Desalination of Brackish Water in the Southern Mesilla Valley: Preliminary Planning

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The Lower Rio Grande Dilemma

• Persistent drought and a permanent shift to a more arid climate;
• Highly interactive surface water and groundwater;
• Long-term water policy issues;
• Water is necessary for economic development.
• Litigation: Texas and US v. New Mexico on the Rio Grande Project;
Complicating Factors

- Texas has filed suit against New Mexico in the US Supreme Court, claiming that withdrawals of groundwater that is hydrologically connected to the Rio Grande has intercepted Texas water.
- That groundwater is the supply source for most of Lower Rio Grande M&I.
- The US has intervened on Texas’ side
- Clearly, New Mexico’s Lower Rio Grande must diversify its water supply
Desalination of Brackish Water

• US Bureau of Reclamation funding $400k + $478k cost share (NMWRRI), Jan 2019 – Dec 2020
• Co-PIs: Dr. Pei Xu, Dr. Sam Fernald, Dr. KC Carroll
• Geohydrology: Dr. John Hawley, PG
• Consultant: Ed Archuleta, PE
Project Objectives:

• Assess potential for brackish water desalination in the Santa Teresa area;
• Characterize source water and geohydrology, treatment technologies, and disposal alternatives;
• Explore binational potential for water supply to San Jeronimo in Mexico;
• Produce a Preliminary Engineering report and plan next steps.
Collaborative Activities

- Advanced dialog with Universidad Autónoma de Chihuahua’s Department of Civil Engineering colleagues as project collaborators
- USIBWC collaboration
- Seminar on hydrogeologic framework of the Mesilla Basin Region of New Mexico, Texas, and Chihuahua presented by Dr. John Hawley, January 9 2018
Interlinked Hydro-geologic Basins and Subbasins of the Mesilla Basin Region

Mesilla Basin-Subbasin Area with thick zones of saturated Santa Fe Group Basin Fill (blues).

Rio Grande Valley floor (dark blue)

Hawley et al., 2018
Pilot Test/Demo Updates

- Acquired pilot-scale test units from NMSU
- Planning to test pilot-scale desalination system using reverse osmosis (RO) and nanofiltration (NF) membranes
Questions?