

TWDB IN A NUTSHELL: statewide support for planning and funding MAR in Texas

Managed Aquifer Recharge: Unleashing Resiliency, Protecting Groundwater Quality
National Ground Water Association
April 24-25, 2023
San Antonio , TX



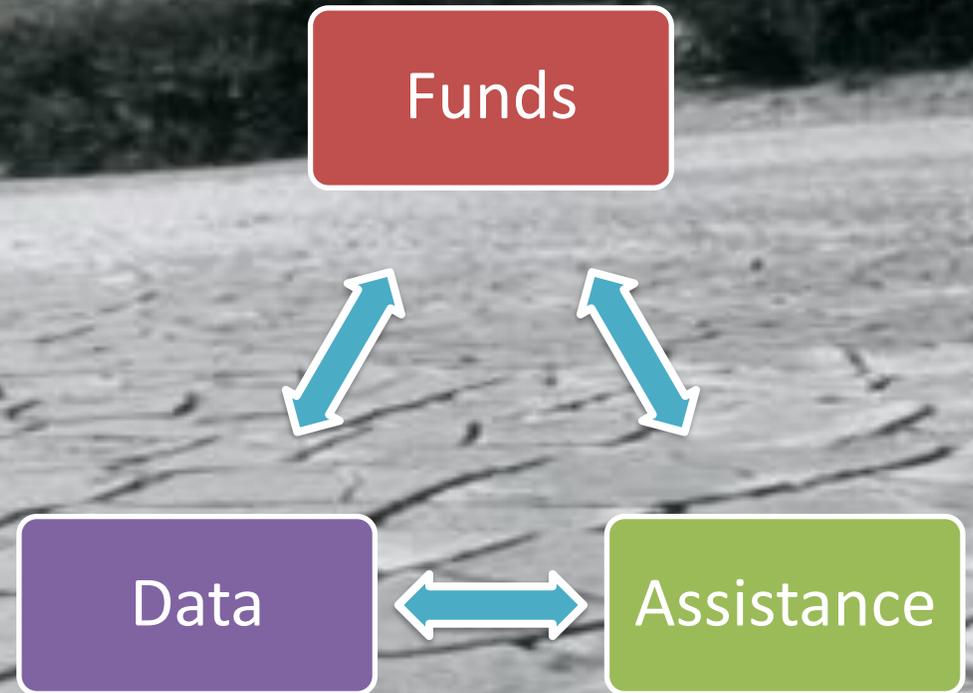
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ASR Discipline Lead
Innovative Water Technologies
Water Science and Conservation

“lead the state's efforts in ensuring a secure water future for Texas and its citizens”

Goals:

- **Texas’ water knowledge storehouse**
- **Water supply and flood plans**
 - **Regional: 16 water, 15 flood**
 - **Statewide**
- **New infrastructure**
 - **Water supply**
 - **Flood**
 - **Wastewater**



Project status

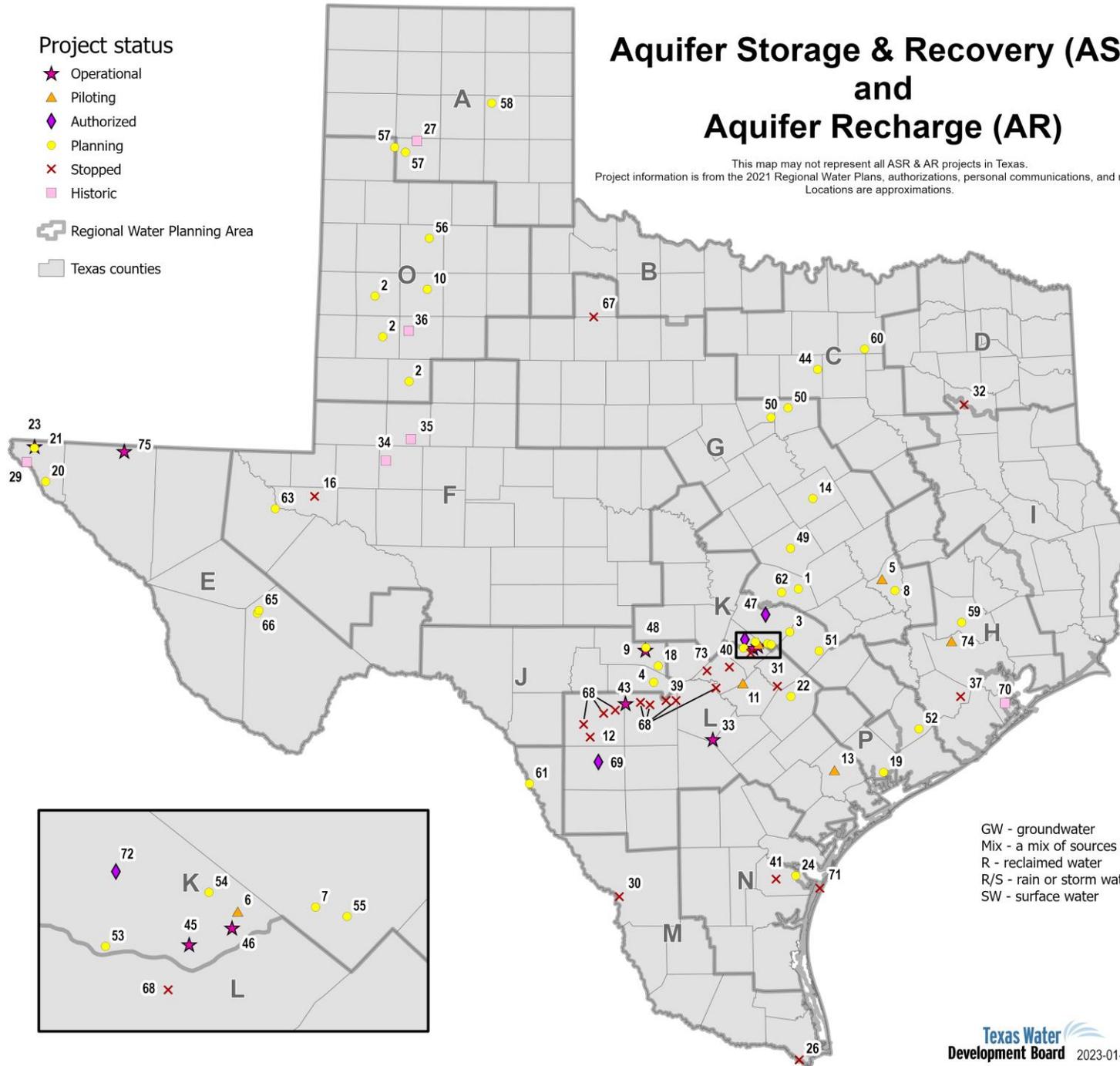
- ★ Operational
- ▲ Piloting
- ◆ Authorized
- Planning
- ✕ Stopped
- Historic

Regional Water Planning Area

Texas counties

Aquifer Storage & Recovery (ASR) and Aquifer Recharge (AR)

This map may not represent all ASR & AR projects in Texas. Project information is from the 2021 Regional Water Plans, authorizations, personal communications, and research. Locations are approximations.



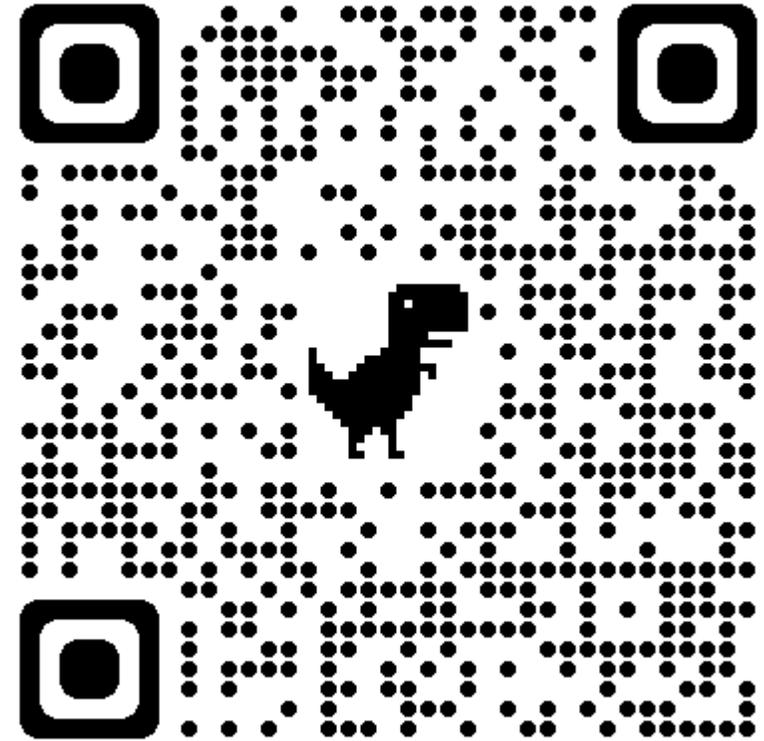
GW - groundwater
 Mix - a mix of sources
 R - reclaimed water
 R/S - rain or storm water
 SW - surface water

Map ID	ASR or AR	Source type	Status	Project description label
1	ASR	SW	Planning	Brazos River Authority - Lake Granger
2	ASR	Mix	Planning	Canadian River Municipal Authority, southern cities
3	ASR	SW	Planning	City of Austin
4	ASR	SW	Planning	City of Bandera
5	ASR	GW	Piloting	City of Bryan
6	ASR	GW	Piloting	City of Buda
7	ASR	GW	Planning	Saline Edwards Aquifer
8	ASR	R	Planning	City of College Station
9	ASR	SW	Planning	City of Kerrville, expansion
10	ASR	Mix	Planning	City of Lubbock
11	ASR	Mix	Piloting	City of New Braunfels
12	ASR	GW	Stopped	City of Uvalde
13	ASR	SW	Piloting	City of Victoria
14	ASR	SW	Planning	McLennan County (City of Waco)
16	ASR	SW	Stopped	Colorado River Municipal Water District
18	ASR	SW	Planning	Eastern Kerr County Regional Water Supply Project
19	ASR	SW	Planning	Lavaca Navidad River Authority (alternative)
20	ASR	Mix	Planning	Lower Valley Water District
21	AR	SW	Planning	El Paso Water Utilities, Rio Grande recharge
22	ASR	SW	Planning	Guadalupe-Blanco River Authority (Mid-basin)
23	AR	R	Operational	El Paso Water Utilities, reuse recharge
24	ASR	R	Planning	City of Corpus Christi
26	ASR	SW	Stopped	Brownsville Public Utilities Board
27	ASR	GW	Historic	City of Amarillo, 1954 to 1955 test
29	ASR	SW	Historic	City of El Paso, 1940-1950s test
30	ASR	SW	Stopped	City of Laredo
31	ASR	SW	Stopped	Luling Water Treatment Plant (alternative)
32	ASR	SW	Stopped	Sabine River Authority
33	ASR	GW	Operational	San Antonio Water System
34	ASR	GW	Historic	City of Midland, 1970s
35	ASR	SW	Historic	Colorado River Municipal Water District, 1963 to 1970
36	ASR	SW	Historic	High Plains, 1970s to 1980s
37	ASR	SW	Stopped	Missouri City
39	ASR	SW	Stopped	Medina Lake Firm Up
40	ASR	SW	Stopped	Canyon Reservoir, upstream
41	ASR	SW	Stopped	Robstown-Driscoll Regional Facility
43	AR	SW	Operational	Seco Sinkhole
44	ASR	SW	Planning	Tarrant Regional Water District
45	ASR	GW	Operational	Ruby Ranch Water Supply Corporation
46	AR	SW	Operational	Onion Creek recharge structures
47	AR	R/S	Authorized	Residential rainwater harvesting
48	ASR	SW	Operational	City of Kerrville
49	ASR	SW	Planning	Bell County
50	ASR	SW	Planning	Johnson County SUD and Acton MUD (alternative)
51	ASR	SW	Planning	LCRA ASR Carrizo-Wilcox
52	AR	SW	Planning	LCRA Enhanced Recharge
53	ASR	GW	Planning	BS/EACD, Hays County Other
54	ASR	GW	Planning	BS/EACD, Hays
55	ASR	GW	Planning	BS/EACD, Creedmoor-Maha WSC
56	ASR	Mix	Planning	City of Plainview
57	ASR	Mix	Planning	City of Amarillo
58	ASR	Mix	Planning	City of Pampa
59	ASR	SW	Planning	San Jacinto River Authority
60	ASR	Mix	Planning	North Texas MWD ASR (alternative)
61	ASR	SW	Planning	City of Eagle Pass (alternative)
62	ASR	SW	Planning	Brazos River Authority - Lake Georgetown
63	ASR	R	Planning	City of Pecos (alternative)
65	ASR	R	Planning	City of Alpine, wastewater treatment facility
66	AR	R/S	Planning	City of Alpine, rainwater harvesting
67	AR	SW	Stopped	Seymour Aquifer, Haskell and Knox counties
68	AR	SW	Stopped	Edwards Aquifer, recharge dams
69	AR	SW	Authorized	Wintergarden GCD
70	ASR	SW	Historic	Texas City ASR, 2005 to 2016
71	ASR	SW	Stopped	Padre Island pump station
72	AR	R/S	Authorized	Driftwood Municipal Management District
73	AR	GW	Stopped	Canyon Lake Water Supply Corporation
74	AR	R/S	Piloting	Harris County infiltration basin
75	AR	R/S	Operational	Dell City flood dams

TWDB Science

(data + assistance)

for MAR Projects



<http://www.twdb.texas.gov/innovativewater/asr/index.asp>

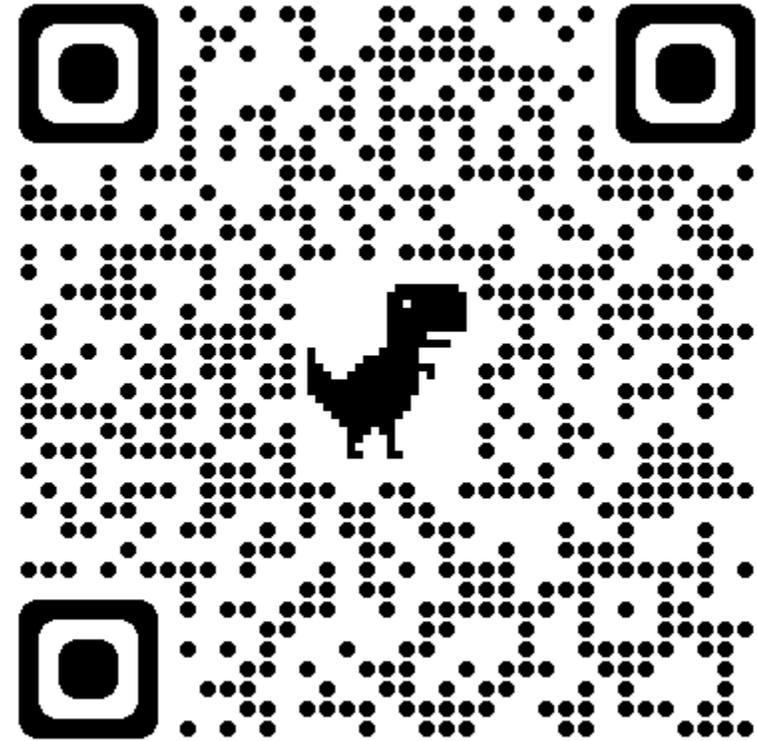
TWDB-supported MAR studies & projects in a nutshell



- One-time special legislative funded studies
 - 2015, Rider 25
 - \$1,000,000
 - Corpus Christi, New Braunfels, Victoria
 - 1995, House Bill 1989
 - \$877,000 total: \$500,000 from legislature + \$216,000 in-kind services + \$161,000 federal funds
 - Brownsville, Laredo, Sabine River Authority, San Antonio, & legislative reports in 1997 & 1999
- Contracted studies and reports
 - 2020, Statewide Suitability Survey for ASR or AR*
 - 2011, An assessment of ASR in Texas
 - 2010, Potential for ASR of stormwater by planning region
 - 2002, ID of geographic areas in Texas Suitable for groundwater banking
- In-house studies reports
 - 2023, Longevity assessment for City of Bandera water wells*
 - 2022, Carrizo-Wilcox Aquifer characterization for GBRA ASR*
 - 2012, Geologic characterization of Corpus Christi ASR Conservation District

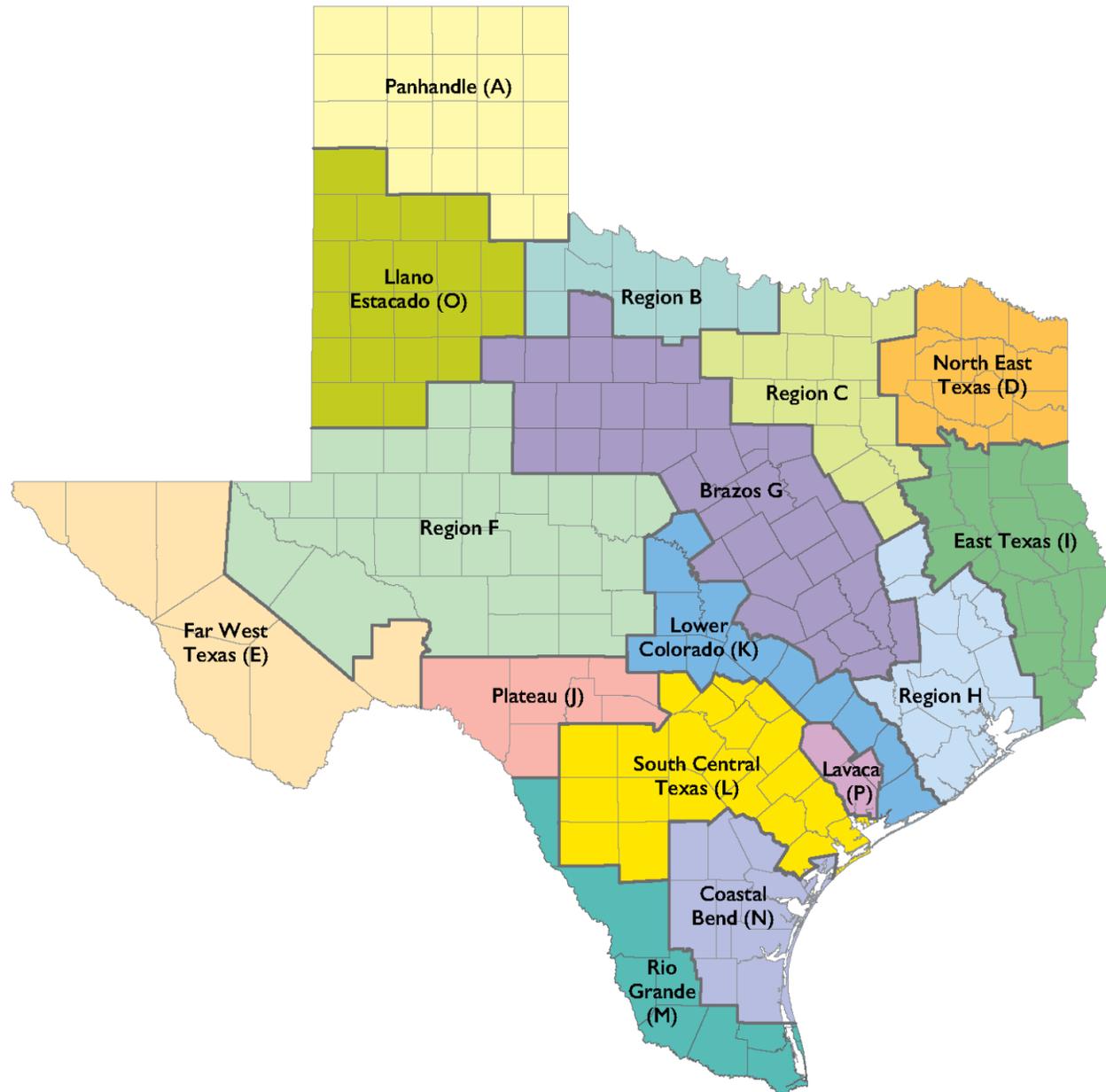
**House Bill 721 (2019) mandates*

TWDB planning (data + assistance) for MAR Projects



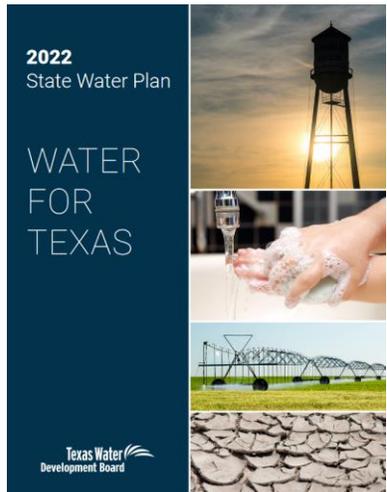
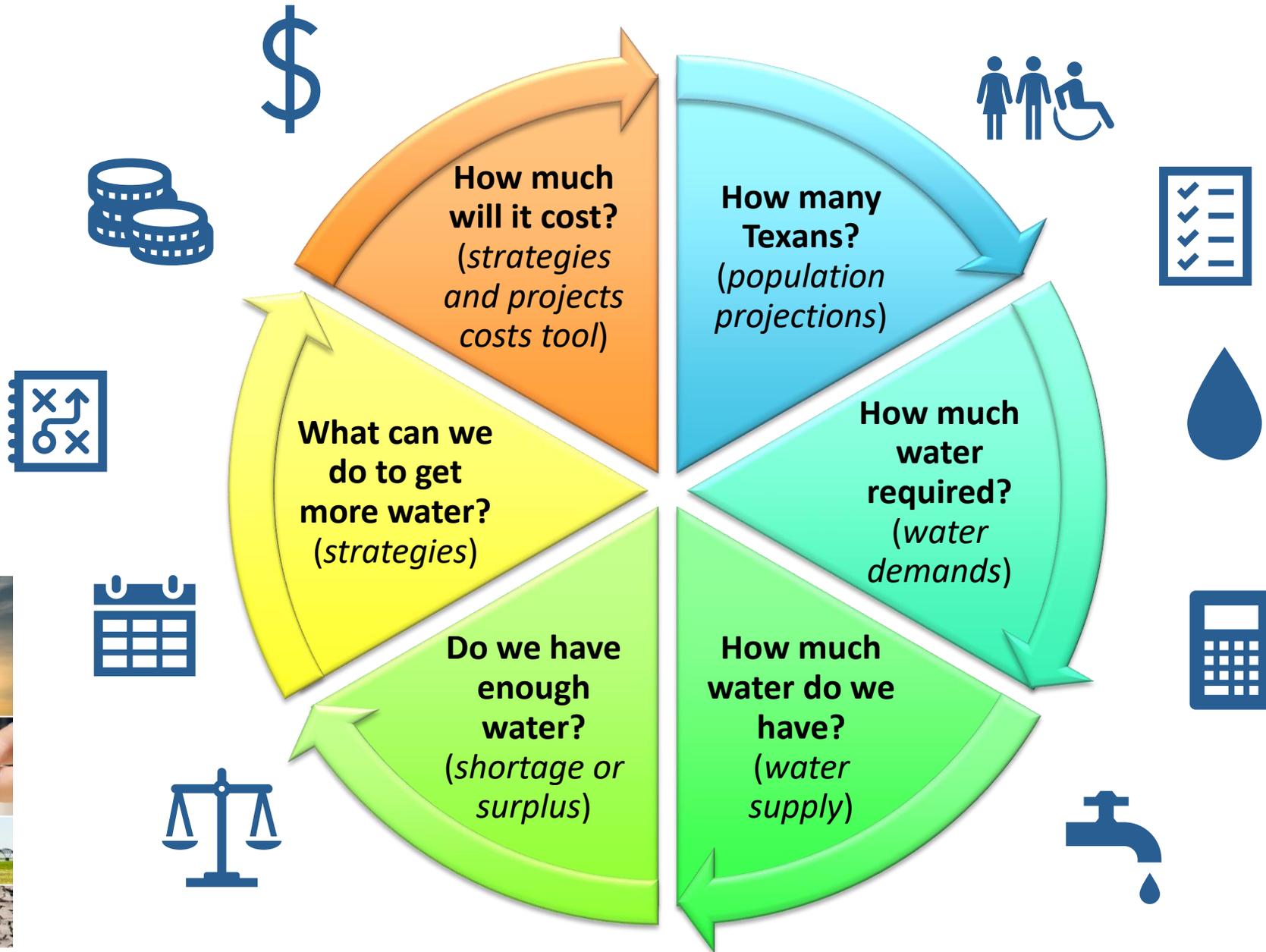
<http://www.twdb.texas.gov/waterplanning/index.asp>

Regional water planning groups (RWPGs)



- 11 state water plans since 1961
- Bottom-up approach since 1997
- Plan for future water needs under drought conditions
- Involvement by entities responsible for water development and supply
- 16 regional water planning groups make decisions
- Transparent and public process
- Regional water plans developed every 5-years and inform the state water plan

Planning in a nutshell

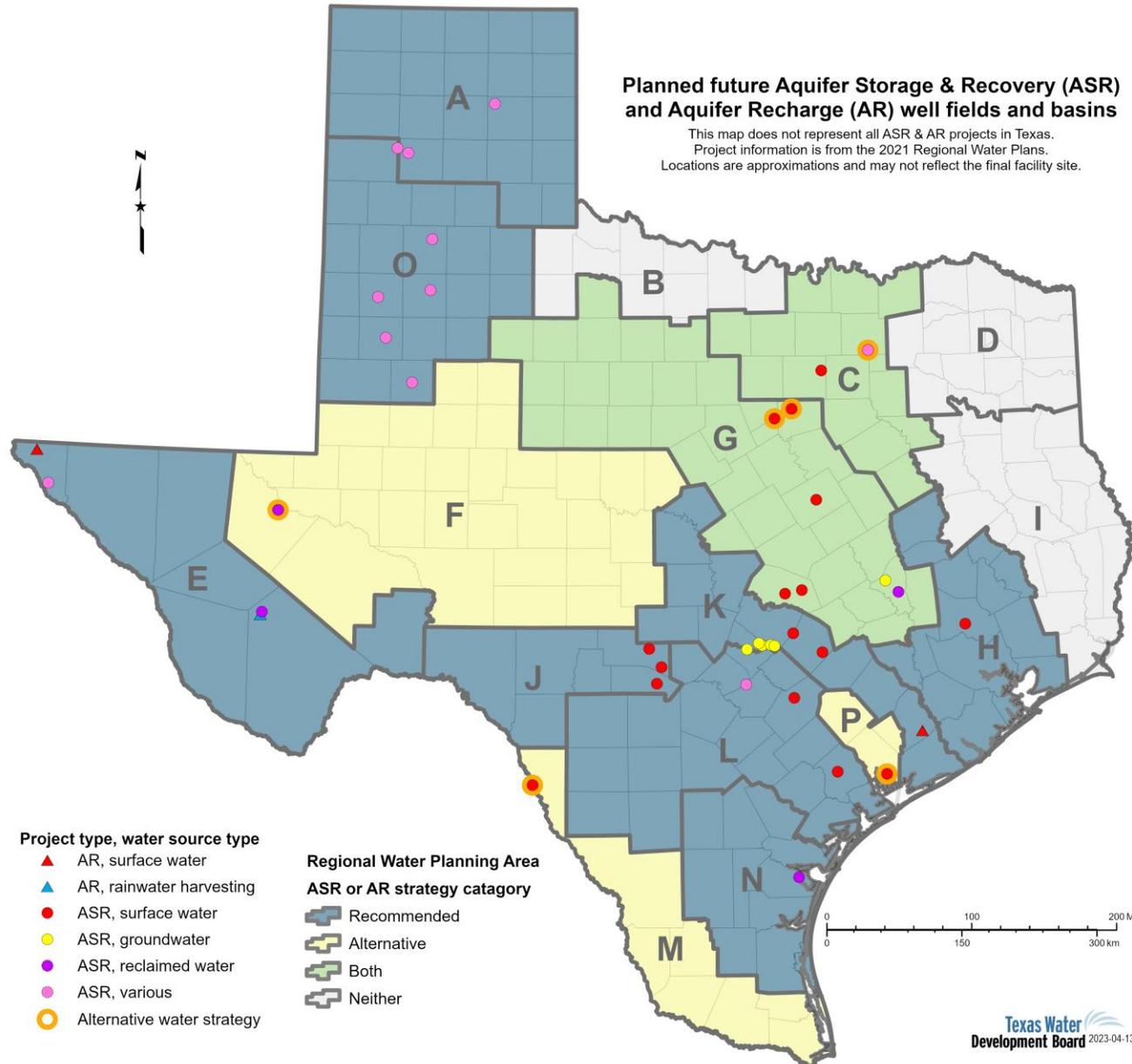


ASR in regional water planning

- Past facility planning grants:
 - 1987 to 1992, \$100,000 + in-kind services for Kerrville ASR studies
 - 2007, \$192,000 TWDB regional water planning grant for the Kerr and Bandera counties' study
 - 2013, \$44,000 Uvalde regional water planning grant
- If ASR is not recommended, regional plans must document why
- New, 2019, requirement: if “significant water needs” identified, the regional plan must provide a specific assessment of ASR potential, (House Bill 807, *86th Texas Legislature*)
 - Threshold(s) for “significant water needs” defined by the region
 - Document how threshold was determined
 - Assess ASR potential to the best of RWPG’s ability
 - Document assessed ASR feasibility



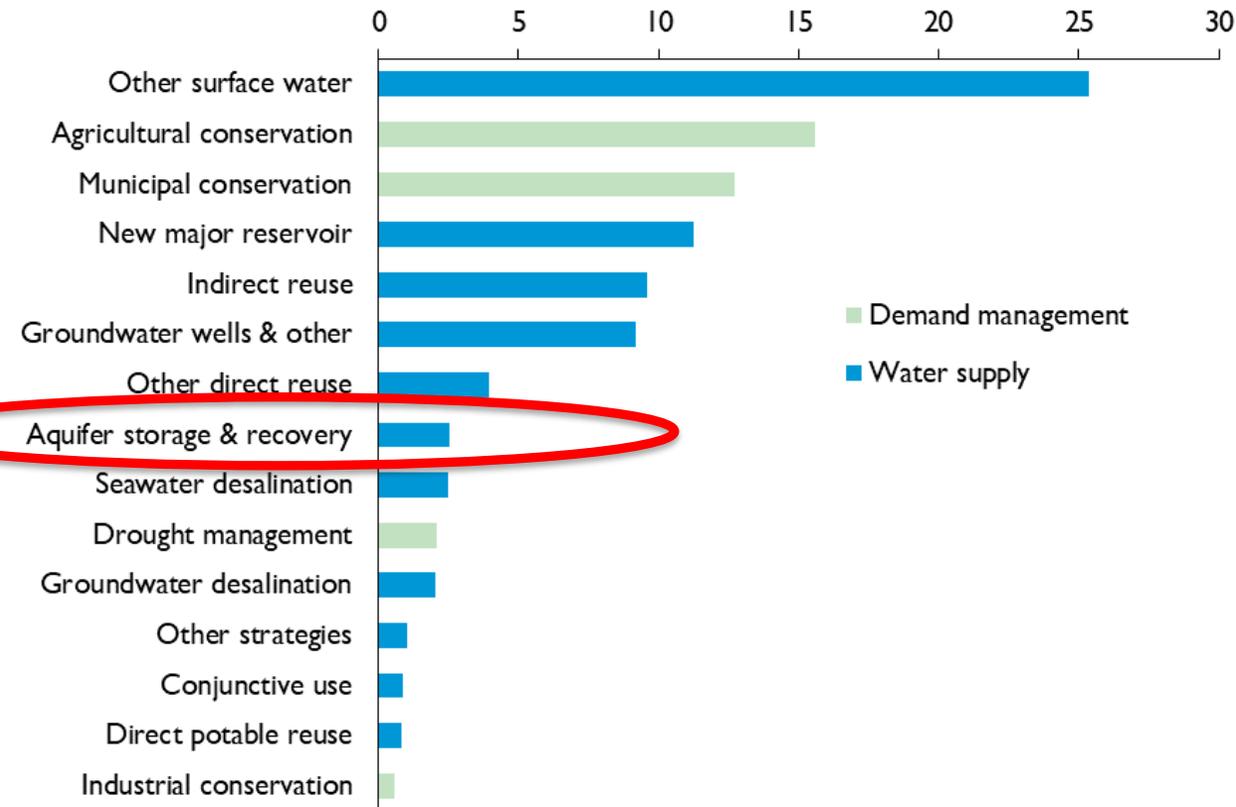
Results in 2021 Regional Water Plans (RWP)



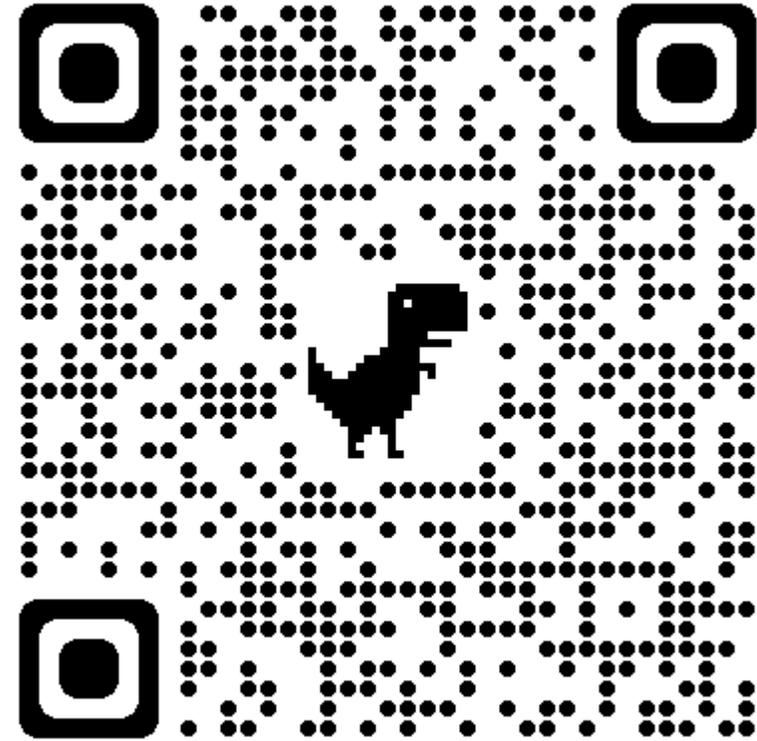
- Threshold(s) for “significant” identified water needs varied by region:
 - Qualitative: Any non-irrigation water need; any major water provider need
 - Quantitative: 800 AFY – 25,000 AFY
- ASR recommended by 10 of 16 regions
- Regions **not recommending** ASR cited reasons such as:
 - unsuitable geology in proximity to needs,
 - cost constraints,
 - unavailable expertise/knowledge/studies, or
 - a lack of interested project sponsors.

Share of strategy volume in the 2022 SWP (percent, 2070)

- Approximately 193,000 acre-feet per year of strategy supply in 2070
- Serving over 160 water user groups
- ASR and AR recommended and alternative strategy sources (for 2070):
 - 17 surface water sources
 - 10 combination of sources
 - 6 groundwater
 - 4 reuse
 - 1 rainwater harvesting

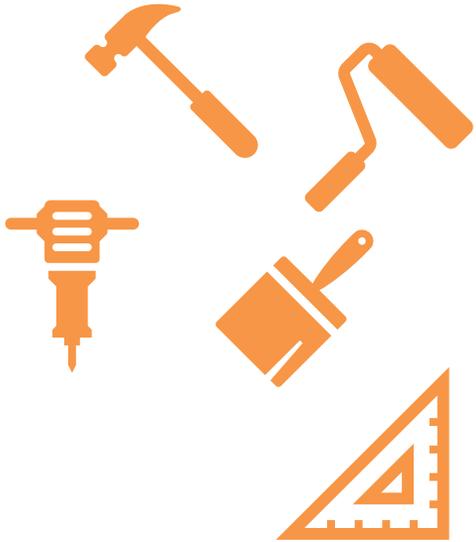


TWDB funding (assistance) for MAR Projects



<http://www.twdb.texas.gov/financial/index.asp>

Funding tools for Public Water Utilities in a nutshell



FEDERAL FUNDS

Clean Water State Revolving Fund (CWSRF)*
Drinking Water State Revolving Fund (DWSRF)*



**Infrastructure Investment and Jobs Act 2022 (IIJA) supplement these*

STATE FUNDS

Agricultural Water Conservation Loans/Grants (AG)^
Economically Distressed Areas Program (EDAP)
Flood Infrastructure Fund (FIF)^
Rural Water Assistance Fund (RWAFF)
State Participation Program (SP)
State Water Implementation Fund for Texas (SWIFT)
Texas Water Development Fund (DFund)



^don't normally apply to drinking or wastewater

How Can These Tools Work for You?

AAA Bond Rating/
Interest Rate
Subsidization

Funding to
accommodate
projects of all sizes

Some combine
funding through
multiple programs

Eligible phases:
planning, design,
acquisition,
construction

Eligible Applicants

	CWSRF	DWSRF	AG	EDAP	FIF	RWAF	SP	SWIFT	DFund
Political Subdivisions	•	•	•	•	•	•	•	•	•
Non-profit WSC's	•	•		•	•	•	•	•	•
Investor-owned Utilities	•	•							
Private Entities	•								

Nonpoint
Source
Pollution
Control
Projects
Only

WSC = Water Supply Corporation



Eligible Drinking & Wastewater Projects

 = fund that have been used or suggested for ASR projects in TX

	 CWSRF	DWSRF	EDAP	RWAF	SP	 SWIFT	DFund
Water Supply		💧	💧	💧	💧	💧	💧
Water Treatment		💧	💧	💧	💧	💧	💧
Water Transmission & Distribution		💧	💧	💧		💧	💧
Potable Reuse	💧	💧	💧	💧	💧	💧	💧
Wastewater Collection	💧		💧	💧	💧		💧
Wastewater Treatment	💧		💧	💧	💧		💧
Nonpoint Source Pollution Control	💧						
Flood Control & Storm Water Management	💧						💧
Conservation meters		💧				💧	💧

State Water Implementation Fund for Texas (SWIFT)*



Aquifer Recovery and Storage Well – Well No. 10

- Texas Legislature during the 83rd Legislature (2013)
- Approved by Texas voters (constitutional amendment)
- Offers low-interest loans for state water plan projects
 - Rural/Agricultural additional interest rate subsidy
- Up to 30-year repayment
- Flexible financing structures
 - Low-interest loans, Deferred Loans, Board Participation
- No maximum funding limit
- City of Bryan ASR project
 - 2016, received \$18M loan commitment
 - 2017, used \$700k for the first phase (retrofit well)
 - 2021, closed on \$15.655M multi-year commitment for Phase II

*The SWIFT program includes two funds, the State Water Implementation Fund for Texas (SWIFT) and the State Water Implementation Revenue Fund for Texas (SWIRFT). Bonds for the program are issued through SWIRFT.

Questions?

Supporting ASR projects in Texas: Texas Water Development Board Science, Planning, and Funding

Science

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