

REGION H

Water Planning Group

MEETING MATERIALS

February 1, 2023

Common Region H Terms and Conversion Factors

List of Abbreviations

CRU	Collective Reporting Unit
DCP	Drought Contingency Plan
DFC	Desired Future Condition
DOR	Drought of Record
EA	Executive Administrator
EPA	Environmental Protection Agency
FWSD	Fresh Water Supply District
GAM	Groundwater Availability Model
GCD	Groundwater Conservation District
GMA	Groundwater Management Area
GPCD	Gallons Per Capita Per Day
GRP	Groundwater Reduction Plan
IFR	Infrastructure Finance Report
IPP	Initially Prepared Plan
MAG	Modeled Available Groundwater
MPC	Master Planned Community
MUD	Municipal Utility District
MWP	Major Water Provider
PDSI	Palmer Drought Severity Index
PWS	Public Water Supply
RFIG	Regional Flood Planning Group
RHWPG	Region H Water Planning Group
ROR	Run-of-River
RWP	Regional Water Plan
RWPA	Regional Water Planning Area
RWPG	Regional Water Planning Group
SWIFT	State Water Implementation Fund for Texas
SWP	State Water Plan
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TPWD	Texas Parks and Wildlife Department
TWC	Texas Water Code
TWDB	Texas Water Development Board
UCM	Unified Costing Model
URS	Unique Reservoir Site
USS	Unique Stream Segment
WAM	Water Availability Model
WCID	Water Control and Improvement District
WCP	Water Conservation Plan
WMS	Water Management Strategy
WRAP	Water Rights Analysis Package
WUD	Water Utility Database
WUG	Water User Group
WWP	Wholesale Water Provider

Water Measurements

1 acre-foot (AF) = 43,560 cubic feet = 325,851 gallons

1 acre-foot per year (ac-ft/yr) = 325,851 gallons per year = 893 gallons per day

1 gallon per minute (gpm) = 1,440 gallons per day = 1.6 ac-ft/yr

1 million gallons per day (mgd) = 1,000,000 gallons per day = 1,120 ac-ft/yr

Region H Water Planning Group
10:00 AM Wednesday
February 1, 2023
San Jacinto River Authority Office
1577 Dam Site Rd, Conroe, Texas 77304
AGENDA

1. Call to order.
2. Introductions.
3. Review and approve minutes of the November 2, 2022 meeting.
4. **Receive public comments on specific issues related to agenda items 5 through 8.** (Public comments limited to 3 minutes per speaker)
5. Planning Group Membership
 - a. Receive Nominating Committee recommendations and discuss and elect officers and members of the Executive Committee of the Region H Water Planning Group (RHWPG).
6. Special Items and Informational Presentations
 - a. Receive presentation from the Gulf Coast Water Authority regarding the Brazos River Alluvium.
 - b. Receive presentation from the Consultant Team and Harris-Galveston Subsidence District on the Joint Regulatory Plan Review.
 - c. Discuss request from BASF Corporation regarding consistency of proposed project with the Regional Water Plan (RWP) and consider taking action authorizing submittal of a letter from the RHWPG on consistency status.
7. Plan Development and Administration
 - a. Receive update from the Consultant Team regarding non-population demand data and projections for the 2026 Region H RWP.
 - b. Receive update from the Consultant Team regarding population demand data and projections for the 2026 Region H RWP.
8. General Updates and Outreach
 - a. Receive update regarding schedule and milestones for the development of the 2026 Region H RWP.
 - b. Receive update from liaisons to other planning groups.
 - c. Receive report regarding recent and upcoming activities related to communications and outreach efforts on behalf of the RHWPG.
 - d. Agency communications and general information.
9. **Receive public comments.** (Public comments limited to 3 minutes per speaker)
10. Next Meeting: May 3, 2023.
11. Adjourn.

Persons with disabilities who plan to attend this meeting and would like to request auxiliary aids or services are requested to contact Sonia Zamudio at (936) 588-3111 at least three business days prior to the meeting so that appropriate arrangements can be made.

Agenda Item 3

Review and approve minutes of the November 2, 2022 meeting.

**REGION H WATER PLANNING GROUP
MINUTES OF REGULAR MEETING
NOVEMBER 2, 2022**

MEMBERS PRESENT:

Gary Ashmore, David Bailey, John Bartos, Arthur Bredehoft, Brad Brunett, Carl Burch, James Comin, Mark Evans, Jace Houston, Robert Istre, Ken Kramer, Ivan Langford, Danny Pierce, and Loyd Smith.

ALTERNATES:

Krystal Boggs for Jun Chang, Ekaterina Fitos for Yvonne Forrest, Mike Uhl for Glenn Lord, Robert Thompson for Marvin Marcell, Bobby Walters for Byron Ryder, Veronica Osegueda for Michael Turco, Jake Hollingsworth for Brandon Wade, and Jim Sims for J. Kevin Ward.

MEMBERS ABSENT:

W.R. Baker, Caleb Cooper, and Mike O'Connell.

NON-VOTING MEMBERS:

Elizabeth McCoy, Texas Water Development Board

CONSULTANT TEAM:

Philip Taucer and Jason Afinowicz

1. CALL TO ORDER

The meeting was called to order at 10:00 a.m.

2. INTRODUCTIONS

There were no introductions.

3. REVIEW AND APPROVE MINUTES OF AUGUST 3, 2022 MEETING

Mr. Bredehoft made a motion to approve the minutes of August 3, 2022, to include the correction of the spelling of his name and to note that he was present at said meeting. The motion was seconded by Mr. Houston and carried unanimously.

4. RECEIVE PUBLIC COMMENTS ON SPECIFIC ISSUES RELATED TO AGENDA ITEMS 5 THROUGH 7

There were no public comments.

5. SPECIAL ITEMS AND INFORMATIONAL PRESENTATIONS

- a. Receive presentation from Consultant Team regarding the proposed application by the Lower Neches Valley Authority to amend the 2021 Region H Water Plan (RWP) and consider approving the submittal of the application package to Texas Water Development board (TWDB) for the determination of minor amendment status**

Mr. Taucer explained the proposed amendment by the Lower Neches Valley Authority (“LNVA”) would expand pumping capacity in the LNVA Devers system and support current and future water needs of customers. Mr. Taucer then explained that the proposed amendment is anticipated to be a minor amendment, but it would have to be submitted to TWDB for the official determination. Mr. Sims made a motion to approve the submittal of the application package to TWDB for determination of the minor amendment status. The motion was seconded by Mr. Langford and carried unanimously.

6. PLAN DEVELOPMENT AND ADMINISTRATION

- a. Receive update from the Consultant Team and the Non-Population Demands Committee regarding data and projections for the 2026 Region H Regional Water Plan**

Mr. Taucer provided an overview of the data and projections for the 2026 Region H Regional Water Plan. He reviewed the different methodologies for irrigation, mining, livestock, manufacturing, and steam electric. Mr. Taucer reviewed the path forward stating that the committee would take a detailed look at the background data and look for evidence of data errors, new or missed facilities, planned facilities, closures, and major differences in long-term demand. He stated that revisions are due July 14, 2023.

- b. Receive update from Consultant Team, Population Demands Committee, and Subsidence Districts regarding data and projections for the 2026 Region H Regional Water Plan**

Mr. Taucer discussed the potential alignment with Houston Galveston Subsidence District and the Fort Bend Subsidence District Joint Regulatory Plan Review. He stated that said alignment would yield highly detailed local analyses, enhanced spatial resolution, and include nine Region H counties. Mr. Taucer stated that this is an ongoing coordination with the Region H Water Planning Group and TWDB and any revision requests are due August 11, 2023.

7. GENERAL UPDATES AND OUTREACH

a. Receive update regarding schedule and milestones for the development of the 2026 Region H Regional Water Plan.

Mr. Taucer provided an overview related to the schedule and milestones for the development of the 2026 Region H Regional Water Plan by providing dates of scheduled events/tasks.

b. Receive update from liaisons to other planning groups

Mr. Evans stated that the Interregional Planning Council's next meeting will take place on November 9, 2022, and he will provide an update at the next Region H Water Planning meeting.

c. Receive report regarding recent and upcoming activities related to communications and outreach efforts on behalf of the RHWPG

There were no meetings to report.

d. Agency communications and general information

Ms. Elizabeth McCoy of TWDB reported on a number of new publications provided by TWDB, reported on information related to projection timelines, and reviewed certain deadlines for the upcoming year.

8. RECEIVE PUBLIC COMMENTS

There were no public comments.

9. NEXT MEETING

It was announced that the next meeting of the Region H Water Planning Group will take place on February 1, 2023.

10. ADJOURN

The meeting was adjourned at 10:58 a.m.

Agenda Item 5a

Receive Nominating Committee recommendations and discuss and elect officers and members of the Executive Committee of the Region H Water Planning Group (RHWPG).

Agenda Item 5a Annual Elections

- Annual election
- No term limits
- Must be from different interest categories
- Current Membership
 - RWPG Chair: Mark Evans (Counties)
 - Vice-Chair: Marvin Marcell (Water Districts)
 - Secretary: Jace Houston (River Authorities)
 - Committee: John Bartos (Environmental)
 - Committee: Yvonne Forrest (Municipalities)



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Agenda Item 5a Annual Elections

Action:

Elect officers and members of the Executive Committee of the RHWPG.



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Agenda Item 6a

Receive presentation from the Gulf Coast Water Authority regarding the Brazos River Alluvium.



The Brazos Alluvium Aquifer

(and how it's our next big drought threat)

Region H Water Planning Group Meeting
February 1, 2023

PRESENTER:

Brandon Wade
General Manager/CEO

Serving Brazoria, Fort Bend & Galveston counties



COMMUNITIES



**INDUSTRIAL
CUSTOMERS**

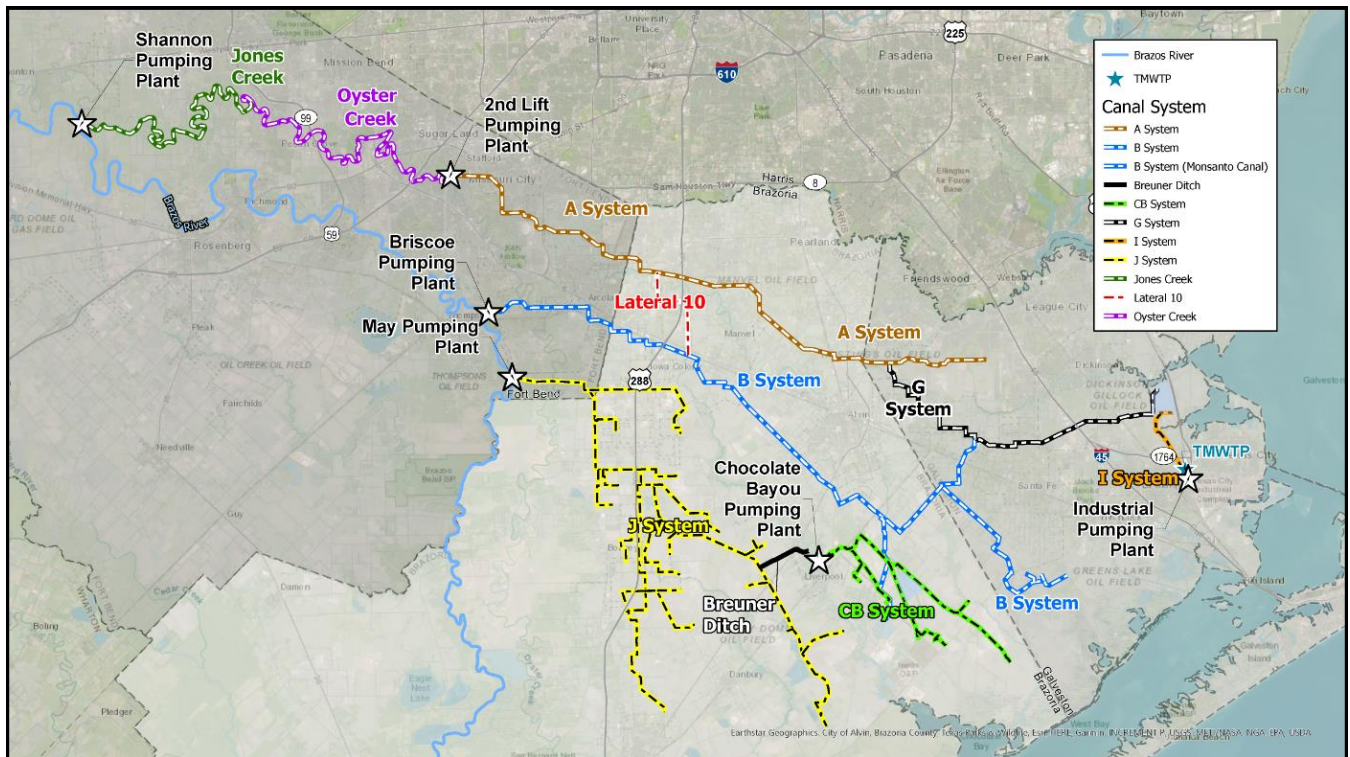


AGRICULTURE

OUR WATER SOURCES

1. State-issued water rights from the 840-mile-long Brazos River
2. Brazos River Authority contracts for stored water in BRA's 11 reservoirs

BRAZOS RIVER BASIN





Gulf Coast Water Authority

GCWA RUN-OF-RIVER RIGHTS

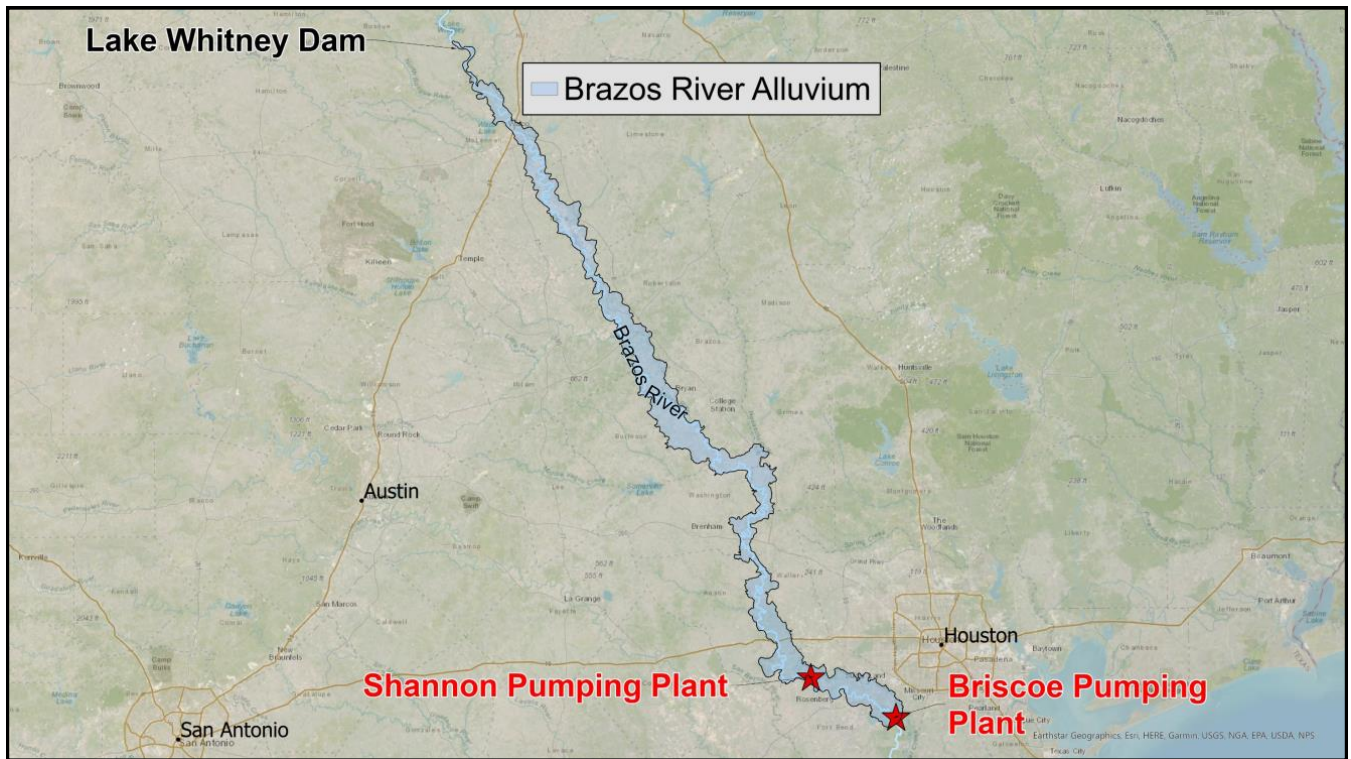
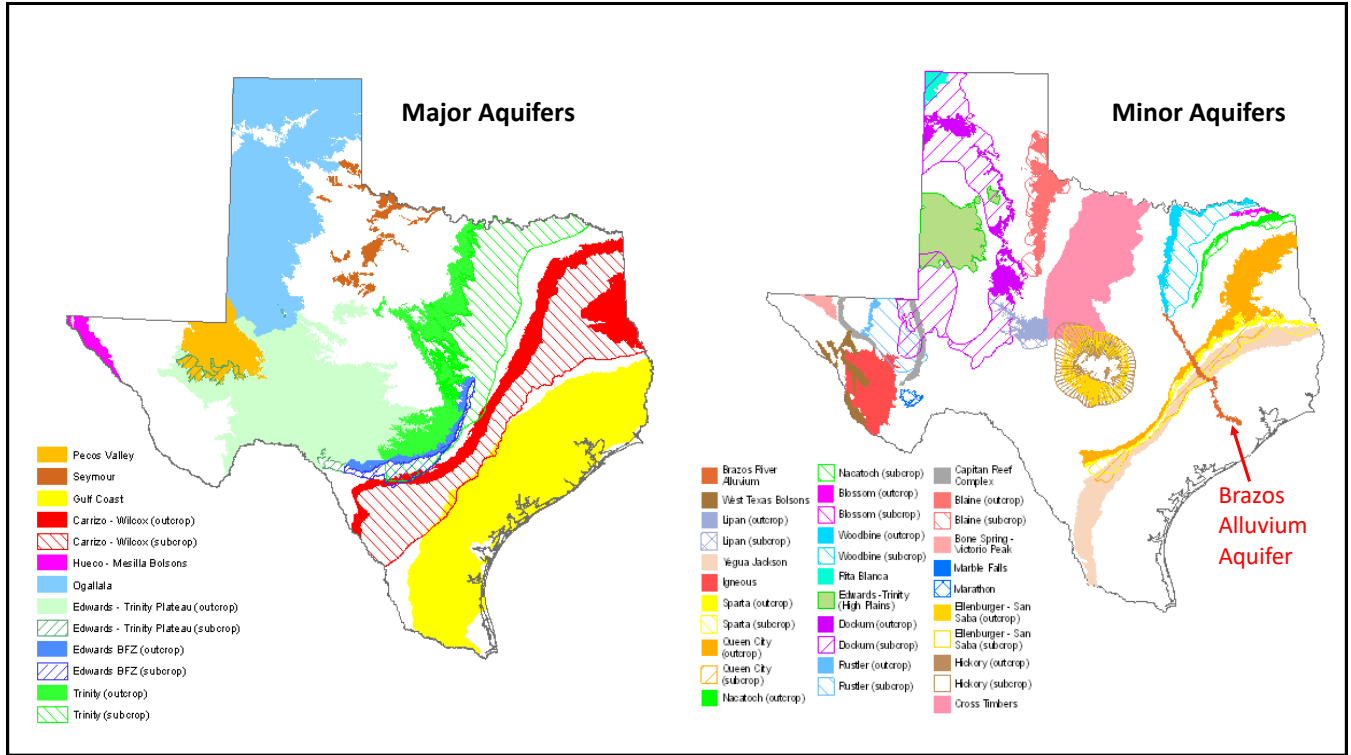
Water Right	Priority	Locations	Annual Permit Amount (ac-ft)	Volume Used (ac-ft)	Volume Remaining (ac-ft)	Percent Used	Allowable Diversion Rate (cfs)	Max Day Diversion Rate (cfs)
CoA 12-5168	1/15/1926	A & B	99,932	0	99,932	0.0%	685	388
CoA 12-5171	12/12/1950	A & B	50,000	0	50,000	0.0%	600	537
	2/1/1939	A & B	75,000	6,296	68,704	8.4%		
CoA 12-5322	7/25/1983	J	75,000	0	75,000	0.0%	900	177
	3/14/1955	J	40,000	0	40,000	0.0%	668	12
	2/8/1929	J	40,000	0	40,000	0.0%	400	251

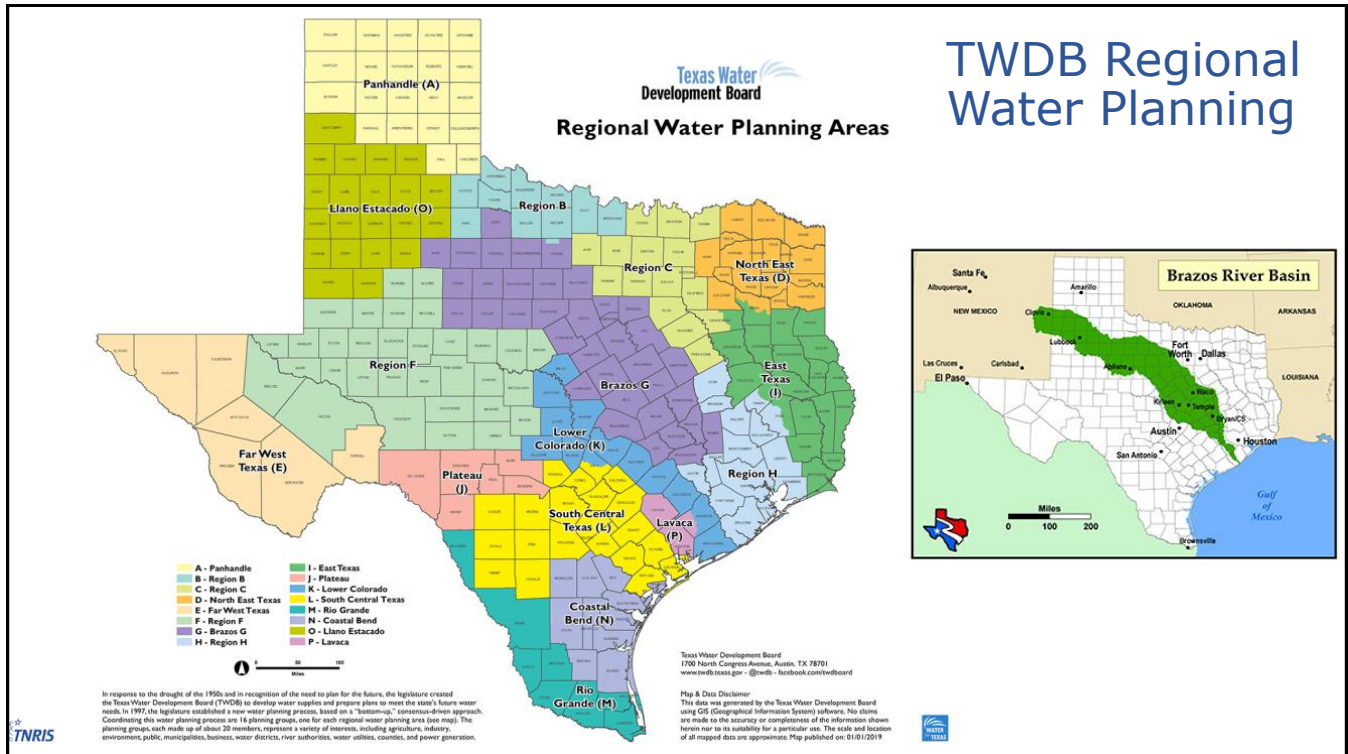


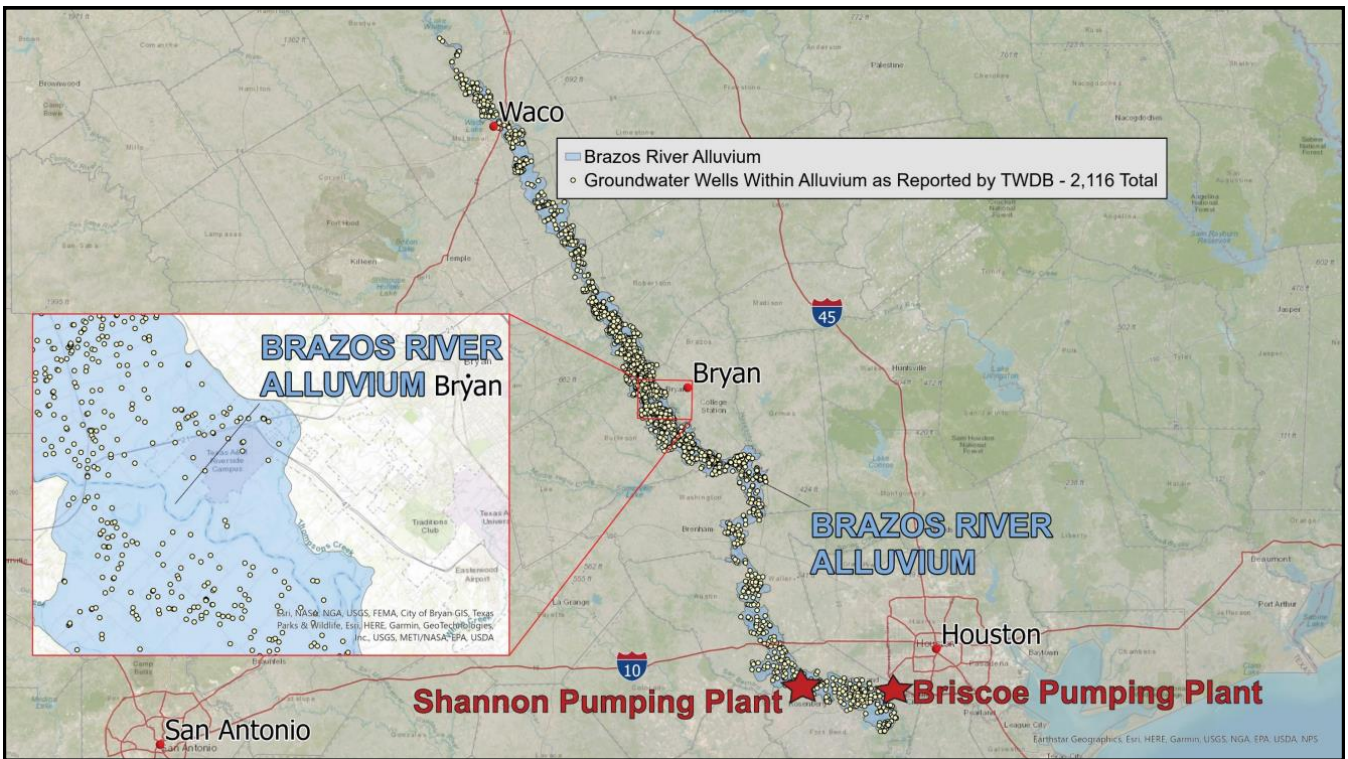
Gulf Coast Water Authority Stored Water Contracts and Releases

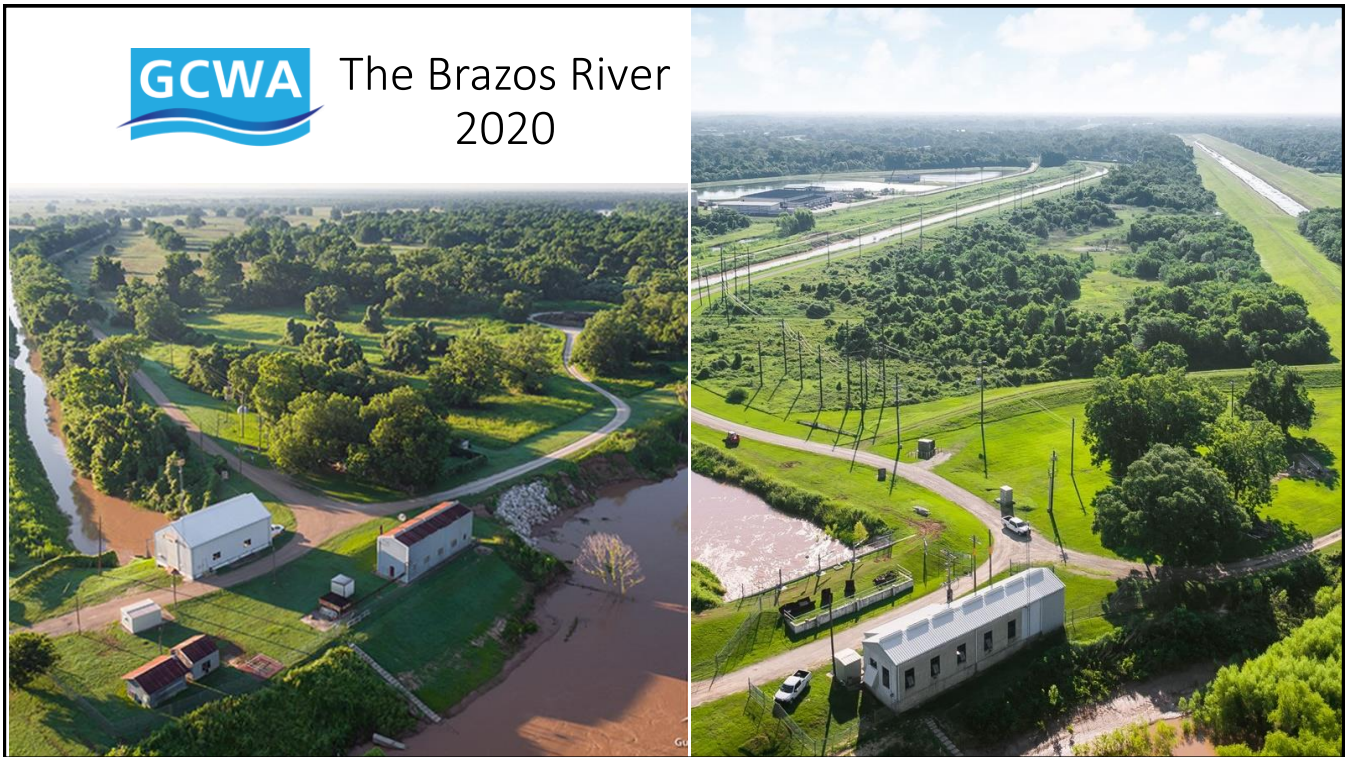
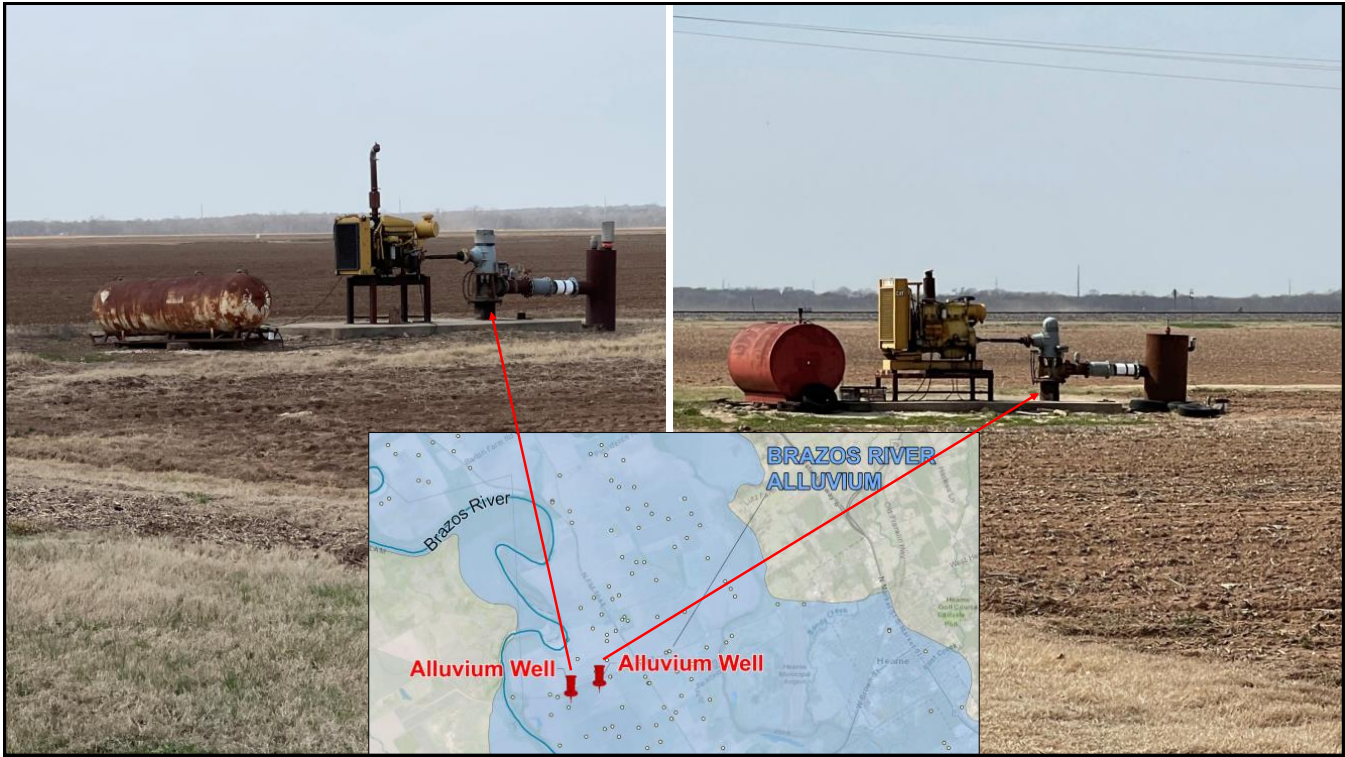
RELEASE SOURCES

Contract	Account Period	Type	Use	Expiration Date	Contract Amount (ac-ft)	Contract Expended (ac-ft)	Remaining (acft)	Percent Contract Expended	Amount Diverted (ac-ft)
#3105-03	9/2022 - 8/2023	FIRM	Municipal / Industrial	2027	31,820	0	31,820	0.0%	
#3105-02	9/2022 - 8/2023	FIRM	Municipal / Industrial	On Agenda for Renewal	9,335	0	9,335	0.0%	
#3105-62 (SysOp)	9/2022 - 8/2023	FIRM	Multi	2045	36,362	0	36,362	0.0%	
Pecan Grove	9/2022 - 8/2023	FIRM	Municipal	2057	3,100	0	3,100	0.0%	
Rosenberg	9/2022 - 8/2023	FIRM	Municipal / Industrial	2024	4,500	0	4,500	0.0%	
#7401-01	CY 2023	FIRM	Multi	2024	5,625	0	5,625	0.0%	
NRG	CY 2023	FIRM	Municipal / Industrial	2023	10,000	0	10,000	0.0%	
Total					100,742	0	100,742	0.0%	







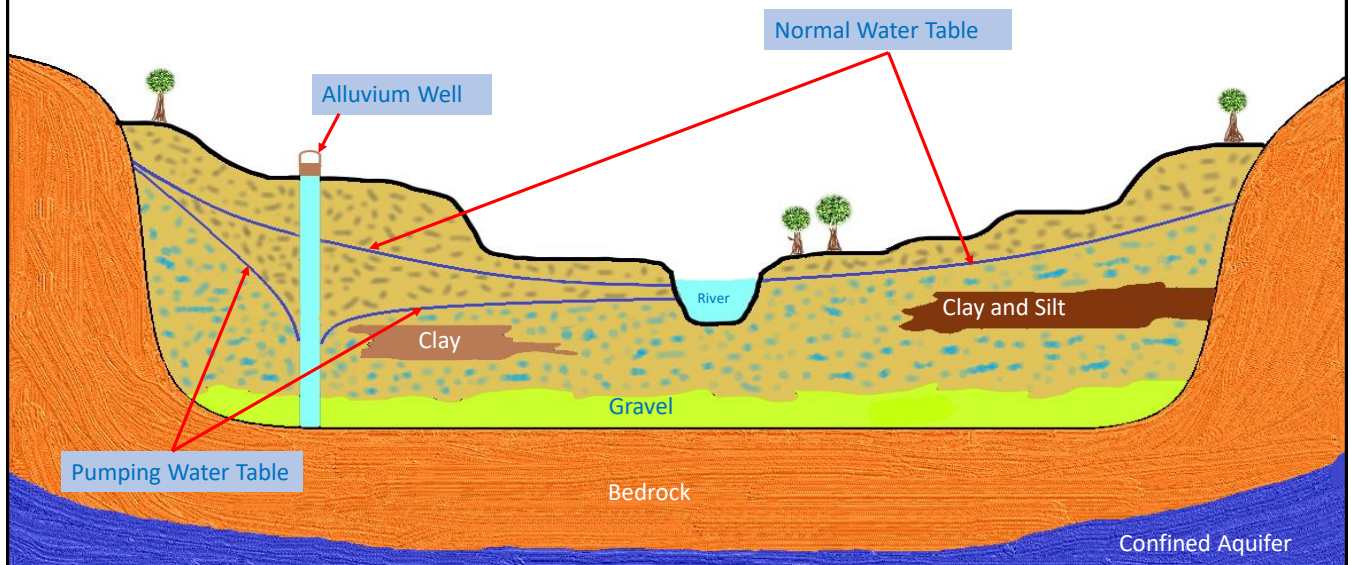


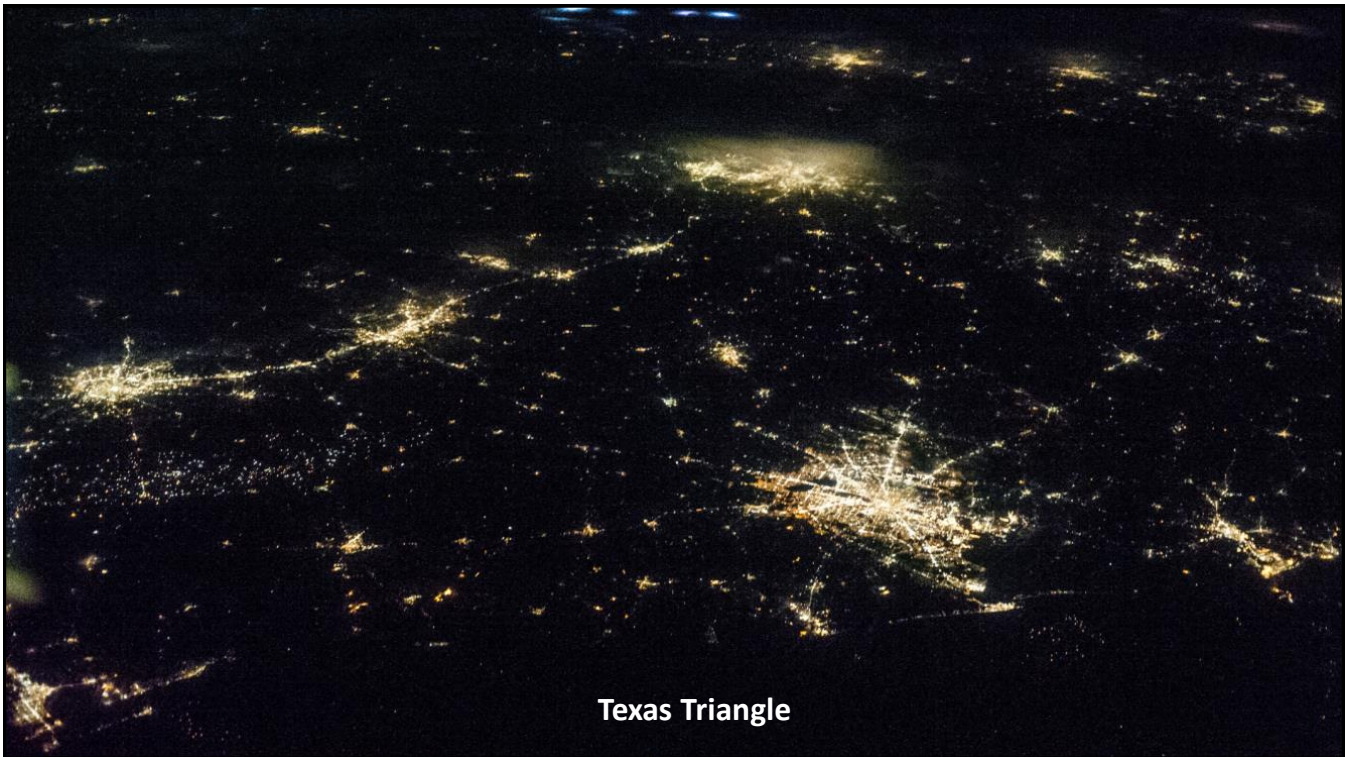
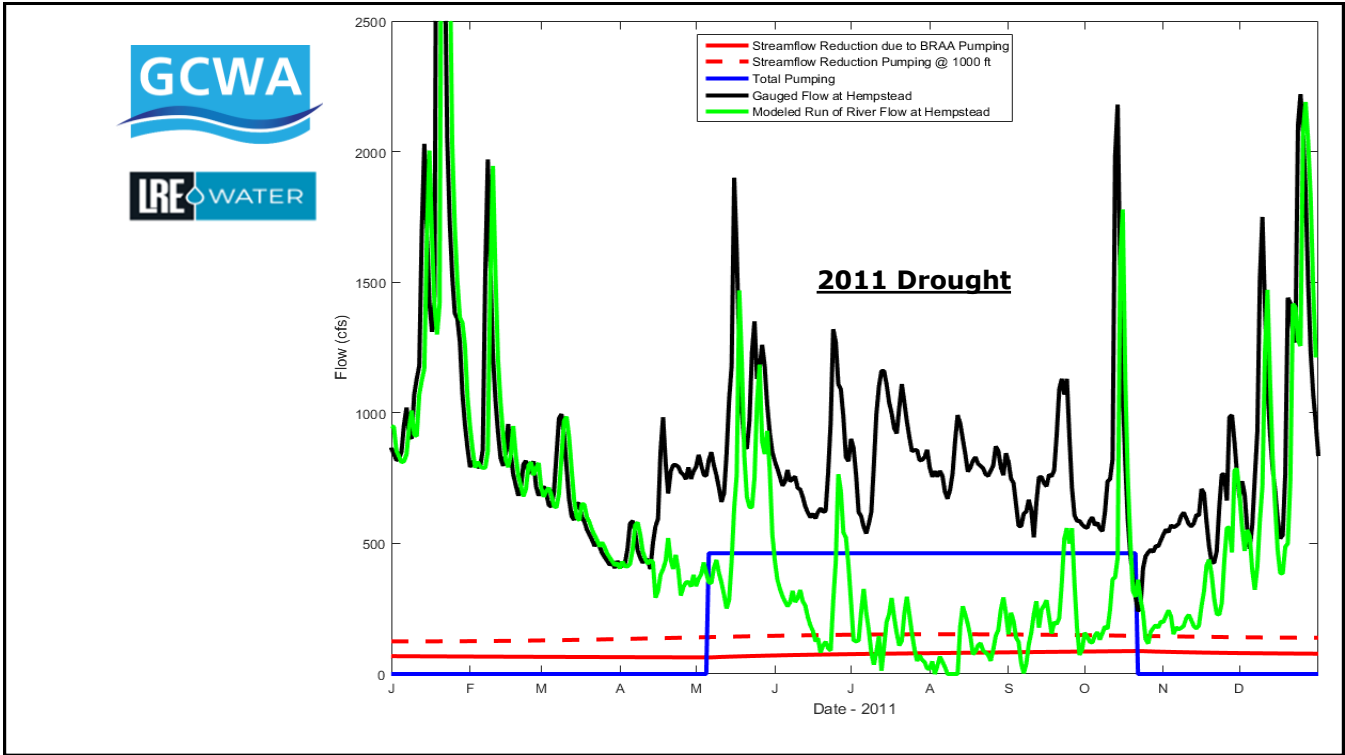


The Brazos River 2009



Brazos Alluvium







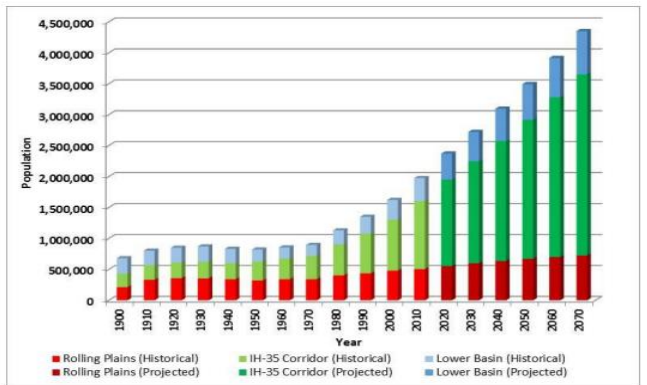
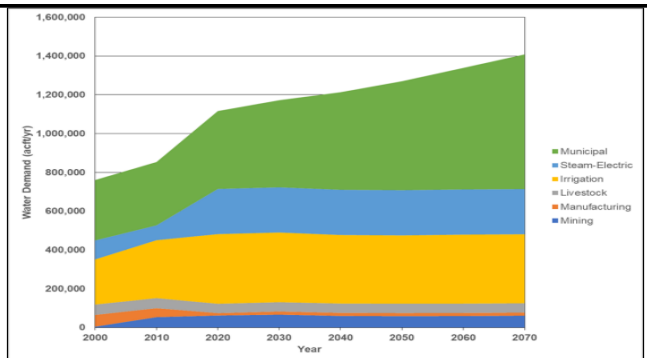
Region G Growth Stats

Total Use by Source	1980	2017
Groundwater	270,270	432,527
Surface Water	274,999	445,650
Region Total	545,269	878,177

Aquifer Use	1980	2017
Brazos Alluvium	29,426	133,065

Population	2020	2070
Region G	2,371,064	4,351,042

Data & Chart Source:
2021 Brazos G Regional Water Plan



2022 Modeled Available Groundwater – Brazos Alluvium

GAM Run 21-017 MAG: Modeled Available Groundwater for the Aquifers in Groundwater Management Area 12

November 1, 2022

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TABLE 11 MODELED AVAILABLE GROUNDWATER FOR BRAZOS RIVER ALLUVIUM AQUIFER IN GROUNDWATER MANAGEMENT AREA 12 SUMMARIZED BY COUNTY FOR EACH DECADE BETWEEN 2020 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR. GCD = GROUNDWATER CONSERVATION DISTRICT.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070
Brazos Valley GCD	Brazos	Brazos River Alluvium	77,816	76,978	76,393	76,195	76,100	76,039
	Robertson	Brazos River Alluvium	55,907	55,424	55,157	54,839	54,723	54,618
Post Oak Savannah GCD	Burleson	Brazos River Alluvium	32,222	32,207	32,207	32,206	32,206	32,206
	Milam	Brazos River Alluvium	31,412	31,375	31,366	31,362	31,359	31,358
Total			197,357	195,984	195,123	194,602	194,388	194,221

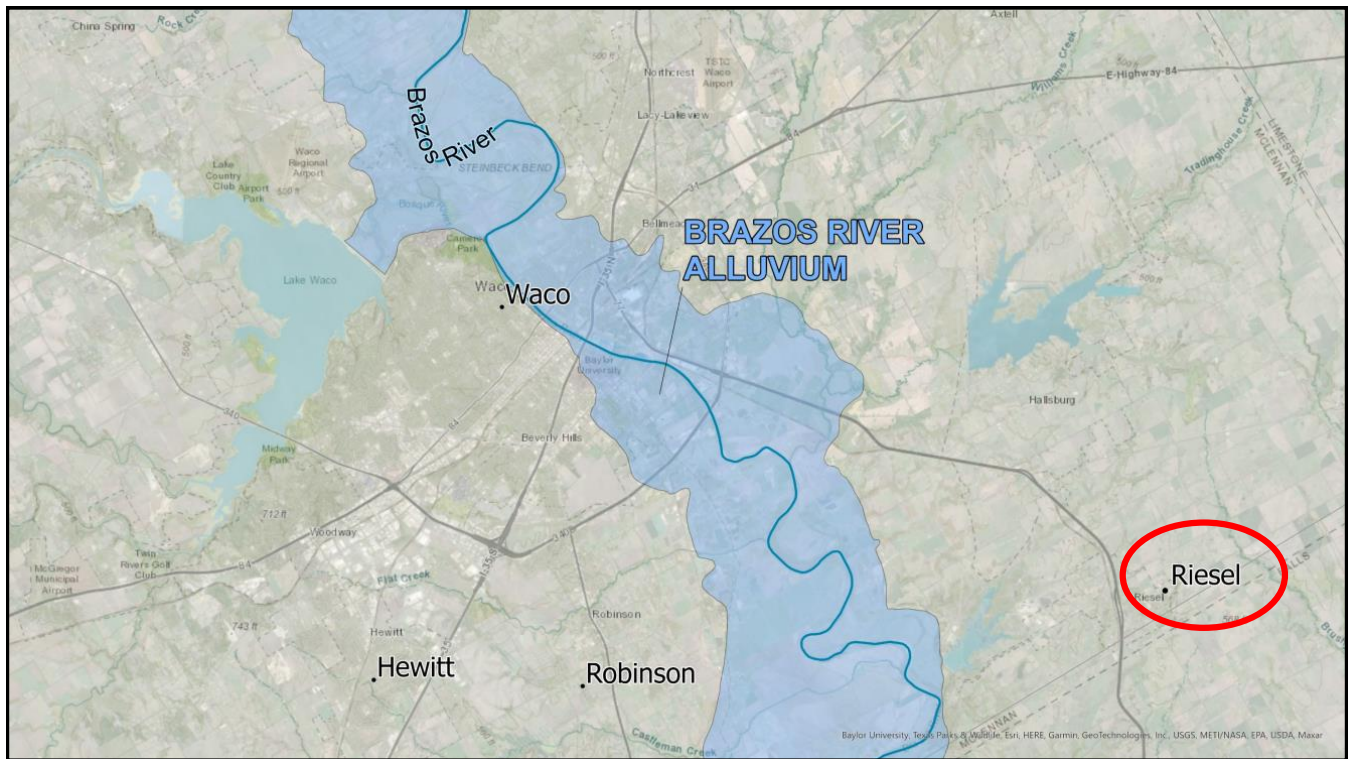
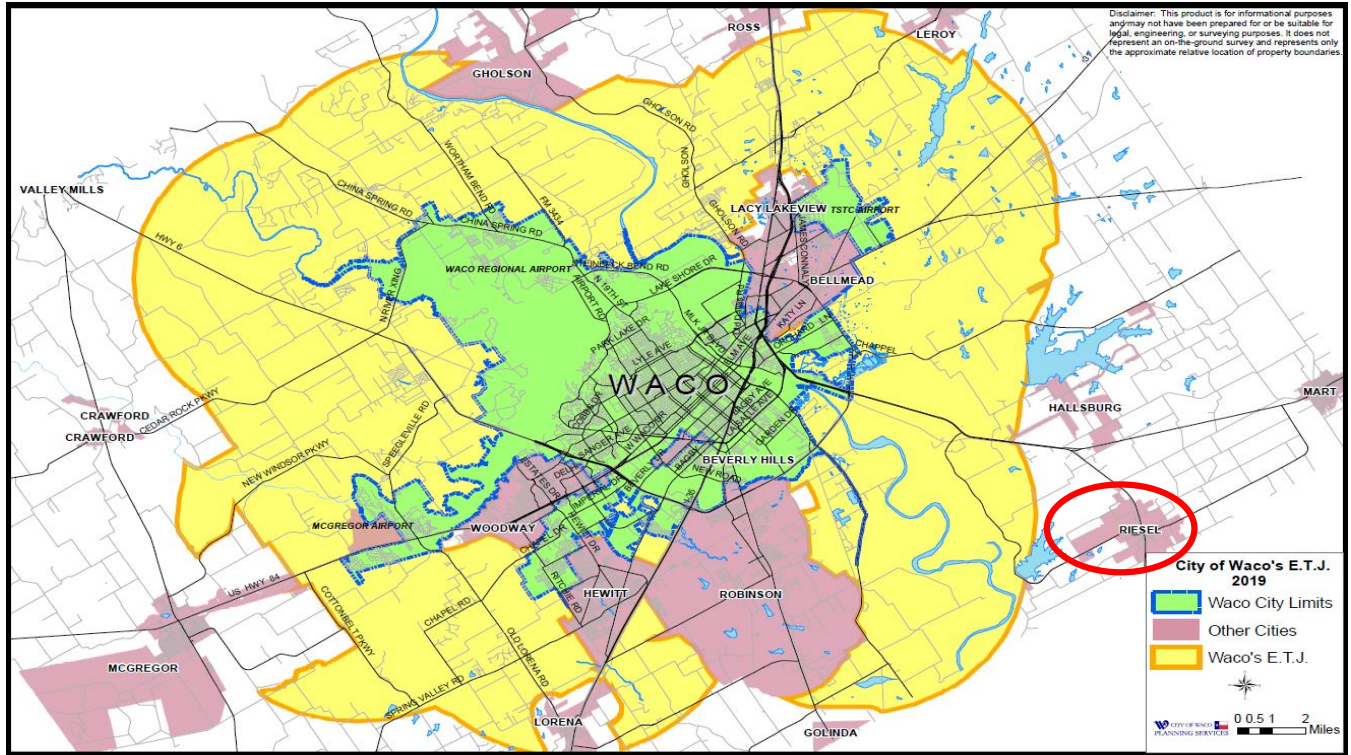
2017 Modeled Available Groundwater – Brazos Alluvium

TABLE 11 MODELED AVAILABLE GROUNDWATER FOR THE BRAZOS RIVER ALLUVIUM AQUIFER IN GROUNDWATER MANAGEMENT AREA 12 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2013 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District	County	Aquifer	2013	2020	2030	2040	2050	2060	2070
Brazos Valley GCD	Brazos	Brazos River Alluvium	122,785	81,581	80,311	80,081	79,976	79,913	79,872
Brazos Valley GCD	Robertson	Brazos River Alluvium	66,608	61,161	57,959	57,633	57,544	57,503	57,480
Brazos Valley GCD Total¹		Brazos River Alluvium	189,393	142,742	138,270	137,714	137,520	137,416	137,351
Post Oak Savannah GCD	Burleson	Brazos River Alluvium	28,515	28,472	28,418	28,414	28,414	28,414	28,413
Post Oak Savannah GCD	Milam	Brazos River Alluvium	50,626	47,818	47,785	47,779	47,775	47,773	47,771
Post Oak Savannah GCD Total¹		Brazos River Alluvium	79,142	76,290	76,203	76,193	76,189	76,186	76,185
No District-County²	Falls	Brazos River Alluvium	NR	NR	NR	NR	NR	NR	NR
GMA 12 Total¹		Brazos River Alluvium	268,535	219,032	214,473	213,907	213,709	213,602	213,536

1. Individual estimates are rounded and may not always sum up to the total value displayed.

2. NR: Groundwater Management Area 12 declared the Brazos River Alluvium Aquifer not relevant in these areas.



NOTICE OF OPEN MEETING

BRAZOS G REGIONAL WATER PLANNING GROUP

Virtual Meeting

10:00 a.m. – October 28, 2020

AGENDA

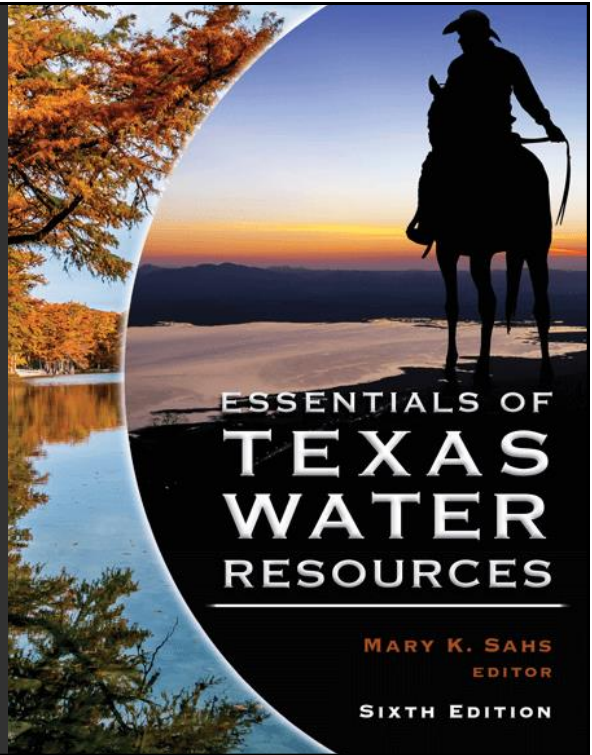
1. CALL MEETING TO ORDER
2. INVOCATION
3. NOTICE OF MEETING
4. ATTENDANCE AND ANNOUNCEMENTS
5. PUBLIC INPUT - Public questions and comments on agenda items or water planning issues
(limited to 5 minutes each)
6. PROGRAM
 - 6.1. Report and possible discussion on report from Texas Water Development Board (TWDB) staff.
 - 6.2. Discussion and possible action to support a Waiver of Consistency for the City of Riesel Arsenic Reduction Project.
 - 6.3. Discussion and possible action to consider requests from various entities to participate in Flood Infrastructure Fund Category 1 Watershed Studies.
 - 6.4. Discussion and possible action adopting the final 2021 Brazos G Regional Water Plan, pending textual changes necessary to address comments received and authorizing BRA and HDR to submit the final plan to TWDB when ready, but no later than November 5, 2020.
 - 6.5. Report and possible discussion on updates from other regional water planning groups (Regions B, C, F, H, K, L & O).
 - 6.6. Report and possible discussion on Groundwater Management Area (GMA) activities.



Rio Grande at Low Flow Conditions in El Paso

Conjunctive
Management
of
Surface Water
and Groundwater
Resources

-Underflow-



- Provide input to Region G Plan
- Monitor development of DFCs, Groundwater Districts, and Well Permit Application
- Perform analysis of Brazos Alluvium pumping on Flows in Brazos River
- Support:
 - ❖ Allens Creek
 - ❖ Desalination
 - ❖ Groundwater (Subsidence)
 - ❖ Reuse



The Brazos Alluvium Aquifer

(and how it's our next big drought threat)

Region H Water Planning Group Meeting
February 1, 2023

PRESENTER:
Brandon Wade
General Manager/CEO

Agenda Item 6b

Receive presentation from the Consultant Team and Harris-Galveston Subsidence District on the Joint Regulatory Plan Review.

HARRIS-GALVESTON



SUBSIDENCE DISTRICT



2023 JOINT REGULATORY PLAN REVIEW

Update To Region H RWPG

01 February 2023

1

Develop Population and Demand Projections

Develop projections of population and water demand over a ten-county area through the year 2100.



2

Conduct Alternative Water Supply Assessment

Review alternative water supplies for the capability of reducing future groundwater demand.



3

Develop the Gulf Coast Land Subsidence and Groundwater Flow Model

Development of the GULF-2023 model for simulating regional groundwater flow and subsidence in the Gulf Coast Aquifer.



4

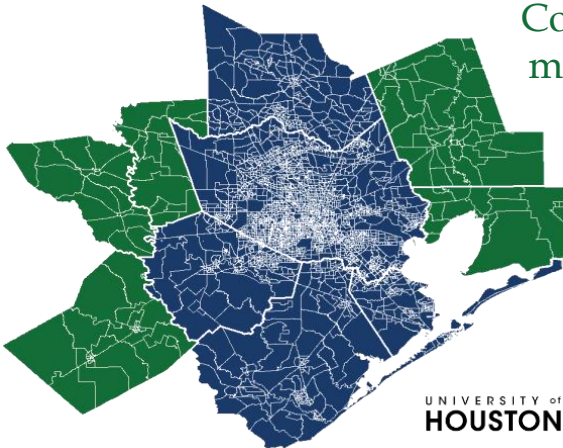
Evaluate Regulatory Scenarios

Evaluate the performance of the HGSD and FBSD regulatory plans and consider refinements to the regulatory plan framework to accommodate future growth, alternative water supplies, and the most recent aquifer science.

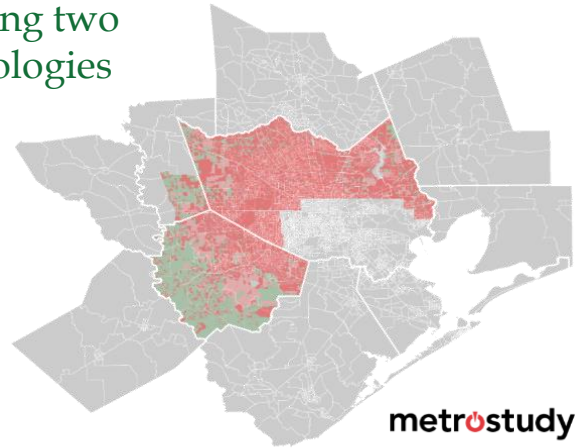


POPULATION PROJECTIONS

Combining two methodologies

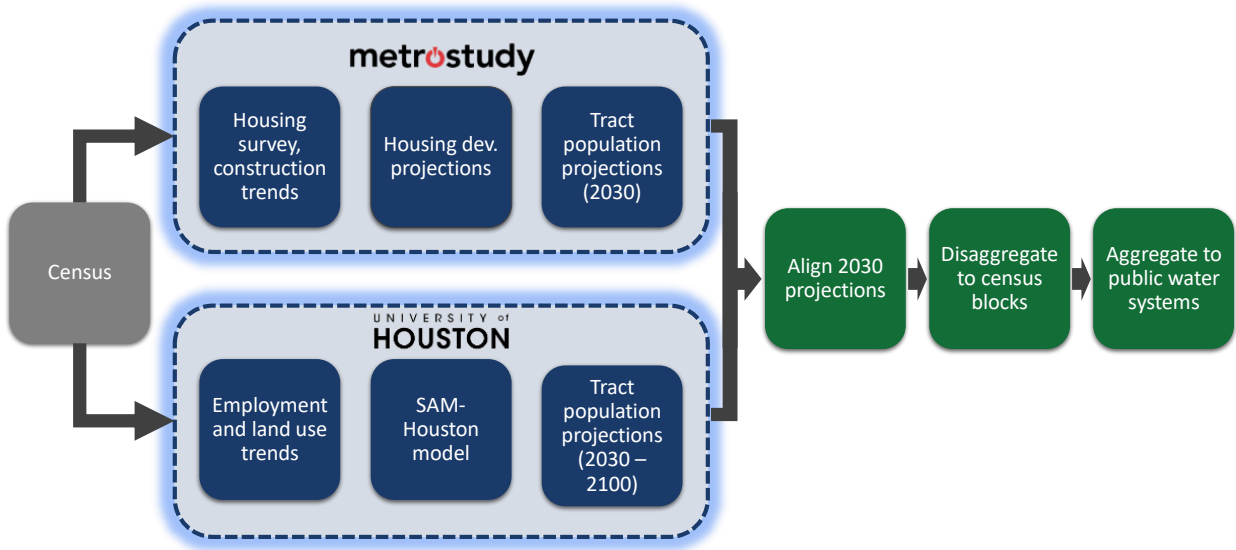


Small Area Model Houston (SAM-Houston)
Long-range, wide-area projections



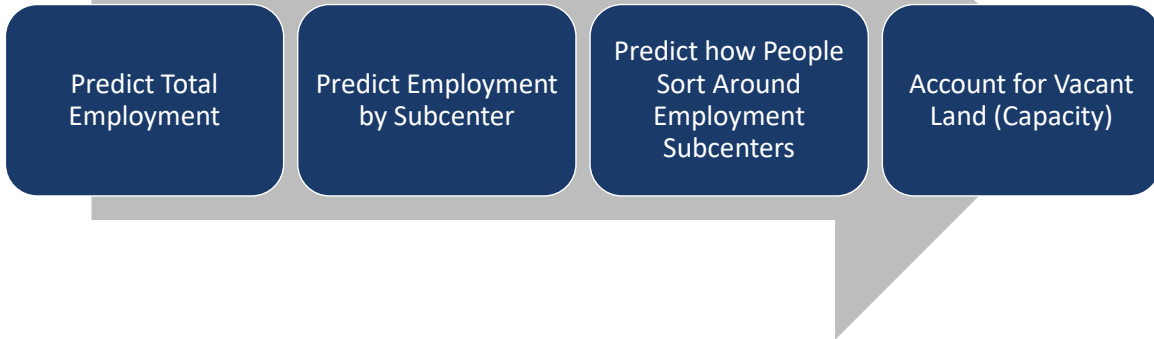
Projected Development Methodology
Short-range, detailed projections

PROJECTED POPULATION



PROJECTED POPULATION

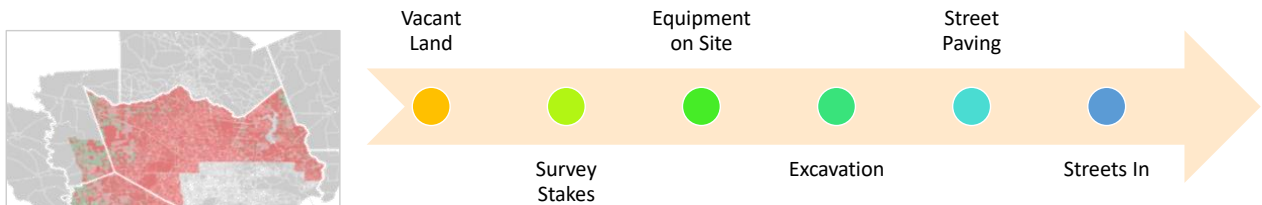
UH SAM-Houston Model Approach



PROJECTED POPULATION

• Metrostudy Projected Development Methodology

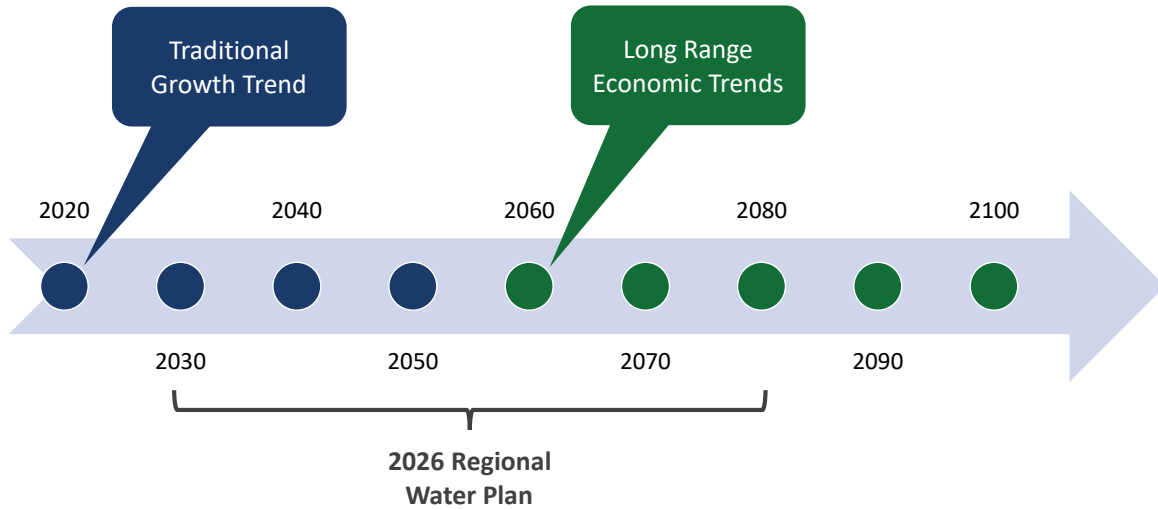
• Land/lot development



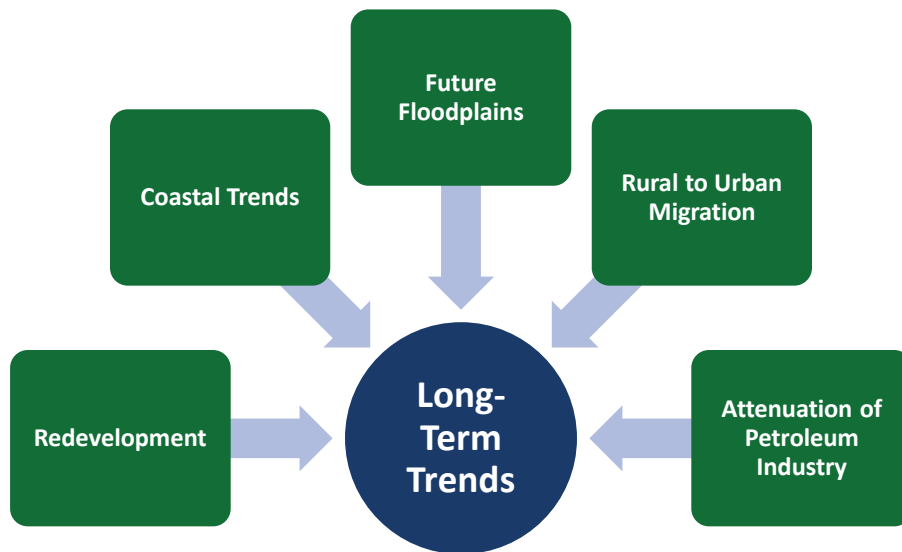
• New home development



TRENDS

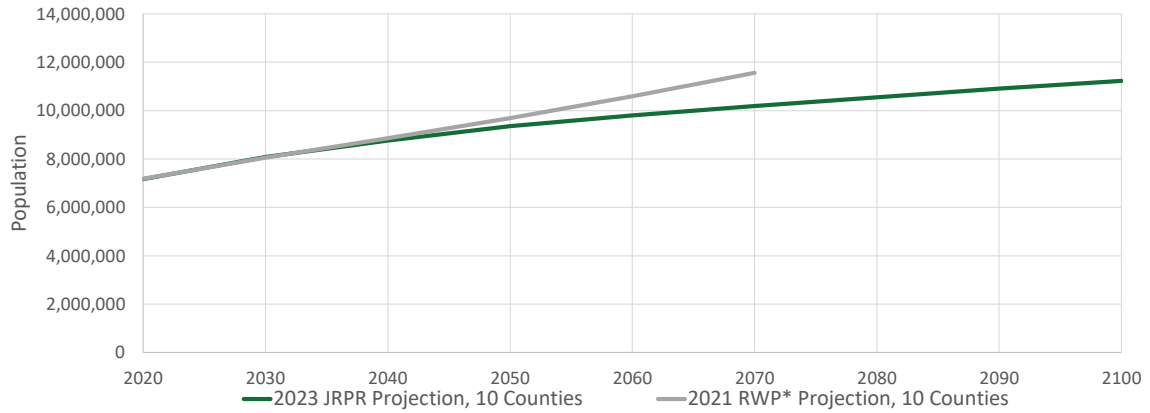


POPULATION PROJECTIONS



POPULATION PROJECTIONS

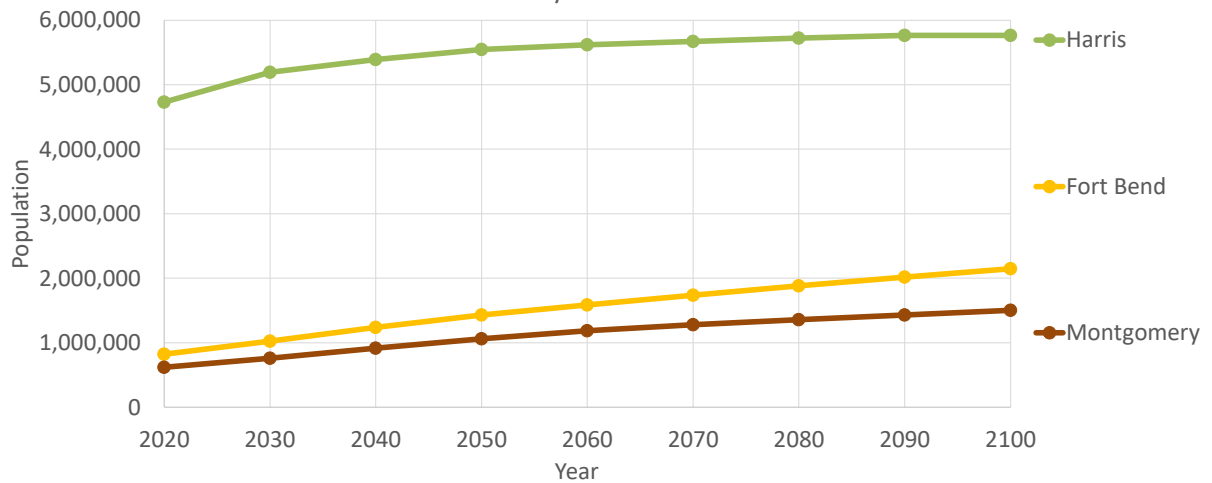
Comparison to Previous Projections



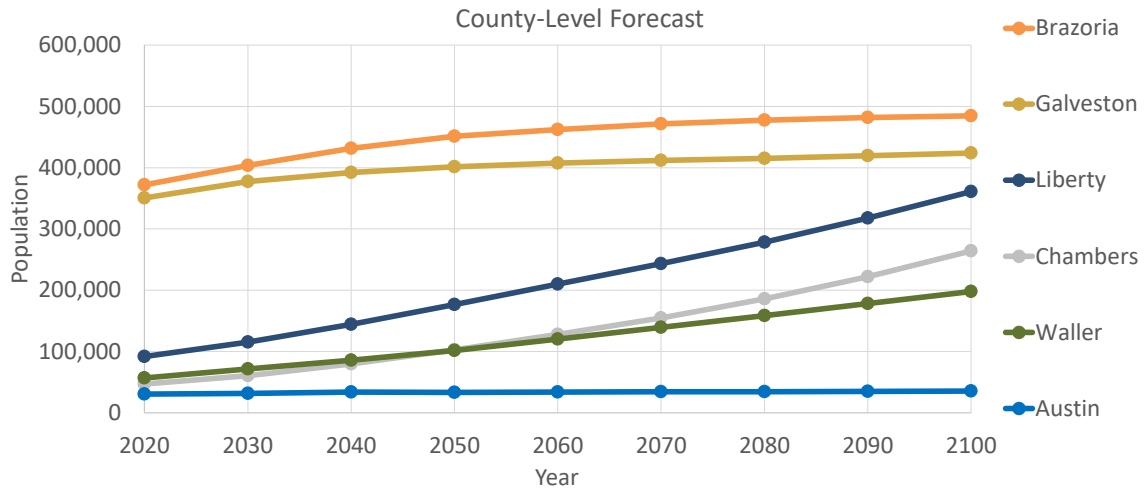
**2021 RWP and 2016 RWP used projections developed in 2013 RGUP for Brazoria, Harris, Galveston, Montgomery, and Fort Bend Counties, with only slight modifications (<0.01%).*

POPULATION PROJECTIONS

County-Level Forecast

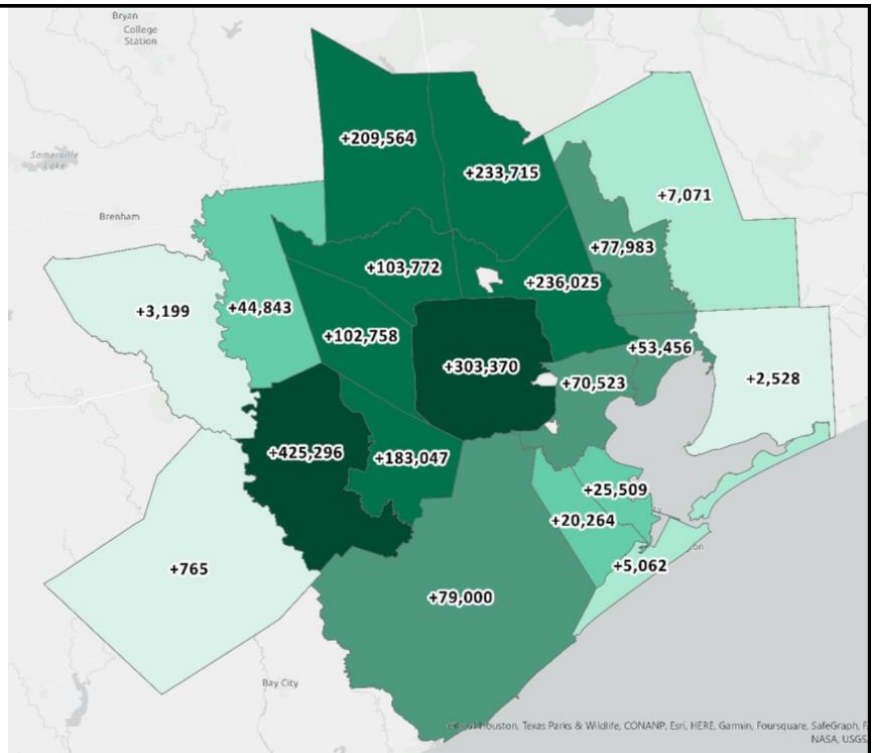


POPULATION PROJECTIONS



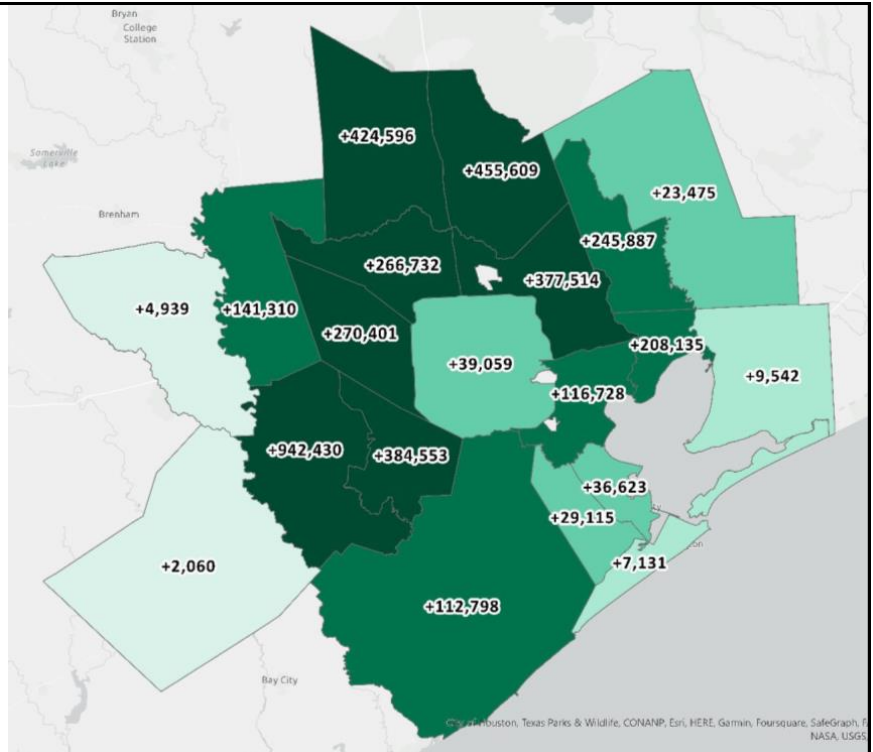
POPULATION GROWTH FORECAST 2020 TO 2050

Magnitude of growth in population



POPULATION GROWTH FORECAST 2020 TO 2100

Magnitude of growth in population



QUESTIONS AND ANSWERS



Agenda Item 6c

Discuss request from BASF Corporation regarding consistency of proposed project with the Regional Water Plan (RWP) and consider taking action authorizing submittal of a letter from the RHWPG on consistency status.

Agenda Item 6c Consistency Status

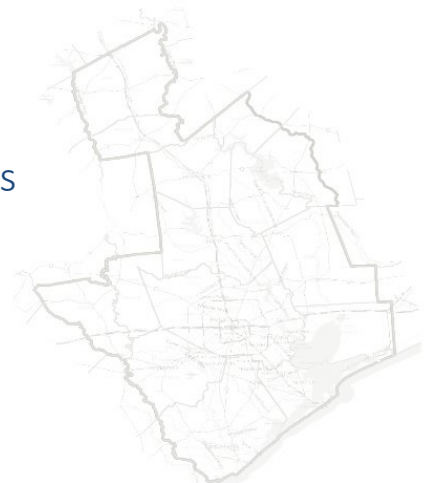
- BASF Corporation water right application
 - Interruptible Brazos River diversion
 - Bed and banks transfer
 - Modeling shows available ≈64% of years
- TCEQ requiring RWPG letter
- Must not be inconsistent with RWP

Proposed Right Summary Information	
Type	Non-Firm (Interruptible)
Basin	Brazos River Basin, San Jacinto-Brazos Coastal Basin
County	Brazoria, Falls, Limestone, McLennan, Robertson
Use Types	Industrial, Municipal
Volume	Up to 9,000 ac-ft/yr
Rate	45 cfs (Lake Creek Reservoir) 630 cfs (Harris and Brazoria Reservoirs)

Freese and Nichols, Inc. | INTERA Inc.

Agenda Item 6c Consistency Status

- Based on project details, should not require:
 - RWP amendment
 - Formal RWP consistency waiver
- Plan review does not indicate consistency issues
 - Interruptible supply typically excluded from RWP
 - Leverages existing infrastructure
 - Not seeking TWDB funding

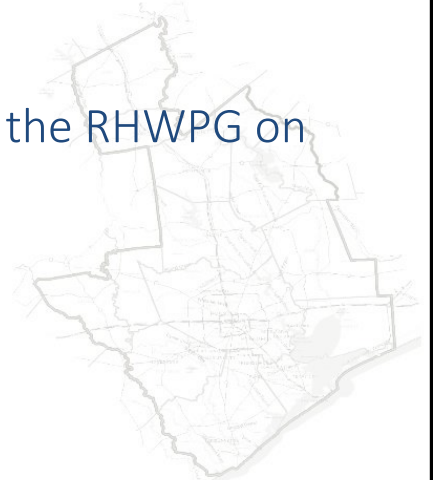


Freese and Nichols, Inc. | INTERA Inc.

Agenda Item 6c Consistency Status

Action:

Approve the submittal of a letter from the RHWPG on consistency status.



Agenda Item 7a

Receive update from the Consultant Team regarding non-population demand data and projections for the 2026 Region H RWP.

Agenda Item 7a Non-Municipal Water Demand



Non-Population Demand

- W.R. Baker
- Carl Burch
- James Comin
- Robert Istre
- Glenn Lord

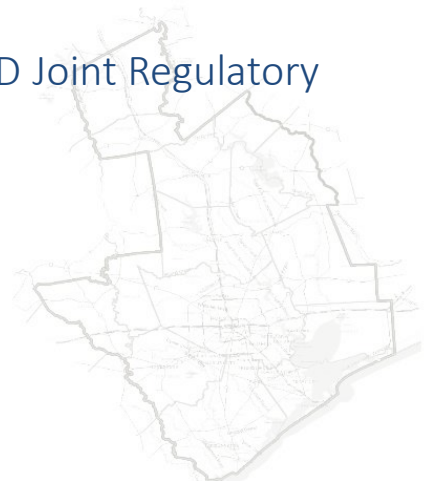
- Review underway
- Detailed look at background data
- Look for evidence of:
 - Data errors
 - New or missed facilities
 - Planned facilities
 - Closures
 - Major difference in long-term demand
- Revision requests due July 14, 2023

Agenda Item 7b

Receive update from the Consultant Team regarding population demand data and projections for the 2026 Region H RWP.

Agenda Item 7b Population Water Demand

- TWDB projections newly released
- Potential population alignment with HGSD/FBSD Joint Regulatory Plan Review
 - Highly detailed local analysis
 - Enhanced spatial resolution
 - 9 Region H counties
- Ongoing coordination with RHWPG and TWDB



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Agenda Item 7b Population Water Demand



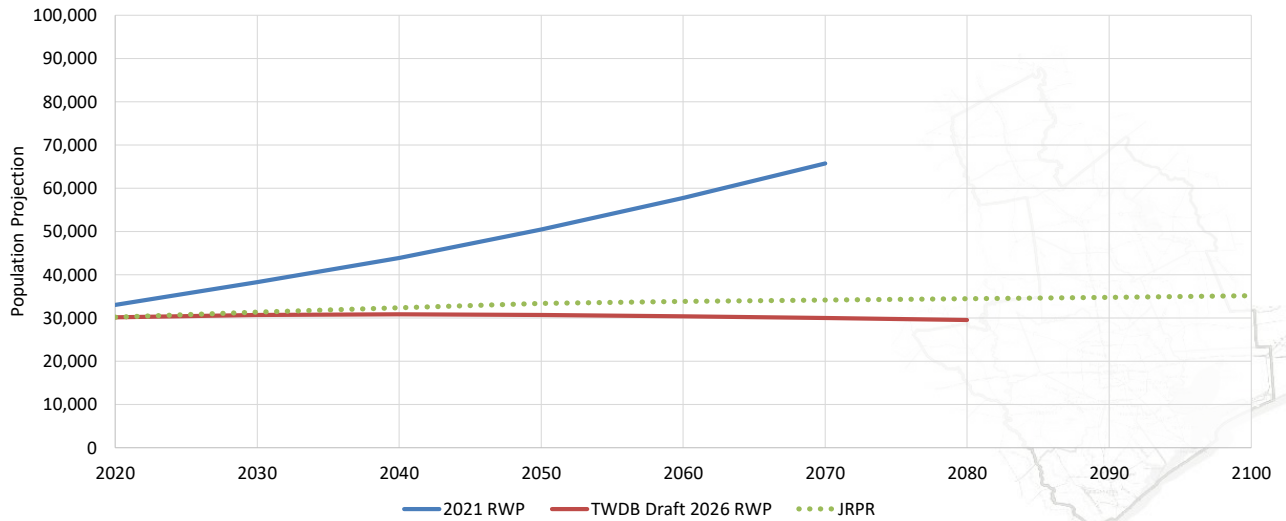
- JRPR general trends
 - Robust but not unlimited urban core growth
 - Suburban expansion
 - Development of employment subcenters
 - Transportation infrastructure impacts
- Comparison to other projections varies by county



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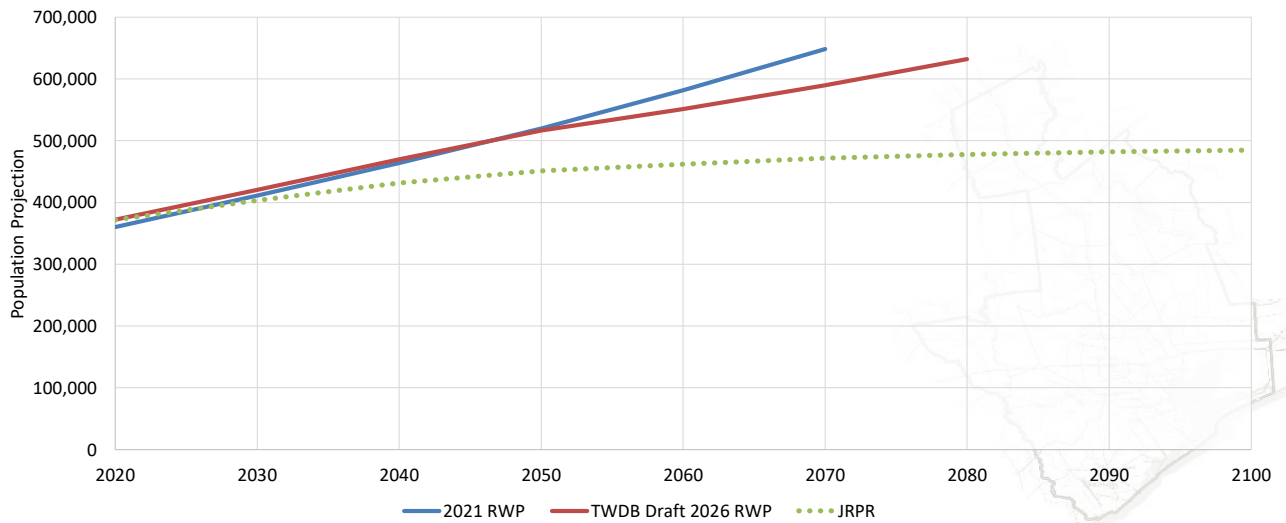
Austin County



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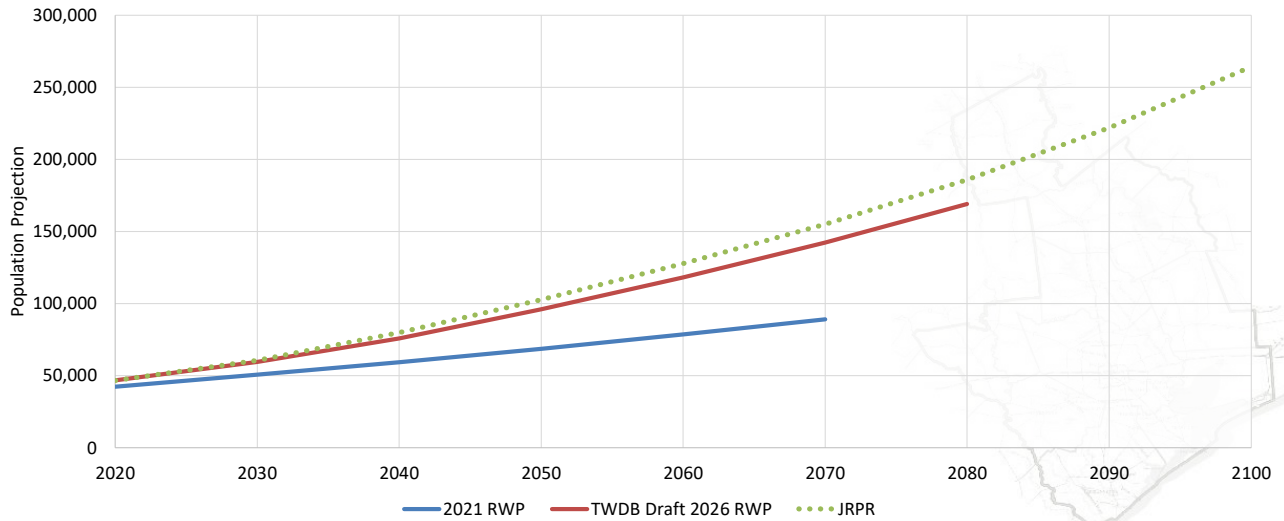
Brazoria County



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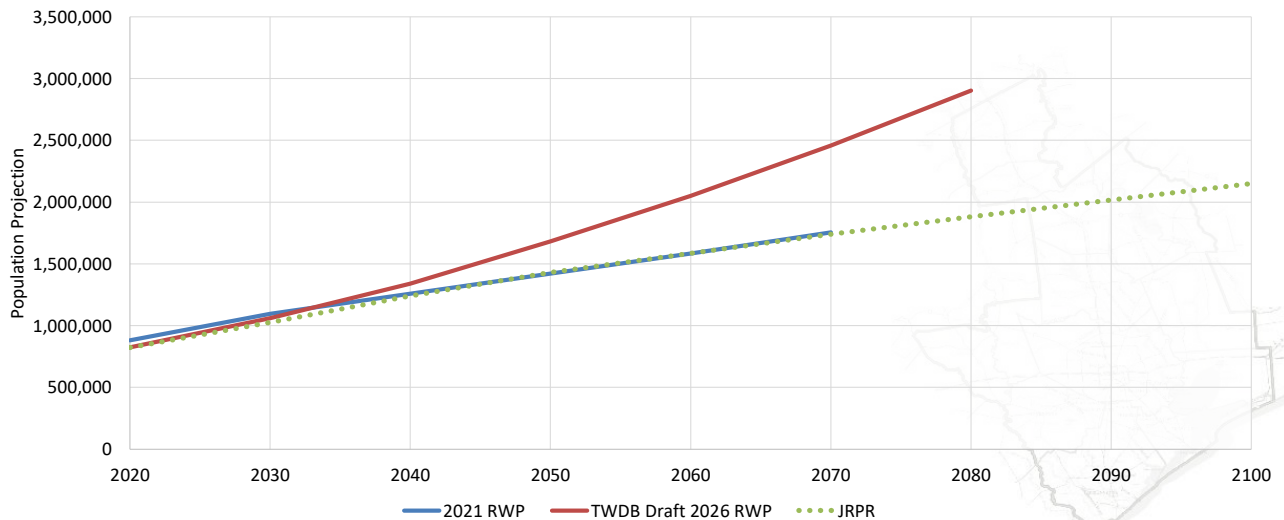
Chambers County



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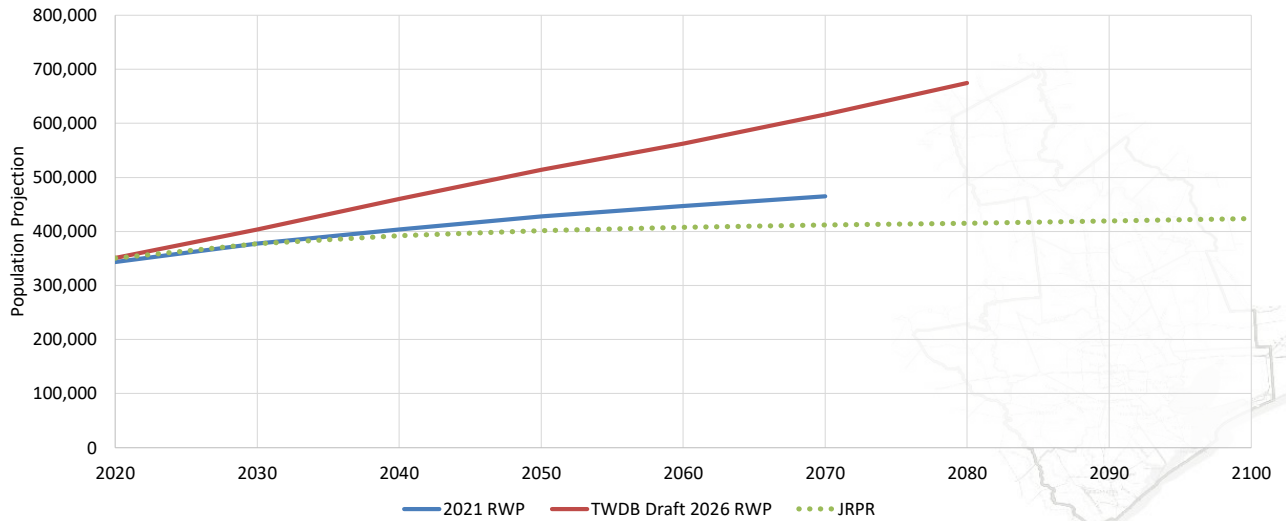
Fort Bend County



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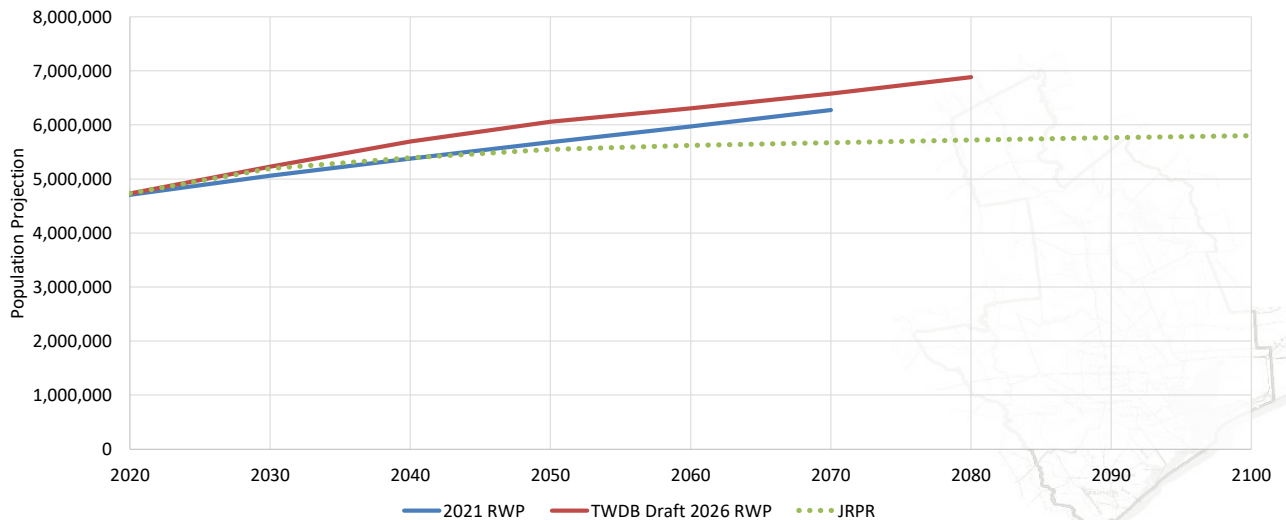
Galveston County



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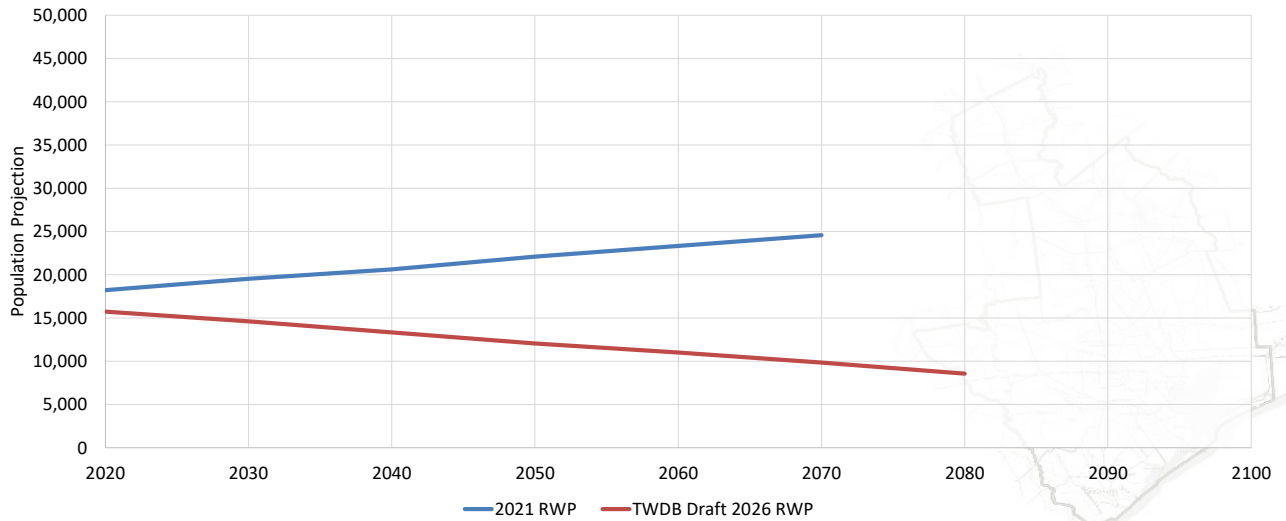
Harris County



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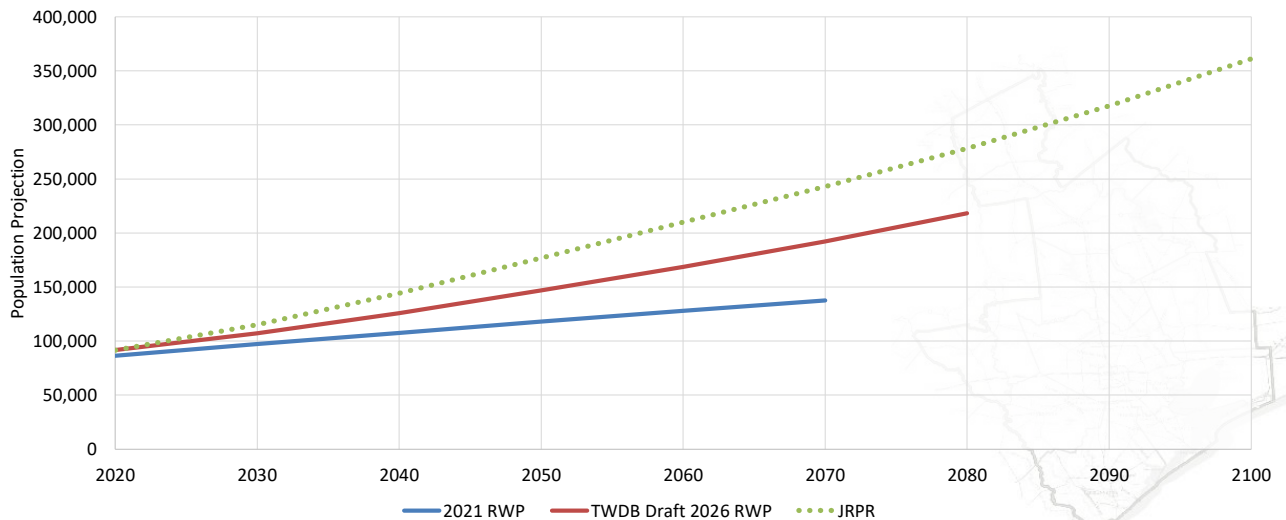
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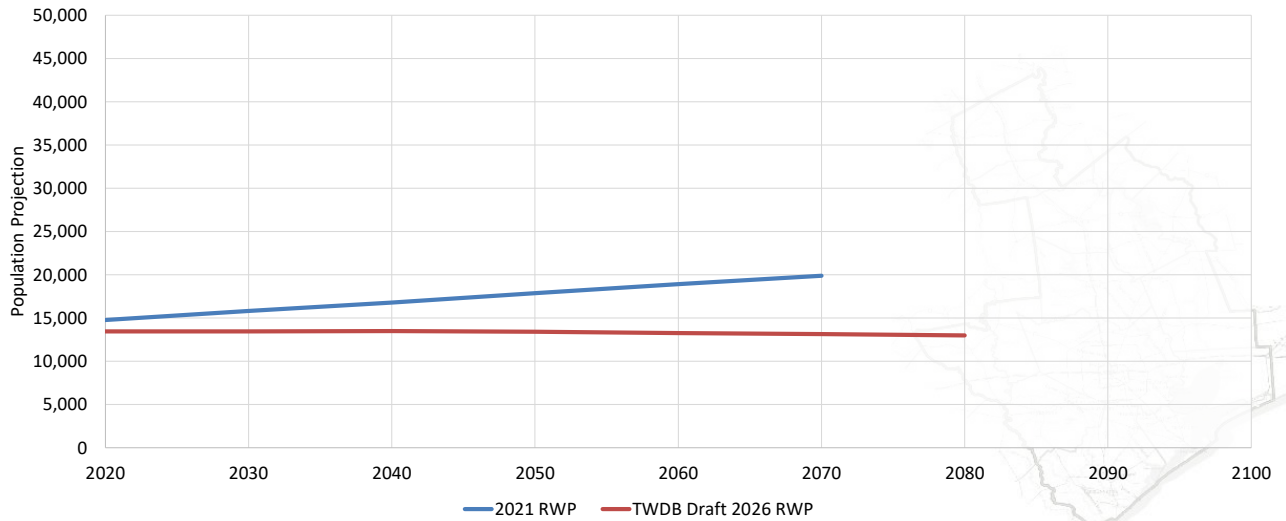
Liberty County



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Agenda Item 7b Population Water Demand

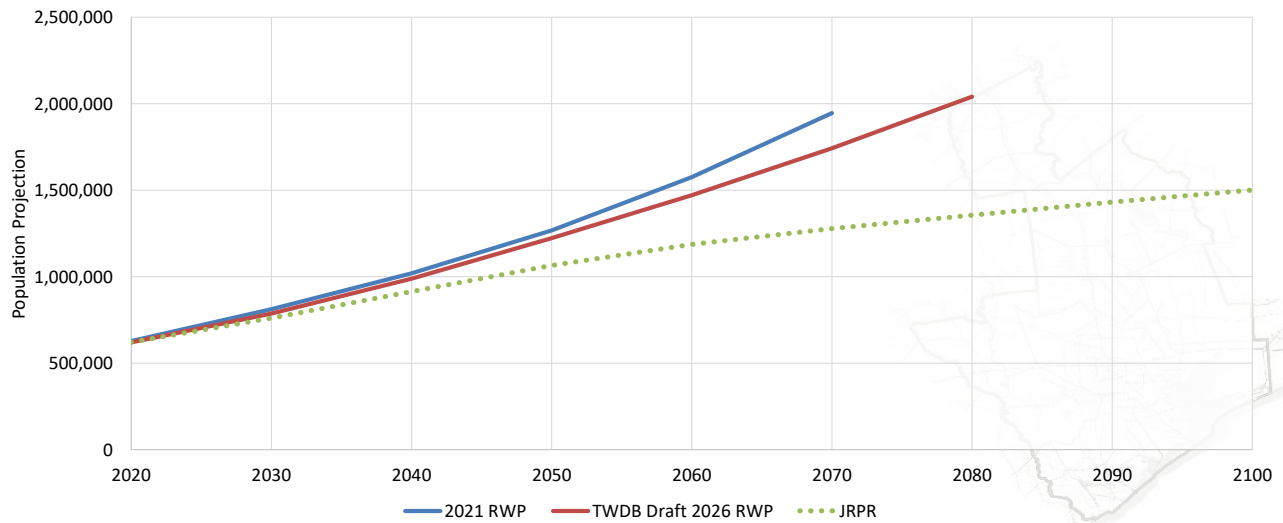
Madison County



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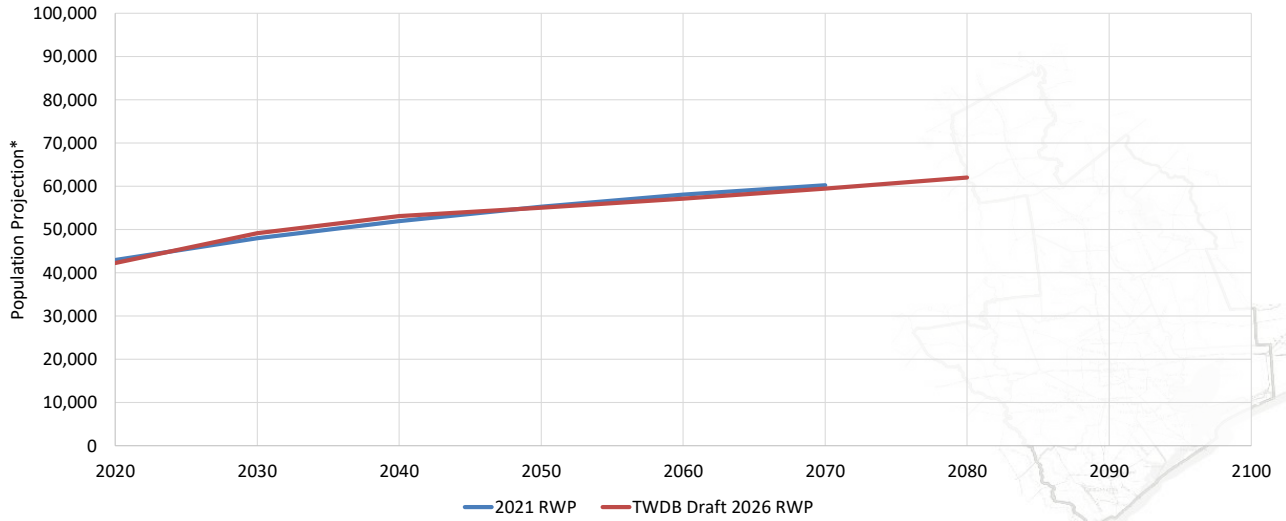
Montgomery County



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Agenda Item 7b Population Water Demand

Polk County

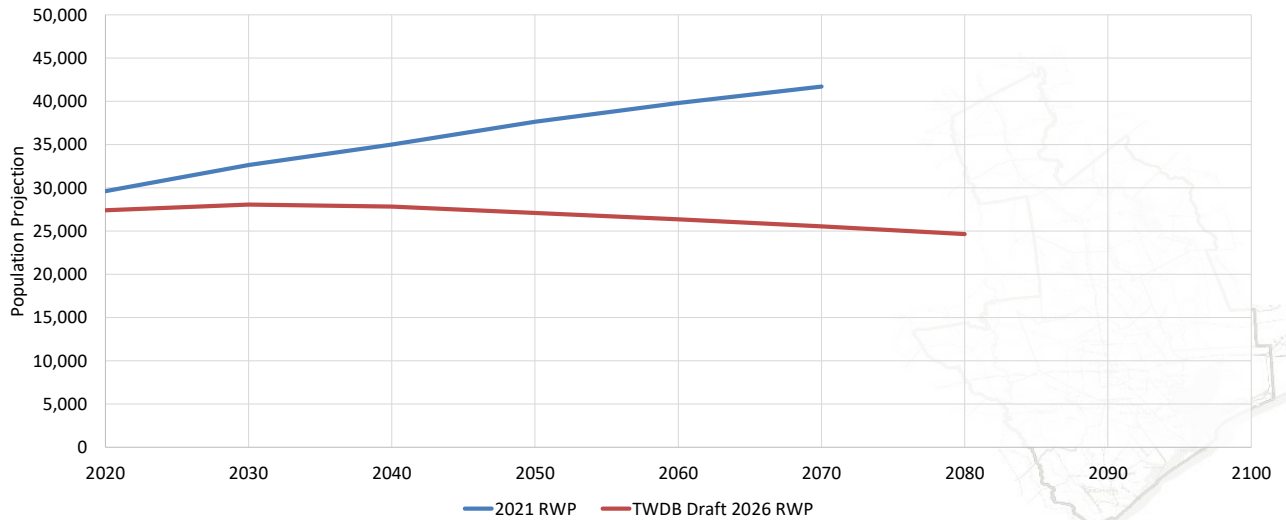


*Region H portion only

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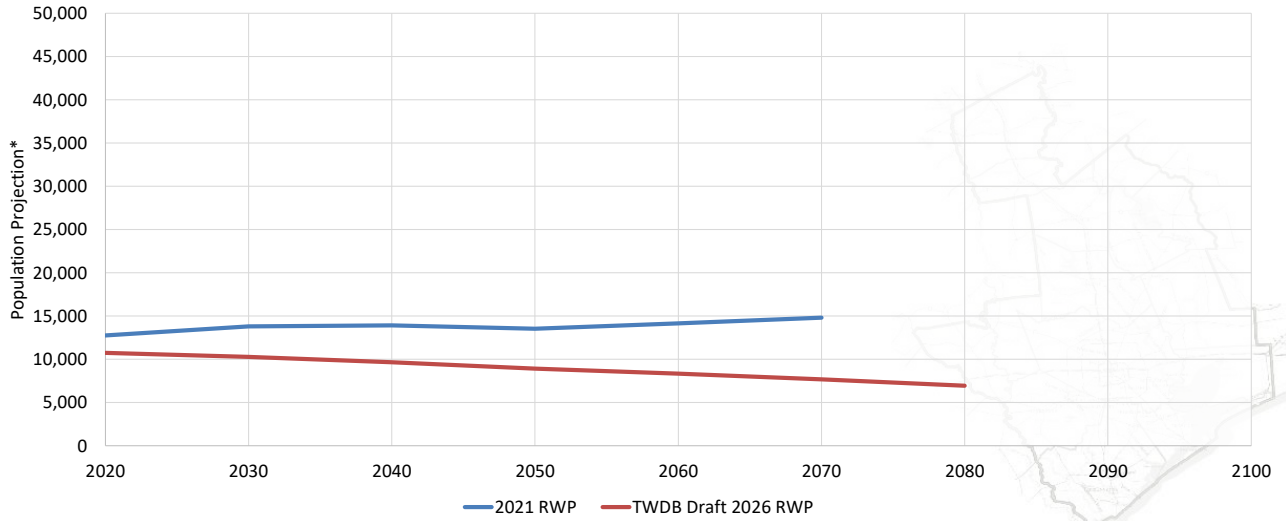
San Jacinto County



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Trinity County

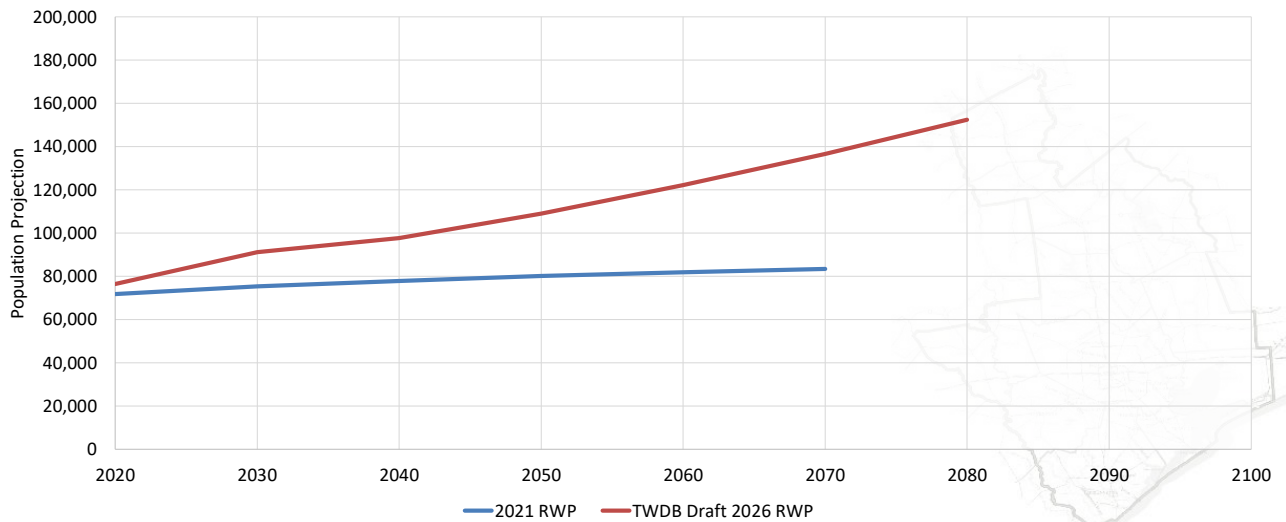


*Region H portion only

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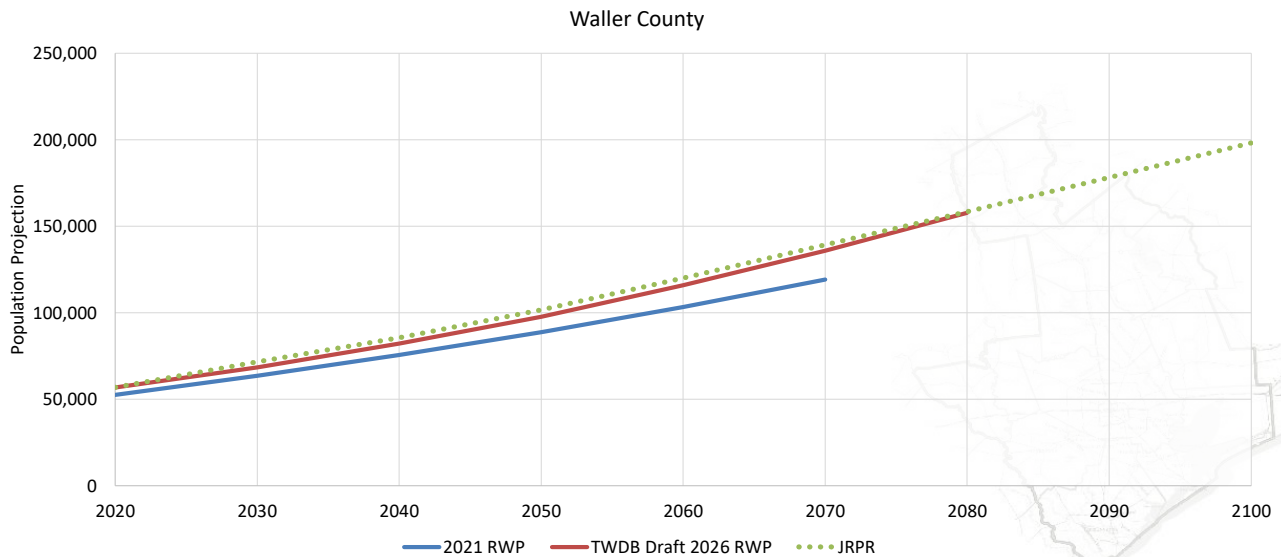
Agenda Item 7b Population Water Demand

Walker County



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Agenda Item 7b Population Water Demand

JRPR Projection Process

- Nine Region H counties
- Area-specific considerations
- Population disaggregated to block
- Average per-capita basis

TWDB Projection Process

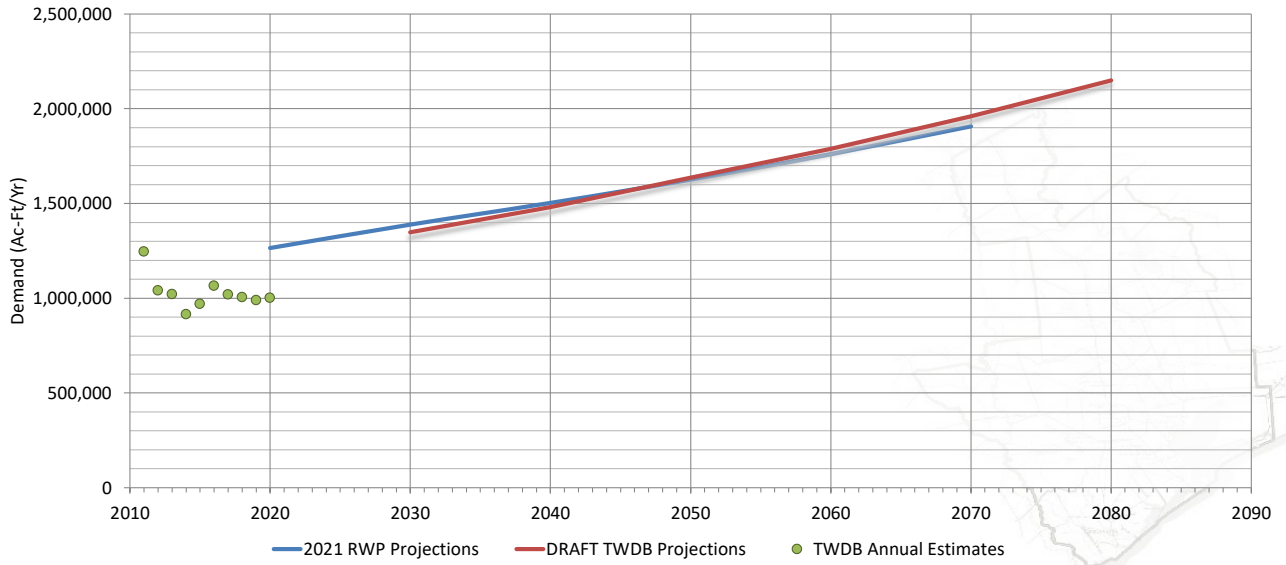
- All 15 Region H counties
- Consistent methodology for State
- Population disaggregated to WUG
- Dry year per-capita basis

Bringing It Together

- Aggregate JRPR populations to WUG boundaries
- Apply TWDB per-capita rates
- Utilize TWDB projections in remaining counties

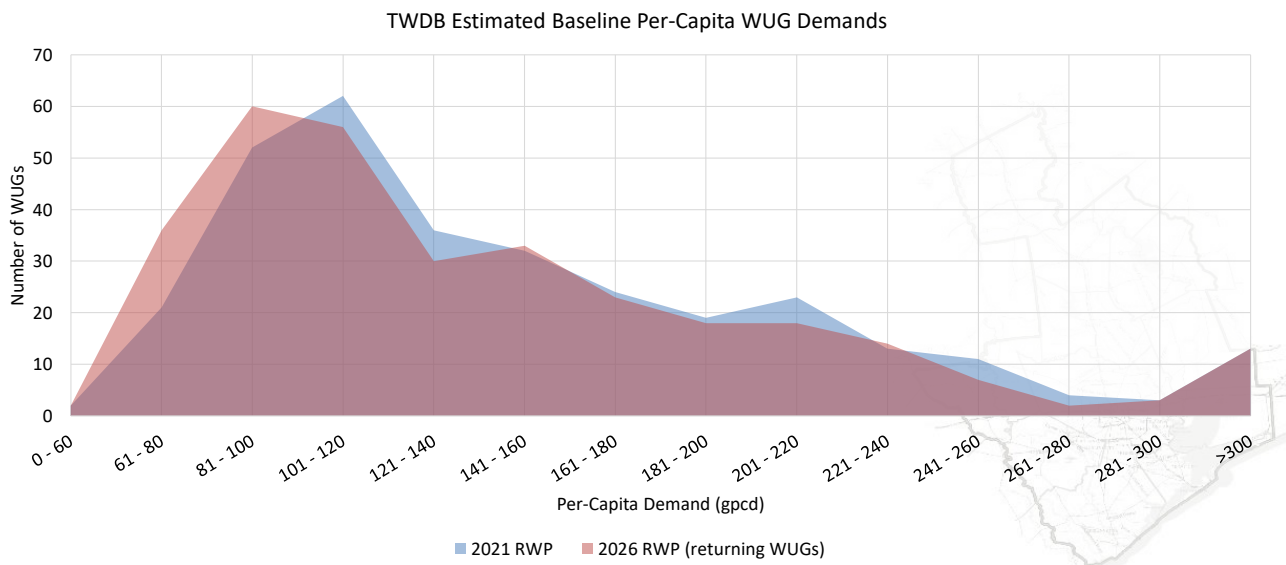
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Agenda Item 7b Population Water Demand



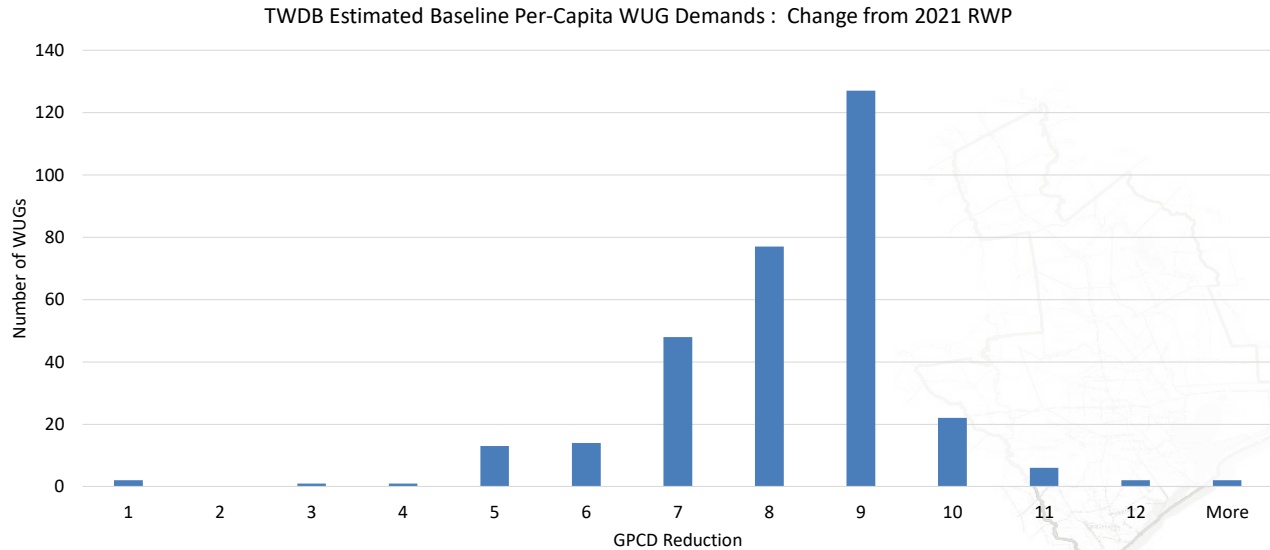
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Agenda Item 7b Population Water Demand



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Agenda Item 7b Population Water Demand



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Agenda Item 7b Population Water Demand

- Detailed examination of projections
- Coordination with:
 - TWDB
 - HGSD / FBSD
 - RWPG
- Revision requests due August 11, 2023
- Additional data available at:
<http://www.twdb.texas.gov/waterplanning/data/dashboard/index.asp>



Population Demand

- Robert Istre
- Ivan Langford
- Marvin Marcell (chair)
- Byron Ryder
- Mike Turco

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Population and Municipal Water Demand Draft Projections for the 2026 Regional and 2027 State Water Plans

1. Population and municipal water demand projections overview

Municipal water demand projections are a function of population projections, baseline Gallons per Capita per Day (GPCD_{base}), and projected plumbing code savings. The following steps are involved in developing municipal water demand projections for Water User Groups (WUGs):

- a) develop population projections,
- b) determine GPCD_{base} by WUG,
- c) develop plumbing code savings projections by WUG, and
- d) calculate municipal water demand projections.

Population projections and municipal water demand projections are aggregated by counties and Regional Water Planning Areas. The high-level steps are outlined here, while Sections 2 and 3 of this document go into more detail.

1.1 Foundational data and major assumptions

- Population projections are based on county-level projections from the Texas Demographic Center (TDC), which used migration rates between the 2010 and 2020 decennial Census to project future growth ([Section 2.1](#)).
- The Texas Water Development Board (TWDB) drafted WUG-level projections using the TDC's 1.0 migration scenario projections and provided 0.5 migration scenario projections for the planning groups' consideration.
- GPCD_{base} values were drafted for each WUG ([Section 3.1](#)) and minimum GPCD values were imposed ([Section 3.2](#)).
- Projected plumbing code savings for each WUG assume passive water efficiency savings due to plumbing code laws related to residential toilets, showerheads, clothes washers, and commercial toilets and urinals. ([Section 3.3](#)). WUGs with high employment relative to the permanent residential population may have high projected plumbing code savings due the replacement of commercial fixtures.

1.2 Key changes from previous planning cycle's projection methodology

- The TWDB population projections for the regional and state water plans have always relied, initially, on county-level population projections from the TDC. In the past, the TWDB had altered the resulting regional plan population projections in certain counties – by holding them flat in future periods – to avoid projecting declining populations. For the 2026 Regional Water Plans (RWPs), the draft county population projections followed the trends projected by the TDC, including declines.
- Future savings from additional faucet and dishwasher replacements were not considered necessary for inclusion in the draft plumbing code savings projections for this current planning cycle. Based on the effective year of the relevant plumbing code standards and the useful life of

these items, the expected water efficiency savings by replacement and new growth would reasonably be fully realized by the first projected decade (2030).

2. Population

The population projection methodology is performed in two steps: first, projections at the county-level, and then, projections at the WUG-level.

2.1 County population projections

Draft county population projections are based on the TDC's 2022 county-level population projections.¹ Such projections are based on recent and projected demographic trends, including the birth rates, mortality rates, and net migration rates of population groups and defined by age, gender, and race/ethnicity. Population projections represent permanent residents, and not seasonal or transient populations. This method for developing population projections is known as the cohort component method and is performed by the TDC using a model.

The TDC generally develops county-level population projections under three migration scenarios:

- zero migration: no net migration (natural growth only),
- 1.0 migration: net migration rates of 2010 to 2020 ("full-migration scenario"), and
- 0.5 migration: 2010 to 2020 migration rates halved ("half-migration scenario").

While the TDC's projections extend to 2060, the 2027 State Water Plan requires projections to 2080. Therefore, the TWDB staff used the 1.0 migration scenario to extend the TDC's projections through 2080 and to develop WUG-level projections. Although, the TDC strongly recommends use of the half-migration scenario for long-term planning, the TWDB drafted population projections for all planning regions using one consistent scenario. For each county, the draft projection is based on the 1.0 migration scenario as the default, but the 0.5 migration scenario was provided through 2080 for Regional Water Planning Groups (RWPGs) to consider during the review process. The TWDB staff extended each region's projections to 2070 and 2080 using the region-level compounded annual growth rates (CAGR) from the 2050 to 2060 projections (see Table 1) and then sub-allocated to counties within the regions using the county's share of the region's decadal growth.

¹ Texas Demographic Center, 2022, Population Projections, <https://demographics.texas.gov/Data/TPEPP/Projections/#2022pri>

Table 1. Extending the TDC's thirty-year population projections through 2080

Region	Sum of TDC 1.0 Migration Scenario Projections				Extend two decades using Region-specific CAGR				
	2030	2040	2050	2060	2050 to 2060 CAGR	2070	2080	2060 to 2070 CAGR	2070 to 2080 CAGR
A	397,160	405,244	408,658	409,696	0.03%	410,735	411,779	0.03%	0.03%
B	189,639	182,637	172,769	162,203	-0.63%	152,283	142,971	-0.63%	-0.63%
C	8,866,884	10,093,722	11,297,108	12,440,777	0.97%	13,700,226	15,087,176	0.97%	0.97%
D	824,990	847,410	859,530	868,815	0.11%	878,201	887,689	0.11%	0.11%
E	931,194	960,699	969,203	963,018	-0.06%	956,873	950,768	-0.06%	-0.06%
F	778,553	879,271	982,649	1,071,087	0.87%	1,167,487	1,272,561	0.87%	0.87%
G	2,703,905	3,074,453	3,481,252	3,913,803	1.18%	4,400,096	4,946,811	1.18%	1.18%
H	8,369,431	9,477,092	10,583,689	11,611,062	0.93%	12,738,163	13,974,676	0.93%	0.93%
I	1,100,376	1,103,143	1,093,467	1,077,850	-0.14%	1,062,457	1,047,284	-0.14%	-0.14%
J	129,683	130,134	130,196	131,285	0.08%	132,384	133,493	0.08%	0.08%
K	2,125,830	2,481,504	2,827,373	3,204,245	1.26%	3,631,353	4,115,392	1.26%	1.26%
L	3,525,104	4,110,775	4,738,184	5,424,749	1.36%	6,210,796	7,110,741	1.36%	1.36%
M	1,778,329	1,831,384	1,842,992	1,818,702	-0.13%	1,794,734	1,771,082	-0.13%	-0.13%
N	585,222	586,642	580,190	569,474	-0.19%	558,956	548,631	-0.19%	-0.19%
O	553,026	587,260	620,752	665,214	0.69%	712,862	763,921	0.69%	0.69%
P	53,556	55,843	57,772	59,678	0.33%	61,648	63,682	0.33%	0.33%

2.2 Water user groups

The regional and state water plans require population projections and municipal water demand projections for individual WUGs ([31 TAC § 357.31\(a\)](#)). Before projections can be developed, a list of municipal WUGs with associated data must first be created.

2.2.1 WUG criteria

Defined in the Texas Administrative Code ([31 TAC § 357.10\(43 A-E\)](#)), municipal WUGs are composites of public water systems, grouped by utilities, developed at the beginning of each regional water planning cycle. Per [First Amended General Guidelines for Development of the 2026 Regional Water Plans \(Exhibit C\)](#), RWPGs reviewed and provided input on the draft WUG list for the 2026 RWP. Municipal WUGs generally include:

- utilities providing more than 100 acre-feet of municipal water per year;
- collections of utilities with a common water supplier or water supplies (Collective Reporting Units or 'CRU'); and
- remaining public water systems and self-supplied population summarized as "County-Other".

For the 2026 RWPs, the draft municipal WUG list was developed by carrying over all municipal WUGs from the 2021 RWPs with active, community public water systems. Additional new WUGs were evaluated based on the utility water use meeting the criteria listed in [31 TAC § 357.10\(43 A-E\)](#).

2.2.2 Historical WUG populations

The historical WUG populations are a critical step in developing WUG population projections. Following the development of the WUG list, the 2010 and 2020 population estimates were developed based on the

decennial Census.² Public water system boundaries were gathered from the TWDB's [Texas Water Service Boundary Viewer application](#) and grouped by WUG. Using ESRI Geographic Information Systems, WUG boundaries were then overlaid with the Census Blocks and population was counted. Because some boundaries contain inaccuracies (e.g., water lines shown as boundaries instead of the actual service area of the water provider) self-reported population estimates from the TWDB Water Use Survey were cross-referenced to determine the final WUG population estimates. The sum of the WUG populations were reconciled to the decennial Census population count. The number of households per WUG were estimated using the 2020 decennial Census data by county and persons per household were then estimated using the previously calculated population.

2.3 Projection methodology

Projections for individual WUGs are developed by sub-allocating the population from the region-county projections to the WUGs. The methods of allocating future populations from the county total to the sub-county areas include:

- share of growth: applying the WUG's historical (2010 to 2020) share of the region-county's growth to future growth,
- share of population: applying the WUG's 2020 share of the region-county's 2020 population to the region-county's projected population each decade, and
- constant population: applied to military bases, universities, and other WUGs that are primarily group quarter population. Also, any WUGs that indicated buildout in the 2021 RWPs were held constant at or near their buildout population from the previous planning cycle.

Over a fifty-year planning period, it can be expected that WUGs may grow at different rates within counties, therefore, the share of growth method was prioritized; however, an extensive review was completed by the TWDB staff to ensure that the projected growth rate was in line with the historical growth. If the projected growth rate was not similar to either the WUG's historical growth rate or the region-county growth rate, then the share of population method may have been used. The share of population method maintains the WUG's 2020 proportion of the region-county population throughout the planning horizon. The sum of all WUG population projections within a region-county was reconciled to the total region-county projection prior to the finalization of draft projections.

3. Municipal water demands

Draft municipal water demand projections utilize the permanent residential population projections and a decade-specific per person water use volume for each WUG, including County-Other WUGs. GPCD represents the entire utility's water use (including residential, commercial, and institutional water use). For each municipal WUG, the initial baseline GPCD (GPCD_{base}) value minus the incremental anticipated plumbing code savings for each future decade was multiplied by the projected population to develop the municipal water demand projections (see [Section 3.4](#) for the formula).

² U.S. Census Bureau, 2020, Decennial Census, P.L. 94-171 Redistricting Data, <https://www.census.gov/programs-surveys/decennial-census/about/rdo/summary-files.html>

3.1 Baseline Gallons per Capita per Day

For the 2026 RWPs, the baseline GPCDs represent historical ‘dry-year’ water use minus accumulated plumbing code savings (GPCD_{base}). The GPCD was drafted for WUGs by carrying over the GPCD from the 2021 RWPs minus estimated accumulated plumbing code savings. The GPCDs in the 2021 RWPs were carried over from the 2016 RWP and mostly represented the historically dry year 2011, although some WUG GPCDs in the 2021 RWPs were revised by the planning groups to use more recent ‘dry-year’ utility-based water use (2010 to 2015). Accumulated plumbing code savings were calculated using the annualized projected plumbing code savings from the 2021 RWPs for each WUG and subtracting from the carried over GPCDs (see Table 2). All new WUGs in the 2026 RWPs baseline GPCD were drafted using 2018 net water use from the TWDB Water Use Survey and estimated population from the U.S. Census Bureau.

Table 2. Calculating Baseline GPCDs for existing WUGs

2027 Entity Name	RWP21 GPCD _{base}	RWP21 GPCD Approx. Year	RWP21 PC Savings 2020	2010-2020 Per Year PC Savings	Number of years between GPCD _{base} & 2020	GPCD minus Savings Accrued	New GPCD _{base} (draft)
AMARILLO	211	2011	9.62	0.96	9	8.7	202
AUSTIN	162	2011	6.00	0.60	9	5.4	157
CORSICANA	214	2011	10.22	1.02	9	9.2	205
DALLAS	207	2015	9.14	0.91	5	4.6	202
LOWER VALLEY WATER DISTRICT	107	2010	10.86	1.09	10	10.9	96
SEGUIN	147	2012	10.04	1.00	8	8.0	139
SPRINGS HILL WSC	88	2011	9.49	0.95	9	8.5	79
ALBANY	258	2013	10.15	1.02	7	7.1	251
NORTH HUNT WSC	60	2011	0	0	9	0	60
RIVERSIDE SUD	64	2011	4	0.4	9	3.6	60

Historical GPCDs were provided for RWPGs consideration to revise the baseline GPCD. The historical GPCDs were developed annually and gathered for the 2026 RWP revision process. Each year, GPCD is estimated for each WUG through the Water Use Survey by:

- a) calculating the net water use of each water system surveyed annually by the TWDB as total system intake volume minus sales reported by the water system to large industrial facilities and other public water systems plus volumes purchased by other surveyed entities,
- b) summarizing the net use by WUG,
- c) estimating population for the WUG using the U.S. Census Bureau’s population estimates for the county, and
- d) dividing the net use by the WUG’s population and then dividing by 365 (number of days in a year).

3.2 Minimum GPCD values

When calculating the GPCD_{base} or the projected per person water use values, the TWDB staff applied a minimum of 60 GPCD for each WUG. The minimum value of 60 GPCD is based on two studies: *Analysis of*

*Water Use in New Single-Family Homes*³ and an internal TWDB report, *The Grass Is Always Greener...Outdoor Residential Water Use in Texas*, analyzing the percentage of Texas residential water used outside of the home.⁴ The single-family home study researched the average indoor per person water use for:

- pre-1995 Homes (62.18 GPCD),
- standard new homes built after 2001 (44.15 GPCD),
- standard new homes retrofitted with high-water-efficient fixtures and appliances (39.0 GPCD), and
- new WaterSense homes built with the best available technology for water conservation (35.6 GPCD).

With the assumed replacement of fixtures and appliances over the next 50 years, the indoor per person water use of the standard new home retrofitted (39.0 GPCD) can be expected under existing standards. However, this is only indoor use and the single-family home study found that there was no statistical difference in outdoor water use between types of housing. The TWDB study of outdoor water use in Texas estimated that on average 31 percent of total residential water use is outdoor water use. Utilizing this average outdoor water use percentage (31 percent) and the indoor water use (69 percent) of 39 GPCD for retrofitted new homes produced a total residential GPCD of 56.5. While some municipal WUGs may remain primarily residential, any water use by commercial, institutional, and light industrial water users will contribute to the overall WUG's average GPCD. For this reason, the minimum baseline GPCD, as well as decade-specific projected GPCD (baseline GPCD minus projected plumbing code savings) was rounded to a value of 60 GPCD.

3.3 Plumbing code savings

Plumbing code savings may be referred to as water efficiency savings and are required to be considered in municipal demand projections per [31 TAC § 357.31\(d\)](#). Plumbing codes are federal and state laws that mandate the efficiency of all new appliances and fixtures sold in retail stores. Plumbing codes result in passive water efficiency savings, as households naturally replace older appliances and fixtures without having to 'actively' seek more water efficient appliances and fixtures. The TWDB staff project plumbing code savings for each WUG for each decade in the planning horizon for the following fixtures and appliances: residential toilets, clothes washers, showerheads, and commercial toilets and urinals.

3.3.1 Plumbing code standards and parameters

Historical legislation (both state and federal) impacts the volume of water used within homes and businesses. Such legislation generally provided a maximum water use standard (per flush, per cycle, or per minute), as well as an effective date for when appliances and fixtures sold locally must meet that standard. Tables 3 and 4 summarize the effective years and the standards for each fixture and appliance included in the plumbing code savings projections. The assumed effective date for the first State of Texas

³ *Analysis of Water Use in New Single-Family Homes*, 2011, Prepared by William B. De Oreo of Aquacraft Water Engineering & Management for The Salt Lake City Corporation and the U.S. Environmental Protection Agency.

⁴ *The Grass Is Always Greener...Outdoor Residential Water Use in Texas*, 2012, Sam Marie Hermitte and Robert E. Mace, Texas Water Development Board Technical Note 12-01.

standards is 1995, which varies slightly from the effective date within the legislation, as allowances were included within the legislation for the sale of inventory stocks. For the purposes of calculating future plumbing code savings, the assumed effective date for the first standards is 1995. Whereas the other standards listed in Tables 3 and 4 correspond with the effective dates listed in each of the pertinent pieces of legislation or actual designation by EPA rule. Based on new research, the useful life of fixtures/appliances may be updated between planning cycles. Standards are measured in gallons per minute (gpm), gallons per flush (gpf), or gallons per cycle (gpc).

Table 3. State of Texas Plumbing Code Standards

Standards	Effective Year of New Standard		Useful Life	Included in 2026 RWP?	Included in 2021 RWP?
	1995 ⁵	2014 ⁶			
Faucets	2.2 gpm		15 years	No, benefits fully realized	Yes
Toilets	1.6 gpf	1.28 gpf	25 years	Yes	Yes
Showerheads	2.75 gpm	2.5 gpm	15 years	Yes	Yes
Urinals	1 gpf	0.5 gpf	25 years	Yes	No

Table 4. Federal Plumbing Code Standards

Standards	Effective Year of New Standard					2026 RWP Useful Life	Included in 2026 RWP?	Included in 2021 RWP?
	2010 ⁷	2011 ⁸	2012 ⁹	2015 ¹⁰	2018 ¹⁰			
Dishwashers	6.5 gpc		5 gpc			10 years	No, benefits fully realized	Yes
Front-load Clothes Washers (4.0 cubic feet)		38.0 gpc		18.8 gpc		12 years	Yes	Yes
Top-load Clothes Washers (4.5 cubic feet)		42.75 gpc		37.8 gpc	29.25 gpc	12 years	Yes	Yes

Two possible fixtures/appliances, originally included in the legislative efforts concerning plumbing codes,

⁵ State of Texas Legislature, SB 587, 1991, 72(R) legislative session, <https://capitol.texas.gov/MnuLegislation.aspx>

⁶ State of Texas Legislature, HB 2667, 2009, 81(R) legislative session, <https://capitol.texas.gov/MnuLegislation.aspx>

⁷ EPA Water Sense, National Efficiency Standards and Specifications for Residential and Commercial Water-Using Fixtures and Appliances, Sept. 29, 2008.

⁸ U.S. Congress, Public Law 110-140, Energy Independence and Security Act of 2007, Dec. 19th, 2007.

⁹ Federal Register, Energy Conservation Program: Energy Conservation Standards for Dishwashers, Vol. 77, No. 190 October 1, 2012.

¹⁰ Office of Energy Efficiency and Renewable Energy, Department of Energy. Energy Conservation Program: Energy Conservation Standards for Residential Clothes Washers, May 31, 2012.

were not included in the 2026 RWP draft calculations. Kitchen and bathroom faucets as well as residential dishwashers were excluded as the timing of the latest effective plumbing code standards and the useful life combined to render little or no additional savings via replacement or new construction installations during the 2030 to 2080 planning horizon.

Draft 2026 RWP water efficiency savings projections also include savings within the commercial sector, a first for the regional water planning effort. Improvements in data availability and analysis methods allowed this first-time estimation for potential water savings due to replacement of commercial toilets and urinals at the WUG-level.

Water savings estimates that accompanied the water demand projections represent an estimation of the amount of water (average per person) that will be saved by the conversion to more water-efficient fixtures. Housing units built before the various standards came into effect will, over time, replace their old fixtures with the new water-efficient fixtures. In addition, construction of new homes or businesses with the more efficient fixtures/appliances will also contribute to the passive savings estimate, lowering the average GPCD as the proportion of more water-efficient fixtures/appliances within the WUG increases over time.

Prior to determining the WUG-level expected savings, the TWDB staff assembled additional data concerning the useful life of each possible fixture/appliance (assumed values in Tables 3 and 4) and updated all calculations concerning the impacts on GPCD when replacing one fixture/appliance with a given level of efficiency with an updated fixture/appliance that has a higher efficiency standard. After reviewing the water efficiency standards, the TWDB staff converted the water use per fixture and appliance into per person water use and estimated GPCD savings (Tables 5 and 6) before projecting utility-wide savings. Because there are multiple standards for each fixture and appliance, the TWDB staff developed GPCD savings for each standard and tracked replacement rates since 1995 (when the first plumbing code laws were enacted). Commercial toilets and urinals were combined and GPCD savings were calculated using the gender percentages from the Bureau of Labor Statistics¹¹ and average number of flushes per day times the number of days at work.

Table 5. GPCD Savings Parameters - Fixtures

Fixture	GPCD Savings		
	Pre-1995 Average Use to 1995 Standard	Pre-1995 Average Use to 2014 Standard	1995 Average Use to 2014 Standard
Showerheads*	13.0	NA	1.86
Toilets - residential	10.5	12.1	1.6
Toilets & urinals – commercial**	7.06	8.41	1.35
* Savings values shown assume 8 minutes per shower and 6.5 showers per person per week			
** Savings values shown assume state-level gender employee proportions and 6 days/week use for commercial toilet and urinal use			

¹¹ Bureau of Labor Statistics, 2020, Geographic Profile of Employment and Unemployment, <https://www.bls.gov/opub/geographic-profile/home.htm>

Table 6. GPCD Savings Parameters - Appliances

Appliance	Key Assumptions	GPCD Savings					
		Pre-2011 Average Use to 2011 Standard	Pre-2011 Average Use to 2015 Standard	Pre-2011 Average Use to 2018 Standard	2011 Standard to 2015 Standard	2011 Standard to 2018 Standard	2015 Standard to 2018 Standard
Clothes Washers	Composite top and front loader, 75/25 percent split. ¹² 300 cycles/year ¹³ and statewide average household size of 2.77 people per household. ²	0.22	2.35	4.25	2.52	4.41	1.90
Savings shown here are an example. Average persons per household varies by WUG and thus actual savings will vary by WUG.							

3.3.2 Plumbing code savings projections methodology – residential

Individual models were developed for each of the fixture/appliance types to project the plumbing code savings for each WUG for 2030 to 2080. The TWDB compiles population data rather than housing data, so in calculating the estimates of the number of houses and less-efficient fixtures, population was used as a proxy for the number of houses at the time the law took effect and the projection of future houses. The 1995 population was estimated for each WUG in the 2026 RWP and used as a benchmark to determine the potential average per capita water savings. The 1995 population (as a proxy for housing and fixtures) is assumed to have less-efficient fixtures, which will be replaced over time, lowering the WUG’s average GPCD. The TWDB staff tracked which standards were likely to be adopted from 1995 to 2080 using the respective efficiency standard and useful life of the fixture/appliance. Because some WUGs’ projected populations decline over time, the planned replacement of fixtures and appliances based on useful life could exceed the number of people (proxy for households) in a WUG, therefore, the TWDB staff scaled the replacement rates based on the number of people within a WUG in each decade. These measures corrected the possible adverse impacts on the projected plumbing code savings and were deemed reasonable to align fixtures and appliances with occupied houses.

3.3.3 Plumbing code savings projections methodology – commercial

Employment estimates were used as a proxy to project the replacement of commercial toilets and urinals and to project average water efficiency savings gained for the WUG. Historical data for county-level population and employment for 2000 through 2020¹⁴ was used to document the relationship between county-level population and employment. A two-way lookup table was derived with the percent change in

¹² U.S. Energy Information Administration, Appliances in U.S. homes in the South and West regions, 2020, <https://www.eia.gov/consumption/residential/data/2020/hc/pdf/HC%203.8.pdf>

¹³ EnergyStar, Clothes Washers, https://www.energystar.gov/products/clothes_washers

¹⁴ U.S. Census Bureau, 2000, 2001, 2010, 2011, 2019, and 2020, County Business Patterns.

employment based upon size classes for population for the WUG and the percent change in population for the WUG. Once the employment projections by decade were determined, similar GPCD savings calculations as residential were implemented. A set of planned replacements was determined based upon the pattern of employment growth, which was then adjusted if the planned replacement exceeded the projected employment. The projected savings by the replacement of more efficient toilets and urinals in commercial businesses, while a function of employment within the utility, was calculated on a WUG-level per person basis. Therefore, WUGs with high projected employment relative to the number of permanent residents may have high projected commercial savings.

3.3.4 Plumbing code savings projections by WUG

Spreadsheets were used to project the plumbing code savings for the specific fixture or appliance, based upon the historical WUG population estimates and projected population or employment. The four types of fixtures or appliance GPCD savings projections were reviewed for accuracy, and then aggregated to determine the total expected plumbing code savings for each WUG. These projections were used to reduce the baseline GPCD ($GPCD_{base}$) (Section 3.1) over the planning horizon to ensure WUG-level passive water efficiency savings, as shown in the formula in Section 3.4 and Table 7 below. Figure 1 below demonstrates how the projected impacts of plumbing code savings will decline over time due to the adoption of more efficient appliances and fixtures occurring in the first part of the planning horizon rather than the latter.

Figure 1. Projected Impacts of Plumbing Code Savings

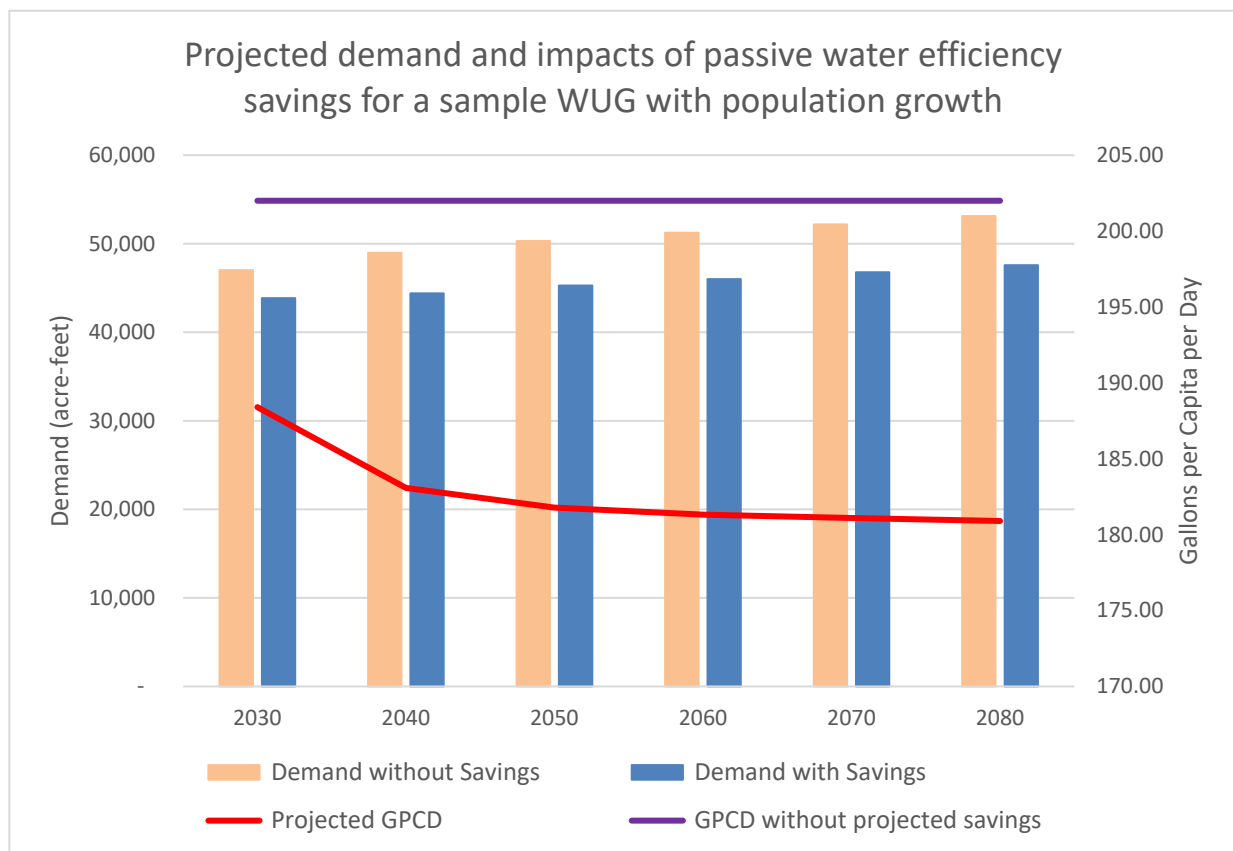


Table 7. Examples of Plumbing Code Savings by WUG

Entity Name	Baseline GPCD	Projected Plumbing Code Savings						Projected GPCD (rounded)					
		2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Abilene	163	13.43	18.85	20.36	21.18	21.80	22.42	150	144	143	142	141	141
Amarillo	202	13.60	18.92	20.22	20.68	20.90	21.10	188	183	182	181	181	181
Austin	157	12.57	17.71	19.69	21.10	22.38	23.62	144	139	137	136	135	133
Spring Hill WSC	79	10.93	15.45	17.48	18.96	19.00	19.00	68	64	62	60	60	60
Carthage	214	13.62	18.84	19.77	19.98	19.98	19.98	200	195	194	194	194	194
Cash SUD	103	11.05	15.30	16.92	17.91	18.71	19.44	92	88	86	85	84	84
Los Fresnos	60	0	0	0	0	0	0	60	60	60	60	60	60
Corpus Christi	173	13.85	19.23	20.40	20.66	20.66	20.66	159	154	153	152	152	152
Corsicana	205	12.83	18.04	19.42	20.08	20.53	20.97	192	187	186	185	184	184
Dallas	202	13.78	19.46	20.83	21.41	21.72	22.04	188	183	181	181	180	180

3.4 Municipal water demand projections

Municipal water demand projections are a function of population, baseline GPCD (GPCD_{base}), and projected plumbing code savings. Municipal water demand projections were developed for each WUG for each decade from 2030 through 2080 and then summarized by county and Regional Water Planning Area. The following formula was used to calculate municipal demands for each decade in acre-feet for each WUG:

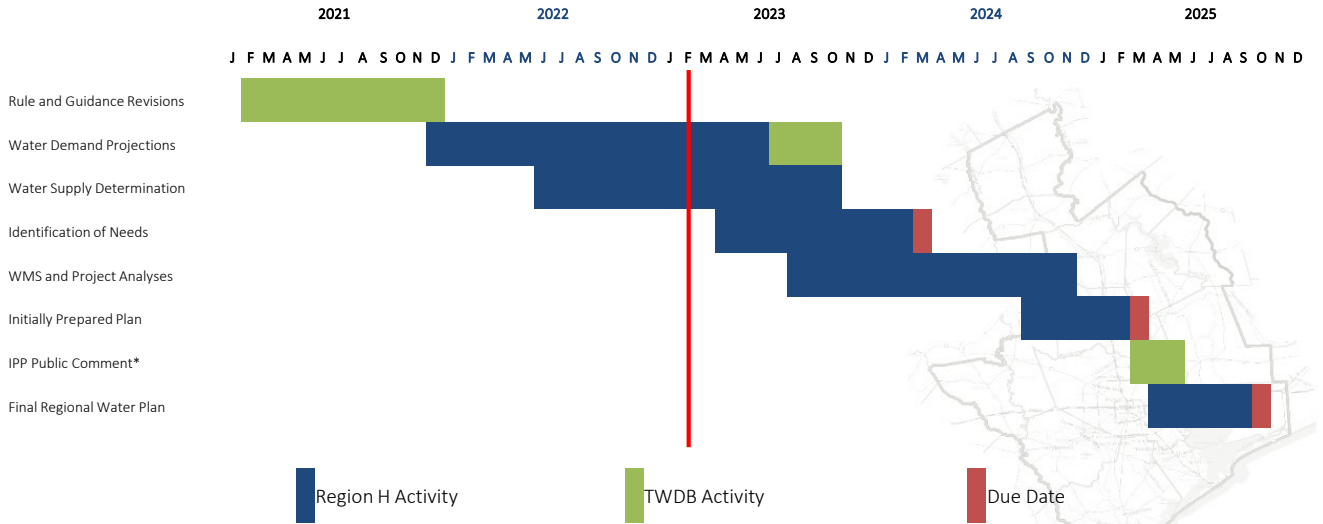
$$\text{Projected Demand} = (\text{Population} * (\text{GPCD}_{\text{base}} - \text{PC Savings}) * 365) / 325,851$$

RWPGs may review and revise the WUG-level population projections, baseline GPCD, and projected plumbing code savings per criteria in [First Amended General Guidelines for Development of the 2026 Regional Water Plans \(Exhibit C\)](#), thus revising the municipal water demand projections.

Agenda Item 8a

Receive update regarding the schedule and milestones for the development of the 2026 Region H RWP.

Agenda Item 8a 2026 RWP Schedule



*Region H accepts public comment throughout the planning cycle and at each RWPG and committee meeting.

Agenda Item 8a 2026 RWP Schedule

Date	Scheduled Events/Tasks
02/2023	RWPG Meeting
02/2023	Draft Population and Municipal demand projections released
05/2023	RWPG Meeting
07/2023	Non-municipal adjustment requests due to TWDB
08/2023	RWPG Meeting
08/2023	Municipal projection review concludes / requests due to TWDB
10/2023	TWDB adoption of projections
03/2024	Technical Memorandum due to TWDB

Agenda Item 8b

Receive update from liaisons to other groups.

Agenda Item 8b Liaison Updates

Region C	Brazos G	Region 6	Region 8
Kevin Ward	Zach Holland	Brandon Wade	Glenn Lord
IPC / Chairs	GMA 12	GMA 14	Other
Mark Evans	David Bailey	Gary Ashmore	RWPG Members

Agenda Item 8c

Receive report regarding recent and upcoming activities related to communications and outreach efforts on behalf of the RHWPG.

Agenda Item 8c Community Outreach

- Looking for opportunities for external outreach
- Support materials available for
 - Stakeholder visits
 - Public meetings
 - Legislative outreach

