

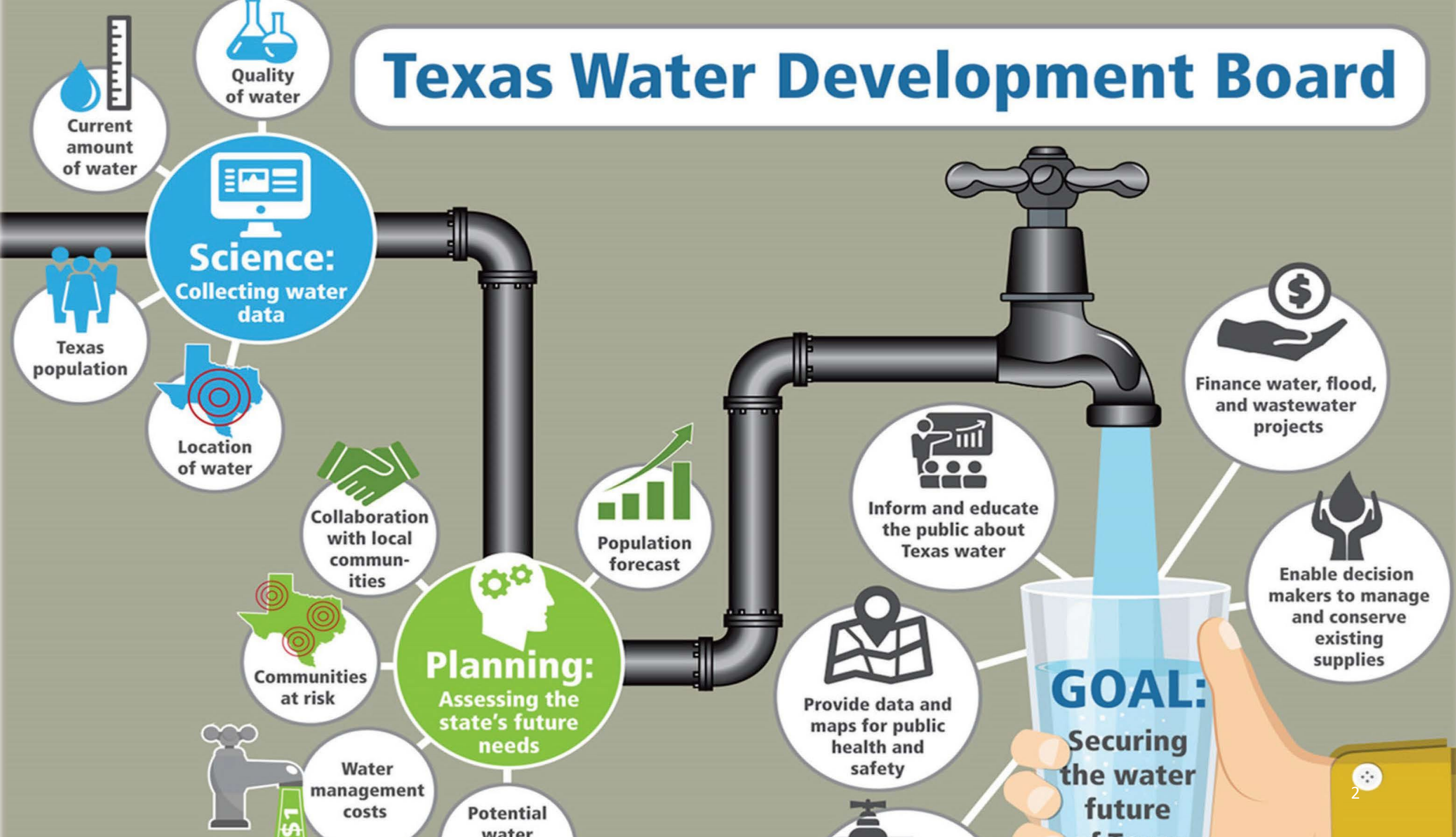
# Desalination in the 2022 State Water Plan

**Erika Mancha**  
**Texas Desal Association**  
**September 2021**

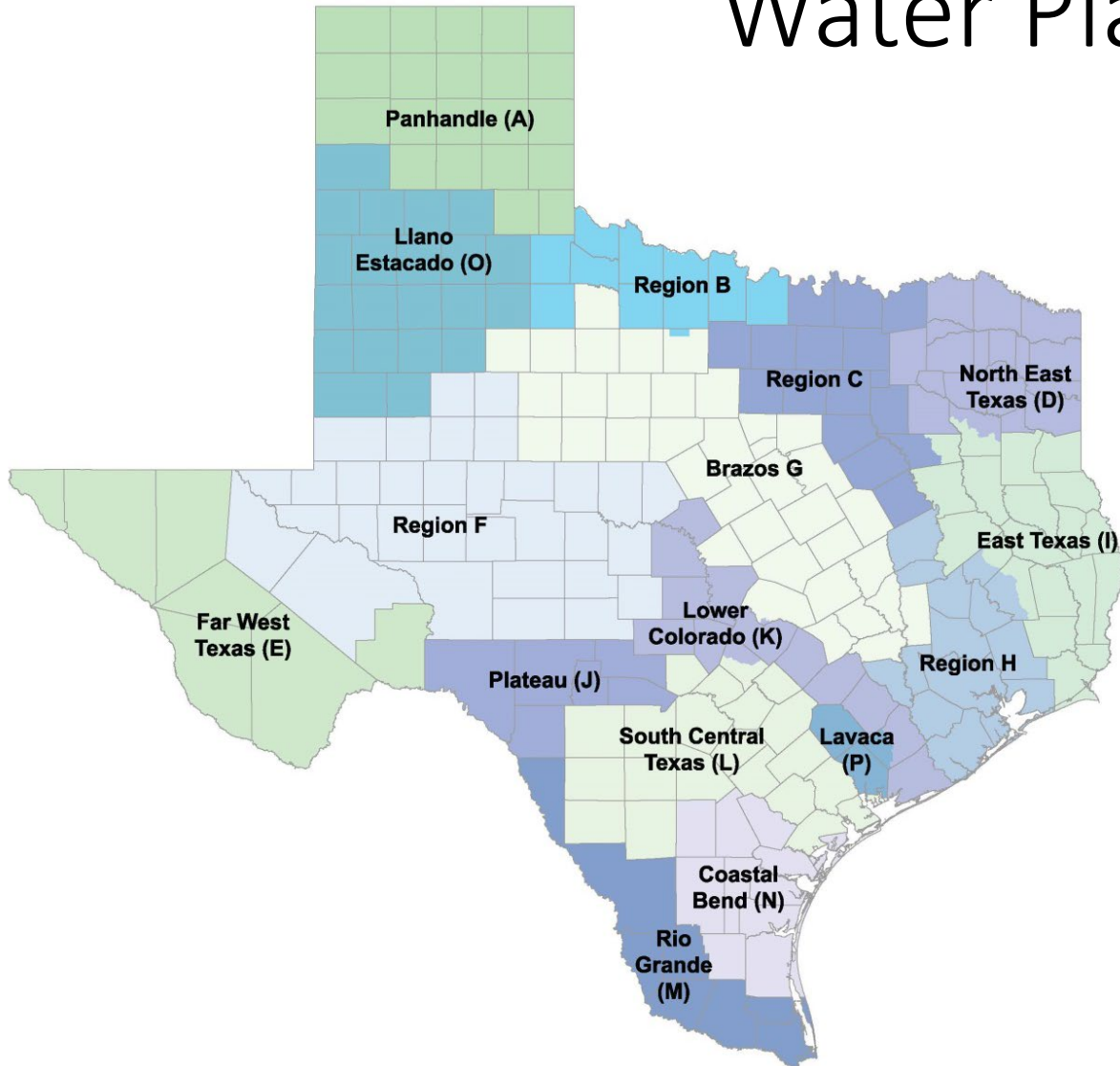
Unless specifically noted, this presentation does not necessarily reflect official Board positions or decisions.



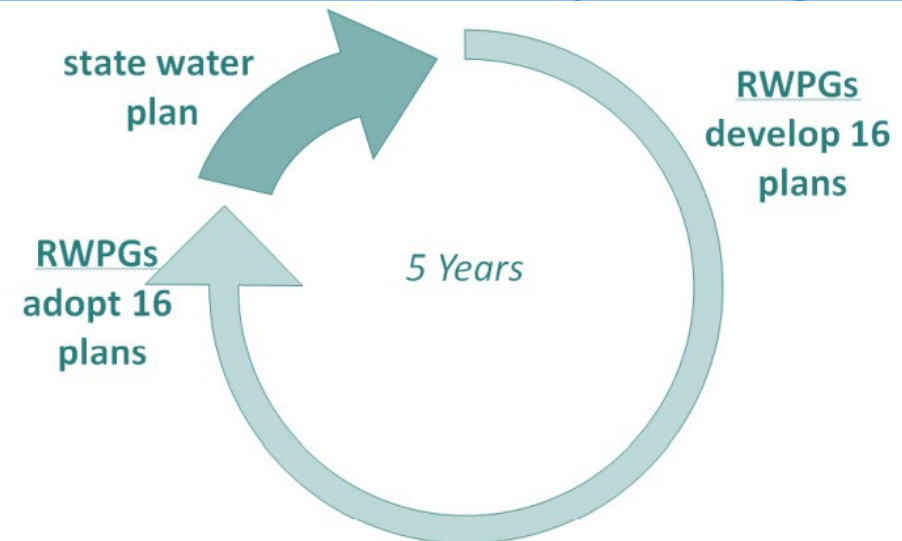
# Texas Water Development Board



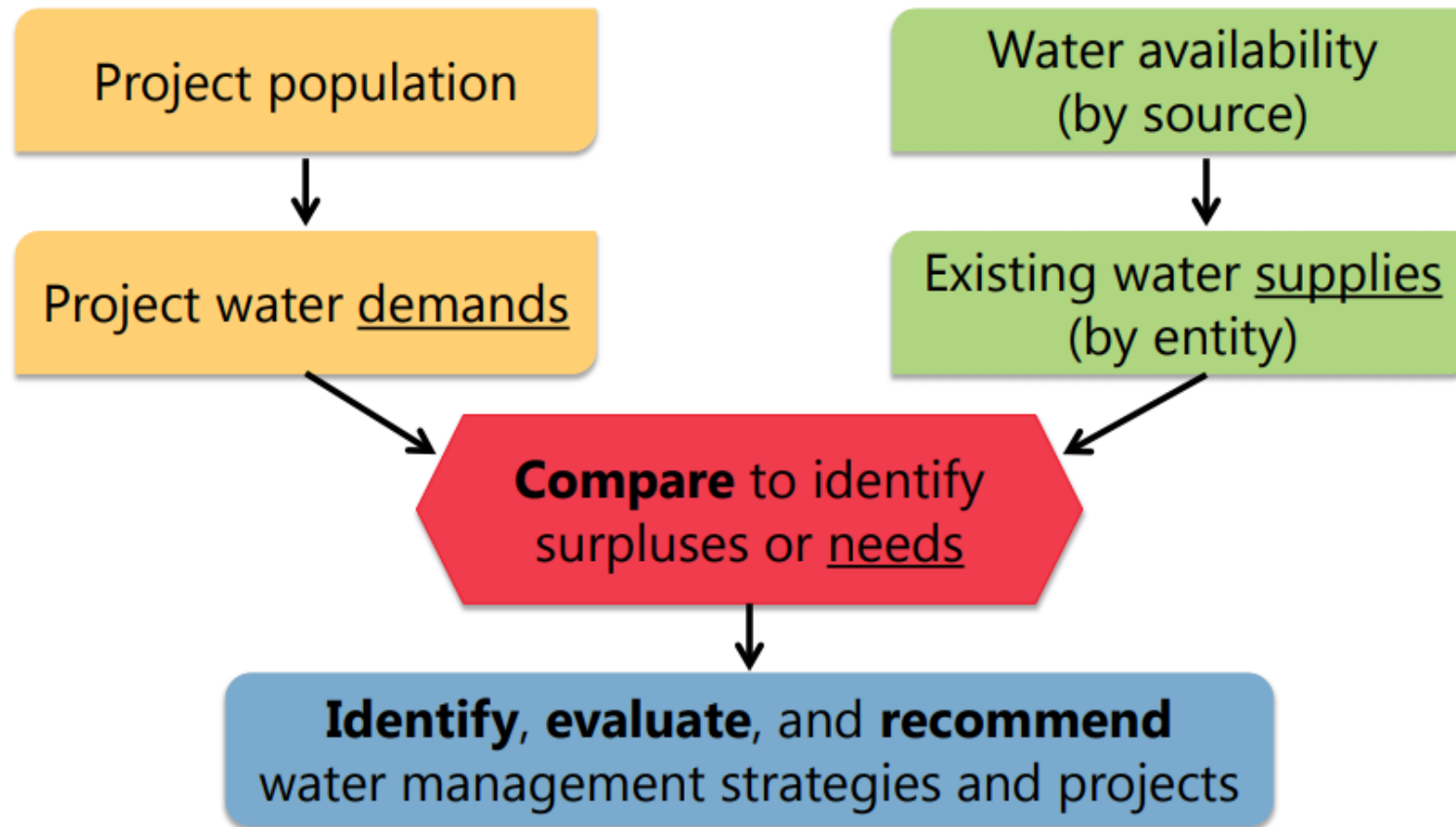
# Water Planning Basics



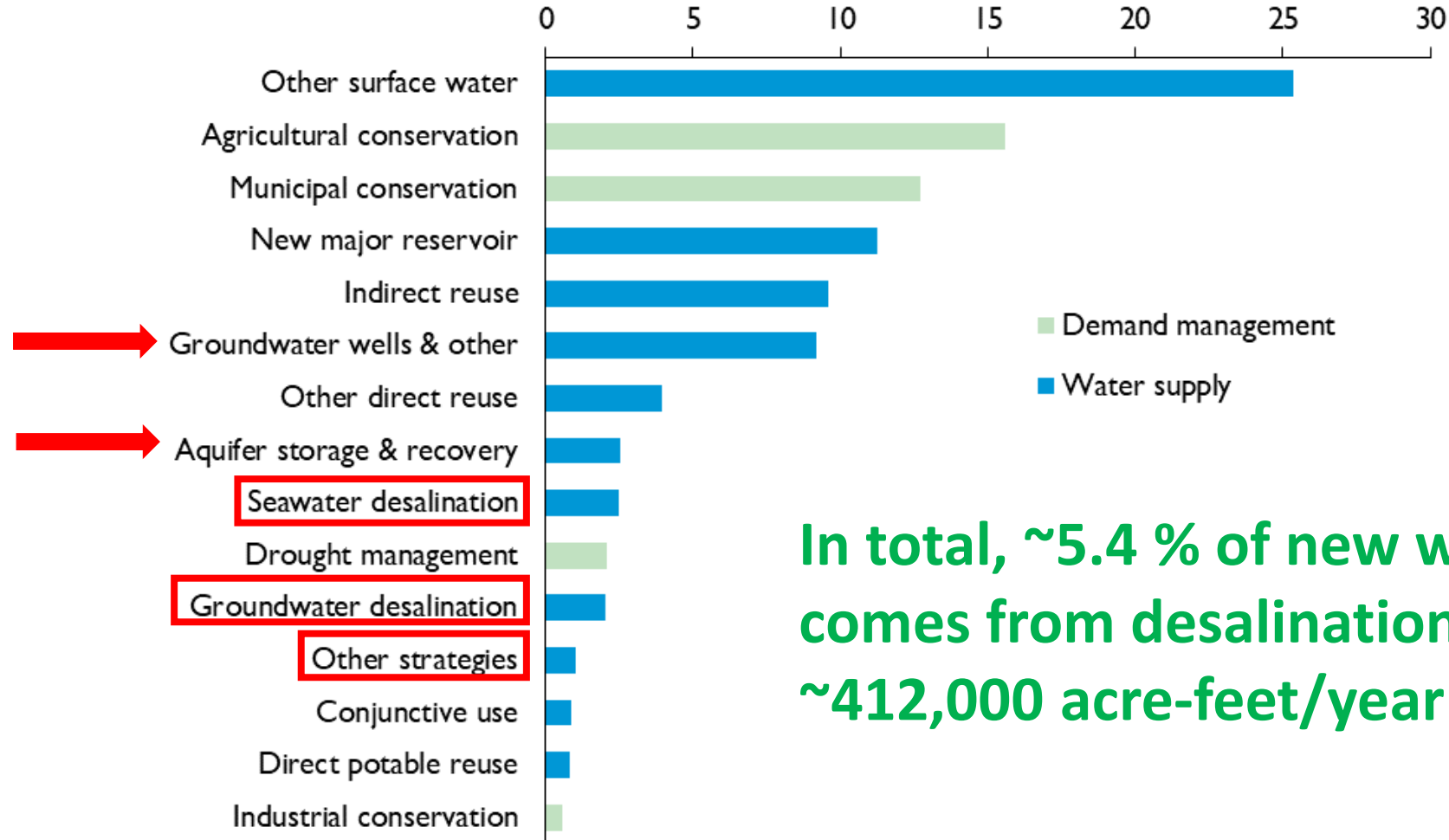
- Bottom-up approach
- 50-year planning horizon
- Meet drought of record water needs
- [2022.texasstatewaterplan.org/statewide](https://2022.texasstatewaterplan.org/statewide)



# Water Planning Basics



# Recommended Water Management Strategies by 2070 in 2022 State Water Plan



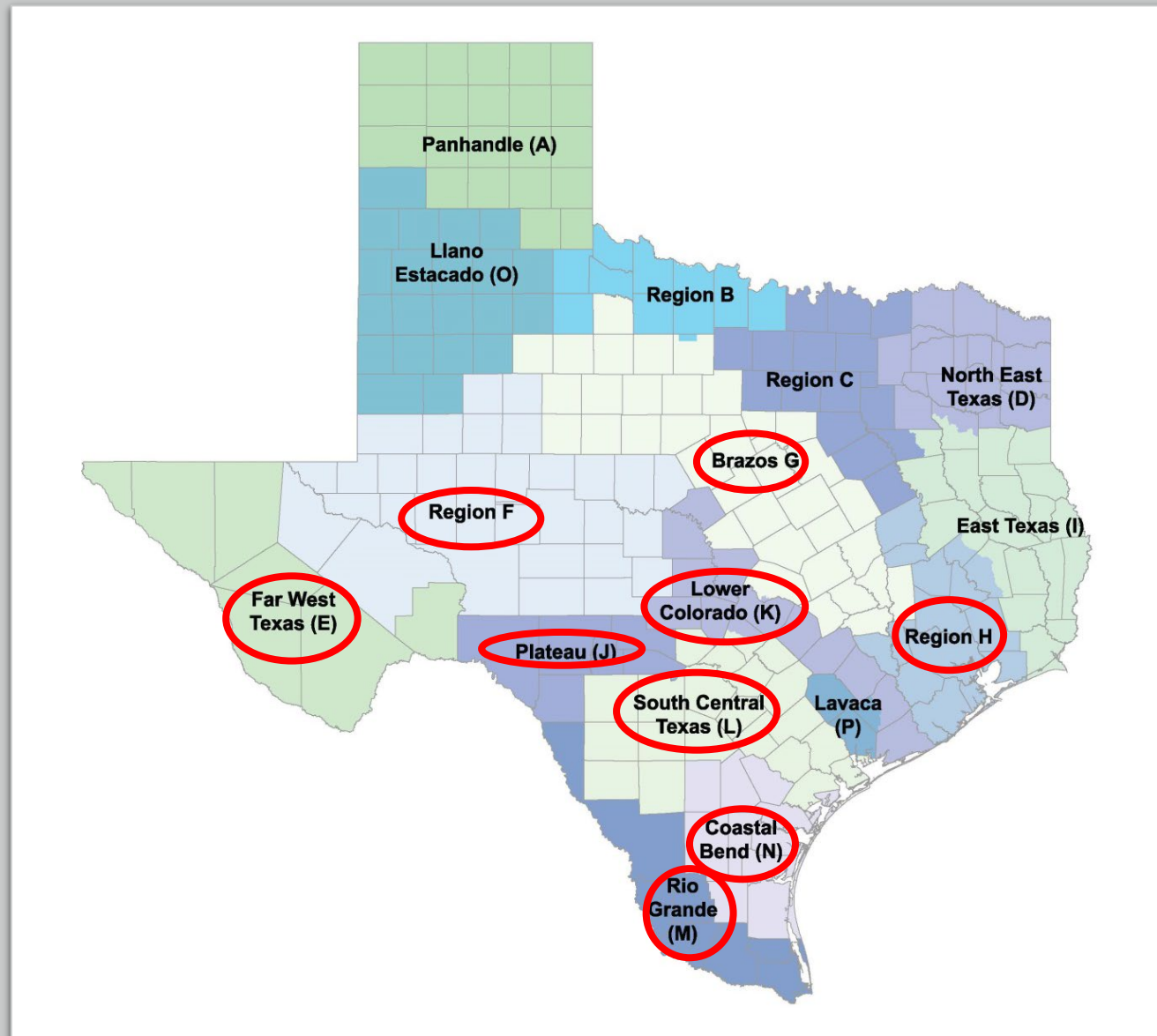
**In total, ~5.4 % of new water supplies comes from desalination, which is ~412,000 acre-feet/year**

# Groundwater Desalination

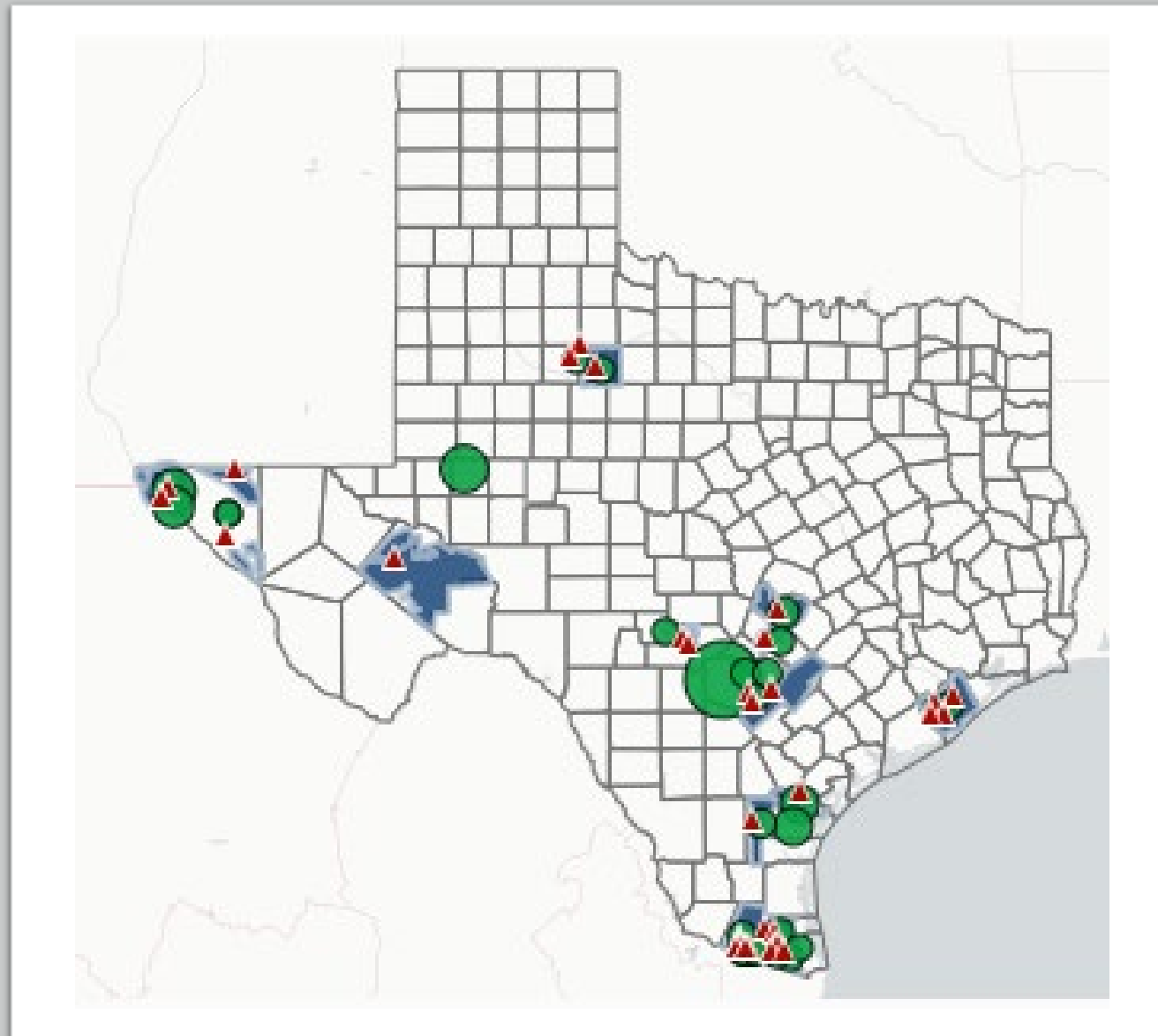
- 157,000 acre-feet per year of supply from brackish groundwater desalination is recommended in 2070 (~2.1% out of 5.4% total)
- Nine out of the 16 planning groups recommended groundwater desalination strategies
- Barriers for implementation include:
  - cost of desalination treatment and infrastructure
  - lack of interested project sponsors
  - existing availability of non-brackish water sources
  - lack of qualified operators in rural areas to operate plants



# Groundwater Desalination



# Groundwater Desalination Projects

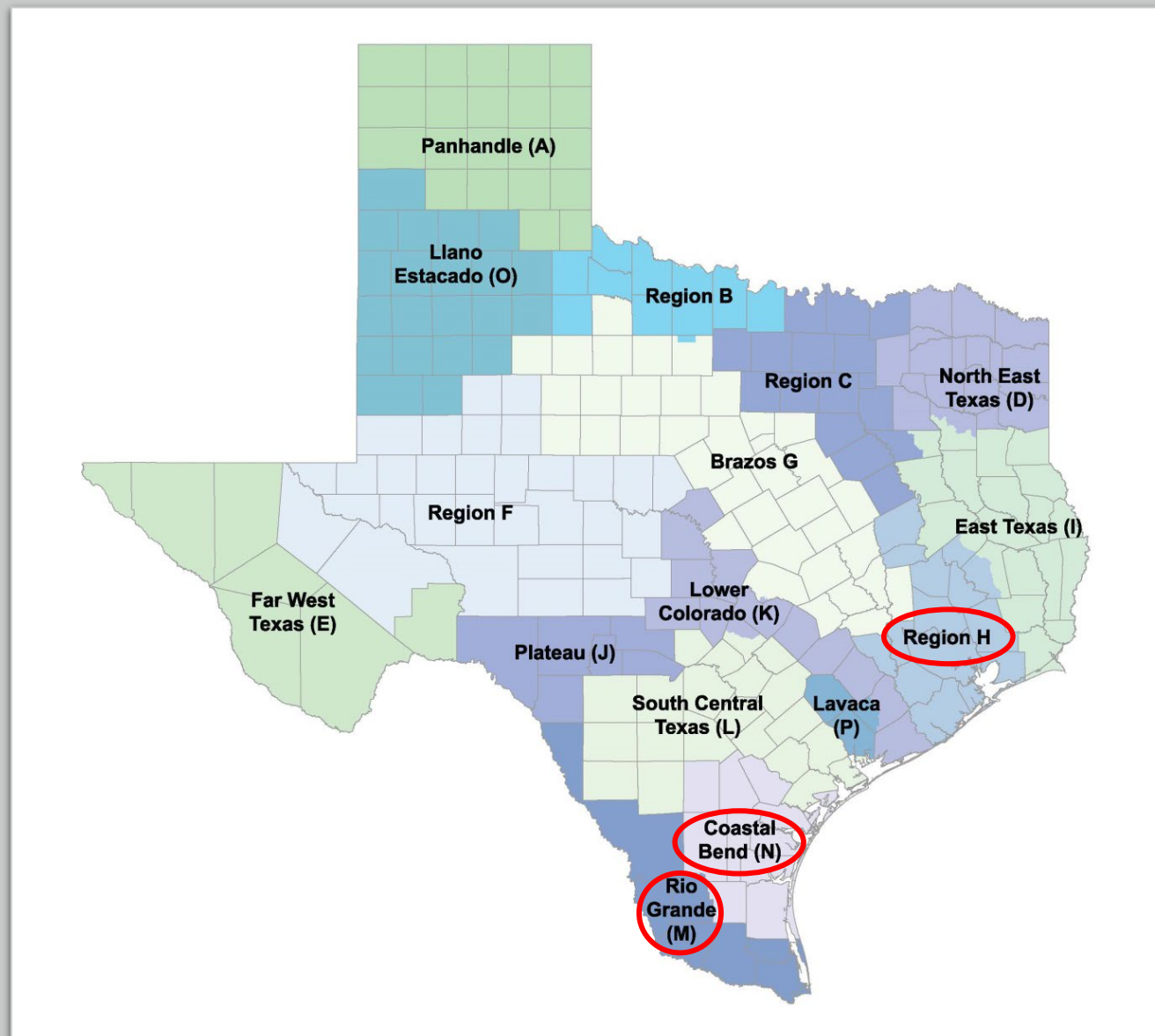




# Seawater Desalination

- 192,000 acre-feet per year of supply from brackish groundwater desalination is recommended in 2070. (~2.5 % out of 5.4% total)
- Three planning groups recommended seawater desalination strategies
- Barriers for implementation include:
  - Cost associated to conveying water supplies

# Seawater Desalination



# Seawater Desalination Projects

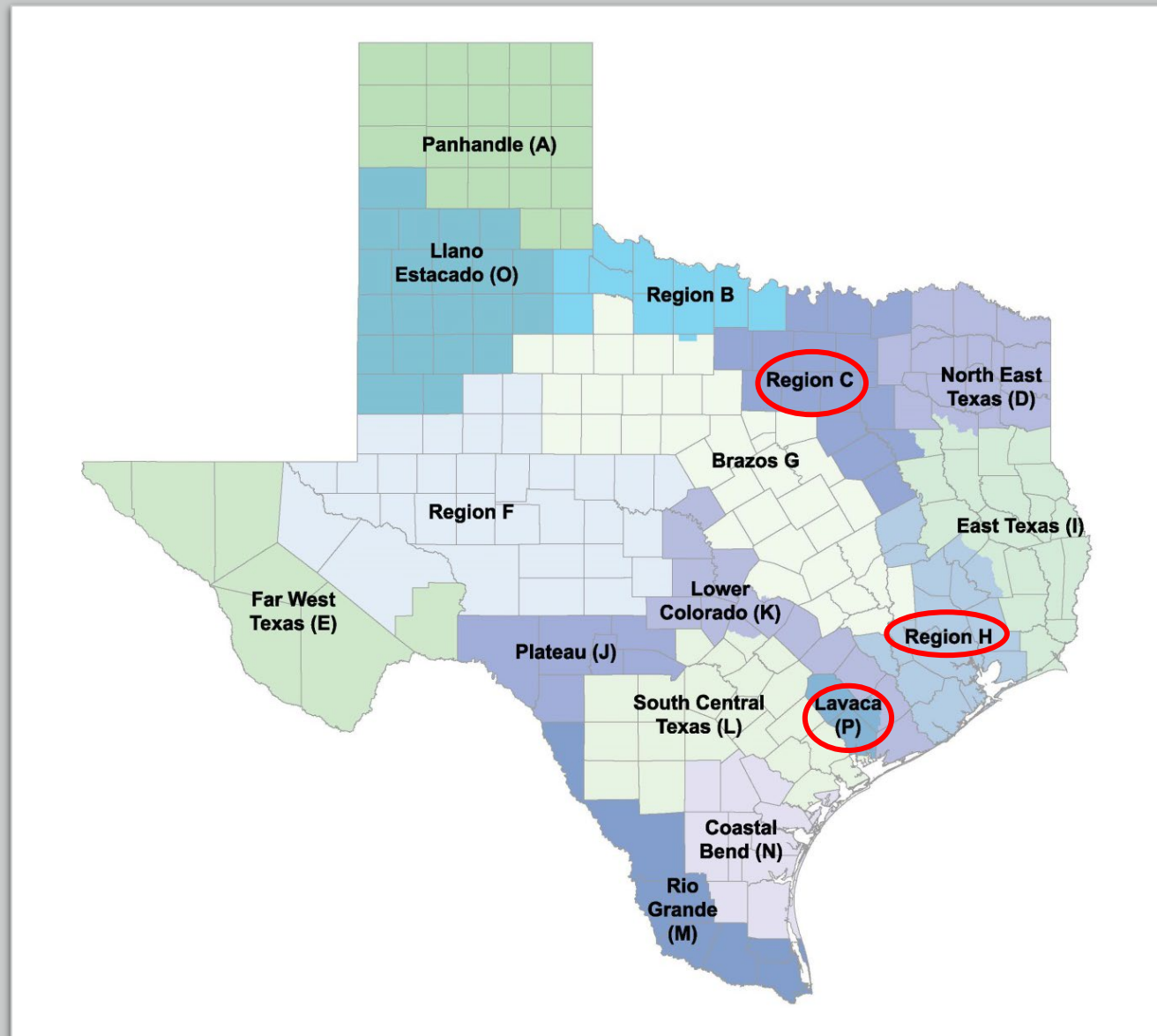
- Free Port
- Port of Corpus Christi Authority – Harbor Island and La Quinta Channel
- City of Corpus Christi – La Quinta and Inner Harbor
- Poseidon Regional – Ingleside
- Laguna Madre Water District



# Surface Water Desalination

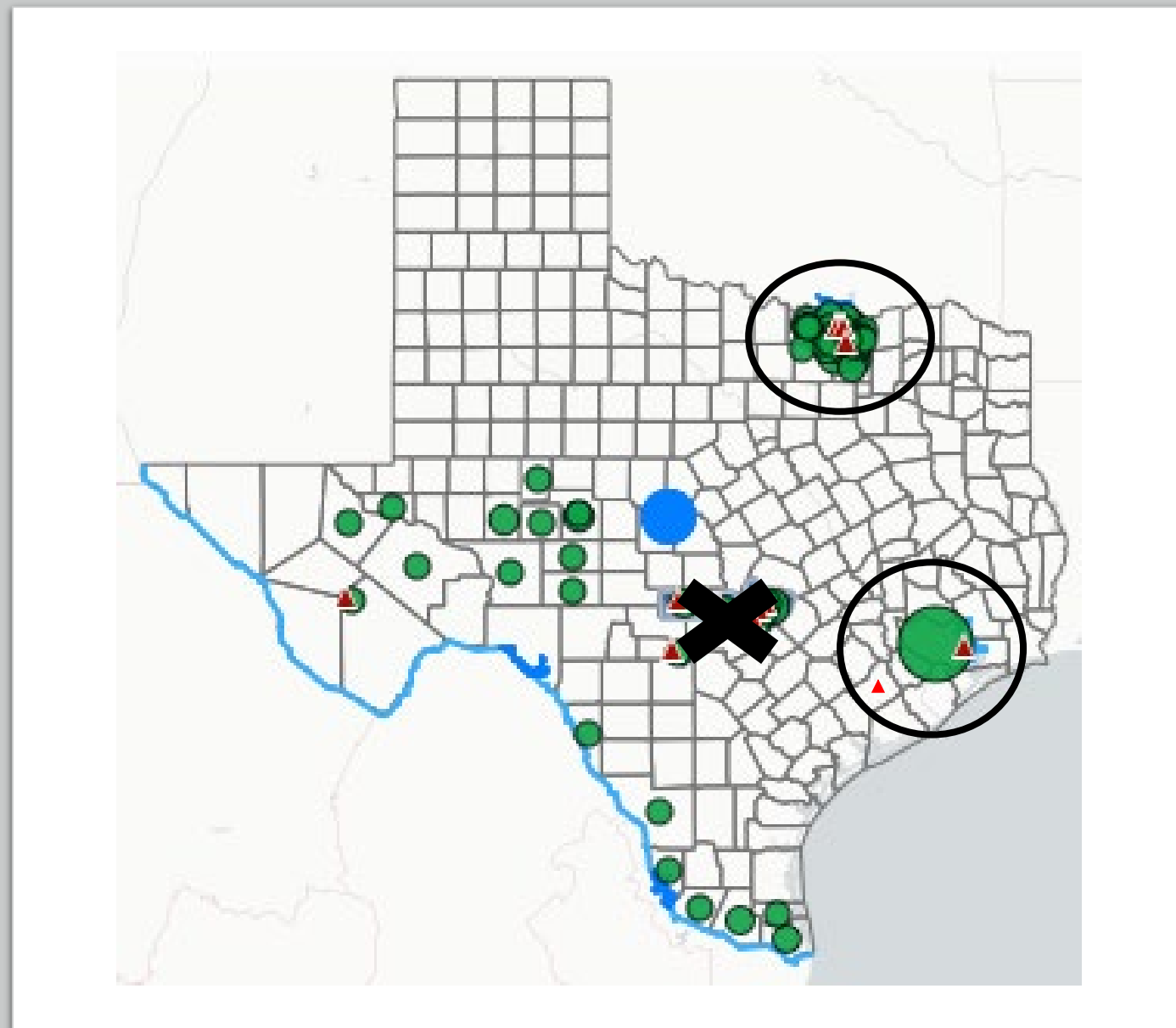
- About 63,000 acre-feet per year of supply from surface water desalination is recommended in 2070. (~0.8% out of 5.4% total)
- Three planning groups recommended surface water desalination strategies
- Barriers for implementation include: none listed

# Surface water desalination



# Surface Water Desalination Projects

- City of Sherman
- Greater Texoma Utility Authority
- Parker County Special Utility District
- NRG Energy, Inc. - Cedar Bayou
- Lavaca Navidad River Authority

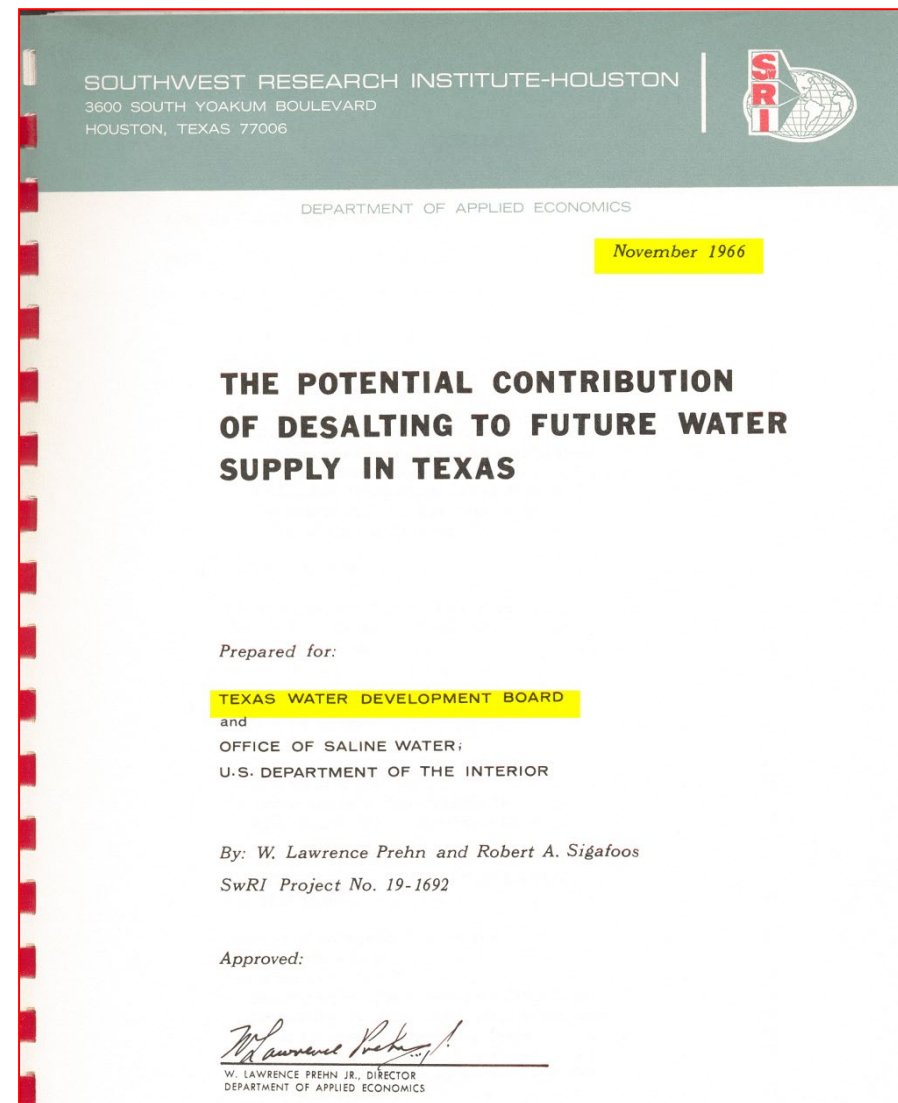
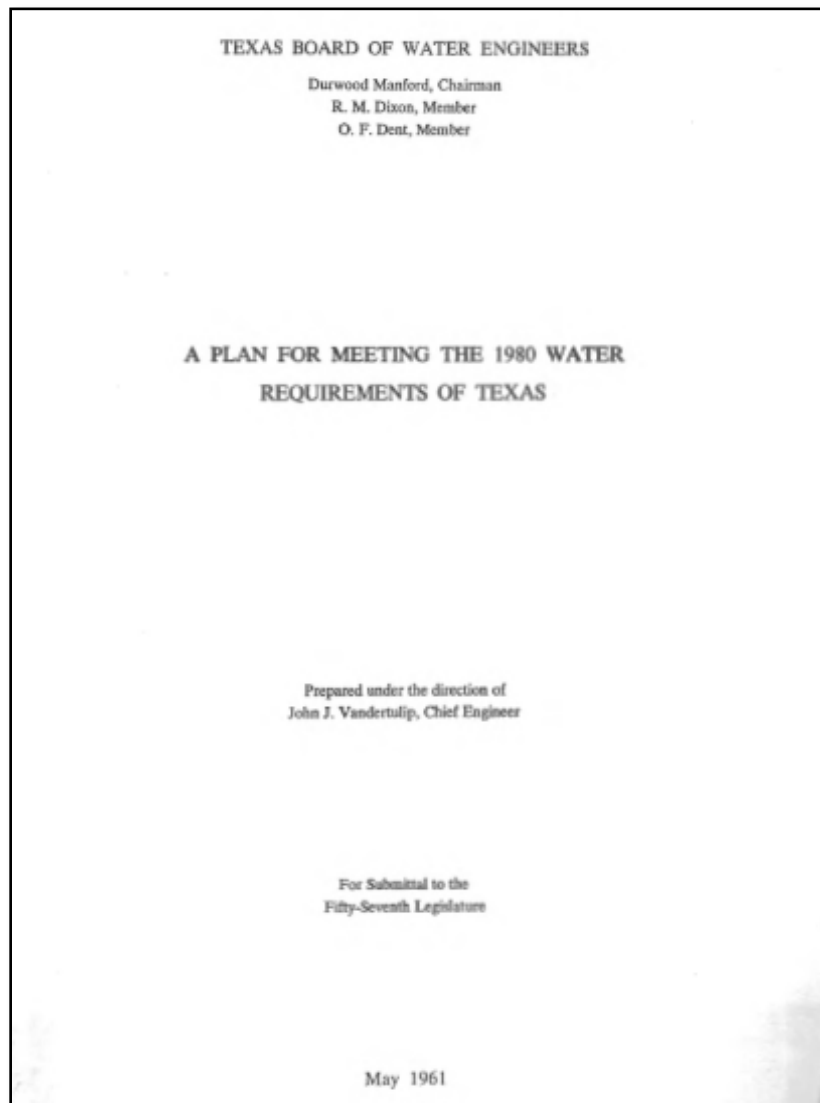




# TWDB Desalination Program

- Created seawater desalination program in 2002 in response to Governor Rick Perry announcing his seawater initiative and Texas Legislature directing TWDB to pursue seawater desalination and to report progress in a biennial report.
- Added brackish groundwater desalination in 2004
- Housed under the Innovative Water Technologies Department
- [www.twdb.texas.gov/innovativewater/desal/index.asp](http://www.twdb.texas.gov/innovativewater/desal/index.asp)

# Desalination dates to 1960s



# Seawater Desalination

- No operational seawater desalination plant in Texas
- A lot of activity in the Corpus Christi area



# Biennial Report on Desalination

- Eighth report in series
- 18 years of activities toward advancing seawater desalination
- Third report to include brackish groundwater desalination and designating brackish groundwater production zones in aquifers

## The Future of Desalination in Texas 2020 Biennial Report on Seawater and Brackish Groundwater Desalination in Texas

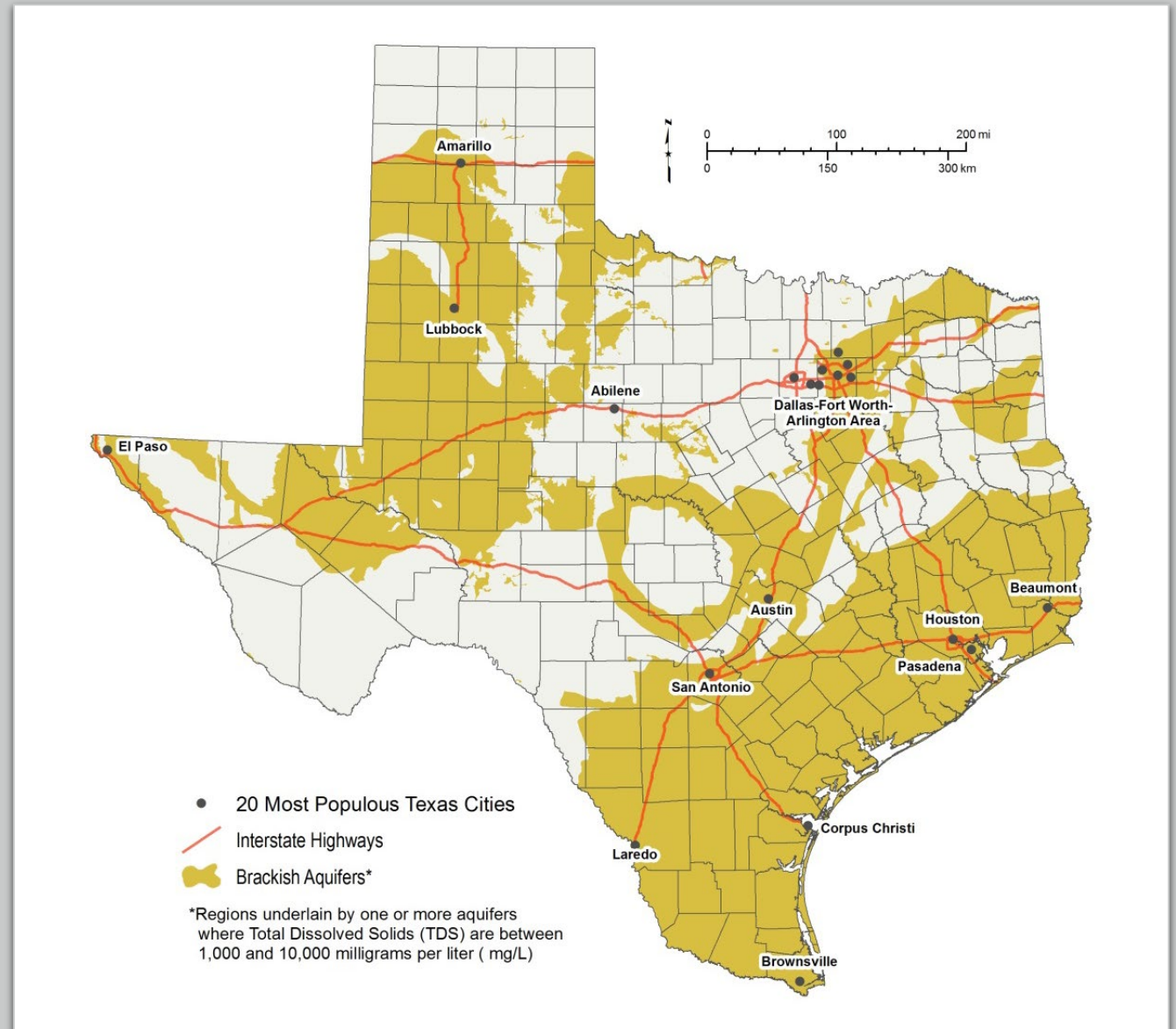


87th Texas Legislative Session

Texas Water  
Development Board

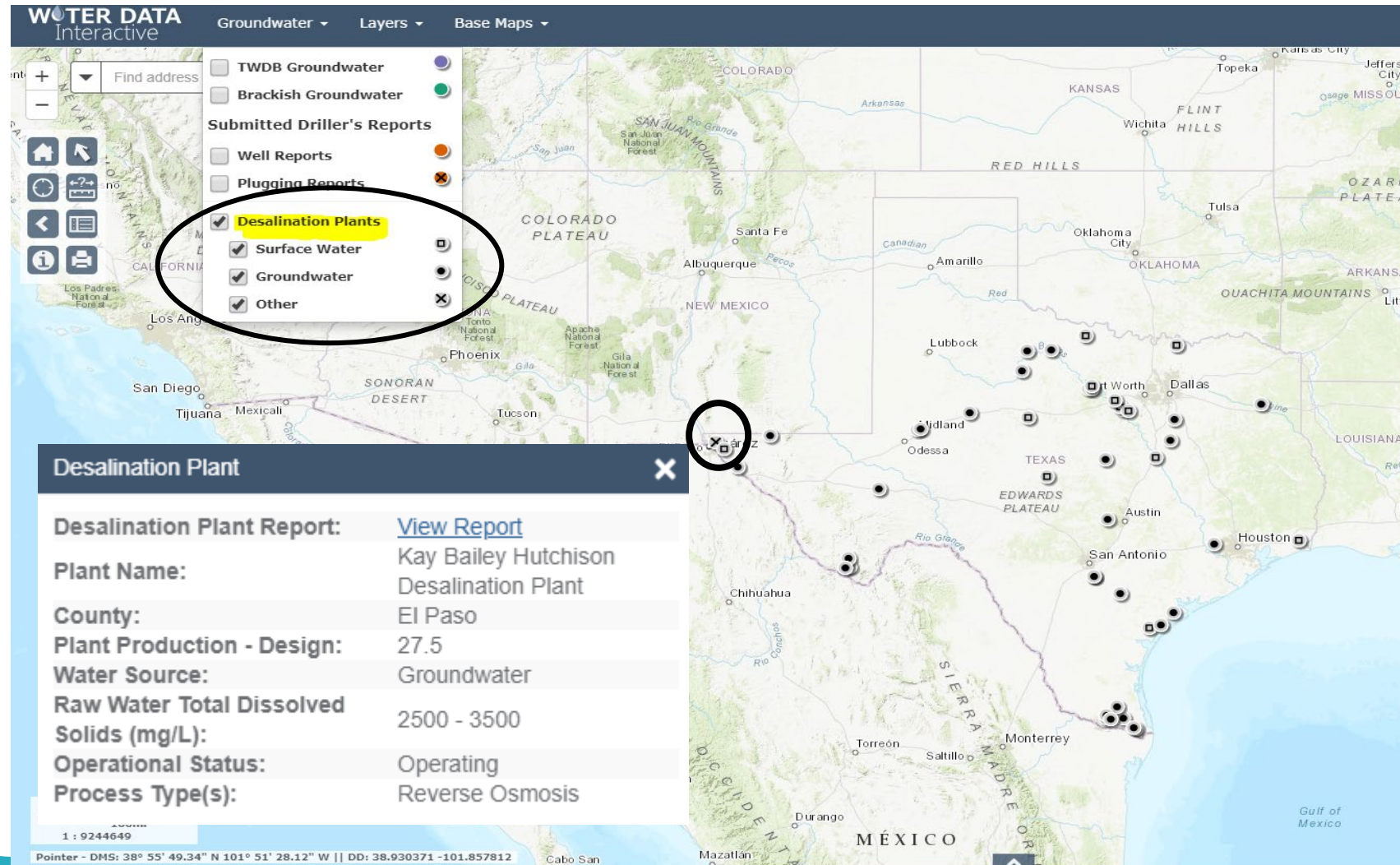
# Brackish groundwater in Texas

~2.7 billion acre-feet of brackish groundwater





# Desalination Plant Database



**WATER DATA Interactive** Groundwater Layers Base Maps

Find address

- TWDB Groundwater
- Brackish Groundwater
- Submitted Driller's Reports**
  - Well Reports
  - Plugging Reports
  - Desalination Plants**
  - Surface Water
  - Groundwater
  - Other

**Desalination Plant**

**Desalination Plant Report:** [View Report](#)

**Plant Name:** Kay Bailey Hutchison Desalination Plant

**County:** El Paso

**Plant Production - Design:** 27.5

**Water Source:** Groundwater

**Raw Water Total Dissolved Solids (mg/L):** 2500 - 3500

**Operational Status:** Operating

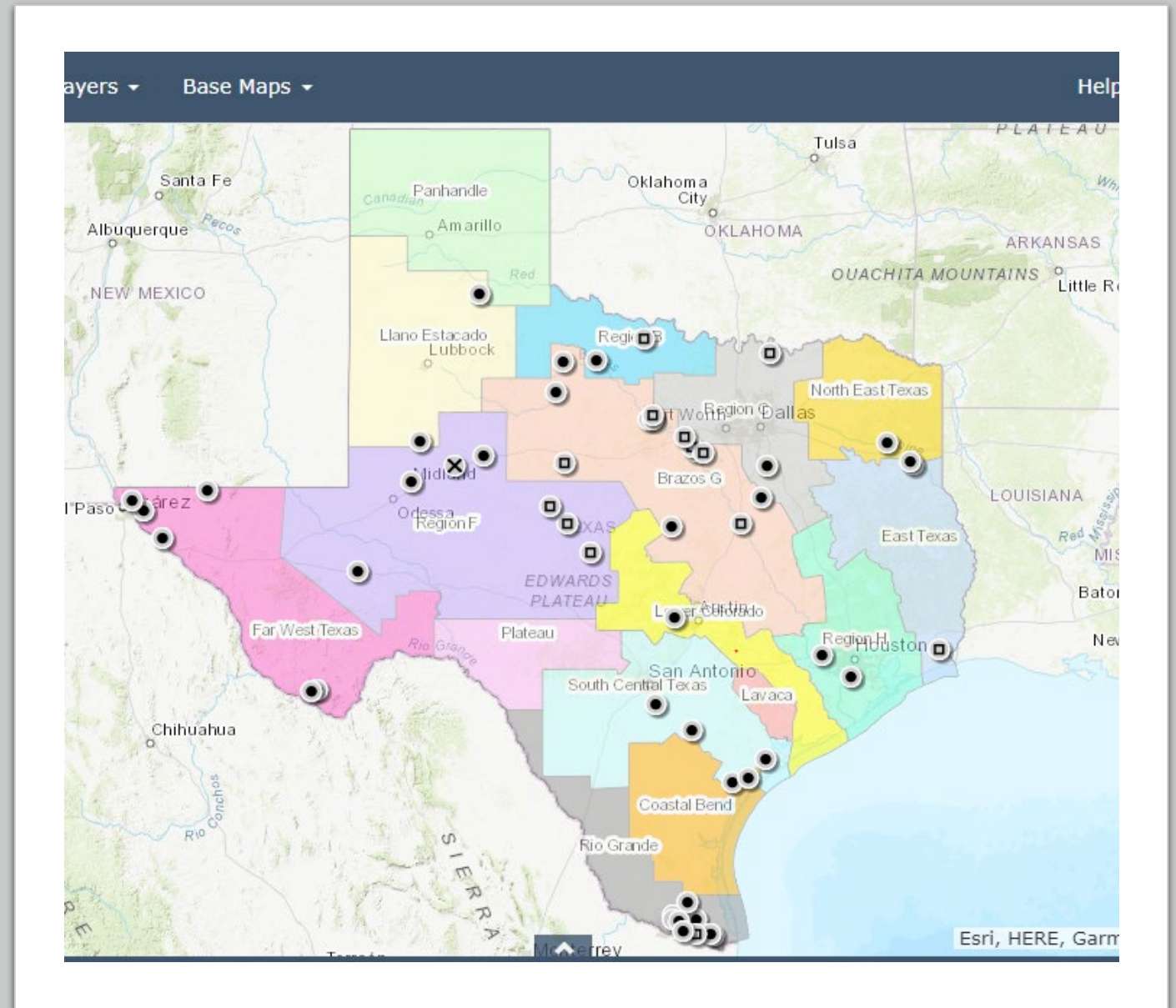
**Process Type(s):** Reverse Osmosis

Pointer - DMS: 38° 55' 49.34" N 101° 51' 28.12" W || DD: 38.930371 -101.857812

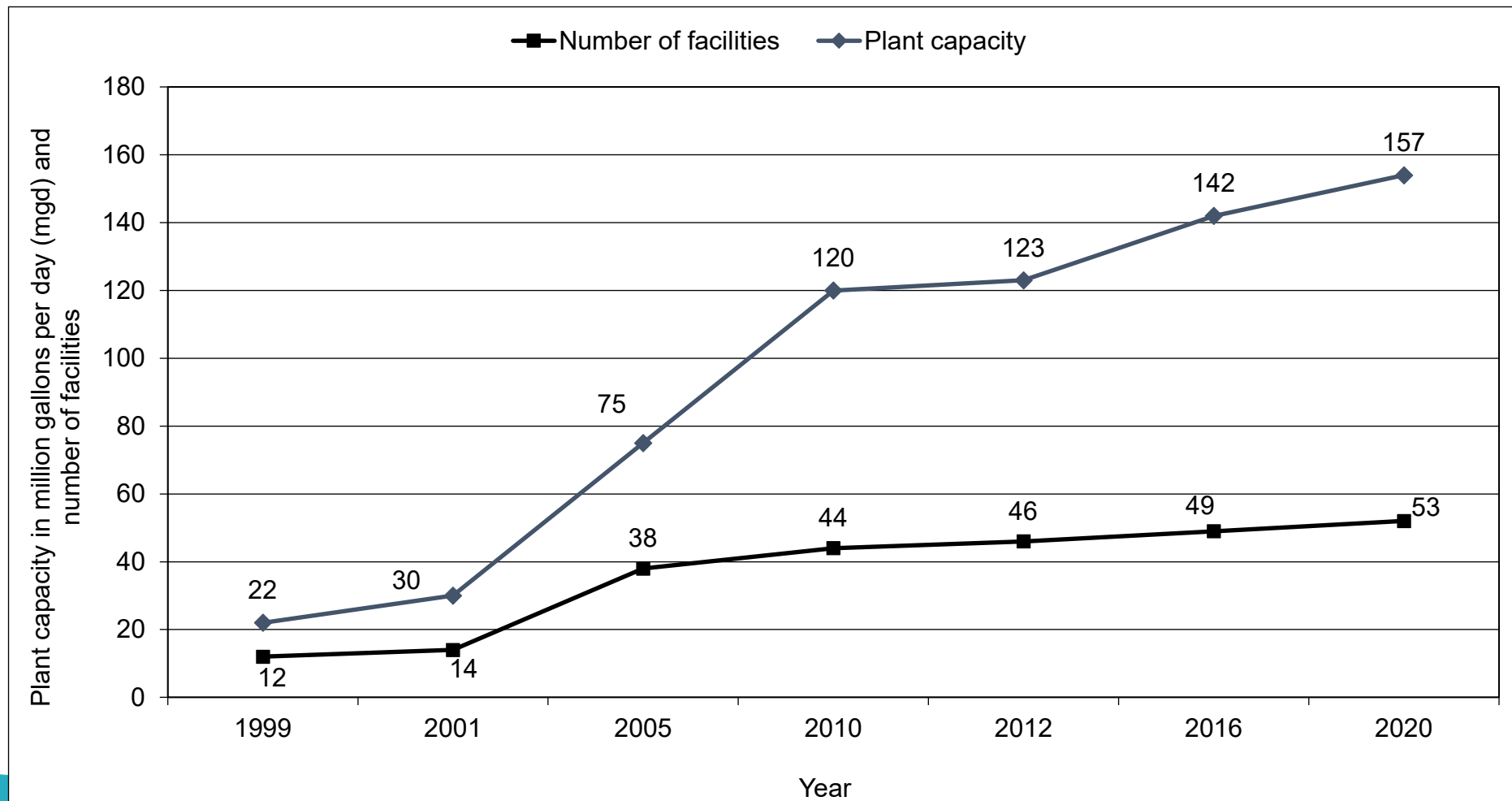


# Desalination Plant Database

- Squares = surface water desalination
- Dots = groundwater desalination
- X = direct potable reuse



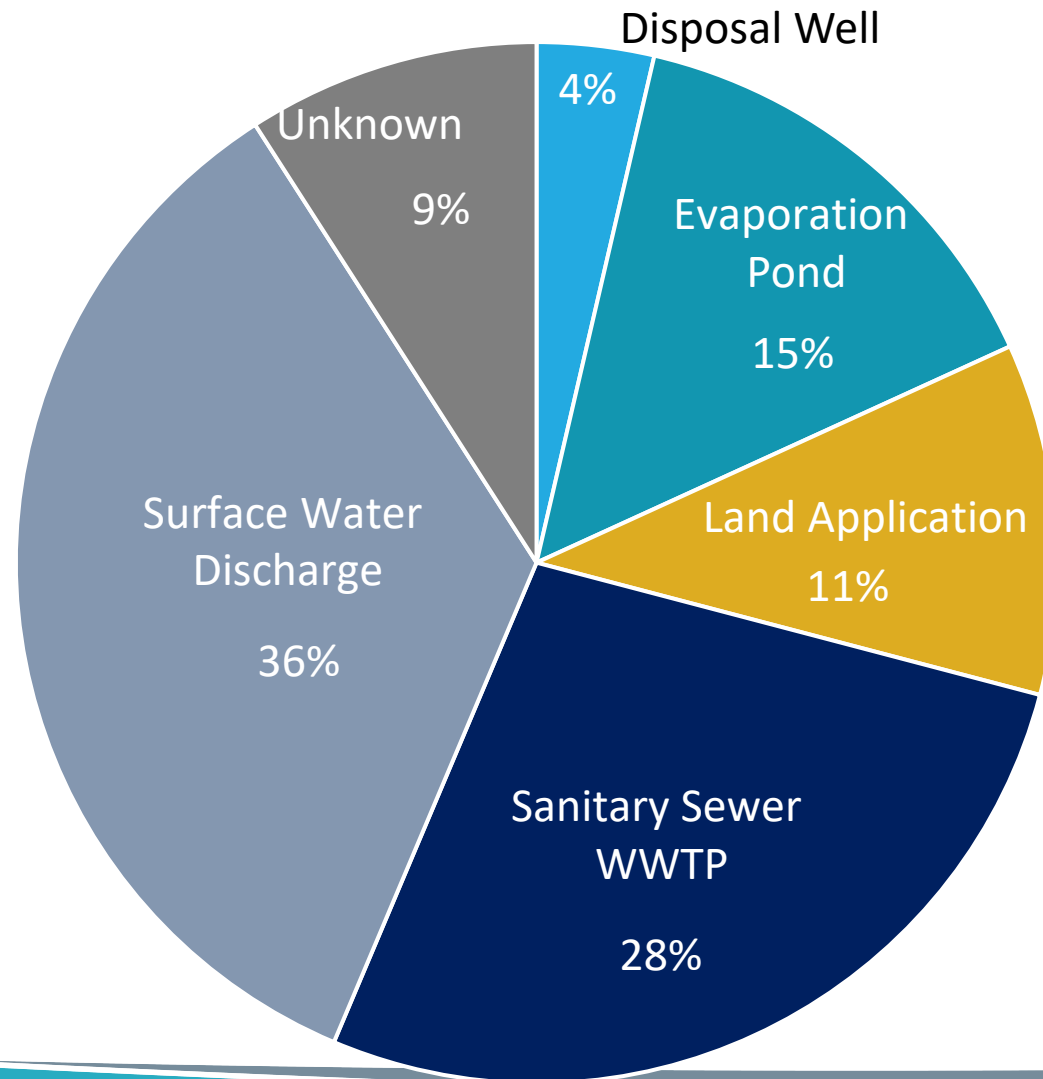
# Desalination growth in Texas













# 2020 Desalination Database Update

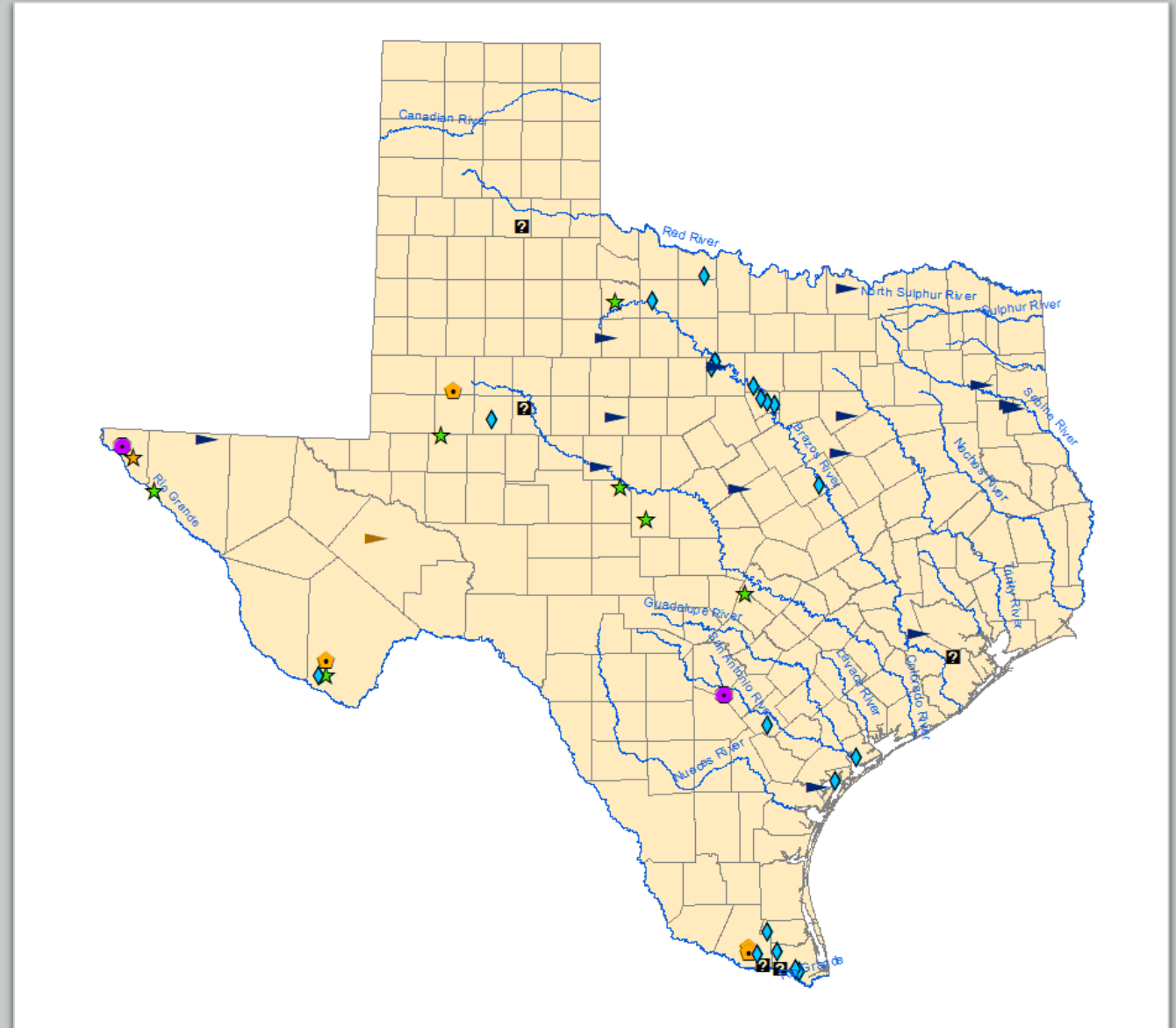
- Added 7 new desalination plants (10.17 MGD)
  - 4 groundwater and 3 surface water desalination
- Closed 3 existing small plants (0.05 MGD)
  - 3 groundwater desalination
- Increased plant capacity for 6 existing plants (+5.43 MGD)
  - 2 groundwater and 4 surface water desalination

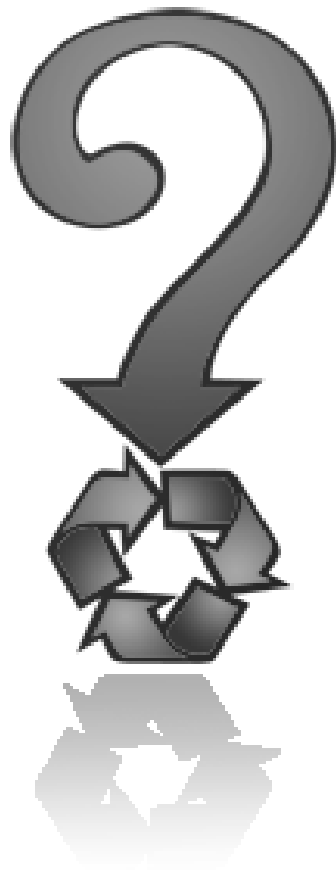
# Concentrate Disposal Methods



# Concentrate Disposal in Texas

-  Disposal Well
-  Evaporation Pond
-  Land Application
-  Land Application and Evaporation Pond
-  Sanitary Sewer
-  Sanitary Sewer and Land Application
-  Surface Water Discharge
-  Unknown
-  Major rivers in Texas
-  County





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**Innovative Water Technologies**

**[www.twdb.texas.gov/innovativewater/index.asp](http://www.twdb.texas.gov/innovativewater/index.asp)**