

# **Rehabilitation of the Wastewater Collection Main Lines Phase II Poniente Collector in Tijuana, Mexico**

## **Environmental Assessment**

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## **1.0 INTRODUCTION**

The United States Environmental Protection Agency (EPA) administers the Border Environment Infrastructure Fund (BEIF), which provides grant funding for water and wastewater infrastructure projects located along the international boundary between the United States (U.S.) and Mexico. EPA policy for use of border funds requires evaluation and certification of projects by the Border Environment Cooperation Commission (BECC) as a condition for grant award. As part of the BECC certification process, the proposed project must comply with (1) Mexican environmental regulations and (2) the National Environmental Policy Act (NEPA). The EPA requires compliance with NEPA before BEIF funds can be authorized. Projects within 62 miles (mi) (100 kilometers [km]) of the U.S./Mexico border are eligible for BEIF assistance.

In accordance with the U.S. Council of Environmental Quality (CEQ) regulations, 40 CFR Parts 1500-1508, and EPA regulations (40 CFR Part 6) as guidance, this Environmental Assessment (EA) documents the environmental consequences in the U.S. of the proposed federal action. The purpose of this document is to comply with NEPA documentation requirements for the proposed federal action under consideration.

### **1.1 STUDY LOCATION**

The proposed project is located in the City of Tijuana, in the state of Baja California in northwestern Mexico. The City of Tijuana is within the larger municipality of Tijuana, which has a population of 1,641,570 people, an area of approximately 339 square miles (879 square kilometers), and contains the municipal delegations of San Antonio de los Buenos, Playas de Tijuana, Centro, Sánchez Taboada, La Mesa de Tijuana, Cerro Colorado, La Presa and Otay-Centenario.

The City of San Diego is the U.S. city located directly north of Tijuana. San Ysidro is a community within the City of San Diego located directly on the U.S./Mexico border across from Tijuana. The City of Tijuana is connected to the San Ysidro district of southern San Diego in the United States by the San Ysidro and Otay Mesa Border Crossing Stations. The San Ysidro border crossing is the busiest land-border crossing in the world, with over 50 million people using the crossing each year.

The area of concern for this EA is relatively flat in the U.S. and hilly in Mexico, generally ranging from sea level to about 800 feet (245 meters) above mean sea level (amsl) in elevation. The low-lying parts of the City of Tijuana have an elevation of roughly 65 feet (20 meters) amsl.

The project area is in the vicinity of the Tijuana River, which originates in the Sierra de Juárez Mountain Range. The 120 mile (193 kilometer) river flows north through Mexico and into the United States before draining into the Pacific Ocean. The Poniente Collector is located next to the river and approximately five miles south of the border.

### **1.2 PURPOSE AND NEED**

The purpose of the proposed action is to improve the wastewater collection system and sanitary conditions within the City of Tijuana. The project will address the deteriorated condition of the existing Poniente Collector which is the major sewer collection line within Tijuana. Within the

project area, wastewater from the collection system flows by gravity to two large collector lines that run parallel to the Tijuana River. The Poniente Collector transports wastewater from the western side of Tijuana to the Internacional Interceptor, and then on to treatment facilities. **Figure 1-1** contains an overview of the existing pumping and treatment infrastructure.

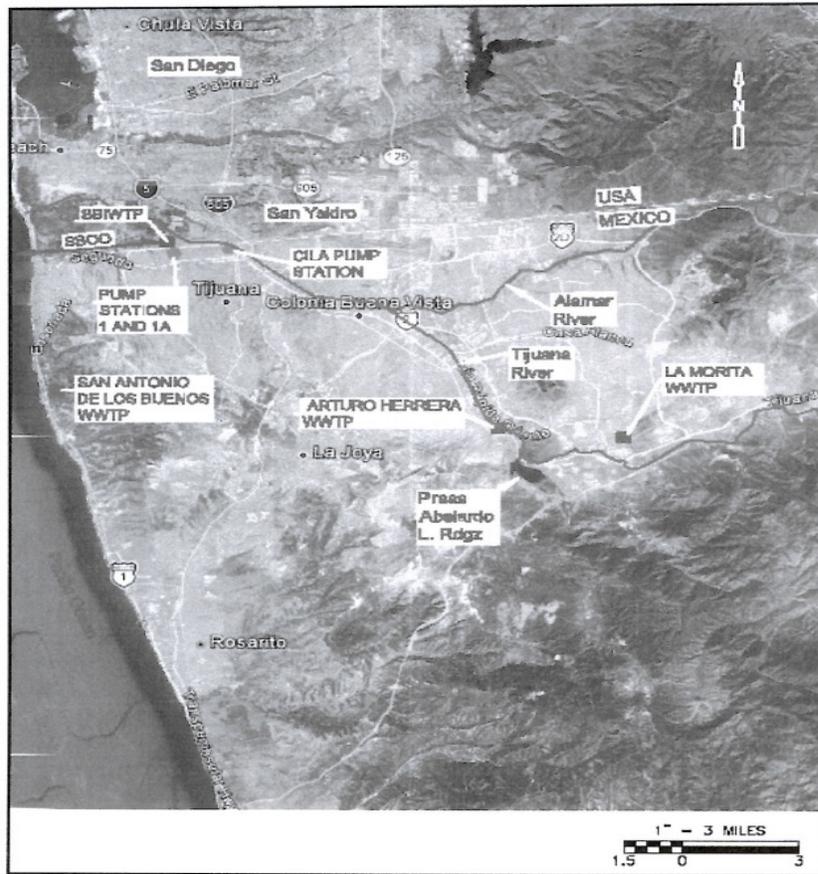


Figure No. 1-1

The Poniente Collector has had a history of collapses, which has resulted in raw sewage leaks to ground and surface water within the Tijuana River watershed potentially affecting human health and the environment. Rehabilitating the Poniente Collector will improve public health and water quality concerns by eliminating the discharge of raw sewage to Tijuana streets. Public safety concerns will also be addressed by reducing the risk and potential for collapse of a major sewer collector and associated manholes and ground subsidence.

In addition, the lack of reliable wastewater collection lines in Tijuana can have a detrimental impact the water quality within the U.S. The Tijuana River crosses from Mexico into the U.S. in southern San Diego County. If the volume of untreated sewage in the Tijuana River exceeds the capacity to divert it for treatment, it can flow into the U.S. The Tijuana River ultimately discharges into the Pacific Ocean, thus untreated wastewater can contaminate U.S.-side beaches.

Downstream of the Poniente Collector, five wastewater collectors were rehabilitated in 2015 due to deterioration issues similar to the problems seen at the Poniente Collector. To address the potential impacts from the rehabilitation of the five collectors, EPA prepared and finalized the *Tijuana Main Lines Environmental Assessment (EA) and Finding of No Significant Impact (FONSI)* dated February 4, 2014. EPA anticipates that many of the environmental impacts associated with the Poniente Collector project will be the same as found in the *Tijuana Main Lines EA and FONSI*. Because of these similarities, the Tijuana Main Lines EA and FONSI are incorporated by reference into this EA. See **Figure 1-2** for the location of the Poniente Collector and the location of the five downstream collectors referred to as Rehab Phase 1.

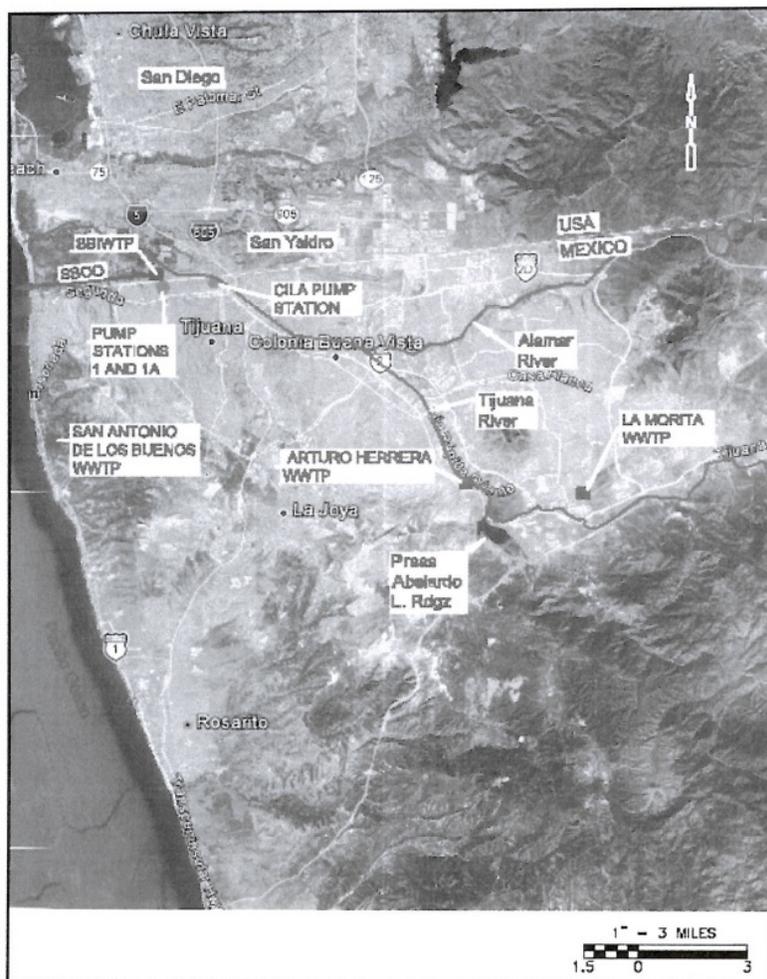


Figure No. 1-1

### **1.3 SCOPE OF ANALYSIS**

Although the project is located in Mexico, this EA evaluates the impacts to the relevant environmental resources within the defined area of concern in the U.S. As defined in the CEQ regulations (§1508.25), the scope consists of the range of actions, alternatives, and impacts to be considered in a NEPA-compliant document.

## **2.0 PROJECT DESCRIPTION AND ALTERNATIVES**

In accordance with Council on Environmental Quality (CEQ) regulations (§1502.14), this section of the EA: 1) presents and objectively evaluates the alternatives, including the No Action alternative; 2) devotes substantial treatment to each alternative considered in detail so the reviewers may evaluate comparative merits; and 3) includes appropriate mitigation measures.

### **2.1 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER STUDY**

A range of gravity sewer collection systems and locations were considered as part of this Environmental Assessment. However, with the exception of the preferred alternative, other alternatives were deemed not feasible, such as those options that would require extended closures of the City's most important roads or would be prohibitively expensive.

### **2.2 PROPOSED ACTION**

The proposed action would replace 5,894 meters of concrete pipeline with 76 and 107 centimeter (cm) or 30 and 42 inch diameter PVC pipeline with necessary modifications to the associated manholes. The proposed project would aid 86,974 residents within the 23,500 households.

### **2.3 EXISTING INFRASTRUCTURE**

The Comisión Estatal de Servicios Públicos de Tijuana or CESPT is the utility in Tijuana that operates the water and wastewater systems for Tijuana and Playas de Rosarito. Essentially all residents and businesses in the project area, which is in the central part of Tijuana, are connected to the sewer collection system. Within the Tijuana municipality as a whole, wastewater collection service coverage is 90 percent.

There are four existing wastewater treatment plants that treat wastewater from within the Tijuana River Watershed: the San Antonio de los Buenos WWTP, the South Bay International Wastewater Treatment Plant (SBIWTP), the La Morita WWTP, and the Arturo Herrera WWTP.

The San Antonio De Los Buenos plant has capacity to treat up to 25 MGD (1,100 L/s) of Tijuana wastewater. Based on data from January through October, the CESPT projects that the plant will treat an average of 25.3 MGD (1,110 L/s) in 2013. The plant is located 4.3 miles (7 km) south of the border and discharges effluent into the Pacific Ocean at Punta Bandera. When the capacity of the existing WWTP is exceeded, the plant discharges a combination of treated wastewater and chlorinated-only wastewater. It has been suggested that the coastal currents in the region sometimes move from south to north, creating the possibility that discharges from the San Antonio de Los Buenos Wastewater Treatment Plant may occasionally affect the quality of the water along the coastal U.S.

The SBIWTP is in San Ysidro, California at the U.S./Mexico border, and treats wastewater generated exclusively in Tijuana. The SBIWTP provides secondary treatment with a capacity of 25 MGD (1,100 L/s) and discharges effluent through an underwater outfall pipe (the South Bay Ocean Outfall (SBOO)) into the Pacific Ocean. The SBOO extends 3.5 miles into the ocean and has a tunnel 11 feet in diameter, and a capacity of 175 MGD (7,623 L/s) which helps to dilute effluent entering the ocean and to reduce environmental impacts. SBIWTP discharges are subject to California water quality standards and are specified in the National Pollution Discharge Elimination System (NPDES) permit for the plant. The SBIWTP treats an average of 25 MGD (1,100 L/s).

The La Morita WWTP, with a design capacity of 5.8 MGD (254 L/s) provides advanced secondary treatment using an oxidation ditch activated sludge treatment process followed by filtration and UV disinfection. Based on data from January through October, the CESPT projects that the plant will treat an average of 4.5 MGD (199 L/s) in 2013. The WWTP is located approximately 6.5 miles (10 km) south of the border and 2.9 miles (4.7 km) east of the Arturo Herrera WWTP. The plant discharges to the Tijuana River via the Matanuco Creek.

The Arturo Herrera WWTP has a design treatment capacity of 10.5 MGD (460 L/s). This plant, also located within the Tijuana River basin, provides advanced secondary treatment similar to La Morita and has two modules of 5.25 MGD (230 L/s) each. Based on data from January through October, the CESPT projects that the plant will treat an average of 5.7 MGD (248 L/s) in 2013. The WWTP is located approximately 6.5 miles (10 km) south of the border. It also discharges to the Tijuana River.

Flows in the Tijuana River (which are a combination of groundwater, natural runoff, treated wastewater effluent, potable water leaks, sewer leaks and spills) are intercepted at the border before crossing into the U.S by the CILA pump station. From the CILA pump station, flows are directed to the Internacional Interceptor and combined with sewage flows from the Tijuana wastewater collection system. Approximately 25 MGD (1,100 L/s) of the flow conveyed by the Internacional Interceptor runs by gravity to the SBIWTP and the rest continues to Pump Station 1 where it is pumped to the San Antonio de los Buenos WWTP. The CILA pump station currently removes up to 22.8 MGD (1,000 L/s) of river flows and stops operating in wet weather when river flows exceed that capacity. At these times, water is allowed to flow into the U.S., discharging to the Pacific Ocean via the Tijuana River estuary.

Construction has been completed on the Sistema de Alejamiento de Aguas Superficiales (SAAS). The new system, which includes pumping capacity at the CILA Pump Station, the new Pump Station 1A, force mains, and gravity mains, has the capacity to intercept up to 34.2 mgd (1,500 L/s) of water from the Tijuana River at the CILA pump station and send it, via Pump Station 1A, to the Pacific Ocean at Punta Bandera. The water in the SAAS system does not mix with untreated wastewater or pass through a wastewater treatment plant. The system provides chlorination at the ocean discharge only when needed. When in operation, the SAAS system relieves the extra burden of river water that affects the wastewater pumping, conveyance, and treatment infrastructure in Tijuana, and reduces the number of instances of hydraulic capacity exceedance at the San Antonio de los Buenos WWTP.

## **2.4 ALTERNATIVE 1 - NO ACTION ALTERNATIVE**

Under the No Action Alternative, no sewer collector line repair or rehabilitation would take place. The Poniente Collector would continue to be used in its current state, with repairs occurring only following major incidents such as collapses.

Current conditions include:

- The escape of wastewater to the open air and undermining and sinking of the street in areas of heavy truck traffic.
- Leaks to the ground and surface water in the Tijuana River watershed.
- Collapse and deterioration of the concrete and iron structures of the manholes allowing odors to escape.
- Deteriorated concrete piping material with aggregate materials and bar wrapping exposed.
- Blockages of the collector lines.

## **2.5 ALTERNATIVE 2 – PREFERRED ALTERNATIVE**

Currently, the Poniente Collector is in a weakened and deteriorated state. The proposed project would rehabilitate 5,954 meters of wastewater collection pipeline.

## **3.0 AFFECTED ENVIRONMENT**

This section describes the environmental resources in the U.S. that may be affected by the proposed action or the no action alternative described in Section 2. The description of the environmental setting focuses on environmental resources located within the U.S. near the U.S.-Mexico border. However, environmental resources in Mexico are also described in some instances when there is a direct correlation between resources in both countries.

### **3.1 LAND USE**

Urban development extends north from the City of Tijuana to the border. The environmental setting in the vicinity of the border in the U.S. is characterized by a combination of urban, industrial, rural and open space land uses. Important features of this area include the Pacific Ocean, the Tijuana River Valley, and the community of San Ysidro, the main urban border community in the U.S. within the study area.

Important land uses in the Tijuana River Valley are the Tijuana River National Estuarine Research Reserve (TRNERR), the Imperial Beach Naval Air Station, the Border Field State Park and the San Diego County Tijuana River Valley Regional Park. The Tijuana River Estuary is designated by the National Park Service as a National Natural Landmark.

The Mexican Federal government has designated 173 Natural Protected Areas in Mexico. The closest Natural Protected Area in Mexico to the area of concern is the *Constitucion de 1857*, approximately 70 miles (113 km) southeast of Tijuana (Comisión Nacional de Áreas Naturales Protegidas 2007). Located in the pine forests of Sierra de Juárez mountain range, the park is an important preserve for a large number of native wild animals like Bighorn Sheep and Mule Deer. The park is characterized by the large variety of coniferous species.

Important farmland including areas of prime farmland, farmland of statewide importance, and farmland of local importance are located in and around the Tijuana River Estuary, to the west of U.S. Interstate 5 and south of Imperial Beach.

The coastal zone boundaries extend west from the point where the Tijuana River enters the U.S. to the Pacific Ocean, which includes the entire Area of Concern in the U.S. Per the California coastal Act of 1976, any development activities within the coastal zone boundary must be approved by either the Coastal Commission or the local government.

### **3.2 TOPOGRAPHY AND SOILS**

Topographic features include the relatively flat alluvial plain of the Tijuana River with tributary canyons and hillsides extending up into Mexico. The elevations in the study area range from sea level at the Pacific Ocean, to 100 feet (30 m) in the Tijuana River Canal in Mexico, to nearly 800 feet (244 m) at the highest of the sewer collector lines.

The mudflats at the mouth and lower parts of the Tijuana River Estuary are occasionally covered by sands transported during storms from the beach Saline Chino. The soils suitable for agriculture occur upstream from the flats. To the south, the fine sandy loams blanketing the mesas and terraces are also considered highly erodible and are contributing substantially to downstream sedimentation.

### **3.3 WATER RESOURCES**

#### **3.3.1 Surface Water**

The two most important surface water features in the area of concern are the Tijuana River and the Pacific Ocean. The Tijuana River originates at the confluence of Arroyo del Alamar and Río de las Palmas in Mexico and drains into the Pacific Ocean. The Tijuana River watershed is 1,700 square miles with 73 percent in Mexico. Flows in the river consist typically of a combination of natural runoff, effluent discharges, and fugitive flow resulting from water and wastewater leaks.

Mexico has agreed to intercept the flow of the Tijuana River during the dry season for its transport to the SBIWTP and the San Antonio de los Buenos WWTP for treatment and disposal. During the rainy season, however, the Tijuana River flow is allowed to continue into the U.S. and to discharge into the estuary whenever the flow exceeds 22.8 MGD (1,000 L/s). Flow records from the U.S. International Boundary and Water Commission (USIBWC) show that in 2008 and 2009, the two most recent years for which the data are available, there were 111 and 116 days, respectively, on which surface water flowed from Mexico to the U.S. These days occurred mostly during the typically rainy season of December through March.

A 2009-2010 study of water quality in the Tijuana River suggests that raw wastewater discharge is the likely source of much of the river's impairment.

**Table 3-2** lists water quality data in the Tijuana River during a random dry weather sampling on discrete dates in 2009 and 2010. Measurements were taken at a multi-sector general permit site, MS4D-TJR-07 near the mouth of the Tijuana River.

**Table 3-2 Water Quality Measurements in the Tijuana River during Dry and Wet Weather**

		Enterococcus (MPN/ 100ml)	TSS (mg/L)	TDS (mg/L)	Nitrite as N (mg/l)	Total Phosphorus (mg/L)	Fecal Coliform (MPN/100mL)	Ammonia as N (mg/l)
Dry Weather Assessment	03/17/2010	500,000	2,150	720	<0.05	14.619	9,000,000	16.4
	05/11/2010	1,300,000	710	1,200	<0.15	9	5,000,000	20
Wet Weather Assessment	11/28/2009	≥16,000,000	5,717.5	560	0.56	15.893	5,000,000	8.4
	02/06/2010	2,400,000	2,630	1,770B	<0.75	13.745	5,000,000	14.83

B-Analyte was detected in the associated method blank.

Source: Weston Solutions 2011

**Table 3-3** shows the California Basin Plan standards for water quality constituents of concern. Tijuana River flows shown in **Table 3-2** do not meet these standards.

**Table 3-3 California Basin Plan Standards**

Parameter	CA Basin Plan Standards <sup>1</sup>
Ammonia (NH <sub>3</sub> )(mg/L)	0.025 mg/l in inland surface waters and estuaries
Phosphorus (total) (mg/L)	0.1 mg/L
Nitrite (as nitrogen) (mg/L)	1.0 mg/L
Fecal Coliform (MPN/100mL)	200/100 mL (30-day period, five samples)

<sup>1</sup>Source: California Regional Water Quality Control Board

[http://www.waterboards.ca.gov/sandiego/water\\_issues/programs/basin\\_plan/docs/update082812/Chpt\\_3\\_2012.pdf](http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/docs/update082812/Chpt_3_2012.pdf)

Ocean water quality in the vicinity of the international border is affected by surface runoff that flows to the ocean and by discharges from wastewater plants. The San Antonio de los Buenos WWTP, located approximately 4.3 miles (7 km) south of the border, discharges a combination of treated wastewater and chlorinated raw wastewater directly in the ocean. It has been suggested that the coastal currents in the region occasionally move from south to north, creating the possibility that some discharges from the San Antonio de los Buenos WWTP affect the quality of the water in the San Diego Bay in the United States.

The SBIWTP is located in San Diego and treats wastewater from Tijuana at a secondary level. The SBIWTP discharges into the bay through an underwater outfall pipe (i.e., the South Bay Ocean Outfall – SBOO), which helps to dilute effluent entering the ocean and to reduce environmental impacts.

The City of San Diego performs monthly compliance monitoring for the SBOO. The sampling area extends from the tip of Point Loma, California southward to Playa Blanca, Baja California, Mexico, and from the shoreline seaward to a depth of 200 ft (61 m). There was no evidence that the wastewater plume from the South Bay outfall reached recreational waters in 2012.

### **3.3.2 Groundwater**

Groundwater in the lower Tijuana River Valley occurs in the following three zones: (1) beneath Nestor Terrace north of the valley, (2) in the alluvial fill underlying the Tijuana River valley, and (3) in the San Diego Formation beneath the alluvium. The primary source of aquifer recharge appears to be the Alamar River. Other likely sources of recharge are winter rainfall, water line leakage in Tijuana, and discharge from surrounding sedimentary bedrock terraces. Recharge to the alluvial aquifer from the Tijuana River surface flow is more prominent in the U.S. than Mexico, since the Tijuana River is a concrete lined channel from the international border to Rodriguez reservoir. The primary aquifer discharge zone is the Pacific Ocean.

There is currently no known extraction of groundwater from the Tijuana River basin in the U.S. for any purpose except for limited agricultural use. As of 1993, groundwater extraction in the Tijuana River valley north of the international border was 1,400 acre feet per year.

Groundwater in the basin is rated generally inferior for domestic use and inferior for irrigation purposes. High levels of total dissolved solids and sodium chloride prevent the use of groundwater for salt-sensitive crops.

### **3.3.3 Floodplains**

The Tijuana River transitions from a natural river bed, south of Tijuana, to a concrete lined canal designed to hold floodwaters, as the river passes through the highly urbanized City of Tijuana.

Downstream of the border, the U.S. IBWC operates the Tijuana River Flood Control Project, which extends for 2.3 miles (3.7 km). Downstream of the IBWC flood control project, the Tijuana River valley in the U.S. consists of a broad natural floodplain containing a variety of wetland and riparian areas. A wide swath of the Tijuana River valley in the U.S. is in the 100-year floodplain. A 100-year flood has a 1 percent chance of occurring in any given year.

### **3.3.4 Wetlands**

The 2,800 acre TRNERR was designated as a wetland of international importance within the nation. It extends east from where the Tijuana River meets the Pacific Ocean and encompasses tidally flushed wetlands, riparian and upland habitats extending immediately north of the U.S. and Mexico border. The closest key wetland in Mexico to Tijuana identified by Ducks Unlimited de México is a palustrine emergent wetland measuring 4,675 acres (1,892 hectares) located approximately 127 miles (205 kilometers) to the southeast of Tijuana.

## **3.4 AIR RESOURCES**

The San Diego Air Basin (SDAB) would, in general, be the area of influence for this project. The climate in San Diego County is typical of a Mediterranean climate. In general, most rains fall from January to March. Average temperatures reach annual lows of 46°F (8°C) in winter and rise to 74°F (23°C) in summer. Prevailing winds come from the northwest in winter and from the southwest in summer. Weather is monitored at the TNERR as part of the NERR System-Wide Monitoring Program (SWMP).

### **3.4.1 Air Quality**

The federal Clean Air Act (CAA) of 1970 and the CAA Amendment in 1977 required the adoption of national ambient air quality standards (NAAQS) for sulfur dioxide (SO<sub>2</sub>), carbon

monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), hydrocarbons (HC), ozone (O<sub>3</sub>), particulates of less than 10 microns in size (PM-10) and lead (Pb). In addition, the California Air Resources Board (CARB) has established state standards that are generally more restrictive than the national ambient air quality standards (NAAQS), and include sulfates, hydrogen sulfide (H<sub>2</sub>S), vinyl chloride, and visibility reducing particles.

**Table 3-1** shows the annual number of days that pollutants exceeded the state and federal ambient air quality standards in the SDAB during 2008 to 2012.

**Table 3-1 Summary of Air Quality Data for the San Diego Air Basin**

Pollutant		Number of Days over Standard				
		2008	2009	2010	2011	2012
Ozone (8-Hour Standard)	Federal <sup>A</sup>	35	24	14	10	10
	State	69	47	21	33	25
Particulates (PM10)	Federal	6.1	0	0	0	0*
	State	163.4	146.4	136	138.5	6.1
Particulates (PM2.5)	Federal	3.5	3.4	2.0	3.0	1.0

Source: <http://www.arb.ca.gov/adam/>

\*Insufficient Data Available

<sup>A</sup> National '08 8-Hour

The SDAB currently has a federal and state ozone designation of nonattainment (CARB 2012). The SDAB is listed as unclassified with the federal standards for PM-10, and unclassified/attainment for PM-2.5, but is currently listed in non-attainment status for both with the state standards.

### 3.4.2 Odor

Odors have been reported in the vicinity of the *Techite* and *Sánchez Taboada* collector lines and are thought to be due to H<sub>2</sub>S production resulting from inadequate maintenance, caused by the wide spacing between manholes. These odors are localized and do not affect the area of concern in the U.S.

### 3.5 NOISE

The area of concern with respect to noise is limited to those areas in the U.S. that are immediately adjacent to the international boundary.

Due to the highly urbanized nature of Tijuana and the area of concern immediately near the international border on both sides, the area of concern is characterized primarily by vehicular noise from car and truck travel, commercial aircraft noise from operations at the Tijuana Airport, aircraft operations associated with Brown Field and the Imperial Beach Naval Auxiliary Landing Field, and general urban activities.

### 3.6 VEGETATIVE HABITAT

San Diego County falls under the Southern and Central California Chaparral and Oak Woodlands ecoregion. This region is characterized as having a Mediterranean climate of hot dry summers and cool moist winters, and associated vegetative cover comprising mainly chaparral

and oak woodlands with grasslands occurring in some lower elevations and patches of pine being found at higher elevations.

Habitat types within the Tijuana River Valley and Tijuana Estuary include beach, saltpan, southern foredunes, tidal estuary, coastal salt marsh, riparian wetlands, coastal sage scrub, southern maritime chaparral, maritime succulent scrub, southern willow scrub, and mulefat scrub.

For the most part, the portion of the River Valley located between the international border and Dairy Mart Road is devoid of notable biological resources while areas west of Dairy Mart Road and north of Monument Road support a variety of bird species and are high in habitat value. The subject area is interspersed with agricultural, equestrian, mining, and rural residential uses, but, overall, is still rich in wildlife values. The most notable area of biological resources is the Tijuana Estuary, which extends approximately 3 miles east from the Pacific Ocean. The Tijuana Estuary is an essential breeding, feeding, and nesting ground for hundreds of bird species.

The Tijuana Estuary is classified as a Coastal Plain Estuary with several different habitats occurring within the Estuary.

### **3.7 WILDLIFE RESOURCES**

The Tijuana River estuary is home to several hundred bird species, the majority of which are migratory. Mammals that inhabit the estuary land include mice, California ground squirrels (*Otospermophilus beecheyi*) and rabbits. The estuary's small tidal creeks and channels contain at least 20 species of fish, plus crabs, rove beetles (*Staphylinus sp.*), tiger beetles (*Cicindela sp.*), and wandering skippers (*Panoquina errans*).

#### **3.7.1 Threatened and Endangered**

The U.S. Fish and Wildlife Service has listed 43 threatened or endangered species as having the potential to occur in San Diego County. Federally listed endangered and sensitive species may be found in the general vicinity of the estuary where suitable habitat is present.

### **3.8 CULTURAL RESOURCES AND AESTHETICS**

There are no Native American reservations in the area of concern in the U.S. There are 208 locations in San Diego County listed on the National Register of Historic Places, California State Historical Landmark, California Register of Historical Resources or as a Point of Historical Interest.

### **3.9 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE**

The racial composition of the City of San Diego and the State of California are both predominantly white with the City of San Diego boasting a lower unemployment rate and a 0.2 percent higher poverty rate. San Diego County is projected to grow at a slower rate than the State of California through 2050.

### **3.10 MUNICIPAL SERVICES**

#### **3.10.1 Water and Wastewater Services**

The CESPT provides water and sewer service for Tijuana and Playas de Rosarito. Essentially all residents and businesses in the project area are connected to the water distribution and wastewater collection systems.

#### **3.10.2 Waste Management**

Solid waste collection is provided by the Municipality with a coverage rate of 83 percent in the Municipality as a whole and 93 percent in the urban center (Ayuntamiento de Tijuana 2010). Solid waste is sent to two private landfills, in Tijuana and Playas de Rosarito, operated by the company GEN Tijuana.

#### **3.10.3 Transportation**

The District of San Ysidro's location on the US/Mexico border allows events in Tijuana to potentially influence conditions in Mexico, and vice versa. The distance from the center of San Ysidro to downtown Tijuana is only about 2.85 miles (4.59 kilometers). As the busiest land port of entry in the western hemisphere, the San Ysidro Land Port of Entry processes more than 50,000 northbound vehicles and 25,000 northbound pedestrians each day.

#### **3.10.4 Energy**

Ninety nine percent of residents of the Tijuana municipality have access to electricity. Electricity is provided by the Federal government through the *Comisión Federal de Electricidad* throughout Mexico.

### **3.11 HUMAN HEALTH AND SAFETY**

Current health concerns are associated with discharges of raw or inadequate sewage collection in neighborhoods in Tijuana.

## **4.0 ENVIRONMENTAL CONSEQUENCES**

Areas where no impacts would occur have not been analyzed in Section 4.0. For the resource areas where effects will occur, the different types of effects (e.g. beneficial, adverse) are identified for each resource (e.g. air, water). Furthermore, cumulative impacts and irreversible commitment of resources for each alternative are described.

The description of impacts is focused specifically on impacts to U.S. resources, but may contain descriptions of impacts in the entire Area of Concern, which encompasses the City of Tijuana, the community of San Ysidro, the Tijuana River from Tijuana to the Pacific Ocean, the sites of proposed wastewater collection improvements, the existing wastewater treatment plants, and effluent discharge locations.

Under the no action alternative (Alternative 1), rehabilitation and/or replacement of the Poniente Collector and existing manholes would not occur and the use of the existing infrastructure would continue. Alternative 2 seeks to either rehabilitate or replace the Poniente Collector.

#### **4.1 LAND USE**

Under the no action alternative, rehabilitation and/or replacement of the Poniente Collector and existing manholes would not occur and the use of the existing infrastructure would continue. The no action alternative would not affect land, use since no construction would take place.

There would be no transboundary effects on land use for Alternative 2. All construction would take place in existing streets and right-of-ways in Mexico. No construction would take place that would affect important farmland or coastal zones.

#### **4.2 SOILS AND TOPOGRAPHY**

Under the no action alternative, adverse impacts to soil from raw sewage and spillovers from failing collector lines would continue since no rehabilitation and/or replacement of the Poniente Collector and existing mainholes would occur.

The proposed action would address the adverse impacts to soil of raw sewage from the aging collection line system. During construction, standard measures will be in place to control erosion and dust.

#### **4.3 WATER RESOURCES**

##### **4.3.1 Surface Water**

Under the no action alternative, intermittent raw sewage leaks and spillovers would continue to occur within the Tijuana River watershed from the deteriorated collector line. These leaks have a negative impact on surface water quality in Mexico. In addition, on those days when the Tijuana River flows into the U.S., there potentially could be adverse impacts to water quality on the U.S.-side from contamination of the river water from raw sewage.

With the proposed action, surface water quality within the Tijuana River will improve since there will be a reduction in raw sewage leaks from the failing Poniente Collector lines within the Tijuana wastewater collection system. Thus, on those days when Tijuana River flows into the U.S., the potential adverse impact to U.S. surface water would also be reduced.

During construction, wastewater flows would be diverted to unaffected collection lines within the Tijuana wastewater collection system.

##### **4.3.2 Groundwater**

Under the no action alternative, intermittent raw sewage leaks and spillovers would continue to occur within the Tijuana River watershed from the deteriorated collector line. These leaks have a negative impact on groundwater water quality in Mexico. In addition, on those days when the Tijuana River flows into the U.S., there potentially could be adverse impacts to groundwater quality on the U.S.-side from contamination of the river water from raw sewage.

With the proposed action, groundwater quality will improve since there will be a reduction in raw sewage leaks from the failing Poniente Collector within the Tijuana wastewater collection system.

During construction, wastewater flows would be diverted to unaffected collection lines within the Tijuana wastewater collection system.

### **4.3.3 Floodplains**

Floodplains would not be affected under the no action alternative since no construction would take place with this alternative.

With the proposed action, all construction would be underground within the urban setting of Tijuana. There would not be any impacts to the volume of surface water flows to the Tijuana River during construction or operation. In addition, there will not be a substantial change in the volume of surface water flowing to the Tijuana River from the proposed project, thus there would be no impacts to floodplains.

### **4.3.4 Wetlands**

Wetlands would not be directly affected by the no action alternative since no construction would take place.

Wetlands would not be directly affected by the proposed action alternative since no construction would take place in or around wetlands. In addition, the volume of surface water to the Tijuana River would not substantially increase, thus there would not be any indirect impacts to wetlands.

## **4.4 AIR RESOURCES**

### **4.4.1 Air Quality**

No impacts to air quality would occur from the no action alternative.

Under proposed action, impacts to air quality from construction activities would be temporary and would return to their original ambient levels once construction activities cease. There would be no longer term impacts to air quality from the proposed project.

### **4.4.2 Odors**

Under the no action alternative, there would be no changes to odors within the project area.

Air quality may be improved with the proposed action since there would be an elimination of odors within the immediate vicinity of the collection lines.

## **4.5 NOISE**

Due to the highly urbanized nature of Tijuana, there would be not be any significant increase in noise levels from the proposed action.

## **4.6 VEGETATIVE RESOURCES**

Under the no action alternative, there would be no impacts to vegetative resources since no construction would occur.

For the proposed action, all activities would be within existing streets in the urbanized setting of Tijuana. Vegetation within the project area is highly disturbed.

#### **4.7 BIOLOGICAL RESOURCES**

Under the no action alternative, there would be no impacts to biological resources since no construction would occur.

For the proposed action, all activities would be within existing streets in the urbanized setting of Tijuana. Vegetation within the project area is highly disturbed and does not support biological resources.

#### **4.8 CULTURAL RESOURCES AND AESTHETICS**

No impacts to cultural resources or aesthetics would occur from the no action alternative.

There would also be no impacts to cultural resources or aesthetics from the proposed action since all construction would occur in previously developed roadways.

#### **4.9 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE**

There would not be any adverse impacts on socioeconomic or environmental justice communities from the no action alternative and the proposed project. The proposed project would eliminate leaks of raw sewage from the wastewater collection main, which would provide a positive impact to the community within the project area.

#### **4.10 MUNICIPAL SERVICES**

Under the no action alternative, there continues to be a risk to human health and the environment of exposure to raw sewage from failing wastewater collection lines.

Short-term impacts on municipal services from the proposed project would be related to minor traffic disruption in Mexico during work on roadways and within easements. There would be no transboundary effects on municipal services for this alternative. Under the proposed alternative, provisions will be made to maintain wastewater collection service to residents within the project area during construction. There would be no effects to energy or waste management.

#### **4.11 PUBLIC HEALTH AND SAFETY**

Without an adequate wastewater collection system in Tijuana, exposure to raw wastewater would continue to occur. This exposure negatively impacts public health in Tijuana as exposure to raw sewage on streets or in surface waters is a pertinent public health risk. Due to the frequency of U.S./Mexico border crossing, the public health in the U.S. is also at risk under the no action alternative, although any potential public health effects directly linked to wastewater from the project collector lines would be a less than significant impact.

By continuing to use the deteriorated Poniente Collector and manholes, a risk of roadway, manhole or collector collapse would continue. These events, though infrequent, pose a serious risk of damage to vehicles and are general public safety risk in Mexico.

Public health in Tijuana would be positively affected by the proposed alternative since the alternative has the potential to eliminate exposure to raw sewage from the overflow of the Poniente Collector. The overall improvement of sanitary conditions within the project area would promote better overall public health conditions and further provide transboundary benefits

by reducing health risks within the immediate area of the border due to the frequency of U.S./Mexico border crossing.

#### **4.12 CUMULATIVE EFFECTS**

CEQ defines cumulative impacts as an “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time by various agencies or individuals. Informed decision-making is served by consideration of cumulative impacts resulting from projects that are proposed under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

The proposed action would rehabilitate the Poniente Collector and rehabilitate the associated manholes. These improvements are expected to generate positive cumulative impacts on both side of the border, since water quality within the Tijuana River Watershed will be improved. The proposed project is expected to reduce potential risks to human health and the environment, as well as improve aesthetic conditions within Tijuana by reducing odors.