

Draft Programmatic Environmental Impact Statement Improvements to the Tijuana River Flood Control Project



Lead Agency:

**United States Section
International Boundary
and Water Commission**
El Paso, Texas

Cooperating Agency:

U.S. Army Corps of Engineers
Los Angeles District, California



Technical Support:

PARSONS
Austin, Texas

August 2007

Cover Sheet

PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT IMPROVEMENTS TO THE TIJUANA RIVER FLOOD CONTROL PROJECT

Draft

Final

Lead Agency

United States Section, International
Boundary and Water Commission
(USIBWC)
El Paso, Texas

Cooperating Agencies

U.S. Army Corps of Engineers

Abstract

The USIBWC anticipates the need to improve capabilities or functionality of the Tijuana River Flood Control Project. Improvement measures associated with the project core mission of flood protection and boundary stabilization are evaluated under the Enhanced Operation and Maintenance (EOM) Alternative, while measures in support of local or regional initiatives for increased utilization of the project or to improve environmental conditions are evaluated under the Multipurpose Project Management (MPM) Alternative.

This Programmatic Environmental Impact Statement (PEIS) evaluates potential environmental consequences alternatives under consideration for improvement of the Tijuana River Flood Control Project.

The USIBWC will apply the programmatic evaluation as an overall guidance for future environmental evaluations of individual improvement projects, the implementation of which is anticipated or possible within a 20-year timeframe.

Other Requirements Served

This PEIS is intended to serve other environmental review and consultation requirements pursuant to 40 CFR 1502.25(a)

Comments Submittal

The Draft PEIS will be available for a 45-day public review period. Comments should be directed by September 24, 2007 to:

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USIBWC
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Date of Draft Availability to USEPA and the Public:

August 10, 2007.

EXECUTIVE SUMMARY

Purpose of and Need for Action

Over a 20-year planning period, the USIBWC anticipates the need to improve capabilities or functionality the Tijuana River Flood Control Project (Tijuana River FCP) located in southern San Diego County, California (Figure ES-1). The USIBWC is proposing a range of alternatives for maintenance activities and future improvements that have been developed at a conceptual level, or that represent measures considered feasible but not currently envisioned for implementation. Known or anticipated improvements are typically associated with the core mission of flood control and boundary stabilization. Other improvements are associated with potential multipurpose utilization of the floodway in support of local or regional initiatives for recreational use or environmental improvement.

The *Programmatic Environmental Impact Statement (PEIS)* evaluates potential environmental impacts of improvement alternatives for the Tijuana River FCP. The USIBWC will apply the programmatic evaluation of potential impacts as an overall guidance for future environmental evaluations of individual improvement projects for anticipated or possible implementation. Once any given improvement project is identified for future implementation, site-specific environmental documentation will be developed based on project specifications and PEIS findings.

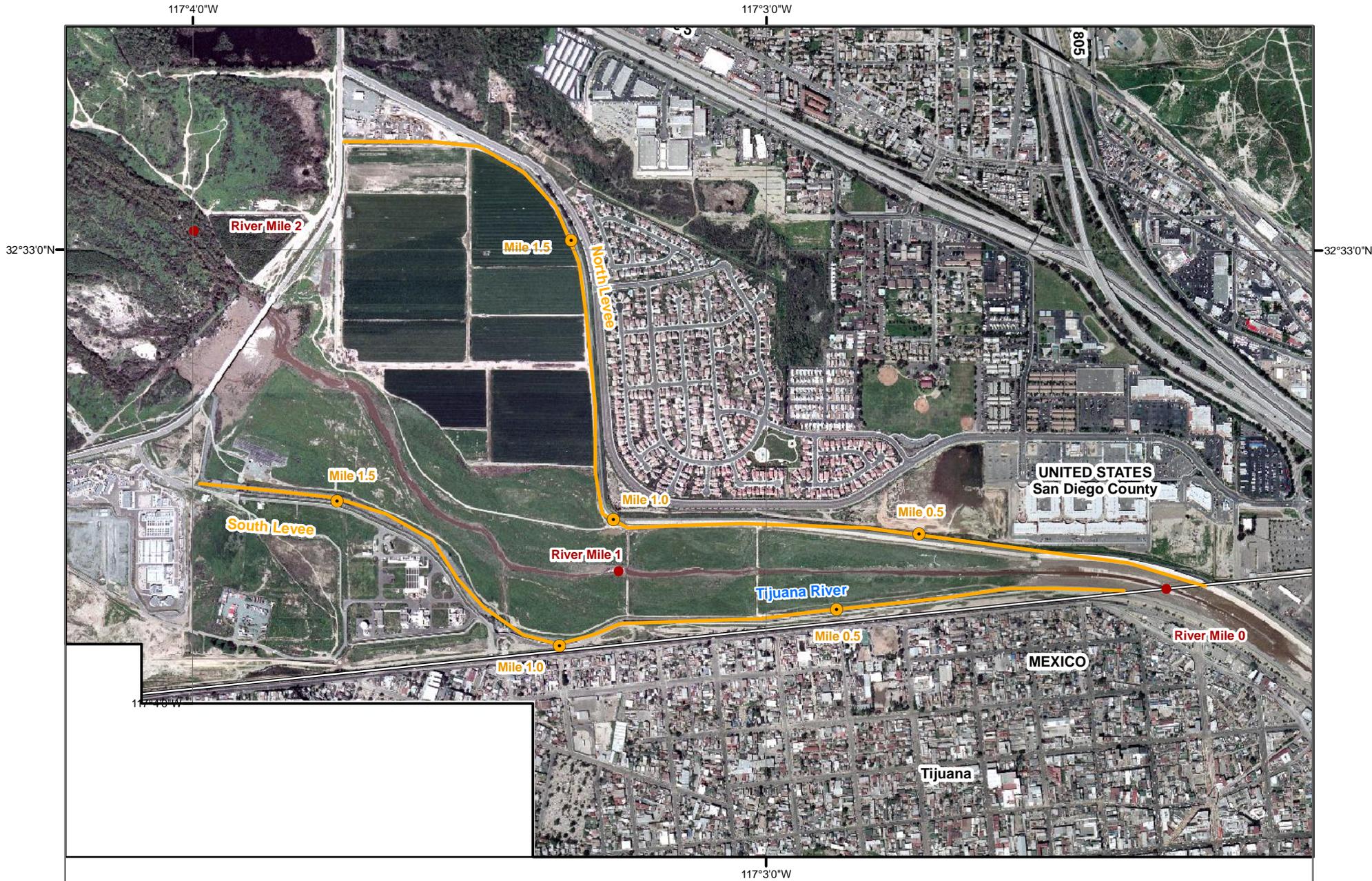
Alternatives Considered in Detail

For the PEIS evaluation, measures identified as feasible were organized into two action alternatives that reflect the following project goals:

1. Measures associated with the mission of flood control and boundary stabilization, evaluated under the Enhanced Operation and Maintenance (EOM) Alternative; and
2. Measures in support of local or regional initiatives for increased utilization of the project or to improve environmental conditions, evaluated under the Multipurpose Project Management (MPM) Alternative.

Summary of Environmental Consequences

The PEIS compares potential environmental consequences of the EOM and MPM alternatives with those expected from continued use of current management and operational practices evaluated under the No Action Alternative. Impacts were evaluated for the following resource areas: water, biological resources, cultural and socioeconomic resources, land use, and environmental health. A summary comparison of potential environmental consequences of the alternatives by resource area, with general application to the three flood control projects under evaluation, is presented in Table ES-1.



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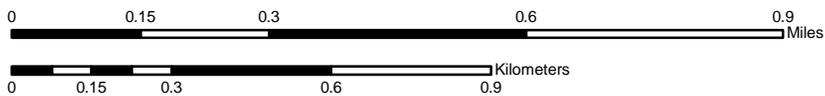


Fig. ES-1
Tijuana River Flood Control Project

Programmatic EIS
 International Boundary and Water Commission,
 United States Section

Table ES-1 Summary of Environmental Consequences of Alternatives for Improvement of the Tijuana River FCP

	No Action Alternative	Enhanced Operation and Maintenance (EOM) Alternative	Multipurpose Project Management (MPM) Alternative
Water Resources			
	Current maintenance practices for the Tijuana River FCP would continue to provide current flood protection in accordance with the cooperative agreement with the U.S. Border Patrol.	Small-scale changes in extent or timing of vegetation removal that would not affect the ability to control floodwaters or result in changes to hydrology or groundwater resources.	No changes to hydrology, groundwater resources, or water quality would be expected as a result of additional use of best management practices for trash and sediment removal or increased restrictions to public access.
Biological Resources			
Vegetation	No changes would be made; current floodway maintenance practices would continue, including the long-term lease for the sod farm to the north side of the Tijuana River FCP area.	Small-scale changes in the extent or timing of vegetation removal would occur. Due to the surrounding regional vegetation, such areas would become non-native grassland due to seral succession.	Initiation of a program to improve watershed management for better sediment control would possibly improve vegetation communities. The portions of the watershed affected would likely become non-native grasslands.
Wildlife	Wildlife habitat under the No Action Alternative is not expected to further degrade, nor would habitat be improved.	Small-scale vegetation changes may result in changes in species composition or conversion to non-native grassland. An increase in grassland would increase raptor foraging habitat.	USIBWC participation in regional wildlife habitat conservation initiatives may improve habitat for wildlife in the vicinity of the Tijuana River FCP.
Threatened and Endangered Species	The present habitat is generally too disturbed to support T&E species, and no changes are expected relative to current conditions.	Small-scale vegetation changes may add foraging habitat for raptors and other species, some of which are protected under the Migratory Bird Treaty Act.	Watershed initiatives to improve sediment control and regional wildlife habitat conservation initiatives may also improve habitat for T&E species in the vicinity of the project.
Wetlands and Aquatic Ecosystems	The dry streambed does not support wetlands or aquatic ecosystems within the floodway.	Small-scale vegetation changes would not improve conditions for development of wetlands or aquatic ecosystems within the floodway.	Watershed initiatives to improve sediment control could improve aquatic ecosystems downstream from the Tijuana River FCP.
Unique or Sensitive areas	No changes would be made to the vegetation communities in the project area.	Small scale vegetation changes are not likely to significantly improve grassland areas.	Regional wildlife habitat conservation initiatives may also improve sensitive areas such as non-native grasslands in the project vicinity.

Land Use			
Residential Uses	Existing residential communities near the river corridor would not be affected.	Changes in floodway management due to levee modifications would not affect residential uses. Increased U.S. Border Patrol operations may limit some recreational uses of the floodway.	Cooperative agreements that promote watershed management and habitat conservation initiatives may change surrounding land uses. If new land uses are adopted in the region, they may affect adjacent land uses as well.
Agricultural Uses	The sod farm within the floodway would not be affected under the No Action Alternative.	Increases in agricultural use of the floodway are not anticipated.	Increases in agricultural use in the project vicinity are not anticipated.
Recreational Uses	Recreational and natural areas, including the Tijuana River Valley Regional Park and neighborhood and communities parks, would not be affected.	Greater restrictions to public use/access of the floodway may limit recreational opportunities.	Greater restrictions to public use/access of the floodway may limit recreational opportunities, while cooperative agreements may promote recreational opportunities in the project vicinity.
Other Uses	Other land uses in the project vicinity, such as sand and gravel extractive operations and U.S. Military lands, would not be affected.	Similar to the No Action Alternative, other land uses in the project vicinity, would not be affected.	Similar to the No Action Alternative, other land uses in the project vicinity, would not be affected.
Cultural Resources			
Historical and Archeological Resources	Continued operation of the Tijuana River FCP would not have adverse effects on historical or archaeological resources.	Small-scale changes in floodway management would not have adverse effects on historical or archaeological resources. Additional levee improvement measures, not currently anticipated, could affect archaeological resources.	No adverse effects are anticipated within the flood control project area. Cooperative projects, depending on extent or location, could have impacts on historical or archaeological resources.
Socioeconomic Resources			
Regional Economics and Social Issues	No impacts on anticipated population increases and other socioeconomic issues in San Diego County are expected by the continued operation of the Tijuana River FCP.	Changes in floodway management would have no impact on anticipated population increases and other socioeconomic issues in San Diego County.	No impact on anticipated population increases and other socioeconomic issues in San Diego County are expected from floodway management. Participation in cooperative initiatives could improve urban land use and create recreational opportunities.
Environmental Justice	Flood control would continue protecting the entire project vicinity. Disproportionately high and adverse human health and environmental effects on minority and low-income populations are not expected.	Floodway management changes in the Tijuana River FCP would not affect adjacent urban areas, including minority and low-income populations.	Participation in cooperative initiatives could improve urban land use and recreational opportunities for residents in the project vicinity, including minority and low-income populations.

Environmental Health			
Air Quality	No increases in air pollution emissions are anticipated from continued USIBWC operation and maintenance activities.	Changes in floodway maintenance could result in changes in releases of particulate matter. Increased emissions of other pollutants from USIBWC operations are not anticipated. Best management practices for sediment removal from the channel would improve air quality.	Cooperative agreements for environmental improvements or recreational opportunities would likely maintain or improve air quality in the project vicinity. Changes would be insignificant at a regional level.
Noise	Continuation of existing Tijuana River FCP operations would not result in any changes in the noise environment. Noise level of equipment in operation for maintenance activities is not expected to exceed the City of San Diego noise standard for any sensitive receptors in the project area.	Similar to the No Action Alternative, modified maintenance operations are not expected to exceed the City of San Diego noise standard for any sensitive receptors in the project area.	Similar to the No Action Alternative, modified maintenance operations are not expected to exceed the City of San Diego noise standard for any sensitive receptors in the project area.
Public Health and Environmental Hazards	Continued operation of the Tijuana River FCP would continue to comply with applicable health and environmental compliance requirements.	As in the No Action Alternative, changes in floodway maintenance would continue to follow applicable health and environmental compliance requirements.	Cooperative agreements for environmental improvements or recreational opportunities would follow applicable health and environmental compliance requirements.
Cumulative Impacts			
Natural Resources Management Areas	No cumulative impacts are anticipated from continued USIBWC operation and maintenance activities	Changes in vegetation management could incorporate limited wildlife habitat in the downstream reach of the flood control project.	Cooperative agreements would support additional local environmental improvements outside the flood control project area.
Water Quality and Sediment Control Projects	No cumulative impacts are anticipated from continued USIBWC operation and maintenance activities.	Increased sediment removal from the river channel and disposal outside the floodway would represent a minor addition to sediment control in Tijuana River tributary canyons located along the international border. Storm water quality would not improve as a result of improvements in flood control.	Cooperative agreements for erosion control in Tijuana River tributary canyons would reduce the sediment load reaching the Tijuana River estuary. Storm water quality improvements would result from participation in additional bi-national plans for upstream control of point and non-point pollution sources.
U.S. Border Patrol Activities	No cumulative impacts are anticipated from continued USIBWC operation and maintenance activities.	Expanded U.S. Border Patrol surveillance and access control activities, as well as flood control requirements, are likely to severely restrict initiatives for additional vegetation development within the floodway.	Participation in local initiatives would support, to various degrees, development of vegetation and wildlife habitat outside the floodway.

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and Water Commission**
El Paso, Texas

Cooperating Agency:

U.S. Army Corps of Engineers
Los Angeles District, California



Technical Support:

PARSONS
Austin, Texas

July 2007

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DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

IMPROVEMENTS TO THE

USIBWC TIJUANA RIVER FLOOD CONTROL PROJECT

Lead Agency:

**UNITED STATES SECTION,
INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO**

Cooperating Agency:

**U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT**

Technical Support:

PARSONS
Austin, Texas

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1

ACRONYMS AND ABBREVIATIONS

ac-ft	acre feet
ac-ft/yr	acre feet per year
AQCR	Air Quality Control Region
BMP	best management practice
CEQ	Council on Environmental Quality
CESPT	Comision Estatal de Servicios Publicos de Tijuana
cfs	cubic feet per second
dBA	A-weighted sound level in decibels
DNL	Day-night average sound level
EIS	environmental impact statement
E.O.	executive order
EOM	enhanced operation and maintenance
IBWC	International Boundary and Water Commission
INS	Immigration and Naturalization Service
JTF-6	Joint Task Force-Six
LOS	level of service
mgd	million gallons per day
mg/L	milligrams per liter
MMPH	multi-habitat planning area
MPM	Multi-purpose project management
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NOI	Notice of Intent
O&M	operation and maintenance
PEIS	Programmatic Environmental Impact Statement
PM ₁₀	particulate matter greater than 10 micrometers
SANDAG	San Diego Association of Governments
SBIWTP	South Bay International Wastewater Treatment Plant
SDAB	San Diego Air Basin
SPCC	spill prevention, control, and countermeasures
T&E	threatened and endangered
Tijuana River FCP	Tijuana River Flood Control Project
USACE	U.S. Army Corps of Engineers
USBP	U.S. Border Patrol
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USIBWC	United States Section, International Boundary and Water Commission

1.1.2 USIBWC Authority

The International Boundary and Water Commission (IBWC), which before 1944 was known as the International Boundary Commission, was created by the Convention of 1889, and consists of a United States Section (the USIBWC) and a Mexican Section (MxIBWC). The IBWC was established to apply the rights and obligations the Governments of the United States and Mexico assumed under the numerous boundary and water treaties and related agreements. Application of the rights and obligations is accomplished in a way that benefits the social and economic welfare of the people on both sides of the boundary and improves relations between the two countries. The mission of the USIBWC has five components, as follows:

- Regulation and conservation of waters of the Rio Grande for use by the United States and Mexico through joint construction, operation, and maintenance of international storage dams and reservoirs and plants for generating hydroelectric energy at the dams, and regulation of the Colorado River waters allocated to Mexico;
- Distribution of waters of the Rio Grande and the Colorado River between the two countries;
- Protection of lands along the border from floods through levee and floodway projects and solution of border sanitation and other border water quality problems;
- Preservation of the Rio Grande and Colorado River as the international boundary; and
- Demarcation of the land boundary

1.2 PURPOSE OF AND NEED FOR ACTION

The USIBWC is proposing a range of alternatives for maintenance activities and future improvements to the Tijuana FCP located in southern California. The PEIS is being prepared to evaluate these maintenance improvement alternatives that would allow USIBWC to minimize potential environmental impacts and take advantage of environmental and recreational opportunities while fulfilling the project goal of flood protection.

Over a 20-year planning period, the USIBWC anticipates the need to improve capabilities or functionality of flood control projects located along the United States-Mexico boundary. While some improvements to those projects are already in a planning stage or have been developed at a conceptual level, others represent measures considered feasible but not currently envisioned for implementation. Known or anticipated improvements are typically associated with the projects' core mission of flood control. Other improvements are associated with additional goals adopted by the USIBWC in support of the flood control projects' core mission, such as multipurpose utilization of the project in support local or regional initiatives for recreational use or environmental improvement.

In compliance with NEPA, the USIBWC integrates the environmental evaluation process with other planning at the earliest possible time to ensure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts. The USIBWC routinely identifies environmental effects of alternative actions in the form of an Environmental Assessment or, when warranted by significance of potential effects, an Environmental Impact Statement (EIS). This environmental documentation and analyses are based on site specific, and project specific alternatives. Because of the long range planning

1 needs, the USIBWC has taken a broad programmatic look at the potential environmental
2 implications of operation and maintenance (O&M) and improvement measures to be
3 considered for future implementation. The PEIS documents the affected environment in the
4 Tijuana River FCP area, and assesses potential environmental consequences of the alternatives.

5 The USIBWC would apply the programmatic analyses of potential impacts as an overall
6 guidance for future individual improvement projects whose implementation is anticipated or
7 possible within a 20-year timeframe. Once any given improvement project is identified for
8 site- and time-specific implementation, action-specific environmental documentation would be
9 developed based on project specifications and PEIS findings.

10 For the PEIS, measures identified as feasible were organized in two Action Alternatives
11 that reflect the following project goals:

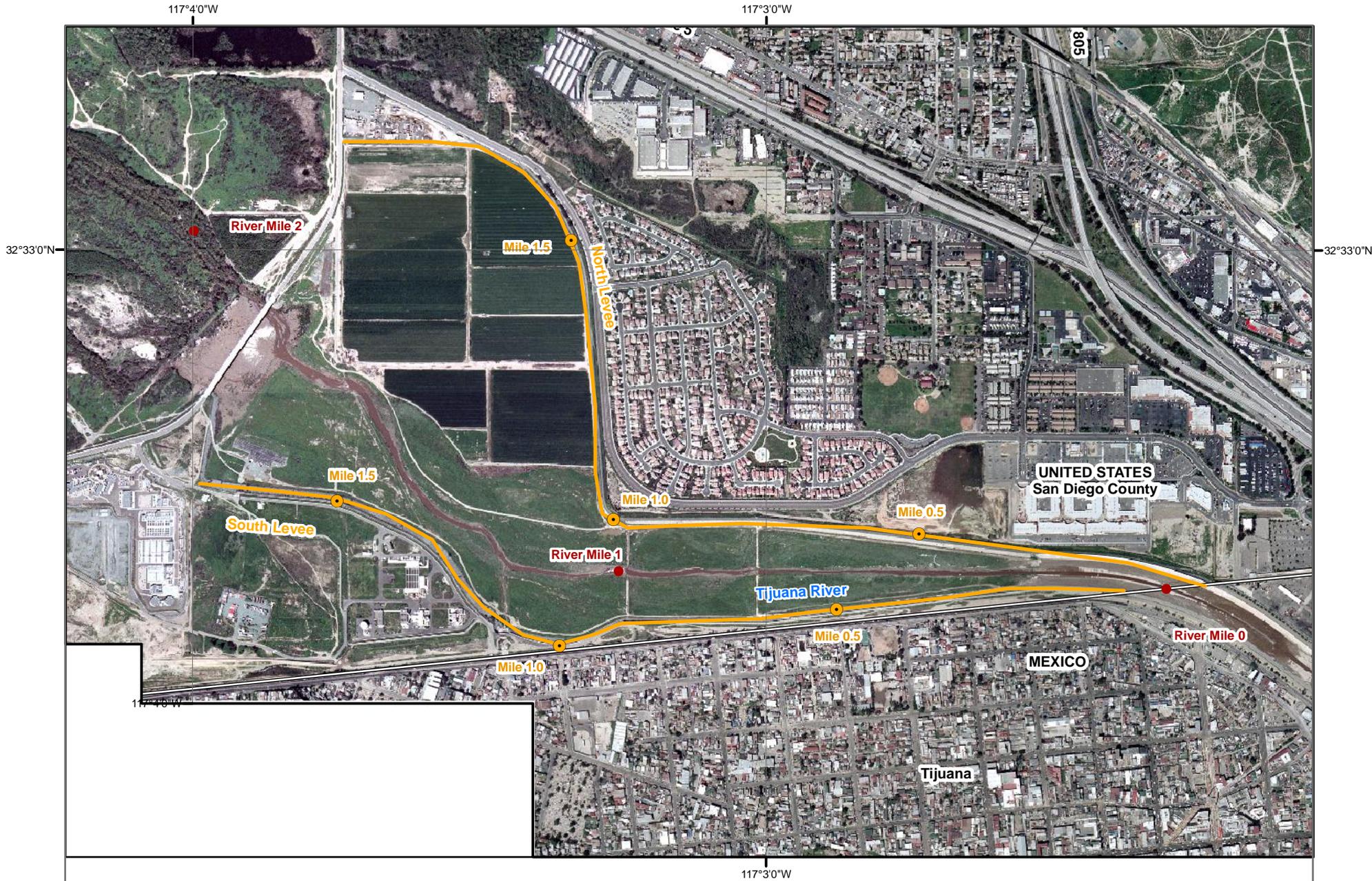
- 12 1. Measures associated with the Tijuana River FCP mission of flood control are evaluated
13 under the Enhanced Operation and Maintenance (EOM) Alternative; and
- 14 2. Measures in support of local or regional initiatives for increased utilization of the
15 project or for improvement of environmental conditions are evaluated under the
16 Multipurpose Project Management (MPM) Alternative.

17 The PEIS compares potential environmental consequences of the EOM and MPM
18 alternatives with continued use of current management and operational practices, evaluated
19 under the No Action Alternative.

20 **1.3 DESCRIPTION OF THE TIJUANA RIVER FLOOD CONTROL PROJECT**

21 Figure 1 indicates the location of four flood control projects operated by the USIBWC
22 along the United States-Mexico border: the Tijuana River FCP under evaluation in this PEIS,
23 and three flood control projects along the Rio Grande (Rio Grande Rectification Project,
24 Presidio-Ojinaga Flood Control Project, and Lower Rio Grande Flood Control Project). Rio
25 Grande projects are evaluated concurrently under a separate PEIS (*Programmatic
26 Environmental Impact Statement for Improvements to Rio Grande Flood Control Projects
27 Along the Texas Border*). Unlike the Tijuana River FCP, Rio Grande projects also include as
28 core functions not only flood control but also boundary stabilization and water delivery.

29 Figure 2 illustrates the Tijuana River FCP. The project is located in the United States
30 portion of the river and extends 2.3 miles from the international boundary to the start of the
31 natural Tijuana River channel in San Diego County, California. The project represents a
32 continuation of the International Tijuana River Flood Control Project that begins in Mexico and
33 provides flood protection to areas in both the United States and Mexico. The project,
34 consisting of channel, floodways, and levees, was constructed for flood control in 1978.
35 Levees are located between the United States and Mexico border and Dairy Mart Road. The
36 total levee length, including north and south levees, is approximately 3.4 miles. On the north
37 side of the river the levee length is 10,444 feet, and on the south side of the river the levee
38 length is 7,178 feet.



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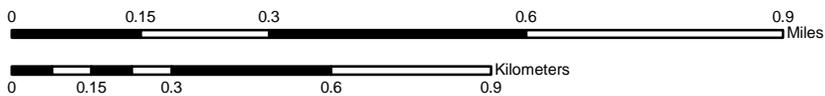


Figure 2
Tijuana River Flood Control Project

Programmatic EIS
 International Boundary and Water Commission,
 United States Section

1 Flow in the Tijuana River is intermittent, and primarily associated with storm events. The
2 stream channel along the Tijuana River FCP is normally dry because dry-weather flows are
3 intercepted upstream of the border for treatment either in Tijuana or at the South Bay
4 International Wastewater Treatment Plant operated by the USIBWC. The plant is located
5 immediately west of the Tijuana River FCP south levee. The floodway between the north and
6 south levees is leased for agricultural use and recreational use (USIBWC 2005b). The
7 municipality of Tijuana, Baja California, Mexico, is located south of the Tijuana River FCP,
8 and has fully developed neighborhoods directly adjacent to the south levee area. To the north
9 and east of the levees is the community of San Ysidro, in San Diego County. Immediately
10 adjacent to the north levee is a single-family residential neighborhood and an indoor shopping
11 mall. To the west of the project is the Tijuana River Valley Regional Park.

12 The channel consists of four sections: a 1,223-foot-long concrete lined channel, a
13 1,695-foot-long energy dissipater of grouted stone, an 824-foot long energy dissipater of
14 dumped stone, and an 8,202-foot long unlined channel. The flared energy dissipater reduces
15 velocities of the flows. The total modified channel length from the international border to the
16 start of the natural Tijuana River channel in San Diego County is 2.3 miles. The capacity of the
17 low-flow channel is approximately 2,000 cfs. The stream channel is normally dry due to the
18 interception of dry-weather flows one-half mile upstream of the border for treatment. The
19 Tijuana FCP was constructed to control flooding and has no capability to control water quality
20 of runoff originating from Tijuana.

21 **1.4 PEIS ORGANIZATION**

22 Section 1 provides background information on the PEIS objectives.

23 Section 2 presents an overview of alternatives and actions for evaluation in the PEIS, as
24 well as the process followed for initial formulation of alternatives.

25 Section 3 provides a description of existing conditions, or affected environment.

26 Section 4 evaluates environmental consequences of continued project operation under
27 current O&M practices (No Action Alternative), and implementation of proposed action
28 alternatives described in Section 2.

29 Sections 5 discusses environmental compliance and coordination, including information
30 on PEIS preparation and review.

31 Sections 6 presents a list of cited references.
32

1 **2.1.1 Opportunities and Constraints**

2 Feasible and likely beneficial actions associated with the Tijuana River FCP were
3 identified on the basis of opportunities and constraints for inclusion in the evaluation of
4 potential impacts. The resulting analysis excluded from evaluation those actions that are in
5 conflict with the project objectives, or small-scale measures with minimum potential impacts or
6 environmental benefit. A summary of key considerations for the project is presented in
7 Table 2.1 and briefly discussed below.

8 **Table 2.1 Opportunities and Constraints for Project Improvement**

Opportunities and Constraints	Tijuana River FCP
Flood control objective	Yes
Primary control of floodway management	USIBWC
Water delivery and boundary stabilization function	Not applicable
Dry-weather baseflow	None; intercepted upstream of the international boundary
Scale	Small, 2.3 miles
Vegetation and wildlife habitat	Minimum diversification; vegetation growth is controlled by mowing and agricultural use
Environmental issues	Few issues associated with the flood control function
Ongoing environmental initiatives for floodway use	Few in the flood control project vicinity, none within the floodway
Potential for additional multipurpose use	Minimum

9

10 ***Flood Control Mission***

11 Flood control is the core mission of the Tijuana River FCP. No levee deficiencies have
12 been identified, nor a need for an improved flood control capability. The flood control mission
13 of the Tijuana River FCP, along with the lack of a dry-weather flow, preclude uncontrolled
14 vegetation growth or development of any wooded vegetation along the 2.3-mile stream
15 segment.

16 ***Project Scale and Diversity***

17 Project length and floodway size, as well as topographic diversification, determine
18 potential extent of additional flood control actions or environmental initiatives for any given
19 flood control project. For the Tijuana River FCP, there is a minimum topographic
20 diversification, and project floodway represents only a minimum fraction of the Tijuana River
21 watershed.

1 **Environmental Initiatives and Cooperative Agreements**

2 The small geographic scale, as well as water availability limited to flood events, severely
3 limits a significant individual contribution of the Tijuana River FCP to environmental
4 improvement initiatives. The project location upstream of valuable natural resources
5 management areas, however, would provide an opportunity for increased support of local
6 environmental initiatives.

7 **2.1.2 Definition of Alternatives**

8 Measures initially identified during the PEIS scoping process were consolidated into a No
9 Action Alternative and two Action Alternatives. Main features of each alternative are
10 summarized below, and a comparative summary is presented in Table 2.1.

11 **No Action Alternative**

12 The No Action Alternative is the continuation of current management and O&M practices,
13 including actions planned or identified for short-term implementation.

14 **Enhanced Operation and Maintenance Alternative (EOM Alternative)**

15 This alternative addresses anticipated or likely improvements in flood control beyond those
16 to be implemented under current O&M practices. Ongoing and future activities associated with
17 the flood control mission of the Tijuana River FCP are those associated with maintenance and
18 improvements to the levee system, and floodway maintenance activities, namely channel
19 maintenance and sediment removal and disposal.

20 **Multipurpose Project Management Alternative (MPM Alternative)**

21 The MPM Alternative incorporates measures under consideration under the EOM
22 Alternative, adding measures for multiple use of the floodway and initiatives for environmental
23 improvement. Those measures include additional floodway utilization for purposes other than
24 optimization of flood control, as well as participation through cooperative agreements in local
25 environmental initiatives to be implemented and managed by other agencies or organizations.

26 **2.2 NO ACTION ALTERNATIVE**

27 The USIBWC conducts the following activities for maintenance of the Tijuana River FCP
28 levee system, either routinely or on an as-needed basis:

- 29
- Grade and resurface maintenance road on levees;
 - 30 • Mow/cut brush/woody vegetation from levee slopes; repair erosion-related
31 damage; and,
 - 32 • Maintain grass vegetation.

33 The U.S. Border Patrol (USBP) resurfaces roadways on the entire north and south levee
34 roadways, according to the terms of a Memorandum of Understanding with the USIBWC.

1 Roadway resurfacing is typically done about every 3 months. A scraper is used to level the top
2 of the road. Decomposed granite or small gravel is then placed on the surface.

3 Several activities are routinely conducted on the floodway and channel for floodway
4 maintenance within the Tijuana FCP. Most of these activities are conducted by the USBP at
5 their expense, under the cooperation agreement with the USIBWC. Those activities include:

- 6 • Mow floodway for enforcement purposes using mowers and/or discs three to
7 five times per year;
- 8 • Mow within 200 to 300 yards of the river on the north and south sides;
- 9 • Dispose sediment on USIBWC property within floodway downstream of the
10 energy dissipater; and,
- 11 • Remove sediment and trash from all concrete-lined and grouted sections of the
12 channel and at downstream end of project to prevent downstream flooding, on
13 an as-needed basis.

14 Parts of the floodway are leased for sod farming and for recreational use by a model
15 airplane club. Most of the land area in the north floodplain is sod farm, while most of the area
16 in the south floodplain is sand. The model airplane club's land lease is about 20 acres located
17 west of the South Bay International Wastewater Treatment Plant, south of the river channel,
18 and downstream of the energy dissipater.

19 Since the USIBWC does not have a work crew at the San Diego field office, a crew from
20 the American Dam field office in Texas is mobilized to the Tijuana River FCP to remove
21 sediment from the channel about once per year, normally during the spring or summer;
22 maintenance activities take place for about 2 weeks. A front end loader or bulldozer is usually
23 used to clean the channel. Sediment is removed from all concrete-lined and grouted stone
24 sections of the channel. The material is put into dump trucks and taken downstream of the
25 energy dissipater to be spread in the floodplain on USIBWC property. This annual cleaning is
26 not done when lack of rainfall results in little debris accumulation.

27 **2.3 ENHANCED OPERATION AND MAINTENANCE**

28 Ongoing and future activities associated with an enhanced flood control mission of the
29 Tijuana River FCP are those associated with improvements and maintenance of the levee
30 system, and floodway maintenance activities; these activities are mainly channel maintenance
31 and sediment removal and management. Table 2.2 summarizes possible or likely actions for
32 flood control improvement. Floodway maintenance is expected to continue under the existing
33 agreement with the USBP; small-scale changes are possible in extent or timing of vegetation
34 removal.

35 Additional best management practices (BMP) are likely required because removal of trash
36 and sediment from the channel has been identified as a concern in terms of potential
37 downstream impacts. No changes are anticipated to current floodway uses; greater restrictions
38 on public use/access of the floodway are expected due to increased requirements of USBP
39 operations.

Table 2.2 Potential Actions Associated with Enhanced O&M and Multipurpose Use of the Tijuana River FCP

	ALTERNATIVE*		Anticipated Change Relative to the No Action Alternative
	EOM	MPM	
FLOOD CONTROL AND WATER DELIVERY			
Vegetation removal and timing/extent of mowing	X	X	Changes are possible to improve water flow, sediment control
Best management practices (BMPs) for floodway maintenance and cleanup	X	X	Implementation of additional BMPs is possible to avoid debris and trash accumulation
Sediment and debris removal	X	X	Changes in location, extent or timing are possible to improve project functionality
MULTIPURPOSE PROJECT MANAGEMENT			
Wildlife habitat conservation		X	Potential participation in multi-agency, regional habitat conservation initiatives
Sediment control in tributary arroyos and canyons		X	Modification of sediment control upstream of the project or potential support of local initiatives
*EOM: Enhanced O&M; MPM: Multipurpose Project Management			

2.4 MULTIPURPOSE PROJECT MANAGEMENT (MPM)

Table 2.2 summarizes measures that, in addition to those included in the EOM Alternative, are possible actions for multipurpose use of the jurisdictional floodway. Increased USIBWC participation in regional wildlife habitat conservation initiatives is expected. The 2.3-mile project has a minimum potential for recreational activities and restricted public access due to USBP operations. Continued USIBWC participation is anticipated in regional initiatives such as the Tijuana River Valley Regional Park Trails and Enhancement Project. This project has been proposed by the San Diego County Department of Parks and Recreation on land adjacent to the flood control project. Improved control of sediment reaching the Tijuana River FCP from adjacent canyons is expected. This activity is managed under a separate USIBWC project.

2.5 MEASURES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

2.5.1 Structural Modifications to the Flood Control Project

Structural modifications to the Tijuana River FCP, such as lateral levee relocation or acquisition of additional flood control easements, are neither anticipated nor considered viable for future implementation. Current and increasing urban development along the flood control project severely restricts lateral expansion of the floodway, and this expansion would not represent a significant improvement in flood containment capacity.

2.5.2 Increased Vegetation Development within the Floodway

Increased vegetation development is physically limited by the lack of water availability, and would be in conflict with the flood control mission. The Tijuana River FCP covers a

1 2.3-mile streambed that has a minimum or no flow during most of the year, as dry-weather
2 flows are intercepted upstream of the international border. Tall vegetation is not only an
3 obstruction that would hamper storm water flow, but also an undesirable feature in terms of
4 USBP patrol operations.

5 **2.5.3 Improvement of Storm Water Quality**

6 The Tijuana River FCP was specifically designed for flood control and does not have a
7 capability to remove storm water pollutants. While control of dry-weather flows is currently in
8 place under bi-national agreements to control point sources, improvements in storm water
9 quality would require large-scale control of non-point pollution sources upstream of the Tijuana
10 River FCP, outside the USIBWC jurisdiction.

11 **2.6 OTHER ACTIONS WITH POTENTIAL CUMULATIVE IMPACTS**

12 **2.6.1 Natural Resources Management Areas**

13 County, state, and federal natural resources management areas are located downstream of
14 the Tijuana River FCP. Those management areas could be affected by changes in floodway
15 management, or water flow within the flood control project. Those areas are:

- 16 • The Tijuana River Valley Regional Park, managed by the Parks and Recreation
17 Department of the County of San Diego. An Environmental Impact Report for a
18 Trails and Habitat Enhancement Project was recently completed by the County
19 for the Regional Park (County of San Diego 2006).
- 20 • The Tijuana Slough Wildlife Refuge, managed by the U.S. Fish and Wildlife
21 Service (USFWS);
- 22 • The Border Field State Park, managed by the California State Parks; and
- 23 • A 551-acre section of the Imperial Beach Navy Outlying Landing Field
24 managed by USFWS under a 1984 Memorandum of Understanding with the
25 U.S. Navy (USFWS 1999).

26 In addition to natural resources management areas, the City of San Diego developed a
27 Multi-Habitat Planning Area (MHPA) that delineated core biological resource areas and local
28 corridors targeted for conservation. A conservation corridor designated by the City along the
29 Tijuana River runs along the three county, state, and USFWS management areas, and extends
30 upstream into the Tijuana River FCP.

2.6.2 Water Quality and Sediment Control

Water Quality Improvement

Bi-national initiatives are currently underway to improve water quality of the Tijuana River upstream of the international border. A major ongoing project is expansion of the wastewater collection system of the Tijuana area, and construction of secondary wastewater treatment plants to reduce contaminant loads entering the United States.

In March 2003 the Comision Estatal de Servicios Publicos de Tijuana (CESPT) and the U.S. Environmental Protection Agency (USEPA) issued a comprehensive master plan addressing sanitation problems in the San Diego-Tijuana border region. The plan was developed in response to the 2000 Tijuana River Valley Estuary and Beach Sewer Cleanup Act of 2000 (Public Law 106-457) that allows construction of wastewater treatment plants in the upper reach of the Tijuana River watershed with partial United States funding. Potential impacts of alternatives for wastewater collection and treatment were evaluated by the USIBWC as part of the Supplemental EIS for Clean Water Act Compliance at the South Bay International Wastewater Treatment Plant (SBIWTP). Those alternatives included expansion of wastewater collection systems in the Tijuana region, increased treatment capacity at the SBIWTP, and construction of new treatment facilities within the Mexican section of the Tijuana River watershed (USIBWC 2005b).

Sediment and Erosion Control

Five canyons located along the international border drain directly into the U.S. reach of the Tijuana River, primarily within the Tijuana River Valley Regional Park boundary. In addition to direct wastewater flow control, initiatives have been developed to increase control of erosion and storm water flows downstream of the Tijuana River FCP. While dry-weather wastewater flow from the canyons is currently intercepted by the USIBWC for treatment at the SBIWTP, extensive erosion and contaminated runoff are considered a significant source of sediment and pollution reaching the Tijuana River estuary (USFWS 1999).

An ongoing initiative for increased control of erosion and storm water flows is the Goat Canyon Enhancement Project developed by the California State Parks and the National Oceanic and Atmospheric Administration. The project, located downstream of the Tijuana River FCP, is intended to reduce sediment loads reaching the Tijuana River Estuary by placement of a series of retention basins within the watershed, and two or three larger avulsion basins in the alluvial fan to reduce sediment supply to the estuary (USFWS 1999).

2.6.3 U.S. Border Patrol Activities

Regional Plans

Cumulative impacts considered for the Tijuana River FCP include greater restrictions to public use/access of the floodway due to increased USBP operations and designation of restricted use zones. Anticipated changes in future USBP operation were evaluated in terms of potential environmental consequences in an updated Programmatic EIS prepared by USACE

1 for the Immigration and Naturalization Service (INS) and Joint Task Force-North (formerly
2 known as Joint Task Force-Six) in 1994 and updated in 2001 (USACE 1994a and 2001).

3 Actions for JTF-6 support to the INS strategy for enforcement activities cover a 50-mile
4 corridor along the United States-Mexico border. Enforcement activities would allow INS to
5 gain and maintain control of the border by enhancing prevention, deterrence, and detection of
6 illegal activities. JTF-6's support would include two major categories with potential
7 cumulative effects on the Tijuana River FCP: operational measures such as increased ground
8 patrols and access restrictions, and engineering measures such as placement fences, lighting,
9 and installation of remote sensing systems such as ground sensors (Integrated Surveillance and
10 Intelligence System).

11 **Local Plans**

12 At the local level, the USBP would implement the *U.S. Customs and Border Patrol*
13 *Protection 14-Mile Border Infrastructure System Project*. The project is the construction of a
14 triple fence along the international border to control illegal border crossings, extending
15 14 miles from the Pacific Ocean to the foothills of the San Ysidro Mountains. The project
16 includes two additional fences, patrol and maintenance roads, lights, and components of the
17 Integrated Surveillance and Intelligence System. This project has been exempted from
18 environmental review and permitting (County of San Diego 2006).

19 **2.7 SUMMARY COMPARISON OF ALTERNATIVES BY RESOURCE AREA**

20 Table 2.3 presents a summary of potential environmental consequences of continued
21 implementation of current O&M practices, the No Action Alternative, and the two action
22 alternatives evaluated for improvement of the Tijuana River FCP: the EOM Alternative, and
23 the MPM Alternative.

24

1 **Table 2.3 Summary of Environmental Consequences of Alternatives for Improvement of the Tijuana River FCP**

	No Action Alternative	Enhanced Operation and Maintenance (EOM) Alternative	Multipurpose Project Management (MPM) Alternative
Water Resources			
	Current maintenance practices for the Tijuana River FCP would continue to provide current flood protection in accordance with the cooperative agreement with the U.S. Border Patrol.	Small-scale changes in extent or timing of vegetation removal which would not have any effect on the ability to control floodwaters or result in changes to hydrology or groundwater resources.	No changes to hydrology, groundwater resources or water quality would be expected as a result of additional use of best management practices for trash and sediment removal, or increased restrictions to of public access.
Biological Resources			
Vegetation	No changes would be made; current floodway maintenance practices would continue, including long-term lease for the sod farm to the northern side of the Tijuana River FCP area.	Small-scale changes in the extent or timing of vegetation removal would occur. Due to the surrounding regional vegetation, such areas would become non-native grassland due to seral succession.	Initiate of a program to improve watershed management for better sediment control would possibly improve vegetation communities. The portions of the watershed affected would likely become non-native grasslands.
Wildlife	Wildlife habitat under the No Action Alternative is not expected to further degrade, nor would habitat be improved.	Small-scale vegetation changes may result in changes in species composition or conversion to non-native grassland. An increase in grassland would increase raptor foraging habitat.	USIBWC participation in regional wildlife habitat conservation initiatives may improve habitat for wildlife in the vicinity of the Tijuana River FCP.
Threatened and Endangered Species	The present habitat is generally too disturbed to support T&E species, and no changes are expected relative to current conditions.	Small-scale vegetation changes may add foraging habitat for raptors and other species, some of them protected under the Migratory Bird Treaty Act.	Watershed initiatives to improve sediment control and regional wildlife habitat conservation initiatives may also improve habitat for T&E species in the project's vicinity.
Wetlands and Aquatic Ecosystems	The dry streambed does not support wetlands or aquatic ecosystems within the floodway.	Small-scale vegetation changes would not improve conditions for development of wetlands or aquatic ecosystems within the floodway.	Watershed initiatives to improve sediment control could improve aquatic ecosystems downstream from the Tijuana River FCP.
Unique or Sensitive areas	No changes would be made to the vegetation communities in the project area.	Small scale vegetation changes are not likely to improve significantly grassland areas.	Regional wildlife habitat conservation initiatives may also improve sensitive areas such as non-native grasslands in the project vicinity.

Land Use			
Residential Uses	Existing residential communities near the river corridor would not be affected.	Changes in floodway management due to levee modifications would not affect residential uses. Increased U.S. Border Patrol operations may limit some recreational uses of the floodway.	Cooperative agreements that promote watershed management and habitat conservation initiatives may change surrounding land uses. If new land uses are adopted in the region, they may affect adjacent land uses as well.
Agricultural Uses	Sod farms within the floodway would not be affected under the No Action Alternative.	Increases in agricultural use of the floodway are not anticipated.	Increases in agricultural use in the project vicinity are not anticipated.
Recreational Uses	Recreational and natural areas including the Tijuana River Valley Regional Park and neighborhood and communities parks would not be affected.	Greater restrictions to public use/access of the floodway may limit recreational opportunities.	Greater restrictions to public use/access of the floodway may limit recreational opportunities, while cooperative agreements may promote recreational opportunities in the project vicinity.
Other Uses	Other land uses in the project vicinity, such as sand and gravel extractive operations and U.S. Military lands, would not be affected.	Similar to the No Action Alternative, other land uses in the project vicinity, would not be affected.	Similar to the No Action Alternative, other land uses in the project vicinity, would not be affected.
Cultural Resources			
Historical and Archeological Resources	Continued operation of the Tijuana River FCP would not have adverse effects on historical or archaeological resources.	Small-scale changes in floodway management would not have adverse effects on historical or archaeological resources. Additional levee improvement measures, not currently anticipated, could affect archaeological resources.	No adverse effects are anticipated within the flood control project area; cooperative projects, depending on extent or location, could have impacts on historical or archaeological resources.
Socioeconomic Resources			
Regional Economics and Social Issues	No impacts are expected by the continued Tijuana River FCP operation on anticipated population increases and other socioeconomic issues in San Diego Country.	Changes in floodway management would have no impact on anticipated population increases and other socioeconomic issues in San Diego Country.	No impact on anticipated population increases and other socioeconomic from floodway management; participation in cooperative initiatives could improve urban land use and create recreational opportunities.
Environmental Justice	Flood control would continue protection to the entire project vicinity. Disproportionately high and adverse human health and environmental effects on minority and low-income populations would not be expected.	Floodway management changes in the Tijuana River FCP would not affect adjacent urban areas, including minority and low-income populations.	Participation in cooperative initiatives could improve urban land use and recreational opportunities for resident in the project vicinity, including minority and low-income populations.

Environmental Health			
Air Quality	No increases in air pollutant emissions are anticipated from continued USIBWC operation and maintenance activities.	Potential beneficial or adverse changes in releases of particulate matter. Increased emissions of other pollutants from operations would not be anticipated. Best management practices for trash and sediment removal from the channel would improve air quality.	Cooperative agreements for environmental improvements or recreational opportunities would likely maintain or improve air quality in the project vicinity. Changes would be insignificant at a regional level.
Noise	Continuation of existing operations would not result in any changes in the noise environment. Noise level of equipment in operation for maintenance activities would not be expected to exceed the City of San Diego noise standard at any sensitive receptors in the project area.	Similar to the No Action Alternative, modified maintenance operations would not be expected to exceed the City of San Diego noise standard at any sensitive receptors in the project area.	Similar to the No Action Alternative, modified maintenance operations would not be expected to exceed the City of San Diego noise standard at any sensitive receptors in the project area.
Public Health and Environmental Hazards	Continued operation of the Tijuana River FCP would continue to comply with applicable health and environmental compliance requirements.	As in the No Action Alternative, changes in floodway maintenance would continue to follow applicable health and environmental compliance requirements.	Cooperative agreements for environmental improvements or recreational opportunities would follow applicable health and environmental compliance requirements.
Cumulative Impacts			
Natural Resources Management Areas	No cumulative impacts are anticipated from continued USIBWC operation and maintenance activities	Changes in vegetation management could incorporate limited wildlife habitat in the downstream reach of the flood control project	Cooperative agreements would support additional local environmental improvements outside the flood control project area.
Water Quality and Sediment Control Projects	No cumulative impacts are anticipated from continued USIBWC operation and maintenance activities	Increased sediment removal from the river channel and disposal outside the floodway would represent a minor addition to sediment control in Tijuana River tributary canyons located along the international border. Stormwater quality would not improve as a result of improvements in flood control.	Cooperative agreements for erosion control in Tijuana River tributary canyons would reduce sediment load reaching the Tijuana River estuary. Stormwater quality improvements would result from participation in additional binational plans for upstream control of point and non-point pollution sources.
U.S. Border Patrol Activities	No cumulative impacts are anticipated from continued USIBWC operation and maintenance activities	Expanded USBP surveillance and access control activities, as well as flood control requirements, are likely to severely restrict initiatives for additional vegetation development within the floodway.	Participation in local initiatives would support, to various degrees, development of vegetation and wildlife habitat outside the floodway.

SECTION 3 AFFECTED ENVIRONMENT

This section describes resources in the potential area of influence of the Tijuana FCP. The sequence of resource areas presented in this section is identical to that presented in Section 4, Environmental Consequences. The baseline conditions along this corridor have been thoroughly described in the following documents that are incorporated herein by reference, as allowed by 40 CFR 1508.02.

- Environmental Impacts Report, *Trails and Habitat Enhancement Project of the Tijuana River Valley Regional Park* (County of San Diego 2006).
- Final Supplemental Environmental Impact Statement, *Clean Water Act Compliance at the South Bay International Wastewater Treatment Plant* (USIBWC 2005b).
- Environmental Baseline, Region 5, California Border (USACE 1994b) prepared for the Supplemental Programmatic Environmental Impact Statement for INS and JTF-6 Activities (USACE 2001).
- Final Environmental Statement for the Tijuana River Flood Control Project, San Diego County, California. United States Section, International Boundary and Water Commission, May 1967 (USIBWC 1976).

The data presented in these documents are on a county-level basis and by physiographic province. These discussions summarize detailed descriptions provided in the documents mentioned above. Descriptions of the affected environment are presented for the following resource areas:

- Water resources;
- Biological resources;
- Land use;
- Cultural resources;
- Socioeconomic resources and transportation; and
- Environmental health.

3.1 WATER RESOURCES

3.1.1 Flood Control

Flood conditions in the Tijuana River FCP have been summarized by the USIBWC (2005a) and USACE (1994b). Flood peaks on the Tijuana River show extreme annual variability. Peak flow events were estimated for the period between 1884 and 1937 by the USACE, and peak flow events were measured between 1937 and 1984. During these periods, the highest estimated historical flow occurred in 1916, with an estimated peak flow of 75,000 cubic feet per second (cfs). An event of this magnitude is expected to have approximately a 1 percent chance of occurring in any given year. During the floods of 1993, an

1 equivalent flow of 33,000 cfs was recorded in the Tijuana River at the United States-Mexico
2 border.

3 In the 1970s, Mexico constructed a concrete flood control channel from the international
4 border upstream approximately 6.5 miles to the confluence with the Alamar River. The
5 channel was designed to convey up to 500-year flood flows of 15,000 cfs. The channel has
6 3 feet of freeboard. The United States constructed an energy dissipater at the downstream end
7 of the flood channel. Mexico designed and completed environmental review to extend the
8 flood control channel upstream an additional 4 miles to below the Abelardo L. Rodriguez
9 Reservoir. This project would control flooding for approximately 1,034 acres of the floodplain.
10 In addition to providing additional flood protection in Mexico, the channel extension would
11 address problems of surface and groundwater contamination.

12 During the rainy season, the Tijuana River is subject to flooding from surface water runoff.
13 The Tijuana River is channelized for flood protection in this reach and the channel is designed
14 for a 500-year flood.

15 The south levee of the Tijuana River in the United States has been modified to protect the
16 SBIWTP from flood flows. Additional modifications to the floodplain and low-flow channel
17 are proposed by the City of San Diego for its South Bay Treatment Plant adjacent to the
18 SBIWTP site, and Dairy Mart Road bridge crossing improvements to accommodate a 333-year
19 flood (City of San Diego 1997).

20 **3.1.2 Hydrology**

21 *Tijuana River.* The Tijuana River is an ephemeral stream draining an area of about
22 1,731 square miles, of which 470 square miles (about 30%) are in the United States and
23 1,261 square miles (about 70%) are in Mexico. The fan-shaped drainage area is about 75 miles
24 long and 50 miles wide.

25 The Tijuana River is formed by the confluence of Cottonwood Creek (Rio El Alamar) and
26 Palm Creek (Rio de las Palmas), about 11 miles southeast of the City of Tijuana. The river
27 flows northward through a 6.6-mile concrete flood control channel in the Tijuana Municipality
28 and crosses the international boundary into California. The USACE in 1995 constructed for the
29 USIBWC a half-mile concrete channel, 2 miles of levees, and an energy dissipater immediately
30 downstream of the international border. After the river crosses into the United States, it
31 continues westward for 5.3 miles and empties into the Pacific Ocean about 1.5 miles north of
32 the boundary.

33 The Tijuana River can be characterized as a braided alluvial stream that shifts widely
34 across the valley floor during flood stage. An alluvial floodplain forms the floor of the Tijuana
35 River valley. North-trending ephemeral drainages from Mexico enter the valley at Canyon del
36 Sol, Smugglers Gulch, and Goat Canyon.

37 Predominant soil along the Tijuana River belongs to the Chino and Tujunga series. Chino
38 soil has a considerable clay content, low infiltration rates, and higher available waterholding
39 capacity. Tujunga soil is noted for high infiltration rates and low available water-holding
40 capacity. Flood control structures and channelization between the international border and

1 Hollister Street have diverted the river westward, away from Tujunga soil and into the finer
2 silty loam of the Chino soil.

3 *Tijuana River Estuary.* The Tijuana River estuary is approximately 2,500 acres, is bisected
4 by the Tijuana River into northern and southern arms, and is bounded by coastal uplands to the
5 north and south, and the alluvial floodplain of the Tijuana River to the east. A 3-mile-long
6 barrier beach separates the estuary from the Pacific Ocean at its western boundary. From the
7 estuary entrance channel, tidal flows are distributed by four channels.

8 The Tijuana River basin is classified as a Mediterranean, dry summer, subtropical climate.
9 The average annual rainfall across the watershed ranges from about 11 inches near the coast to
10 25 inches at higher inland elevations, resulting in aquifer recharge of up to 4,500 acre feet
11 (ac-ft) of water in the 5,000-acre alluvial aquifer.

12 *Stream Flow.* As described in detail in USIBWC 2005b, the Tijuana River is an ephemeral
13 stream characterized by low or no flow for many months each year in the United States.
14 Intermittent flood flows are highly variable and are dependent upon rainfall quantity and
15 intensity across the watershed. Brief periods of very high flows, primarily during the rainy
16 season (November through April), are often followed by low or no summer flows. During
17 periods of groundwater overdraft, surface waters provide recharge to the aquifer in direct
18 proportion to the available storage. When the aquifer is full or overflowing, however,
19 groundwater seepage into the lower Tijuana River creates “gaining” stream conditions. These
20 conditions are apparent when ponds and stream flows in the valley are maintained in the
21 absence of surface water input from Mexico.

22 According to the U.S. Geological Survey (USGS), the average annual discharge in the
23 Tijuana River at the international boundary from 1936 through 1981 was approximately
24 33,000 ac-ft per year (ac-ft/yr), compared to a “median” discharge of 659 ac-ft/yr. The
25 maximum annual discharge was recorded during the 1979 to 1980 water year when
26 586,000 ac-ft flowed through the lower Tijuana River valley.

27 A hydraulics study to determine the low-flow characteristics of river flows was conducted
28 (Boyle Engineering 1996). Flow rates ranging from 1.7 to 34.8 million gallons per day (mgd)
29 have been modeled to determine the travel times from Stewart’s Drain to the Tijuana River
30 estuary for the selected flows. The predicted travel times vary from a minimum of 4.6 hours at
31 34.8 mgd to a maximum of 14.4 hours at 1.7 mgd.

32 **3.1.3 Groundwater Resources**

33 As summarized in USACE 1994b and USIBWC 2005b, groundwater in the lower Tijuana
34 River valley occurs in three zones: (1) beneath the Nestor Terrace north of the valley, (2) in the
35 alluvial fill underlying the Tijuana River valley, and (3) in the San Diego Formation beneath
36 the alluvium (Dudek & Associates, Inc. 1994). Of these three zones, the Tijuana River valley
37 alluvium has been studied and used the most.

38 The Tijuana River valley aquifer is recharged primarily by direct rainfall, subsurface
39 inflow from adjacent areas, and intermittent flood flows (State of California 1967;
40 USACE 1990; Rempel 1992). Surface flows in the river may also provide groundwater

1 recharge (Dudek & Associates 1994). The amount of groundwater inflow from across the
2 international border has been estimated by various sources at 1,580 ac-ft/year (State of
3 California 1952); 1,208 ac-ft/yr (USACE 1965); and 1,160 ac-ft/yr (USIBWC 1976). There is
4 also potential recharge from water-bearing zones east of IH5 that has not been estimated.

5 The chief factors contributing to the reduction of groundwater in storage are agricultural
6 pumping and evapotranspiration from phreatophytes (*i.e.*, deep-rooted plants notable for their
7 ability to obtain water from groundwater or the overlying capillary fringe). There is the
8 possibility of minor outflow from the basin toward the north during periods of high
9 groundwater. The amount of groundwater discharging either directly to the ocean or to the
10 lower reaches of the river has been estimated to be 2,090 ac-ft/yr during dry years and
11 2,827 ac-ft/yr during wet years (Dudek & Associates 1994).

12 It is only when the amount of groundwater removed from a basin chronically exceeds
13 natural recharge from rainfall, subsurface inflow, and intermittent flood flows that the
14 groundwater table levels will begin to decline. The record for the lower Tijuana River valley
15 from 1965 to 1978 shows that groundwater levels can recover from drier-than normal rainfall
16 and less-than-normal runoff as long as groundwater extraction is reduced. This observation is
17 supported by data collected between 1965 and 1978.

18 Depending on stream flow, accumulated rainfall, and groundwater pumping, water table
19 elevations vary from year to year and between wet and dry seasons. Sustained high rates of
20 groundwater extraction during the 1950s resulted in a decline in groundwater levels of 23 to
21 30 feet or more in the Tijuana River valley. By the early 1960s, groundwater table elevations
22 across much of the valley had fallen below sea level, resulting in the intrusion of seawater and
23 highly saline groundwater from underlying and adjacent marine sediments into the alluvial
24 aquifer (Rempel 1992). By 1967, seawater intrusion had affected most wells up to the United
25 States-Mexico border. This saltwater degradation of the aquifer contributed to the declining
26 demand for groundwater from the Tijuana River valley. As rates of natural recharge exceeded
27 rates of consumption, the resulting annual surplus of water began to overcome years of
28 accumulated deficits, and water levels began recovering.

29 Increased annual precipitation and runoff between 1978 and 1984, and greatly reduced
30 groundwater pumping for irrigation since 1970 appear to have raised the groundwater levels to
31 within 0 to 15 feet of the ground surface throughout the river floodplain (Rempel 1992).
32 Groundwater levels at the SBIWTP site have been reported to be between 28.5 to 35 feet mean
33 average sea level (Woodward-Clyde 1994). The mean average sea level elevation at the
34 SBIWTP, adjacent to the Tijuana River FCP, is about 50 feet.

35 **3.1.4 Water Quality**

36 During wet weather, river flows through Tijuana are degraded by sewage, affecting the
37 water quality of the Tijuana River in the United States and its coastal waters. Various studies
38 have been conducted to assess the water quality of the Tijuana River estuary. A study by
39 Gersberg, *et al.* (1989) found that, despite continued inflow of sewage containing heavy metals,
40 elevated levels of only cadmium were found in the sediments of both the Tijuana River and

1 southern estuary sites. The study also concluded that only lead was found in levels above an
2 international standard in fish.

3 Groundwater in the Tijuana River valley is characterized by high levels of sodium chloride
4 and total dissolved solids. These high salinity levels prevent the current use of well water for
5 the irrigation of salt-sensitive crops cultivated within the valley. As a result of lowered
6 groundwater levels and seawater intrusion, groundwater total dissolved solids concentrations
7 along the coast have exceeded 27,000 milligrams per liter (mg/L) (concentration generally
8 ranges between 1,000 and 1,500 mg/L). In the Department of Water Resources Bulletin 106-2
9 (State of California 1967), the Tijuana River valley groundwater was rated generally inferior
10 for domestic use because of its high sulfate and high fluoride concentrations. It was also rated
11 generally inferior for irrigation purposes because of high electrical conductivity, high chloride
12 levels, and high percentage of sodium in the vicinity of Spooner's Mesa. In addition to
13 seawater intrusion problems, the poor quality of the groundwater is also attributed to sodium
14 chloride leaking from the San Diego Formation, irrigation return, and groundwater movement
15 from beyond the international boundary (USEPA 1988).

16 **3.2 BIOLOGICAL RESOURCES**

17 Biological resources along the project corridor have been described in Final Supplemental
18 Environmental Impact Statement, Clean Water Act Compliance at the South Bay International
19 Wastewater Treatment Plant (USIBWC 2005b), *Trails and Habitat Enhancement Project,*
20 *Recirculated Draft Environmental Impact Report for the Tijuana River Valley Regional Park*
21 *(County of San Diego 2006), Biological Resources Technical Report, Tijuana River Valley*
22 *Regional Park Trails and Habitat Enhancement Project (County of San Diego 2005), and*
23 *Multiple Species Conservation Program, City of San Diego MSCP Subarea Plan (City of San*
24 *Diego 1997).* Information from these documents is incorporated by reference.

25 **3.2.1 Vegetation**

26 The County of San Diego (2005) describes vegetation in the general Tijuana River FCP
27 area. The vegetation historically probably included riparian communities and coastal sage
28 scrub/chaparral communities. The cottonwood-willow riparian communities contain Fremont
29 cottonwood, Gooding's black willow, and arroyo willow. The understory of the riparian forest
30 is typically composed of shrubby arroyo willows and mule fat. Invasive species such as giant
31 reed and tamarisk also occur along the margins of the riparian forest. Coastal Sage
32 Scrub/Chaparral communities typically include such species as coastal sagebrush, California
33 buckwheat, laurel sumac, and white sage (County of San Diego 2005).

34 The Tijuana River FCP is 2.3 miles long, and has been impacted by urban development
35 and agricultural practices. The low-flow channel is normally dry as dry-weather flows are
36 currently intercepted at the border for treatment at the USIBWC-operated SBIWTP. Therefore,
37 the riparian and coastal sage scrub communities are generally degraded, and support only
38 limited native vegetation. Most of the northern portion of the floodway is leased for sod-
39 farming, and native plant communities have been eliminated. Most of the southern portion of
40 the floodway can be considered disturbed non-native grassland or ruderal/disturbed vegetation.
41 The non-native grasslands are dominated by wild oat, ripgut brome, rye-grasses and fescues

1 (County of San Diego 2005). In areas where the non-native grasslands are disturbed, they can
2 become infested with the non-native Russian thistle, to the exclusion of grasses. The
3 ruderal/disturbed areas often do not support many species, contain bare ground, and are
4 dominated by weedy species including Russian thistle, mustards, and garland chrysanthemum.

5 **3.2.2 Wildlife**

6 A number of wildlife species are present in the region. Mammals in the region include
7 species typical of fields and lowlands, including several species of mice, California ground
8 squirrel, and rabbits. These species provide food resources for a number of raptor species
9 (USEPA 2006). In addition, other small mammals may include striped skunks, long-tailed
10 weasels, raccoon, and the locally rare San Diego black-tailed jackrabbit. Larger mammals may
11 include coyotes, American badger, mountain lions, and southern mule deer (City of San
12 Diego 1997; County of San Diego 2005).

13 In addition to mammals, the Tijuana River Valley Regional Park and the Tijuana River
14 National Estuarine Research Reserve, downstream of the Tijuana River FCP, contains a
15 number of reptiles and amphibians (County of San Diego 2005; USFWS 1999). The Tijuana
16 River Valley Regional Park amphibian fauna include non-native bullfrogs and African clawed
17 frogs, and native species such as California tree frogs and Pacific chorus frogs (County of San
18 Diego 2005). The reptiles of the Regional Park include species that use rodent burrows in non-
19 native grasslands for cover and within riparian areas. The species documented in the Regional
20 Park include coastal whiptail lizards, side-blotched lizards, and western fence lizards in drier
21 habitats, as well as gopher snakes, glossy snakes, southern Pacific rattlesnakes, and other
22 snakes in lower abundance (County of San Diego 2005). A California species of special
23 concern, the orange-throated whiptail, and a federal species of special concern, the silvery
24 legless lizard, were also documented in the Regional Park. Within the Tijuana River National
25 Estuarine Research Reserve, further downstream of the Regional Park, at least four species of
26 frogs, six species of lizards, and three species of snakes have been documented. In addition to
27 the species listed above, two additional California species of special concern, the San Diego
28 horned lizard and the Coronado skink, were documented in the Estuary Reserve
29 (USFWS 1999).

30 Bird species are well represented in the Tijuana Regional Park and the Tijuana Estuary
31 Reserve. Within the Regional Park, there is a large diversity of nesting and foraging habitat.
32 The agricultural and uplands areas of the Regional Park provide habitat for wintering and
33 breeding raptors, and several species that are typically residents of coastal sage scrub habitat,
34 including peregrine falcons, California species of special concern Cooper's hawk, northern
35 harriers, white tailed kites, prairie falcons, and sharp shinned hawks (County of San
36 Diego 2005). Ponds and associated riparian wetlands provide habitat for rails, waterfowl and
37 shorebirds (County of San Diego 2005). Within the Regional Park, immediately downstream
38 of the Tijuana FCP, there is riparian habitat suitable for the federally listed Least Bell's vireo,
39 and populations are established and increasing in number. Other sensitive species known to
40 have large populations in the Regional Park include the yellow warbler, the yellow-breasted
41 chat, Swainson's thrush, the downy woodpecker, and American bittern (County of San
42 Diego 2005). Within the Estuary Reserve, as many as 370 species have been documented
43 (USFWS 1999).

3.2.3 Threatened and Endangered species

Within the Tijuana River Valley, there are several species listed as federally threatened or endangered, and several additional species listed as threatened or endangered by the State of California (NatureServe 2006). The project area is within San Diego County. Within San Diego County, there are several federal and state listed T&E species, as follows:

- four species of invertebrates;
- four species of fish;
- two species of amphibians;
- one species of reptile;
- seven species of birds;
- three species of mammals, and
- 20 species of plants.

The presence of T&E species has been reported for the Tijuana River FCP vicinity, and T&E and sensitive species are known to occur in the Regional Park immediately downstream of the Tijuana River FCP, but have not been documented within the floodway. The evaluation of the Trails and Habitat Enhancement Project of the Tijuana River Valley Regional Park provides detailed information about the T&E species found in the Tijuana River FCP vicinity (County of San Diego 2006).

3.2.4 Aquatic Ecosystems

The Tijuana River is an ephemeral stream draining an area of about 1,731 square miles, of which 470 square miles (about 30%) are in the United States and 1,261 square miles (about 70%) are in Mexico.

The Tijuana River is formed by the confluence of Cottonwood Creek (Rio El Alamar) and the Rio de las Palmas about 11 miles southeast of the City of Tijuana. The river flows northward through a 6.6-mile concrete flood control channel in the Tijuana Municipality and crosses the international boundary into California. The USACE in 1995 constructed for the Tijuana River FCP by building a half-mile concrete channel, 2 miles of levees, and an energy dissipater immediately downstream of the international border. After the river crosses into the United States, it continues westward for 5.3 miles and empties into the Pacific Ocean about 1.5 miles north of the boundary (USIBWC 2005b).

The Tijuana River can be characterized as a braided alluvial stream that shifts widely across the valley floor during flood stage. An alluvial floodplain forms the floor of the Tijuana River valley. North-trending ephemeral drainages from Mexico enter the valley at Canyon del Sol, Smugglers Gulch, and Goat Canyon.

Downstream of the Tijuana River FCP, the Tijuana River receives water from canyons lining the river, and maintains baseflow through much of the year. The river flows to the Pacific Ocean, where it feeds the Tijuana River Estuary. The Tijuana River estuary is approximately 2,500 acres, is bisected by the Tijuana River into northern and southern arms, and is bounded by coastal uplands to the north and south, and the alluvial floodplain of the

1 Tijuana River to the east. A 3-mile-long barrier beach separates the estuary from the Pacific
2 Ocean at its western boundary. From the estuary entrance channel, tidal flows are distributed by
3 four channels.

4 The Tijuana River basin is classified as a Mediterranean, dry summer, subtropical climate.
5 The average annual rainfall across the watershed ranges from about 11 inches near the coast to
6 25 inches at higher inland elevations, resulting in aquifer recharge of up to 4,500 ac-ft of water
7 in the 5,000-acre alluvial aquifer.

8 Freshwater aquatic fisheries are apparently very limited in the area, and have not been well
9 described. There are several reasons that freshwater fish may be limited in the Tijuana River,
10 including a discontinuity between the Tijuana River and other coastal streams of southern
11 California has prevented movement of freshwater fish between the systems. In addition, the
12 long standing aridity of the region has prevented the coastwise dispersal of fish via estuaries
13 (Follett 1960).

14 Marine aquatic resources in the area include the Tijuana estuary. The estuary supports a
15 diverse population of fish (USFWS 1999). The fish species in the estuary have been dominated
16 by topsmelt, longjaw, mudsucker, arrow goby, and California killifish. Adult striped mullet are
17 also common in the estuary. The tidal channels of the estuary provide nursery habitat for
18 several recreational fish, including the diamond turbot and California halibut, and eggs of
19 marine species have been reported in the tidal channels as well (USFWS 1999).

20 **3.2.5 Unique or Sensitive Areas**

21 Non-native grasslands, both disturbed and undisturbed, may be considered a sensitive
22 biological resource because it provides foraging habitat for raptors, including such species as
23 northern harrier, red-tailed hawk, and red-shouldered hawks, and a white-tailed kite has been
24 observed in the general area of the project. Quino checkerspot butterfly may also potentially
25 occur on non-native grasslands. This species is federally listed in the United States as
26 endangered. The principal larval host plant of this species in the San Diego region is dot-seed
27 plantain. Potential habitat for Quino checkerspot in the region includes vegetation
28 communities with relatively open areas that typically include patches of dot-seed plantain,
29 owl's clover, and nectaring plants. These habitats include vernal pools, lake margins, non-
30 native grassland, perennial grassland, disturbed habitat, disturbed wetlands, and open areas
31 within shrub communities. While some of these habitats occur within the study area, they are
32 probably too disturbed to support this species (USIBWC 2005b).

33 **3.2.6 Wetlands**

34 All wetland areas are considered sensitive, as are wetland buffer areas. The USACE
35 regulates the discharge of dredged or fill material into waters of the United States (wetlands
36 and non-wetlands jurisdictional waters) according to Section 404 of the Clean Water Act. The
37 California Department of Fish and Game regulates all changes to the natural flow or bed,
38 channel, or bank of any river, stream, or lake that supports fish or wildlife.

1 While the Tijuana River runs through the Tijuana River FCP, no jurisdictional waters or
2 wetlands are present due to the lack of a baseline flow. As baseline flow increases downstream
3 of the project area, wetlands are associated with ponded areas, primarily along a portion of the
4 northern side-channel of the Tijuana River, in the Tijuana River Valley Regional Park (County
5 of San Diego 2005). The mouth of the Tijuana River, downstream of the project area, supports
6 diverse wetland habitat.

7 **3.3 LAND USE**

8 This section characterizes land uses in the immediate and general vicinity Tijuana River
9 FCP. This section includes a description of the existing public and private land uses in this
10 portion of the Tijuana River Valley area of the United States, as well as a general discussion of
11 land uses in Tijuana, Baja Mexico.

12 **3.3.1 Residential Uses and Population**

13 The municipality of Tijuana, Baja Mexico, is located south of the proposed levee
14 improvements, and has fully-developed neighborhoods directly adjacent to the south levee area.
15 To the north and east of the levees is the community of San Ysidro, in San Diego County,
16 California. Immediately adjacent to the north levee is a single-family residential neighborhood
17 and an indoor shopping mall (Google Earth 2006-2007). To the west of the project is Tijuana
18 River Valley Regional Park (USIBWC 2005b).

19 In addition to the residential neighborhood immediately northeast of the project, the project
20 area is transitioning from rural to suburban with a growing number of single-family
21 neighborhoods and older private ranches (Google Earth 2006-2007). According to the
22 2000 U.S. Census Bureau, the population within an approximate 3.5 mile radius of the project
23 location is 101,730 on the U.S. side of the border. Most of these residents live north of the
24 project location, nearer to the densely populated metropolitan centers of the City of San Diego
25 and San Diego County.

26 The San Diego Association of Governments (SANDAG) performed an in-depth analysis in
27 2004 of the Tijuana River Valley Community Planning Area, which includes the floodway area
28 bounded by the two levees and extends east. For the SANDAG Planning Area, 2004
29 population estimates were only 62 persons. Population growth is expected to be minimal and
30 reach 63 by 2030. An estimated 19 housing units are within the Planning Area, with an
31 average of 3.3 persons per household. This area represents a much more rural residential
32 character than the suburban areas to the north (USIBWC 2005b).

33 **3.3.2 Agricultural Use**

34 While the majority of the region has become urbanized, some areas to the west and east of
35 the project site are still used for agriculture. Row cropping, organic sprouts production, and
36 horse breeding and boarding are documented agricultural uses in this area (USIBWC 2005b).
37 the Tijuana River FCP floodway includes leased areas for sod farming.

3.3.3 Recreational Use

Major recreational and natural areas near the Tijuana River FCP include the Tijuana River Valley Regional Park. Several smaller neighborhood and community parks are also located in the project area. The Tijuana River Valley Regional Park consists of approximately 1,800 acres, of which 1,638 acres are owned by the County of San Diego. Other land uses in the park are under the jurisdiction of the City of San Diego and the California Department of Fish and Game. The park is generally bounded on the east by Dairy Mart Road, the Tijuana River Estuary on the west, the United States/Mexico international border on the south and Sunset Avenue and the residential community to the north. The park includes a mixture of recreational uses, agriculture and native habitats (USIBWC 2005b).

Several neighborhood and community parks are located in the general vicinity of the project area. An unnamed neighborhood park is located in the residential subdivision that is adjacent to the north levee, and the San Ysidro Athletic Area is approximately one-quarter mile north of the east end of the project area. Other parks within 2 miles of the Tijuana River FCP include the San Ysidro Community Area, Vista Terrace Park, Howard Lane Park, Berry Park, Nestor Park and several unnamed neighborhood parks (Google Earth 2006-2007).

3.3.4 Other Significant Land Uses in the Project Vicinity

Another land use in the region is sand and gravel extractive operations. Sand mining had been ongoing in the Tijuana River until flooding occurred in 1993. The Border Highlands area, south of Monument Road and east of Border Field State Park, was one area of extractive operations. In compliance with the Surface Mining and Reclamation Act of 1975, the deposits have been mapped as Mineral Resource Zone Category 2. These zones represents areas where significant mineral aggregate deposits are present, or where a high likelihood for their presence exists (USIBWC 2005b).

United States military land uses are also located in the area. Navy Outlying Field-Imperial Beach is a U.S. Navy helicopter air station located on 1,100 acres adjacent to Imperial Beach and the estuary. The field is the only exclusive-use naval helicopter airfield on the west coast. Navy Outlying Field-Imperial Beach IB serves as a practice field for Pacific Fleet helicopters and is utilized by 11 squadrons of combat and patrol helicopters (USIBWC 2005b).

The international border between the United States and Mexico is adjacent to the southern levee of the project. A steel border fence has been constructed along the southern boundary of the United States from the ocean to the International Crossing at San Ysidro and eastward. On the United States side, west of the San Ysidro crossing, the area north of the fence is cleared of vegetation and night lighting stanchions have been installed. The USBP is responsible for the interdiction of smuggling, drug traffic and persons attempting to enter the United States illegally. U.S. Border Patrol agents from the Imperial Beach station continuously monitor entry across the fenced areas and activity in the river valley by vehicle and aerial patrols (USIBWC 2005b).

An additional two sections of fence have been constructed at the border, extending approximately 100 feet north of the old fence. The SBIWTP, which is west of Tijuana River

1 FCP, has a perimeter screen of narrowly spaced pillars that provide security and restrict access
2 to the plant (USIBWC 2005b).

3 **3.3.5 Planned Land Uses in the Project Area**

4 The Tijuana River Valley Community Planning Area that was mentioned above is within
5 the Coastal Zone. The Coastal Zone Management Program for the area is governed by the
6 California Coastal Act Policies and Plan, Local Coastal Program, and Tijuana River National
7 Estuarine Sanctuary Management Plan. The California Coastal Plan identifies the coastal area
8 of the Tijuana River valley as Subregion 12 of the San Diego Coast Region. The Tijuana River
9 Valley Plan and Local Coastal Program Addendum address the major portion of the Tijuana
10 River valley and provide land use policies and goals for portions of the area within the City of
11 San Diego and coastal zone (USIBWC 2005b).

12 The City of San Diego and other regional jurisdictions, in cooperation with the United
13 States Fish and Wildlife Service and the California Department of Fish and Game, have
14 prepared an overall *Multi-Species Conservation Plan* to implement the requirements of the
15 California Natural Communities Conservation Planning Act of 1992 and Section 10a of the
16 Endangered Species Act. The MSCP includes locally specific Subarea Plans for each covered
17 jurisdiction. The Subarea Plan for the City of San Diego identifies the Tijuana River valley and
18 estuary as a preserve area (USIBWC 2005b).

19 San Diego County Department of Parks and Recreation has developed the *Tijuana River*
20 *Valley Regional Park*, which includes a mixture of recreational activities, sustainable
21 agriculture and native habitats. The park is immediately west of the project area. Development
22 of the park is governed by the County's Management Framework, which contains the
23 conceptual framework for design and management of the park. The primary goal of the
24 Tijuana River Valley Regional Park is agricultural and wildlife preservation. Its location
25 provides protection for that portion of the river system, which lies within the jurisdiction of the
26 United States. The County is implementing a Trails and Habitat Enhancement project within
27 the Tijuana River Valley Regional Park. This project would include a network of trails to
28 facilitate recreational access and allow for the rehabilitation of degraded and natural habitat
29 within the regional park (County of San Diego 2006).

30 **3.4 CULTURAL RESOURCES**

31 In the Tijuana River FCP, previous cultural resources surveys have been carried out, as
32 summarized by the cultural resources report prepared for the USIBWC in support of the PEIS
33 preparation (GeoMarine 2005).

34 Cultural resources in the Tijuana River FCP are defined as historic properties that are
35 archeological sites or historic structures. One archeological site also contains historic
36 structures. Archeological sites in the project area range in date from the Late Prehistoric to the
37 Historic period (A.D. 500/800 to 1539; Geo-Marine 2005). Historic structures are defined as
38 those constructed 50 or more years ago. For these cultural resource types, the project area
39 encompasses all areas that could be directly affected by the project, or areas where a change
40 could result in indirect effects to cultural resources.

1 The following description of the affected environment is based primarily on cultural
2 resources data for the Tijuana River FCP prepared in support of the PEIS (GeoMarine 2005).
3 The results of the study, which identified cultural resources within one-half mile from the
4 Tijuana River FCP, found 20 cultural properties or historic districts. All of these cultural
5 resources are located in San Diego County. Sixteen of the 20 sites are prehistoric, three are
6 historic (including historic archeological sites and standing structures; one archeological site
7 also contains standing structures), and one site is multicomponent (prehistoric and historic). Of
8 those sites identified, the eligibility status for listing in the National Register of Historic Places
9 or as historic districts is unknown (GeoMarine 2005).

10 Within the Tijuana River FCP, there is one cultural resource containing historic structures.
11 These standing structures are within a known archeological site (GeoMarine 2005).

12 Within the Tijuana River FCP, 95 percent of the previously recorded temporal components
13 are within the floodplain, 85 percent are within the prehistoric floodplain, 15 percent are within
14 the prehistoric terrace/fan, 50 percent are within the historic floodplain, and 50 percent are
15 within the historic terrace/fan (GeoMarine 2005).

16 **3.5 SOCIOECONOMIC RESOURCES AND TRANSPORTATION**

17 Socioeconomics is defined as the basic attributes and resources associated with the human
18 environment, particularly population and economic activity. Economic activity typically
19 encompasses employment, personal income, and industrial growth. Depending on local
20 economic and demographic characteristics, the proposed action at the Tijuana River FCP could
21 potentially have some influence on socioeconomic activity within the surrounding region of
22 influence.

23 **3.5.1 Regional Economics**

24 For the purposes of this PEIS, regional economics includes population,
25 employment/income, and housing.

26 ***Population***

27 The Tijuana River FCP is located within San Diego County. San Diego County consists of
28 numerous cities and communities. The closest cities/communities that may be affected by
29 flood control management alternatives being considered for the Tijuana River FCP is the
30 community of San Ysidro and the city of Imperial Beach.

31 Table 3.1 presents population characteristics, including populations in 2000, as well as
32 projected populations for 2005, 2006, and 2030 and the percent change for these statistical
33 areas. As shown in Table 3.1, the total county population is projected to increase 37 percent
34 from 2000 to 2030. Imperial Beach and San Ysidro expect similar increases of 34 and
35 27 percent, respectively.

Table 3.1
Population Growth in San Diego County and Relevant Communities
Adjacent to the Tijuana River FCP

Jurisdiction	2000	2005	2030	Percent Change 2000-2030
San Diego County	2,813,800 ¹	3,039,277 ²	3,855,100 ¹	37% ¹
Imperial Beach (zip codes 91923, 91933)	26,992 ³	27,604 ²	36,125 ³	34% ³
San Ysidro (zip code 92173)	28,346 ⁴	None available	36,240 ¹	27%

¹ SANDAG 2006b

² State of California Department of Finance 2006

³ SANDAG 2007a and b

⁴ SANDAG 2006a

Employment and Income

The economy of the San Diego region is based primarily on the service, retail trade, government, and manufacturing sectors of the economy. The estimated total employment for San Diego County, and relevant communities is shown in Table 3.2. The estimated total employment for the county is expected to increase 14.8 percent from 2000 to 2010.

Table 3.2
Estimated Total Employment for San Diego County and Relevant Communities
Adjacent to the Tijuana River FCP

	2000	2010	Percent Change 2000-2010
San Diego County	1,384,673 ¹	1,590,206 ¹	14.8%
Imperial Beach	3,731 ²	4,021 ²	7.8%
San Ysidro	8,918 ¹	11,369 ³	2.7%

¹ U.S. Census Bureau 2004a

² SANDAG 2007c

³ SANDAG 2006b

Median household income for San Diego County (reported in 1999 dollars) was \$47,067 (U.S. Census Bureau 2004a). Median family income (reported in 1999 dollars) was \$53,438. Per capita income was \$22,926 (reported in 1999 dollars).

Approximately 4 percent of the total county households surveyed were reported to be on public assistance income (35,533 of 995,492 households). In addition, approximately 9 percent of all families (59,221 of 669,102 families) were reported to be below the poverty level in the 2000 Census (U.S. Census Bureau 2004b).

1 **Housing**

2 According to the 2000 U.S. Census, the housing stock in San Diego County was
 3 1,040,149. The largest portion of the housing stock in 2000 was comprised of single-family
 4 units (60%). Multifamily units accounted for 35 percent of the housing stock in the county. As
 5 shown in Table 3.3, the number of housing units for the county increased 12 percent from 2000
 6 to 2010.

7 **Table 3.3**
 8 **Estimated Total Housing Units for San Diego County and**
 9 **Relevant Communities Adjacent to the Tijuana River FCP**

	2000	2010	Percent Change 2000-2010
San Diego County	1,040,149 ¹	1,161,259 ¹	12%
Imperial Beach	9,739 ²	9,830 ²	1%
San Ysidro	7,584 ¹	7,665 ³	1%

10 ¹ U.S. Census Bureau 2004a

11 ² SANDAG, 2007a and c

12 ³ SANDAG 2006b

13 **3.5.2 Environmental Justice**

14 Executive Order (E.O.) 12898, *Federal Actions to Address Environmental Justice in*
 15 *Minority Populations and Low-Income Populations*, encourages federal facilities to achieve
 16 “environmental justice” by identifying and addressing, as appropriate, disproportionately high
 17 and adverse human health or environmental effects of its programs, policies, and activities on
 18 minority and low-income populations. Accompanying E.O. 12898 was a Presidential
 19 transmittal memorandum that referenced existing federal statutes and regulations to be used in
 20 conjunction with E.O. 12898. One of the items in this memorandum was the use of the policies
 21 and procedures of NEPA, specifically that, “Each Federal agency shall analyze the
 22 environmental effects, including human health, economic, and social effects, of Federal actions,
 23 including effects on minority communities and low-income communities, when such analysis is
 24 required by the NEPA 42 USC, Section 4321, *et seq.*” In this subsection, relevant data
 25 regarding environmental justice are presented, along with an analysis of census tracts that
 26 would be affected by flood control management alternatives being considered by the USIBWC
 27 for the Tijuana River FCP in San Diego County, California.

28 **Demographic Data.** An analysis of demographic data was conducted to derive
 29 information on the approximate locations of low-income and minority populations in the
 30 community of concern. In developing statistics for the 2000 Census of Population and
 31 Housing, the U.S. Department of Commerce, Bureau of the Census, identified small
 32 subdivisions used to group statistical census data. In metropolitan areas, these subdivisions are
 33 known as census tracts.

1 Since the analysis considers disproportionate impacts, two areas must be defined to
2 facilitate comparison between the area actually affected and a larger regional area that serves as
3 a basis for comparison and includes the area actually affected. The larger regional area is
4 defined as the smallest political unit that includes the affected area and is called the community
5 of comparison. For purposes of this analysis, the community of comparison is San Diego
6 County.

7 Three U.S. census tracts (100.09, 101.09 and 102) were identified in the potential region of
8 influence for the Tijuana River FCP. To determine whether an individual census tract contains
9 a disproportionately high low-income or minority population, data for each tract were
10 compared to data for the community of concern.

11 **Minority Populations.** The percentage of the population represented by minorities and the
12 poverty rate for each of the selected census tracts in the project area are shown on Table 3.4.

13 Census tracts 101.09 and 100.09 have a disproportionately high minority population,
14 exceeding 50 percent. Census Tract 102 does not have a disproportionately high minority
15 population. The average minority population of the three census tracts is 36.3 percent. The
16 minority population in the region of comparison is 42.2 percent. Minority populations of
17 Hispanic nationality dominate in the potential region of influence with an average of
18 34.3 percent. The population of Hispanic persons in Census Tract 100.09 is exceptionally high
19 at 56.7 percent.

20 **Table 3.4 Percentage of Minority Populations and Poverty Rates in the Project**
21 **Area**

	California	San Diego County	Census Tract			Average
			100.09	101.09	102	
White ^a	46.7	55.0	4.6	11.8	59.0	11.8
Hispanic or Latino (of any race)	32.4	26.7	86.7	56.7	27.1	34.3
Black	6.7	5.7	3.8	5.3	5.1	24.6
Asian ^b	10.9	8.9	3.9	23.0	3.9	28.3
American Indian ^c	1.0	0.9	0.8	0.5	1.4	9.6
Total Minority	51.0	42.2	95.2	85.5	37.5	36.3
Poverty ^d	14.2	12.4	31.6	5.4	21.9	30.5

Source: U.S. Census Bureau 2004a
^a White persons, not of Hispanic or Latino origin
^b Asian includes Pacific Islander and Non-Native Hawaiian
^c American Indian includes Alaska Native persons
^d Poverty rates reflect persons living below the poverty level (1999)

22 **Poverty Rates.** The U.S. Census Bureau poverty assessment weighs income before taxes
23 and excludes capital gains and non-cash benefits (such as public housing, Medicaid, and food
24 stamps). Poverty rates indicate low-income populations are relatively high in census tracts
25 100.09, 101.09, and 102 (U.S. Census Bureau 2004a). The average low-income population is
26 19.6 percent for the region of influence. The percentage of persons living below the poverty
27 level in the region of influence is greater than the 12.4 percent in the region of comparison.

1 The project area exhibits a disproportionately high population of persons with low income in
 2 relation to the community of comparison and region.

3 **3.5.3 Transportation**

4 The primary public roads in the project area are Dairy Mart Road, Camino de la Plaza, and
 5 Monument Road. Maintenance roads alongside the north and south levee are used by the
 6 USIBWC and the U.S. Customs and Border Protection. Dairy Mart Road is a two-lane
 7 collector road that has a maximum Level of Service (LOS) C capacity of 5,000 average daily
 8 traffic volume. For the Dairy Mart Road this volume is 1,500 vehicles per day (County of San
 9 Diego 2005). Average weekday traffic volumes recorded in 2005 (SANDAG 2007d) are
 10 shown on Table 3.5.

11 **Table 3.5 Average Weekday Traffic Volumes for Roads**
 12 **in the Project Area (2005)**

Primary Street	First Cross Street	Second Cross Street	Average Weekday Traffic Volume (2005)
Dairy Mart Road	Interstate 5	Servando Avenue	4,400 (northbound)
	Servando Avenue	Monument Road	12,600
Camino de la Plaza	Willow Road	Interstate 5 Southbound Ramp/Camiones Way	17,400 (northbound)
Monument Road	Hollister Street	Dairy Mart Road	700 (northbound)

13 Source: SANDAG 2007d

14 **3.6 ENVIRONMENTAL HEALTH**

15 **3.6.1 Air Quality**

16 The Clean Air Act, Title 42, Section 7407 of the U.S. Code, states that Air Quality Control
 17 Regions (AQCR) shall be designated in interstate and major intrastate areas as deemed
 18 necessary or appropriate by a federal administrator for attainment and maintenance of
 19 concentration-based standards called National Ambient Air Quality Standards (NAAQS). The
 20 USEPA classifies the air quality within an AQCR according to whether the concentration of
 21 criteria air pollutants in the atmosphere exceeds primary or secondary NAAQS. All areas
 22 within each AQCR are assigned a designation of attainment, nonattainment, unclassifiable
 23 attainment, or not designated attainment for each criteria air pollutant. An attainment
 24 designation indicates that the air quality within an area is as good as or better than the NAAQS.
 25 Nonattainment indicates that air quality within a specific geographical area exceeds applicable
 26 NAAQS. Unclassifiable and not designated indicates that the air quality cannot be or has not
 27 been classified on the basis of available information as meeting or not meeting the NAAQS and
 28 is therefore treated as attainment. Before a nonattainment area is eligible for reclassification to
 29 attainment status, the state must demonstrate compliance with NAAQS in the nonattainment
 30 area for three consecutive years and demonstrate, through extensive dispersion modeling, that
 31 attainment status can be maintained in the future even with community growth.

1 Generally, areas in violation of one or more of the NAAQS are designated nonattainment
2 and must comply with stringent restrictions until all of the standards are met. In the case of
3 ozone (O₃), carbon monoxide (CO), and particulate matter greater than 10 micrometers in size
4 (PM₁₀), USEPA divides nonattainment areas into different categories, depending on the
5 severity of the problem in each area. Each nonattainment category has a separate deadline for
6 attainment and a different set of control requirements under the applicable State
7 Implementation Plan.

8 The USIBWC Tijuana River FCP is located in San Diego County within the San Diego
9 Interstate AQCR for the San Diego Air Basin (SDAB). The local agency responsible for air
10 quality within this AQCR is the San Diego Air Pollution Control District. The California Air
11 Resources Board is the state-level agency responsible for administration of state and Federal air
12 quality regulations.

13 The air quality in San Diego County is considered better than national standards for Sulfur
14 dioxide. Total suspended particulates in the east portion of San Diego County cannot be
15 classified, and does not meet primary standards in the west portion. Carbon monoxide is in
16 attainment within a part of the San Diego area, and is considered unclassifiable or in attainment
17 for the remainder of the SDAB. PM₁₀ in San Diego County is considered unclassifiable.
18 Nitrogen dioxide in the SDAB cannot be classified or better than the national standard. San
19 Diego County is classified as serious nonattainment for ozone (1-hour standard)
20 (USEPA 1998).

21 The emissions data for the San Diego AQCR are as follows (California Air Resources
22 Board 2007):

- 23 • Carbon monoxide, 342,261 tons per year;
- 24 • Volatile organic compounds, 67,800 tons per year;
- 25 • Nitrogen dioxide, 69,131 tons per year;
- 26 • Sulfur oxides, 1,351 tons per year; and,
- 27 • PM₁₀, 30,990 tons per year.

28 Existing maintenance activities by USIBWC personnel consists of routine inspections of
29 levees and access roads. Periodic maintenance activities at the levees, channels and floodway
30 results in the use of heavy equipment including scrapers, mowers, bulldozers and dump trucks.
31 Use of these heavy equipment and associated vehicles is typically limited to once every three
32 months or less and does not represent a significant source of air pollutants.

33 **3.6.2 Noise**

34 The characteristics of sound include parameters such as amplitude (loudness), frequency
35 (pitch), and duration. Sound varies over an extremely large range of amplitudes. Noise is
36 defined as sound that is undesirable because it interferes with speech and hearing, is intense
37 enough to damage hearing, or is otherwise annoying.

38 The decibel, a logarithmic unit that accounts for the large variations in amplitude, is the
39 accepted standard unit for describing levels of sound. Different sounds have different

1 frequency contents. Because the human ear is not equally sensitive to sound at all frequencies,
2 a frequency-dependent adjustment (*i.e.*, A-weighted sound level in decibels, or dBA) has been
3 devised to measure sound similar to the way the human hearing system responds. The
4 adjustments in amplitude, established by the American National Standards Institute (1983), are
5 applied to the frequency content of the sound.

6 The day-night average sound level (DNL) is a measure of the total community noise
7 environment. DNL is the average dBA over a 24-hour period, with a 10 dBA adjustment added
8 to the nighttime levels (between 10:00 p.m. and 7:00 a.m.). This adjustment is an effort to
9 account for increased human sensitivity to nighttime noise events. DNL was endorsed by the
10 USEPA for use by federal agencies.

11 Potential adverse effects of noise include annoyance, speech interference, and hearing loss.
12 Noise annoyance is defined by the USEPA as any negative subjective reaction to noise by an
13 individual or group. Typically, 15 to 25 percent of persons exposed on a long-term basis to
14 DNL of 65 to 70 dBA would be expected to be highly annoyed by noise events, and over
15 50 percent at DNL greater than 80 dBA (National Academy of Sciences 1977).

16 In a noisy environment, understanding speech is diminished when speech signals are
17 masked by intruding noises. Based on a variety of studies, DNL 75 dBA indicates there is
18 good probability for frequent speech disruption. This level produces ratings of “barely
19 acceptable” for intelligibility of spoken material. Increasing the level of noise to 80 dBA
20 reduces the intelligibility to zero, even if the people speak in loud voices.

21 Hearing loss is measured in dBs and refers to a permanent auditory threshold shift of an
22 individual’s hearing. The USEPA (USEPA 1974) recommended limiting daily equivalent
23 energy value of equivalent sound level of 70 dBA to protect against hearing impairment over a
24 period of 40 years. Hearing loss projections must be considered conservative as the
25 calculations are based on an average daily outdoor exposure of 16 hours.

26 It is recommended that no residential uses, such as homes, multi-family dwellings,
27 dormitories, hotels, and mobile home parks, be located where the noise is expected to exceed a
28 DNL of 65 dBA. Some commercial and industrial uses are considered acceptable where the
29 noise level exceeds DNL of 65 dBA. For outdoor activities, the USEPA recommends DNL of
30 55 dBA as the sound level below which there is no reason to suspect that the general population
31 will be at risk from any of the impacts of noise (USEPA 1974).

32 Land use and zoning classifications surrounding the project areas provide an indication of
33 potential noise impact. The predominant land uses in the immediate vicinity of the USIBWC
34 flood control levees are an inactive quarry, sod farms, residential, and the Tijuana River Valley
35 Regional Park. The Coral Gate housing area (a planned residential community) is located
36 directly across the Street along Camino de la Plaza (approximately 15 feet) northeast of the
37 north levee. The nearest school is Willow Elementary School, approximately 0.45 mile north
38 of the north levee. Sensitive noise receptors in the project area include residences, educational
39 facilities, libraries, and the Tijuana River Valley Regional Park which includes habitat for three
40 federally listed bird species.

1 The noise environment in the project area is periodically influenced by intermittent aircraft
2 activity originating from the Imperial Beach Naval Auxiliary Landing Field, Brown Field
3 Municipal Airport and the Tijuana International Airport. Major regional noise sources from
4 airfields in the surrounding area include helicopters, propeller and jet aircraft, and commercial
5 airlines. To a lesser extent, model aircraft operations off Dairy Mart Road adjacent to the north
6 levee also contribute to temporary increases in ambient noise.

7 Motor vehicle traffic is another source of noise near busy intersections and during morning
8 and afternoon commute times. These noise levels are typical for moderately-sized suburban
9 residential developments and industrial areas. Interstate Highway 5, located approximately
10 0.2 miles north of the project area, is a major north-south transportation route in San Diego and
11 a major access route to Mexico. Freeway noise from Interstate Highway 5 contributes to the
12 ambient noise level northeast of the project area. The U.S. Customs and personnel use off-road
13 vehicles and four-wheel all terrain vehicles for patrolling in locations where road access is not
14 possible.

15 Hourly sound levels measured in August and September 2004 along Monument Road
16 ranged from approximately 40 dBA to 61 dBA. Higher noise levels at this location and
17 throughout the project area are the result of intermittent aircraft overflight. All terrain vehicles
18 noise levels generally exceed 80 dBA at 25 feet depending on the activity and type of vehicle,
19 and represent a major noise source in the project area (County of San Diego 2005).

20 Existing maintenance activities by USIBWC personnel consists of routine inspections of
21 levees and access roads. Periodic maintenance activities at the levees, channels and floodway
22 results in the use of heavy equipment including scrapers, mowers, bulldozers and dump trucks.
23 Use of these heavy equipment and associated vehicles is typically limited to once every
24 3 months or less and does not represent a significant source of noise.

25 **3.6.3 Public Health and Environmental Hazards**

26 This subsection addresses those aspects of existing conditions in the vicinity of the Tijuana
27 FCP that could cause public health and environmental hazards. This subsection also describes
28 the regulatory setting and hazardous materials.

29 **Public Health**

30 A public health issue would be associated with public contact with contaminated water in
31 the Tijuana River related to untreated sewage discharges into the Tijuana River from Mexico.
32 This discharge would include pathogens (bacteria, viruses, and parasites), heavy metals, and
33 organic compounds. Additionally, it is likely that floodwaters containing sewage pollutants
34 have impacted soil within the floodplain of the river.

35 Previous investigations of physical conditions on or near the project site are summarized to
36 determine compliance with applicable laws and regulations for protection of public health and
37 environmental hazards (USIBWC 2005).

38 The Tijuana River is considered highly contaminated by continuing spills from the Tijuana
39 sewer system and by drainage of sewage from large populated areas within the Tijuana

1 Municipality that are not served by any sewer system. River water was characterized as black
2 in color, foul smelling, and indistinguishable from raw sewage at Dairy Mart Road in 1991.
3 Although this situation has since improved, continuing sewage flows during wet weather pose
4 environmental and health concerns, including vector-borne disease, from potential exposure to
5 hazardous wastes (RECON 1994).

6 **Environmental Hazards**

7 Hazardous materials are those substances defined by the Comprehensive Environmental
8 Response, Compensation, and Liability Act, as amended by the Superfund Amendments and
9 Reauthorization Act and the Toxic Substances and Control Act. Hazardous wastes are defined
10 under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery
11 Act. In general, both hazardous substances and wastes include substances that, because of their
12 quantity, concentration, and physical, chemical, or infectious characteristics, may present a
13 danger to public health and/or welfare and to the environment when released or improperly
14 managed.

15 Waste disposal activities at or near the Tijuana River Flood Control Project area were
16 reviewed to identify areas where industrial processes occurred, solid and hazardous wastes
17 were stored, disposed, or released; and hazardous materials or petroleum or its derivatives were
18 stored or used. A data search on waste storage and disposal sites was conducted on
19 January 9, 2007 using EnviroMapper for Envirofacts, an internet service provided by USEPA
20 (USEPA 2007a). EnviroMapper combines interactive maps and aerial photography to display
21 facility-based environmental information as filed with state agencies and reported to the
22 USEPA. The facility types that were queried for the Tijuana River Flood Control Project area
23 included a list of the following facility types.

- 24 • Superfund Sites: Indicates the specific facilities designated as Superfund sites by the
25 USEPA.
- 26 • Toxic Release Sites: Indicates the specific facilities regulated by the USEPA that
27 release toxic substances into the environment, as found in the Toxics Release Inventory
28 database.
- 29 • Water Dischargers: Indicates USEPA regulated municipal and industrial wastewater
30 treatment facilities discharging water into rivers, streams, lakes, and other waterways.
- 31 • Hazardous Waste Sites: Indicates Resource Conservation and Recovery Act sites
32 and/or facilities regulated by the USEPA that handle materials designated as hazardous
33 waste.
- 34 • Multi-Activity Sites: EnviroMapper allows you to query sites that show up on multiple
35 databases for facility information.

36 The search extended along the Tijuana River Flood Control Project area, including the
37 interior floodway system, up to 1 mile from the levee corridor centerline. No Superfund sites,
38 toxic release sites, nor water dischargers were identified for the Tijuana River Flood Control
39 Project area. Within 1 mile of the levee centerline, nine hazardous waste sites, and one multi-
40 activity sites were identified during the query.

1 The USIBWC has spill prevention, control, and countermeasures (SPCC) and stormwater
2 pollution prevention plans for its operations at the SBIWTP. These plans require routine
3 inspections (using checklists included in the plan) of a range of areas, tanks, and containers at
4 the facility (USIBWC 2006). The USIBWC does not have separate SPCC or other
5 management plans for flood control operations.

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SECTION 4 ENVIRONMENTAL CONSEQUENCES

This section provides analyses of the environmental consequences of the No Action Alternative and two action alternatives considered in this PEIS.

4.1 WATER RESOURCES

The following discussion is a summary of the water resources potentially affected by the alternative flood control practices. This discussion includes a description of the Tijuana River Watershed and a description of stream flow conditions and water quality of the receiving water.

Impacts to water resources would be considered significant if any of the following were to occur: substantial flooding or erosion; adverse effects on any significant water body (such as stream, lake, or bay); exposure of people to reasonably foreseeable hydrologic hazards such as flooding; or, adverse effects to surface or groundwater quality or quantity. Impacts on water quality would be considered significant when concentrations of indicator parameters exceeded regulatory values, including federal freshwater quality criteria for the Tijuana River.

4.1.1 No Action Alternative

Under the No Action Alternative, O&M of the Tijuana River FCP would not change from the current management practices.

Flood Control

Impacts to flood control would not be expected as this alternative would not result in any changes to flood control practices. Current maintenance practices for the Tijuana River FCP would continue to provide flood protection.

Hydrology

No changes to the existing hydrology of the river would occur. For these reasons, impacts to hydrology of the Tijuana River would not be expected.

Water Supply and Water Management

The Tijuana River FCP does not have a water supply or water management component. Water from the Tijuana River is not used for domestic purposes.

Groundwater Resources

Recharge potential of the Lower Tijuana River aquifer would not change as a result of the No Action Alternative. The aquifer has very limited utilization due, among other factors, to extensive saline intrusion. Overall, current aquifer conditions are likely to continue in the future in terms of aquifer recharge and water quality.

1 **Water Quality**

2 All dry weather flows from the Tijuana River are currently diverted at the international
3 border for subsequent treatment at the SBIWTP and/or the San Antonio de los Buenos
4 Wastewater Treatment Plant in Mexico. While Tijuana River flows during dry weather
5 conditions are currently intercepted upstream of the international boundary, stream flows
6 during storm events are allowed to continue into the Tijuana estuary. Wet-weather flows
7 include contaminated runoff from areas not currently served by Tijuana's wastewater collection
8 system, overflows from an aging sewer system, and partially-treated wastewater from the City
9 of Tecate. The No Action Alternative would not modify water quality of runoff entering the
10 Tijuana River FCP from Mexico.

11 **4.1.2 Enhanced Operation and Maintenance Alternative**

12 The EOM Alternative would result in the continuation of floodway maintenance. Small-
13 scale changes are possible in extent or timing of vegetation removal which would not have a
14 significant effect on the ability to control floodwaters. No changes to hydrology or
15 groundwater resources would be expected. Beneficial impacts to water quality would be
16 expected as a result of the EOM Alternative. For these reasons, the impacts of the EOM
17 Alternative to water resources would not be considered significant.

18 **4.1.3 Multipurpose Management Alternative**

19 The MPM Alternative would result in the continuation of current floodway maintenance.
20 This alternative would result in small-scale changes in the timing and/or extent of vegetation
21 removal, possible additional best management practices (BMPs) for trash and sediment
22 removal from the channel, and greater restriction of public use/access of the floodway
23 associated with increasing USBP operations. Changes to offsite wildlife habitat conservation
24 efforts by other agencies or entities may occur as the result of USIBWC participation in multi-
25 agency conservation initiatives. These changes to ongoing operations and maintenance at the
26 Tijuana River flood control facilities would not be expected to result in any substantial change
27 other than beneficial effects on wildlife and habitat conservation. The MPM Alternative may
28 also result in improvements to watershed management for sediment control. No changes to
29 hydrology, groundwater resources or water quality would be expected as a result of the MPM
30 Alternative. For these reasons, the impacts of the MPM Alternative to water resources would
31 not be considered significant.

32 **4.2 BIOLOGICAL RESOURCES**

33 Impacts on biological resources would be considered significant if the alternative
34 diminishes habitat for plant or animal species; reduces population sizes of regionally important
35 plant or animal species; or interfere with movement of animal species.

1 **4.2.1 No Action Alternative**

2 ***Vegetation***

3 Floodway maintenance, including mowing within 200 to 300 yards of the river on the
4 north and south sides would continue. The levee slopes would remain primarily invasive
5 grasses that rapidly re-grow after disturbances such as mowing. The sod farm to the northern
6 side of the project area is under a long-term lease. Therefore, no changes would be made to the
7 vegetation under the No Action Alternative.

8 The vegetation under the No Action Alternative would remain as primarily heavily
9 disturbed habitat containing non-native species and bare ground. The vegetation would not be
10 managed differently, and would not be expected to become non-native grassland through seral
11 succession.

12 ***Wildlife***

13 The project area is limited in size, with limited habitat suitable for raptor foraging, but no
14 changes would be made to the vegetation communities, and therefore wildlife species that
15 utilize the area would continue to do so under the No Action Alternative. The wildlife habitat
16 under the No Action Alternative is not expected to further degrade, nor would additional
17 habitat through seral succession be developed.

18 ***Threatened and Endangered Species***

19 Any habitat that is considered valuable for T&E species would not be altered under the No
20 Action Alternative. No changes would be made to change the timing of the mowing regime or
21 other habitat improvements that would provide suitable habitat for T&E species.

22 ***Aquatic Ecosystems***

23 The Tijuana River is generally dry except during very high flows. Under the No Action
24 Alternative, the flow regime would not be modified, and therefore the aquatic ecosystems
25 would not be altered under the No Action Alternative.

26 ***Unique or Sensitive Areas***

27 The degraded non-native grasslands in the southern portion of the project area may provide
28 some foraging habitat for raptors, but no changes would be made to the vegetation communities
29 in the project area. Therefore, if foraging habitat is available, it would remain in present
30 condition under the No Action Alternative.

31 ***Wetlands***

32 There are no jurisdictional wetlands in the project area, and therefore under the No Action
33 Alternative, there would be no changes. The wetlands with in the Tijuana River Valley
34 Regional Park and the wetlands at the mouth of the Tijuana River, outside the Tijuana River
35 FCP area, would not be affected under No Action Alternative. These wetlands would continue
36 to provide habitat for migratory and resident bird species, amphibian and reptile species.

4.2.2 Enhanced Operation and Maintenance Alternative

Vegetation

The current floodway maintenance activities would continue under the EOM Alternative, but in very limited reaches, small-scale changes are possible in the extent or timing of vegetation removal. Depending on the scale at which the timing of vegetation removal occurs, it is possible that the vegetation communities may be improved. Along the western edge of the Tijuana River FCP, there is some riparian vegetation that may be improved through non-native vegetation removal, which would be expected to improve habitat. If vegetation removal occurs in areas adjacent to grassland areas, due to the surrounding regional vegetation, it is likely that these areas would become non-native grassland due to seral succession.

Wildlife

The vegetation communities may be altered on a small scale, and therefore, improved habitat in limited areas may provide additional habitat for wildlife species on a small scale. If non-native vegetation removal in riparian areas occurs, it may improve habitat for sensitive species that are known to occur in the Tijuana River Valley Regional Park downstream of the Tijuana River FCP. If the vegetation removal adjacent to grassland areas occurs, and the area becomes non-native grassland with fewer shrub species, this may provide additional foraging habitat for raptors.

Threatened and Endangered Species

The present habitat is generally too disturbed to support T&E species. However, if vegetation changes occurred in riparian areas, sensitive species such as the yellow warbler and the yellow-breasted chat and T&E species such as the Bells' least vireo may utilize the improved habitat to establish nesting and breeding territories. If vegetation removal results in more open grasslands, and the areas provide additional foraging habitat for raptors, T&E species and bird protected under the Migratory Bird Treaty act (including raptors) may also benefit.

Aquatic Ecosystems

Additional BMPs proposed under the EOM Alternative would provide additional trash and sediment removal from the channel. This would indirectly benefit downstream aquatic ecosystems during high flow events.

Unique or Sensitive Areas

The southern portion of the project area is composed of degraded non-native grassland. If timing of vegetation removal results in changes to the grassland area, that would improve habitat. If the species diversity in some areas of the grasslands increases to include more grasses, and fewer Russian thistle shrubs, then the sensitive habitat would be preserved. However, the vegetation changes are likely to occur only on a small scale, and the improvement to the grassland area would be limited.

1 **Wetlands**

2 There are no jurisdictional wetlands in the Tijuana River FCP. The wetlands within the
3 Tijuana River Valley Regional Park and the wetlands present at the mouth of the Tijuana River,
4 outside the project area, would not be impacted under the EOM alternative.

5 **4.2.3 Multipurpose Management Alternative**

6 In addition to the actions described under the EOM Alternative, the MPM alternative
7 would include actions that are considered regional alternatives, outside the USIBWC scope.
8 These actions would require multi-agency cooperation to achieve.

9 **Vegetation**

10 Under the MPM Alternative, it may be possible to initiate a program to improve watershed
11 management to provide better sediment control. This initiative would likely decrease erosion,
12 which would possibly improve vegetation communities. Based on the regional vegetation, the
13 portions of the watershed affected would likely become non-native grasslands through seral
14 succession. Sediment control programs would also prevent degradation of downstream
15 communities within the Tijuana River Valley Regional Park.

16 **Wildlife**

17 If watershed initiatives to improve sediment control also improve vegetation communities,
18 these would be available as additional habitat for wildlife species. In addition, under the MPM
19 Alternative, increased USIBWC participation in regional wildlife habitat conservation initiative
20 is expected. These regional initiatives include the Trails and Enhancement Project of the
21 Tijuana River Valley Regional Park. Although the project would occur outside the Tijuana
22 River FCP, the measures would include improving habitat for sensitive riparian species on the
23 western edge of the project. This project could be supported by the USIBWC under a
24 cooperating agreement.

25 **Threatened and Endangered Species**

26 Watershed initiatives to improve sediment control and regional wildlife habitat
27 conservation initiatives may also improve habitat for T&E species, particularly the areas on the
28 western edge of the Tijuana River FCP that may support the endangered Bell's least vireo.

29 **Fisheries and Aquatic Ecosystems**

30 Watershed initiatives to improve sediment control would improve aquatic ecosystems and
31 may provide additional habitat for aquatic species, particularly downstream in the Tijuana
32 River Valley Regional Park.

33 **Unique or Sensitive Areas**

34 Regional wildlife habitat conservation initiatives that improve vegetation communities
35 may also improve sensitive areas such as riparian areas or non-native grasslands. The
36 improved areas may support an increase in species diversity and species abundance,

1 particularly of small mammals in grasslands. An increase in species diversity or species
2 abundance would, in turn, provide additional foraging habitat and resources for raptor species.

3 **Wetlands**

4 There are no jurisdictional wetlands in the project area. However, watershed initiatives to
5 improve sediment control may benefit the wetlands in the Tijuana River Valley Regional Park
6 and benefit the wetlands at the mouth of the Tijuana River, both of which are outside the
7 project area. Reducing sediment loads in wetlands would slow the infilling of wetlands, and
8 may improve wetland habitats. Improving wetland habitats may benefit wildlife, T&E species,
9 and aquatic species.

10 **4.3 LAND USE**

11 Impacts to land use would be considered significant if implementation of the alternative
12 would result in substantial in agricultural land use or recreational use at a regional level.

13 **4.3.1 No Action Alternative**

14 **Land Use**

15 Under the No Action Alternative, O&M of the Tijuana River FCP would not change from
16 the current management practices. If no improvements are made to the levee system and
17 floodplain area, it does not appear likely that any significant impacts would occur to
18 surrounding land uses.

19 **4.3.2 Enhanced Operation and Maintenance Alternative**

20 The EOM Alternative includes changes in floodway management that may affect land
21 usage in the immediate project vicinity. Greater restrictions to public use/access of the
22 floodway are anticipated due to increased USBP operations and designation of restricted use
23 zones.

24 **4.3.3 Multipurpose Management Alternative**

25 The land use impacts of the MPM Alternative would include those described as part of the
26 EOM Alternative. Additional elements of the MPM Alternative have the potential for affecting
27 land use. A key emphasis of the MPM Alternative is multi-jurisdictional, regional, cooperative
28 agreements that promote watershed management and habitat conservation initiatives. If new
29 land uses are adopted in the region, they may affect adjacent land uses as well. For any
30 proposed habit or nature preserve that receives federal funding, additional regulatory clearance
31 processes will require further examination of the impact to local and regional land uses.

1 **4.4 CULTURAL RESOURCES**

2 Impacts to cultural resources would be considered during the planning of the Tijuana River
3 FCP; those impacts would be considered significant if they have a potential to affect the
4 historic integrity of valuable cultural resources, or affect archaeological sites.

5 **4.4.1 No Action Alternative**

6 Under the No Action Alternative, O&M of the Tijuana River FCP would not be modified.
7 No adverse affects are anticipated on historical or archaeological resources.

8 **4.4.2 Enhanced Operation and Maintenance Alternative**

9 Under the EOM Alternative, the need for levee height increases or structural improvements
10 is not anticipated, and changes in the floodway use would be limited to surface disturbances.
11 For this reason, impacts to historical or archaeological resources would not be considered
12 significant

13 **4.4.3 Multipurpose Management Alternative**

14 Similar to the EOM Alternative, the need for levee height increases or structural
15 improvements is not anticipated for the MPM Alternative, and changes in the floodway use
16 would be limited to surface disturbances. For this reason, impacts to historical or
17 archaeological resources would not be considered significant. Cooperative agreements outside
18 the floodway could affect cultural resources to some extent depending on the nature of
19 proposed initiatives.

20 **4.5 SOCIOECONOMIC RESOURCES**

21 A socioeconomic impact would be considered significant if the federal action resulted in
22 substantial growth or concentration of population or the need for substantial new housing or
23 public services.

24 **4.5.1 No Action Alternative**

25 ***Population, Employment/Income, and Housing***

26 Under the No Action Alternative, O&M of the Tijuana River FCP would not change from
27 the current management practices. This alternative would not generate additional business
28 sales, income or employment from construction. Current maintenance practices for the Tijuana
29 River FCP would continue to provide a steady, long-term benefit by continuing to add some
30 revenue in wages and expenditures into the regional economy every year. The Tijuana River
31 FCP currently employees a permanent staff of three persons in the USIBWC San Diego Field
32 Office. Assistance from other USIBWC field offices is provided for recurring maintenance
33 operations.

1 The low-intensity land use in the Tijuana River Valley area and the fact that the majority of
2 the existing channel, floodways, and levees have been constructed on undeveloped and public
3 lands tends to minimize socioeconomic impacts from the continued operation of the Tijuana
4 River FCP .

5 ***Environmental Justice***

6 Executive Order 12898 requires that each federal agency analyze the human health,
7 economic, and social effects of federal actions, including the effects on minority communities
8 and low income communities. An impact to environmental justice would be considered
9 significant if the federal action had disproportionately high and/or adverse human health or
10 environmental effects on minority and low income populations.

11 The affected area is the footprint of land where potential adverse impacts could result from
12 a planned activity. For this project, these are the United States census tracts that could be
13 affected by flood waters of the Tijuana River from the U.S./Mexico border to the Pacific
14 Ocean.

15 Environmental justice impacts can arise as a result of the uncontrolled flood waters that
16 may cause damage to property. The No Action Alternative would result in the continued
17 control of flood waters using current maintenance practices in accordance with applicable
18 regulatory requirements and, therefore, would not result in any increased in flood and
19 associated health hazards to the immediate community.

20 Impacts to biological resources, geologic resources (*e.g.*, soil), air quality, noise, and
21 cultural resources would not be expected as a result of the No Action Alternative. For these
22 reasons, disproportionately high and adverse human health and environmental effects on
23 minority and low-income populations would not be expected.

24 ***Transportation***

25 Under the No Action Alternative, O&M of the Tijuana River FCP would not change from
26 the current management practices. This alternative would not result in any changes to existing
27 traffic patterns or volumes on Dairy Mart Road, Camino de la Plaza, and Monument Road. No
28 changes to maintenance roads alongside the north and south levee used by USIBWC and the
29 USBP personnel would occur. The No Action Alternative would not result in any impacts to
30 transportation.

31 **4.5.2 Enhanced Operation and Maintenance Alternative**

32 ***Population, Employment/Income, and Housing***

33 Current floodway maintenance practices are expected to continue. Small-scale changes are
34 possible in extent or timing of vegetation removal which would not have an economic impact.
35 The EOM Alternative would not result in significant impacts to population,
36 employment/income, or housing.

1 **Environmental Justice**

2 Small-scale changes are possible in extent or timing of vegetation removal which would
3 not have any effects on the ability to control floodwaters. Impacts to biological resources,
4 geologic resources (*e.g.*, soil), air quality, noise, and cultural resources would not be expected
5 as a result of the EOM Alternative. For these reasons, disproportionately high and adverse
6 human health and environmental effects on minority and low-income populations would not be
7 expected.

8 **Transportation**

9 This alternative would not result in any changes to existing traffic patterns or volumes on
10 Dairy Mart Road, Camino de la Plaza, and Monument Road. No changes to maintenance roads
11 alongside the north and south levee used by USIBWC and the U.S. Customs and Border
12 Protection personnel would occur. The EOM Alternative would not result in any impacts to
13 transportation.

14 **4.5.3 Multipurpose Management Alternative**

15 **Population, Employment/Income, and Housing**

16 Current floodway maintenance practices are expected to continue. The MPM Alternative
17 would result in possible small-scale changes in the timing and/or extent of vegetation removal,
18 possible additional BMPs for trash and sediment removal from the channel, and greater
19 restriction of public use/access of the floodway associated with increasing USBP operations.
20 Changes to offsite wildlife habitat conservation efforts by other agencies or entities may occur
21 as the result of USIBWC participation in multi-agency conservation initiatives. These changes
22 to ongoing operations and maintenance at the Tijuana River flood control facilities would not
23 be expected to result in any direct or indirect impacts to population, employment, income or
24 housing.

25 **Environmental Justice**

26 The MPM Alternative would result in possible small-scale changes in the timing and/or
27 extent of vegetation removal, possible additional BMPs for trash and sediment removal from
28 the channel, and greater restriction of public use/access of the floodway. The MPM Alternative
29 may also result in improvements to watershed management for sediment control. Impacts to
30 geologic resources (*e.g.*, soil), air quality, noise, and cultural resources would not be expected
31 as a result of the MPM Alternative. For these reasons, disproportionately high and adverse
32 human health and environmental effects on minority and low-income populations would not be
33 expected.

34 **Transportation**

35 Besides small-scale changes in the timing and/or extent of vegetation removal, possible
36 additional BMPs for trash and sediment removal from the channel, and greater restriction of
37 public use/access of the floodway associated with increasing USBP operations. The MPM
38 Alternative may also result in improvements to watershed management for sediment control.
39 This alternative would not result in any changes to existing traffic patterns or volumes on Dairy

1 Mart Road, Camino de la Plaza, and Monument Road. No changes to maintenance roads
2 alongside the north and south levee used by USIBWC and the USBP personnel would occur.
3 The MPM Alternative would not result in significant impacts to transportation.

4 **4.6 ENVIRONMENTAL HEALTH**

5 Potential impacts on environmental health issues would be considered significant if
6 implementation of an alternative would result in the following:

- 7 • Generate *air emissions* that cause or contribute to a violation of any national, state, or
8 local ambient air quality standard; represent 10 percent or more of the emissions
9 inventory for the affected AQCR counties to be considered regionally significant; or
10 cause non-conformance with the USEPA General Conformity requirements.
- 11 • *Noise generation* by construction activities above ambient noise levels; cause
12 annoyance, speech interference, or hearing loss; or noise-sensitive receptors are located
13 in the proximity of the noise source.
- 14 • Regarding *public health and environmental hazards*, violation of federal or state
15 regulations for hazardous waste usage, storage, or disposal; use of materials that could
16 not be accommodated by existing guidance; human exposure to hazardous wastes or
17 materials; or hazardous waste generation that could not be accommodated by current
18 waste management practices.

19 **4.6.1 No Action Alternative**

20 ***Air Quality***

21 Under the No Action Alternative, O&M of the Tijuana River FCP would not change from
22 the current management practices. No construction activities would be performed on the levee
23 system. This alternative would not result in any changes in the generation of air pollutant
24 emissions during operations and maintenance activities. For this reason, impacts to air quality
25 would not be considered significant. A USEPA General Conformity Determination would not
26 be required.

27 ***Noise***

28 This alternative would not result in any changes in the noise environment during
29 operations and maintenance activities. The resultant noise level of equipment in operation for
30 flood control maintenance activities would not be expected to exceed the City of San Diego
31 noise standard at any sensitive receptors in the project area. For this reason, impacts to noise
32 would not be considered significant.

33 ***Public Health and Environmental Hazards***

34 Hazardous material practices of the USIBWC are in compliance with applicable standards
35 under the current operations and maintenance practices. Storage of diesel fuel and refueling of
36 vehicles and equipment is performed in compliance with applicable state and federal standards.
37 No hazardous materials sites are currently affected by operations and maintenance activities.

1 Therefore, current USIBWC practices would not affect hazardous materials handling, nor any
2 facilities or sites in the project area.

3 The Tijuana River FCP would continue to implement current maintenance practices such
4 as resurfacing roadways of the levee system and floodway maintenance activities. This
5 alternative would not result in exposure to any contamination on the site, and there are no
6 remediation activities ongoing at the Tijuana River FCP . For these reasons, impacts to public
7 health and environmental hazards would not occur.

8 **4.6.2 Enhanced Operation and Maintenance Alternative**

9 ***Air Quality***

10 Under the EOM Alternative, the need for levee height increases or structural improvements
11 has not been identified and is not anticipated. The EOM Alternative would result in the
12 continuation of floodway maintenance. Small-scale changes are possible in the extent or
13 timing of vegetation removal which would not have any effect on the ability to control
14 floodwaters. This alternative would not result in any increase of air pollutants above the No
15 Action Alternative. For these reasons, impacts to air quality would not be considered
16 significant.

17 ***Noise***

18 This alternative would not be expected to result in any change in the existing noise
19 environment of the floodway and surrounding area. For these reasons, impacts to noise would
20 not be considered significant.

21 ***Public Health and Environmental Hazards***

22 Hazardous and/or toxic products (*e.g.*, fuel, oil, grease, and hydraulic fluid) would be used
23 from operating equipment for vegetation and sediment removal. Implementing established
24 industry practices for controlling releases of these substances would reduce the possibility of
25 accidental releases of these products. Preventive maintenance and daily inspections of the
26 equipment would ensure that any releases of these hazardous materials are minimized. All
27 visible dirt, grime, grease, oil, loose paint, *etc.*, would be removed from the equipment prior to
28 use at the construction sites.

29 Improvements to the levee system would not be affected by waste storage and disposal
30 sites. Identified sites in the Tijuana River FCP would not affect, or be affected by the proposed
31 vegetation and sediment removal due to their distance, and in some cases, the containment
32 systems in place.

33 Since the risk of an accidental release of hazardous and/or toxic chemicals or waste is
34 minimal, and implementation of the EOM Alternative would not result in noncompliance with
35 applicable federal or state regulations, it is anticipated that there would be no hazardous and/or
36 toxic waste impacts from the proposed operations activities.

1 Removal of sediment and trash has been identified as a concern for downstream water
2 impacts. These BMPs would improve public health and environmental hazards by minimizing
3 downstream water impacts.

4 **4.6.3 Multipurpose Management Alternative**

5 ***Air Quality***

6 In addition to small-scale changes in the timing and/or extent of vegetation removal,
7 possible additional BMPs for trash and sediment removal from the channel, and greater
8 restriction of public use/access of the floodway associated with increasing USBP operations.
9 Changes to ongoing operations and maintenance at the Tijuana River flood control facilities
10 would not be expected to result in any substantial change other than beneficial effects on
11 wildlife and habitat conservation. The MPM Alternative may also result in improvements to
12 watershed management for sediment control. None of these aspects would be expected to
13 result in any substantial change in the amount of air pollutants generated by USIBWC
14 operations. For these reasons, impacts to air quality would not be considered significant.

15 ***Noise***

16 Changes to offsite wildlife habitat conservation efforts by other agencies or entities may
17 occur as the result of USIBWC participation in multi-agency conservation initiatives. These
18 changes to ongoing operations and maintenance at the Tijuana River flood control facilities
19 would not be expected to result in any substantial change other than beneficial effects on
20 wildlife and habitat conservation. The MPM Alternative would not result in any changes to the
21 existing noise environment. For these reasons, impacts to noise would not be considered
22 significant.

23 ***Public Health and Environmental Hazards***

24 The MPM Alternative would result in continuation of the existing operation of the Tijuana
25 River FCP with the possibility of small-scale changes in the timing and/or extent of vegetation
26 removal, possible additional best management practices for trash and sediment removal from
27 the channel, and greater restriction of public use/access of the floodway associated with
28 increasing USBP operations. Changes to offsite wildlife habitat conservation efforts by other
29 agencies or entities may occur as the result of USIBWC participation in multi-agency
30 conservation initiatives. The MPM Alternative may also result in improvements to watershed
31 management for sediment control. The Tijuana River FCP would continue to be managed in
32 accordance with applicable health and environmental compliance requirements. Identified sites
33 identified would not affect, or be affected by the proposed MPM Alternative due to their
34 distance, and in some cases, the containment systems in place. None of the aspects of the
35 MPM Alternative would be expected to result in any increases in exposure to contamination on
36 the site, and there are no remediation activities ongoing at the Tijuana River FCP. For these
37 reasons, impacts to public health and environmental hazards would not be expected to occur.

4.7 INDIRECT AND CUMULATIVE IMPACTS

Indirect and cumulative impacts would be considered significant if the alternative would cause considerable incremental effects when evaluated in combination with relevant current and probable activities in the project area.

4.7.1 Natural Resources Management Areas

No significant cumulative impacts were identified. Anticipated or probable flood control improvements to the Tijuana River FCP would have a small potential for significant removal or development of valuable wildlife habitat within the floodway; increased vegetation development within the floodway is severely limited by the incompatibility of extensive vegetation growth with the flood control mission of the Tijuana River FCP, minimum availability of non-managed areas, and conflict with USBP operations. Future flood control improvement projects will be implemented by the USBWC taking into account goals and requirements of the Multi-Habitat Planning Area developed the City of San Diego.

4.7.2 Water Quality and Sediment Control

Water Quality Improvement

Binational initiatives currently underway to improve water quality of the Tijuana River upstream of the international border are expected to reduce sewer overflows, considered a major component of contaminant load reaching the Tijuana River estuary, and improve storm water quality by upstream watershed control of non-point pollution sources (USBWC 2005). Operation of the Tijuana River FCP would not improve, nor deteriorate, stormwater quality as the projects was designed to route stormwater flows for protection of the City of San Diego and adjacent lands. The Tijuana River FCP has no capability to modify or control stormwater quality.

Sediment and Erosion Control

Tijuana River FCP would continue to contribute to sediment retention and removal as part of floodway maintenance. Disposal outside floodway will reduce sediment load and retain flood containment capability. Changes in routine cleanup of channel, however, would not be a significant benefit relative to regional initiatives for erosion control along the tributary canyons located downstream of the Tijuana River FCP.

4.7.3 U.S. Border Patrol Activities

Support of JTF-6 to the INS strategy for enforcement activities would include two major categories with a potential cumulative effects on the Tijuana River FCP: operational measures such as increased ground patrols and access restrictions, and engineering measures such as placement fences, lighting, and installation of a remote sensing system such as ground sensors. The extent of those measures within the limited Tijuana River FCP are not likely to significantly modify the extent of current USBP operations within the floodway.

1 were noted. Comment forms were distributed during the meetings, and turned in during the
2 meeting or mailed to the USIBWC after the meeting (USIBWC 2005a).

3 The Notice of Intent to prepare a PEIS was published in the Federal Register by the
4 USIBWC on December 10, 2004. A copy of the Notice of Intent is included in the Scoping
5 Meeting Summary report (Appendix A – Item 1 of the USIBWC 2005a).

6 **5.1.2 Notifications to Agencies, Elected Officials, Organizations, and Individuals**

7 The USIBWC mailed a notification letter for the public scoping meetings to 1,647 elected
8 officials, federal/state/local agencies, organizations, and individuals. The letter, mailed
9 December 10, 2004, contained a description of the USIBWC flood control projects, example
10 lists of potential alternatives, and example lists of potential criteria to be used for evaluating
11 alternatives. Dates and times of scoping meetings, and instructions for submitting written
12 comments were included. A response form was included for recipients to return stating their
13 desire to continue or not continue receiving information on the project. A copy of the letter, a
14 blank response form, and the mailing list for notification are included in Appendix A – Item 5
15 of the Scoping Meeting Summary report (USIBWC 2005a).

16 A Public Notice announcing the purpose, dates and locations of the scoping meetings was
17 published in the legal section of the *San Diego Union-Tribune* on December 14, 15, and
18 16, 2004). Additional notices were posted for Rio Grande flood control projects in the *El Paso*
19 *Times* (December 14, 15, and 16, 2004); *Las Cruces Sun News* (December 14, 15, and
20 16, 2004); *The International*, Presidio, Texas (December 16, 23, and 30, 2004); and *The*
21 *Monitor*, McAllen, Texas (December 21, 22, and 23, 2004). Copies of the publisher's
22 affidavits are provided in Appendix A - Item 4 of the Scoping Meeting Summary report
23 (USIBWC 2005a).

24 **5.2 PEIS PREPARATION AND REVIEW**

25 **5.2.1 Cooperating Agencies**

26 The USIBWC sent letters to federal agencies, state agencies, and tribal governments
27 soliciting their participation as Cooperating Agencies during the NEPA process of the flood
28 control projects. A total of 87 letters were sent on November 16, 2004, and seven responses
29 were received. A sample copy of the request letter is provided in Appendix A - Item 2 of the
30 Scoping Meeting Summary Report (USIBWC 2005a). Agencies receiving the request letter and
31 copies of the responses received are shown in Appendix A - Item 3 of the Scoping Meeting
32 Summary report (USIBWC 2005a). Five agencies agreed to serve as cooperating agencies in
33 PEIS preparation, as follows:

- 34 • The United States Army Corps of Engineers, Los Angeles District, whose jurisdiction
35 includes the Tijuana River FCP.
- 36 • Three agencies agreed to be cooperating agencies in the PEIS prepared concurrently for
37 three Rio Grande flood control projects along the Texas border (Rectification FCP,
38 Presidio FCP, and Lower Rio Grande FCP), USACE Galveston District; United States

- 1 Bureau of Reclamation, El Paso Area Office; and United States Fish and Wildlife
 2 Service, New Mexico Ecological Services Field Office,
 3 • A fifth agency, the New Mexico Office of Cultural Affairs, Historic Preservation
 4 Division, agreed to be cooperating agency for evaluation of the Rio Grande
 5 Canalization Project, no longer included in the scope for Rio Grande FCPs.

6 **5.2.2 PEIS Preparation**

7 Technical personnel responsible for preparation and review of the PEIS for the Rio Grande
 8 flood control projects along the Texas border are listed in Table 5.1.

9 **Table 5.1 PEIS Preparation Technical Personnel**

Name	Organization	Role / or Resource Area	Discipline / Expertise	Experience
Daniel Borunda	USIBWC	PEIS oversight and coordination, impacts evaluation	M.S. Fisheries and Wildlife Science	12 years Project Manager NEPA Compliance
Raymundo Aguirre	USIBWC	Document review	Ph.D. Civil Engineering	49 years, project engineering
Carlos Victoria-Rueda.	Parsons	Project management, scoping, impacts evaluation	Ph.D., Environmental Engineering	22 years NEPA and related environmental studies
R. C. Wooten	Parsons	Technical direction, quality assurance	Ph.D. Biology/Ecology	34 years NEPA and related environmental studies
Rosemarie Crisologo	Parsons	Socioeconomic resources	B.S. Biological Science M.S. Environmental Engineering	25 years NEPA and related environmental studies
Anthony Davis	Parsons	Water resources and environmental health	B.S. Civil Engineering	30 years NEPA and related environmental studies
James Hinson	Parsons	Biological resources, impacts evaluation	M.S. Wildlife Science	16 years vegetation and wildlife analyses; field studies supervision
Taylor Houston	Parsons	Wetlands, aquatic ecosystems	M.S. Geography-Environmental Resources	6 years wetlands and land use
Sherrie Keenan	Parsons	Technical editor	B.A., Journalism	30 years technical editor
Justin Kirk	Parsons	Environmental health issues	B.S., Environmental science	6 years environmental health
Namir Najjar	Parsons	Hydrology	Ph.D., Water Resources Engineering	9 years hydraulic modeling
Jill Noel	Parsons	Biological resources, impacts evaluation	M.S. Botany	8 years vegetation and community resources
Angela Schnapp	Parsons	Air quality	B.S. Nuclear Engineering M.S. Environmental Engineering	10 years NEPA and related environmental studies
Nicky de Freece	LGGROUP	Cultural resources	B.A., Archaeology	16 years Cultural resources evaluation

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