



Rio Grande Canalization Project Water Budget Study

El Paso County, TX and Doña Ana County, New Mexico

Rio Grande Citizens Forum Meeting

**Padinare Unnikrishna, Ph.D., P.E., CFM
Hydraulic Engineer**

**International Boundary and Water Commission
United States Section
Engineering Services Division**

October 16, 2012



Project Overview

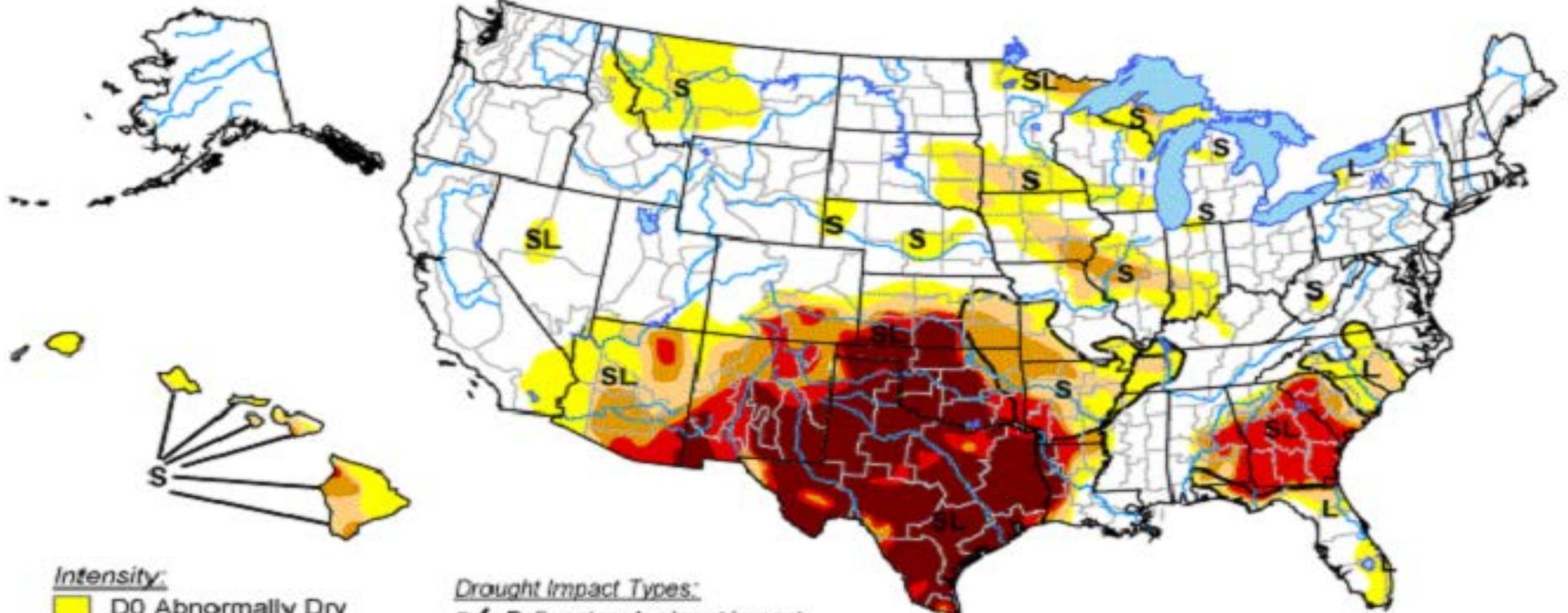
- **Purpose of the Study (Partnering with USBR)**
 - Ongoing severe drought (since Oct 2010)
 - Stakeholders requesting different irrigation water release times
 - Therefore, need to quantify water budgets
 - Implications of different release times and volumes
 - Recommendations on managing water releases in the years ahead
- **Consultant: Tetra Tech**



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U.S. Drought Monitor

September 27, 2011
Valid 8 a.m. EDT



Intensity:

-  D0 Abnormally Dry
-  D1 Drought - Moderate
-  D2 Drought - Severe
-  D3 Drought - Extreme
-  D4 Drought - Exceptional

Drought Impact Types:

-  Delineates dominant impacts
- S = Short-Term, typically <6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically >6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu/>



Released Thursday, September 29, 2011

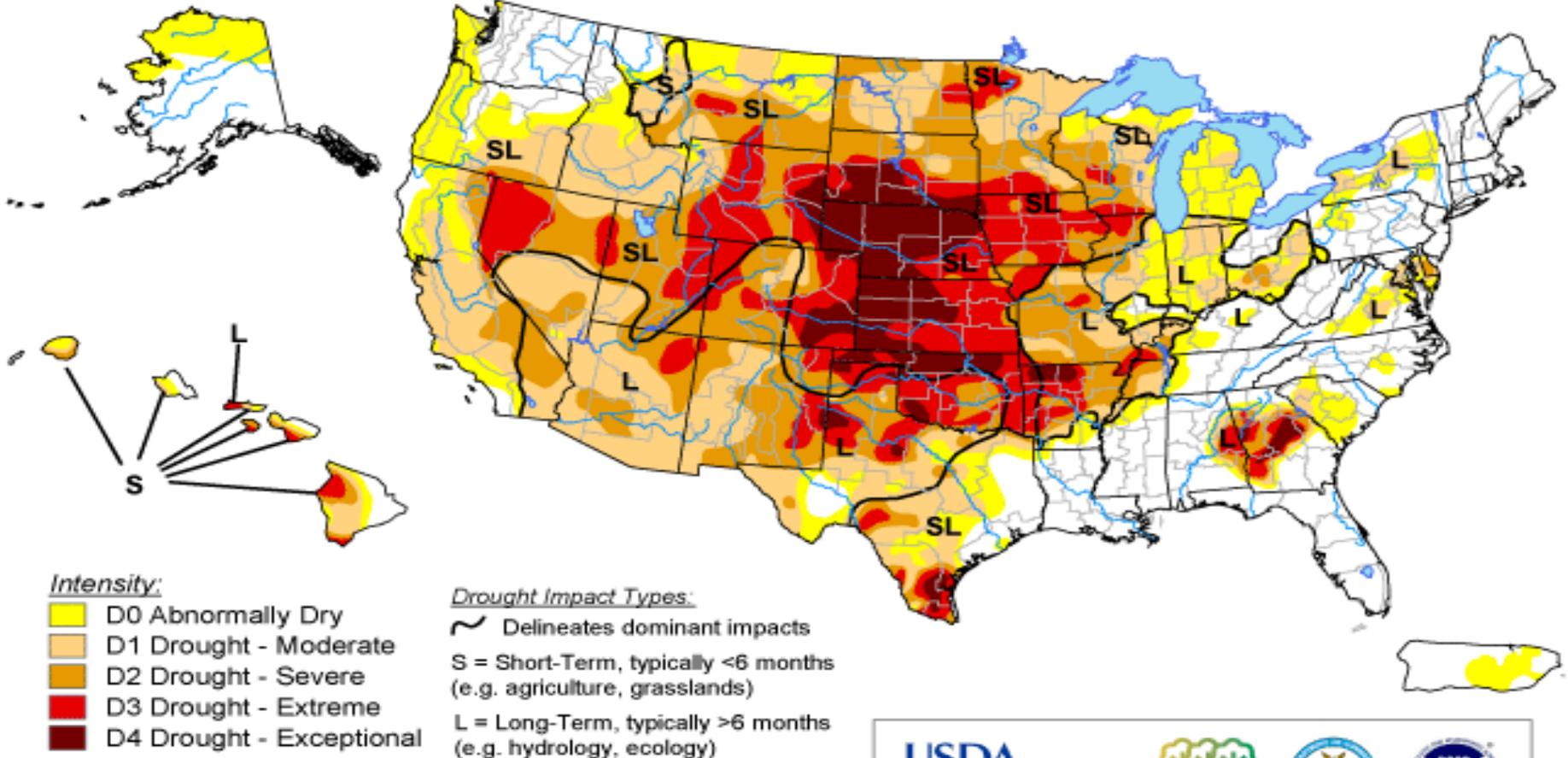
Author: Michael Brewer/Liz Love-Brotak, NOAA/NESDIS/NCDC



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U.S. Drought Monitor

October 9, 2012
Valid 7 a.m. EDT



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu/>



Released Thursday, October 11, 2012
Author: Matthew Rosencrans, NOAA/NWS/NCEP/CPC



Water Budget Study Components

- **Define Study Area**
 - reservoir, watershed, river reach
- **Select Time Step**
 - annual, monthly, weekly, daily
- **Calculations**

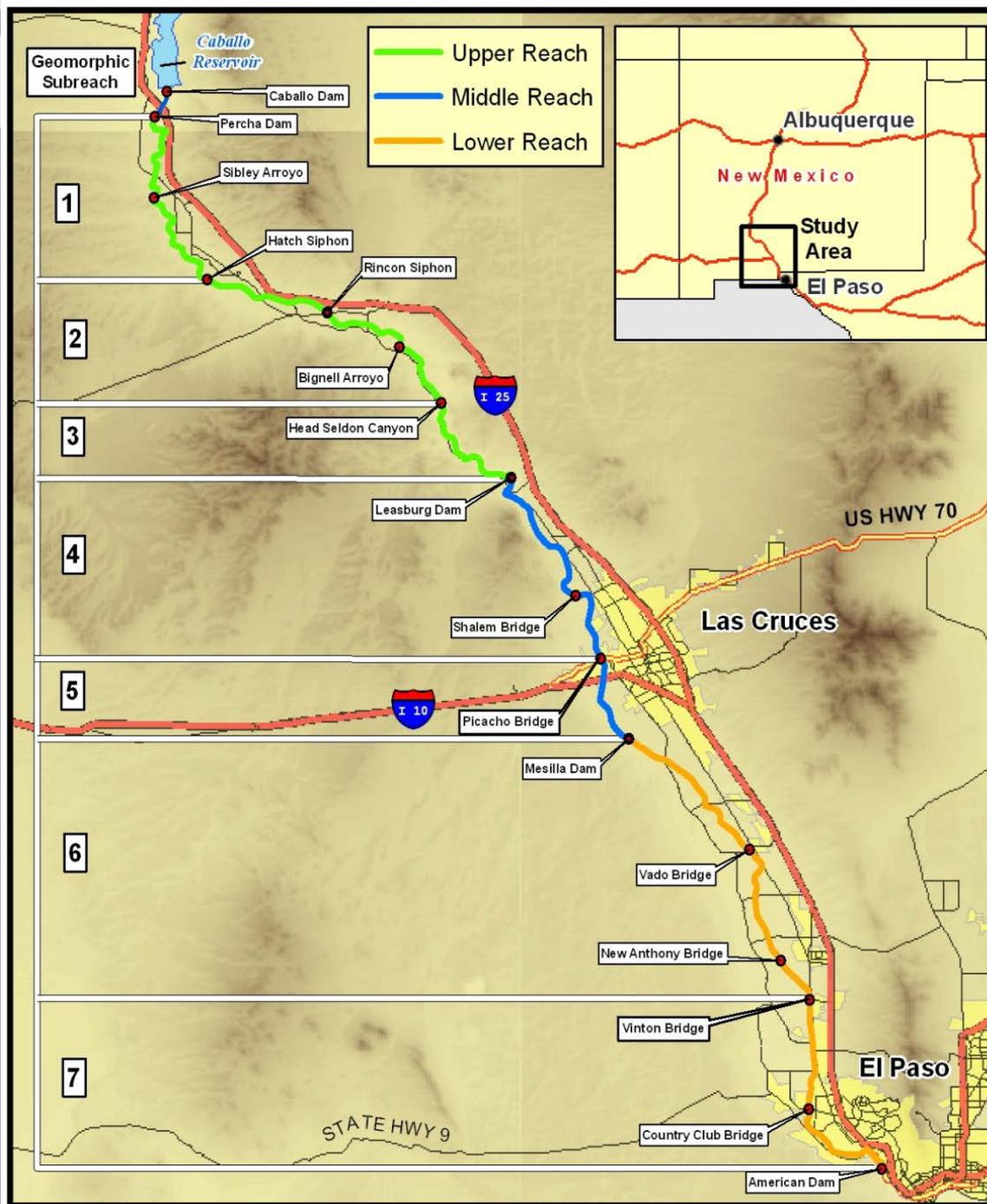
$$\text{INFLOW} - \text{OUTFLOW} = \text{CHANGE IN STORAGE}$$



In

on

Study Area

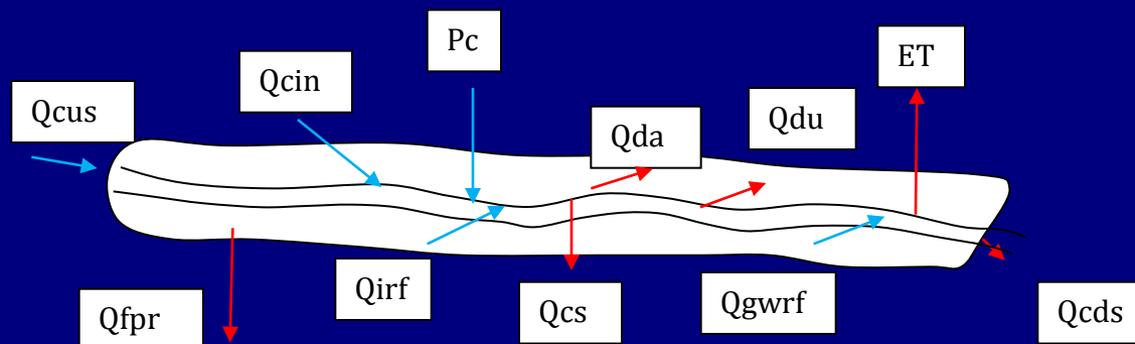




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RGCP Scale Water Budget

Jan 1, 2010 to June 30, 2012; Time Step = Daily



Upper Reach (Caballo to Leasburg metering stations)

Middle Reach (Leasburg to Mesilla metering stations)

Lower Reach Mesilla to Anthony metering station

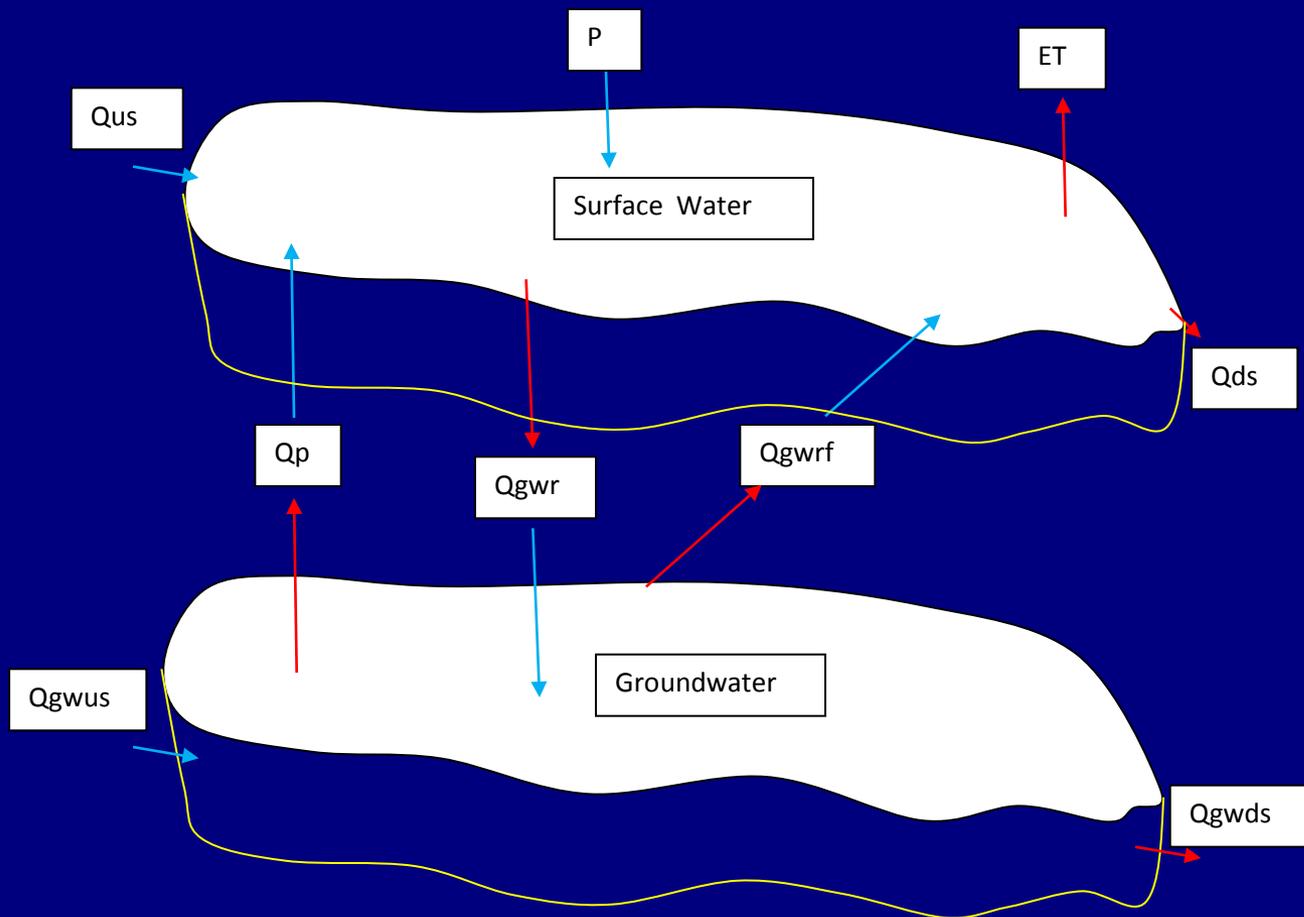
Lower Reach Anthony to American Dam



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Local Basin Scale Water Budget

Jan 1, 2010 to June 30, 2012; Time Step = Daily





Summary of Available Information

- **Measured Data**

Topographic Data – **Based on 2010 LiDAR**

Surface Water Data

Reservoir Outflow Data

Diversion Data

Irrigation Return Flow

Pumping Data

Precipitation and Runoff Data

USGS Groundwater Data

GIS Data



Summary of Available Information

- **Relevant Studies and Literature Review**

 - Channel Seepage Studies

 - Evaporation/ET Studies (Classify Land Use, Crops)

 - Lake Evaporation (Caballo and Elephant Butte)

 - Soil Evaporation

- **Models**

 - HEC-RAS Model

 - FLO-2D Models (2005, 2007, 2009)

 - USGS MODFLOW Groundwater Model (2007)



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Project Status

- **Kickoff Meeting on July 17, 2012**
- **Data Collection Complete**
- **Analysis**
 - HEC-RAS and FLO-2D Updates with latest LiDAR for Channel Seepage Calculations
 - Water Budget Calculations
- **Interpretation of Results**



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Project Schedule

- October 12, 2012: 60% Report
- October 26, 2012: Stakeholder Comments Due
- November 27, 2012: 90% Report Due
- December 4, 2012: Stakeholder Comments Due
- December 7, 2012: Final Report Due



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Expected Benefits from Study

- Improved understanding of the partitioning of water along the RGCP between different components of the water budget.
- Implications of different water release pulses during the March to September irrigation season.
- Provide recommendations on future irrigation releases.
- Provide a good foundation for future water budget studies and water management along the RGCP.



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Engineering Services Division

4171 N. Mesa, Ste C-100

El Paso, TX 79902

(915) 832-4759