

# New Tools for Quantifying Hydro-Economic Well Performance

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Groundwater Management Area 12

Joint Planning Meeting

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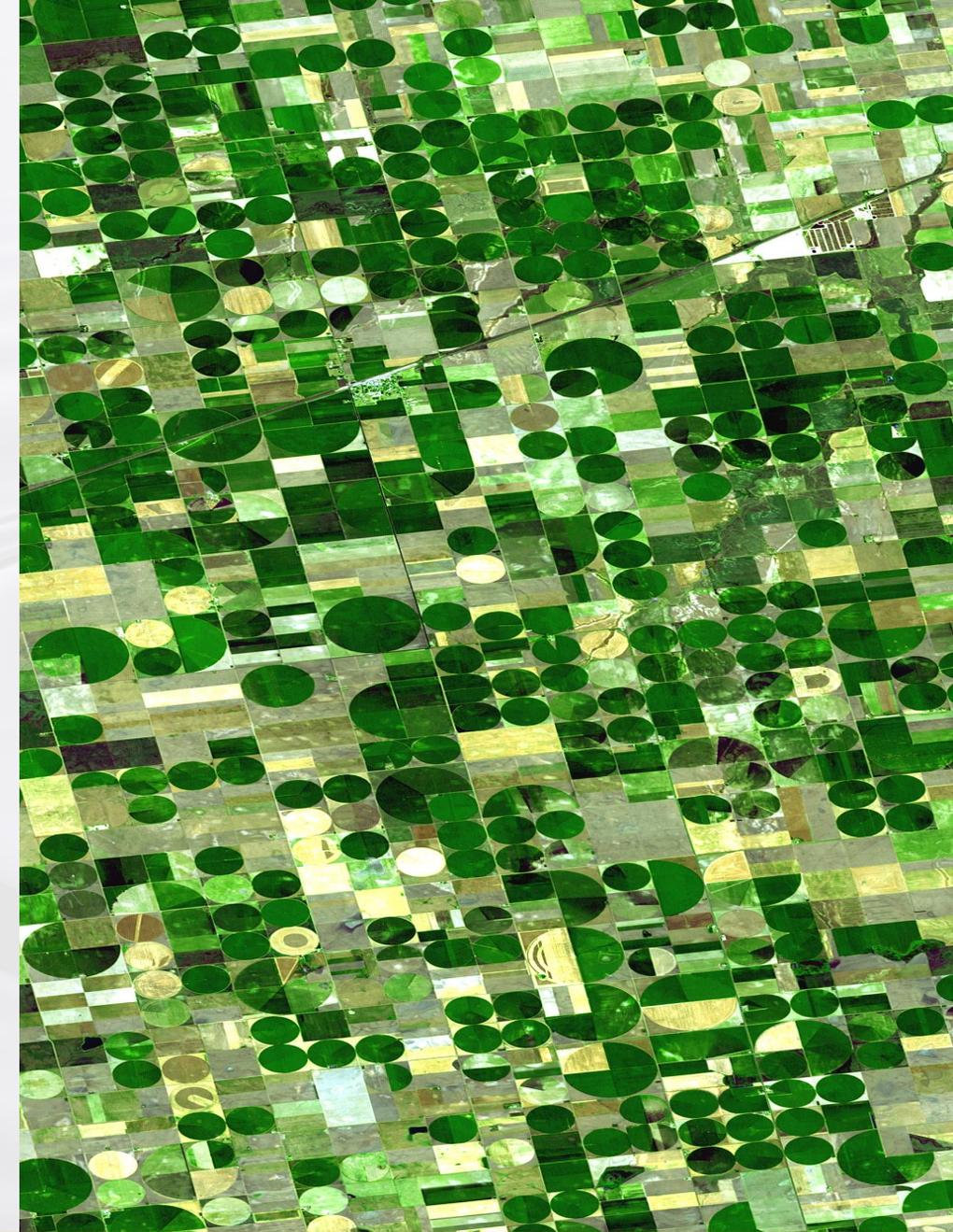
BUREAU OF  
ECONOMIC  
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# MOTIVATION

## DFC Considerations

- Total Estimated Recoverable Storage (TERS)
  - **Arbitrary** recovery constraints
  - No consideration for well performance
- Socioeconomic Impacts
  - TWDB studies on the impact of water deficits
    - **Not DFC impacts** “reasonably expected to occur”
  - No common methods as of 2021 planning cycle



# HYDRO-ECONOMIC APPROACH

*How does well performance change as DTW increases?*

## 1. Operational Impacts

Capacity **falls** with increasing DTW

Model: How water levels in the well respond to pumping

Q: Can the well meet pumping demand without failing?

LIMIT:  $DTW + \text{drawdown} = \text{pump or screen top}$

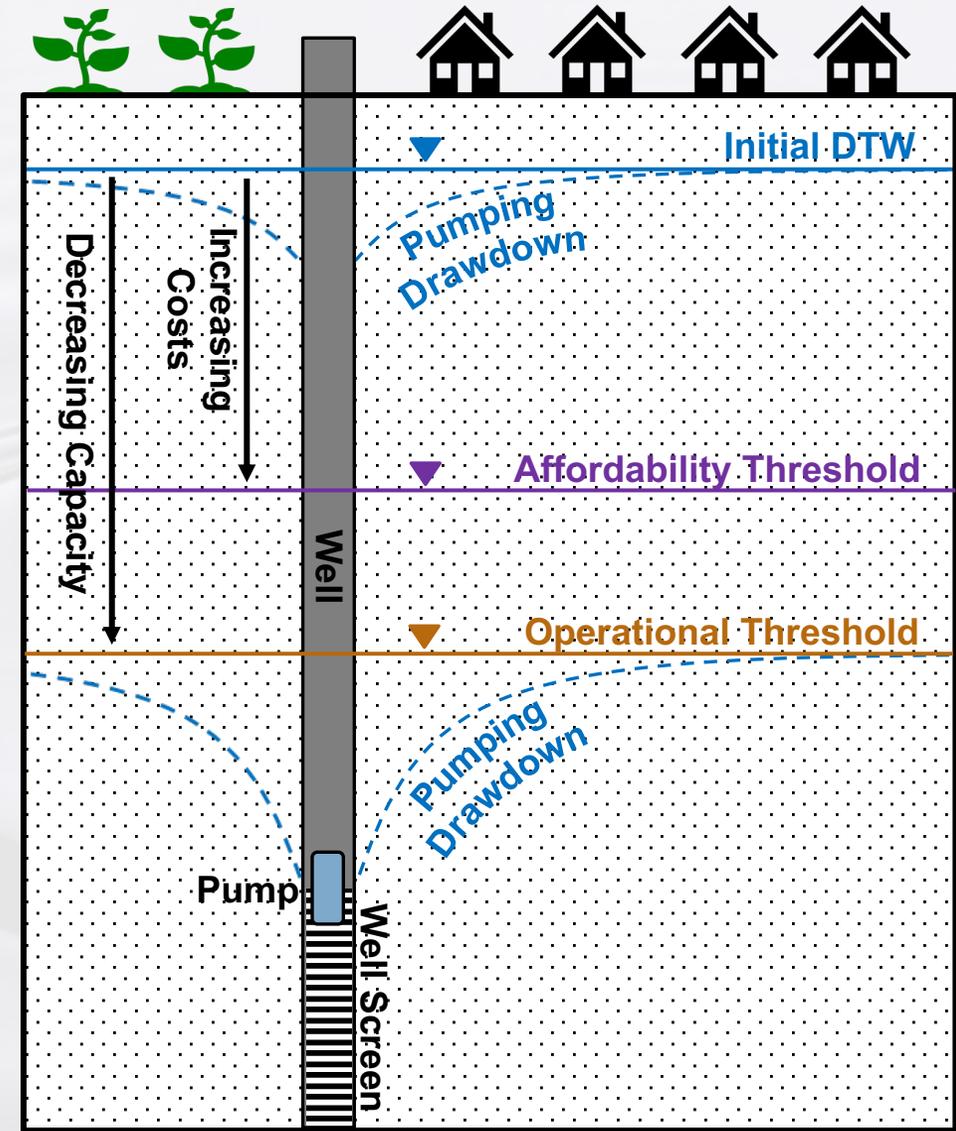
## 2. Economic Impacts

Costs **rise** with increasing DTW

Model: How pumping / remediation costs change

Q: Are pumping / remediation costs affordable?

LIMIT:  $\text{pumping costs} = \text{willingness-to-pay}$



# OUTCOMES

## New Tools

- BEG is developing this approach into a decision support tool
  - Feasible yields: operational or affordable
  - Quantified hydro-economic impacts of DTW changes
- Goal: Free web platform for stakeholder, district, and GMA use

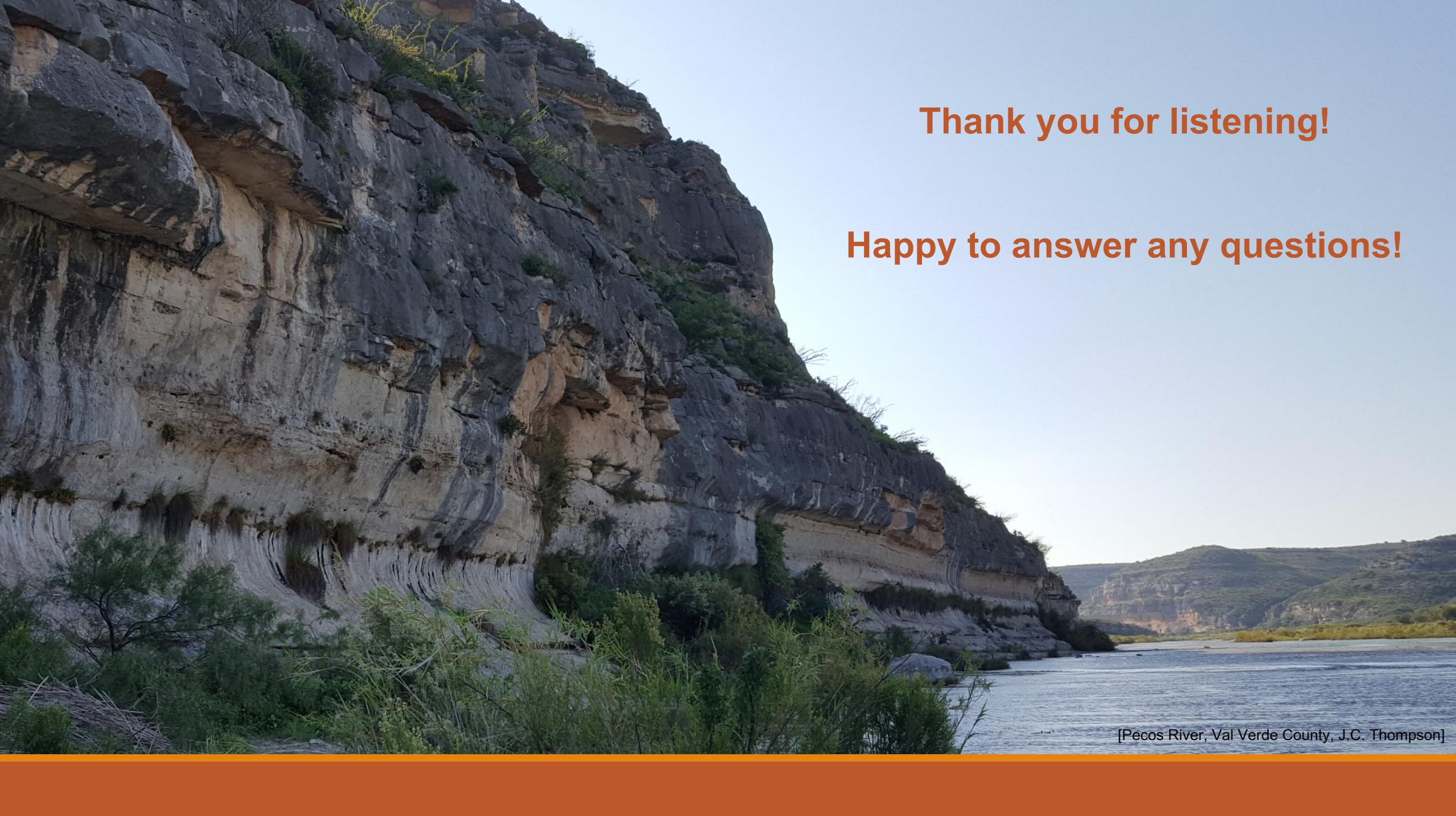
## Pilot Program

- Understand district and stakeholder needs
- Assess the available input data and desired outputs
- Test alpha-version tools and troubleshoot

## Opportunity

- Legislative support for this and other BEG water research



A scenic view of a river flowing through a canyon. The canyon walls are composed of layered, light-colored rock formations, possibly sandstone or limestone, with some darker, more rugged sections. Sparse green vegetation, including shrubs and small trees, grows on the rocky slopes. The river is calm and reflects the sky. In the background, rolling hills and mountains are visible under a clear, light blue sky.

**Thank you for listening!**

**Happy to answer any questions!**

[Pecos River, Val Verde County, J.C. Thompson]