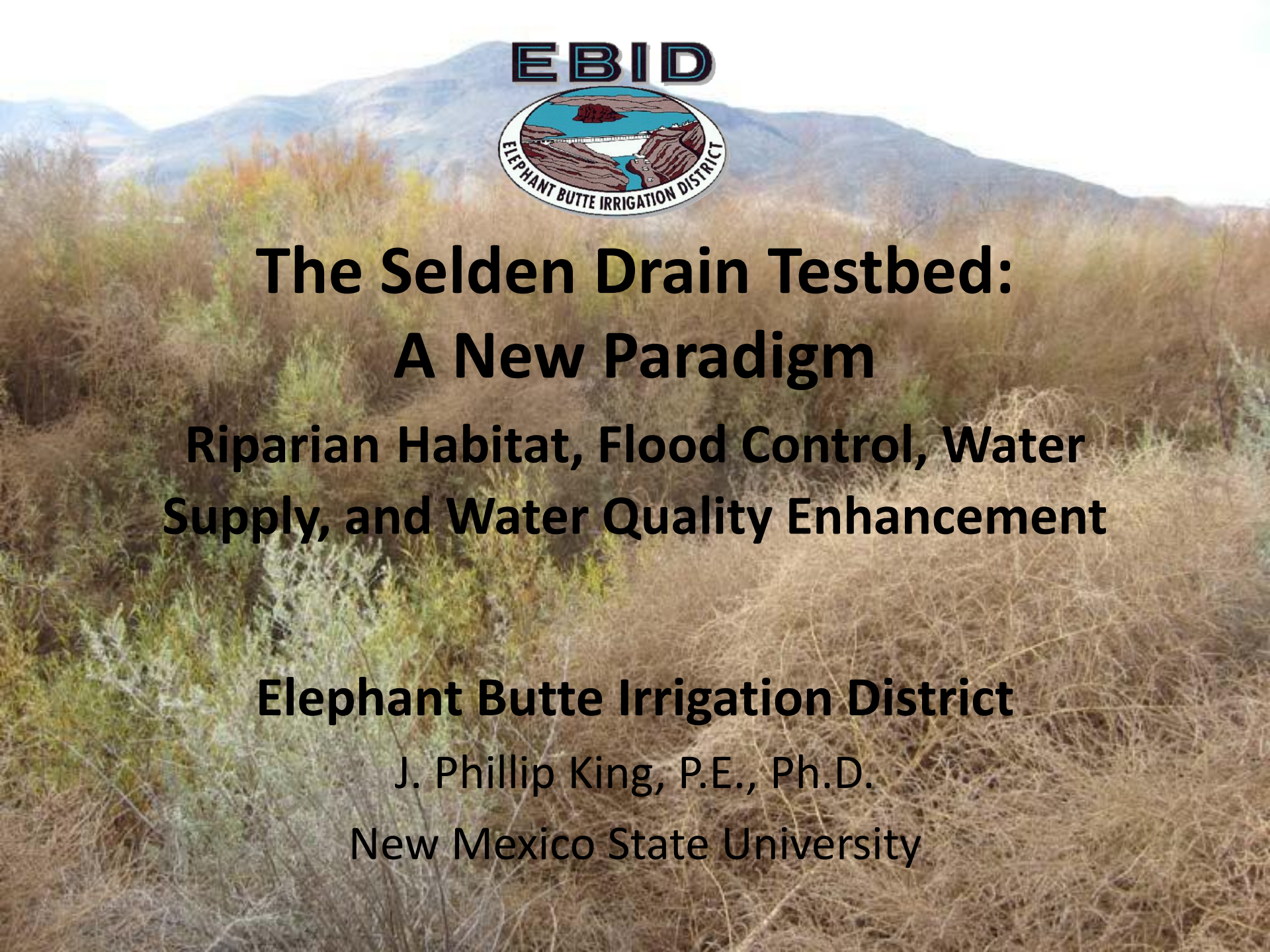


The Selden Drain Testbed: A New Paradigm

Riparian Habitat, Flood Control, Water Supply, and Water Quality Enhancement

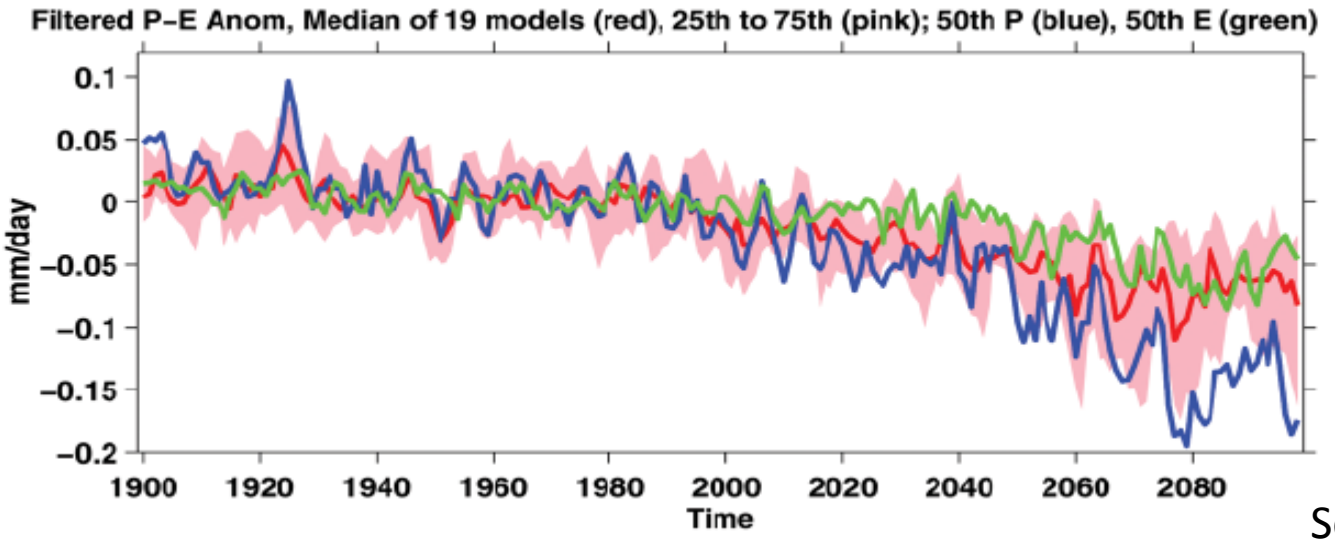
Elephant Butte Irrigation District

J. Phillip King, P.E., Ph.D.

New Mexico State University

EBID's Planning Scenario for Climate Change

- Long-term decrease in snowpack in Colorado and northern New Mexico, historically 80 percent of Project Water supply
  - As snowmelt runoff decreases, so does allocation to Mexico, EPCWID
- Increase in severity of extreme rainfall events
  - Management and use of storm flow does not affect allocation to Mexico, EPCWID
  - Significance of 2008 Operating Agreement, EBID, EPCWID, and BOR
- Increase in duration and severity of drought
  - Requires innovative conjunctive management of surface water and groundwater
- Strategic response is not sensitive to actual outcome.



Seager et al, 2007

Storm Water Issues

- Inadequate flood control infrastructure
  - Improvisational
  - Beyond design life
  - Developed for low risk duty
  - Sediment and debris
- Aimed at evacuating water downstream
  - Could be used directly, stored, or recharged to aquifer
- Reduced habitat along river corridor
  - Canalization provides flood protection and conveyance but
- E. coli impairment from runoff events

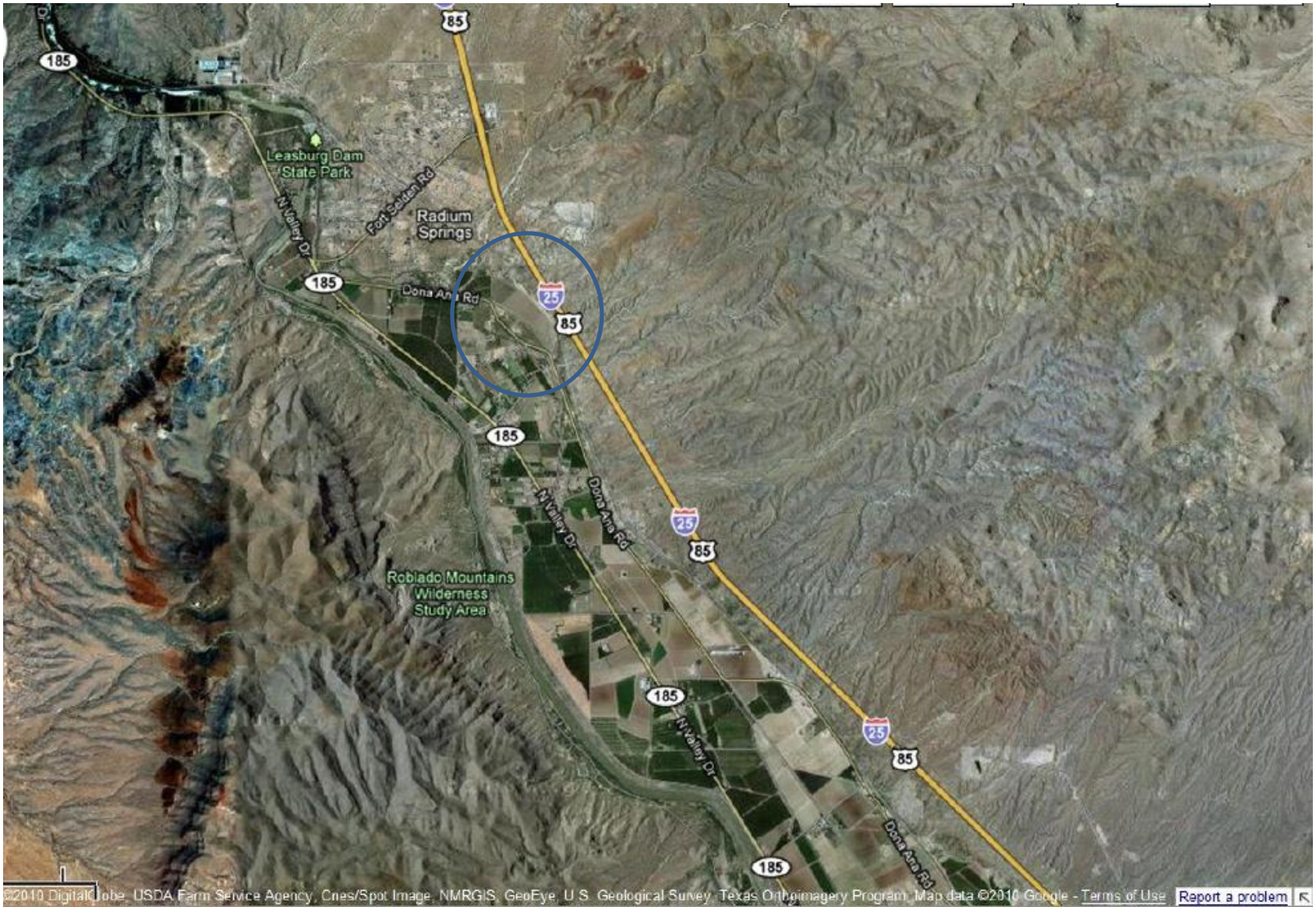
Picacho Hills


Rincon

Hatch

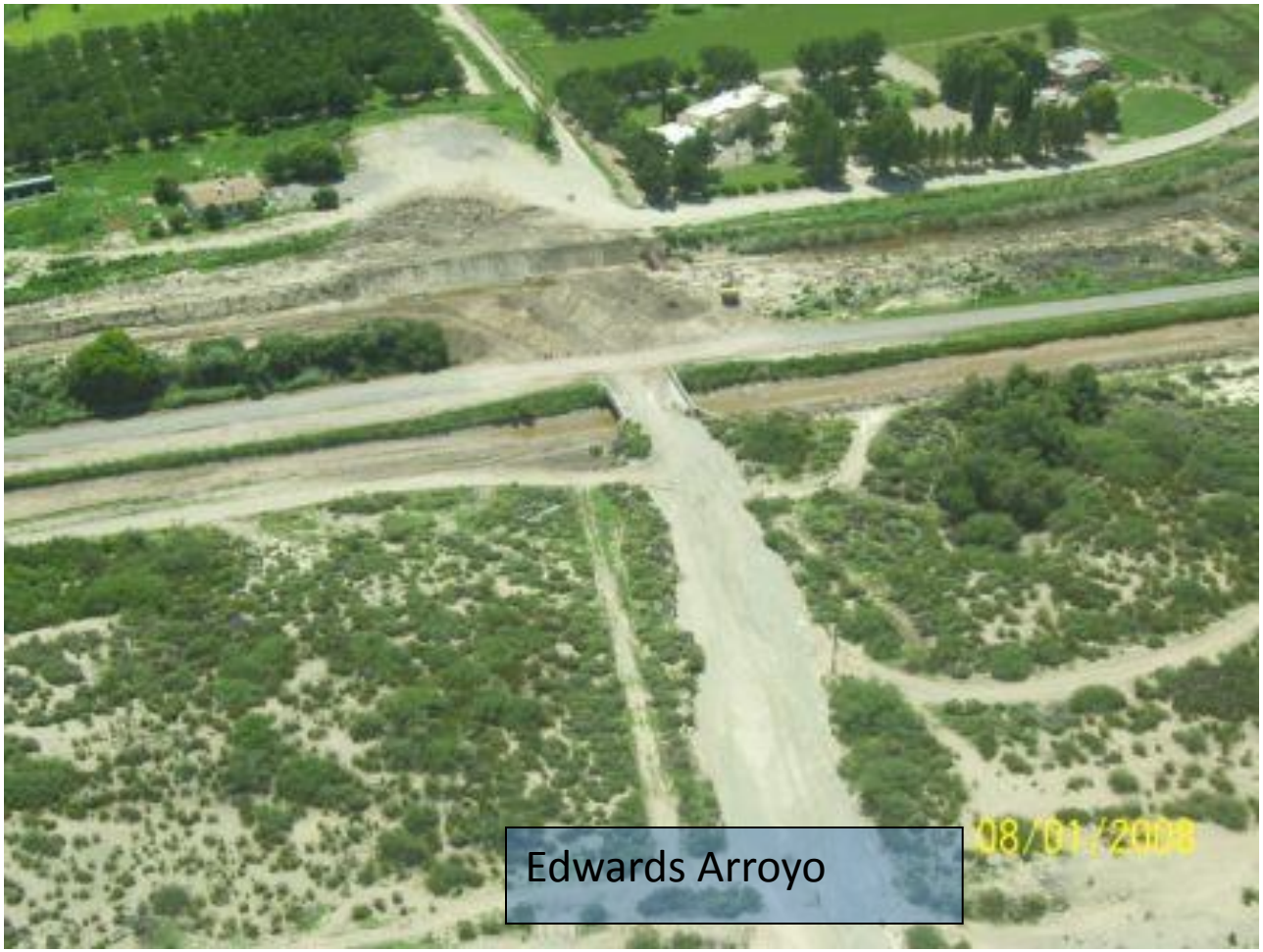

Selden Drain

Selden Drain Location



Dolly Strikes

July 28, 2008



Note narrow drain with low levels of vegetation

July 28, 2008

Selden Drain Testbed

- Funded by RER through NMED
- Major construction completed in 2009
- Ongoing monitoring and evaluation
- Included in National Science Foundation proposal aimed at reinventing urban water management


Left Bank
Right
Bank
Main Channel
Overbank Terrace


Edwards Arroyo
South Habitat &
Stormwater
Retention
section

Selden Drain Project

Plants established

- **Weedy species**
  - **Kochia, Russian Thistle, star nightshade, buffalo gourd, pigweed, others**
- **Riparian species**
  - **Cattails, nutgrass, mixed grasses, sunflower**
  - **Cottonwood, willow, salt cedar, wolfberry**

Ongoing bird surveys

- 21 bird species observed
  - Doves, sparrows, kingbirds, swallows, mallards, hummingbirds, and grackle
  - Riparian specialists: blue grosbeak, common yellowthroat, red-winged blackbird

Bird Surveys by John Douglas

Selden Drain Flood Control Project - In Action

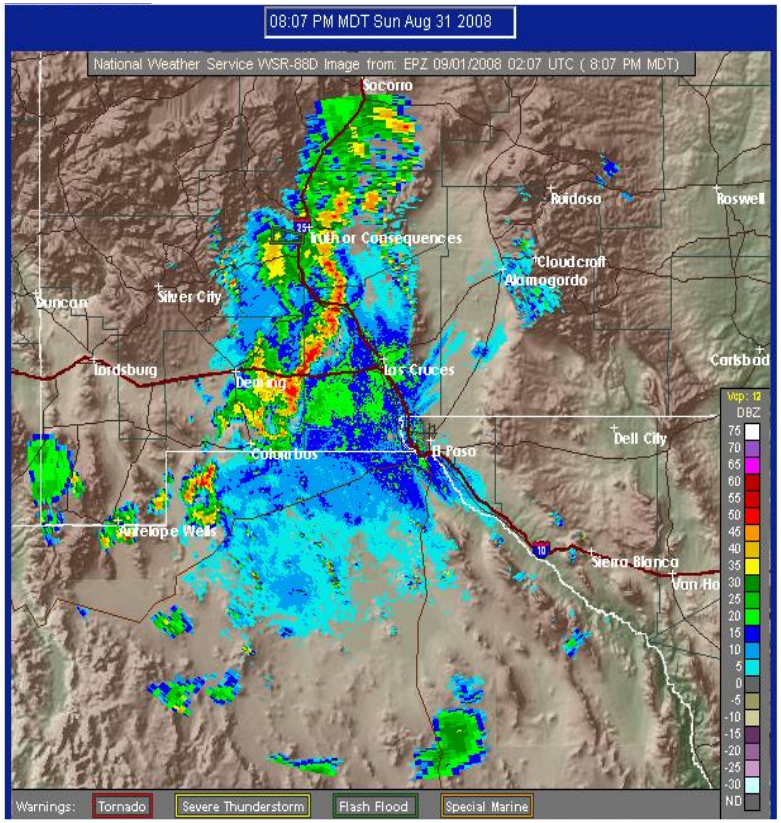
EBID Plans for Regulating Reservoirs

- Burn Lake – Water 2025 grant in partnership with City of Las Cruces – E. coli issues
- Westside Flood Retention (Mesilla Dam)
- Tonuco Drain Regulating Project (Hatch Valley)
- Diez Lagos Retention Project (South Valley)
- La Mancha Retention Project (Central Mesilla Valley)

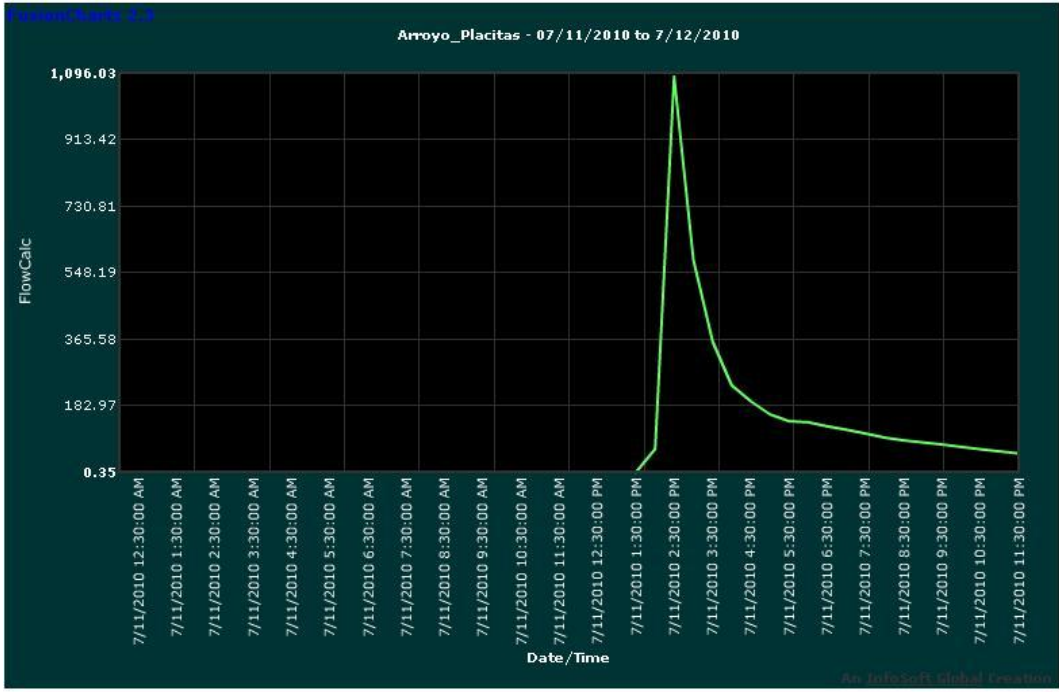
EBID's Advance Warning System Real-time Monitoring

Early warning:

- Satellite and R monitoring – before a runc
- Identify prefe paths for opti instrumentat
- Monitor traje intensity of st for flood resp
- Develop imag algorithms fo forecasting (N
- Retain or rele based on inco



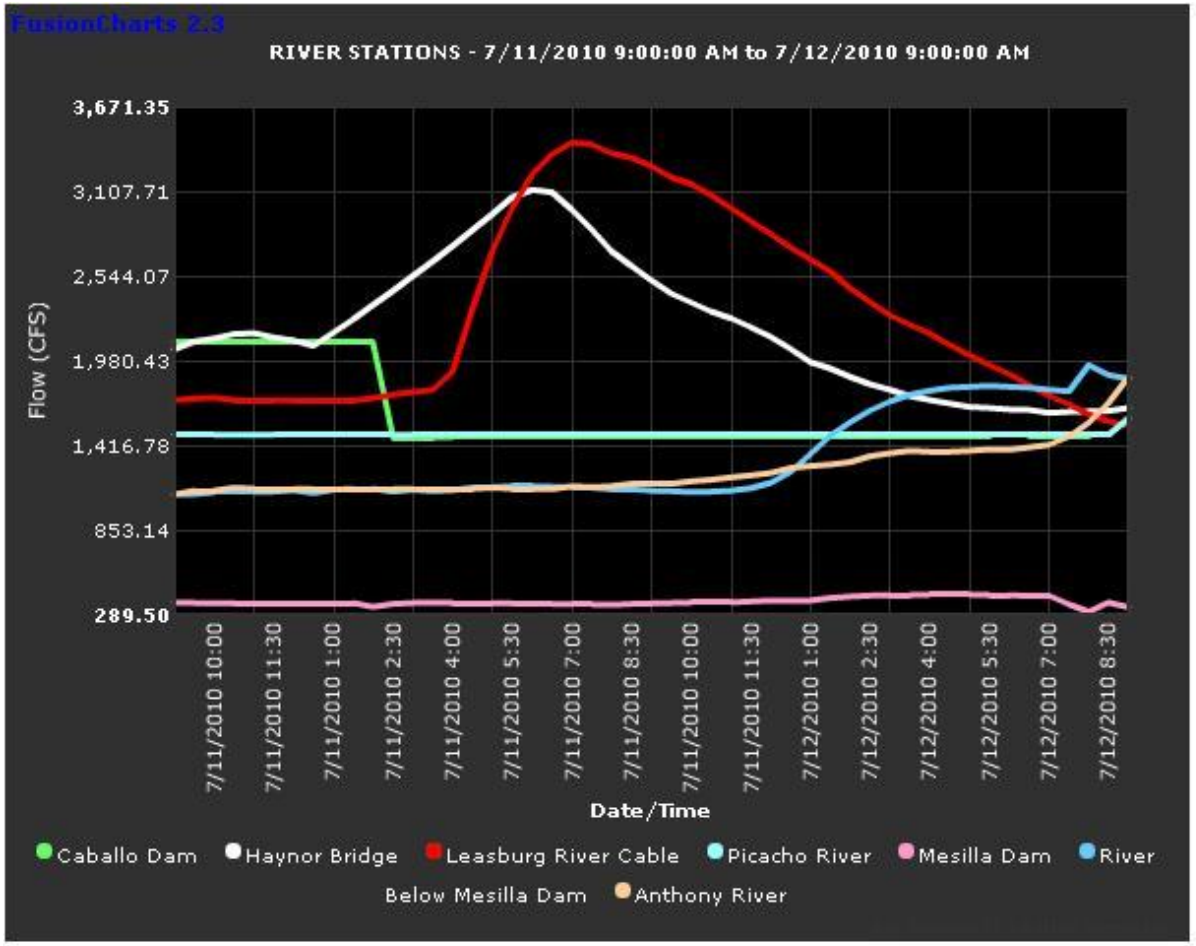
EBID's Watershed Instrumentation Arroyo Metering



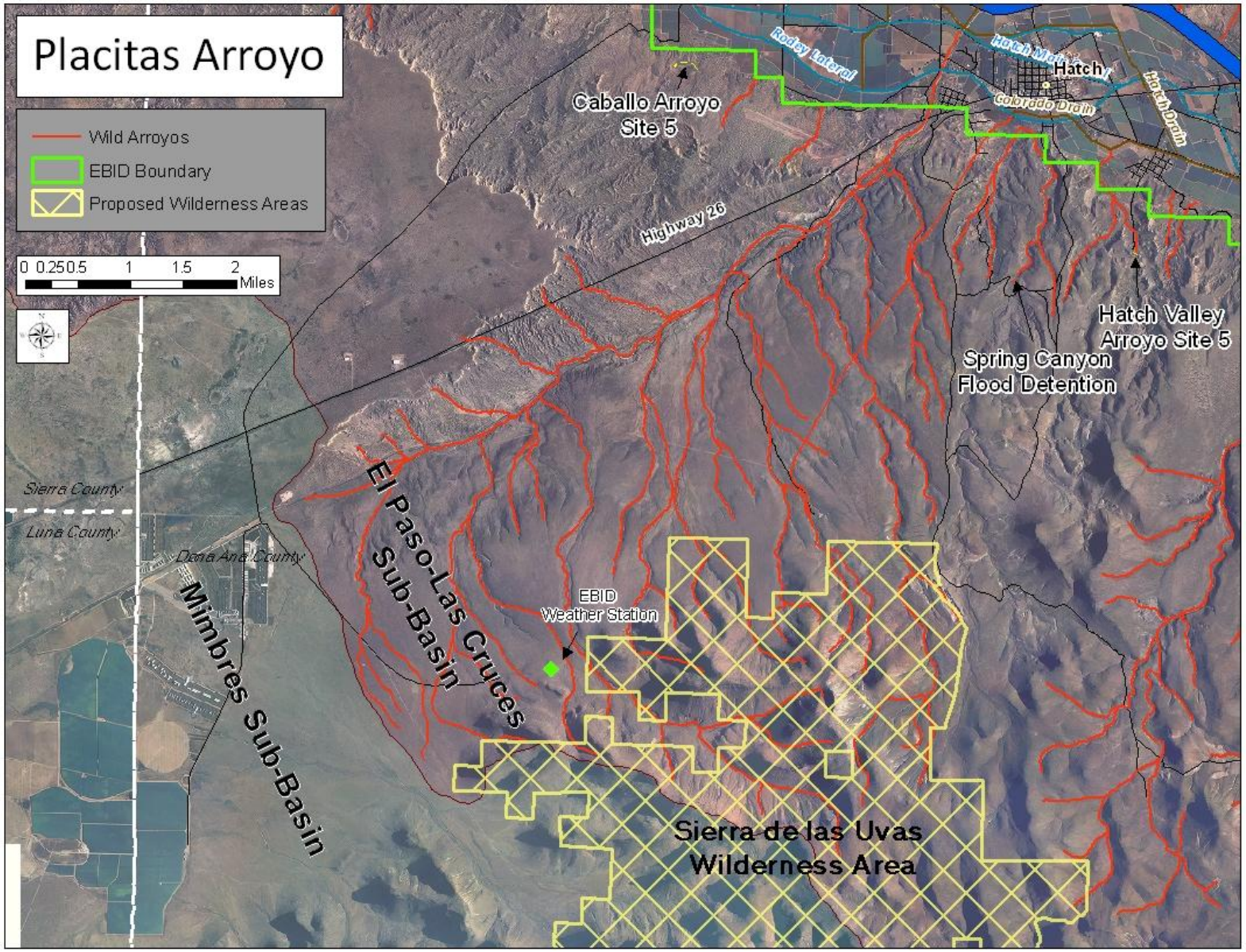
- Early Warning from rain gauges in upper watersheds
  - Flood warning
- Flumes for metering flow into Rio Grande
  - Flood warning
  - Diversion management
- Calibrate hydrologic models of watersheds
  - Improve forecasting
  - Improve statistical characterization of flood flows
  - Identify and prioritize areas for stormwater capture

EBID's Rapid Response to close Caballo Dam gates during Storm Flows

- 7 operational stations from Caballo Dam to the Texas State Line
- 20 minute real-time data, radio telemetry
- Operations management
- Flood tracking and warning
- Available on web, used by many local agencies



EBID utilizes GIS data to understand the potential impact of rainfall on wild arroyos in the Placitas Arroyo Watershed



EBID's Reservoir Instrumentation

- Early warning:
  - Dam instrumentation – storage and discharge status of flood control storage
- Track outlet flow and potential for emergency spillway flow
- Track remaining retention space
- Much safer and more timely than visual confirmation

Regional Watershed Planning & GIS Data Integration

- EBID is working with local authorities – counties, cities, towns, villages – to form a regional stormwater & flood control entity
- EBID collected GIS data from multiple agencies relating to watershed and stormwater
- Provide data sharing via a central clearinghouse
- Advantage: The same important information is shared and used for planning and management decisions & solutions by all agencies