repairs	CBP	U.S.	Improper compaction of soil and construction materials along a wall segment is causing dangerous erosion along a 14-mile stretch in San Diego, California. DHS will begin necessary backfill projects to ensure the safety of nearby border communities.	To be determined
Other Conditions Affecting Tijuana River Valley Communities				
22. Baseline conditions and activities in overburdened communities	N/A	U.S. and Mexico	Stressors, such as emissions from traffic congestion and climate-driven risks/trends such as increased drought conditions, that contribute to environmental and human health impacts in overburdened communities.	Ongoing
23. Wastewater infrastructure failures	N/A	Mexico	See Section 1.3.1.	Ongoing

4.21.5.2 Cumulative Effects Analysis

The majority of the identified past, present, and reasonably foreseeable actions or projects considered in the cumulative effects analysis are intended to improve environmental conditions and/or public health and safety in the Tijuana River Valley—for example, by restoring wetland habitat or by preventing or capturing transboundary flows of trash and untreated wastewater. These projects also do not encourage growth or qualify as major development projects, as they neither increase housing nor provide new commercial or industrial opportunities to the neighboring urban and suburban areas.

Due to the variety of projects analyzed as part of the Proposed Action and the scale of the geographic area of analysis, the cumulative effects analysis is limited to a discussion of resource areas affected by the Proposed Action that are of national, regional, and/or local significance and that have non-beneficial impacts as a result of the Proposed Action.

The resource areas identified for discussion in the cumulative effects analysis are presented in Table 4-40 along with a description of the geographic area of analysis considered in the analysis. The cumulative effects of the Proposed Action in combination with past, present, and reasonably foreseeable projects is discussed in the subsections below. Based on this analysis, EPA and USIBWC identified potentially significant cumulative effects for air quality and environmental justice and identified one additional mitigation measure, which is reflected in Section 5 (Mitigation Measures).

All Supplemental Projects should be reassessed for cumulative effects at the time of their subsequent tiered NEPA analysis.

Table 4-40. Cumulative Effects Analysis Scope and Project Matrix

Affected Resource of National/Regional/Local Significance	Element(s) of Proposed Action That Would Result in Non-beneficial Effect	Geographic Area of Analysis Associated with the Affected Resource	Other Actions that Affect the Resource in the Geographic Area (See Table 4-39)
Freshwater and Estuarine Resources: Hydrology	Construction in wetlands in the U.S.; operation of new infrastructure in the U.S. and Mexico that would cause a reduction in downstream Tijuana River flow frequency and volume	The Tijuana River watershed	All actions (except 16)
Marine Waters and Biological Resources	Increase in discharges of treated effluent to Pacific Ocean via the SBOO; physical modification of SBOO diffusers	Ocean waters from Point Loma to the U.S.-Mexico border, extending out to the continental shelf (approximately 10 miles offshore)	10, 16, 23
Floodplains	Construction in the Tijuana River floodplain (e.g., between the north and south levees) for installation of new infrastructure in the U.S.	The 100-year floodplain of the Tijuana River in the U.S. that is upstream of Dairy Mart Road	9, 14, 15, 17
Inland Biological Resources	Construction in the U.S.; operation of new infrastructure in the U.S. and Mexico that would cause a reduction in downstream Tijuana River flow frequency and volume	Localized areas in the vicinity of construction activities in the U.S. and habitat in areas downstream of new infrastructure in the Tijuana River Valley in the U.S.	All actions in the U.S. (except 16)
Air Quality	Construction activities in the U.S. and Mexico (i.e., fugitive dust); operations of new infrastructure in the U.S. (i.e., anaerobic digestion and combustion of biogas at the expanded ITP and emissions from truck hauling of solids for disposal); and operation of new infrastructure in Mexico (i.e., emissions from truck hauling of solids for disposal)	The San Diego air basin and Tijuana, Mexico	All actions (except 23)
Odor	Operation of the expanded ITP in the U.S.	Localized areas in the vicinity of the ITP (including communities in and adjacent to the Tijuana River Valley and Mexico communities near the ITP)	23
GHG Emissions	See Air Quality	The San Diego air basin and Tijuana, Mexico	All actions (except 23)
Solid and Hazardous Waste	Temporary construction activities that would produce minor waste; and operations in the U.S. that would produce wastewater process solids waste and trash	Regional landfills (including Punta Bandera, [a] Otay Landfill, and Sycamore Landfill)	1, 2, 4, 8, 9, 10, 16 [b]

Table 4-40. Cumulative Effects Analysis Scope and Project Matrix

Affected Resource of National/Regional/Local Significance	Element(s) of Proposed Action That Would Result in Non-beneficial Effect	Geographic Area of Analysis Associated with the Affected Resource	Other Actions that Affect the Resource in the Geographic Area (See Table 4-39)
Public Health and Safety	Operation of new infrastructure in the U.S. (e.g., trash booms and river diversion); and increasing staff and/or facilities in areas susceptible to very high fire severity and landslides	Areas along the U.S.-Mexico border and near the proposed trash booms and river diversion in the Tijuana River main channel	1, 3, 4, 7, 8, 9, 11, 12, 14, 23
Transportation	Construction in the U.S. (i.e., use of heavy equipment/vehicles); operations in the U.S. (i.e., employee commuting and truck hauling to dispose of solids waste)	Public roads in the Tijuana River Valley i.e., Dairy Mart Road and the I-5 interchange along with access roads within the ITP parcel and Smuggler's Gulch) and public roads leading to the disposal facilities (including Punta Bandera in Mexico and proposed regional facilities in the U.S.)	1, 4, 7, 8, 9, 10, 13, 14, 15, 18, 19, 20, and 21
Environmental Justice	Construction/operations in the U.S. (i.e., activities resulting in air quality, transportation, and odor impacts to overburdened and DACs)	EJ Study Area as defined in Section 3.20 (Environmental Justice)	All actions

a – Or an appropriate replacement disposal facility in Mexico.
b – This list includes actions that would be expected to result in long-term solid waste disposal requirements.

Freshwater and Estuarine Resources: Hydrology

Certain projects of the Proposed Action (Projects C, D, E, F, and H) would reduce the frequency and volume of flows in the Tijuana River that could, as a consequence, affect the hydrology of lower reaches of the Tijuana River downstream of Dairy Mart Road Bridge, adversely affect infiltration to groundwater, and decrease the availability of dry-weather surface flows for riparian vegetation and habitat; see Section 4.1 (Freshwater and Estuarine Resources). Certain actions in Table 4-39 potentially accelerate these expected reductions in transboundary river flow frequency and volume but do not result in additional reductions beyond those expected under the Proposed Action. Specifically, Action 11 will reduce potential leaks from the International Collector to the Tijuana River (e.g., via Stewart's Drain); this will potentially result in transboundary river flow reductions that are currently attributed to Project C in Section 4.1 of this PEIS but could do so on a more accelerated schedule. Similarly, if implementation of Action 12 allows PB-CILA to reliably divert 35 MGD, it will potentially result in transboundary river flow reductions that are currently attributed to Project D in Section 4.1 of this PEIS but could do so on a more accelerated schedule. While Actions 3 and 6 are aimed at preventing future potential line failures that otherwise could contribute flows to the Tijuana River, implementation of these projects will not reduce existing leaks or transboundary river flows. The actions in Table 4-39 are therefore not expected to contribute to potential adverse effects related to downstream hydrology. Additionally, the transboundary river flow reductions due to the Proposed Action would contribute to beneficial efforts (e.g., Action 18) to counteract the increasing freshwater influence and restore tidal influence and salt marsh hydrology in the Tijuana River Estuary.

Certain projects of the Proposed Action (Projects F and J) would have direct effects on jurisdictional aquatic resources in the watershed, specifically upstream of Dairy Mart Road Bridge in the Tijuana River. Actions 1, 4, 8, 9, and 18 in Table 4-39 also involve direct impacts to jurisdictional aquatic resources in the Tijuana River Valley. Some actions (e.g., Action 18) are meant to restore these resources while others include only minor negative impacts. For example, past construction for Actions 1 and 4 were limited in size and scope and were not major construction or development projects (e.g., pilings for boom installation and minor in-stream work for boom installation) that destroyed aquatic resources. Current and future continued maintenance activities associated with actions such as trash boom cleaning and sediment excavation (Actions 1, 4, 8, and 9) are part of efforts to improve hydrologic conditions in Smuggler's Gulch and the Tijuana River and have limited effects at the time of the regular maintained activity. Cumulatively, direct effects on jurisdictional aquatic resources do not result in removal of aquatic habitat nor do they create substantial detrimental effects across the watershed.

Based on the above, this analysis did not identify any significant cumulative effects on freshwater and estuarine resources beyond those identified Section 4.1 (Freshwater and Estuarine Resources) for the Proposed Action. No further mitigation is necessary.

Marine Waters and Biological Resources

Certain projects of the Proposed Action (Projects A, B, C, D, E, F, and H) would substantially increase pollutant loadings from treated effluent discharged to the Pacific Ocean via the SBOO, which would potentially increase pollutant concentrations in the area of nearfield dilution, depending on the configuration of open SBOO diffuser ports; see Section 4.2 (Marine Waters). Other actions in Table 4-39 contribute pollutant loadings to the Pacific Ocean offshore of southern San Diego County, including continued discharges of treated effluent from the Point Loma WWTP via the PLOO (Action 16), which have the potential to result in cumulative effects on marine water quality and marine biological resources. While these discharges contribute pollutant loadings to the existing conditions in the Pacific Ocean, the areas of nearfield dilution for the SBOO and PLOO do not overlap. It is possible for large-ranging marine species (e.g., whales) to move between the areas of nearfield dilution for each outfall and thus be impacted by both the Proposed Action and Action 16, resulting in cumulative effects such as direct ingestion, or indirect ingestion via prey, of chemicals in the effluent. While these impacts may be additive, the cumulative effect is dependent on the movement patterns of the marine species and would not affect all spatial extents equally due to variations in ocean upwellings and current patterns that may carry effluent discharges unevenly throughout the zones of initial dilution.

Additionally, the Proposed Action would provide net positive impacts to the Pacific Ocean by ameliorating existing poor water quality conditions as discussed in Section 4.2 (Marine Waters). While continued operation of the SBWRP and ITP (Action 10) also results in the discharge of treated effluent via the SBOO, the analyses in Section 4.2 and Appendix G (South Bay Ocean Outfall Plume Transport Modeling) account for these cumulative effects by including existing and projected treated effluent flows and pollutant loadings from these facilities (including BOD_5 and nutrients) as part of the evaluated baseline.

Based on the above, this analysis did not identify any significant cumulative effects on marine waters and biological resources—per the criteria in Section 4.2.1 (Standards of Significance) and Section 4.5.1 (Standards of Significance)—beyond those identified in Section 4.2 (Marine Waters) and 4.5 (Marine Biological Resources) for the Proposed Action. No further mitigation is necessary.

Floodplains

Certain projects of the Proposed Action (Projects B, F, and J) would affect the 100-year floodplain of the Tijuana River in the U.S. that is upstream of Dairy Mart Road. The Proposed Action would require permanent development (Projects F and J) in both the 100-year floodplain and regulatory floodway (inside the levees) while Project B would include temporary work in the 100-year floodplain outside the levees. Certain actions in Table 4-39 (Actions 9, 14, and 15) include permanent development in the 100-year floodplain. Specifically, the proposed trash barrier across the Tijuana River just north of the U.S.-Mexico border (Action 9) will serve similar purposes as Project J and result in similar impacts to floodplains. The Action 9 trash barrier will decrease the amount of trash that enters the Project J trash boom if they operate simultaneously. If both projects are implemented, designs for each would need to ensure that the existing levees and energy dissipator structures would continue to provide floodwater protection to the surrounding communities as intended. As EPA and USIBWC conduct the subsequent tiered NEPA analysis for Project J, they will coordinate with CBP to ensure that these analyses (including consideration of impacts to the levees providing floodwater protection and the regulated floodway) account for potential impacts of Action 9. Lastly, continued vegetation maintenance (Action 17) does not affect the levees and will continue to benefit flood control by removing flow obstructions and vegetation from within the flood channel.

Certain projects of the Proposed Action (Project F) would temporarily affect the existing levee surrounding the Tijuana River in the U.S. by installing piping under the south levee. This would not affect the north levee where levee improvements (Action 15) are planned to take place, and no projects of the Proposed Action would affect the levees near where the border fence replacement (Action 14, which is already complete) occurred.

Based on the above, this analysis did not identify any significant cumulative effects on floodplains per the criteria in Section 4.3 (Standards of Significance). No further mitigation is necessary.

Inland Biological Resources

All projects of the Proposed Action in the U.S. would result in temporary effects on inland wildlife species, habitat, and/or sensitive natural communities, predominantly in localized areas in the vicinity of construction activities for new infrastructure. Projects F and J would also result in permanent effects on inland wildlife species and their habitat due to removal of riparian habitat for installation of the diversion structure and trash boom; these effects would be analyzed in further detail in the subsequent tiered NEPA analyses. See Section 4.4 (Inland Biological Resources). EPA and USIBWC are coordinating with USFWS regarding potential effects on special-status species and are developing mitigation measures intended to limit or reduce effects.

Of the projects identified in Table 4-39, all actions in the U.S. have the potential to affect inland biological resources on at least a temporary basis. Actions that involve construction activities with heavy vehicles and that occur at the same time in the same vicinity as the Proposed Action will potentially contribute to cumulative additive increases in noise effects on nearby species such as nesting birds. The Nelson Sloan Quarry restoration (Action 19) will remove coastal sage scrub habitat (and provide restoration for the removal) and potentially affect special-status species and migratory birds in the vicinity of the quarry (e.g., coastal California gnatcatcher and Quino checkerspot butterfly). Per the project's Draft Environmental Impact Report (EIR), Action 19 will include mitigation measures, such as preconstruction surveys and noise attenuation measures as appropriate, to reduce potential effects on special-status species (CDPR, 2021).

Development of the Tijuana River Valley Regional Park campground (Action 13) removed approximately 15 acres of vegetation, based on a review of aerial imagery dated July 2021, and could result in the grading of over 30 acres if the project is fully implemented; however, all impacts are in disturbed, non-native vegetation (CDPR, 2018). Other actions (e.g., Actions 18 and 20) involve habitat restoration and will have minor limited impacts on habitat. Actions that are subject to the MSCP Subarea Plan and the City's MSCP are required to comply with the biological guidelines and provisions set forth in those plans for compliance with applicable regulations. Construction schedules of other actions in Table 4-39 are not all known, so it is not possible for EPA and USIBWC to assess the potential for other temporary cumulative biological resource impacts during construction.

The Proposed Action—in particular, the U.S.-side river diversion under Project F—would potentially result in permanent effects on inland biological resources from reductions in transboundary river flows that could potentially result in long-term disturbances of special-status plant species that are associated with riparian habitat and could potentially affect the ability of special-status fish to migrate in the Tijuana River. Certain infrastructure improvements in Mexico (Actions 11 and 12) will potentially accelerate these expected reductions in transboundary river flow frequency and volume but will not result in additional reductions beyond those expected under the Proposed Action.

Based on the above, this analysis did not identify any significant cumulative effects on inland biological resources beyond those identified in Section 4.4 (Inland Biological Resources) for the Proposed Action. No further mitigation is necessary.

Air Quality

All projects of the Proposed Action in the U.S. would result in direct emissions of criteria air pollutants (e.g., VOCs, NOx, PM, and CO) during construction and/or operational activities, and certain activities in Mexico (e.g., elements of Projects B and C) would potentially result in transboundary emissions from construction activities; see Section 4.11 (Air Quality and Odor). All actions in Table 4-39 are also expected to result in direct emissions through construction or operational activities or as a result of existing baseline conditions in the Tijuana River Valley (e.g., air pollution from traffic congestion surrounding the San Ysidro Port of Entry). When considered cumulatively, these combined effects are expected to be additive in nature and could contribute negatively to overall air quality in the San Diego air basin.

Restoration of the former Nelson Sloan quarry (Action 19) will be concurrent with, and immediately west of, Proposed Action construction activities at the ITP parcel. Quarry restoration will result in dust (PM_{10}) emissions from dumping sediment at the quarry and from heavy vehicles used to haul large volumes of sediment to the project site. CDPR estimated that maximum daily PM_{10} emissions will be slightly below AQIA trigger levels (CDPR, 2021). It is possible that this action, combined with PM_{10}-emitting temporary construction activities under the Proposed Action (e.g., grading and fill activities at the ITP parcel), will produce daily PM_{10} emissions that exceed the AQIA trigger levels and thus result in a significant cumulative effect. The Proposed Action includes dust mitigation measures, but additional measures may be warranted for cumulative effects should Action 19 and Proposed Action activities at the ITP parcel be implemented concurrently. Construction schedules of other actions in Table 4-39 are not all known, so it is not possible for EPA and USIBWC to assess the potential for other temporary cumulative air quality impacts during construction.

Based on the above, this analysis identified **significant cumulative effects on air quality resources**—per the criteria in Section 4.11.1 (Standards of Significance)—beyond those identified in Section 4.11 (Air Quality and Odor) for the Proposed Action. Consideration of further mitigation is necessary. Specifically, EPA and USIBWC would coordinate with CDPR regarding construction and operation schedules for the Proposed Action and quarry restoration activities to ensure, to the extent practicable, that activities with potential to generate substantial dust emissions do not take place concurrently (e.g., grading, fill, or sediment hauling activities at the ITP parcel taking place concurrently with sediment hauling and deposition at the quarry).

Odor

Certain projects of the Proposed Action (Project A and, to a lesser extent, Project D) would potentially create objectionable odors in communities near the ITP—in both the U.S. and Mexico—due to H_2S emissions from expanded wastewater treatment operations and a new anaerobic digestion process. Of the actions identified in Table 4-39, operation of the existing ITP (Action 10) potentially contributes to objectionable odors in communities near the ITP, and existing wastewater infrastructure failures (Action 23) are known to contribute objectionable odors in the Tijuana River Valley by causing or contributing to transboundary flows of untreated wastewater. While odors from the existing ITP (Action 10) do present a potential cumulative effect, the Proposed Action is specifically intended to reduce contaminated transboundary flows, including those caused by existing wastewater infrastructure failures (Action 23).

Based on the above, this analysis did not identify any significant cumulative effects on odor beyond those identified in Section 4.11 (Air Quality and Odor) for the Proposed Action. No further mitigation is necessary.

GHG Emissions

All projects of the Proposed Action would result in increases in GHG emissions (Scope 1, Scope 2, and/or Scope 3) from both construction and operational activities. Of the actions identified in Table

4-39, all actions except Action 23 are also expected to contribute GHG emissions from construction and, in some cases, operational activities. Per CEQ guidance, the analysis of the effects of GHG emissions is essentially a cumulative effects analysis that is included in the general discussion of climate change impacts; the direct and indirect effects analysis therefore adequately addresses cumulative climate change effects from the Proposed Action (CEQ, 2016). See Section 4.12 (Climate) for the direct and indirect effects analysis.

Based on the above, this analysis did not identify any significant cumulative effects on climate beyond those identified in Section 4.12 (Climate) for the Proposed Action. No further mitigation is necessary.

Solid and Hazardous Waste

Certain projects of the Proposed Action (Projects A, D, E, and J) would affect regional landfills—including Punta Bandera in Mexico,[62] and Otay Landfill and Sycamore Landfill in the U.S. —due to their long-term solid waste disposal requirements for wastewater treatment processes solids waste or trash as discussed in Section 4.13 (Solid and Hazardous Waste). Certain actions in Table 4-39 (Actions 1, 2, 4, 8, and 9) are also expected to produce long-term operational wastes (i.e., trash extracted from trash booms or sediment removed from sediment capture basins) to be sent to regional disposal facilities in the U.S. if reuse is not feasible. As discussed in Section 3.13 (Solid and Hazardous Waste), regional landfills such as Otay and Sycamore Landfills have available capacity, which EPA and USIBWC expect to be sufficient to account for incoming wastes from these actions. Additionally, to the extent that these regional landfills are already accepting wastes from these actions, the "Projected Cease Operation Date" in Table 3-12 should already account for these waste disposal requirements. For actions that are disposing of sediment, reuse options in the area will include the proposed Nelson Sloan Quarry restoration (Action 19). Separately, continued operation of the ITP and the SBWRP (Action 10) and the Point Loma WWTP (Action 16) will continue to produce long-term wastewater treatment process solids that require disposal. Specifically, Action 10 results in solids waste that is sent to the Punta Bandera facility in Mexico from the ITP and, in the case of the SBWRP, conveyance of sludge to the Point Loma WWTP for disposal or beneficial reuse. For Action 10, the solids waste produced by the existing ITP is analyzed as part of the current conditions in the analysis described in Section 4.13 (Solid and Hazardous Waste); this existing disposal requirement already informs Mexico's decision to seek out a replacement for the Punta Bandera facility. Under the Proposed Action—specifically, Project A (Expanded ITP)— solids waste disposal requirements from the ITP would initially decrease due to anaerobic digestion of all primary and secondary sludge from the ITP, with the increase in solids waste occurring in later years (between 2030 and 2050) as the additional treatment capacity comes into service in response to population growth, depending on the design option. Implementation of Project A, since it would reduce solids waste hauled to Punta Bandera in the initial phases of operation, would help prolong the time Mexico has to find a suitable replacement facility before Punta Bandera must close.

Based on the above, this analysis did not identify any significant cumulative effects on solid and hazardous resources per the criteria in Section 4.13.1 (Standards of Significance). No further mitigation is necessary.

[62] Or an appropriate replacement disposal facility in Mexico.

Public Health and Safety

Certain projects of the Proposed Action (Projects F and J) would affect public health and safety. Specifically, Project J would increase unsafe field conditions for CBP personnel conducting inspections near or within areas of accumulated trash, and Projects F and J would introduce potential breeding areas for disease-spreading vectors.

Contaminated transboundary flows due to wastewater infrastructure failures (Action 23) contribute to poor and unsafe working conditions where CBP personnel operate along the border. However, the Proposed Action and certain infrastructure improvements in Mexico (Actions 11 and 12) would reduce contaminated transboundary flows and thus improve field conditions for CBP personnel that work in and around those flows.

Trash booms and barriers installed under Action 1 (completed) and Actions 8 and 9 (proposed) have the potential to create conditions conducive to the breeding and multiplication of disease vectors (e.g., mosquitoes, rodents, stray dogs), similar to Project J. However, the locations of trash booms in Smuggler's Gulch under Actions 1 and 8 are at least 1.5 miles away from the locations of booms under Project J. The trash barrier constructed across the Tijuana River under Action 9 will decrease the amount of trash—and thus the potential for disease vectors—that enters the Project J trash boom if they operate simultaneously. Existing wastewater infrastructure failures (Action 23) do currently provide potential breeding areas in the form of stagnant and pooled waters from contaminated transboundary flows. However, the Proposed Action is specifically intended to reduce contaminated transboundary flows, including those caused by existing wastewater infrastructure failures.

Based on the above, this analysis did not identify any significant cumulative effects on public health and safety beyond those identified in Section 4.16 (Public Health and Safety) for the Proposed Action. No further mitigation is necessary.

Transportation

Certain projects of the Proposed Action (Projects A, B, D, E, F, I, and J) would affect public roads by increasing the number of vehicles on local roads during construction and/or operations in the Tijuana River Valley and on roads leading to the disposal facilities (including Punta Bandera in Mexico and Otay Landfill and/or Sycamore Landfill in the U.S.). The Proposed Action would increase trucking along disposal routes, increase AADT resulting from an increase in employee commuting at the ITP parcel, increase traffic for construction activities, and result in temporary traffic configurations during construction. Certain actions in Table 4-39 (Actions 7, 8, 9, 13, 14, 15, 18, 20, and 21) are expected to add to a cumulative increase in construction-related traffic within and near the Tijuana River Valley. However, several of these projects are already complete. Construction schedules of other planned actions are not known, so it is not possible for EPA and USIBWC to assess the potential for temporary cumulative transportation impacts during construction.

Actions 4, 8, and 19 are expected to generate long-term operational transportation impacts in the U.S. from truck hauling of excavated sediment for disposal. Under current sediment management practices within the Tijuana River Valley (including Action 4), sediment extracted from the Goat Canyon sediment basin, Smuggler's Gulch, the Tijuana River, and the Tijuana River pilot channel is hauled by heavy trucks to regional landfills and other off-site placement locations. This occurs seasonally over a period of approximately three to four months per year. Installation of a new sediment capture basin in Smuggler's Gulch (Action 8) is expected to increase the amount of sediment captured at this site and the associated hauling requirements. The Nelson Sloan Quarry restoration (Action 19), which will be underway before construction begins under the Proposed Action, will effectively redirect all seasonal Tijuana River Valley sediment management truck activity to the quarry as the deposition site. Trucks will access the quarry via an improved dirt driveway off of Monument Road, approximately 0.25 miles west of the ITP parcel. CDPR determined that traffic impacts from the quarry restoration would be well below City of San Diego screening thresholds for significance (CDPR, 2020) and that the project would reduce overall truck trips and VMT by reducing the need to haul excess sediment from within the Tijuana River Valley to regional landfills and other off-site placement locations (CDPR, 2021).

Actions 1, 8, and 9 are expected to generate long-term operational transportation impacts in the U.S. from truck hauling of trash (from trash booms/barriers) for disposal. However, these hauling activities are expected to take place infrequently and likely no more than several days per year. The trash barrier constructed across the Tijuana River under Action 9 will decrease the amount of trash—and thus the associated hauling requirements—that enters the Project J trash boom if they operate simultaneously and is not expected to substantially increase overall trash hauling requirements compared to Project J alone.

Continued operation of the ITP and SBWRP (Action 10) generates long-term operational transportation impacts in the U.S. from employee commuting, which is presumably reflected in the baseline AADT counts provided in Section 3.17 (Transportation).

Cumulatively, these actions, combined with the Proposed Action, potentially increase the amount of long-term truck and traffic impacts in the Tijuana River Valley (e.g., along Monument Road and Dairy Mart Road) but are not expected to result in substantial increases in traffic volumes in residential or congested areas beyond those potential increases under Project J.

Based on the above, this analysis did not identify any significant cumulative effects on transportation resources—per the criteria in Section 4.17.1 (Standards of Significance)—beyond those identified in Section 4.17 (Transportation) for the Proposed Action. No further mitigation is necessary.

Environmental Justice

As discussed in Section 4.20 (Environmental Justice), air quality, odor, and transportation impacts from the Proposed Action would occur in communities that currently experience high or extremely high burdens for these specific environmental indicators in addition to other social and environmental burdens. As discussed above, this analysis identified potential significant cumulative effects on air quality due to the cumulative PM_{10} emissions from Proposed Action construction activities and other actions—specifically, the Nelson Sloan Quarry restoration (Action 19). These temporary, cumulative air quality impacts could contribute to existing socio-environmental vulnerabilities in communities along the U.S.-Mexico border and overburdened communities in the U.S. This underscores the need to implement the additional mitigation identified in the Air Quality discussion above.

Additionally, and as described throughout this cumulative effects analysis, many of the actions in Table 4-39 that are intended to mitigate contaminated transboundary flows involve temporary construction-related impacts. These temporary impacts are generally located within or near communities that currently experience high or extremely high social and environmental burdens. In contrast, the long-term environmental benefits of these projects will include substantial benefits to downstream and coastal communities that generally do not currently experience a similarly elevated degree of social and environmental burdens. This cumulative inequity in the distribution of construction-related impacts and environmental benefits further underscores the disproportionately high and adverse effects identified in Section 4.20 (Environmental Justice) and the associated need for mitigation.

Baseline conditions and activities in overburdened communities (Action 22) are an inherent component of the affected environment and environmental consequences discussions in Sections 3.20 (Environmental Justice) and 4.20 (Environmental Justice), respectively. There are no new cumulative effects identified as a result of Action 22 in this analysis that are not previously discussed in Section 4.20.

Wastewater infrastructure failures (Action 23) currently cause transboundary flows that convey environmental contaminants into predominantly minority, low-income, and/or overburdened communities in the U.S. However, the Proposed Action and several other actions in Table 4-39 (Actions 1-12) are specifically intended to reduce contaminated transboundary flows, including those caused by existing wastewater infrastructure failures (Action 23), such that the cumulative effect is a lessening of these impacts to minority, low-income, and/or overburdened communities in the U.S.

Based on the above, this analysis identified cumulative effects that are **significant and disproportionately high and adverse impacts**—per the criteria in Section 4.20.1 (Standards of Significance)—beyond those potentially significant impacts identified in Section 4.20 (Environmental Justice) for the Proposed Action. Consideration of further mitigation is necessary. Specifically, and as noted in the Air Quality section of this analysis, EPA and USIBWC would coordinate with CDPR regarding construction and operation schedules for the Proposed Action and quarry restoration activities to ensure, to the extent practicable, that activities with potential to generate substantial dust emissions do not take place concurrently (e.g., grading, fill, or sediment hauling activities at the ITP parcel taking place concurrently with sediment hauling and deposition at the quarry).

5. MITIGATION MEASURES

Mitigation measures are those that avoid, minimize, or compensate for effects caused by a proposed action or its alternatives as described in an environmental document, and are committed to by the agency in the decision document (e.g., the ROD for an EIS) as appropriate. Mitigation can include avoiding the impact altogether; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or compensating for the impact by replacing or providing substitute resources or environments (40 CFR § 1508.1(s)).

EPA and USIBWC have identified mitigation measures associated with the Proposed Action that will be included in the decision as determined necessary throughout the NEPA process.

5.1 Mitigation Summary

Significant impacts for each Alternative were evaluated in Section 4 (Environmental Consequences) and are summarized by resource area in Table 5-1. EPA and USIBWC have determined that a portion of these significant impacts would require mitigation as noted in the table. Table 5-1 includes indicators to show which Alternative(s) result in the significant impact.

A summary of applicable mitigation measures for the Core and Supplemental Projects is included in Table 5-2. For Supplemental Projects, future tiered NEPA analyses may identify additional mitigation measures required for implementation. Table 5-2 includes indicators to show whether the mitigation measures are necessary to address a significant impact listed in Table 5-1. For Supplemental Projects, mitigation measures are identified in order to solicit public comment on the measure to inform the tiered framework established by this programmatic document. Mitigation measures for Supplemental Projects will not be included in the ROD as committed measures but instead will be carried forward and revised as appropriate as measures in subsequent tiered NEPA analyses for the Supplemental Projects.

5.2 Mitigation Monitoring

Agencies may adopt monitoring programs, if applicable, to enforce mitigation requirements or commitments, and if doing so, must summarize such monitoring in the decision document (e.g., the ROD for an EIS) (40 CFR § 1505.2). EPA and USIBWC will commit to the following roles and responsibilities to ensure effective implementation of mitigation:

- EPA, as the agency responsible for coordinating the issuance of U.S. appropriations for implementation of the Proposed Action, would ensure that any interagency agreements with USIBWC regarding the Proposed Action include specification of the required mitigation measures to be implemented, as identified in the ROD for the PEIS or in the decision documents for subsequent tiered NEPA analyses.

- USIBWC, as the agency responsible for implementation of the Proposed Action, would assume responsibilities for ensuring mitigation specified in the ROD is incorporated and enforced. Mitigation measures would be incorporated into contract documents as appropriate in the design and construction procurement process or otherwise implemented by USIBWC. USIBWC oversight of this process would include, but not be limited to, review and approval of designs, specifications, and Work Plans; monitoring of implemented contracted mitigation activities and construction; review and approval of final reports, assessments, and designs; and ensuring mitigation requirements are met.

Table 5-1. Significant Impacts to be Mitigated

Significant Impact	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Comprehensive Solution)
Freshwater and Estuarine Resources			
Continuation of impacts to freshwater and estuarine resources and water quality degradation	✕		
Potential impacts to potential jurisdictional water of the U.S. for construction of U.S.-side river diversion and trash boom(s) in Tijuana River main channel and floodplain			⊙
Potential permanent reduction in acreage of potential jurisdictional water resources in the Tijuana River floodplain for the U.S.-side river diversion and trash boom[s] requiring an individual CWA 404 permit			⊙
Marine Waters			
Continuation, and worsening over time, of existing marine water quality impacts	✕		
Substantial increase in pollutant loadings to Pacific Ocean via the SBOO		■	■⊙
Floodplains			
[None identified]			
Inland Biological Resources			
Continuation of negative effects on inland biological resources resulting from contaminated transboundary flows	✕		
Potential short-term substantial disturbances of special-status wildlife and fish species during construction in Tijuana River main channel and floodplain, depending on the locations of the proposed river diversion and trash boom(s)			⊙
Potential long-term substantial disturbances of special-status plant and wildlife species associated with downstream riparian habitat due to reduced wet-weather transboundary flows			⊙
Potential long-term reduction in special-status fish migration ability and/or estuarine rearing conditions due to reduced wet-weather transboundary flows			⊙
Marine Biological Resources			
[None identified]			
Geological Resources			
[None identified]			
Cultural Resources			
[None identified]			
Visual Resources			
Potential detraction from the visual character or quality of the localized area due to introduction of physical structures, land conversion, and O&M associated with the U.S.-side river diversion and trash boom(s)			⊙

Table 5-1. Significant Impacts to be Mitigated

Significant Impact	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Comprehensive Solution)
Potential disproportionately high and adverse effect due to visual intrusions from U.S.-side river diversion and/or trash boom(s)*			⊙
Land Use			
[None identified]			
Coastal Zone			
[None identified]			
Air Quality and Odor			
Potential objectionable odor emissions from ITP anaerobic digestion process		■	■⊙
Potential objectionable odors and/or impacts to sensitive receptors due to trash boom operations			⊙
Disproportionately high and adverse effect due to minor increase in $PM_{2.5}$ and diesel PM emissions (due to construction, operations, and/or commuting) in areas that currently experience extremely high overburdens from $PM_{2.5}$ and diesel PM*		■	■⊙
Disproportionately high and adverse effect due to objectionable odor emissions from ITP anaerobic digestion process*		■	■⊙
Potential for cumulative daily PM_{10} emissions (from the Proposed Action and concurrent restoration activities at the nearby Nelson Sloan Quarry) to exceed AQIA trigger levels and result in disproportionately high and adverse effect*		■	■⊙
Climate			
Inconsistent with the City of San Diego Climate Action Plan due to an increase in GHG emissions		■	■⊙
Solid and Hazardous Waste			
[None identified]			
Energy			
[None identified]			
Public Services and Utilities			
Potential impedance to CBP operations due to U.S.-side river diversion and trash boom(s)			⊙
Public Health and Safety			
Exacerbation of unsafe field conditions for CBP personnel	✕		
Exacerbation of water quality issues at public beaches	✕		
Increase in unsafe field conditions for CBP personnel due to trash boom(s)			⊙
Introduction of breeding areas for disease-spreading vectors due to U.S.-side river diversion and trash boom(s)			⊙

Table 5-1. Significant Impacts to be Mitigated

Significant Impact	No-Action Alternative	Alternative 1 (Core Projects)	Alternative 2 (Comprehensive Solution)
Potential disproportionately high and adverse effect due to proximity to disease vectors from U.S.-side river diversion and/or trash boom(s)*			⦿
Transportation			
Potential substantial localized increases in traffic volumes and congestion from Project J, depending on frequency of trash hauling			⦿
Disproportionately high and adverse effects due to minor increases in traffic associated with operations, commuting, and waste hauling in areas currently experiencing extremely high overburdens from traffic impacts and/or traffic proximity*		■	■⦿
Noise			
Potential localized, short-term exceedances of city and county noise levels during construction		■	■⦿
Potential for substantial, short-term increases in noise levels during construction in specific areas near noise-sensitive receptors (e.g., protected species habitat and recreational areas in Smuggler's Gulch; residences immediately adjacent to portions of Monument Rd)		■	■⦿
Potential long-term impacts from increase in noise due to continuous (or near-continuous) operation of biogas-fired engine and electrical generator		■	■⦿
Socioeconomics			
[None identified]			
Environmental Justice			
[See disproportionately high and adverse effects identified with an asterisk (*) listed in Visual Resources, Air Quality and Odor, Public Health and Safety, and Transportation sections above in this table.]			

* Indicates a disproportionately high and adverse effect that was identified in the environmental justice analysis (see Section 4.20 [Environmental Justice]) or the environmental justice portion of the cumulative effects analysis (see Section 4.21.5 [Cumulative Effects]).

Symbol key:

- ✕ Significant impact is a result of the No-Action Alternative.
- ■ Significant impact is a result of a Core Project(s).
- ⦿ Significant impact is a result of a Supplemental Project(s).
- ■⦿ Significant impact is a result of both a Core and Supplemental Project(s).

Table 5-2. Summary of Mitigation Measures by Alternative and Project

Mitigation Measure	Alternative 1									
	Alternative 2									
	A	B	C	D	E	F	G	H	I	J
Water Resources (Includes Freshwater and Estuarine, Marine, and Floodplains)										
WR-1: Adherence to NPDES permit conditions (operational effluent limitations, monitoring requirements, etc.).	■			■	⊙					
WR-2: Acquisition of CWA Section 404 permit authorization(s) and adherence to CWA 404 permit conditions, if applicable; water quality certification or waste discharge permit from RWQCB.		□				⊙				⊙
WR-3: Adherence to erosion and sediment control measures and prevention procedures in accordance with a project-specific Stormwater Pollution Prevention Plan (SWPPP) prepared by a certified Qualified SWPPP Developer and approved by the San Diego Water Board.	□	□		□	⊙	⊙			⊙	⊙
WR-4: Incorporation of stormwater runoff control measures, procurement of state stormwater permits, development of a stormwater management plan and Spill Prevention Plan that include BMPs for minimizing stormwater runoff, erosion, and potential water quality impacts.	□	□		□	⊙	⊙			⊙	⊙
WR-5: Avoidance of wetlands (through use of trenchless methods for channel crossings or through relocation of pipeline).									⊙	
WR-6: Limiting construction activities in the Tijuana River floodplain to the dry season.						⊙				⊙
WR-7: Use of remote assessment tools for inspections of infrastructure in the 100-year floodplain and regulatory floodway.						⊙				⊙
WR-8: Implementation of a pilot-scale trash boom study and further hydrologic modeling.						⊙				⊙
Biological Resources (Inland and Marine)										
BR-1 through BR-10: (General) Adherence to general conservation measures and BMPs specified in the FWS Biological Assessment—see Appendix D (USFWS Biological Assessment [Draft]) (e.g., confining equipment to existing access roads, equipment inspections, erosion control).	□	□		□	⊙	⊙			⊙	⊙
BR-11: (Special-status Species) A qualified biologist will develop an environmental training and will present the training to all crew members prior to them beginning work on the project. The training will include a description of special-status species with potential to occur, life history and habitat associations, general protection measures, the terms and conditions of project permits, penalties for non-compliance, and the boundaries of the construction areas. A handout will be provided to all participating personnel and at least one copy will be kept onsite during construction activities. Upon completion of the training, crew members will sign a form stating that they attended and understood the training.	□	□		□	⊙	⊙			⊙	⊙

Table 5-2. Summary of Mitigation Measures by Alternative and Project

Mitigation Measure	Alternative 1									
	Alternative 2									
	A	B	C	D	E	F	G	H	I	J
BR-12: (Special-status Species) Preconstruction surveys for special-status wildlife species shall be performed within seven days prior to construction initiation. Surveys will be conducted by qualified biologists with appropriate knowledge and experience in the life history, ecology, and identification of special-status species that may be encountered.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-13: (Special-status Species) A focused survey for vernal pools will be conducted in the project area no less than one year prior to construction. If any vernal pools are found, they will be flagged and fully avoided. If full avoidance is infeasible, USFWS-protocol San Diego fairy shrimp surveys will be conducted. If fairy shrimp are found to inhabit any vernal pools that cannot be completely avoided, Section 7 consultation with USFWS will be reinitiated, and a mitigation plan will be developed.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-14: (Special-status Species) A preconstruction survey for Quino checkerspot butterfly host plants will be conducted in areas of suitable habitat that may be impacted by construction (including staging areas) during appropriate blooming periods and no less than one year prior to construction. If found, areas containing host plants will be flagged and avoided.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-15: (Special-status Species) Sensitive biological resources (e.g., vernal pools, nesting birds, listed plants, Quino checkerspot butterfly host plants) identified in or adjacent to construction work areas during preconstruction surveys will be clearly marked or flagged in the field. Such areas will be avoided during construction as detailed in relevant species-specific measures below.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-16: (Special-status Species) Erosion control materials shall be installed per manufacturing material specifications and must not contain monofilament netting. Only tightly woven netting or similar material will be used for all geo-synthetic erosion control materials such as coir rolls and geo-textiles.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-17: (Special-status Species) All construction personnel will visually check for wildlife on or beneath vehicles and construction equipment before moving or operating them.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-18: (Special-status Species) If listed wildlife is observed within the work area or its immediate vicinity, work will stop until the animal leaves the area of its own volition. The animal will not be harried or harassed into leaving the area. If the animal does not leave of its own accord, contact the Project biologist for further guidance.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-19: (Special-status Species) During project activities, all trash that may attract wildlife will be properly contained in covered garbage receptacles. Following construction, all trash and construction debris from project sites will be removed.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-20: (Special-status Species) Impacts from fugitive dust during construction will be avoided and minimized through watering, limiting vehicle speeds to 20 miles per hour, controlling vehicle access, and other appropriate measures.	☐	☐		☐	⊙	⊙			⊙	⊙

Table 5-2. Summary of Mitigation Measures by Alternative and Project

Mitigation Measure	Alternative 1									
	Alternative 2									
	A	B	C	D	E	F	G	H	I	J
BR-21: (Special-status Species) At the end of the day, all steep-sided excavations more than 2 feet deep will either be covered or be provided with one or more ramps installed at an angle of no more than 45 degrees to allow egress. Covers and ramps shall be constructed of earth material or plywood (or similar material). All excavations will be inspected prior to backfill or grading to ensure that no listed species are trapped within.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-22: (Special-status Species) For project activities conducted during the migratory bird breeding season (February 1 to August 15), a preconstruction nest survey will be conducted. Surveys will include ground nesting birds and raptors within 300 feet of the project area. Species-specific surveys for least Bell's vireo and California gnatcatcher will be conducted as described below in measures 23 and 24. If active nests (i.e., nests containing eggs or young) are identified, a no-disturbance buffer zone will be established around the nest using flagging, fencing, and/or signage as appropriate. No construction activities will occur within the buffer zone until a qualified biologist has determined that the young have fledged or that construction activities within the buffer zone are not disturbing the nesting birds. The width of the buffer zone will be determined by a qualified biologist in coordination with CDFW; recommended buffers are 500 feet for raptors and 100 feet for other birds. If the project is delayed longer than two weeks during breeding season, an additional survey will be necessary.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-23: (Special-status Species) To the greatest extent practicable, work within 300 feet of suitable least Bell's vireo habitat (i.e., riparian habitat associated with Smuggler's Gulch) will be avoided during the vireo breeding season (March 15 to August 31). If work is necessary to begin within 300 feet of suitable vireo habitat during the breeding season, a biologist will perform a preconstruction survey no more than 14 days before construction initiation in the area to determine if any nesting vireos are present. If an active nest is present, a 300-foot no-disturbance buffer around the nest will be clearly demarcated, and the area will be avoided until the young have fledged the nest and/or the nest becomes inactive. Preconstruction surveys will be repeated if construction start is delayed more than 14 days from the survey date.	☐	☐		☐	⊙	⊙			⊙	⊙

Table 5-2. Summary of Mitigation Measures by Alternative and Project

Mitigation Measure	Alternative 1									
	Alternative 2									
	A	B	C	D	E	F	G	H	I	J
BR-24: (Special-status Species) To the greatest extent practicable, work within 300 feet of suitable gnatcatcher habitat (e.g., coastal sage scrub habitat associated with Smuggler's Gulch) will be avoided during the gnatcatcher breeding season (February 15 to August 31). If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a biologist will perform a preconstruction survey no more than 14 days before construction initiation in the area to determine whether any nesting gnatcatchers are present. If a nest is present, a 300-foot no-disturbance buffer around the nest will be clearly demarcated, and the area will be avoided until the young have fledged and/or the nest becomes inactive. Preconstruction surveys will be repeated if construction start is delayed more than 14 days from the survey date.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-25: (Special-status Plants and Sensitive Natural Communities) Protocol-level surveys for special-status plant species and sensitive natural communities with the potential to occur in the project areas will be conducted during appropriate blooming periods and no less than one year prior to construction. The survey protocol will follow the Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (USFWS 2000) and Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018).	☐	☐		☐	⊙	⊙			⊙	⊙
BR-26: (Special-status Plants and Sensitive Natural Communities) If found, a no-work buffer will be established around the special-status plant population or sensitive natural community, and this buffer will be avoided to the maximum extent practicable. The buffer width will be determined in coordination with USFWS and/or CDFW.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-27: (Special-status Plants and Sensitive Natural Communities) If the special-status plants or sensitive natural community cannot be avoided, a mitigation and monitoring plan will be developed in coordination with USFWS and CDFW.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-28: (Special-status Fish) Prior to commencing work, installation of silt fencing, straw bales, fiber rolls, and/or other measures would be placed to reduce erosion and sediment transport from construction areas and activities. Exposed soil areas will be stabilized for overwintering protection from erosion.	☐	☐		☐	⊙	⊙			⊙	⊙

Table 5-2. Summary of Mitigation Measures by Alternative and Project

Mitigation Measure	Alternative 1									
	Alternative 2									
	A	B	C	D	E	F	G	H	I	J
BR-29: (Special-status Fish) Hydrocarbon contamination of aquatic habitats could potentially occur during construction operations. Contamination could result from leaking fuel or hydraulic lines on heavy equipment, improper fuel handling practices, or spills during refueling or lubrication operations. The contractors will ensure that all fuel and hydraulic lines on heavy equipment are in good working order and not leaking. The operators will also conduct all fueling and lubrication operations at the designated out-of-channel laydown site and use BMPs when doing so. There will be no fuel storage facilities within the banks of the channel or within the floodplain. All equipment will be serviced on an as-needed basis with the necessary fueling and lubrication conducted at the designated locations. Accidents, such as a breaking of a hydraulic line, require immediate cleanup of the area well before the onset of high-flow conditions. Adequately sized spill kits will be present at all times during operation of equipment. All packaging, containers, tires and auto body debris, other large metal debris, and trash will be removed from the construction area and disposed of or recycled properly.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-30: (Special-status Fish) In-water construction would be limited to the dry-season (approximately June through November) unless otherwise agreed upon with resource agencies. The intent of the established operating season is to limit the potential for direct impacts and other interactions between construction activities and various steelhead and Pacific lamprey life-history stages that occupy (seasonally or year-round) the project site. If construction occurs during migration season, implementation of trap and haul or other approaches to provide volitional or non-volitional passage should be considered in coordination with resource agencies.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-31: (General) Additional unspecified measures, if necessary, to ensure wildlife and fish impacts are not substantial (to be identified during subsequent tiered NEPA analyses).						⊙				⊙
BR-32: (General) A Field Environmental Monitor (FEM) will be onsite during ground-disturbing activities and during construction to monitor compliance with applicable environmental regulations and site-specific BMPs and conservation measures.	☐	☐		☐	⊙	⊙			⊙	⊙
BR-33: (Marine Wildlife) Adherence to measures identified and required by NMFS as a result of the Section 7 ESA consultation.	☐			☐	⊙					

Table 5-2. Summary of Mitigation Measures by Alternative and Project

Mitigation Measure	Alternative 1									
	Alternative 2									
	A	B	C	D	E	F	G	H	I	J
BR-34: (Marine Wildlife) Vessel operator or crewmember must maintain a constant watch of the ocean surface in front and adjacent to the vessel for marine mammals and turtles at all times. If marine animals are observed distant to the vessel, vessel operators should adjust their course as necessary to ensure they do not disturb the natural behavior of these animals. If animals are observed within close limits of the vessel such that the vessel may disturb those animals, vessels are advised to follow close observation guidelines available through NMFS. These include the following recommendations: ▪ Slow down and operate at a no-wake speed. ▪ Stay out of the path of the animal's direction of travel. ▪ Do not put your vessel between whales, especially mothers and calves. ▪ Do not chase or harass animals, and do not approach the animals head-on, from directly behind them, or from the side (t-bone). If animals are following a trajectory closely parallel to the direction of vessel travel, gradually steer the vessel to be parallel to the animals from the side and stay at least 100 yards away—i.e., the length of a football field.	☐			☐	⦿					
BR-35: (Marine Wildlife) If a vessel needs to deploy any anchors, the vessel operators will check for reef with onboard sonar equipment and anchors will be deployed over sandy seabed at least 10 feet away from the edge of the rocky reef surrounding the SBOO.	☐			☐	⦿					
BR-36: (Marine Wildlife) Vessels must be maintained to a standard that eliminates the likelihood of diesel or hydraulic oil spills during normal operation, including the storage and maintenance of spill kits appropriate to dealing with small vessel-based spills such as sand buckets, absorbent pads and cloths, and other emergency containment devices to stop small spills of hydraulic fluids and other polluting fluids from entering the water if they are accidentally spilled on deck.	☐			☐	⦿					
BR-37: (Marine Wildlife) In the case of a catastrophic loss of engine power that may result in a grounding, vessel captains must have procedures in place to raise coastguard support rapidly.	☐			☐	⦿					
Geological Resources										
GR-1: Preparation of a geotechnical report to assess site soil characteristics.	☐	☐		☐	⦿	⦿			⦿	⦿
GR-2: Incorporation of site stabilization measures (e.g., revegetation of disturbed areas) during and post-construction.	☐	☐		☐	⦿	⦿			⦿	⦿
GR-3: Ripping and/or loosening of compacted areas prior to revegetation.	☐	☐		☐	⦿	⦿			⦿	⦿
GR-4: Site watering to reduce fugitive dust from disturbed, exposed soils.	☐	☐		☐	⦿	⦿			⦿	⦿
GR-5: Potential reuse of high-quality removed topsoil for restoration activities elsewhere in the project area.	☐	☐		☐	⦿	⦿			⦿	⦿

Table 5-2. Summary of Mitigation Measures by Alternative and Project

Mitigation Measure	Alternative 1									
	Alternative 2									
	A	B	C	D	E	F	G	H	I	J
GR-6: Incorporation of standard erosion and sediment control BMPs, specified in a project-specific Erosion and Sediment Control Plan and/or Stormwater Management Plan (typical BMPs include silt fences, swales, and filter socks).	☐	☐		☐	⊙	⊙			⊙	⊙
GR-7: Incorporation of specific measures to reduce the potential for soil contamination during construction (e.g., from equipment leaks or material spills) in a project-specific SWPPP prepared by a certified Qualified SWPPP Developer and approved by the San Diego Water Board.	☐	☐		☐	⊙	⊙			⊙	⊙
GR-8: Compliance with Uniform Building Code, California Building Code, City of San Diego Municipal Code, and any applicable seismic design standards to ensure risks are minimized and mitigated.	☐	☐		☐	⊙	⊙			⊙	⊙
GR-9: Incorporation of measures to prevent unstable soil conditions such as caving and sloughing, especially during trenching operations.		☐		☐		⊙			⊙	⊙
Cultural Resources										
CR-1: Avoidance of previously identified cultural resources during project design and construction. Should project plans change, and avoidance become infeasible, a formal evaluation for eligibility to the NRHP is recommended.		☐								
Visual Resources										
VR-1: Minimization of construction lighting, when practicable consistent with applicable lighting regulations and ordinances.	☐	☐		☐	⊙	⊙			⊙	⊙
***VR-2:** Additional unspecified measures to reduce or mitigate potential detraction from the visual character or quality of the localized area due to U.S.-side river diversion and trash boom(s) (to be identified during subsequent tiered NEPA analyses).						⊙				⊙
Land Use										
[None identified]										
Coastal Zone										
[None identified (beyond those identified elsewhere in this table for resources in the coastal zone)]										
Air Quality and Odor										

Table 5-2. Summary of Mitigation Measures by Alternative and Project

Mitigation Measure	Alternative 1									
	Alternative 2									
	A	B	C	D	E	F	G	H	I	J
***AQ-1:** Community outreach to ensure that receptors potentially affected by odor emissions, including emissions from operation of the expanded ITP (including the anaerobic digester) and the new APTP, have the opportunity to share information with USIBWC. Examples include but are not limited to: ▪ Continuing to hold USIBWC Citizens Forum Meetings as vehicle for hearing community concerns. ▪ Publishing regular (e.g., annual) public notices to ensure community is aware of meetings. ▪ Providing contact information to ensure timely communication of any odor complaints. ▪ Conducting direct outreach to individual members of the potentially affected community (e.g., via email or flyer) before the proposed facilities become operational.	■			■	⊙					
***AQ-2:** Appropriate use of scrubbers, aeration, fugitive emissions containment system, and/or other odor controls to lessen odor impacts.	■				⊙					
***AQ-3:** Installation of BACT emissions reduction technologies for criteria pollutants and/or HAPs (e.g., biogas pretreatment to remove formaldehyde and H_2S, selective catalytic reduction to remove NOx, catalytic oxidation to remove VOCs, combustion of biogas).	▪									
***AQ-4:** Development and implementation of a Fugitive Dust Control Plan to reduce fugitive dust emissions and community exposure to fugitive dust. The plan would apply to both active and inactive construction sites (i.e., including weekends and holidays) and to related activities including hauling and storage of fill material. This includes, but is not limited to, the following recommendations: ▪ Stabilizing of disturbed areas by covering and/or applying water or chemical/organic dust palliative. ▪ Covering of hauled and stockpiled materials to prevent spillage or transport by wind. ▪ Phasing of activities that produce substantial amounts of dust (e.g., grading operations and dumping of soil) and avoiding these activities under windy conditions. ▪ Limiting speed of earth-moving equipment to 10 mph. ▪ Placing stockpiles in locations away from nearby receptors.	▪	▪		▪	⊙	⊙			⊙	⊙
***AQ-5:** Inclusion of construction fleet emissions reduction strategies as a factor in the scoring and evaluation of proposals during the procurement process. Examples include, but are not limited to, indicating a preference for proposals that include commitments to use energy-efficient and fuel-efficient fleets (“clean trucks”), alternative fuel vehicles, zero-emission technologies, and/or grid-based electricity for generators.	▪	▪		▪	⊙	⊙			⊙	⊙

Table 5-2. Summary of Mitigation Measures by Alternative and Project

Mitigation Measure	Alternative 1									
	Alternative 2									
	A	B	C	D	E	F	G	H	I	J
***AQ-6:** Coordination with CDPR regarding construction and operation schedules to ensure, to the extent practicable, that activities with potential to generate substantial dust emissions at/near the ITP parcel and the Nelson Sloan quarry do not take place concurrently (e.g., grading, fill, or sediment hauling activities at the ITP parcel taking place concurrently with sediment hauling and deposition at the quarry).	■	■		■	⊙	⊙			⊙	⊙
Climate										
CL-1: Adherence to State of California GHG cap and trade program requirements, if applicable.	■									
CL-2: Incorporation of anaerobic digestion of primary and secondary sludge into project design (with appropriate control of biogas emissions) to reduce downstream GHG emissions from landfilling of solids waste from the expanded ITP.	■									
CL-3: Adherence to mitigation measures identified elsewhere in this table for reducing/offsetting anticipated increases in stationary and mobile source emissions, energy use, and waste generation.	□			□	⊙					⊙
Solid and Hazardous Waste										
***SHW-1:** Incorporation of anaerobic digestion of primary and secondary sludge into project design to reduce amount of solids waste from the expanded ITP.	■									
SHW-2: Development of a trash management plan for trash and debris captured by trash boom(s).										⊙
SHW-3: Development and implementation of a Solid and Hazardous Waste Management Plan that identifies wastes generated at the project site and their appropriate means of disposal.	□	□		□	⊙	⊙			⊙	⊙
SHW-4: Implementation of employee training that outlines appropriate disposal practices for allowable wastes that can be placed in a landfill and regulated substances including fluorescent light bulbs, oily rags, and aerosol cans.	□	□		□	⊙	⊙			⊙	⊙
Energy										
EN-1: During siting, orientation, and design, encourage and explore ways to: ▪ Reduce wasteful, inefficient, and unnecessary consumption of energy during construction, operation, maintenance and/or removal. ▪ Minimize energy consumption (including transportation energy), increase water conservation, and reduce solid waste. ▪ Reduce peak energy demand. ▪ Employ alternate fuels (particularly renewable ones) or energy systems. ▪ Promote energy conservation, which could result from recycling efforts.	□	□		□	⊙	⊙			⊙	⊙
Public Services and Utilities										

Table 5-2. Summary of Mitigation Measures by Alternative and Project

Mitigation Measure	Alternative 1									
	Alternative 2									
	A	B	C	D	E	F	G	H	I	J
PSU-1: Ensure access to community facilities is not impeded during construction by employing appropriate traffic control measures.	□	□		□	⊙	⊙			⊙	⊙
PSU-2: Additional unspecified measures to reduce or mitigate potential impedance to CBP operations due to U.S.-side river diversion and trash boom(s) (to be identified during subsequent tiered NEPA analyses).						⊙				⊙
Public Health and Safety										
***PHS-1:** Additional unspecified measures to reduce or mitigate presence of standing water in/around U.S.-side river diversion and intercepted trash (to be identified during subsequent tiered NEPA analyses).						⊙				⊙
Transportation										
***TR-1:** Additional unspecified measures, if necessary, to ensure trash hauling does not create substantial localized increases in traffic volumes in residential congestion (to be identified during subsequent tiered NEPA analyses).										⊙
***TR-2:** Incorporation of anaerobic digestion of primary and secondary sludge into project design to reduce amount of solids waste requiring hauling from the expanded ITP.	■									
***TR-3:** Development and implementation of a Construction Traffic Management Plan to include specific measures for reducing vehicle trips and VMT by the construction vehicle fleet (in particular, reducing heavy truck trips in areas currently experiencing extremely high overburdens from traffic impacts and/or traffic proximity).	▪	▪		▪	⊙	⊙			⊙	⊙
***TR-4:** Development and implementation of an Operational Traffic Management Plan to include specific measures for reducing vehicle trips and VMT during treatment plant operations and employee commuting (in particular, reducing heavy truck trips in areas currently experiencing extremely high overburdens from traffic impacts and/or traffic proximity).	▪			▪	⊙					
***TR-5:** Feasibility assessment for the use of larger-capacity dump trucks for hauling of APTP solids waste to landfills, thus reducing the number of trips required. This would need to be conducted prior to or during design for the APTP to ensure the facilities and site plan incorporate sufficient clearance for larger trucks.				▪	⊙					
Noise										
NO-1: Construction timing limited to Monday-Saturday from 7:00 a.m. to 7:00 p.m.	■	■		■	⊙	⊙			⊙	⊙
NO-2: Construction timing for work within 300 feet of suitable least Bell's vireo or coastal California gnatcatcher habitat limited to time-of-year restrictions outside of bird breeding season (see Biological Resources Mitigation Measures #22 and #23 above).		■								

Table 5-2. Summary of Mitigation Measures by Alternative and Project

Mitigation Measure	Alternative 1									
	Alternative 2									
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
NO-3: Proper siting of biogas-fueled engine and electrical generator within the ITP parcel (e.g., away from the property boundary) with incorporation of noise attenuation features.	■									
NO-4: Incorporation of design measures to minimize operational noise (i.e., acoustical structure housing).	☐	☐		☐	⊙	⊙			⊙	
Socioeconomics										
SO-1: To the extent permitted by Federal statutes and regulations, USIBWC will encourage the use of local small disadvantaged businesses or women-owned businesses for Federal procurement(s) related to the proposed project.	☐	☐		☐	⊙	⊙			⊙	⊙
Environmental Justice										
[See mitigation measures identified with an asterisk (*) in Visual Resources, Air Quality and Odor, Public Health and Safety, and Transportation sections above in this table.]										

* Indicates a mitigation measure is necessary to address a disproportionately high and adverse effect identified in the environmental justice analysis (see Section 4.20 [Environmental Justice]) or the environmental justice portion of the cumulative effects analysis (see Section 4.21.5 [Cumulative Effects]). In some cases, this mitigation is necessary to address a disproportionately high and adverse effect caused by impacts in a different resource area—for example, SHW-1 under Solid and Hazardous Waste is intended to mitigate disproportionately high and adverse effects to air quality and transportation.

Symbol key:

- ■ Core Projects: Mitigation measure is necessary to address a significant impact identified in Section 4 and Table 5-1.
- ■ (grey) Core Projects: Mitigation measure is intended to address both a non-significant impact and a disproportionately high and adverse effect identified in the environmental justice analysis, as identified in Section 4 and Table 5-1.
- ☐ Core Projects: Mitigation measure is intended to address a non-significant impact identified in Section 4.
- ⊙ Supplemental Projects: Mitigation measure may be necessary to address impacts of a Supplemental Project. These potential impacts, their significance, and the associated mitigation requirements will be analyzed further in subsequent tiered NEPA analyses.

6. COMPLIANCE WITH APPLICABLE ENVIRONMENTAL REGULATIONS

6.1 United States Regulations and Permits

6.1.1 Summary of Federal Cross-Cutting Authorities

Table 6-1 summarizes the applicability of 22 federal overlapping (“cross-cutter”) authorities to the Proposed Action, based on the current understanding of the project scopes and impacts. For presentation purposes, the cross-cutters are organized into three categories as described below:

1. *Applicable Cross-Cutters with Major Requirements:* Those that may require a substantial effort on the part of the federal agency to reach full compliance or that have significant resources present in the affected area that trigger compliance requirements.

2. *Applicable Cross-Cutters with Minor Requirements:* Those that may require minor effort on the part of the federal agency to reach full compliance or that have minor resources present in the affected area that trigger compliance requirements.

3. *Non-Applicable Cross-Cutters:* Those that do not apply and have no potential to be triggered in the future.

The specific requirements of applicable cross-cutters are discussed throughout Section 4 (Environmental Consequences) and the following subsections of Section 6.1. Additionally, Section 7.2 (Regulatory Consultation) includes discussion of the consultation and coordination efforts performed during the development of this PEIS in response to cross-cutter requirements.

Table 6-1. Summary of Applicability of Federal Cross-cutting Authorities by Alternative and Project

Federal Cross-cutting Authority	Alternative 1									
	Alternative 2									
	A	B	C	D	E	F	G	H	I	J
Applicable Cross-Cutters with Major Requirements										
Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668-668C)	✓	✓		✓	✓	✓			✓	✓
Clean Water Act: Section 401 (33 U.S.C. § 1341) and Section 404 (33 U.S.C. § 1344)		*				✓				✓
Clean Water Act: Section 402 National Pollutant Discharge Elimination System (33 U.S.C. § 1342)	✓	✓	✓	✓	✓					
Coastal Zone Management Act (16 U.S.C. § 1451 et seq.)	✓	✓	*	✓	✓	✓	*	*	✓	✓
Endangered Species Act (16 U.S.C. § 1531 et seq.)	✓	✓		✓	✓	✓			✓	✓
EO No. 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 7629)	✓	✓		✓	✓	✓			✓	✓
Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.)						✓				✓
National Historic Preservation Act and Archeological and Historic Preservation Act (16 U.S.C. § 469A-1)	✓	✓		✓	✓	✓			✓	✓
Applicable Cross-Cutters with Minor Requirements										
EO No. 11988, *Flood Plain Management* (42 FR 26951), as amended by EO No. 12148, *Federal Emergency Management* (44 FR 43239)		✓				✓			✓	✓
Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.)	✓	✓	✓	✓	✓					
Marine Mammal Protection Act (16 U.S.C. § 1361)	✓	✓	✓	✓	✓					
Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)	✓	✓		✓	✓	✓			✓	✓
Native American Graves Protection and Repatriation Act (25 U.S.C. § 3001 et seq.)	✓	✓		✓	✓	✓			✓	✓
EO No. 11990, *Protection of Wetlands* (42 FR 26961), as amended by EO No. 12608, *Elimination of Unnecessary Executive Orders and Technical Amendments to Others* (52 FR 34617)		✓				✓				✓
Non-Applicable Cross-Cutters										
Archaeological Resources Protection Act (16 U.S.C. §§ 470AA-MM)										
Clean Air Act Conformity (42 U.S.C. § 7401 et seq.)										
Coastal Barriers Resources Act (16 U.S.C. § 3501 et seq.)										
Farmland Protection Policy Act (7 U.S.C. § 4201 et seq.)										
Rivers and Harbors Act: Section 10 (33 U.S.C. § 403)										
Safe Drinking Water Act (42 U.S.C. § 300f et seq.)										
Wild and Scenic Rivers Act (16 U.S.C. § 1271 et seq.)										
The Wilderness Act (16 U.S.C. § 1131 et seq.)										

Symbol key:
✓ The project triggers the cross-cutter.
* The project potentially triggers the cross-cutter (applicability not yet determined).

6.1.2 Freshwater and Estuarine Resources

Surface Water: Lakes, Rivers, and Streams

Actions affecting surface water resources including lakes, rivers, and streams are regulated by the federal CWA, specifically sections 401, 404, and 402. Section 401 of the CWA prohibits federal agencies from issuing permits or licenses to conduct any activity that may result in any discharge into waters of the U.S. unless a state, in this case the San Diego Water Board, issues a water quality certification. Section 404 of the CWA regulates the discharge of dredged or fill material into the waters of the U.S. A Section 404 permit must be obtained from USACE before material may be discharged into "waters of the U.S.," which are broadly defined by USACE to include the navigable waters, their tributaries, lakes, ponds, most impoundments of waters of the U.S., wetlands that are adjacent to or abutting waters of the U.S, and the territorial seas. The federal CWA requires that every applicant for a Section 404 permit or Section 10 of the Rivers and Harbors Act permit must request a state certification that an activity does not violate state or federal water quality standards.

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) program, which regulates the discharge of pollutants through a point source into a water of the U.S. The EPA establishes effluent limits for discharges and sets water quality standards for constituents in surface waters. NPDES permits include limits on the amounts of pollutants to be discharged, in addition to enforceable permit conditions related to monitoring and reporting. In California, NPDES permits are managed by the RWQCBs. There are two current NPDES permits for discharges to the Pacific Ocean via the SBOO: one for the SBWRP (CA0109045) held by the City of San Diego and the other for the ITP (CA0108928) held by USIBWC. See Section 3.2 (Marine Waters) for more details on these discharges.

Development activities affecting aquatic resources in California may require a Lake and Streambed Alteration (LSA) Agreement. CDFW requires that entities notify them prior to conducting activities that divert or obstruct river flow; change the bed, channel, or bank of a river; use material from a river; or deposit or dispose of material into a river. This regulation pertains to rivers that are dry for periods of time, such as the Tijuana River, and includes riparian habitats associated with watercourses. CDFW requires an LSA Agreement for any projects that may substantially adversely affect fish and wildlife resources (CDFW, 2020b).

Surface Water Quality

The CWA is the most relevant federal policy pertaining to water quality in the Tijuana River. Section 303 requires states to adopt water quality standards, and Section 303(c)(2)(b) requires that states adopt numerical water quality standards for toxic pollutants for which EPA has published water quality criteria.

In California, the Porter-Cologne Act is the statutory authority for protecting water quality in surface water, coastal waters, groundwater, and discharges. It requires California to adopt water quality policies, plans, and objectives that protect the state's waters (SWRCB, 2014a). The Porter-Cologne Act states that beneficial uses and water quality objectives must be defined for all waters of the state (SDRWQCB, 2016). The RWQCB is responsible for designating appropriate beneficial uses to be maintained and protected; the San Diego Water Board is responsible for carrying out these obligations for the Tijuana River (SDRWQCB, 2016).

Wetlands

Wetlands in California are protected by federal and state laws, regulations, and policies. Under the federal CWA, wetlands are defined as "Those areas that are inundated or saturated by surface or ground water at a frequency or duration sufficient to support, and that normally do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include marshes, swamps, bogs, and similar areas (33 CFR Part 328)." The overarching goal of the CWA is to maintain the physical, chemical, and biological integrity of the Nation's waters, and more specifically to ensure a "No Net Loss" of wetlands in the CWA regulatory program through avoidance, then minimization, and finally compensatory mitigation for impacts associated with discharges of dredge or fill material into waters of the U.S. The Section 404 permit program allows discharges of dredge of fill material into waters of the U.S., including wetlands, under two scenarios: no practicable alternative exists that is less damaging to aquatic resources, or the waters of the U.S. would not be significantly degraded. For unavoidable impacts on federally regulated wetlands, compensatory mitigation is required to replace the loss of wetland and aquatic resource functions in the watershed, as outlined in the Mitigation Rule Section 404(b)(1) guidelines. Wetlands under CWA jurisdiction may occur within the Proposed Action area and would be subject to Section 404 regulations. Section 10 of the Rivers and Harbors Act prevents the unauthorized obstruction of navigable waters of the U.S., including wetlands. The Tijuana Estuary (to 2.5 feet MSL) is regulated as a Traditional Navigable Water (TNW) pursuant to Section 10 of the Rivers and Harbors Act; however, the scope of this jurisdiction is outside of the Proposed Action area.

EO 11990, *Protection of Wetlands* (42 FR 26961), as amended (52 FR 34617), requires federal agencies to avoid undertaking or providing assistance for new construction located in wetlands unless practicable alternatives do not exist and the proposed action includes all practicable measures to minimize harm to wetlands, which may result from such use. The affected area of the Proposed Action includes mapped wetland features (see CWA discussion above). The federal agency must consider alternatives to wetland sites and, if use of a wetland site cannot be avoided, must minimize damage to wetlands. EO 11990 is applicable to Projects B, F, and J. Alternatives are being evaluated as part of this NEPA review and, through coordination with the appropriate entities, mitigation, minimization, and avoidance measures will be incorporated into the decision-making process.

The CZMA authorizes states to manage coastal resources, which in California are administered by state agencies, including CCC, under the California Coastal Management Program (CCMP) (see Section 6.1.9 [Coastal Zone] for additional information). The CCC is responsible for determining the presence of wetlands that are subject to regulation under the CCA; further, the CCC may review applications for Section 404 and Section 10 permits for consistency with the CCMP in addition to other requirements the CCC has for CDP applications. Section 30231 of the CCA requires the maintenance and restoration of the biological productivity and quality of wetlands. Section 30233 prohibits the filling of wetlands unless there is no feasible alternative that is less environmentally damaging. A portion of the coastal wetlands within the Tijuana River Valley likely fall within the jurisdiction of the CCC and are subject to CCC regulations.

In accordance with the Porter-Cologne Water Quality Control Act, the RWQCBs regulate discharges of dredge and fill material that may affect the quality of waters of the state, including some but not all features that are defined as wetlands. The state's wetland definition generally includes all waters of the U.S. and all natural wetlands regardless of their proximity to other waters. Project activities resulting in discharges of dredged and fill material into wetland waters of the state may be reviewed under the RWQCB's Waste Discharge Permit program (SWRCB, 2021).

The CDFW assists the CCC with determining the size and presence of wetlands subject to regulation under the CCA. Wetlands may also be subject to jurisdiction by CDFW under Sections 1600–1616 of the California Fish and Game Code.

Activities associated with the construction of one Core Project (Project B) would likely fall under a Section 404 Nationwide Permit 58 for Utility Line Activities for Water and Other Substances and may be eligible for enrollment under a RWQCB General Order to meet Section 401 Water Quality Certification and Waste Discharge Requirements. The activities may also require an LSA Agreement with the CDFW, and a CDP may be required. For Supplemental Projects, the specific construction-related impacts to aquatic resources and the associated permitting and review requirements (e.g., CWA Section 404 permit authorization, RWQCB 401 Water Quality Certification, LSA Agreement, CDP) would be evaluated in subsequent tiered NEPA analyses.

Stormwater Management

Stormwater discharges are regulated under the CWA Section 402 NPDES program. In addition, EISA requires federal agencies to reduce stormwater runoff from federal development and redevelopment projects to protect water resources, which can include green infrastructure and low-impact development practices. EO 13834, *Efficient Federal Operations* (83 FR 23771), stipulates that agencies must meet statutory requirements pertaining to stormwater management, and notes that Section 438 of EISA establishes those requirements for construction of new federal facilities (CEQ, 2019; EPA, 2018).

In California, the SWRCB is responsible for issuing stormwater permits in accordance with the NPDES program. If more than one acre of land will be disturbed, the entity conducting the construction must file an NOI to be covered under the General Permit for Storm Water Discharges Associated with Construction Activity (General Permit Order 2009-0009-DWQ) (SWRCB, 2013). The General Permit requires that entities must also have a SWPPP prepared by a certified Qualified SWPPP Developer that specifies BMPs that will be used to prevent pollutants from entering stormwater and to control sediment erosion (SWRCB, 2013). Stormwater discharge from industrial sites is allowed through an Industrial General Permit (State Board Order 2014-0057-DWA), and discharge from construction sites requires a Construction General Permit (State Board Order 2012-0006-DWQ) (SWRCB, 2012, 2014b). The San Diego Water Board issues stormwater permits for projects in the Tijuana River Valley and reviews SWPPPs and activities in accordance with a general NPDES permit.

At the county level, stormwater is regulated under the County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance. Under this ordinance, entities undertaking development projects in the County of San Diego must adhere to discharge regulations, which may include BMPs, and create a Stormwater Management Plan that describes measures that will be used for stormwater and non-stormwater management (County of San Diego, 2016). Additionally, post-construction stormwater management must be consistent with applicable requirements of the County of San Diego BMP Design Manual (County of San Diego, 2020c).

Of the Core Projects, Projects A and D would be required to incorporate design measures to reduce post-construction runoff per the County of San Diego BMP Design Manual (under which both projects are likely to be considered Priority Development Projects) and per EISA. Both projects would likely require a General Permit for Stormwater Discharges Associated with Construction Activity. Of the Supplemental Projects, Projects E, F, and J may also face the same requirements, but the specifics of such applicability would be evaluated in subsequent tiered NEPA analyses.

Groundwater and Drinking Water

The Safe Drinking Water Act (SDWA) authorizes the EPA to set health-based standards for drinking water. In addition, SDWA authorizes EPA to designate sole source aquifers and review projects located in the review area for the aquifer to ensure that the project does not contaminate the sole source aquifer.

The SDWA does not apply to the Proposed Action because no sole source aquifers exist within the affected area and none of the projects involve establishing public drinking water systems.

6.1.3 Marine Waters

Section 402 of the CWA establishes the NPDES program, which regulates the discharge of pollutants through a point source into a water of the U.S. A NPDES permit is required for such discharges and would contain limits on the amounts of pollutants to be discharged in addition to enforceable permit conditions related to monitoring and reporting. In California, the state is fully authorized to issue NPDES permits through its state NPDES program managed by the SWRCB and the RWQCBs. Discharges to ocean waters must further comply with Ocean Discharge Criteria when obtaining a NPDES permit pursuant to Section 403 of the CWA.

Limits on discharges to marine receiving waters are also informed by the NRWQC. Published pursuant to Section 304(a) of the CWA, the NRWQCs are compiled to provide guidance for states and tribes to establish water quality standards and control discharges. Some pollutants have NRWQCs established for the protection of aquatic life that establish the acute (i.e., criteria maximum) or chronic (i.e., criteria continuous) concentrations in saltwater (EPA, 2020).

The California Ocean Plan is intended to protect the quality of ocean waters for public use and enjoyment, by means of controlling discharge of waste to ocean waters and intake of seawater. The California Ocean Plan therefore regulates discharges to the ocean from point source discharges such as the SBOO (SWRCB, 2019). The California Ocean Plan identifies water quality objectives, which include standards for bacterial, physical, chemical, and biological characteristics, as well as radioactivity. It also provides water quality objectives for protection of marine aquatic life (based on six-month median, daily maximum, and instantaneous maximum limiting concentrations) and protection of human health from carcinogens and non-carcinogens (based on 30-day average limiting concentrations).

Section 402 of the CWA is applicable to all projects that would increase discharges via the SBOO. Core Projects A (Expanded ITP) and D (APTP Phase 1) and Supplemental Project E (APTP Phase 2) would be expected to meet discharge requirements and obtain NPDES permits. This process would need to account for any projected changes in the influent wastewater resulting from implementation of Core Projects B (Tijuana Canyon Flows to ITP) and C (Tijuana Sewer Repairs) and Supplemental Project H (Tijuana WWTP Treated Effluent Reuse). For Supplemental Projects, the subsequent tiered NEPA analyses for these projects would evaluate the specific estimated changes in loadings and marine water quality impacts resulting from these increases in SBOO discharges.

These projects would ensure consistency with the California Ocean Plan via the NPDES process. As part of the NPDES application, EPA/USIBWC would complete and submit effluent testing data and whole effluent toxicity testing data consistent with EPA's NPDES application form requirements. In addition, EPA/USIBWC would submit a request to the San Diego Water Board for a regulatory mixing zone based on modeling that reflects the facility's operational and discharge characteristics at the time of application. When fully treated and with the establishment of a regulatory mixing zone, the discharge from the facility would not cause or contribute to exceedances of water quality objectives of the California Ocean Plan.

6.1.4 Floodplains

Section 14 of the Rivers and Harbors Act, commonly referred to as Section 408 (of the U.S.C.), provides that any use or alteration of a civil works project by another party is subject to the approval of USACE. The Tijuana River Basin (Tijuana River Flood Control Project) was completed in 1979 and is controlled by USIBWC. While USACE designed and provided construction management services for the Tijuana River Flood Control Project, they performed work under contract to USIBWC rather than through USACE funding. The Tijuana River Basin is owned and managed by USIBWC and is therefore not a civil works project. Thus, modification to the basin under the Proposed Action does not require a Section 408 permit or USACE approval.

EO 11988, *Floodplain Management* (42 FR 26951), as amended (44 FR 43239), requires federal agencies to evaluate the potential effects of any actions it may take in a floodplain and is implemented by the *Guidelines for Implementing Executive Order 11988, Floodplain Management, and Executive Order 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder* (FEMA, 2015). EO 11988 requires that an agency consider alternatives to avoid adverse effects and incompatible development in a floodplain. In addition, the EO requires public notice for actions that are proposed to be located in the floodplain and requires that new construction in a floodplain be protected with floodproofing or other measures. The implementing guidance recommends that the floodplain be defined and established through one of several approaches. For purposes of this Proposed Action, where a levee structure exists to provide freeboard elevation around critical infrastructure (the ITP), the floodplain considered is defined as “the elevation and flood hazard area that result from using the freeboard value, reached by adding an additional 2 feet to the base flood elevation for non-critical actions and from adding an additional 3 feet to the base flood elevation for critical actions” (FEMA, 2015). The levee system that surrounds the Tijuana River Basin provides 3 feet of freeboard above the base flood elevation and is designed to protect the ITP parcel from a 333-year flood event at the south levee specifically. Projects located within the levee system are subject to the requirements of EO 11988.

Development in a floodplain or floodway is also regulated by county requirements. The *San Diego County General Plan—Safety Element* establishes policies related to flood hazards and development within floodways, such as limiting development in floodplains and requiring conformance to federal floodproofing standards and siting criteria (County of San Diego, 2011). Furthermore, the County of San Diego Flood Damage Prevention Ordinance imposes construction standards on projects located in SFHAs to protect human life and to minimize public and private losses due to flood conditions. The ordinance requires a development permit for new construction and requires notifications from the Floodplain Administrator to adjacent communities, the California Department of Water Resources, and FEMA for alteration or relocation of a watercourse in a FEMA floodplain. Construction in a floodway requires a “No Rise” Certification demonstrating the proposed use shall not result in any increase in flood levels during the base flood discharge (San Diego County Code of Regulatory Ordinances, Title 8, Division 11).

As discussed in Section 4.3 (Floodplains), the majority of the Proposed Action is located outside the 100-year floodplain and the regulatory floodway. However, Projects F (U.S.-side River Diversion to APTP) and J (Trash Boom(s)), and a small component of Project B (Options B1 and B2 only), would occur within the 100-year floodplain (a SFHA). Additionally, Projects F and J would occur within the levee system and in the regulatory floodplain and therefore would be required to comply with EO 11988 and the Flood Damage Prevention Ordinance. For those projects subject to the EO, this PEIS includes an initial consideration of alternatives to development in the floodplain (i.e., the No-Action

Alternative). However, subsequent tiered NEPA analyses would need to address the requirements of EO 11988 in more detail and would provide the required public notices.

6.1.5 Inland Biological Resources

Endangered Species Act

Under Section 7 of the ESA, federal agencies must consult with the USFWS when any action the agency carries out, funds, or authorizes may affect a listed endangered or threatened species under USFWS jurisdiction. A federal agency must ensure that its actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Furthermore, if incidental take is reasonably certain to occur, ESA requires USFWS to provide an Incidental Take Statement that specifies the impact of any incidental taking and includes nondiscretionary, reasonable, and prudent measures and terms and conditions to minimize such impacts.

If the federal agency taking the action determines that the project is *not likely to adversely affect* listed species and/or critical habitat, they submit an informal consultation request to USFWS for concurrence. USFWS will provide a Letter of Concurrence to the EPA if it agrees with the action agency's *not likely to adversely affect* determination.

Section 7 of the ESA is applicable to all Core Projects with effects in the U.S. Several federally listed endangered or threatened species have potential to occur in the area affected by the Proposed Action. Consultation with USFWS is therefore necessary to determine the potential for adverse effects on listed species that may occur. See Section 7.2.1 (Endangered Species Act Section 7 Consultation) regarding this consultation with USFWS.

Similarly, Section 7 of the ESA is applicable to all Supplemental Projects with effects in the U.S. Consultation would take place during subsequent tiered NEPA analyses.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) makes it unlawful to take any protected migratory bird species listed in 50 CFR § 10.13 without prior authorization by USFWS. Because protected migratory birds use the affected area, compliance with the MBTA is required.

Migratory birds are abundant and can be found in the majority of habitat types across the U.S. In the lower Tijuana River Valley, especially in the estuary and along the coastline, migratory birds are attracted to the marsh and wetland habitats. The USFWS Information for Planning and Consultation tool identifies 28 migratory bird species with the potential to occur in the Tijuana River Valley, plus additional species that could occur along the beaches north of the estuary.

Typically, construction and operation of wastewater infrastructure has the potential to result in indirect impacts to protected migratory bird species. The MBTA is applicable to all Core and Supplemental Projects located in the U.S. (i.e., Projects A, B, D, E, F, I, and J). As the Proposed Action is evaluated during the ESA consultation and throughout the NEPA process, USFWS would help guide the project on appropriate mitigation measures and best practices to ensure the project does not result in 'take' as defined in Section 3.4.2 (Wildlife and Inland Fish Resources). Mitigation measures, once adopted in the NEPA decision document, become enforceable by the EPA.

Bald and Golden Eagle Protection Act

BGEPA provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds. The BGEPA broadly defines 'take' as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb."

As documented in Section 3.4.2 (Wildlife and Inland Fish Resources), bald eagles and golden eagles are expected to have a low likelihood to occur within the project areas due to the lack of suitable nesting habitat and presence of only marginally suitable foraging habitat. While the BGEPA would apply, the Proposed Action is assumed to have minimal or no potential to result in the take of individuals of either species. This will be confirmed through USFWS during the NEPA process.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) requires consultation with the USFWS and the fish and wildlife agencies of states where the "waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage" by any agency under a federal permit or license. An exemption exists for surface water impoundments where the maximum surface area is less than 10 acres.

FWCA is applicable to the Supplemental Projects with major activities in the Tijuana River—specifically, Projects F (U.S.-side River Diversion to APTP) and J (Trash Boom[s])—and therefore USFWS review is required. FWCA recommendations, if applicable, would be provided by USFWS upon their review of the PEIS during the NEPA process or during subsequent tiered NEPA analyses and would be considered as mitigation in the broader environmental review process.

California Endangered Species Act

CESA conserves and protects species at a risk of extinction, with species being designated as threatened or endangered by the California Fish and Game Commission. A CESA-listed species may not be imported, exported, taken, possessed, purchased, or sold without proper authorization from the CDFW. CESA is similar to the federal ESA both in process and substance; it is intended to provide additional protection to threatened and endangered species in California. Species may be listed as threatened or endangered under both acts (in which case the provisions of both state and federal laws apply) or under only one act. A candidate species is one that the California Fish and Game Commission has formally noticed as being under review by CDFW for addition to the state list. Candidate species are protected by the provisions of CESA. Any listed or candidate species that could be adversely affected by any aspect of the proposed project would be required to comply with CESA and obtain an incidental take permit.

As described in Section 3.4 (Inland Biological Resources), there are CESA-listed species present that would be affected by the Proposed Action. Therefore, CESA would apply to the Proposed Action.

California Fish and Game Code

The CDFW is also responsible for enforcing the California Fish and Game Code, which contains several provisions potentially relevant to construction projects. The Fish and Game Code lists animal species designated as Fully Protected, which may not be taken or possessed at any time. The Fully Protected designation does not allow "incidental take" and is thus more restrictive than CESA.

Fully Protected species are listed in Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the Fish and Game Code, while protected amphibians and reptiles are listed in Chapter 5, Sections 41 and 42 (CCR; Title 14, Div. 1).

Section 3503 of the Fish and Game Code (CCR; Title 14, Div. 1) prohibits the take, possession, or needless destruction of the nest or eggs of most bird species. Subsection 3503.5 (CCR; Title 14, Div. 1) specifically prohibits the take, possession, or destruction of any birds in the orders Falconiformes (hawks and eagles) or Strigiformes (owls) and their nests. These provisions, along with the federal MBTA, serve to protect nesting native birds. Certain non-native species, including European starling and house sparrow, are not protected under the California Fish and Game Code.

All Core and Supplemental Projects would be required to comply with the Fish and Game Code.

California Species of Special Concern

The CDFW maintains an administrative list of Species of Special Concern, defined as a "species, subspecies, or distinct population of an animal native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria: is extirpated from the State, or, in the case of birds, in its primary seasonal or breeding role; is listed as federally, but not State, threatened or endangered; meets the State definition of threatened or endangered but has not formally been listed; is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status; and has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status."

The CDFW's Nongame Wildlife Program is responsible for producing and updating Species of Special Concern publications for mammals, birds, reptiles, and amphibians. The Fisheries Branch is responsible for updates to the Fish Species of Special Concern document and list. Section 15380 of the CEQA Guidelines indicates that Species of Special Concern should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined therein. In contrast to species listed under the federal or California ESAs, however, Species of Special Concern have no formal legal protective status.

Native Plant Protection Act

The Native Plant Protection Act (NPPA; CFG Code Section 1900 et seq.) designates 64 species, subspecies, and varieties of native California plants as rare. NPPA prohibits take of rare native plants but includes some exceptions for agricultural and nursery operations; emergencies; and, after properly notifying CDFW, for vegetation removal from canals, roads, and other sites, changes in land use, and in certain other situations.

California Rare Plant Ranks

Special-status plants in California are assigned to one of five CRPRs by a group of over 300 botanists in government, academia, non-governmental organizations, and the private sector. This effort is jointly managed by the CDFW and CNPS. The five CRPRs currently recognized by the CNDDB include the following:

- Rare Plant Rank 1A—presumed extinct in California.

- Rare Plant Rank 1B—rare, threatened, or endangered in California and elsewhere.
- Rare Plant Rank 2—rare, threatened, or endangered in California but more common elsewhere.
- Rare Plant Rank 3—a review list of plants about which more information is needed.
- Rare Plant Rank 4—a watch list of plants of limited distribution.

Substantial impacts to plants ranked 1A, 1B, and 2 are typically considered significant based on Section 15380 of the CEQA Guidelines, depending on the policy of the lead agency. Plants ranked 3 and 4 may be evaluated by the lead agency on a case-by-case basis to determine significance thresholds under CEQA.

6.1.6 Marine Biological Resources

Endangered Species Act

Under Section 7 of the ESA, federal agencies must consult with NMFS when any action the agency carries out, funds, or authorizes may affect a listed endangered or threatened species under NMFS jurisdiction. A federal agency must ensure that its actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Furthermore, if incidental take is reasonably certain to occur, Section 7(b)(4) requires NMFS to provide an Incidental Take Statement that specifies the impact of any incidental taking and includes nondiscretionary reasonable and prudent measures and terms and conditions to minimize such impacts.

If the federal agency taking the action determines that the project is *not likely to adversely affect* listed species and/or critical habitat, they submit an informal consultation request to NMFS for concurrence. NMFS will provide a Letter of Concurrence to the action agency if it agrees with the action agency's *not likely to adversely affect* determination.

Section 7 of the ESA is applicable to projects that would increase the amount of pollutants discharged into the ocean via the SBOO, including all of the Core Projects. It is also applicable to projects that would require physical modifications to the SBOO (e.g., Projects A, D, and/or E). As described in Section 3.5 (Marine Biological Resources), while no marine critical habitats occur at or near the SBOO, several federally listed endangered or threatened species have potential to occur in the marine environment around the SBOO. Consultation with NMFS is therefore necessary to determine the potential for adverse effects on listed marine species that may occur. See Section 7.2.1 (Endangered Species Act Section 7 Consultation) regarding this consultation with NMFS.

Marine Mammal Protection Act

The MMPA restricts the take[63] of marine mammals and is implemented by NMFS, USFWS, and the Marine Mammal Commission. The act provides for both *directed* and *incidental* take authorizations

[63] Take is defined to mean "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal" (16 U.S.C. § 1362). This definition is expanded in 50 CFR § 216.3 to include a list of actions that fall into the category of take.

that may permit an entity to incidentally take marine mammals associated with commercial and noncommercial fishing operations, for scientific purposes, and for other limited activities. All marine mammals are protected under the MMPA.

The MMPA is applicable to projects that would increase the amount of pollutants discharged into the ocean via the SBOO, including all of the Core Projects. It is also applicable to projects that would require physical modifications to the SBOO (e.g., Projects A, D, and/or E). As described in Section 3.5 (Marine Biological Resources), protected marine mammals have the potential to occur in the marine environment around the SBOO, and an increase in discharges via the SBOO has the potential to result in indirect impacts to these protected marine mammals. If project activities may result in exceeding Level A or Level B harassment thresholds,[64] there are two types of authorizations that can be obtained depending on the project activity:

- An Incidental Harassment Authorization—written approval from NMFS for time-limited harassment, which is generally applied to activities like construction that might occur over a period typically shorter than a year or two.
- A Letter of Authorization—for operational effects that may span multiple years.

The Proposed Action is likely to result in net benefits to marine mammals protected under the MMPA. Therefore, there is no likelihood of incidental take and no requirement for application to NMFS under the MMPA for an incidental take authorization of letter of authorization.

Magnuson-Stevens Fishery Conservation and Management (Magnuson-Stevens) Act

The Magnuson-Stevens Fishery Conservation and Management (Magnuson-Stevens) Act governs fisheries management in U.S. federal waters and requires federal agencies to consult with NMFS regarding any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, that may adversely affect EFH. Within the category of EFH, regional Fishery Management Councils are entitled to identify HAPCs. These subsets of EFH are either spatially explicit areas or habitat types that have been identified by regional Fishery Management Councils as having high priority for conservation, management, or research.

The Magnuson-Stevens Act is applicable to projects that would increase the amount of pollutants discharged into the ocean via the SBOO, including all of the Core Projects. It is also applicable to projects that would require physical modifications to the SBOO (e.g., Projects A, D, and/or E). As described in Section 3.5 (Marine Biological Resources), the marine environment around the SBOO includes several EFH-designated areas, including those of the common thresher shark, dorado fish, PCG, CPS, and krill, as well as HAPCs including canopy kelp and rocky reefs. In addition, estuaries are designated as HAPCs, and potential changes in river flows, canyon flows, and sediment transport to the Tijuana River Estuary would therefore require consideration for potential adverse

[64] Level A harassment means the potential to injure a marine mammal or marine mammal stock in the wild. Level B harassment means the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but which does not have the potential to injure a marine mammal or marine mammal stock in the wild.

effects on CPS EFH and PCG HAPC. See Section 7.2.2 (Magnuson-Stevens Fishery Conservation and Management Act Consultation (Essential Fish Habitat)) regarding this consultation with NMFS.

California Endangered Species Act

CESA conserves and protects species at a risk of extinction, with species being designated as threatened or endangered by the California Fish and Game Commission (CDFW, 2021c). A CESA-listed species may not be imported, exported, taken, possessed, purchased, or sold without proper authorization from the CDFW (CDFW, 2021d). CDFW designates Species of Special Concern, which carries no formal legal status but allows focus on native California wildlife species at conservation risk before they meet CESA criteria for listing (CDFW, 2021b). The CEQA Guidelines indicate that Species of Special Concern should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined therein (Cal. Code Regs. tit. 14, § 15380). CDFW Fully Protected animals may not be taken or possessed, and no permits may be issued except for scientific research or relocation (CDFW, 2021a)

There are no affected CESA-listed species in the marine environment. Therefore, CESA regulating marine wildlife would not apply to the Proposed Action.

6.1.7 Cultural Resources

National Historic Preservation Act

To ensure the protection of historic resources, the U.S. Congress passed the NHPA in 1966 and then amended the NHPA in 1976, 1980, 1992, and 2016. Section 106 of the NHPA, implemented under 36 CFR Part 800, requires federal agencies to consider the effects of undertakings (i.e., actions) on any historic property and consult with various parties, including the SHPO, on these effects. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess the effects on those properties, and identify ways to avoid, minimize, or mitigate any adverse effects on historic properties. In California, the OHP within the CDPR serves as the SHPO.

The use of federal funds administered by EPA for the Proposed Action qualifies as an undertaking for purposes of the NHPA as defined in 36 CFR § 800.16. Sections 7.2.3 and 7.2.4 discuss EPA's consultations with the SHPO and Native American tribes.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA) (Pub. L. No. 101; 43 C.F.R. § 10.4) requires the preparation of an inadvertent discoveries plan for excavation to ensure that certain Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony are appropriately repatriated if found.

The significant majority of excavation activities associated with the Proposed Action in the U.S. would take place within federal lands (e.g., Projects A, D, E, F, I, and J). If remains or cultural items are discovered on federal or tribal lands, federal agencies may pursue intentional excavation or removal pursuant to a previously developed discovery plan. However, if the likelihood of discovery is deemed low, the federal agency may forgo developing a formal plan and instead include plans for addressing inadvertent discoveries in some other manner, such as in their Section 106 compliance documentation. Inadvertent discoveries are typically handled by issuing a stop work order, protecting the site from damage, and then following up with the appropriate entities to consult and develop a plan for disposition so that work can resume. Preparation of an inadvertent discoveries plan is expected to be sufficient to ensure NAGPRA compliance.

Some excavation or trenching activities associated with the Proposed Action in the U.S. would take place outside of federal or tribal lands, including potential excavation within Smuggler's Gulch and along Monument Road under Project B (Tijuana Canyon Flows to ITP). Local or state laws would govern excavations and discoveries in these areas (e.g., California PRC § 5097.98 and State Health and Safety Code § 7050.5) and would not be subject to NAGPRA; however, under state laws, a similar mechanism exists for the discussion and repatriation of culturally sensitive materials.

Archaeological Resources Protection Act

The Archaeological Resources Protection Act (ARPA) (Pub. L. No. 96-95; 16 U.S.C. 470cc(a)) establishes requirements for projects involving the excavation or removal of archeological resources on public lands (i.e., lands owned and administered by the U.S.) or Indian lands. Any entity undertaking a project on public or Indian lands must obtain a permit for the excavation or removal of archaeological resources and for carrying out any associated activities.

The majority of activities associated with the Proposed Action in the U.S. would take place within federal lands. However, none of the Core Projects or Supplemental Projects are expected to involve excavation or removal of archaeological resources. The potential for inadvertent discoveries and methods to avoid unintentional excavation or removal of archaeological resources are identified during the NHPA Section 106 process.

The affected area does not include American Indian tribal lands or those associated with federally recognized tribal entities (e.g., federally recognized Reservations, Off-Reservation Trust Lands, or Census Oklahoma Tribal Statistical Areas) (USFS, 2020).

6.1.8 Visual Resources

Several state and local laws and regulations are in place for the protection of visual and scenic resources, including the following:

- The CCA, discussed in more detail in Section 6.1.9 (Coastal Zone), includes provisions about protecting visual or scenic resources within the Coastal Zone.
- Under the California Scenic Highway Program, the Caltrans Director designates highways as State Scenic Highways if they are highly scenic with natural features visible from the highway and the local government has created a Corridor Protection Program to ensure development is consistent with these visual resources (Caltrans, 2021b). The portion of Interstate 5 that is northeast of the project area is eligible to be, but not yet designated as, a State Scenic Highway (Caltrans, 2018).
- The San Diego County Zoning Ordinances General Regulations contain restrictions relating to glare and outdoor lighting, including nighttime requirements for lighting use between 11:00 p.m. and dawn, as well as temporary exemptions (County of San Diego, 2020b).
- The San Diego County Light Pollution Code includes requirements for outdoor light fixtures; however, federal government or State of California lighting fixtures are exempt (County of San Diego, 2009).

- Through Council Policy 900-19, the City of San Diego offers protection for designated tree resources, including landmark trees that have very high or unique aesthetic quality, from being removed, damaged, or pruned without prior approval and permits from the city.
- The Tijuana River Valley Local Coastal Program Land Use Plan identifies steep hillsides as potential scenic amenities that would be regulated through San Diego Municipal Code §143.01 *Environmentally Sensitive Lands Regulations* (City of San Diego, 2007).

As discussed in Section 4.8 (Visual Resources), the Proposed Action would not include tree removal or modification, development on steep hillsides, or introduction of features visible from Interstate 5. Additionally, construction and operational lighting would be minimized when practicable and would comply with applicable light and glare standards. Therefore, the Proposed Action would be expected to comply with applicable regulations pertaining to visual resources.

6.1.9 Coastal Zone

Coastal Zone Management Act

Enacted by Congress in 1972, the CZMA provides for the management of coastal resources with the goal "to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone" (16 U.S.C. § 1452). It requires that any federal action "within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved state management programs" (16 U.S.C. § 1452). In response, the CCMP was created and federally certified in 1977 to implement the federal consistency procedures of the CZMA.

Under the CZMA, federal agency activities and development projects that have reasonably foreseeable effects on the coastal zone—even if the project is located on federal property and not in the coastal zone—must undergo a *consistency determination*. Similarly, any non-federal applicants for federal authorizations (e.g., permits, licenses) and funding must undergo a *consistency certification*. Federal consistency provisions shall include a statement indicating that the proposed action will be undertaken in a manner that is consistent with the state coastal management program (in this case, the CCMP). They shall also include a detailed description of the activity, its associated facilities, and their coastal effects, and comprehensive data and information sufficient to support the consistency statement. The CCC is responsible for reviewing these consistency analyses for federal projects affecting the California coastal zone.

Consistency determinations are required for activities affecting land use, water use, or natural resources in the coastal zone. Land and water uses include—but are not limited to—public access, recreation, fishing, historic or cultural preservation, development, hazards management, marinas and floodplain management, scenic and aesthetic enjoyment, and resource creation or restoration projects. Natural resources include biological or physical resources that are found within a state's coastal zone on a regular or cyclical basis. Biological and physical resources include—but are not limited to—air, tidal and nontidal wetlands, ocean waters, estuaries, rivers, streams, lakes, aquifers, submerged aquatic vegetation, land, plants, trees, minerals, fish, shellfish, invertebrates, amphibians, birds, mammals, reptiles, and coastal resources of national significance (15 CFR § 930.11).

California Coastal Act

In 1972, due to growing public concern about coastal development and its impact on public access and coastal resources, California voters passed Proposition 20, "The Coastal Initiative." The initiative authorized the development of the California Coastal Plan and created what is now known as the CCC to regulate development in the coastal zone. The CCA was passed soon after in 1976. All consistency documents are reviewed for consistency with Chapter 3 of the CCA, which is the underlying legal authority for the CCMP.

A key provision of the CCA is the requirement that local governments draft LCPs to guide coastal zone development, conservation, and planning. Once an LCP is approved by the CCC, the review authority for new development transfers from the CCC to the local authority, with the exception of certain geographic areas including submerged lands and public trust lands (County of San Diego, 2018). The CCC also retains appellate authority over specified categories of development. The primary tool for implementing the LCP is the CDP. Development within the coastal zone generally may not commence until a CDP has been issued either by the CCC or—if the LCP has been approved—by the local authority.

Applicability to the Evaluated Alternatives

As noted in Section 3.10 (Coastal Zone), the Tijuana River Valley and adjacent coastal areas are located within the coastal zone. Federal lands, including the ITP parcel and the flood control areas upstream of Dairy Mart Road, are excluded from the coastal zone. However, pursuant to the CZMA, actions on federal lands must nonetheless be reviewed for reasonably foreseeable effects on the coastal zone.

All U.S.-side project components evaluated in this PEIS are located within the Tijuana River segment of the City of San Diego LCP jurisdiction. Per Chapter 12, Article 6, Division 7 of the City of San Diego Municipal Code Coastal Development Permit Procedures, projects located within both the City of San Diego LCP jurisdiction and the CCC jurisdiction require a CDP from each agency for the portion of the project within the agency's jurisdiction. However, per informal coordination with the CCC under this effort, portions of the Tijuana River Valley remain under the jurisdiction of the CCC as "Deferred Certification Areas." Transboundary coastal zone effects (Mexico to U.S.) from U.S.-funded actions in Mexico also could potentially be subject to review for consistency with the CCMP, depending on the jurisdiction for the associated improvements in the U.S.

On February 11, 2022, EPA submitted a jurisdictional review request to the CCC to determine the applicable authorities, review requirements, and approval processes (e.g., CCC versus City review of the federal consistency determination and CDP application) for the projects that comprise the two action alternatives in this PEIS. Prior to completion of the Final PEIS, and pursuant to the CZMA, EPA will prepare and request CCC concurrence with a consistency determination for the Core Projects. Consistency determinations for the Supplemental Projects would be prepared and submitted during the subsequent tiered NEPA analyses. Additionally, following the completion of the NEPA process, but prior to project implementation, EPA and/or USIBWC would prepare and submit a CDP application to include the appropriate analyses as described above (e.g., regarding environmentally sensitive areas, wetlands, and sea level rise). EPA and/or USIBWC would proceed with project implementation in accordance with the conditions of the issued CDP.

6.1.10 Air Quality and Odor

The amendments to the Clean Air Act mandated that EPA regulate the emissions of HAPs. HAPs are pollutants that are known or suspected to cause cancer or other serious health effects. HAPs include certain VOCs, pesticides, herbicides, and radionuclides. EPA has identified industry-specific National Emission Standards for Hazardous Air Pollutants (NESHAPs) to protect public health and welfare. These NESHAPs apply to all air emission sources that have the potential to emit at least 10 tons/yr of any single HAP or 25 tons/yr of multiple HAPs (40 CFR § 63.2). In addition to the NESHAPs, EPA has developed Maximum Achievable Control Technology (MACT) standards for particular source categories. MACT standards are based on the level of emission control currently being achieved by the best-performing similar sources. Stationary sources identified as major sources of HAPs are required to comply with MACT standards and perform an initial performance test and regular monitoring to demonstrate compliance with NESHAPs.

Projects involving any new or modified air emission sources (e.g., boilers, emergency generators) are required to apply the BACT, as defined by California law. If emissions exceed certain limits, emissions offsets may be required. If modeled emissions of HAPs from new or modified stationary sources are found to exceed specified health limits, the application of best available control technology for toxics (T-BACT) would be required.

Under the Clean Air Act GCR, no federal agency can approve or undertake an action unless the project has been demonstrated to conform to the applicable State Implementation Plan. A federal action must not adversely affect the attainment and maintenance of the NAAQS or emission reduction plans leading to attainment, nor can it cause or contribute to any new violation of any standard. Conformity determinations are not required for federal actions if an applicability analysis shows that the total direct and indirect emissions from the project would be below the applicable *de minimis* thresholds (40 CFR § 93.153). Table 4-16 presents the *de minimis* thresholds for San Diego County.

Table 6-2. *De Minimis* Emissions Thresholds for General Conformity Applicability

Pollutant	San Diego County Attainment Status	*De Minimis* Emissions (tons/yr)
O_3 (2015 standard)	Severe Nonattainment	25 [a]
O_3 (2008 standard)	Severe Nonattainment	25 [a]
CO	Maintenance	100

Source: 40 CFR § 93.153.
a – *De minimis* limits for ozone apply to the precursor pollutants, VOCs, and NOx. EPA is responsible for complying with both the 2015 and 2008 ozone standards.

Under Regulation IV, Rule 51 of the SDAPCD, the discharge of air contaminants is prohibited if such a discharge would cause "injury, detriment, nuisance or annoyance to any considerable number of persons or to the public." Under this rule, an odor is considered a nuisance based on the number of complaints received by the SDAPCD. Odor impacts are also regulated under California Health and Safety Code Section 41700, San Diego County Zoning Ordinance Section 6318, and the San Diego Municipal Code § 142.0710.

As discussed in Section 4.11 (Air Quality and Odor), emissions from the Proposed Action would not exceed GCR *de minimis* thresholds. However, stringent pollution and odor control requirements (i.e., BACT) would apply to Project A (Expanded ITP) due to emissions from the anaerobic digestion process. Projects D and E (APTP Phases 1 and 2) would not be expected to trigger substantial permitting, impact assessment, or emission control requirements for criteria pollutants or HAPs, as the principal processes of non-industrial wastewater treatment operations (including primary and secondary treatment) typically produce trace emissions that are considerably less than notable regulatory applicability thresholds. The APTP would likely require an operational permit and permits to operate emergency generators.

EPA and/or USIBWC would obtain and comply with all applicable permits for the Proposed Action.

6.1.11 Climate

In 2016, CEQ issued final guidance on GHG emissions and the effects of climate change (CEQ, 2016). The guidance recommended that agencies quantify a proposed agency action's projected direct and indirect GHG emissions and use the projected GHG emissions as a proxy for assessing potential climate change impacts in NEPA analyses. The guidance also advises agencies to use their NEPA review to consider alternatives that would make the actions and affected communities more resilient to the effects of a changing climate (CEQ, 2016). This CEQ guidance is currently under review for revision and update.

The recently issued EO 14008, *Tackling the Climate Crisis at Home and Abroad* (86 FR 7619), states that the U.S. needs to achieve economywide net-zero emissions no later than 2050. It sets the expectation that agencies with infrastructure investments shall reduce climate pollution and those with permitting decisions shall consider the effects of GHG emissions and climate change in their decisions.

The State of California has developed statewide GHG reduction goals through several legislative and executive directives. In 2005, Governor Schwarzenegger issued EO S-3-05 to reduce statewide emissions to 80 percent below 1990 levels by 2050. In 2006, the California Global Warming Solutions Act (AB 32) called for the reduction of statewide emissions to 1990 levels by 2020. AB 32 required CARB to develop a Climate Change Scoping Plan to describe the approach to reach the goal by 2020. The current plan (2017) is being updated for the third time since being approved in 2008. The scoping plan recommends that local governments adopt adopted GHG emissions reduction goals for year 2020 consistent with AB 32 and recommends local governments to adopt a goal for municipal operations and communitywide emission reduction by approximately 15 percent from current levels by 2020 (City of San Diego, 2015). In 2015, California Governor Brown issued EO B-30-15, which established an interim goal to reduce statewide emissions to 40 percent below 1990 levels by 2030.

Under CEQA, agencies must analyze the GHG emissions of proposed projects, including an analysis of the project's effect on climate change. In determining the significance of a project's impact, agencies should consider the project's consistency with California's long-term climate goals (Cal. Code Regs. tit. 14, § 15064.4). Threshold approaches are typically used to determine if the climate impacts from the project are considered significant. The City of San Diego's 2015 Climate Action Plan included a CAP Consistency Checklist that is currently being revised and is proposed to be codified in the Land Development Code. It is meant to provide a streamlined review process for the GHG analysis of proposed new development projects that trigger environmental review pursuant to CEQA. Projects that are consistent with the Climate Action Plan as determined through the checklist may rely on the GHG analysis in the Climate Action Plan. Projects that are inconsistent with the Climate Action Plan must prepare a project-specific GHG analysis.

As discussed in Section 4.12 (Climate), the Core Projects would be inconsistent with the City of San Diego Climate Action Plan because they increase GHG emissions directly and through energy use, transportation, and waste generation. This led to a determination of significant impact specific to climate impacts. Industrial and wastewater sectors were not specifically addressed in the 2015 Climate Action Plan.

6.1.12 Solid and Hazardous Waste

Sludge disposal in the U.S. must comply with Section 503 of the CWA, which establishes requirements for the management of biosolids generated during the treatment of municipal wastewater. Section 503 establishes general requirements, pollutant limits, management practices, operational standards, and requirements for the frequency of monitoring, recordkeeping, and reporting for biosolids that are (i) applied to land to condition the soil or fertilize crops or other vegetation grown in the soil, (ii) placed on a surface disposal site for final disposal, or (iii) fired in a biosolids incinerator (40 C.F.R. § 503).

The California Hazardous Waste Control Act establishes regulations and incentives to ensure the safe handling, treatment, recycling, and destruction of hazardous wastes (CA H&SC § 25100-25259). California's Hazardous Materials Business Plan program provides threshold quantities for regulated hazardous substances. If quantities are exceeded, the responsible entity is required to submit a Hazardous Materials Business Plan consisting of an inventory of hazardous materials, an emergency response plan, and an employee training program (CA H&SC § 25500-25547.8). For San Diego County, businesses that handle solid hazardous materials in amounts greater than or equal to 500 pounds in a given year are required to submit a Hazardous Materials Business Plan pursuant to the CA H&SC (San Diego County Code § 68.1113).

As discussed in Section 4.13 (Solid and Hazardous Waste), all evaluated alternatives are expected to comply with applicable solid and hazardous waste standards if they generate hazardous waste from typical cleaning and equipment maintenance wastes (e.g., solvents, oils, greases). With anaerobic digestion for Project A (Expanded ITP), produced solids waste could be suitable for beneficial reuse such as land application in the U.S. and, if so, would be required to comply with Section 503 of the CWA. Section 503 requirements would not apply to solids waste produced under Projects D and E (APTP Phases 1 and 2), which would be disposed of in a landfill, or to solids waste to be disposed of in Mexico.

6.1.13 Noise

Local ordinances regulate noise by establishing acceptable noise thresholds and potentially requiring permits and noise mitigation for construction activities and noise-producing equipment. Examples of mitigation methods include use of noise barriers (e.g., solid walls, fences, earthen mounds), enclosures, and monitoring. The County of San Diego Noise Ordinance, the San Diego County Code § 36.409, and the San Diego Municipal Code § 59.5.0404 state that, between 7 a.m. and 7 p.m., construction noise should not exceed a sound level of 75 dB at the property boundary line when averaged over an eight-hour period. A permit is required for any construction-specific noise between the hours of 7 p.m. and 7 a.m., regardless of land use (San Diego Municipal Code § 59.5.0404). Construction activities must adhere to applicable noise limits depending on its jurisdictional location. Additionally, San Diego County Code § 36.410 states that impulsive noise shall not exceed 82 dB in residential areas or 85 dB in agricultural areas at the property line for 25 percent of the minutes in the measurement period.

Residential areas have slightly lower maximum general sound thresholds than areas zoned for agricultural, commercial, or industrial use (San Diego County Code § 36.404). The City of San Diego Noise Abatement and Control Ordinance provides general sound level limits for different land uses, as well as noise controls for maintenance and construction activities. Industrial and commercial land uses do not have a tiered time-of-day limitation, while residential and commercial land uses average sound level is more tightly restricted from 7 p.m. to 7 a.m. (San Diego Municipal Code § 59.5.0401). See Table 3-15 for a comparison of the county and city general sound level limitations.

As discussed in Section 4.18 (Noise), most Core and Supplemental Projects are expected to comply with applicable noise standards with possible exceptions for work near residential property boundaries (e.g., Option B1 trenching along Monument Road) and operation of the biogas-fired engine and electrical generator under Project A. If nighttime construction is necessary, the construction contractor would first obtain the appropriate permit.

6.1.14 Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 7629), specifically requires that federal agencies consider effects of proposed actions—including human health, economic, and social impacts—on minority and low-income communities when performing NEPA analyses. EO 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government* (86 FR 7009), directs federal agencies to imbed equity into agency programs and activities by assessing the extent to which underserved communities face systemic barriers in accessing opportunities and benefits related to the agency's policies and programs and directs the agency to develop a plan for addressing these barriers. To help achieve environmental justice, EPA's *E.O. 13985 Equity Action Plan* calls for EPA to develop more thorough analyses on the accumulation of multiple environmental and social stressors during decision making (including environmental decision making), conduct a critical review of existing data and methods for considering vulnerabilities due to burdens, and identify opportunities and develop recommendations to address vulnerabilities due to overburdens during decision contexts (EPA, 2022g). EO 14008, *Tackling the Climate Crisis at Home and Abroad* (86 FR 7619), directs federal agencies to address disproportionately high and adverse human health, environmental, climate-related, and cumulative impacts and associated economic effects on DACs.

Both minority and low-income populations, as well as communities overburdened for one or more environmental indicators, are present in the EJ Study Area, which includes communities in the vicinity of construction and operational activities under the Proposed Action. Therefore, EOs 12898, 13985, and 14008 require that EPA and USIBWC complete an analysis to determine whether, and to what extent, the projects would result in disproportionately high and adverse effects on the minority and low-income populations, including the potential for exacerbation of existing social, economic, health, or environmental burdens. EPA and USIBWC would develop and incorporate mitigation measures as described in Section 5 (Mitigation Measures) to avoid, minimize, or compensate for potential effects. See Sections 3.20, 4.20, and Appendix F (Supplemental Data for Environmental Justice Analysis) for additional information on the environmental justice review and analysis conducted for the Proposed Action.

6.2 Mexican Regulations and Permits

Mexico authorities would be responsible for preparing environmental impact analyses for actions in Mexico pursuant to Mexican laws and authorities.

Components of the Proposed Action that occur in Mexico would require additional environmental review in the form of an Environmental Assessment Document ("Manifestación de Impacto Ambiental" [MIA]). Development of an MIA ensures that actions in Mexico are compliant with Mexican regulations, protect environmental resources, and prevent adverse impacts (Sanchez-Triana & Enriquez, 2007). The MIA serves as a technical and legal document to present the evaluation of alternatives, identify potential impacts, and set forth mitigation measures to reduce adverse impacts, including impacts from construction, O&M, and decommissioning activities (Parsons, 2005; Sanchez-Triana & Enriquez, 2007; White & Case LLP, 2019). The MIA would be subject to review by federal, state, and local governments, which may provide comments, require additional mitigation measures, require additional risk assessments, report the action, or deny issuing authorization for the action (Parsons, 2005; Sanchez-Triana & Enriquez, 2007). As part of the MIA process, a summary of the action must be published in a newspaper, the MIA must be made public if requested, and public comments on the MIA must be included in the action's administrative record.

Recent BWIP-funded projects in Tijuana (i.e., Rehabilitation of the International Collector [Phase 1] and Tijuana River diversion rehabilitation; see Section 2.8 [Related Projects]) involved public outreach in compliance with NADBank community participation criteria. Specifically, public outreach included the formation of a Citizen Information Committee, distribution of factsheets to the community adjacent to the project location, publication of an information note in the local newspaper, and a survey to gauge community support for the projects. Components of the Proposed Action in Mexico funded through USMCA Implementation Act appropriations or BWIP would potentially undergo a similar public outreach and engagement process.

Additional Mexican regulations, standards, and permitting requirements also exist to protect environmental and human health. The following represent example aspects of the Proposed Action that may have environmental compliance implications in Mexico:

- Temporary effects from construction in Mexico under Projects B (Tijuana Canyon Flows to ITP), C (Tijuana Sewer Repairs), D (APTP Phase 1), G (New SABTP), H (Tijuana WWTP Treated Effluent Reuse), and I (ITP Treated Effluent Reuse)—subject to regulations and permitting requirements to protect a broad range of resource areas including water resources, geologic resources, air quality, biological resources, cultural resources, land use, visual resources, solid and hazardous waste, public health and safety, transportation, and noise.

- Solids waste transport, disposal, and/or land application in Mexico under Projects A (Expanded ITP) and G (New SABTP)—subject to regulations on transportation, solid and hazardous waste, and land use.

- Treated effluent discharges from Mexico under Project G—subject to water quality standards, wastewater permitting requirements, and regulations to protect biological resources.

- Treated effluent reuse in Mexico under Projects H and I—subject to drinking water standards and regulations protecting water quality.

See Section 6.2 of the Final Supplemental EIS for Clean Water Act Compliance at the South Bay International Wastewater Treatment Plant (Parsons, 2005) for additional background on potentially applicable Mexican regulations and permits.[65]

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[65] See https://www.ibwc.gov/Files/Web/Final_SEIS.pdf.

7. PUBLIC AND INTERAGENCY COORDINATION

7.1 Interagency Stakeholder Coordination Prior to Draft PEIS Development

Before developing the Draft PEIS, EPA initiated early stakeholder coordination and outreach to engage interested international, federal, state, and local entities and representatives. This process was integral to forming the alternatives presented in this Draft PEIS. Initially, EPA led the public and interagency coordination process as mandated by the USMCA Implementation Act. In October 2021, EPA and USIBWC agreed to become joint lead agencies for the NEPA process as discussed in Section 1.5 (Purpose and Scope of the Programmatic EIS).

7.1.1 Eligible Public Entities Coordinating Group

The USMCA Implementation Act directed EPA to carry out the planning, design, construction, and O&M of high-priority treatment works "in coordination with eligible public entities." Based on that direction, EPA established the EPECG, consisting of federal, state, and local stakeholders and solicited their input on the set of project options to be considered for evaluation in an EIS.

The EPECG membership roster consists of the following public entities:

- EPA co-chairs:
  - EPA Office of Wastewater Management
  - EPA Region 9, Water Division
- Binational entities:
  - North American Development Bank (NADBank)
- U.S. federal entities:
  - U.S. Army Corps of Engineers (USACE)
  - U.S. Customs and Border Protection (CBP)
  - U.S. Department of Commerce—represented by the U.S. International Trade Administration
  - U.S. Department of State
  - U.S. Fish and Wildlife Service (USFWS)
  - U.S. International Boundary and Water Commission (USIBWC)
  - U.S. Navy
- U.S. state, regional, and local public entities:
  - California Environmental Protection Agency (CalEPA)
  - California natural resource agency—represented by the Tijuana River National Estuarine Research Reserve (TRNERR) with the California State Coastal Conservancy as delegate
  - San Diego Regional Water Quality Control Board (SDRWQCB, or San Diego Water Board)
  - San Diego County
  - City of Chula Vista

- City of Coronado
- City of Imperial Beach
- City of San Diego
- Port of San Diego

To date, the EPECG has met on nine occasions, all by conference call. Coordination topics addressed at EPECG meetings have included, among other topics: the approach to public engagement; the project evaluation and selection process, including member feedback on the merits and concerns of each project option; overview of the technical analysis approach, high-level criteria to be used in the evaluation, and the long-term projects identified for inclusion in the evaluation; the identification and optimization of alternatives; the planning and evaluation of short-term project options; appropriate use of USMCA funds; and recent research efforts.

- EPECG Meeting 1—June 2, 2020
- EPECG Meeting 2—July 29, 2020
- EPECG Meeting 3—October 1, 2020
- EPECG Meeting 4—November 19, 2020
- EPECG Meeting 5—February 25, 2021
- EPECG Meeting 6—May 19, 2021
- EPECG Meeting 7—August 4, 2021
- EPECG Meeting 8—November 8, 2021
- EPECG Meeting 9—March 7, 2022

As part of EPA's process to assess technical options to address the transboundary wastewater flows, the supporting contractors conducted 18 individual virtual interviews with EPECG members in January and February 2021. The goal of these interviews was to understand the EPECG members' perspectives on the range of long-term projects currently being considered, synergies between projects, and the larger contextual considerations that may impact project success. Responses were aggregated and not attributed to specific individuals. High-level themes that emerged from the interviews were shared with EPA. The EPECG members provided input on a range of topics, including:

- The most pressing negative impacts and pollutants facing the Tijuana River watershed.
- Key projects or combinations of projects that may have the most promise to address the impacts or issues of most importance.
- The most important factors for implementing a solution to address transboundary flows related to USMCA investments.
- Critical actions that could be taken within Mexico to aid in ensuring long-term investments and reliable O&M of infrastructure.
- Questions and/or additional information that EPECG members have for EPA and/or other entities engaged in the process.

7.1.2 Technical Expert Consultation Process (TECP)

Early in the project development phase, EPA recognized the need to obtain and incorporate information from technical experts to inform the feasibility and alternatives analysis and to bring the USMCA Mitigation of Contaminated Transboundary Flows project team up to speed on existing information. As a result, EPA developed the TECP and involved stakeholders who were familiar with the technical aspects of transboundary flows and existing infrastructure. Specifically, the following stakeholders either 1) own or operate infrastructure or resources within the project area or 2) maintain data, reports, and other technical information that are critical to understanding transboundary flows and potential solutions:

- EPA Region 9 and Headquarters staff.
- U.S. International Boundary and Water Commission (USIBWC) and Comisión International de Limites y Aquas, Sección Mexicana (CILA).
- North American Development Bank (NADBank).
- The County of San Diego and their consultant, HDR.
- The City of San Diego and representatives from the South Bay Water Reclamation Plant (SBWRP).
- U.S. Customs and Border Protection (CBP).
- Scripps Institution of Oceanography at the University of California San Diego.
- San Diego Regional Water Quality Control Board (SDRWQCB, San Diego Water Board).
- California Department of Parks and Recreation (CDPR).

After reviewing documents, reports, and data provided by the TECP, EPA scheduled meetings with individual TECP stakeholders to 1) introduce the USMCA Mitigation of Contaminated Transboundary Flows Project team; 2) assign a main point of contact between EPA and the TECP stakeholder; and 3) request documentation, additional technical information, or clarification to further inform the feasibility and alternatives analysis. In some cases, EPA provided a list of questions to discuss with TECP stakeholders during the meetings. TECP stakeholders responded to the questions and provided additional technical documentation to EPA, as requested. The following presents a summary of the TECP meetings that have occurred to date:

- Meeting with USIBWC on September 17, 2020:
  - Discussed the existing footprint and treatment processes of the ITP, the ability for the ITP to handle additional flows during wet weather, and other operational and performance challenges faced by the ITP and the collection system.
- Meeting with the County of San Diego and HDR on October 16, 2020:
  - Discussed the Scripps Institution of Oceanography draft study and findings regarding beach impacts from coastal discharges of untreated wastewater.
  - Discussed issues with flooding of Monument Road in addition to road closures, estuary impacts, and lack of water quality data from Goat Canyon.
  - Discussed the operation of various existing infrastructure including PB-CILA, PB1-A, the SBOO, levees, border walls, and the ITP.

- Meetings with the City of San Diego on November 2, 2020, and November 9, 2020:
  - Discussed source control in Mexico as a barrier to treating water for beneficial reuse, the potential of selling SBWRP and the SBOO assets to the federal government, and evaluating the potential for treatment system consolidation and regionalization.
  - The city provided additional information on asset management of SBWRP and the SBOO.
  - Discussed the availability of data for hydraulic modeling and profiles of SBWRP and SBOO, mapping and land use surrounding SBWRP, stress testing, asset management documentation, hydraulic modeling, design basis and hydraulic profiles for SBWRP and SBOO, operating costs, and sludge disposal.
- Meetings with NADBank on October 29, 2020, and December 2, 2020:
  - Discussed the overall NEPA process.
  - Participants requested additional information regarding flow diagrams of the systems (including diversion structure operation); information on infrastructure upgrades; standard operating procedures for operating PB-CILA; plan, schedule, and cost of maintaining the canyon collector system; and the availability of water quality monitoring data.
  - Discussed questions regarding the operation, performance, and possibility of failure for assets (particularly PB-1A, PB-1B, and PB-CILA); seasonal flow trends; historical data on asset performance; service life of assets; regular O&M for diversion infrastructure and the canyon collector system; and water reuse.
- Meeting with CDPR on December 4, 2020:
  - Discussed Yogurt Canyon drainage; sediment and trash deposition; issues with road flooding, seasonal flooding, and the connection between flooding and public access issues to beach and parks; loss of salt marsh habitat; the option of a proposed pilot channel; and concerns regarding its invasive impacts to the salt marsh.
- PG Environmental site visits to ITP and wastewater infrastructure in the U.S. and Mexico, May 25–27, 2021:
  - Met with representatives from IBWC and Veolia, who provided a plant tour of the ITP. Discussed operational challenges and constraints, condition of existing plant equipment, and site suitability for expanding the plant.
  - Met with representatives from CBP, who provided a tour of the U.S.-side canyon flow diversion structures along the international border. Discussed challenges with patrolling the border infrastructure, including pools of wastewater during dry weather and high-flow events during wet weather.
  - Met with representatives from CESPT and CILA, who provided a tour of PB-CILA and other Mexico-side pump stations. Discussed current condition of pumping equipment, operational protocols and procedures, and operational challenges and constraints.
  - Met with representatives from the County of San Diego, who provided a tour of the Smuggler's Gulch trash boom. Discussed trash boom design, efficacy, and maintenance requirements.

   – Met with representatives from CDPR, who provided a tour of the Goat Canyon sediment basin and trash boom. Discussed sediment basin and trash boom design, efficacy, and maintenance requirements.

The USMCA Mitigation of Contaminated Transboundary Flows Project team does not have additional meetings scheduled with TECP stakeholders at this time, but may identify the need for additional meetings, depending upon the need for technical input for the feasibility and alternatives analysis.

7.1.3 Natural Resources Workshop

On March 9 and April 2, 2021, EPA hosted and facilitated a Natural Resources Workshop for the USMCA Mitigation of Contaminated Transboundary Flows Project. EPA invited natural resource managers and conservation specialists in the San Diego region to the workshop to solicit input related to biological resources to inform the planning process. The workshop was divided into two parts (two-hour sessions each) and was focused on the following:

- Part 1 (March 9, 2021)—EPA summarized the project options being considered; described the natural resource data collection and review efforts to date; and requested relevant information on flora and fauna, such as survey and monitoring data, ongoing projects and management efforts, and species recovery plans.

- Part 2 (April 2, 2021)—EPA focused on discussing potential water quality and river flow changes and concerns downstream of the U.S.-Mexico border and the implications on natural and ecological resource management in the Tijuana River and Estuary.

Participants include individuals from the following agencies and organizations: USFWS, USDA-NRCS, USIBWC, TRNERR, CDPR, CDFW, County of San Diego, City of San Diego, City of Imperial Beach, San Diego Management and Monitoring Program, USGS, U.S. Navy, California State Coastal Conservancy, and Bureau of Land Management.

7.2 Regulatory Consultation

7.2.1 Endangered Species Act Section 7 Consultation

Consultation with USFWS

EPA engaged in preliminary discussions and early coordination with USFWS, including some prior to initiation of the NEPA process, which included the following:

- On December 16, 2020, EPA conducted an introductory meeting with USFWS to notify them of the Proposed Action and begin early coordination on the action and its potential effects.

- EPA hosted and facilitated the Natural Resources Workshop, including USFWS as a participant. See Section 7.1.3 (Natural Resources Workshop).

- On July 1, 2021, EPA met with USFWS and discussed an overview of the Proposed Action, the status of alternatives development, and a proposed approach to ESA Section 7 consultation.

- On January 5, 2022, EPA met with USFWS and discussed updates and a summary of listed species with the potential for project-related effects.

- On February 9, 2022, EPA's biological consultants conducted a site visit with USFWS to evaluate site conditions in the proposed Action Area[66] and discuss potential impacts on federally listed species.

The scope of the Section 7 consultation is limited to the Core Projects. Supplemental Projects would be subject to the ESA but would undergo consultation at a later date, likely in support of the subsequent tiered NEPA analyses for those projects. On May 25, 2022, EPA submitted to USFWS a draft biological assessment for review and a request for concurrence—see Appendix D (USFWS Biological Assessment [Draft]). EPA will continue to coordinate with USFWS pursuant to Section 7 of the ESA for the Core Projects throughout the NEPA process. Mitigation measures identified in consultation with USFWS would be applied to the Core Projects and included in Section 5 (Mitigation Measures) in the Final PEIS.

Consultation with NMFS

During the development of the EID, EPA engaged in preliminary discussion with NMFS staff to inform them of the development of alternatives leading up to the release of this Draft PEIS.

- On February 26, 2021, EPA provided a joint presentation to NMFS that included information on the 10 projects identified in Section 2.1.1 (Identification of Projects to Undergo Feasibility Analysis) that were under consideration in the EID.

- On July 7, 2021, EPA provided a second presentation to NMFS that included an update on three tentative project alternatives that would be brought forward to the PEIS.

- On August 4, 2021, a technical memorandum was provided to NMFS for review. The memorandum described the Action Area[67] potentially affected by the Proposed Action considered for assessment in the PEIS. The memorandum also contained a list of species that EPA had determined could occur within this Action Area and a table of key life-history and management references compiled to inform the biological assessment. The technical memorandum also included a discussion of potential EFH in the Action Area. On August 25, 2021, NMFS provided an email response with comments relating to the technical memorandum.

Since these discussions, EPA completed the alternatives analysis (see Section 2.1.3 [Alternatives Analysis]), which identified the Alternatives 1 and 2 considered in this Draft PEIS.

The scope of the Section 7 consultation is limited to the Core Projects. Supplemental Projects would be subject to the ESA but would undergo consultation at a later date, likely in support of the subsequent tiered NEPA analyses for those projects. On May 25, 2022, EPA submitted to NMFS a draft biological assessment for review and a request for concurrence—see Appendix E (NMFS

[66] This Action Area, related to inland biological resources, is defined in Appendix D (USFWS Biological Assessment [Draft]).

[67] This Action Area, related to marine biological resources, is defined in Appendix E (NMFS Biological Assessment and Essential Fish Habitat Assessment [Draft]).

Biological Assessment and Essential Fish Habitat Assessment [Draft]). EPA intends to supplement this first draft biological assessment with additional information and analyses to address NMFS comments and will continue to coordinate with NMFS pursuant to Section 7 of the ESA for the Core Projects throughout the NEPA process. Mitigation measures identified in consultation with NMFS would be applied to the Core Projects and included in Section 5 (Mitigation Measures) in the Final PEIS.

7.2.2 Magnuson-Stevens Fishery Conservation and Management Act Consultation (Essential Fish Habitat)

Consultation regarding effects on EFH with NMFS has been, and will continue to be, conducted in parallel with discussions and subsequent consultation with NMFS on ESA-listed species. See Section 7.2.1 (Consultation with NMFS) for discussion of consultation timelines and future intentions.

7.2.3 National Historic Preservation Act Section 106 Consultation

Discussions with the OHP regarding the Proposed Action began with a meeting with Associate State Archaeologist Jeffrey Delsescaux on December 15, 2020. Mr. Delsescaux provided information from a recent cultural resources study for the Tijuana River Flood Control Project conducted within the APE for the Proposed Action. The study recorded one new resource not on file at the SCIC, CA-SDI-23075, and it was thus added to the list of cultural resources to consider in the Class III Cultural Resource Inventory for the Proposed Action.

On May 25, 2022, EPA submitted a formal request for consultation under NHPA Section 106 and concurrence on the findings of the Class III Cultural Resource Inventory that the Proposed Action will not affect historic properties. For communications related to Section 106 consultation with the SHPO, see Appendix J (NHPA Section 106 Correspondence).

7.2.4 Government-to-Government Consultation with Native American Tribes

On March 30, 2021, letters were mailed to local tribal contacts provided by the NAHC and EPA tribal liaison seeking early engagement and requesting any knowledge of cultural resources in the USMCA project areas and any potential concerns regarding the Proposed Action and its potential for adverse effects on cultural resources.[68] Tribes with available email addresses were provided electronic copies of the outreach as well on April 2, 2021. The Rincon Band of Luiseño Indians responded in a letter dated April 28, 2021, stating that they have no additional information concerning potential impacts on cultural resources. The Rincon Band recommended that EPA coordinate with the Kumeyaay Nation to address and mitigate impacts to cultural resources and requested to be included in future correspondence for the USMCA project. No other tribal contacts responded to EPA's outreach letter. Separately, in response to the NOI to prepare an EIS (see Section 7.3.4.1 [Public Notification and Scoping Meeting]), the Viejas Band of Kumeyaay Indians commented on April 8, 2021, that the USMCA project site has cultural significance or ties to them and requested that a Kumeyaay Cultural Monitor be onsite for ground-disturbing activities. Native American participation was included as part of the pedestrian survey for the Class III Cultural

[68] A separate version of this outreach letter was mailed to Carmen Lucas of the Kwaaymii Laguna Band of Mission Indians on April 20, 2021.

Resource Inventory. During the pedestrian survey, Deangelo Espinoza from the Viejas Band of Kumeyaay Indians served as the Kumeyaay Cultural Monitor.

Although EPA did not need to consult with tribes in reaching the finding that the Proposed Action will not affect historic properties, EPA provided notification and documentation specified in 40 CFR § 800.11(e) supporting its finding to tribal contacts provided by the NAHC and EPA tribal liaison—see Appendix K (Tribal Outreach Correspondence). This letter notified tribal contacts that SHPO consultation and concurrence on this determination for the Proposed Action was requested. This letter covered the full scope of the Proposed Action, including all projects proposed in this PEIS.

EPA will continue to consult with the SHPO and Indian tribes in the process of applying the criteria of adverse effect to historic properties within the APE, as necessary. EPA recognizes that consultation is an ongoing process of communication that may include written correspondence, meetings, telephone conferences, site visits, and emails, and will employ these methods of consultation to seek agreement with tribes regarding matters arising out of the Section 106 process as necessary, in accordance with 36 CFR § 800.16(f). EPA recognizes the special expertise of Indian tribes to determine the religious and cultural significance of historic properties to them per 36 CFR § 800.4(c)(1) and recognizes that 36 CFR § 800.5(a) requires that agencies apply the criteria of adverse effect in consultation with Indian tribes.

7.3 Public Engagement and Review

7.3.1 Public Information Meetings

To date, EPA has conducted six public listening sessions with broader stakeholders, all by conference call. Topics addressed at the public listening sessions have included, among other topics, update on short-term impact projects; overview of the technical analysis approach, high-level criteria to be used in the evaluation, and the long-term projects identified for inclusion in the evaluation; the identification and optimization of alternatives; information on the NEPA scoping process and important dates for stakeholders; and addressing public stakeholders' key questions. Upcoming public listening sessions will be announced by EPA.

- Public Information Meeting 1—June 25, 2020
- Public Information Meeting 2—November 20, 2020
- Public Information Meeting 3—February 26, 2021
- Public Information Meeting 4—May 24, 2021
- Public Information Meeting 5—August 6, 2021
- Public Information Meeting 6—November 8, 2021

7.3.2 USIBWC Citizens Forum Meetings

The USIBWC Citizens Forum was established in 2002 to facilitate the exchange of information between USIBWC and members of the public about Commission activities in San Diego County. The Citizens Forum is intended to bring together community members enabling the early and continued two-way flow of information, concerns, values, and needs between USIBWC and the general public, environmentalists, government agencies, municipalities, and other interested parties. The Citizens Forum meetings are conducted three times per year and cover topics including, but not limited to, projects within the Tijuana River watershed, wastewater treatment operations along the U.S.-

Mexico border, and the status of the USMCA Mitigation of Contaminated Transboundary Flows Project. Meeting minutes and presentation materials are available on the USIBWC Citizens Forum website.[69]

7.3.3 South County Environmental Justice Taskforce

The South County Environmental Justice Taskforce (SCEJTF), chaired by San Diego County District 1 Supervisor Nora Vargas, was created in 2021 to bring together San Diego leaders on public health issues and pollution affecting residents in the Tijuana River Valley. One of its main purposes is to improve health outcomes, particularly in severely impacted communities with environmental justice concerns in San Diego County. By facilitating diverse stakeholder engagement, it aims at broadening awareness and support to implement innovative ideas. The SCEJTF is comprised of binational entities representing various sectors including government, community groups, academia, and nonprofit including members from environmental justice organizations. The Taskforce meets quarterly and as needed. Following NEPA public scoping, EPA provided overview presentations on and answered questions posed by Taskforce members on the USMCA project in June and September 2021. EPA continues being an active participant in SCEJTF meetings.

7.3.4 NEPA Public Scoping

7.3.4.1 Public Notification and Scoping Meeting

On April 5, 2021, EPA published in the Federal Register a NOI to prepare an EIS (86 FR 17595; this notice is available at www.federalregister.gov). The publication initiated public scoping by providing a notice of virtual public scoping meetings and request for comments from federal, state, and local agencies, Native American tribes, and the public. EPA established a 45-day public comment period for the scoping process that concluded on May 20, 2021.

EPA published public notices of their intent to prepare an EIS, notice of public scoping meeting, and request for comments in two local newspapers: the *San Diego Union-Tribune* for three consecutive days starting on April 6, 2021, and the *Imperial Beach Eagle and Times* on April 8, 2021. Additionally, EPA notified approximately 85 “potentially interested parties” (e.g., agencies, organizations, and businesses) through a combination of emailed flyers, directly mailed flyers, a listserv distribution (for NADBank), and website submittals. EPA also posted notices on the EPA project website (https://www.epa.gov/sustainable-water-infrastructure/usmca-tijuana-river-watershed). Appendix L (Distribution List) includes the list of the potentially interested parties that received public notice distributions.

As described in the NOI and other public scoping materials, EPA had not yet identified the alternatives to be evaluated in the EIS but anticipated that each alternative would consist of one or more of the 10 projects that were undergoing feasibility analysis at the time, as described in Section 2.1 (Formulation of Alternatives).

EPA hosted a virtual public scoping meeting on April 20, 2021, at 6 p.m. Pacific Daylight Time to provide information to the public on the Proposed Action and to accept public comments. The presentation lasted approximately 30 minutes and was followed by a formal public comment period for the meeting participants who submitted comments both orally and in written form

[69] See https://ibwc.gov/Citizens_Forums/CF_SBIWTP.html.

within the virtual meeting platform. The presentation included an overview of the USMCA, the NEPA and scoping process, an anticipated schedule, technical analysis process, scope of the issues to be addressed, overview of the existing systems, and a description of the proposed projects.

Nearly 150 people attended the virtual public scoping meeting and the comments received during the virtual meeting were collected, reviewed, and considered during the preparation of this Draft PEIS. The meeting materials were presented in a bilingual written format (English/Spanish) and audio was made available during the meeting with simultaneous Spanish interpretation services. Closed captioning was also available to participants during the meeting. A recording of the public scoping meeting was made available on the EPA Tijuana River Watershed NEPA Implementation project website.[70]

7.3.4.2 Summary of Scoping Comments

EPA received scoping comments from public citizens, federal and tribal representatives, non-governmental organizations, and a variety of other stakeholders. Comments were received by email and as written and spoken comments during the public scoping meeting. Commenters provided input on the following topics: the proposed projects; the purpose and need; funding sources and scope of funding; timing and schedule; alternatives; the binational nature of the issues; Tijuana infrastructure; effects on tourism, recreation, water quality, terrestrial and estuarine habitats, streams and riparian habitats, air quality and odor, public health, and cultural resources; Navy operations, environmental justice, and climate change; mitigation and BMPs; and coordination and consultation with agency stakeholders.

7.3.4.3 Summary of Submitted Alternatives, Information, and Analyses

During the NEPA public scoping period for this PEIS, EPA and USIBWC received scoping comments from public citizens, federal and tribal representatives, non-governmental organizations, and a variety of other stakeholders. Some of these comments suggested projects to be considered in the PEIS and/or provided information or analyses for EPA and USIBWC consideration. As discussed in Section 2.7.3 (Other Projects Identified Based on Public Scoping Comments), commenters submitted the following alternatives for EPA consideration: Separation of the stormwater and sewage systems in Tijuana, Utilization of a treatment plant in Mexico for reclamation and reuse of untreated wastewater and/or treated effluent, Installation of micro-treatment systems in Tijuana, Promotion of home (domestic) water reuse in Tijuana, Establishment of a recycling program in Tijuana to prevent solvents, detergents, and chemicals from entering the waste stream, Remediation and restoration of the Tijuana River Valley to its historical environmental conditions, and Extension of the SBOO to deeper offshore waters. Additional information about the range of alternatives considered is provided in Sections 2.2 (Proposed Action and Range of Alternatives Evaluated in This PEIS) and 2.7 (Alternatives Eliminated from Evaluation in This PEIS).

EPA and USIBWC have appended to this Draft PEIS all comments received during the scoping process that identified alternatives, information, and analyses for the agencies' consideration—see Appendix M (Public Scoping Comments Identifying Alternatives, Information, and Analyses). EPA

[70] See https://www.epa.gov/sustainable-water-infrastructure/tijuana-river-watershed-nepa-implementation.

and USIBWC invite comment on this summary identifying all submitted alternatives, information, and analyses, in accordance with 40 CFR § 1502.17(a)(2).

7.3.5 Public Review of Draft PEIS

This Draft PEIS is being made available for public review and comment by any interested party for a period of 45 days. EPA and USIBWC will host a public comment meeting during the 45-day review period, which will be open to any interested party. All comments received on time, both individually during the 45-day review period and during the public comment meeting, will be reviewed by EPA and USIBWC. Substantive comments will be considered in preparation of a Final PEIS and will be appended to or otherwise summarized in the Final PEIS (40 CFR § 1503.4). Additionally, the Final PEIS will include a summary that identifies all alternatives, information, and analyses submitted by state, tribal, and local governments and other public commenters for consideration in developing the Final PEIS (40 CFR § 1502.17(b)).

8. LIST OF PREPARERS AND REVIEWERS

The individuals listed in Table 8-1 contributed to the preparation of this document.

Table 8-1. List of Preparers and Reviewers

Affiliation	Name	Relevant Experience
Preparers		
ERG	Patrick Goodwin (Project Manager)	B.A. Environmental Science; 20 years of experience in NEPA and environmental planning and compliance
	Helen Anthony	B.S. Environmental Technology and Management; 8 years of experience in water quality planning and compliance
	Eric Bell	B.S. Mechanical Engineering, M.S. and Ph.D. Civil and Environmental Engineering; 8 years of experience in sustainability engineering and climate change mitigation
	Allison DenBleyker	B.S. Civil Engineering, M.S. Environmental and Water Resources Engineering; 15 years of experience in air pollution emission inventories from mobile sources
	Theresa Docal	B.S. Environmental Science and Policy; 3 years of experience in NEPA and environmental and natural resource studies and documentation
	Blake Fox	B.S. Environmental Science; 9 years of experience in NEPA and environmental and natural resource studies and documentation
	Kathleen Onorevole	B.A. Environmental Biology, M.S. Marine Science; 8 years of experience in sustainability and water quality planning and monitoring
	Bob Sidner	B.S. Chemical Engineering; 22 years of experience in air pollution permitting and compliance assessments, air emissions estimation, air pollution control planning, and process engineering evaluations
ASM Affiliates	Jimmy Daniels	B.A., M.A., and Ph.D. (candidate) Anthropology; 15 years of experience in archaeology and cultural resource management
PG Environmental	James Hollibaugh	B.S. Mechanical Engineering; 16 years of experience in environmental compliance
	Esa Crumb	B.S. Molecular, Cellular, and Developmental Biology, M.S. Ecology and Systematic Biology, PWS #3842; 14 years of experience in environmental compliance and natural resource assessment, monitoring, technical studies, and documentation
	Matt Reusswig	B.S. Environmental Science, B.S.E. Civil and Environmental Engineering, M.S. Environmental Engineering and Science; 12 years of experience in NPDES permits development, wastewater engineering, and modeling
	Andrew Rimelman	B.S. Chemical Engineering; 3 years of experience in wastewater engineering and NPDES permitting
	Jason Rose	B.S. Geoenvironmental Engineering; M.S. Hydrological Science and Engineering; 25 years of experience in hydrogeology, environmental remediation and compliance
	Kevin Stockton	B.S. Astrophysics; 8 years of experience in stormwater/wastewater infrastructure planning, assessment, and compliance
Stillwater Sciences	Wendy Katagi	B.A. Social Ecology; Certified Environmental Professional, 32 years of experience in watershed planning/implementation of multi-benefit restoration and species recovery programs
	Holly Burger	B.S. Biology; 20 years of experience in aquatic and terrestrial biology and environmental planning and compliance
	Lucy Barraza	B.S. Evolution and Ecology; 17 years of experience in CEQA and NEPA, environmental planning and compliance

Table 8-1. List of Preparers and Reviewers

Affiliation	Name	Relevant Experience
	Matt Drenner	B.A. Biology, M.S. Environmental Sciences, Ph.D. Forestry; 13 years of experience evaluating fish populations and habitat and extensive research examining the behavior and physiology of fish species
	Nicole Jurjavcic	B.A. Biological Sciences (Ecology and Evolution), M.S. Ecology; 25 years of experience in botanical surveys, habitat assessments, and environmental planning and compliance
	Marissa Montjoy	B.A. Environmental Sciences; 5 years of experience in wildlife construction monitoring and targeted wildlife surveys
	Margie Pfeffer	B.A. Environmental Science; 5 years of experience in botanical surveys and habitat restoration
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	Kelly Blough	B.A. Geology; 28 years of experience in environmental management
	Mark Howe	B.A. Anthropology, M.A. History; 25 years of experience in cultural resources
	Elizabeth Verdecchia	B.A. Environmental Science and Engineering, M.A.G. Applied Geography; 21 years of experience in environmental science

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