

# INTERNATIONAL BOUNDARY AND WATER COMMISSION UNITED STATES AND MEXICO



Upper Rio Grande Flood Control Project

Levee Improvement

December 15, 2009

# Rio Grande Canalization Project

- Constructed 1938-1943
- Water delivery and flood control project
- 106 river miles from Percha Dam, NM to American Dam at El Paso, TX
- 130 miles of flood control levees



# AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009



- \$220 million appropriated to USBIWC
- Funds for rehabilitating Rio Grande flood control levees in Texas and New Mexico
- Purpose of Recovery Act is to create and save jobs, jumpstart the economy, and build long-term economic growth.
- Funding will afford the USIBWC the opportunity to accomplish in less than two years, work that had been projected to take 20 years





# Why Perform Levee Improvements?

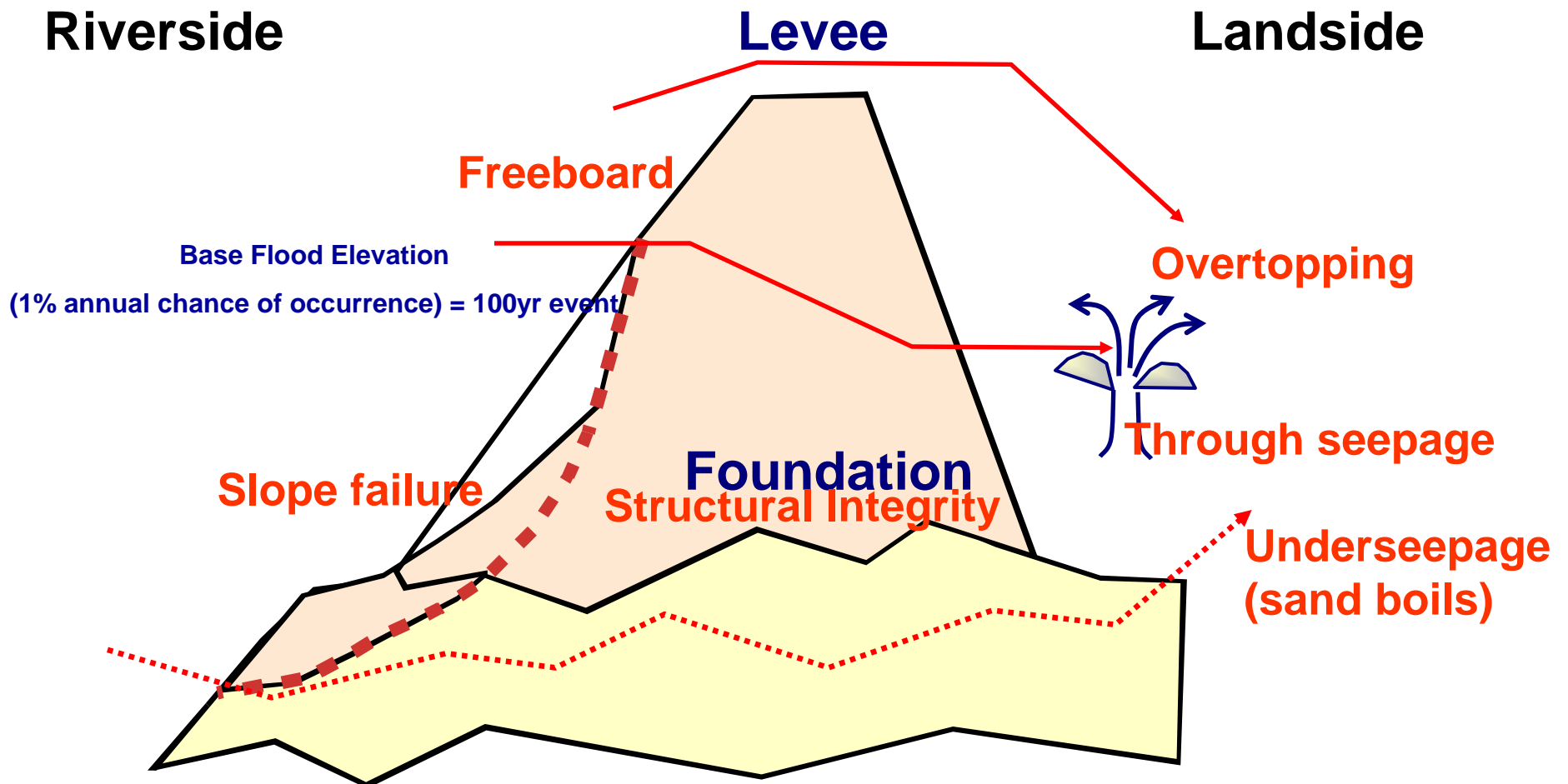
- FEMA is updating flood insurance rate maps
- FEMA requires levees to contain the 100-year flood with 3 ft. freeboard
- USIBWC notified FEMA in 2006 that it could not certify all levees as meeting this requirement



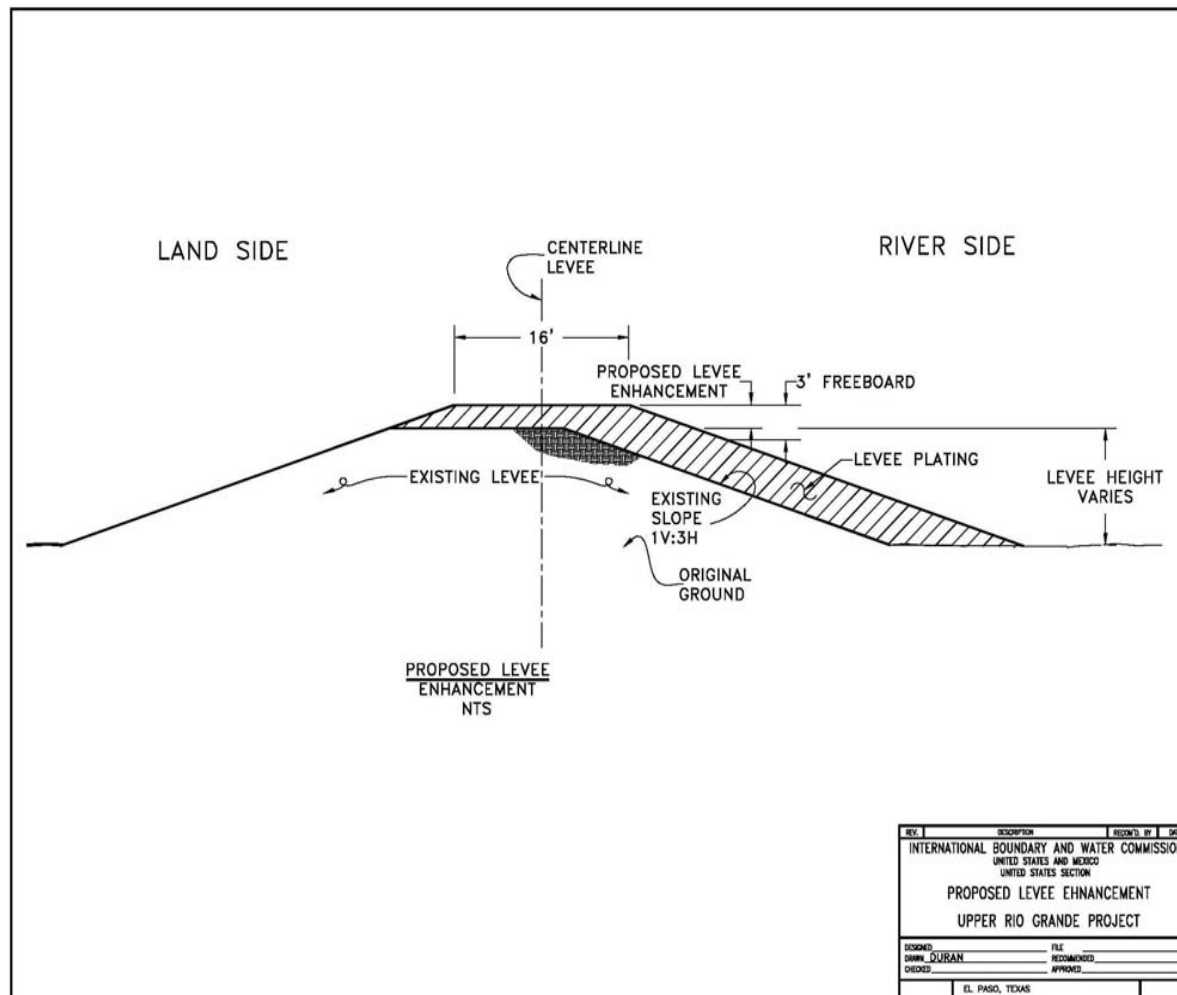
# INITIAL STUDIES

- Hydraulic studies began in 1995
- A determination of the number of miles where insufficient freeboard existed was determined.
  - 2003 Canalization FLO-2D Model
  - Geotechnical studies have been conducted on the levees, and the designs for levee improvement for Upper Rio Grande are underway

# Levee Terminology



# LEVEE ENHANCEMENT TYPICAL SECTION

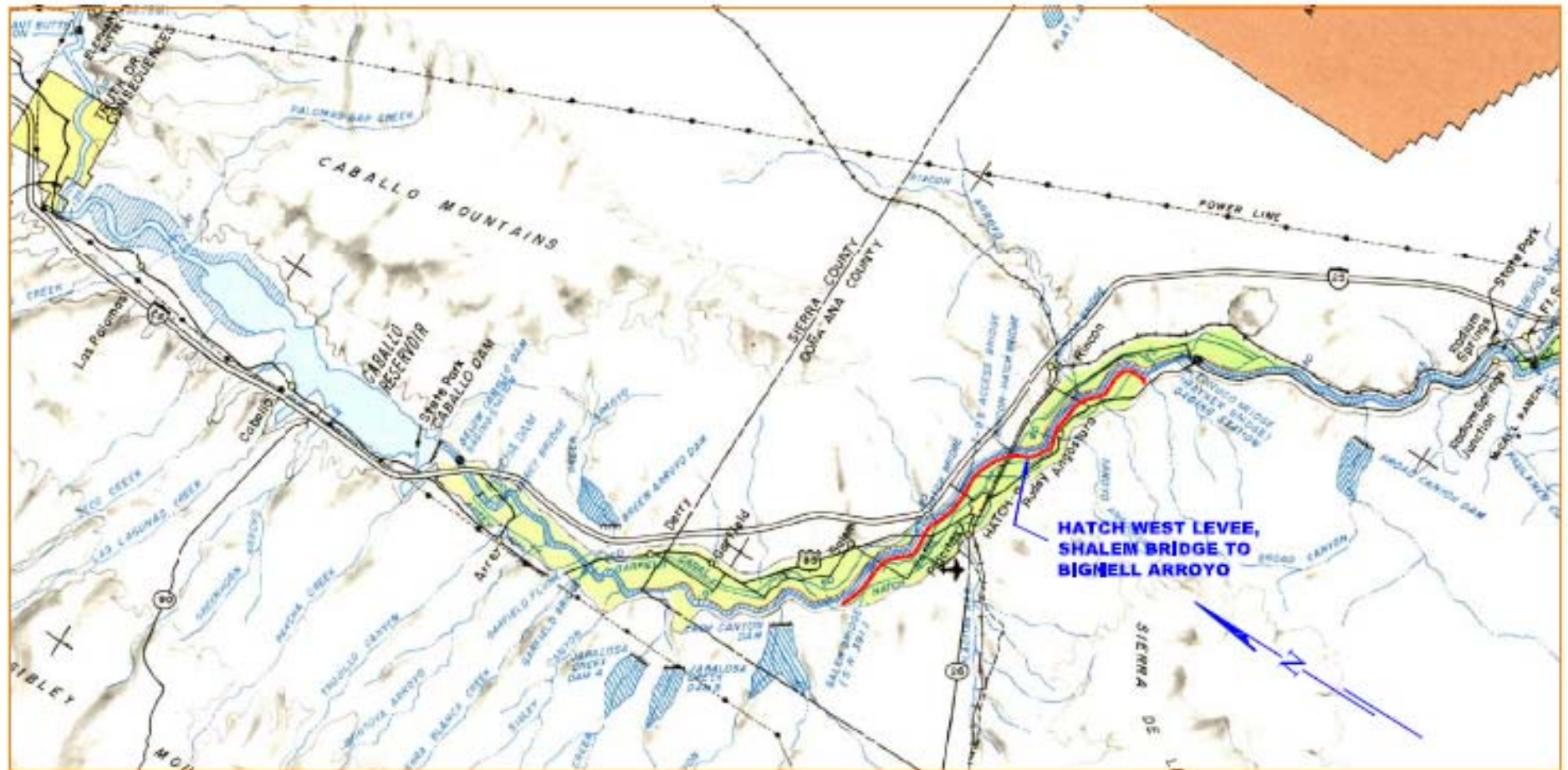




# Levee Status – Doña Ana County

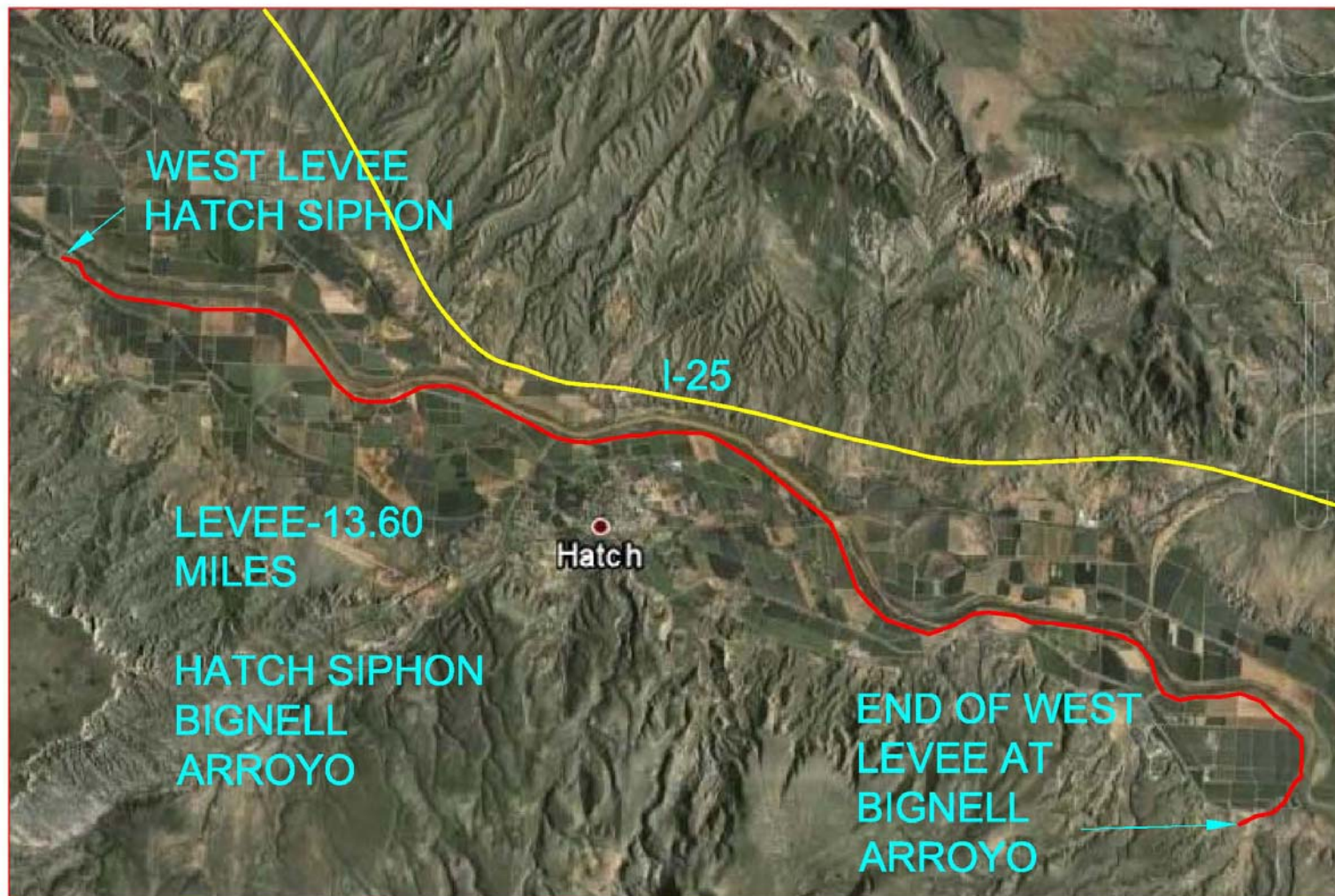
## ■ Hatch Area Levees

- Hatch West Levee (Hatch Siphon to Bignell Arroyo)  
Levee Enhancement, Structure Improvements
  - Plans and Specs Have Been Produced
  - Award Construction Contract December 2009
  - Construct Flood Control Improvements Jan. 2010- Jan. 2011



HATCH WEST LEVEE,  
SHALEM BRIDGE TO  
BIGNELL ARROYO:  
13.6 MILES

# WEST LEVEE HATCH SIPHON TO BIGNELL ARROYO





# Levee Status – Canalization Project

## ■ Mesilla East and West Levees Phase 1 (Shalem Bridge to Vado Bridge) – 32 Miles

- ☐ Plans and Specs Have Been Produced
- ☐ Award Construction Contract: January 2010
- ☐ Construction: January 2010-February 2011

## ■ Mesilla East Levee, Phase 2 Beginning of Levee at Radium Springs to Mesilla Dam– 20 Miles

- ☐ Plans and Specs are being produced:
- ☐ Award Construction Contract: Work initiated in-house by USIBWC
- ☐ Construction: August 2008 – April 2011

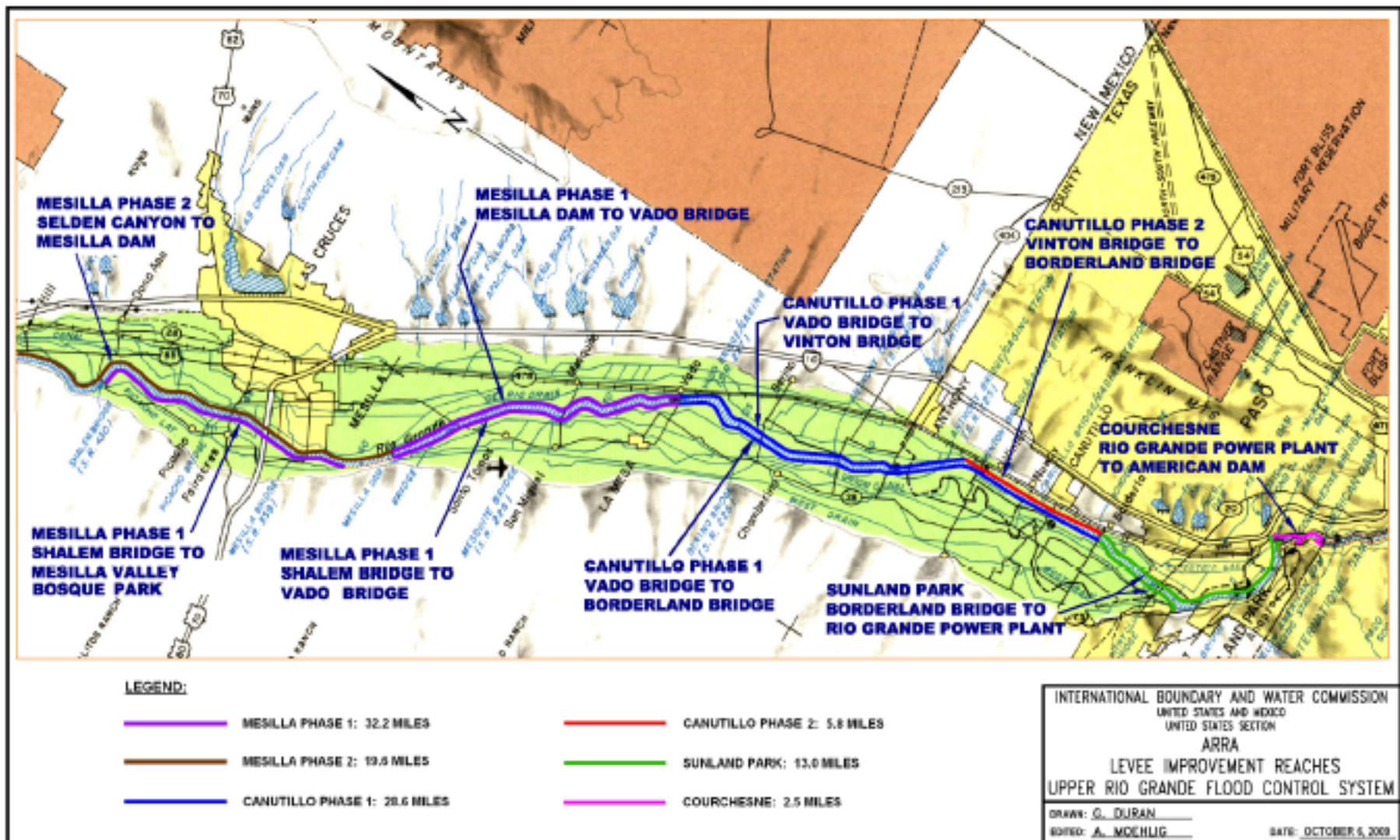
## ■ Anthony / El Paso Levees, (Canutillo Phase 1) Vado Bridge to Borderland Bridge (except Canutillo east Levee) -32 miles

- ☐ Plans and Specs are Being Produced
- ☐ Award Construction Contract: January 2010
- ☐ Construction: January 2010 – January 2011

## ■ Upper Valley/Sunland Park, Borderland Bridge to Rio Grande Power Plant – 12 miles

- ☐ Plans and Specs are being produced
- ☐ Award Construction Contract: Work initiated in-house by USIBWC
- ☐ Construction: January 2009 – June 2011

# Levee Status – Doña Ana County



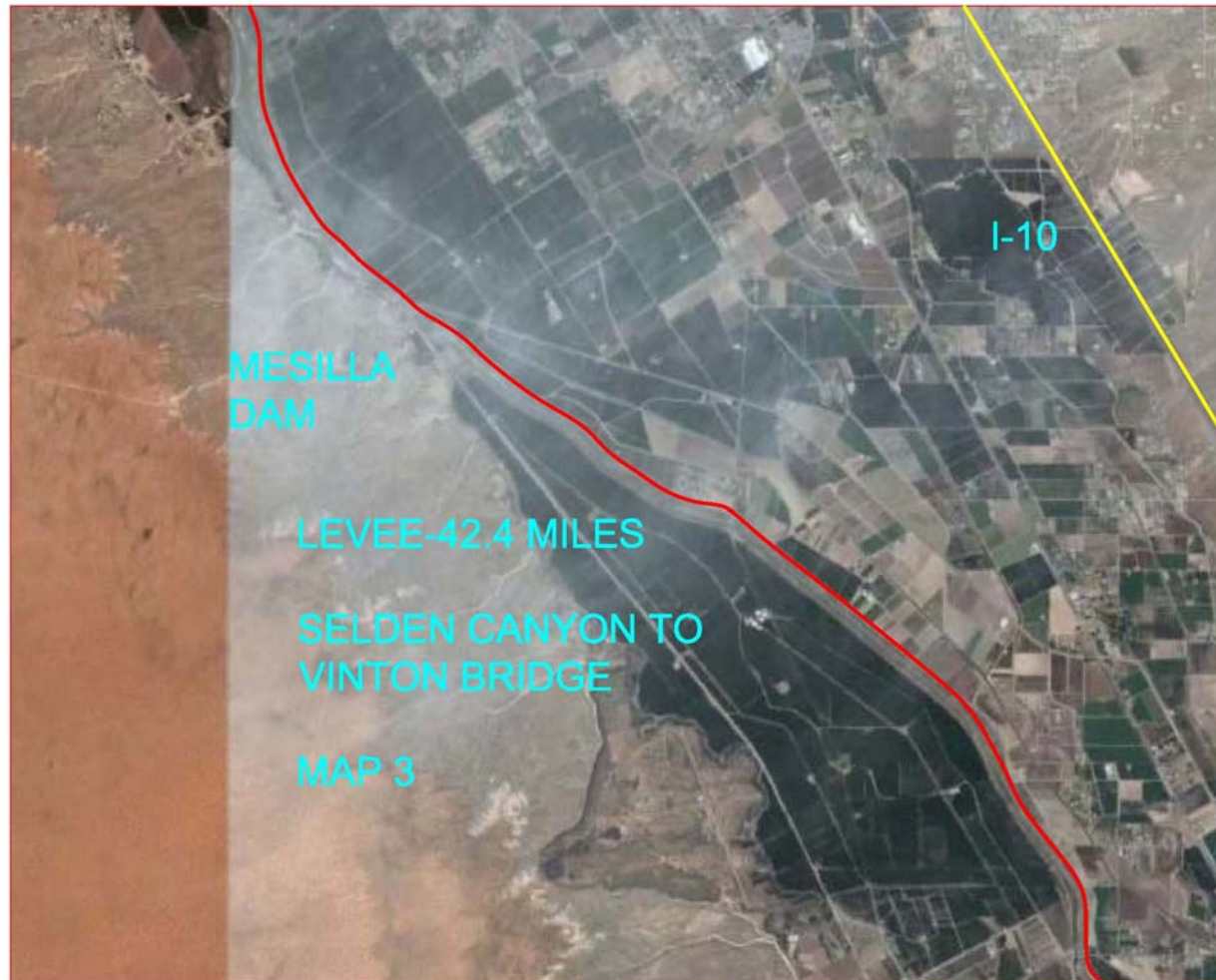
# EAST LEVEE SELDEN CANYON TO VINTON BRIDGE MAP 1 of 5



# EAST LEVEE SELDEN CANYON TO VINTON BRIDGE MAP 2 of 5



# EAST LEVEE SELDEN CANYON TO VINTON BRIDGE MAP 3 of 5



# EAST LEVEE SELDEN CANYON TO VINTON BRIDGE MAP 4 of 5

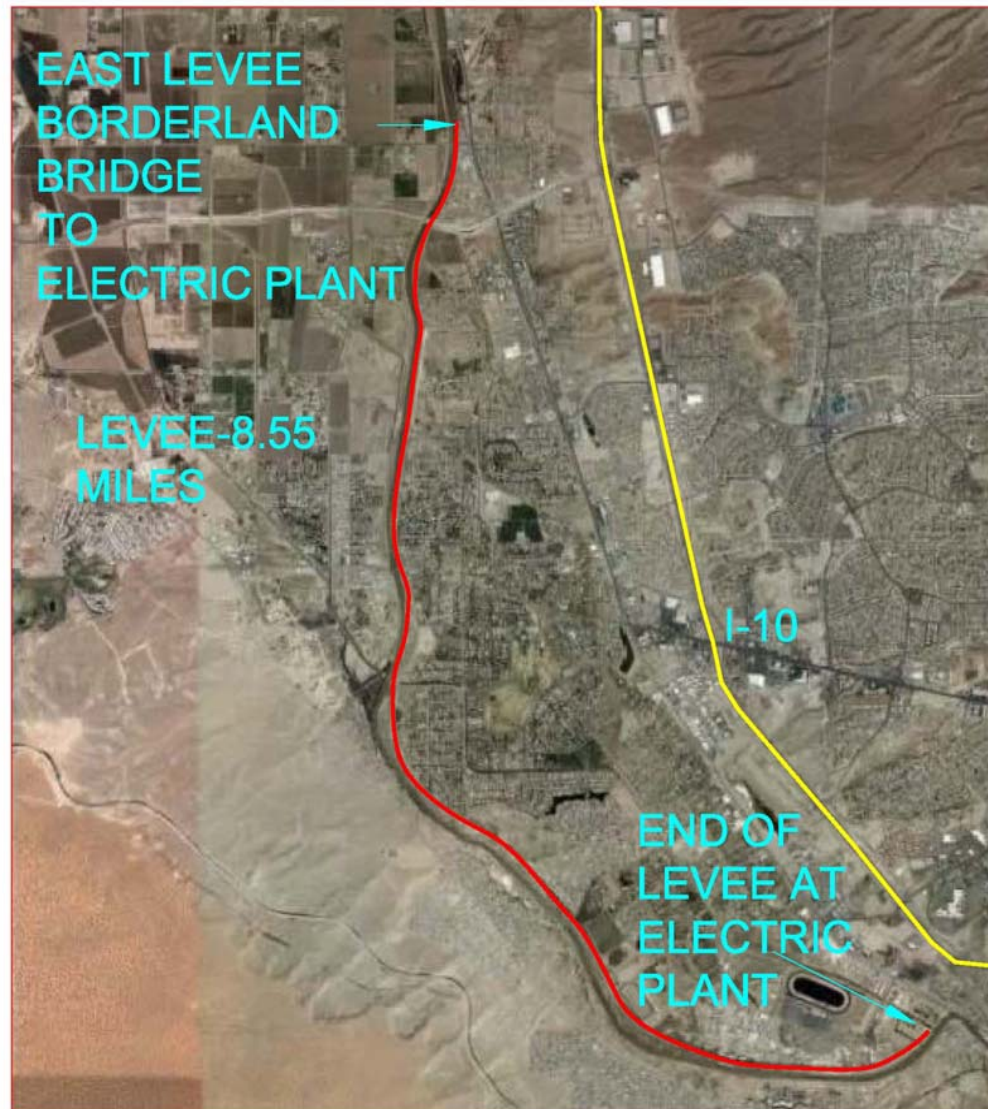


# EAST LEVEE SELDEN CANYON TO VINTON BRIDGE MAP 5 of 5



# EAST LEVEE

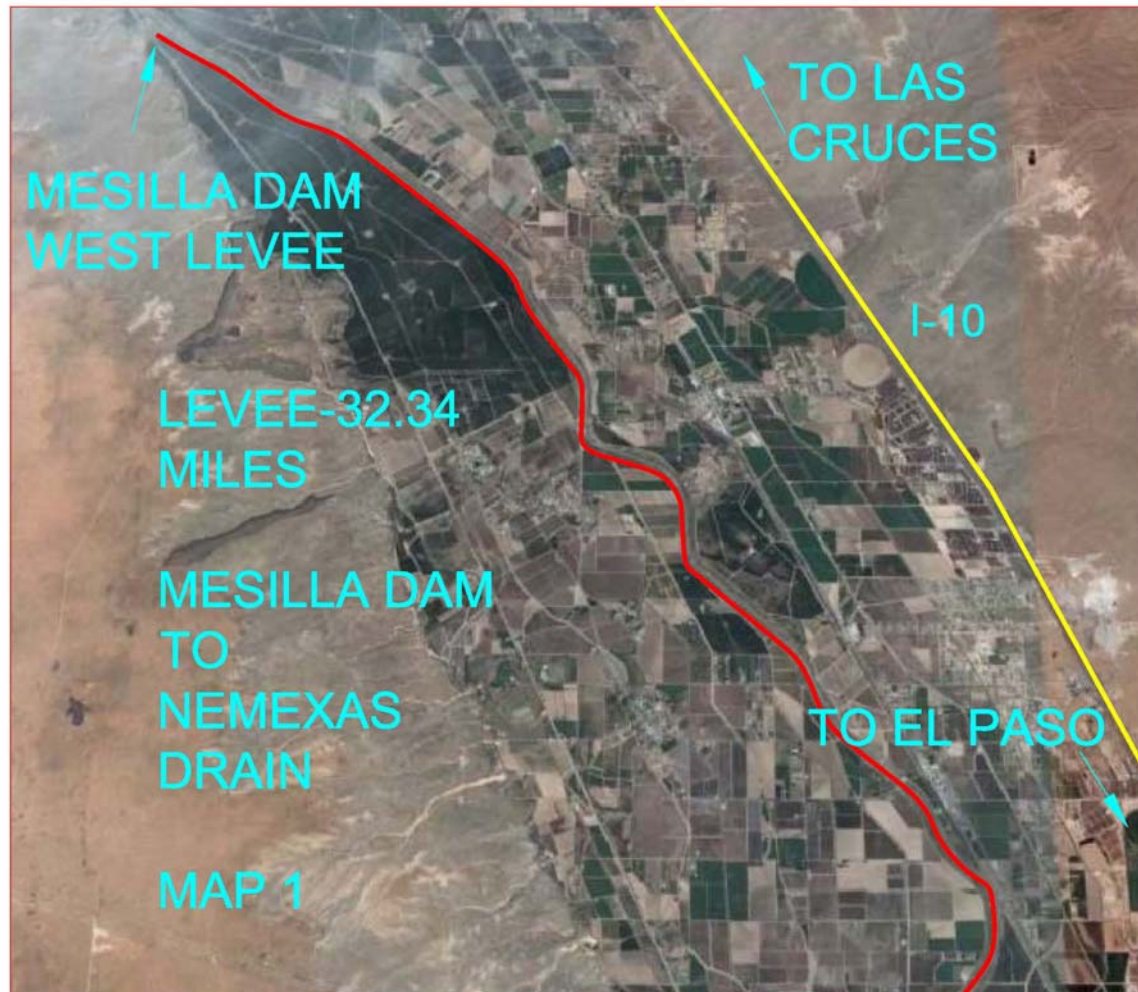
## Borderland Bridge to Electric Plant



# WEST LEVEE PICACHO FLUME TO NEW MEXICO STATE PARK



# WEST LEVEE MESILLA DAM TO NEMEXAS DRAIN MAP 1 OF 3



# WEST LEVEE MESILLA DAM TO NEMEXAS DRAIN MAP 2 OF 3



# WEST LEVEE MESILLA DAM TO NEMEXAS DRAIN MAP 3 OF 3





## Canutillo - Phase 2

- Canutillo East - Levee/Floodwall, Vinton Bridge to Borderland Bridge  
– 5.6 Miles

- ☐ Develop Scope for Task Order

80% complete - January 2010

- ☐ Construction:

Estimated time - 2011-2012



# EAST LEVEE CANUTILLO AREA





# Levee Status – Rectification Project

## ■ El Paso Levee, International Dam (near old Hacienda Restaurant) to downstream of Zaragoza Bridge - 16 Miles

☐ Award Construction Contract:

In House Work by USIBWC

☐ Construction:

Most of the Work is Complete 2007-2008

## ■ Fabens/Tornillo and Ft. Hancock Levee Improvements – 20 Miles

☐ Plans and Specs are being produced:

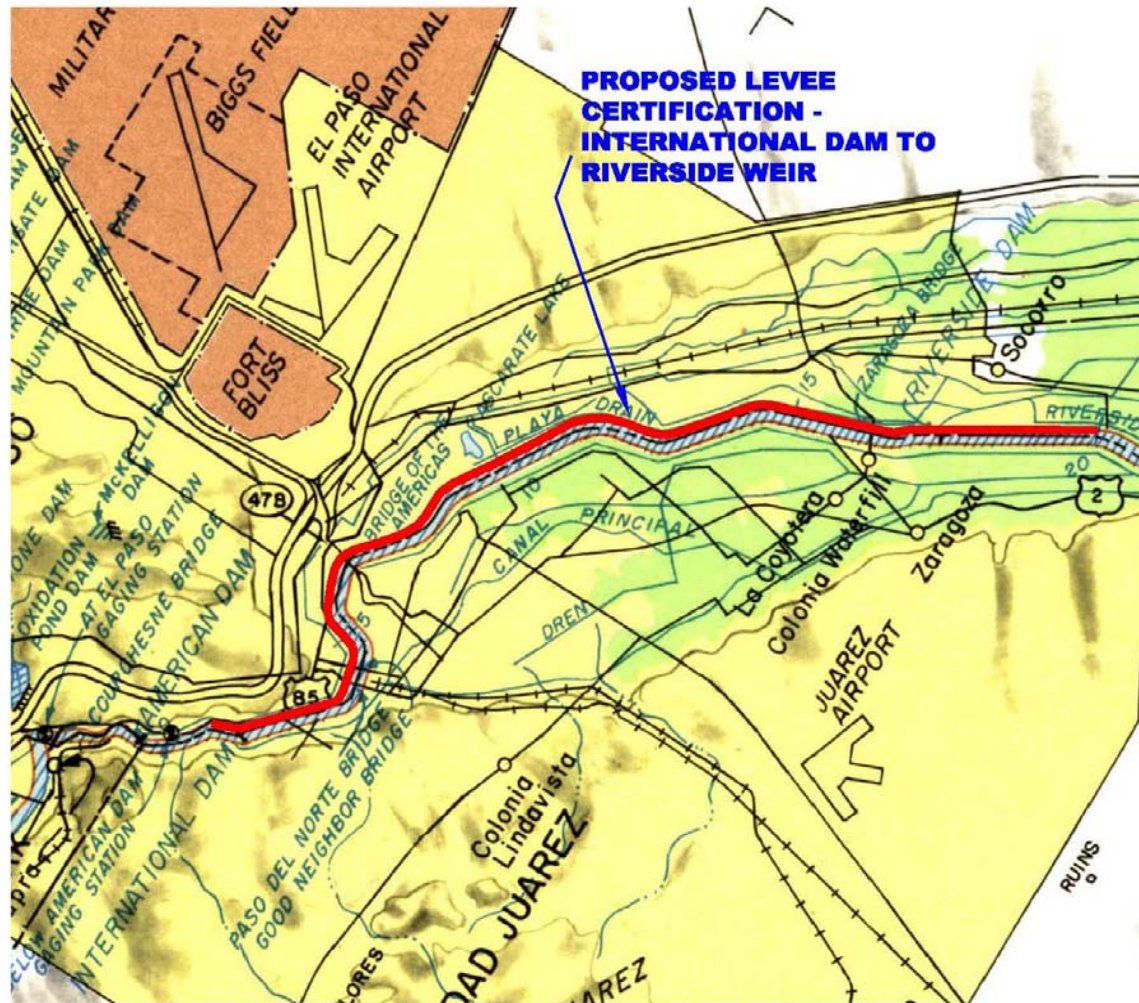
☐ Award Construction Contract:

February 2010

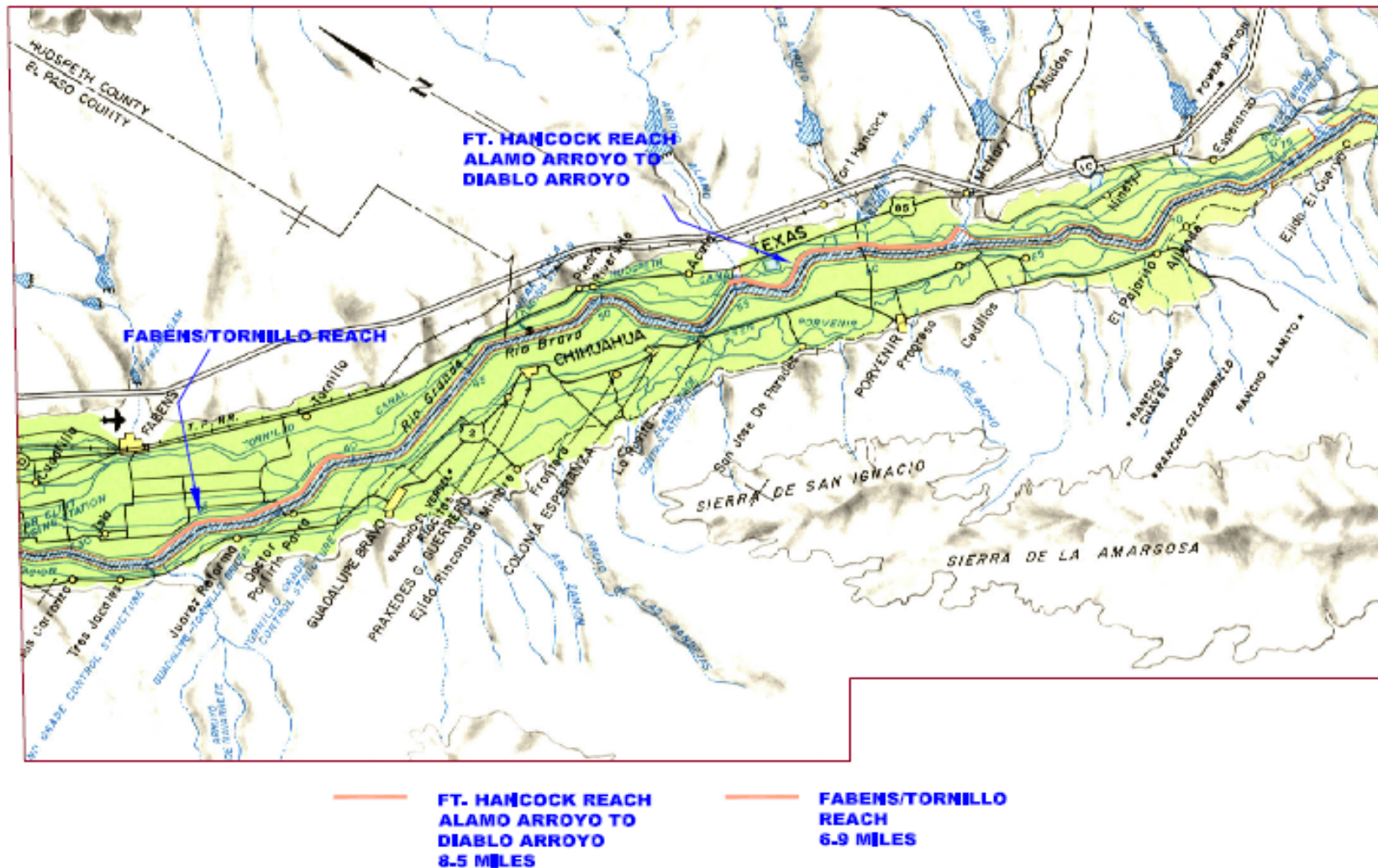
☐ Construction:

March 2010 – March 2011

# Proposed Levee Certification



# El Paso/Hudspeth County Levee Improvement





# Design Criteria for Levee Systems

- **Freeboard** – 3 feet above the Base Flood Elevation
- **Closures** – All openings must be provided with a closure device
- **Embankment Protection** – No appreciable erosion of levee can be expected
- **Embankment and Foundation Stability Analyses** – Evaluation of levee embankment seepage
- **Settlement Analyses** – Demonstrate that freeboard will be maintained
- **Interior Drainage** – Identify sources of potential flooding



# Operation Plan

- **Flood Warning System** – Documentation of a system to trigger emergency operation
- **Plan of Operation** – Specific plan of action and assignments
- **Periodic Operation of Closures** – Exercise closure devices for testing and training



# Maintenance Plan

- **Levee systems** - Must be maintained with an official adopted plan
- **Maintenance activities** - Must be under the jurisdiction of a Federal, State, or an agency of a community
- **The Plan** - Must document a procedure that ensures the stability, height, and overall integrity of the levee



# Interior Drainage Plan

(USIBWC is not responsible for  
Community interior drainage)

- **Flood Warning System** – Documentation of a flood warning system used to trigger emergency operations
- **Plan of Operation** - Specific plan of action and assignments
- **Manual Backup** – Manual backup for the activation of automatic systems
- **Periodic Inspection** - Periodic inspection of interior drainage systems and periodic operation

# LEVEE ENHANCMENT EQUIPMENT ON LEVEE



# LEVEE ENHANCEMENT EQUIPMENT



# In-House Levee Enhancement Mesilla Valley



# RECOVERY ACT LINKS

- <http://www.ibwc.gov/Recovery/Index.html>  
(overview of USIBWC Recovery Act, with additional links)
- [http://www.ibwc.state.gov/Files/URG\\_Schedule.pdf](http://www.ibwc.state.gov/Files/URG_Schedule.pdf) (weekly updates on Upper Rio Grande levee rehab, including schedules)
- [www.recovery.gov](http://www.recovery.gov) (federal government, all agencies)
- [www.state.gov/recovery](http://www.state.gov/recovery) (State Department)
- [www.FedBizOpps.Gov](http://www.FedBizOpps.Gov) (info for contractors)
- [www.oig.state.gov](http://www.oig.state.gov) (to report suspected fraud)





## **Rectification Project DE SILTING RIO GRANDE/ GUAYUCO ARROYO CONFLUENCE**

- USIBWC will de-silt 3 Kilometers of the Rio Grande at the Guayuco Arroyo confluence

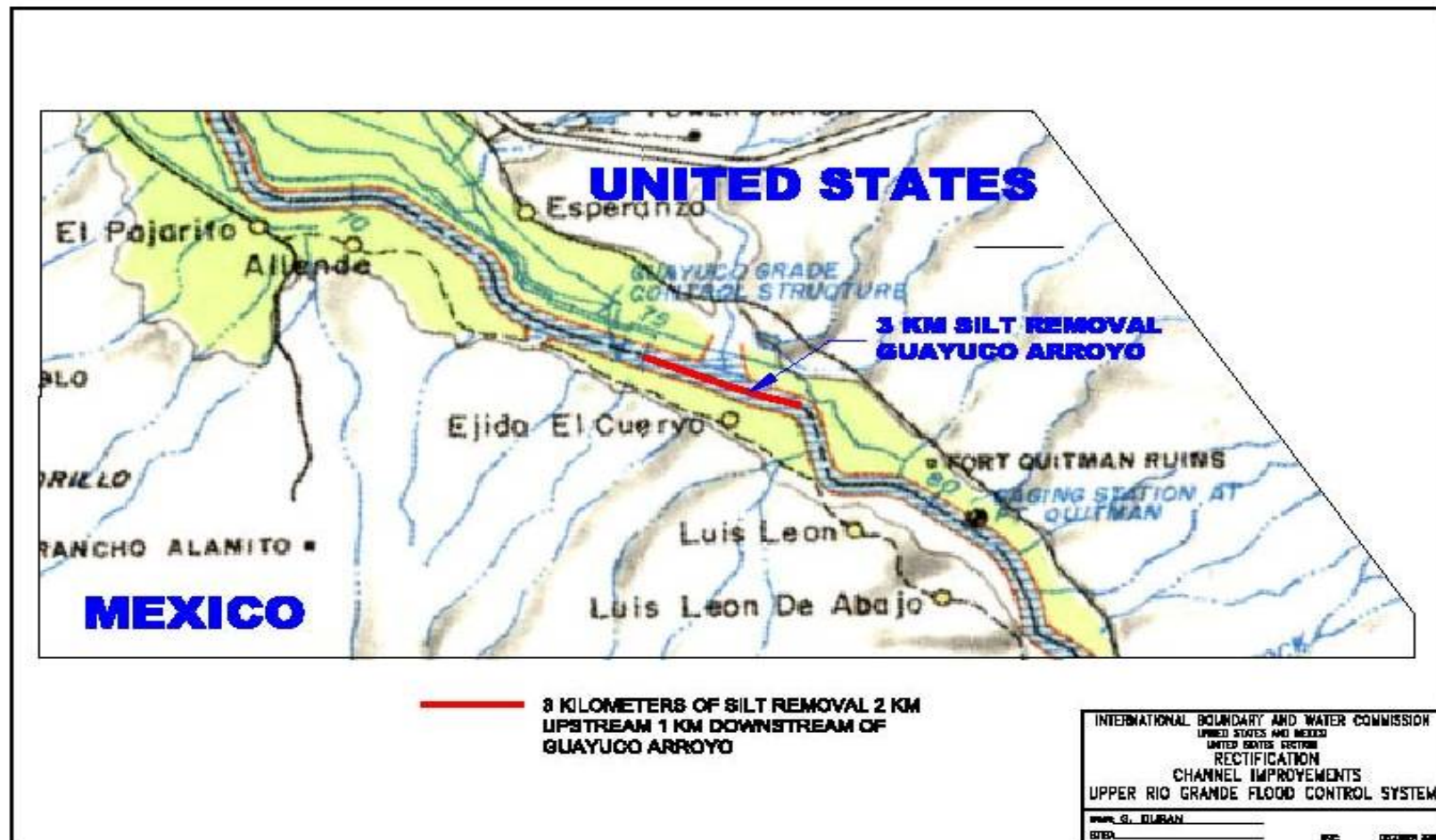
- ☐ USIBWC In House Work
- ☐ To Begin 2<sup>nd</sup> week of January 2010

# NON ARRA WORK RECTIFICATION CHANNEL DE-SILTING



# NON ARRA WORK

## RECTIFICATION CHANNEL DE QUITMAN



# INTERNATIONAL BOUNDARY AND WATER COMMISSION, UNITED STATES AND MEXICO



## Contact Information

Gabriel Duran (915) 832-4746

Tony Solo (915) 351-1030

Cesar Boisselier (915) 351-1030

[www.ibwc.state.gov](http://www.ibwc.state.gov)