



trash.
tracking
project

IBWC Citizens Forum March 2nd 2017

**Professor Oscar Romo, Principal Investigator
Jennifer Hazard, Research Assistant**



First Stage

**Documenting trash sources in the
Tijuana River Valley
(Tijuana, Mexico)**



Collaboration

Alter Terra

Earth Island Institute

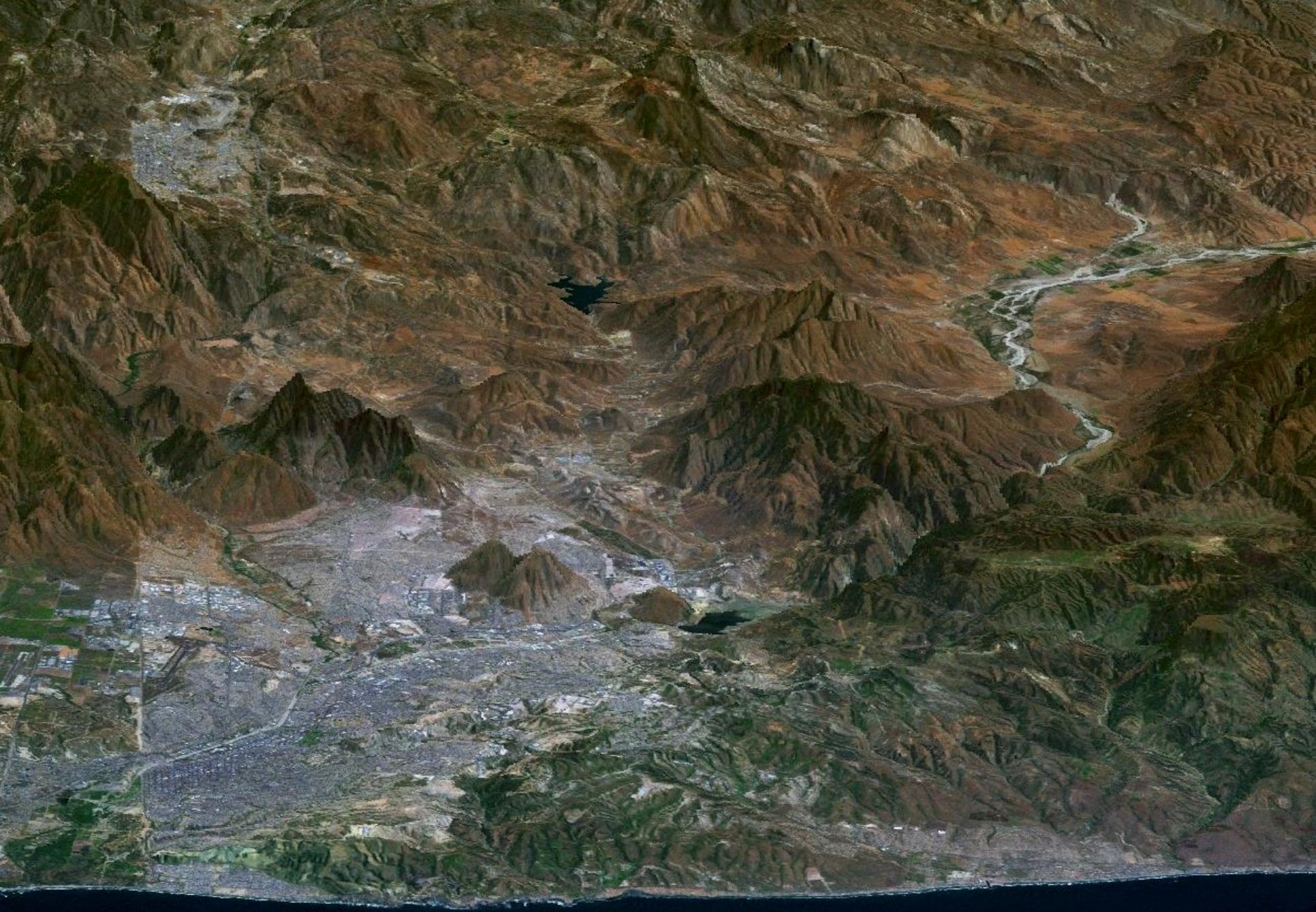
NOAA National Estuarine Research Reserve
System (NERRS)

Southern California Wetlands Recovery
Project

Southwest Wetlands Interpretative
Association

Tijuana River National Estuarine Research
Reserve



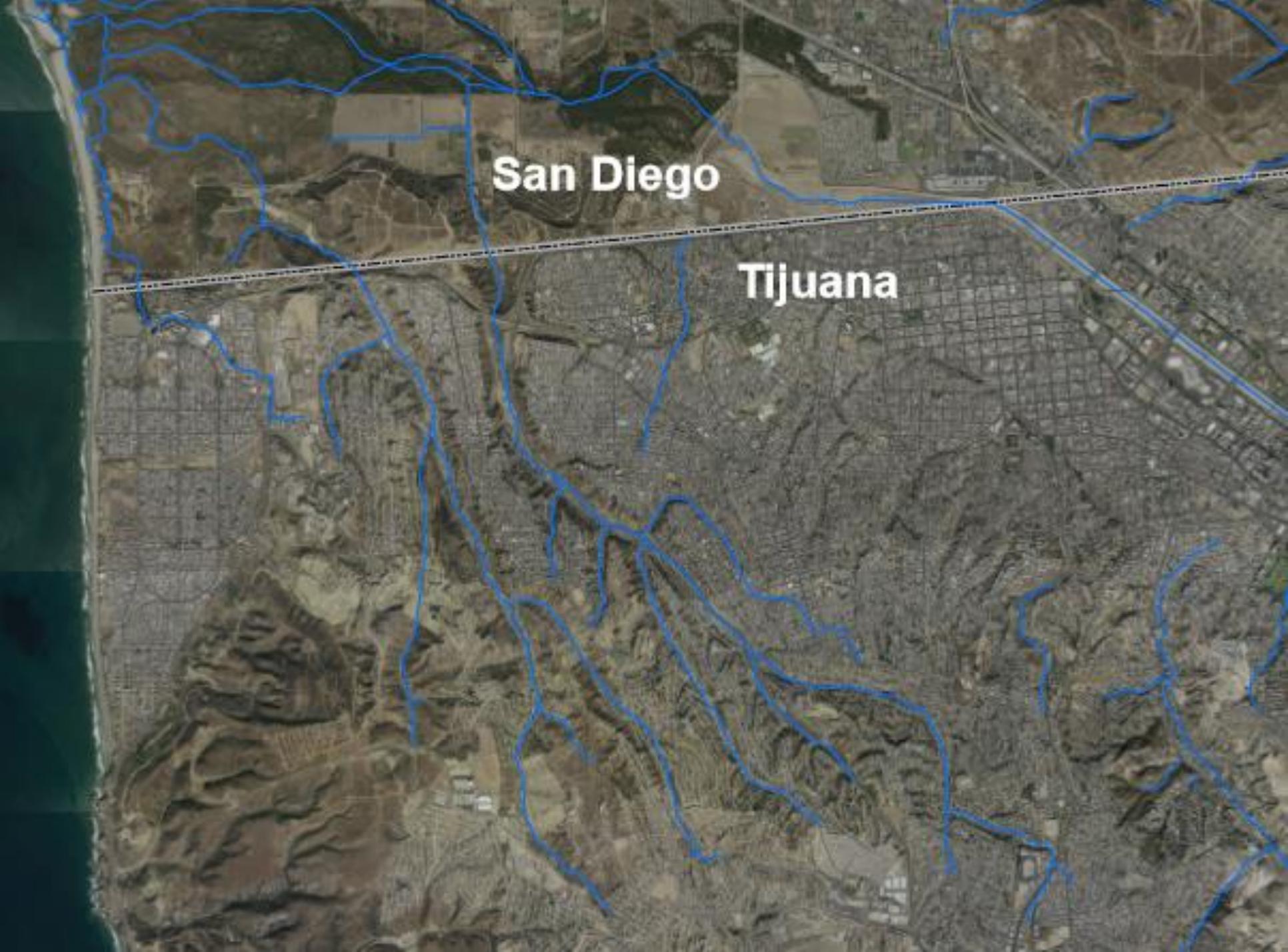






San Diego

Tijuana













Second Stage

**Documentation of illegal dump
sites in Laureles Canyon
(Goat Canyon)**



Collaboration

Alter Terra

Calit2 at UCSD

Hound Systems

NOAA San Diego Coastal Storms

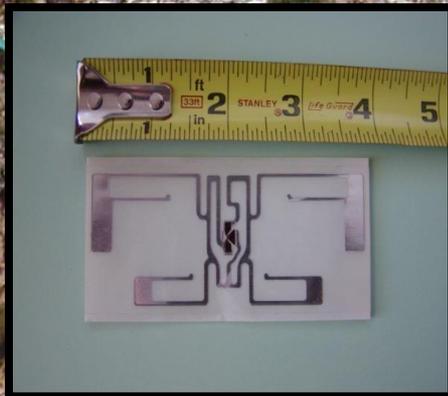
**UC San Diego, Urban Studies & Planning
Program**

**Tijuana River National Estuarine Research
Reserve**

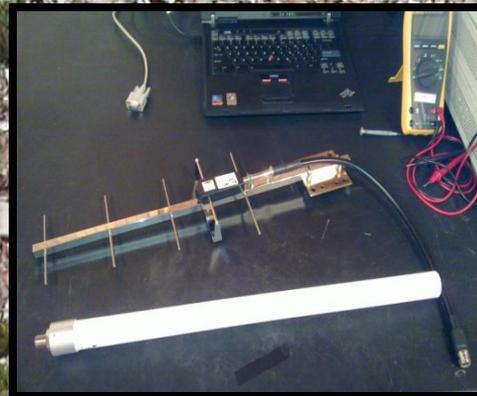




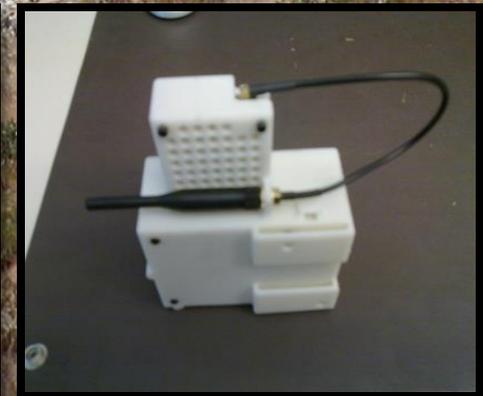
Probes 08:53 PM



AD-833 RFID Tag



Yagi Antenna



Receptor





Factory Waste



Commercial Waste



Mixed classes



Ridgeline dump site



Hospital waste



Industrial waste



Domestic Waste



40
km/h

40
km/h





ACCESIBLE
EXCLUSIVO

SOLICITA
INFORMES

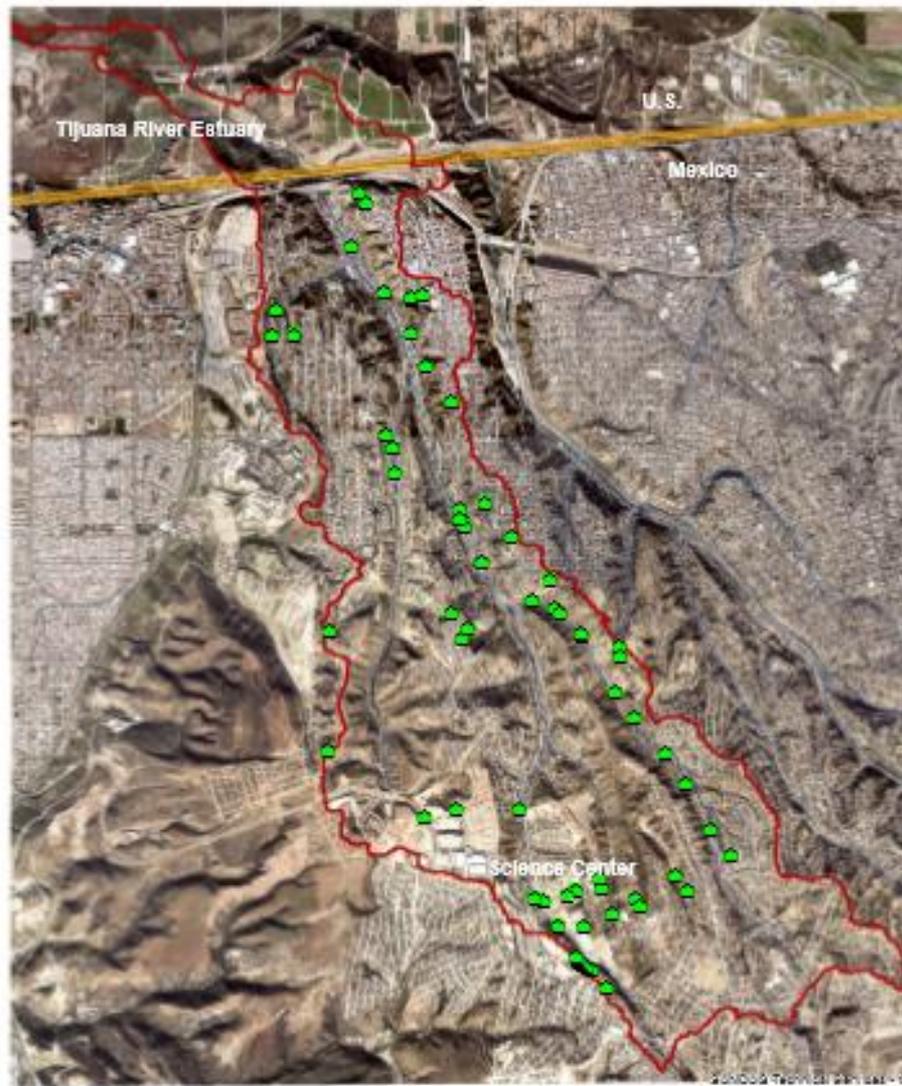
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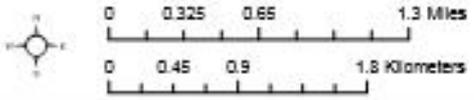
TRANSBOUNDARY TRASH TRACKING STUDY



Legend

- Green Triangle: Dump Sites
- Blue Line: Streams
- Red Line: Los Laureles Boundary
- Yellow Line: U.S./Mexico Border

Los Laureles/Goat Canyon Sub-basin



Alpha Forma, 2011

TRANSBOUNDARY TRASH TRACKING STUDY





Third Stage

**Documentation of illegal dumpsites
in Matadero Canyon
(Smugglers gulch)**



Collaboration

Alpha Forma, LLC

Alter Terra, A.C.

Calit2 at UCSD

California State Water Resources Control Board

City of Imperial Beach

City of Tijuana

Hound Systems

NOAA San Diego Coastal Storms

UC San Diego, Urban Studies & Planning Program

Tijuana River National Estuarine Research Reserve





View of Matadero Canyon drain
aprox. 3.2 miles south of the border



View of Matadero Canyon drain
aprox: four miles south of the border



View of Matadero Canyon drain
aprox. 4.5 miles south of the border



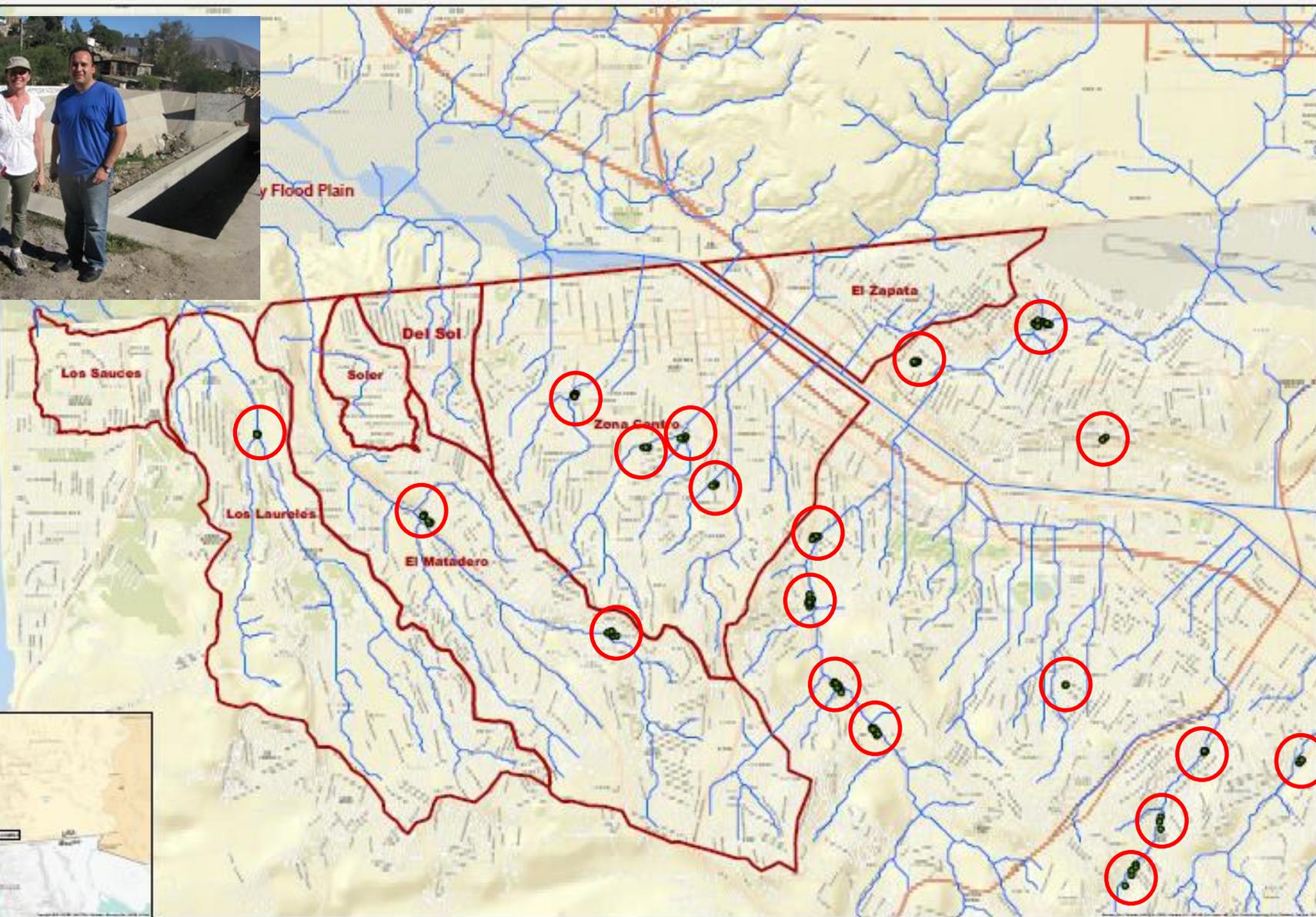
View of Matadero Canyon drain
aprox. six miles south of the border



T i j u a n a F o c u s A r e a

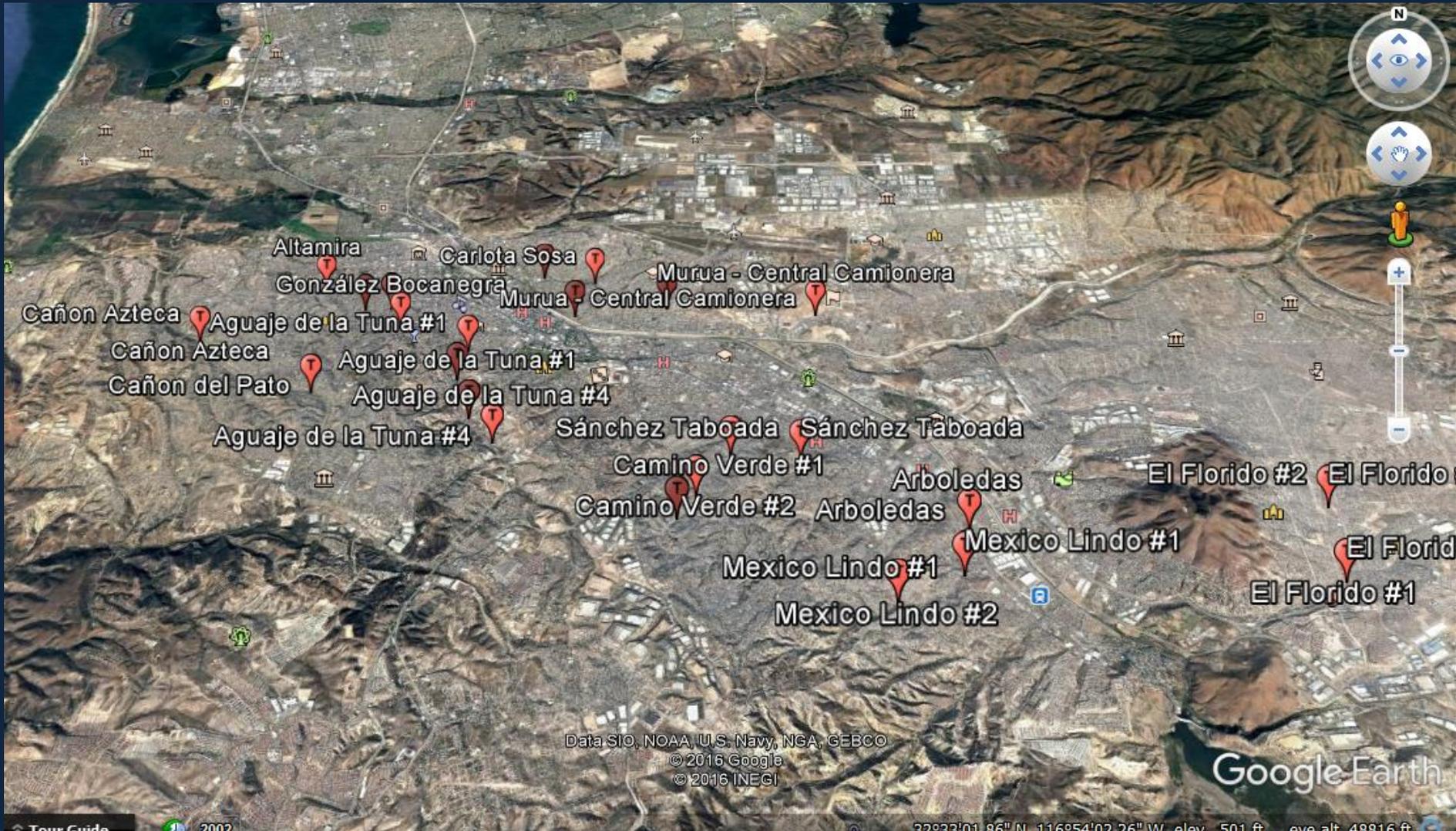


y Flood Plain

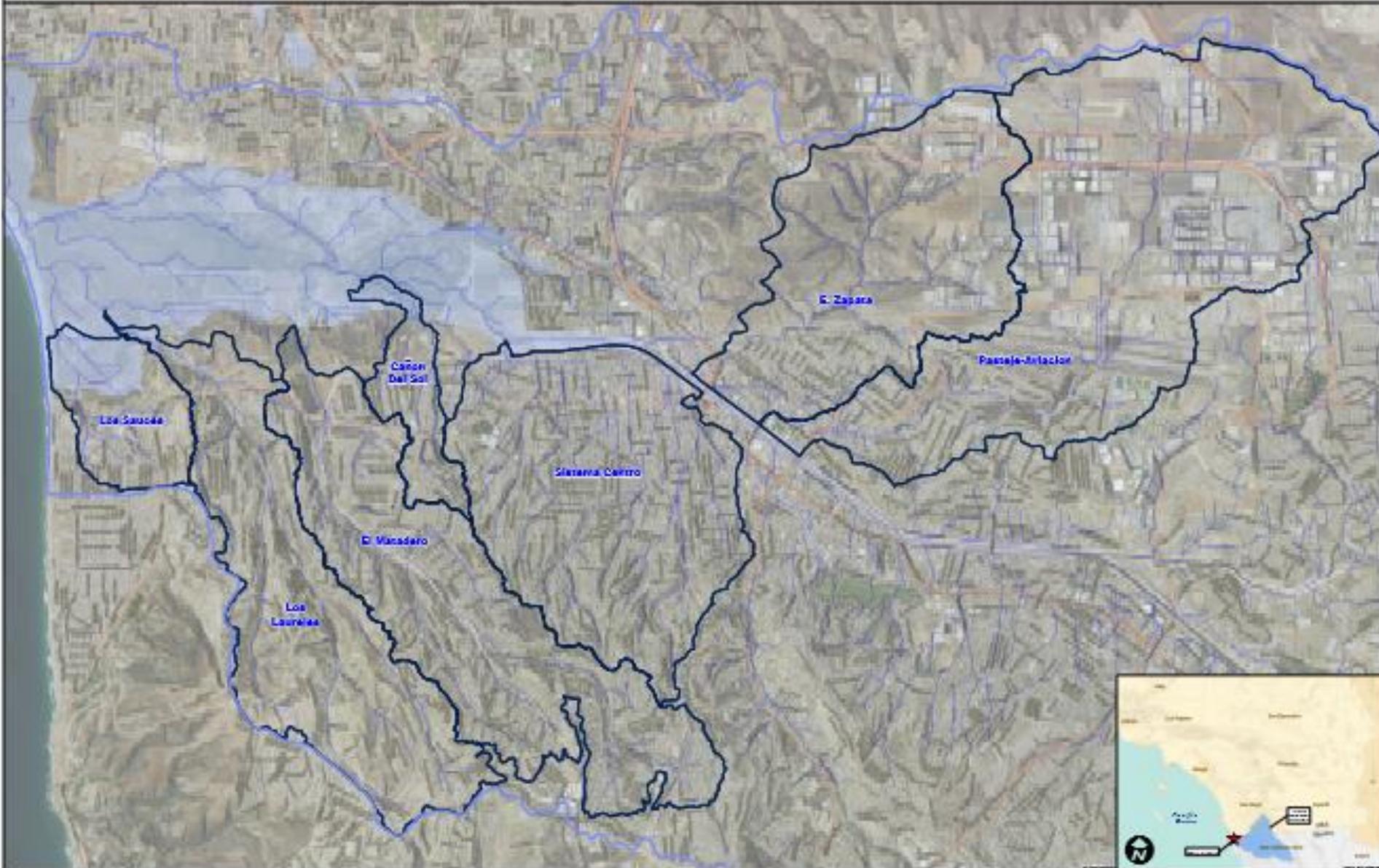


Legend





Tijuana Focus Area Hydrology



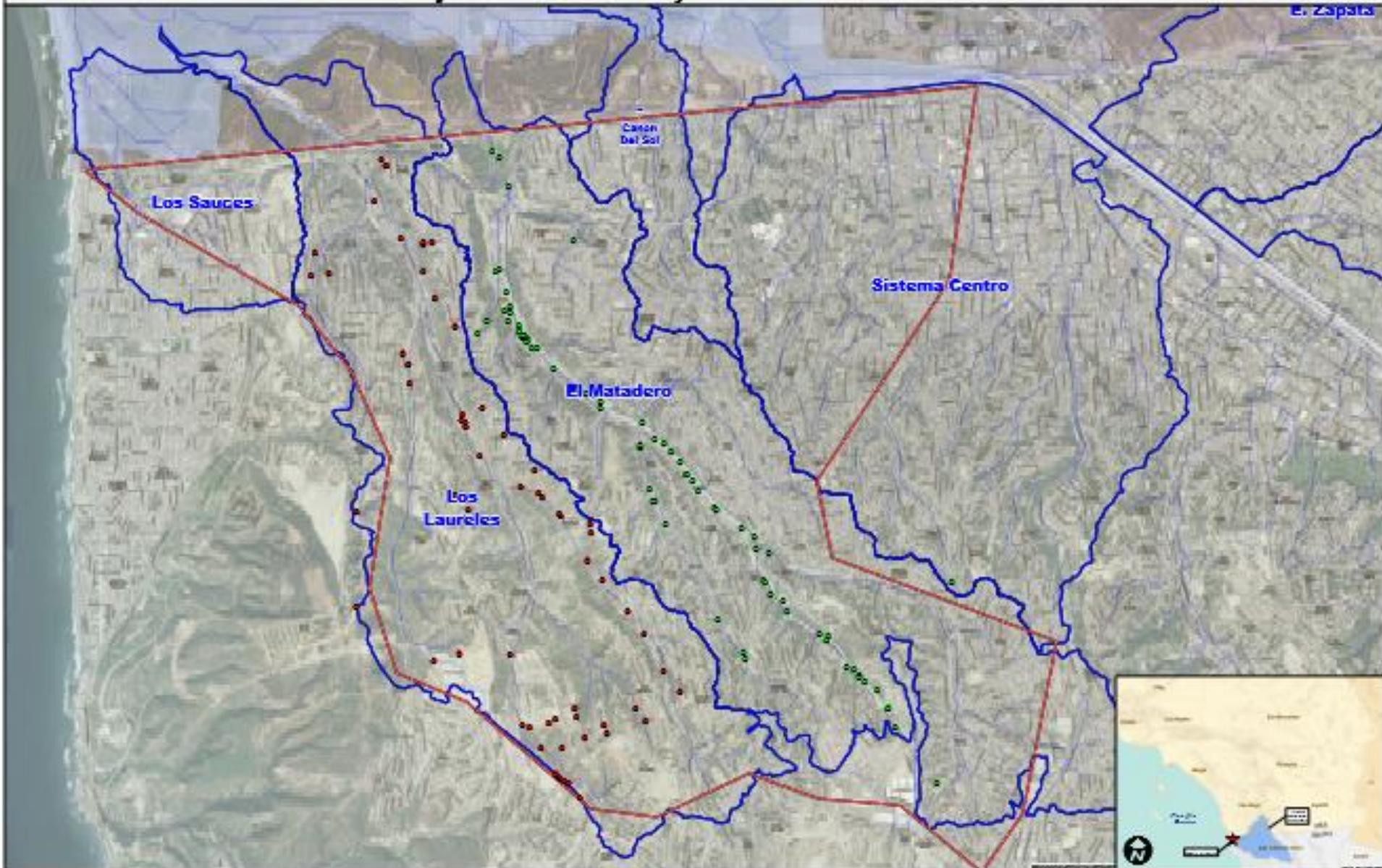
Legend

- Tijuana River Watershed Boundary
- Tijuana Focus Area
- Subbasin Boundaries
- 100-Year FEMA Flood Zone (USA)
- Main Stream



Trash and Sediment Sources in the Tijuana River Valley Flood Control Zone

E. Zapata



Legend

- Sediment Source Sub-basins
- 100-Year FEMA Flood Zone (JBC)
- Los Laureles Trash Sources
- Matadero Trash Sources





Old sediment stockpile site

CNA Sediment removal project 10 Km.

New sediment stockpile site



New sediment stockpile
in "El Florido" near the Rodriguez Dam



Old sediment stockpile site
in the base of "Matadero" Canyon





Real-time remote erosion monitoring

<http://sdcoastalstorms.org/>



San Diego Coastal Storms - Windows Internet Explorer

http://sdcoastalstorms.org/

File Edit View Favorites Tools Help

Norton Phishing Protection on Identity Safe Log-ins

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San Diego Coastal Storms

San Diego Coastal Storms

Real-Time, Remote Erosion Monitoring and Outreach Pilot
Los Laureles Canyon, Tijuana, Mexico

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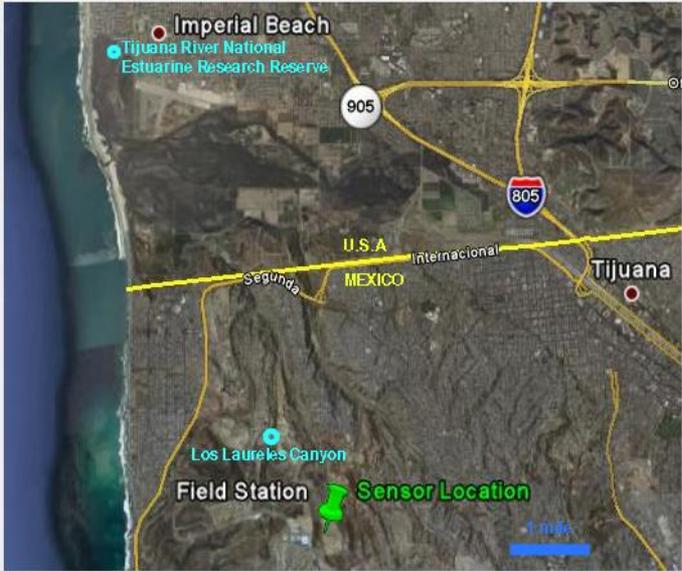
Introduction and Problem Statement

During coastal storm events, the effect of raw sewage, sediment, and trash generated upstream, such as in the U.S./Mexico border community of Los Laureles Canyon, located in Tijuana, Mexico (Figure 1), is pronounced and not only impacts Tijuana, but directly impacts the U.S. and Mexico beach water quality and coastal and ocean resources.

This project proposes to combine real-time sedimentation monitoring technology and educational outreach efforts in Los Laureles Canyon to address this binational pollution problem in the Tijuana River Watershed.

Project Objectives

This project's goal is to quantify data on upstream sedimentation/trash generation and provide outreach efforts that integrate members of the Los Laureles community directly in the monitoring, training, and instituting a local alert system. In this manner, technology efforts will provide researchers and community stakeholders on either side of the U.S.-Mexico border a mechanism to evaluate and implement best management practices to reduce risk to human health and the environment.



Imperial Beach
Tijuana River National Estuarine Research Reserve
905
805
U.S.A. Tijuana
Segunda Internacional MEXICO
Los Laureles Canyon
Field Station
Sensor Location

Start C:\Documents ... 4 Microsoft Po... San Diego Co... 3:53 PM



Fourth Stage

Implementation of trash control
systems in
Smugglers Gulch



*San Diego County
Water Authority*

Collaboration

Alpha Forma, LLC

Alter Terra, A.C.

San Diego County Water Authority

San Diego County Parks and Recreation

**San Diego Integrated Regional Water
Management**

State of California,

Department of Water Resources

Rural Community Assistance Corporation





Saturn Blvd

Monument Rd

Rollister St

960 ft

1994

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lat 32.543126° lon -117.0858

The image is a microscopic view of High Density Polyethylene (HDPE) plastic, split vertically into two halves. The left half shows a relatively smooth, light-colored surface with some irregular, darker patches. The right half shows a much more complex and colorful texture, with prominent yellow, blue, and green areas, suggesting a more degraded or contaminated sample. The text is centered over the image.

High Density Plastic HDPE
(samples made from containers
recovered in the creek)



Trash Boom

How might we design a trash boom that is a simple structure to create & maintain that can be placed in a trash gulch to prevent trash from the gulch from overflowing?

Smugglers Gulch Site Analysis

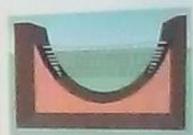


Trashboom Design Challenges:

- 1. Make the boom made of low budgeted percent (used materials)
- 2. Make the boom blend with surrounding environment
- 3. Control flow of trash
- 4. Durable and innovative with seasons

Materials

1. Recycled plastic materials
2. Custom netting
3. Concrete
4. Metal



Prototype B



The actual site, Smugglers Gulch, with the design placed in it.





TB 1B (W)

TB 1B (E)

TB 2 (W)

TB 2 (E)

TB 3 (W)

TB 3 (E)

Montmorency Rd

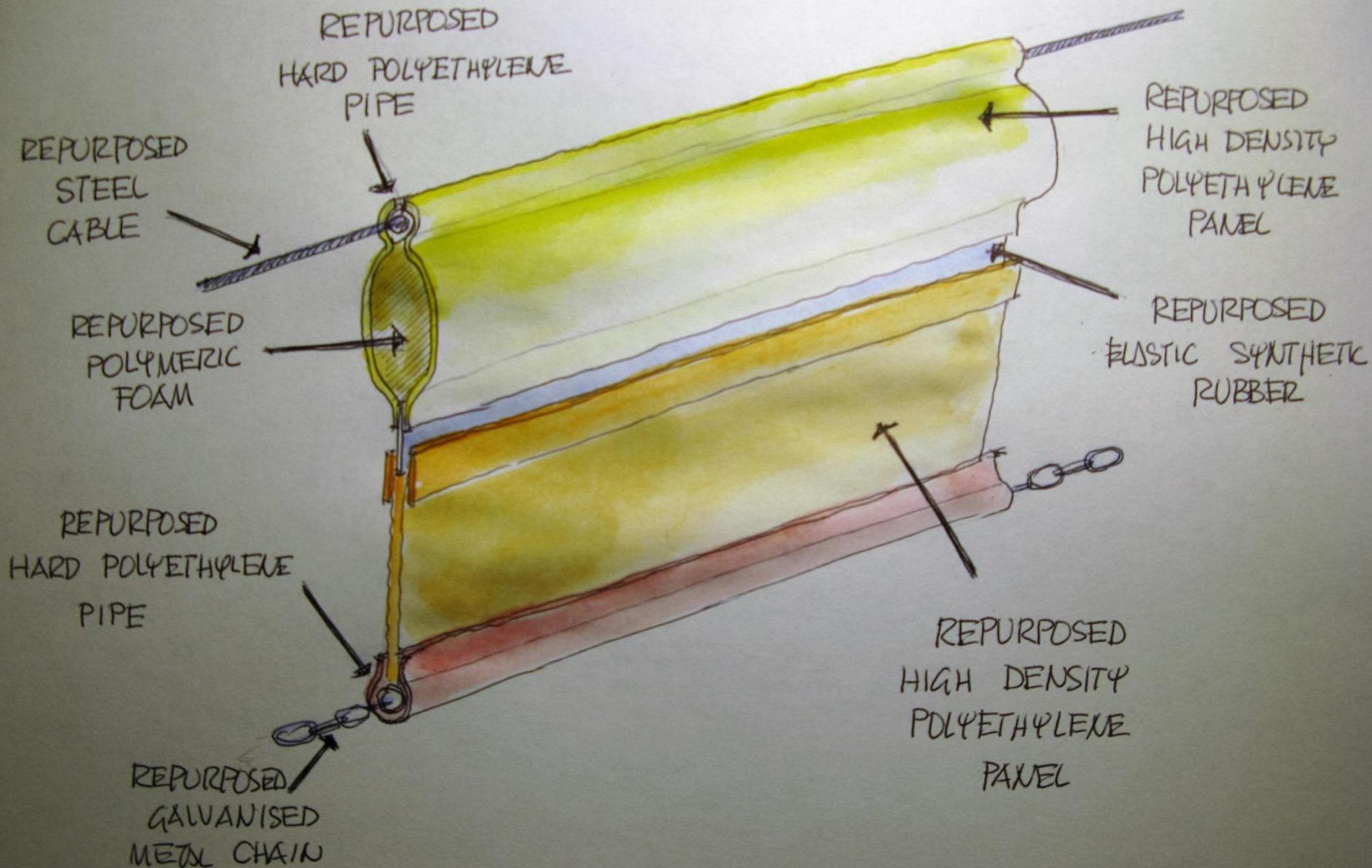
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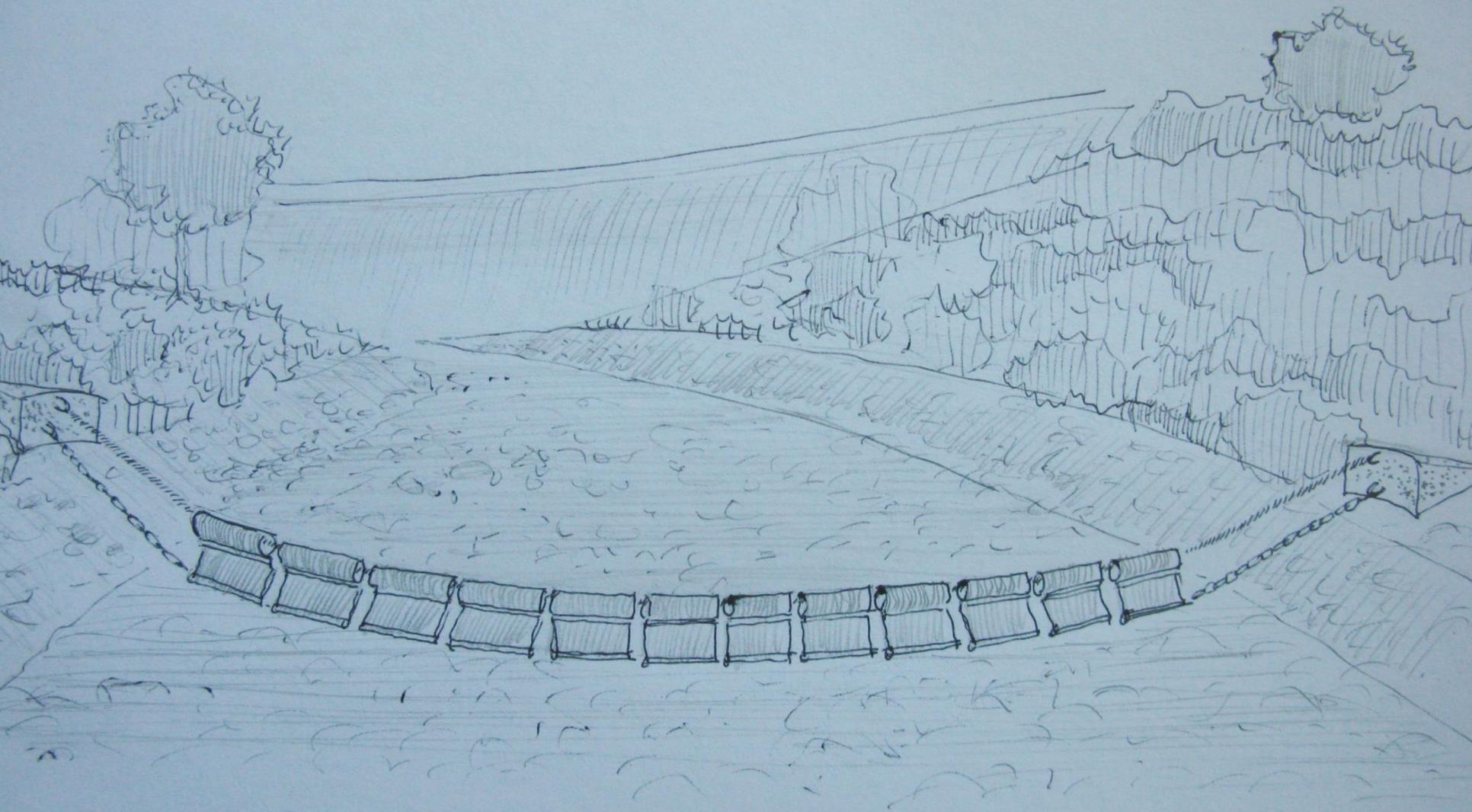
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Google earth



lat 32.541846° lon -117.087330° elev 106 ft eye alt 1346 ft





Scientific record of trans-border waste flows that threaten water quality in the Tijuana River Valley

75 uncontrolled open dumpsites recorded & Mapped

Funding provided in cooperation of Tijuana's Secretaries of Social Development & Urban Development

Bi-national media attention to illegal waste disposal in Tijuana

Participation of local residents in source control projects

Less trash in TRNERR sediment basins

Over \$100,000 in grants from the Mexican EPA (SEMARNAT) for temporary employment projects

Allocation of \$850,000 U.S. from City of Tijuana for sub-basin clean-ups

Clean-up of 171 illegal dump sites by the Tijuana Public Works Department



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