GMA 14 Discussions of Hydrological Conditions

Groundwater Management Area 14

April 30, 2025

Desired Future Conditions (“DFCs”) TWC 36.108(d-2)

Highest Practicable Level
of Groundwater Production

Conservation,
Preservation, Protection,
Recharging, and Prevention
of Waste of Groundwater
and Control of Subsidence

DFC Considerations TWC 36.108(d)

(1) Aquifer Uses or Conditions

(2) Supply Needs and Management Strategies

(3) Hydrological Conditions

(4) Environmental Impacts

(5) Subsidence Impacts

(6) Socioeconomic Impacts

(7) Private Property Rights

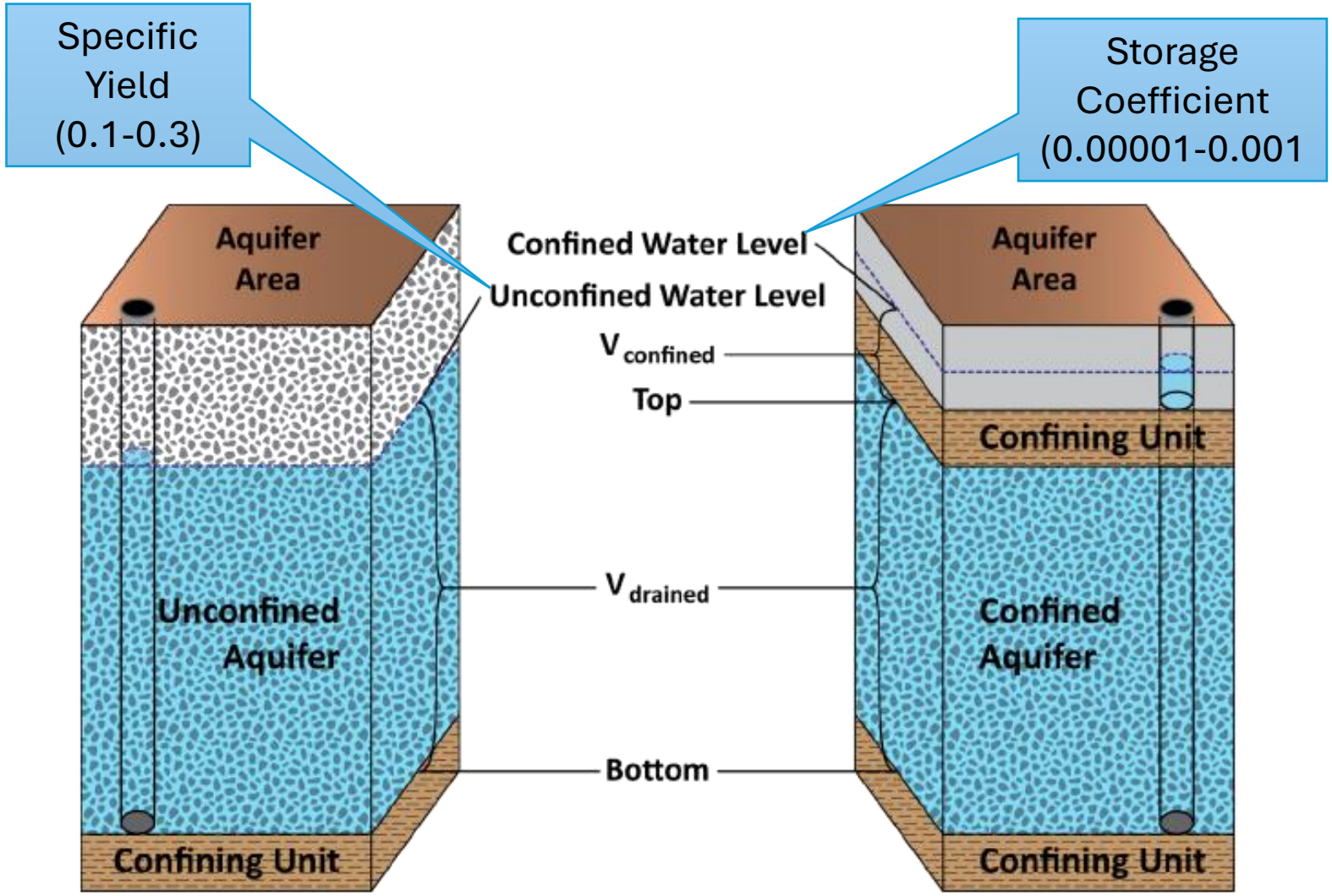
(8) Feasibility

(9) Other Relevant Information

Consideration of Hydrological Conditions

- Related to “Aquifer Conditions” considered during the last GMA 14 meeting
- Specific Items
  - Total Estimated Recoverable Storage (“TERS”)
  - Recharge
  - Inflows
  - Discharge
- Only discussing the Gulf Coast Aquifer System (“GCAS”)

Recoverable Storage Calculation



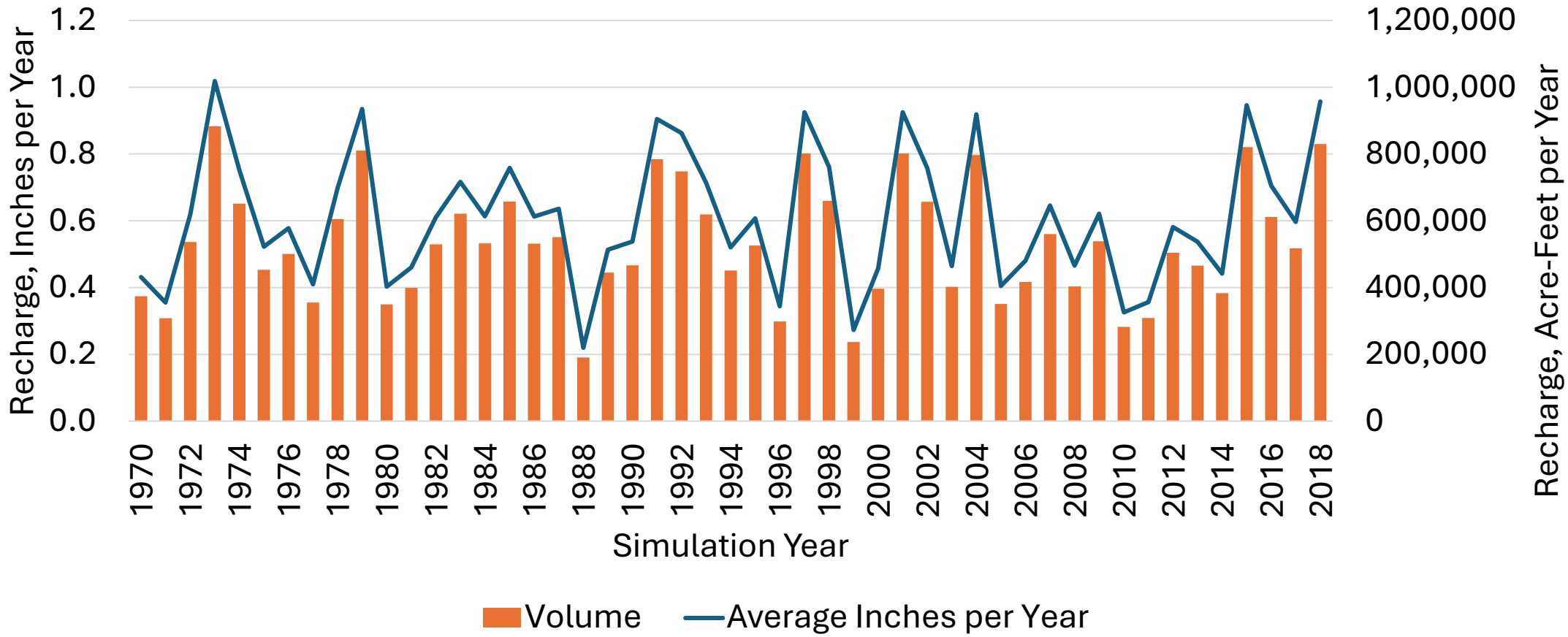
TERS calculated using the Houston Area Groundwater Model ("HAGM")

- Calculated by TWDB
  - GAM Task 13-037
  - Calculated using the HAGM
- Total for GMA 14 = 2.8 billion acre-feet
  - 25% = 0.7 billion acre-feet
  - 75% = 2.1 billion acre-feet
- Based on model structure and properties
- No consideration for water quality

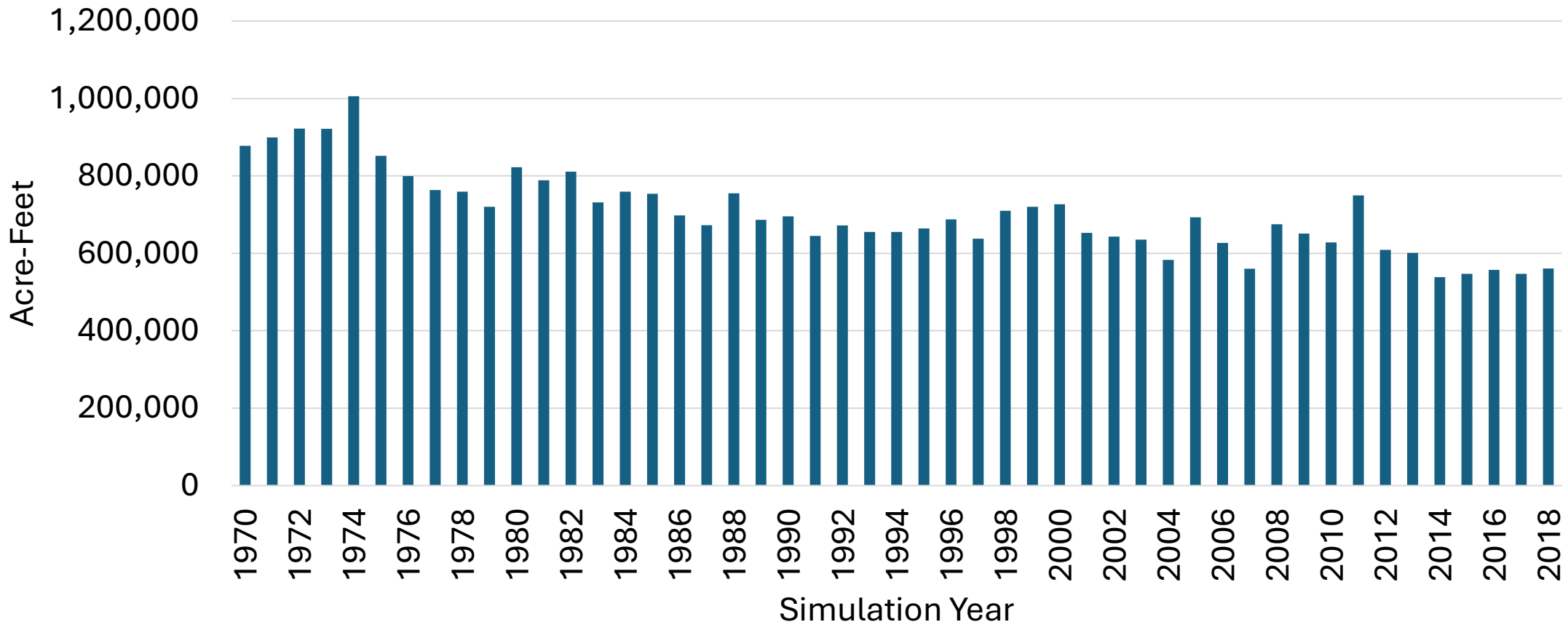
GCAS Inflows / Outflows

- Recharge is the greatest inflow
  - Estimated from GULF-2023 and GMA 14 model
  - 30-Year average > 500,000 acre-feet per year
- Largest outflow is stream leakage
  - Estimates from 2016 Texas Aquifers Study
  - Regional models are not appropriate tools for assessing GW/SW interactions
  - Discussed under consideration of environmental impacts
- Pumping outflow > 500,000 acre-feet per year

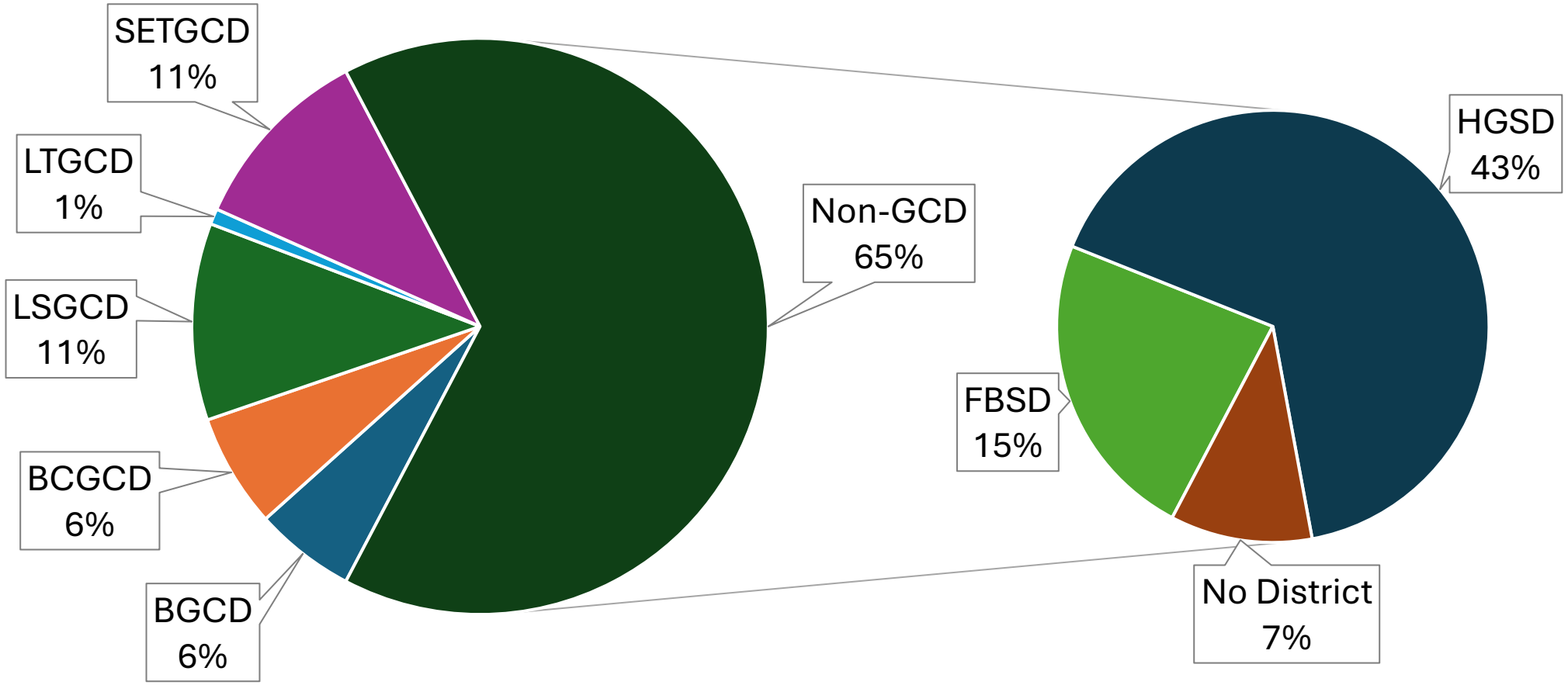
GCAS Recharge



GMA 14 GCAS Pumping



GMA 14 5-Year (2014-2018) Average Pumping



5-Year Average = 550,000 Acre-Feet per Year

Discussion

- Pumping is expected to increase with population growth
- Most outflow from the aquifer is to baseflow
  - Current models are not good tools for simulating effects on surface water
  - TWDB Texas Aquifers Study
- 30-Year average recharge > 500,000 acre-feet per year

Discussion

- Aquifer storage estimates vary with model parameter values
- One parameter by itself is a poor indicator of groundwater availability, for example:
  - Total storage does not consider (among other things)
    - Groundwater flow
    - Aquifer depth
    - Available drawdown
    - Water quality
  - Recharge does not consider (among other things)
    - Storage
    - Spatial and temporal variability

Questions

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