International Boundary & Water Commission

San Diego Field Office Update

Citizens' Forum
July 12, 2023

Morgan Rogers
Area Operations Manager
U.S. Section- IBWC

International Boundary and Water Commission (IBWC)

- Independent federal agency established 1889
- Mission – Administer the boundary and water Treaties between the US and Mexico
- Organization -
  - US & Mexican Sections IBWC
  - US Section IBWC (USIBWC) HQ in El Paso, TX
  - Field Offices along the border
    - Assets, operations & management…

International Boundary and Water Commission (IBWC)

Assets, Operations & Management Responsibilities

- Water deliveries – Rio Grande and Colorado Rivers
- Levees – over 500 miles
- Flood plains –34,900 acres
- Dams & hydroelectric power plants
  - 2 international dams & hydroelectric plants
  - 5 diversion dams
- International bridges and boundary demarcations
  - 2 international bridges
  - 800 monuments, markers, and bouys
- International wastewater treatment plants
  - San Diego
  - Nogales, AZ

San Diego Field Office USIBWC

- 2995 Clearwater Way, San Diego, CA 92154 (San Ysidro) 5 CA 92154
- Area of Operations - San Diego towards Yuma
- Primary Focus of Operations
  - South Bay International Wastewater Treatment Plant (SBIWTP)
  - Prevention and response to transboundary wastewater flows

San Diego - Tijuana Region

Coronado

Imperial Beach

Tijuana River Int'l Border

SAB WWTP

Ocean Outfall

SBIWTP

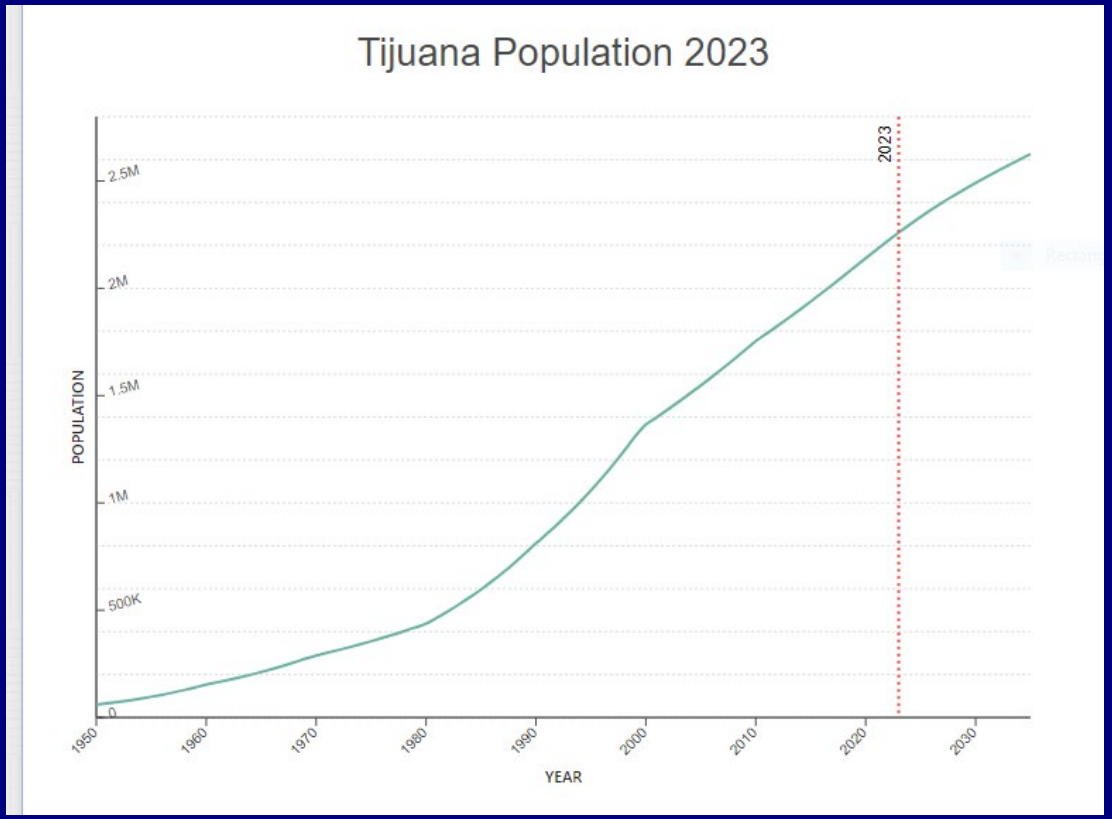
MISSION BEACH
MISSION VALLEY
OCEAN BEACH
San Diego Zoo
Five Points
San Diego
POINT LOMA
Coronado
San Diego Bay
Grossmont
La Mesa
Casa De Oro-Mount Helix
Spring Valley
Rancho San Diego
Jamul
National City
Lincoln Acres
Bonita
Chula Vista
EASTLAKE GREENS
OTAY RANCH
Otay Open Space Preserve
Fruitdale
Imperial Beach
SAN YSIDRO
OTAY MESA
GARITA DE OTAY
UNITED STATES
MÉXICO
ZONA RÍO
Tijuana
RIO TIJUANA 3RA ETAPA
Rancho Hernandez
Potrero
Tecate
El Chaparal
Tecate
Juliana Granja La Luz
Fraccionamiento el Niño
Florido Viejo
Ejido Nueva Colonia Hindú
EL REFUGIO
Terrazas Del Sol
Don Berna
Portico de San Antonio
San Antonio del Mar
Isla Coronado
Los Cinco Hermanos
Valle Bonito
Ampliación Ejido Plan Libertador
Fraccionamiento Urbivillas del Prado
Palma Real
Rosarito
Ninguno
Seco
Ramos
Valle de Las Palmas
Santa Anita
Ejido Morelos
La Gloria
Coyoteca Rancho State Park
Tijuana
Pacific Ocean
Baja California
Kilometers
Tijuana River Watershed
Tijuana River Watershed and Sub-Basins
Tijuana River NERR
Lakes and Streams
San Diego
UNITED STATES
MÉXICO
Tijuana
Pacific Ocean
Baja California
Kilometers

San Diego - Tijuana Wastewater System

US - Tijuana Wastewater System Challenges

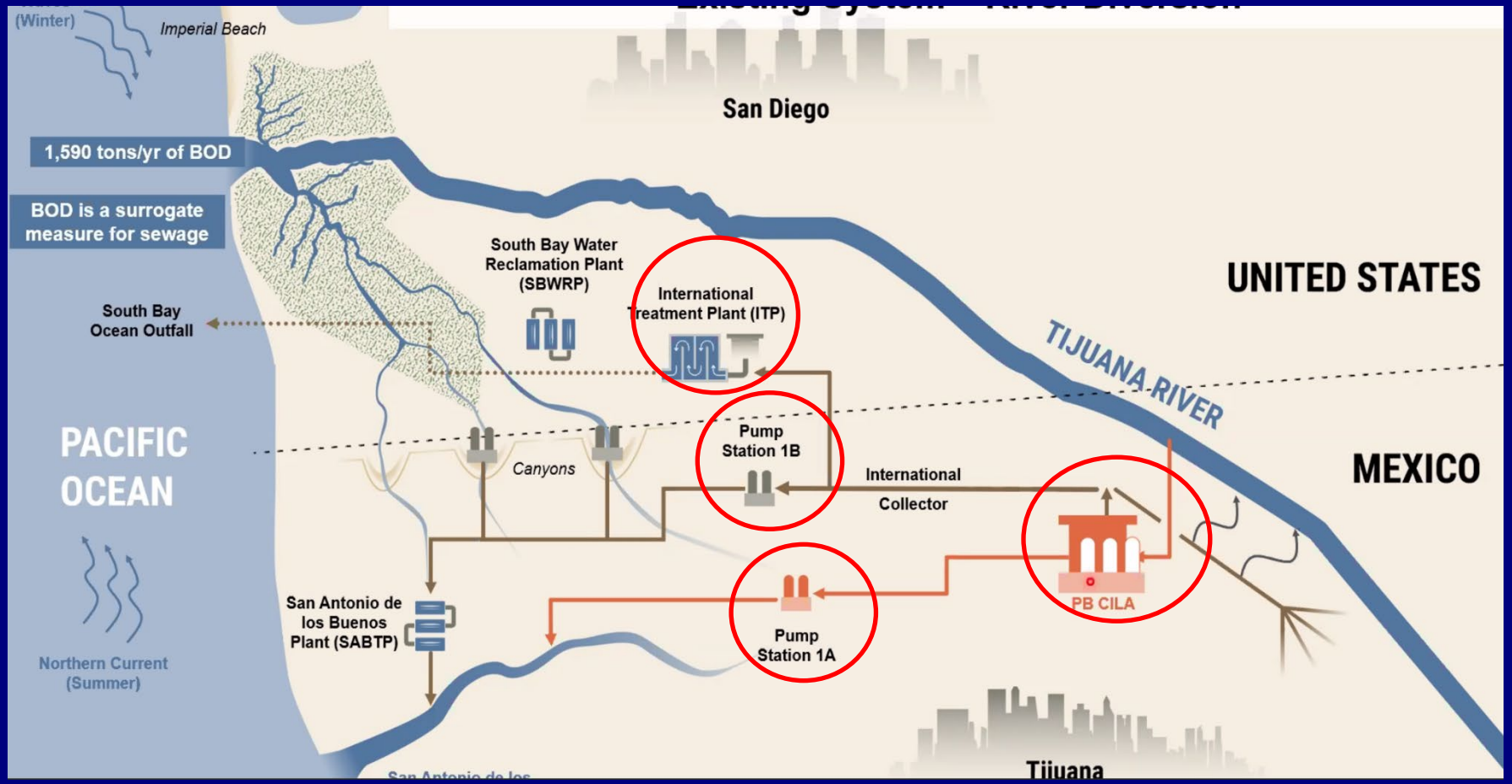
- Population growth - infrastructure not keeping up

- 1950 – 60,336
- 2000 – 1,364,918
- 2020 – 2,140,398 (57%)
- 2035 – 2,626,333 (22%)



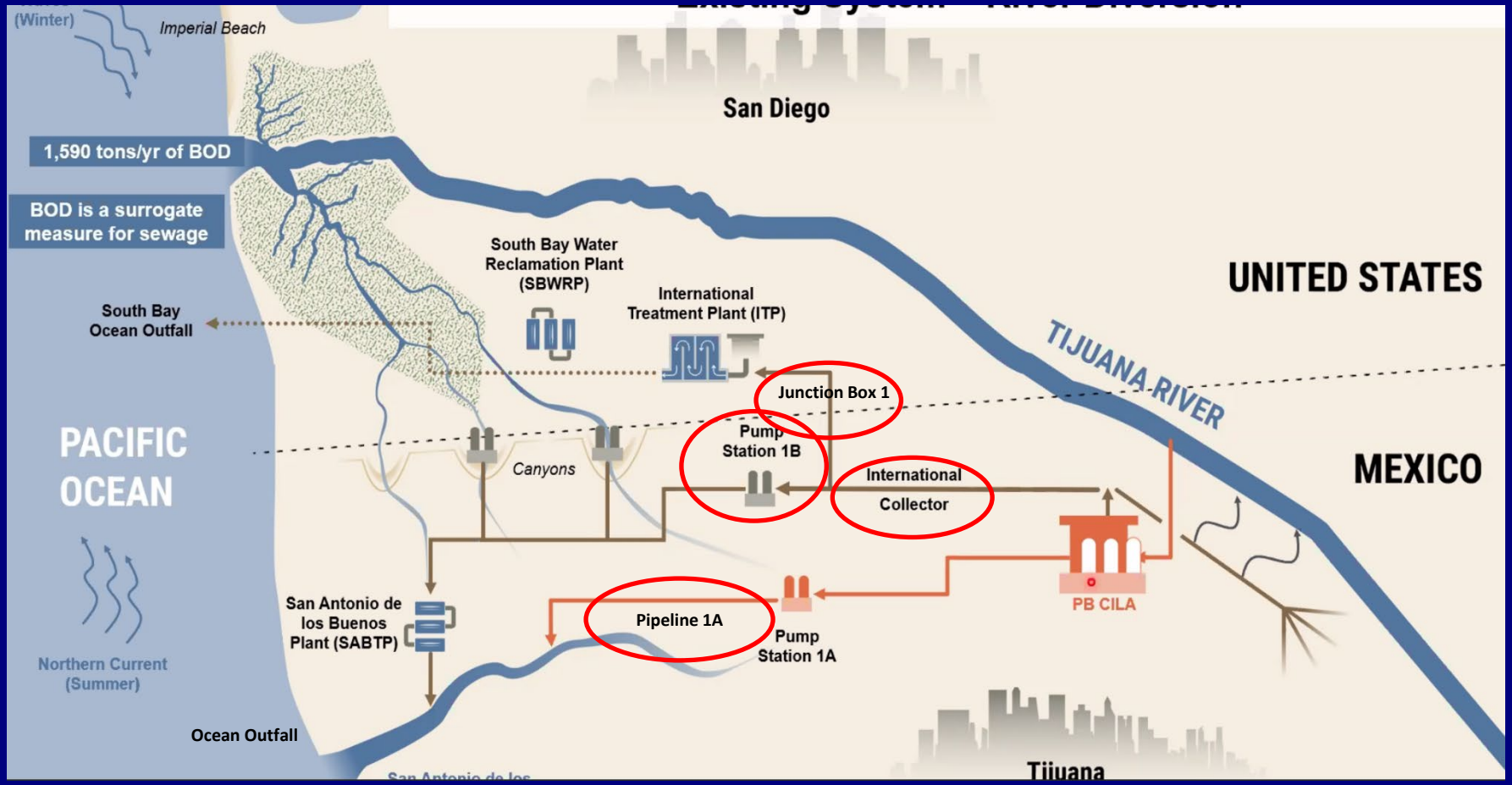
US - Tijuana Wastewater System Challenges

- Infrastructure Interdependencies



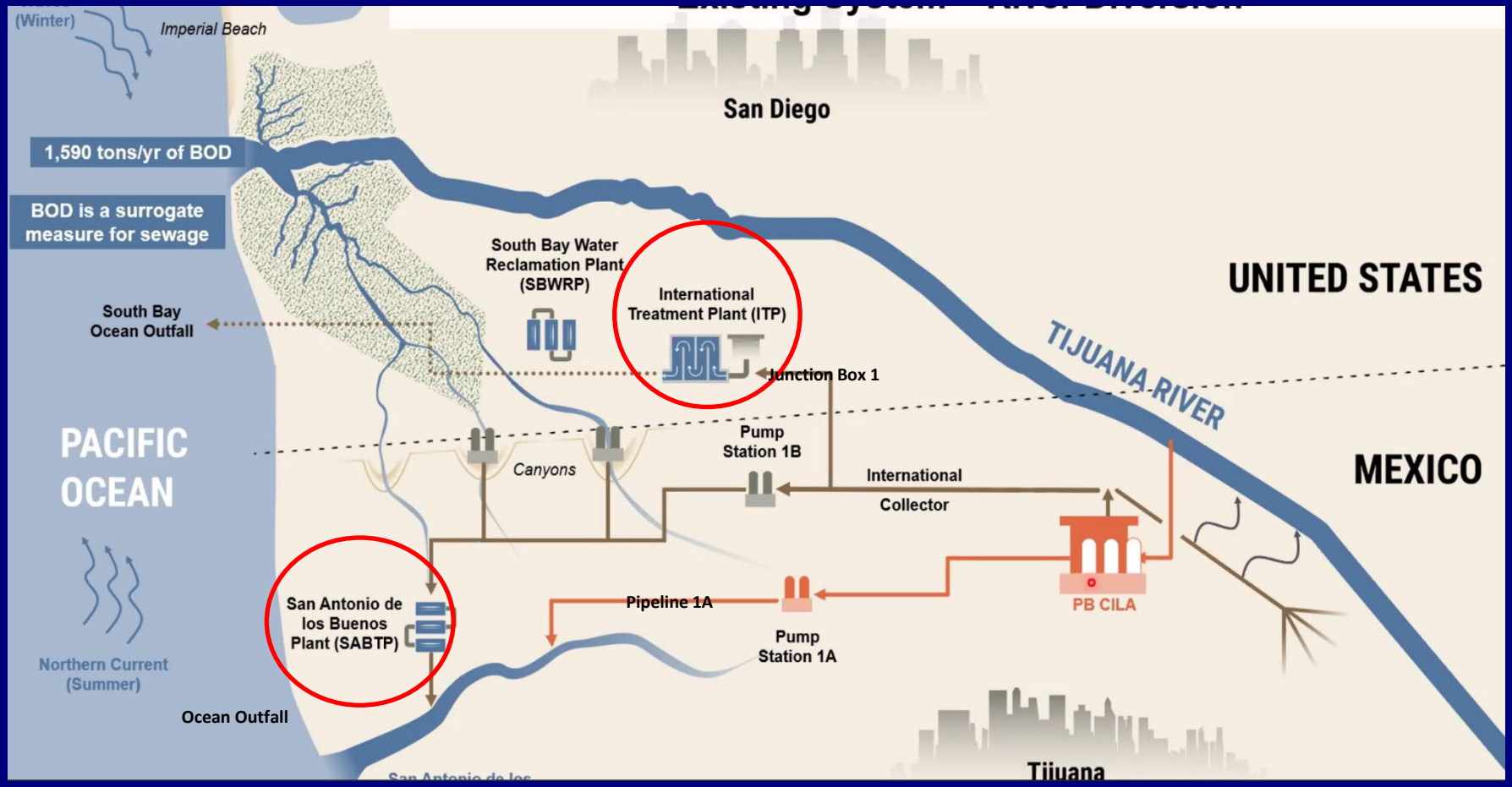
US - Tijuana Wastewater System Challenges

- Infrastructure **FLOW** weak points



US - Tijuana Wastewater System Challenges

- Infrastructure **WATER QUALITY** weak points



US - Tijuana Wastewater System Challenges

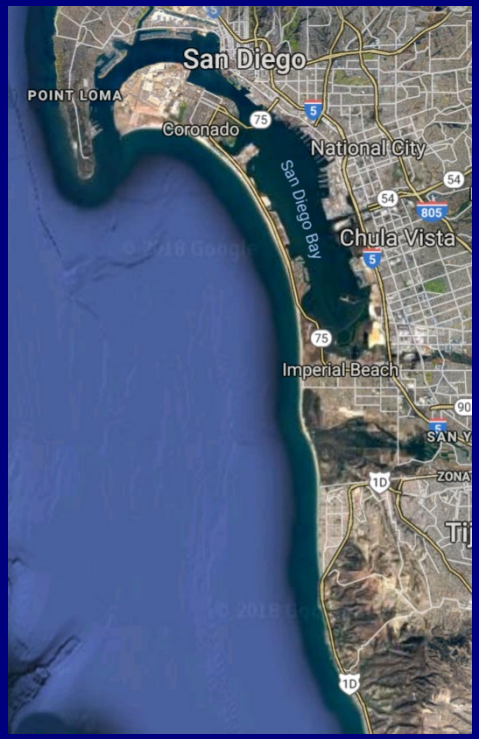
South Bay International Wastewater Treatment Plant

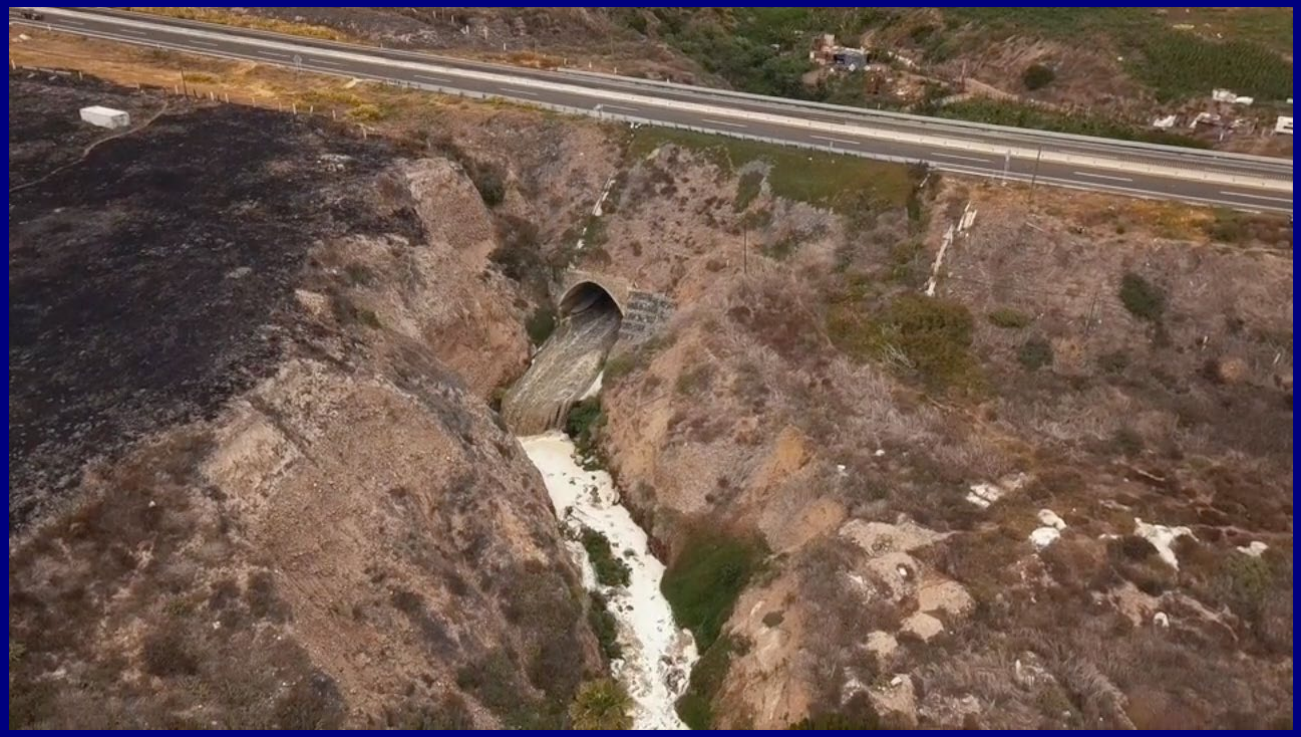
- Design/Permit 25 MGD
- Average 29 MGD Aug 22 – July 23
- Primary treatment out of service

Monthly Average Effluent Flow (MGD)	
July 2022	23.6
Aug 2022	31.4
Sept 2022	33.7
Oct 2022	32.5
Nov 2022	31.5
Dec 2022	28.6
Jan 2023	27.5
Feb 2023	29.2
Mar 2023	24.9
Apr 2023	21.2
May 2023	26.7
June 2023	29.4
July 2023	31.9

US - Tijuana Wastewater System Challenges

- Infrastructure not capable of capturing and treating Tijuana generated wastewater
- 35-40 MGD discharged directing into the ocean south of Tijuana

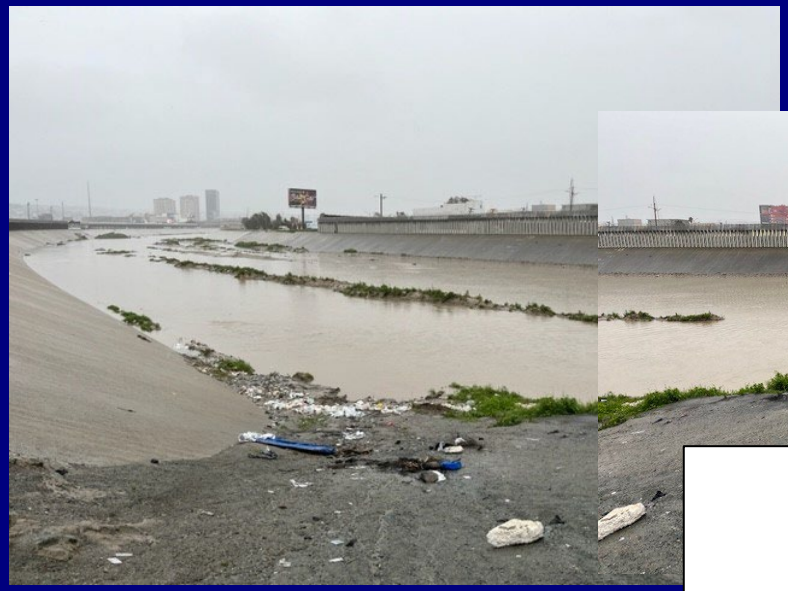


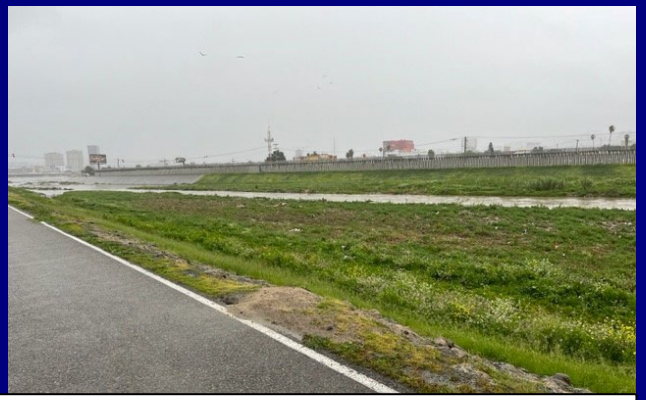


San Diego – Transboundary Flows

Transboundary Flows

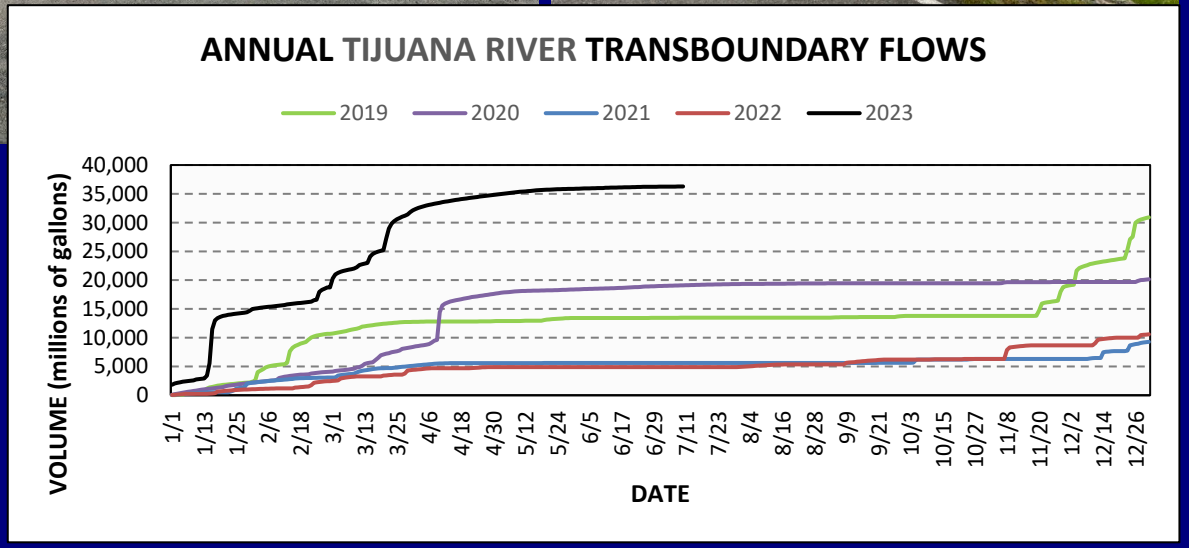
- Tijuana River





Annual Flows – Billion Gallons

- 2020 - 19.8
- 2021 - 9.2
- 2022 - 10.2
- 2023 - 32.7



Transboundary Flows

- Canyon collectors

YEAR	GALLONS	CAUSE
2023	8,178,000	SAB Pipeline Break/Rain
2022	57,012,000	JB1, PB1A/B Pipeline Break
2021	8,234,000	PB1, Various

Transboundary Flows

- **Canyon collectors** – July 11, 2023

Stewart's Drain

Silva Drain

Transboundary Flows

- **Canyon collectors** – July 11, 2023

Canyon Del Sol

Smugglers' Gulch

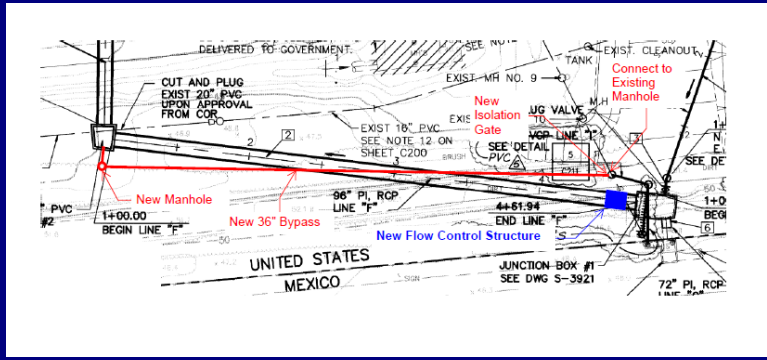
Goats Canyon

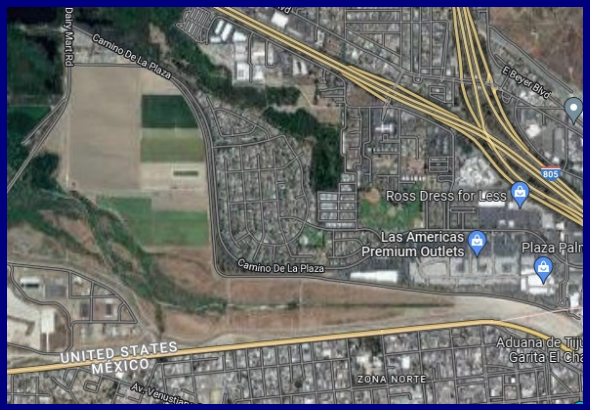
Transboundary Flows Response & Prevention

- Sediment berm to contain Tijuana River dry-weather flows
- Pumps for extra collector containment and diversion capacity

USIBWC Projects

- JB1 rehabilitation (FY23)
- Sediment removal
- Levee restoration





Minute 328 Projects

- United States
  - Expand/Rehab SBIWTP
- Mexico
  - Rehabilitate PBCILA
  - Rehabilitate PB1 (PB1A & PB1B)
  - Rehabilitate International Collector
  - Repair Pipeline PB1A
  - Reuse Arturo Herrera & La Morita treated wastewater
  - Reconstruct SAB wastewater treatment plant to 18 MGD capacity

For additional information, contact:

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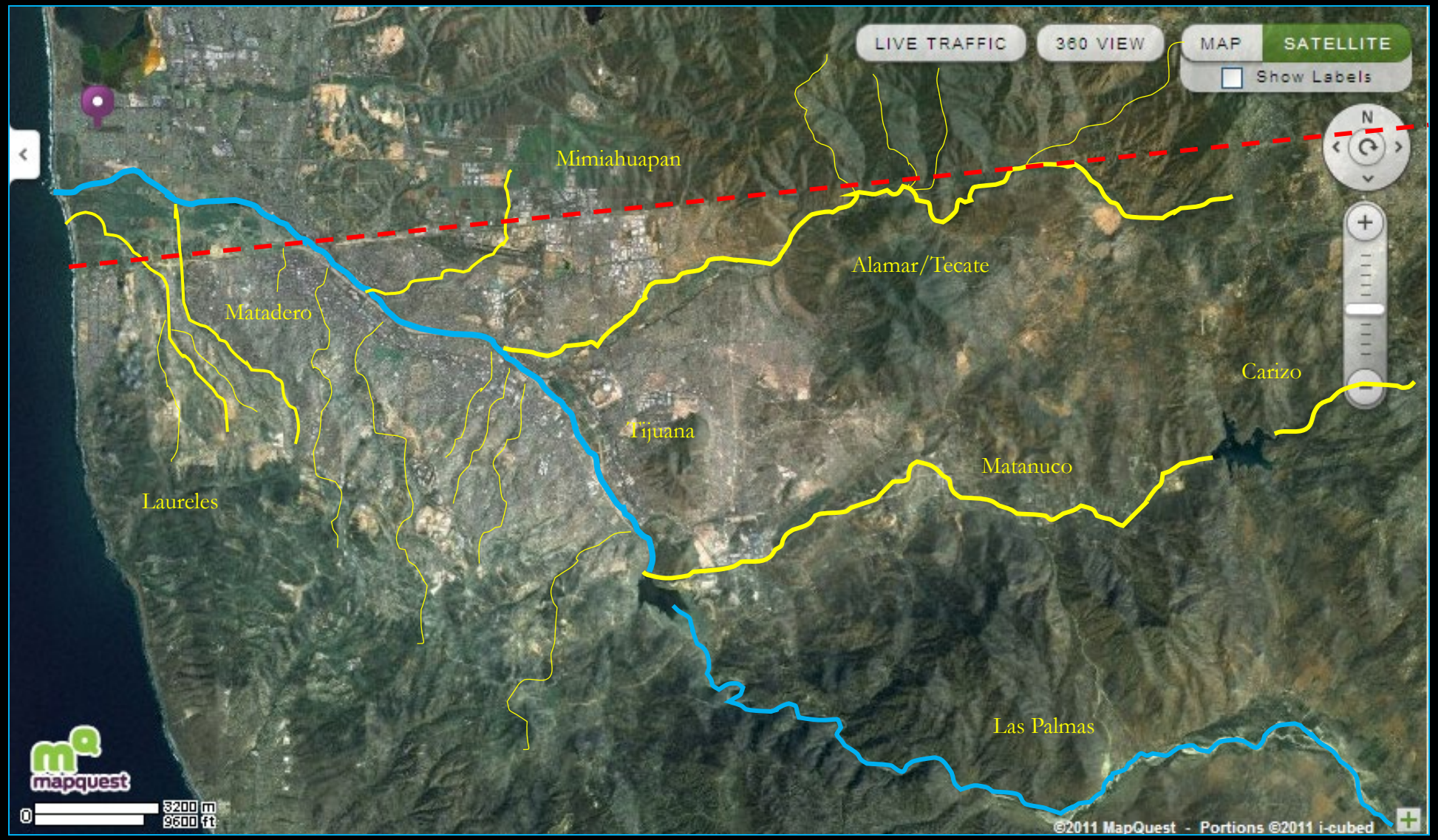
Tijuana River Trash Booms Project (SB 170)

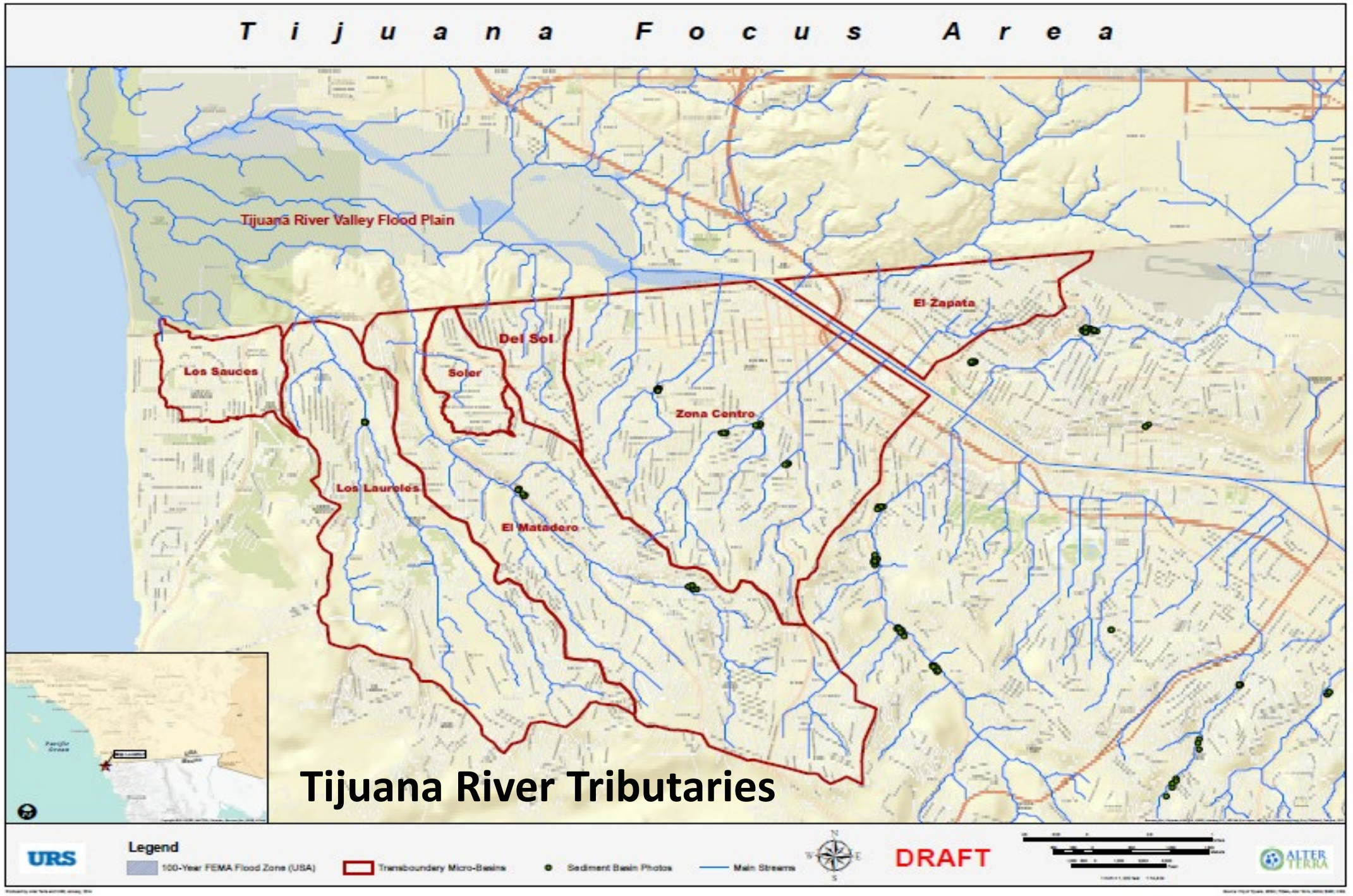
U.S. Mexico Border Rivers Program

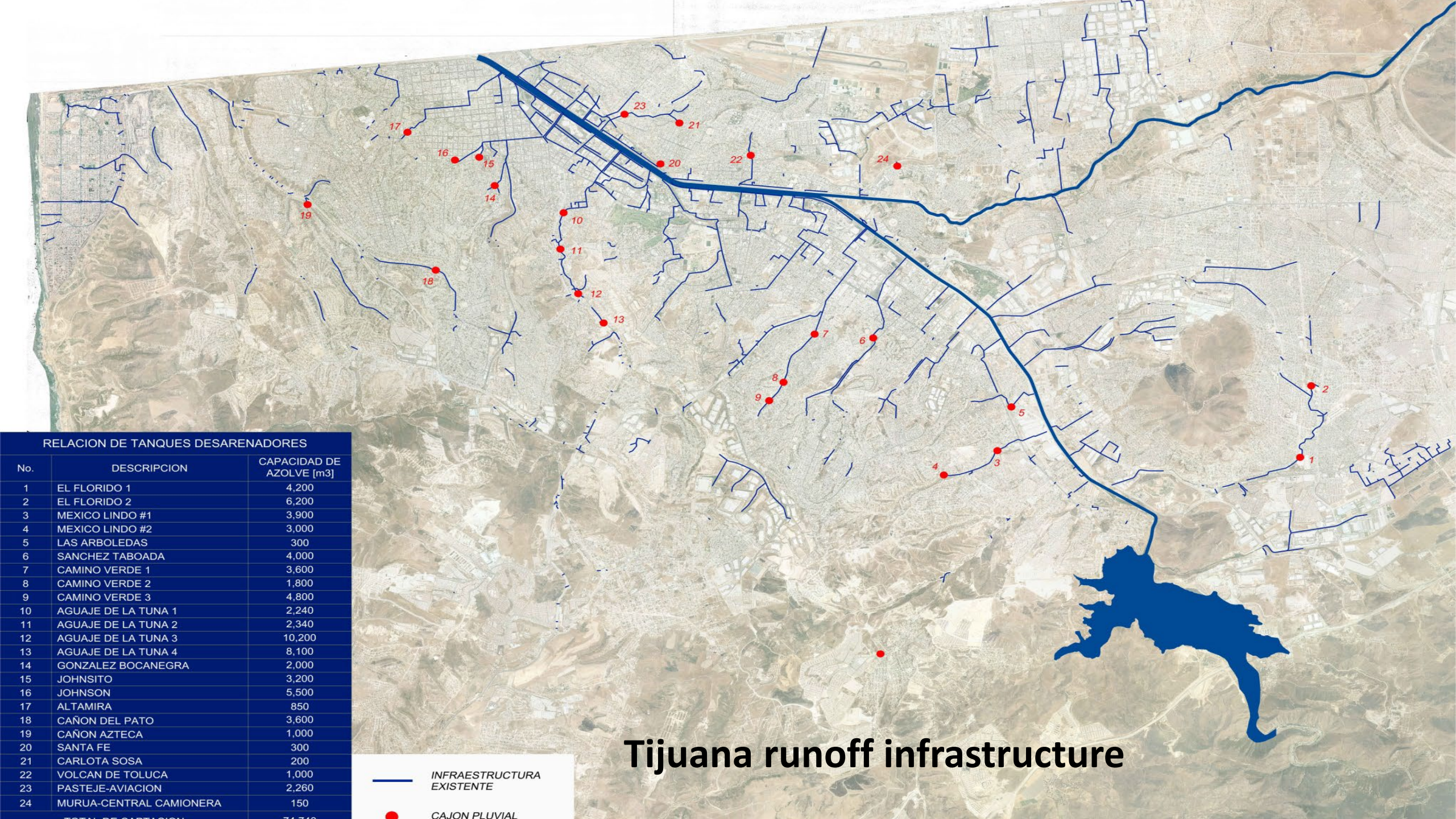
IBWC Citizens Forum
July 12, 2023

Oscar Romo



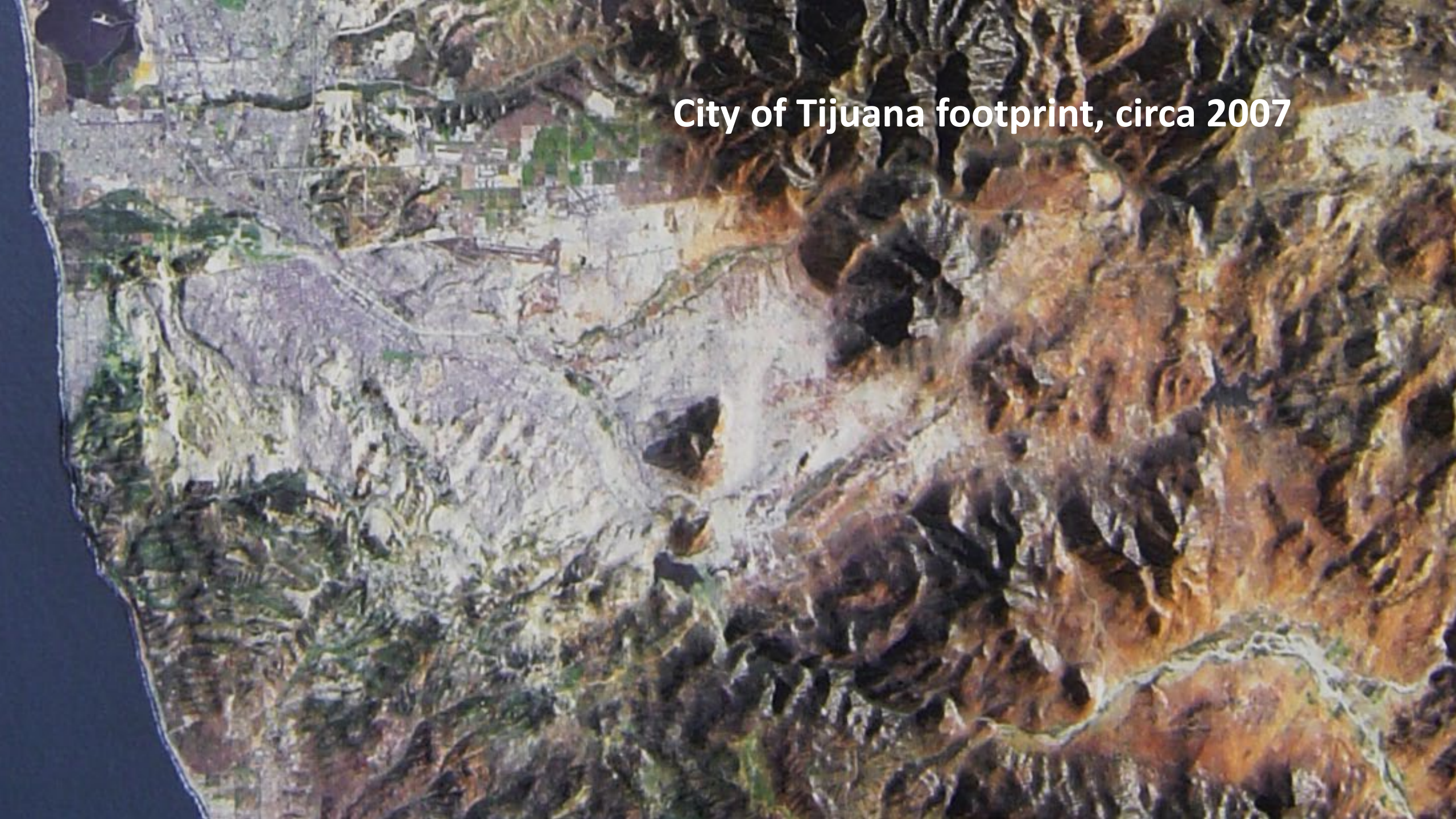
Tijuana River Main tributaries


Tijuana Focus Area
Tijuana River Valley Flood Plain
Los Sauces
Del Sol
Soler
El Zapata
Zona Centro
Los Laureles
El Matadero
Tijuana River Tributaries
URS
Legend
100-Year FEMA Flood Zone (USA)
Transboundary Micro-Basins
Sediment Basin Photos
Main Streams
DRAFT
ALTER TERRA



Tijuana runoff infrastructure

RELACION DE TANQUES DESARENADORES		
No.	DESCRIPCION	CAPACIDAD DE AZOLVE [m3]
1	EL FLORIDO 1	4,200
2	EL FLORIDO 2	6,200
3	MEXICO LINDO #1	3,900
4	MEXICO LINDO #2	3,000
5	LAS ARBOLEDAS	300
6	SANCHEZ TABOADA	4,000
7	CAMINO VERDE 1	3,600
8	CAMINO VERDE 2	1,800
9	CAMINO VERDE 3	4,800
10	AGUAJE DE LA TUNA 1	2,240
11	AGUAJE DE LA TUNA 2	2,340
12	AGUAJE DE LA TUNA 3	10,200
13	AGUAJE DE LA TUNA 4	8,100
14	GONZALEZ BOCANEGRA	2,000
15	JOHNSITO	3,200
16	JOHNSON	5,500
17	ALTAMIRA	850
18	CAÑON DEL PATO	3,600
19	CAÑON AZTECA	1,000
20	SANTA FE	300
21	CARLOTA SOSA	200
22	VOLCAN DE TOLUCA	1,000
23	PASTEJE-AVIACION	2,260
24	MURUA-CENTRAL CAMIONERA	150


City of Tijuana footprint, circa 2007


PBR
MEXICO
TOUR 2013
SAB. 28
DE
SEP.


ABARROTES
AMEZCUA

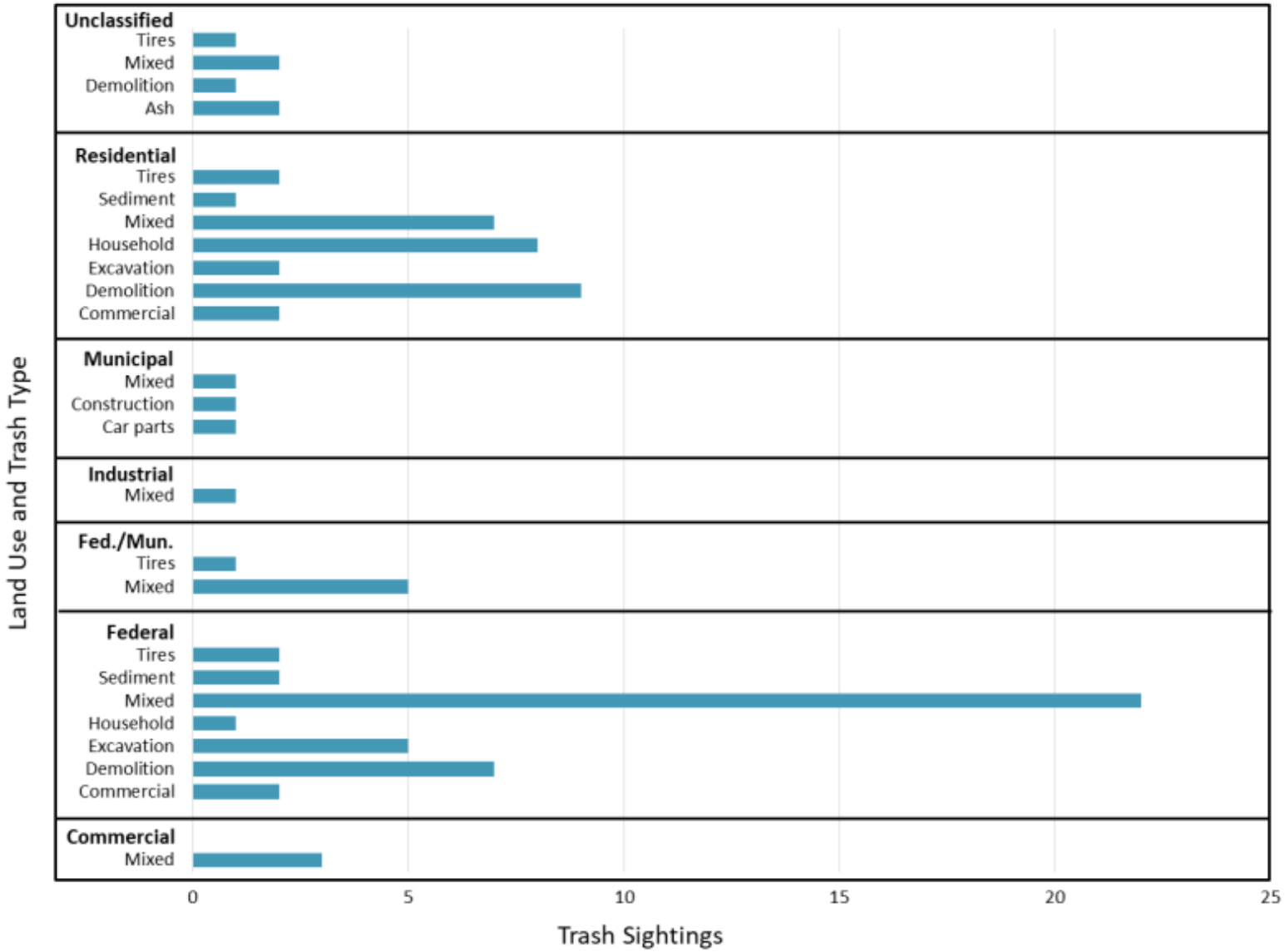

ZONAFEDERAL
NO TIRAR
BASURA

Table 1. Waste Class Definitions

Waste class	Definition
Animal	Carcasses, feces, manure
Appliances	Refrigerators, stoves, dishwashers, washers, dryers
Ashes	Burnt trash of unidentifiable source
Car parts	Bumpers, windshields, frames, mufflers, doors, etc.
Commercial	Food waste, packaging, shelving, etc. from stores, restaurants, markets, offices, hotels
Construction	Building materials typical of demolition debris: roofing materials, concrete, bricks, wood, etc.
Electronics	Used smaller appliances: televisions, printers, computers
Excavation	Broken ground, broken concrete, pieces of road, soils removed to level building lots
Foam	Packaging, furniture stuffing, etc.
Hospital	Used needles, plastics, gloves, gowns, medications, body parts, specimen samples
Industrial	Factory wastes from manufacturing
Mixed	Wastes of more than three types/sources combined
Organics	Yard waste, farming crops, trimmings, trees, bushes, nonnative plants
Palettes	Wooden shipping and storage palettes
Plastics	Bottles and anything made from plastic
Soils	Various sediment transported from other areas
Tires	Used tires

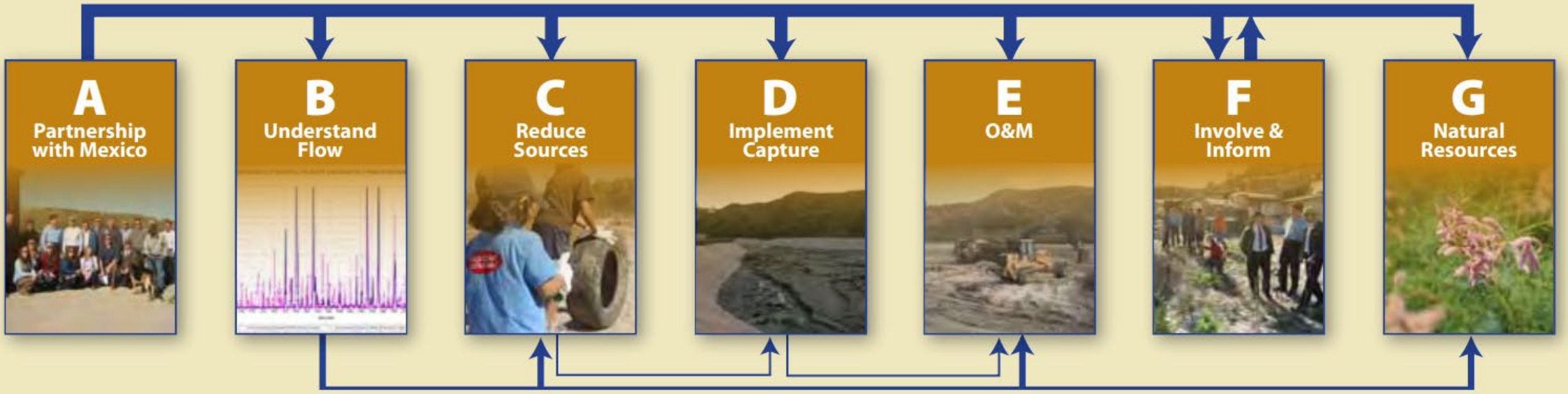
Source: Alpha Forma, LLC (2012)

Figure 7. Sightings (Visible Dumpsites) of Trash Types by Land Use

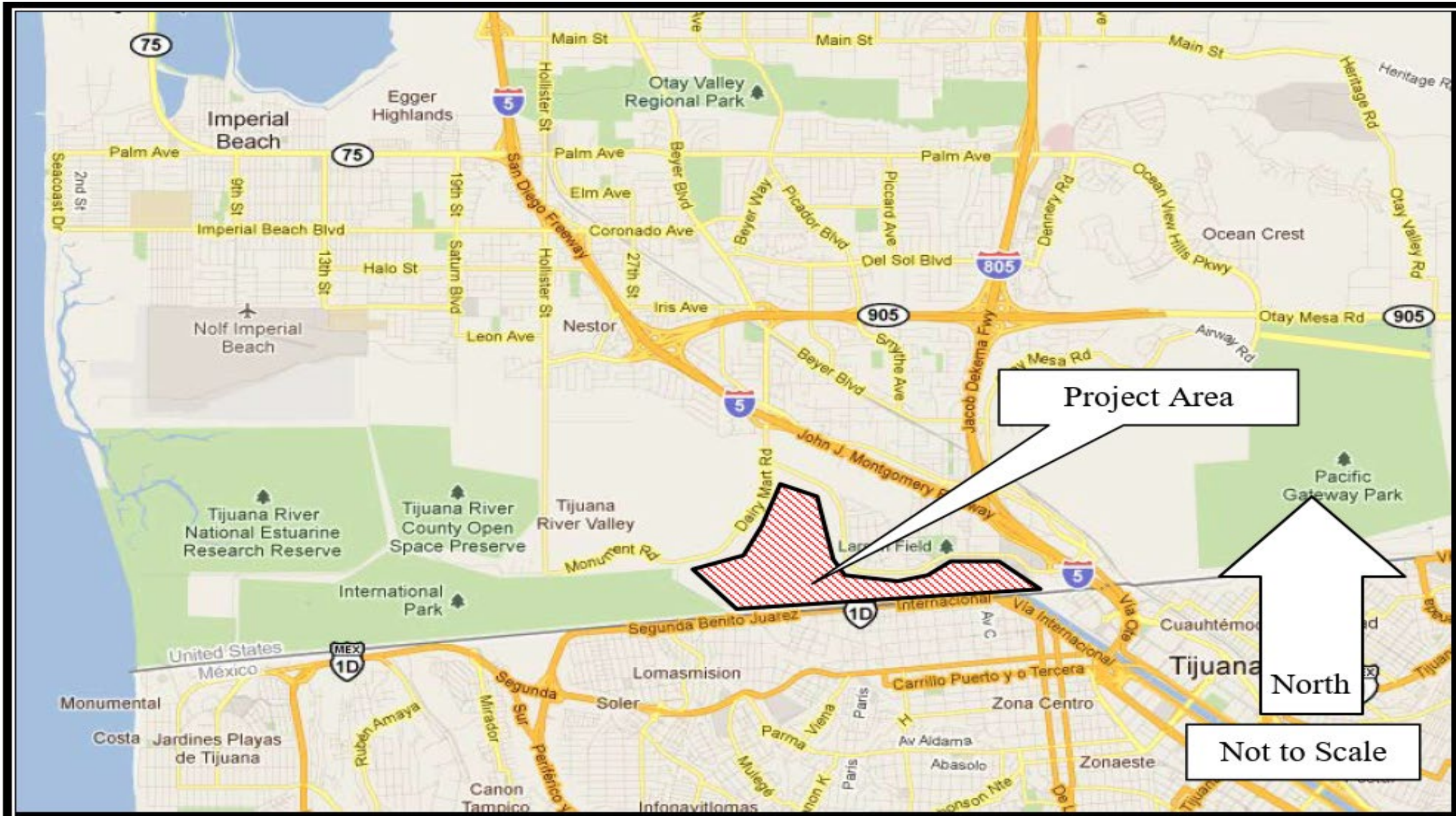


Source: Alter Terra (2014)
Note: Trash types described in Table 1.

Tijuana River Valley Recovery Strategy



Interconnection of Priority Action Areas - Project Outcomes Inform Future Work


Project Area
North
Not to Scale
Imperial Beach
Egger Highlands
Otay Valley Regional Park
Ocean Crest
Nolf Imperial Beach
Nestor
Tijuana River National Estuarine Research Reserve
Tijuana River County Open Space Preserve
Tijuana River Valley
International Park
Pacific Gateway Park
Lomasmision
Soler
Zona Centro
Zonaeste
Monumental
Costa Jardines Playas de Tijuana
Canon Tampico
Infonavitlomas
United States
México
Main St
Palm Ave
Elm Ave
Coronado Ave
Imperial Beach Blvd
Halo St
Iris Ave
Leon Ave
Del Sol Blvd
Otay Mesa Rd
Monument Rd
Dairy Mart Rd
Beyer Blvd
Segunda Benito Juarez
Carrillo Puerto y o Tercera
Av Aldama
Abasolo
Parma
Viena
Paris
Mirador
Ruben Amaya
Segunda Sur
Pertenico
Muleg
Via Internacional
Cuauhtémoc
Tijuana
Heritage Rd
Otay Valley Rd
Ocean View Hills Pkwy
Airway Rd
Jacob Dekema Fwy
John J. Montgomery Fwy
San Diego Freeway
Hollister St
19th St
13th St
9th St
2nd St
Seacoast Dr
Saturn Blvd
27th St
Beyer Way
Picador Blvd
Piccard Ave
Dennery Rd
Smythe Ave
Lauren Field
75
5
805
905
1D
MEX

TIJUANA RIVER TRASH BOOM PRELIMINARY CONCEPT MAP

Hydraulic Models

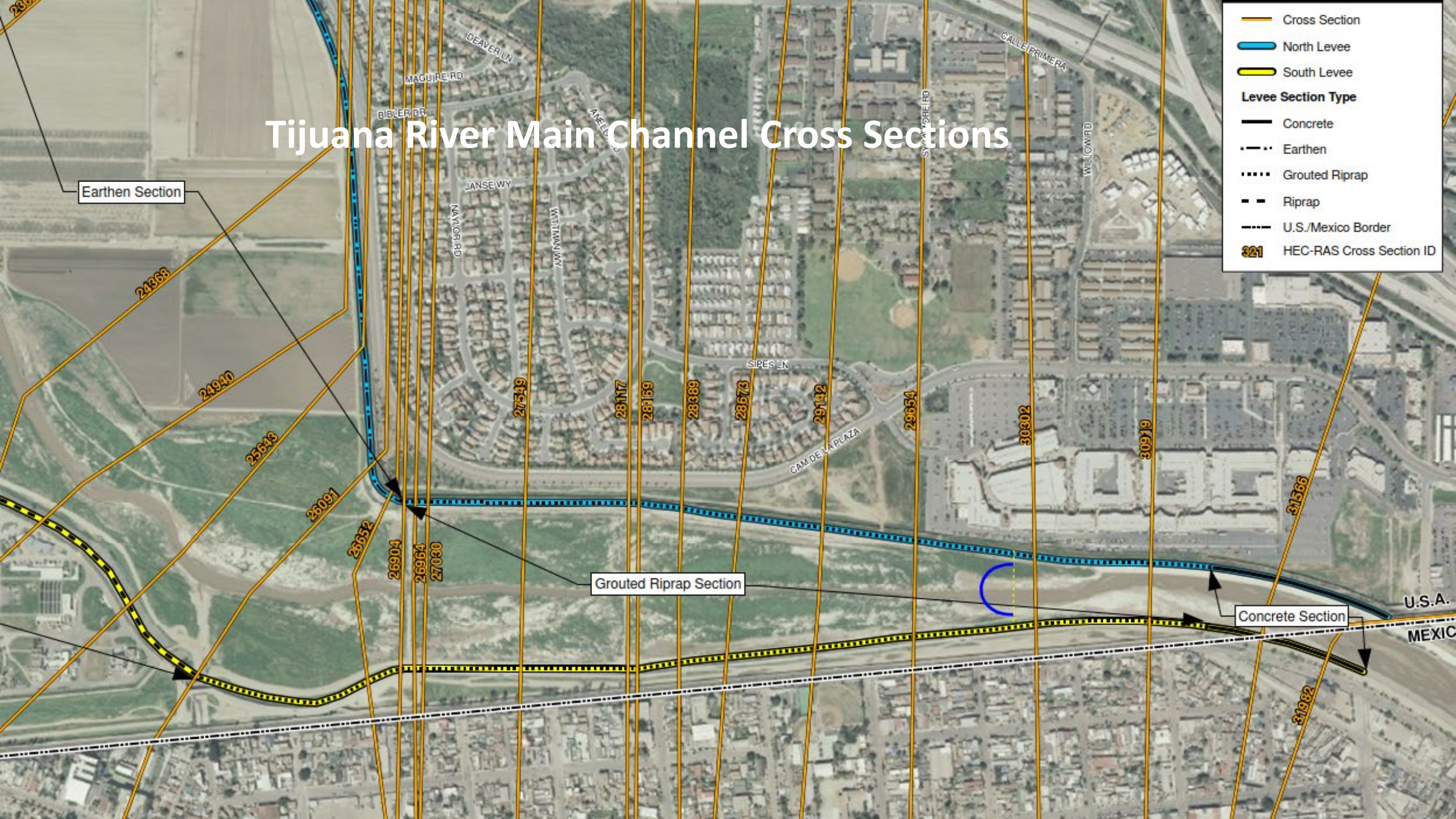
- Hydraulic models used for:
  - Hydraulic loading on booms and anchors
  - Water surface elevation impacts

IBWC

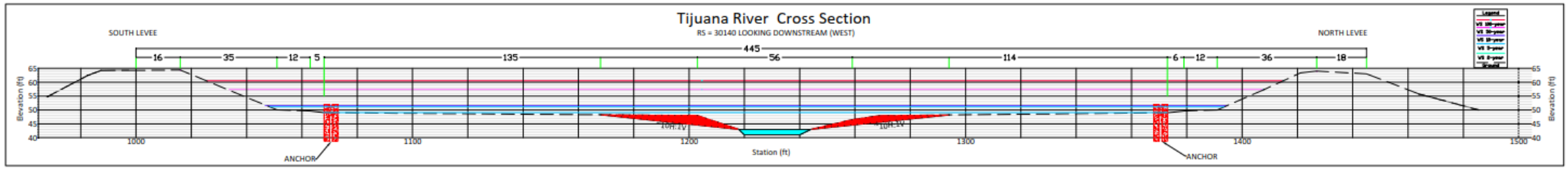
- URS HEC-RAS for levee certification
- URS HEC-RAS for levee rehab project
- Stantec Feasibility Study for sediment basins

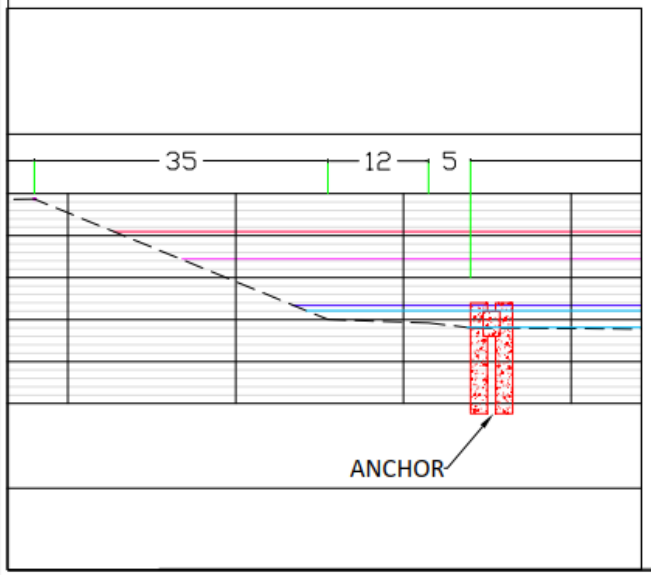
USACE

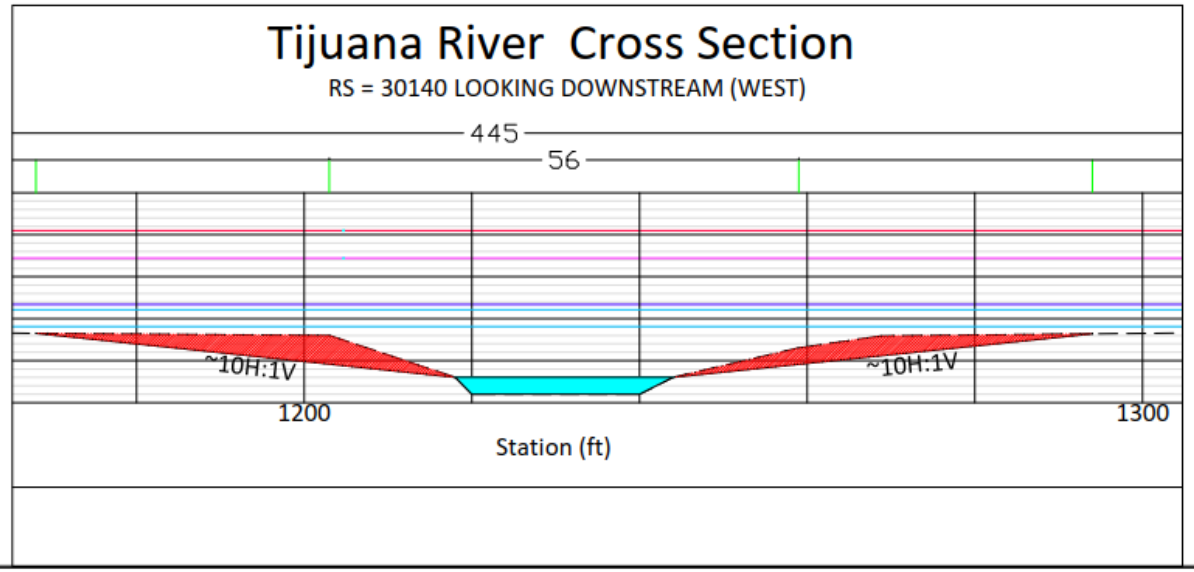
- 2018 HEC-RAS models

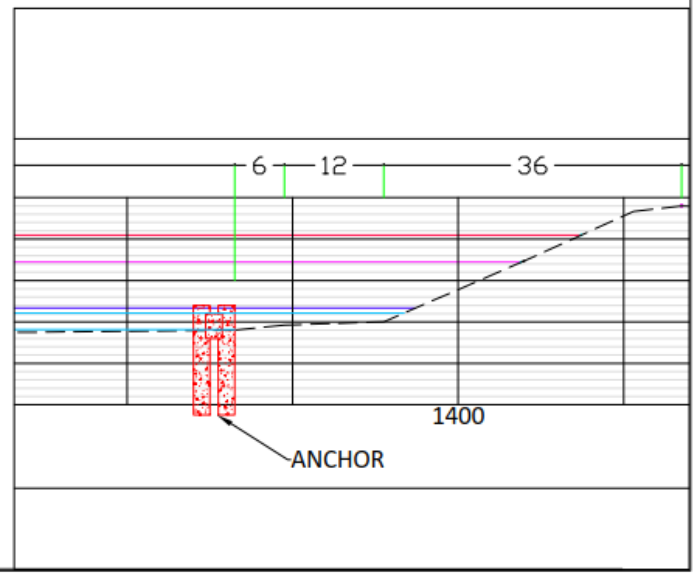

Tijuana River Main Channel Cross Sections
Earthen Section
Grouted Riprap Section
Concrete Section
Cross Section
North Levee
South Levee
Levee Section Type
Concrete
Earthen
Grouted Riprap
Riprap
U.S./Mexico Border
321 HEC-RAS Cross Section ID
24368
24940
25643
26091
26652
26904
26964
27030
27549
28117
28169
28389
28673
29142
29654
30302
30919
31366
31982
BEAVER LN
MAGUIRE RD
RIBLER DR
JANSE WY
TAYLOR RD
WILLIAM WY
SIPES LN
CAM DE LA PLAZA
CALLE PRIMERA
SYCAMORE RD
W. LOW RD
U.S.A.
MEXIC

Tijuana River Hydraulic Cross Section









HEC-RAS Plan: TJ Nor.MultiQ Locations: User Defined

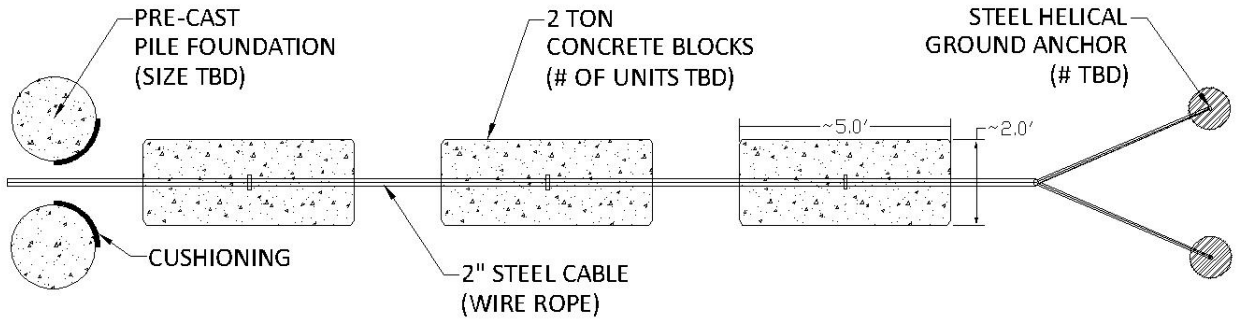
River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Max Chl Dpth	Shear Chan
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
Tijuana River	Reach-1	30140.*	2-yr	2000.00	42.28	48.44	46.63	48.79	0.001279	4.77	419.39	116.94	0.44	6.16	0.28
Tijuana River	Reach-1	30140.*	5-yr	6000.00	42.28	51.06	49.51	51.79	0.002030	6.87	872.99	198.90	0.58	8.78	0.55
Tijuana River	Reach-1	30140.*	10-yr	7612.00	42.28	51.69	50.11	52.58	0.002207	7.60	1001.45	208.83	0.61	9.41	0.66
Tijuana River	Reach-1	30140.*	50-yr	37163.00	42.28	57.20	56.82	60.47	0.004383	14.51	2562.00	340.11	0.93	14.92	2.04
Tijuana River	Reach-1	30140.*	100-yr	66894.00	42.28	58.95	60.49	65.86	0.007440	21.09	3172.10	358.65	1.25	16.67	4.07

Trash Booms deployment

Anchor Concept

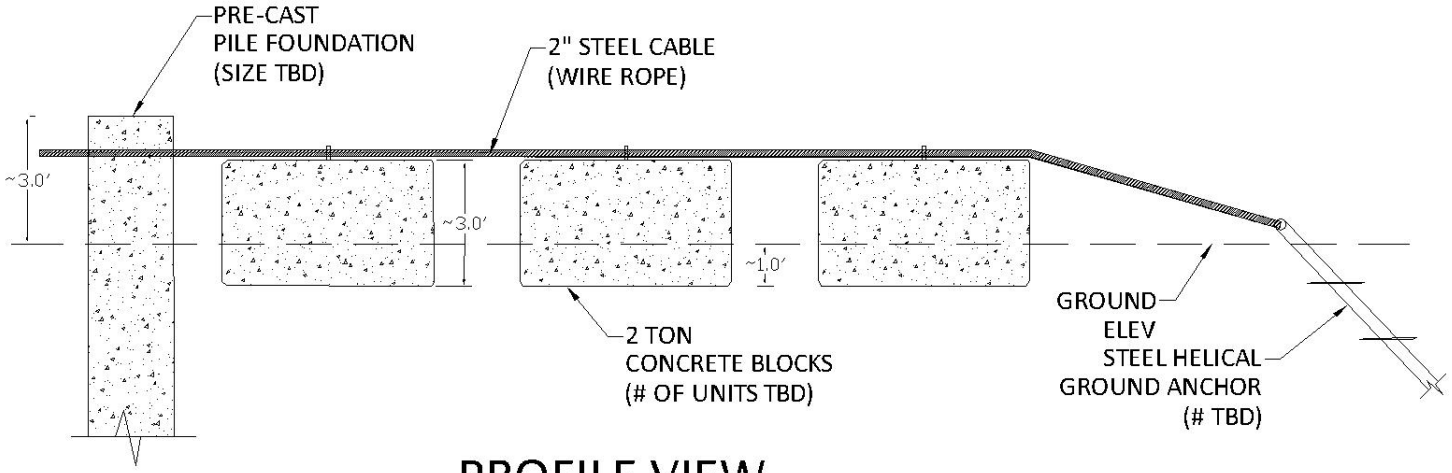
Resist: Sliding, buoyancy/uplift

- Concrete block and ground anchor – primary sliding and uplift resistance
- Piles – backup sliding stop



PLAN VIEW

NO SCALE



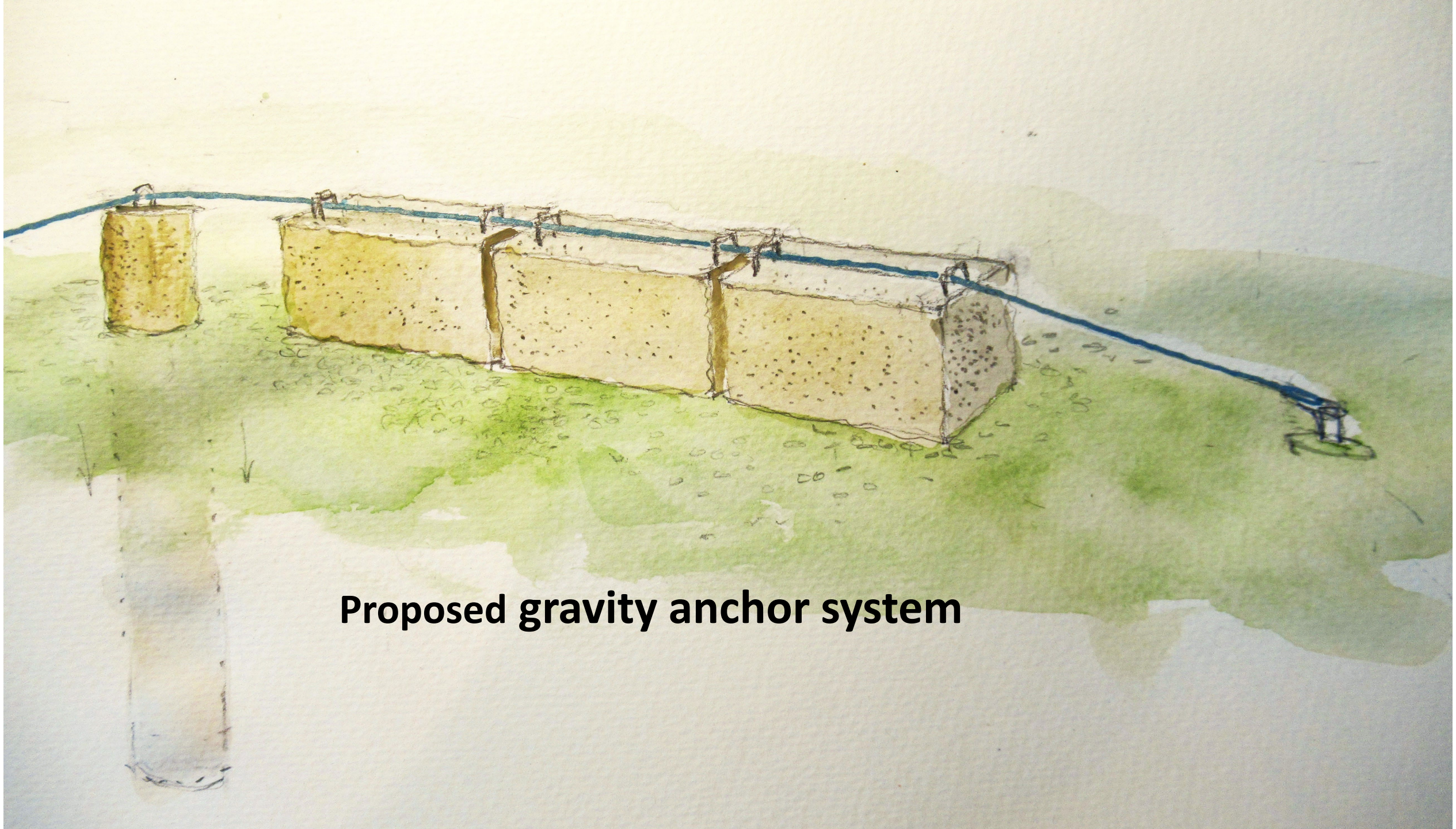
PROFILE VIEW

NO SCALE

Pre-Cast Pile Foundations

Concrete Blocks

Helical Ground Anchors



Proposed gravity anchor system

Gravity anchor system deployment

Trash boom modules installed at Smuggler’s Gulch


Transportable, large capacity trash bins

Potential trash yield 30,000 CY
Potential area 270,000 square feet or 6.2 acres

Trash removal routes

Otay Landfill in Chula Vista

Research Component

Contact

ALTER TERRA

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