Groundwater Reduction Plan Participant Meeting

November 6, 2024

2024 Participant Meeting

- Introductions
- Fort Bend Subsidence District Update
- GRP Implementation
  - Integrated Water Resource Plan
- GRP Financial Update

Fort Bend Subsidence District

Mike Turco
General Manager

Fort Bend Subsidence District

The Fort Bend Subsidence District (FBSD) is a special-purpose district created by the Texas Legislature in 1989 to prevent further land subsidence in Fort Bend County.

GROUNDWATER REGULATION

Collaborate with local to state water entities and providers to manage groundwater use through water planning and well permitting.

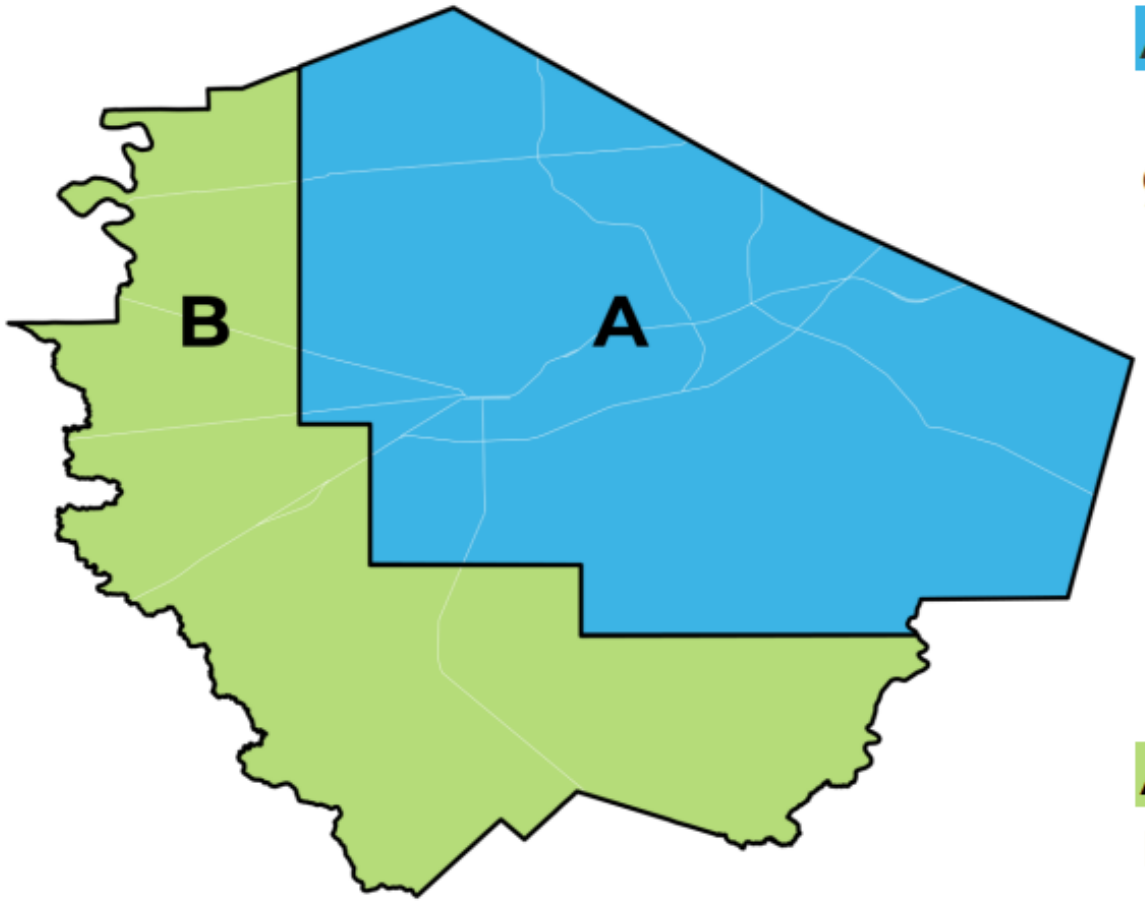
RESEARCH & MONITORING

Utilize the highest quality data to monitor groundwater usage, aquifer characteristics, and land surface changes.

WATER CONSERVATION

Provide permittees, businesses, and educators with water conservation tools to reduce water use and empower the community to value water.

FBSD Regulatory Areas



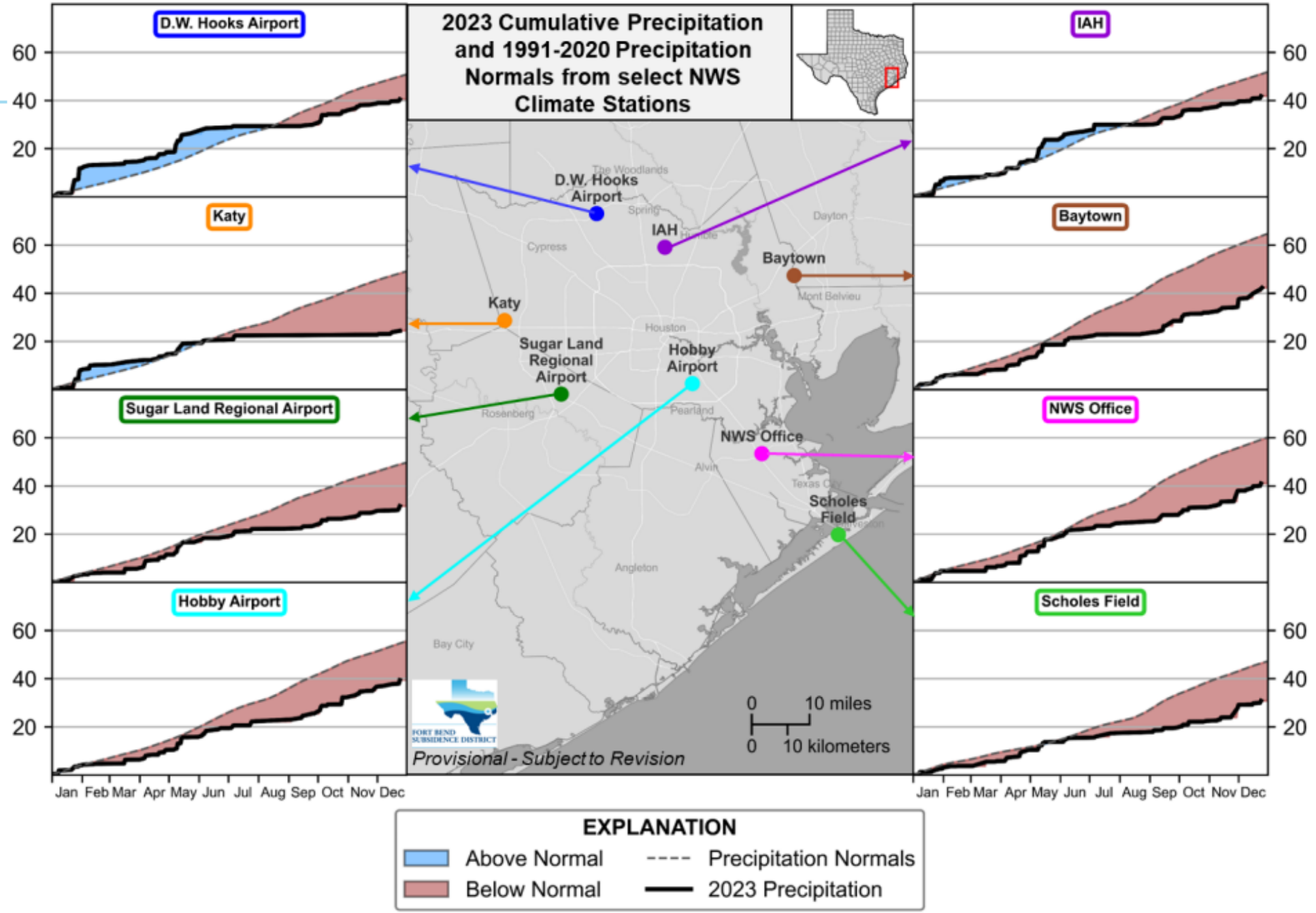
Area A: no more than 40% of Total Water Demand (TWD) may be sourced from groundwater.

- Permittees operating within an approved Groundwater Reduction Plan have the following requirements:
  - 2013 – no more than 70% of TWD from groundwater
  - 2027 – no more than 40% of TWD from groundwater

Area B: not subject to groundwater reduction requirements.

Climate

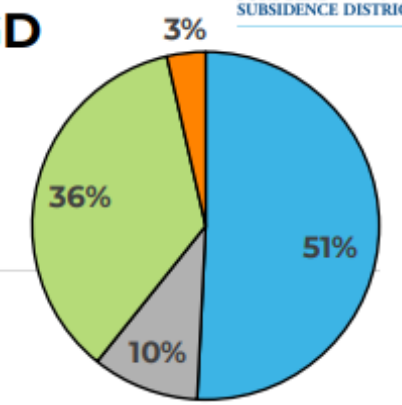
Location of National Weather Service (NWS) climate stations used for rainfall data for the 2023 calendar year.



Total Water Demand

FORT BEND SUBSIDENCE DISTRICT

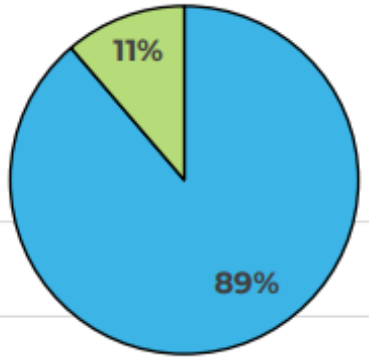
2023: 188.1 MGD

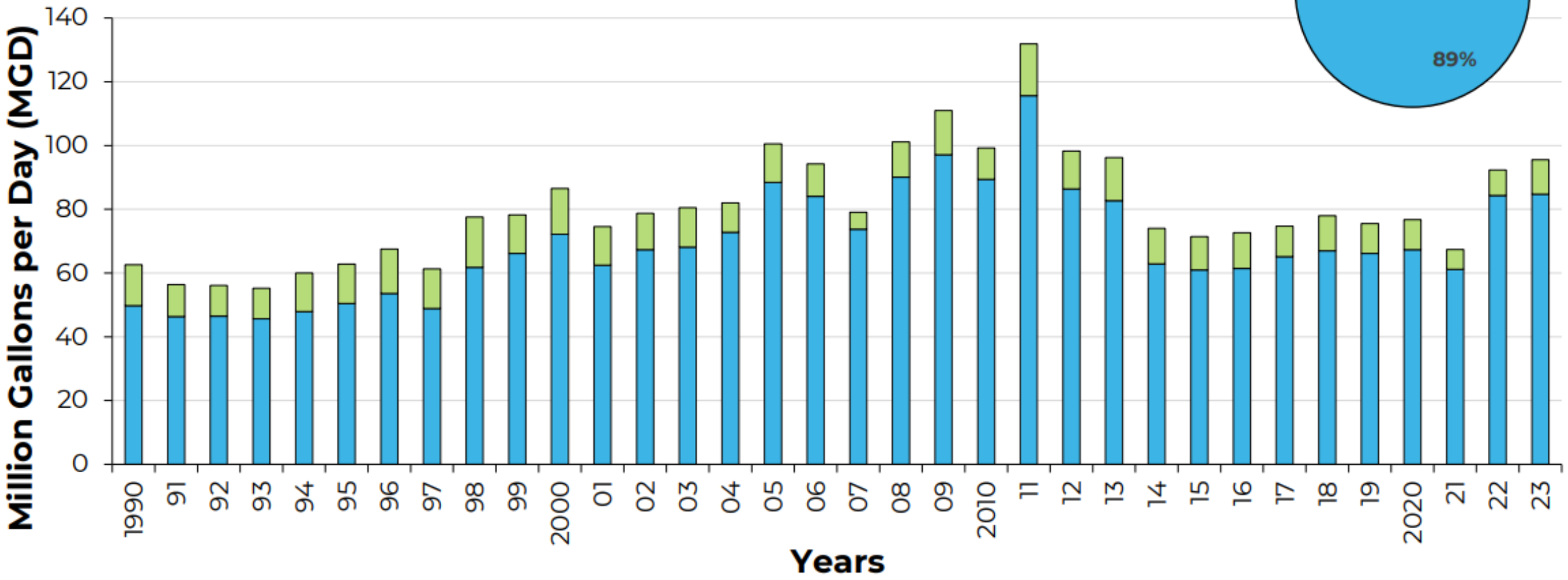


Groundwater Withdrawal

FORT BEND SUBSIDENCE DISTRICT

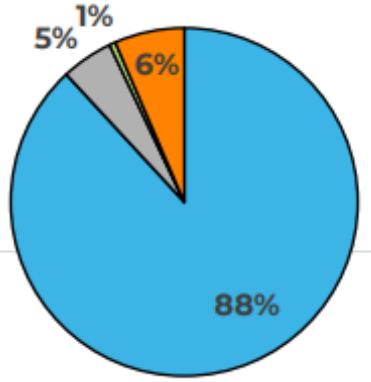
2023: 95.5 MGD





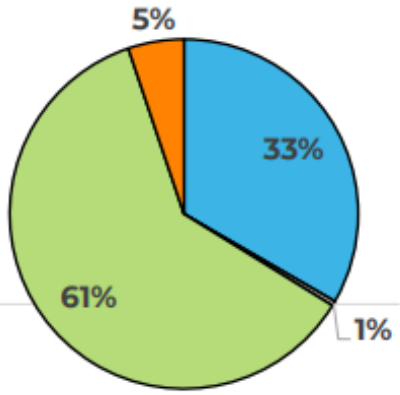
Regulatory Area A Groundwater Withdrawal

2023: 84.8 MGD



Regulatory Area B Groundwater Withdrawal

2023: 10.8 MGD



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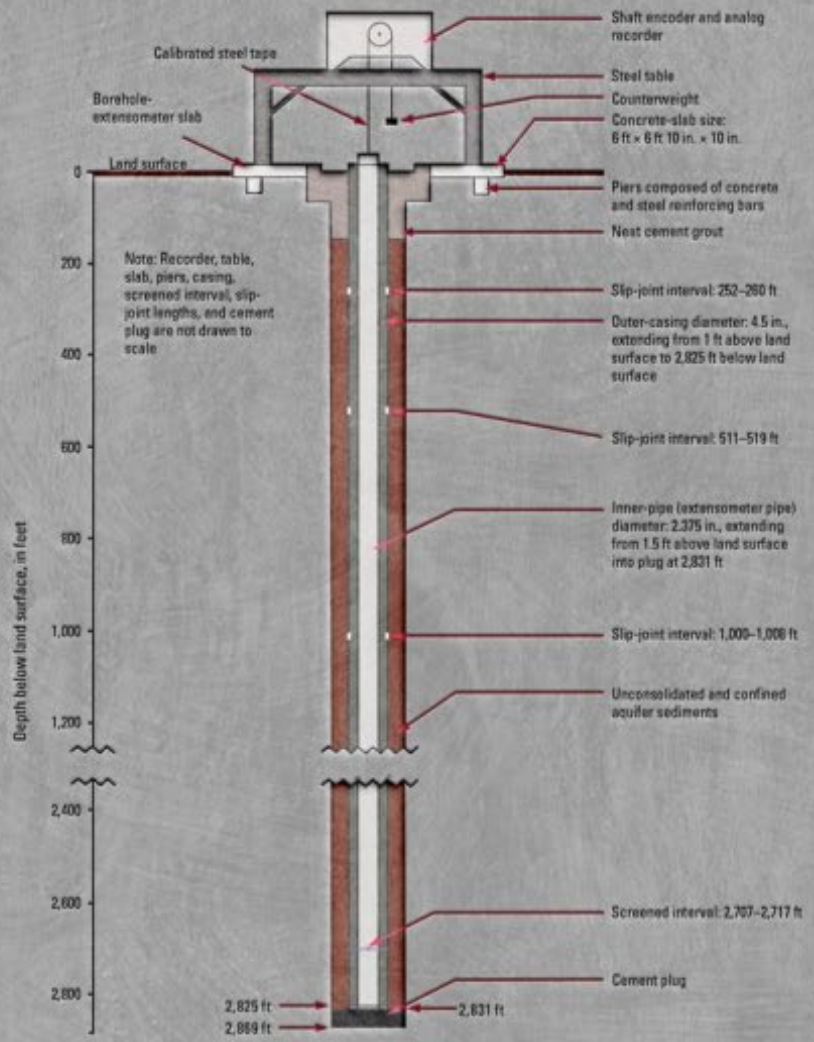


DIAGRAM OF A BOREHOLE EXTENSOMETER

Groundwater-level Altitudes, Long-Term Change & Compaction

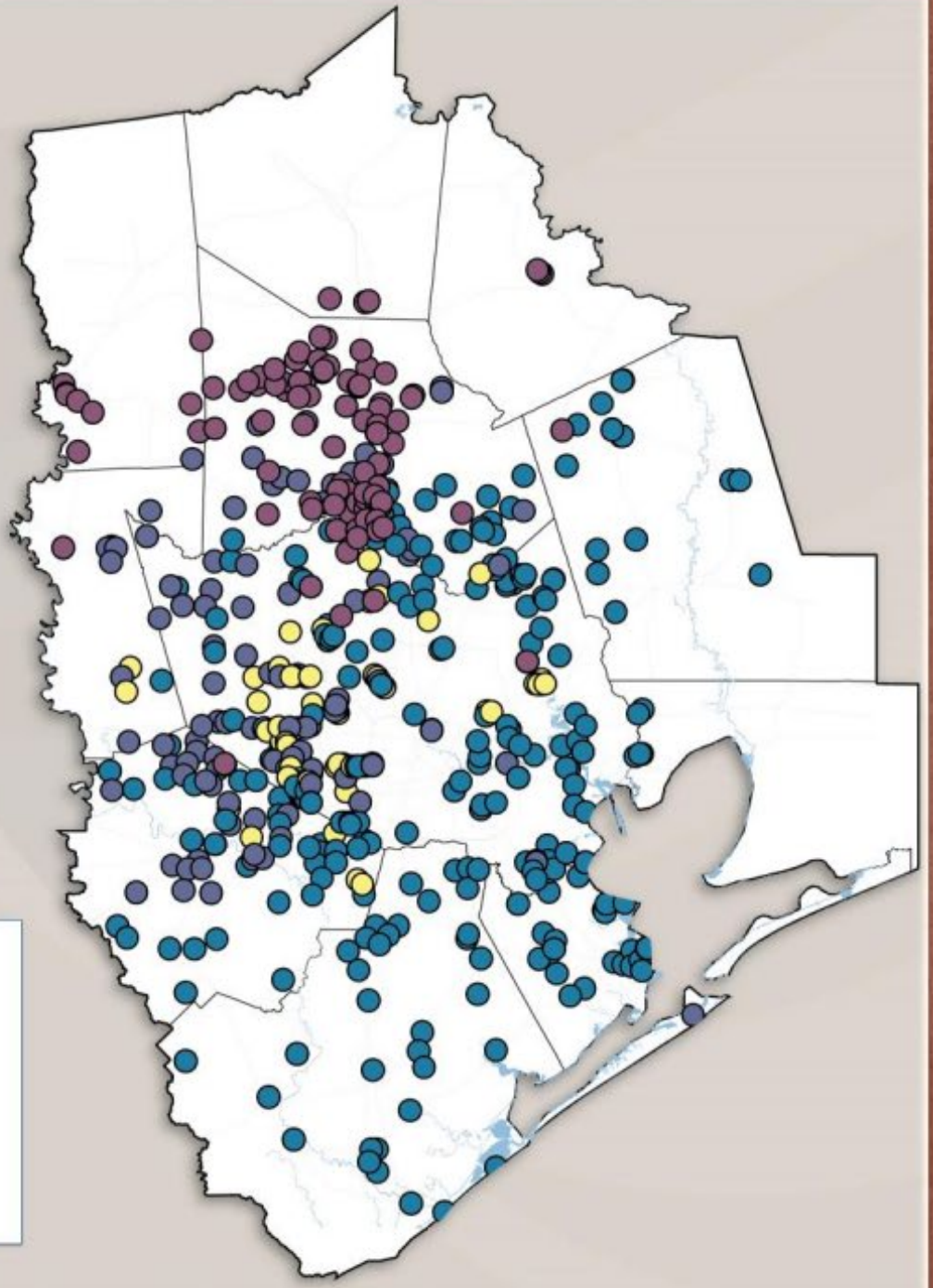
CHICOT/EVANGELINE AND JASPER AQUIFERS

RESEARCH IN COOPERATION WITH THE HARRIS–GALVESTON & FORT BEND SUBSIDENCE DISTRICTS BRAZORIA GROUNDWATER CONSERVATION DISTRICT, THE CITY OF HOUSTON AND LONE STAR GROUNDWATER CONSERVATION DISTRICT

2024 Water-Level Map Series

- Chicot and Evangeline Aquifers (undifferentiated)
  - 2024 Water-Level Altitude
  - 2023 to 2024 Water-Level Change
  - 2019 to 2024 Water-Level Change
  - 1990 to 2024 Water-Level Change

- Compaction 1973 to 2023
  - Compaction Data from 14 Extensometers



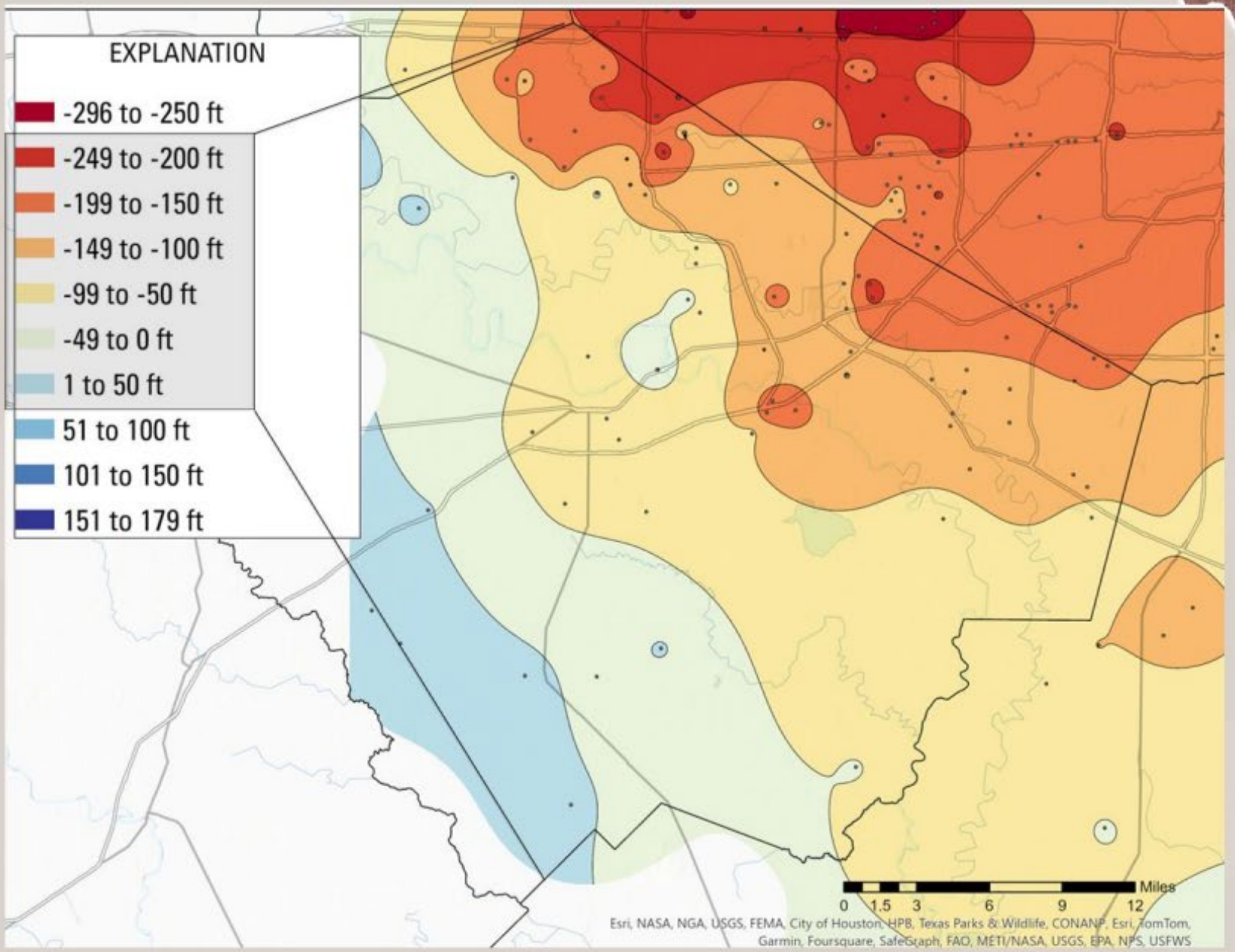
Water-Level Altitude

Chicot and Evangeline (undifferentiated)

Altitudes are referenced from NAVD 88

Lowest altitudes in northern and eastern portions of the county along the border with Harris County

Highest altitudes in the western portions of the county



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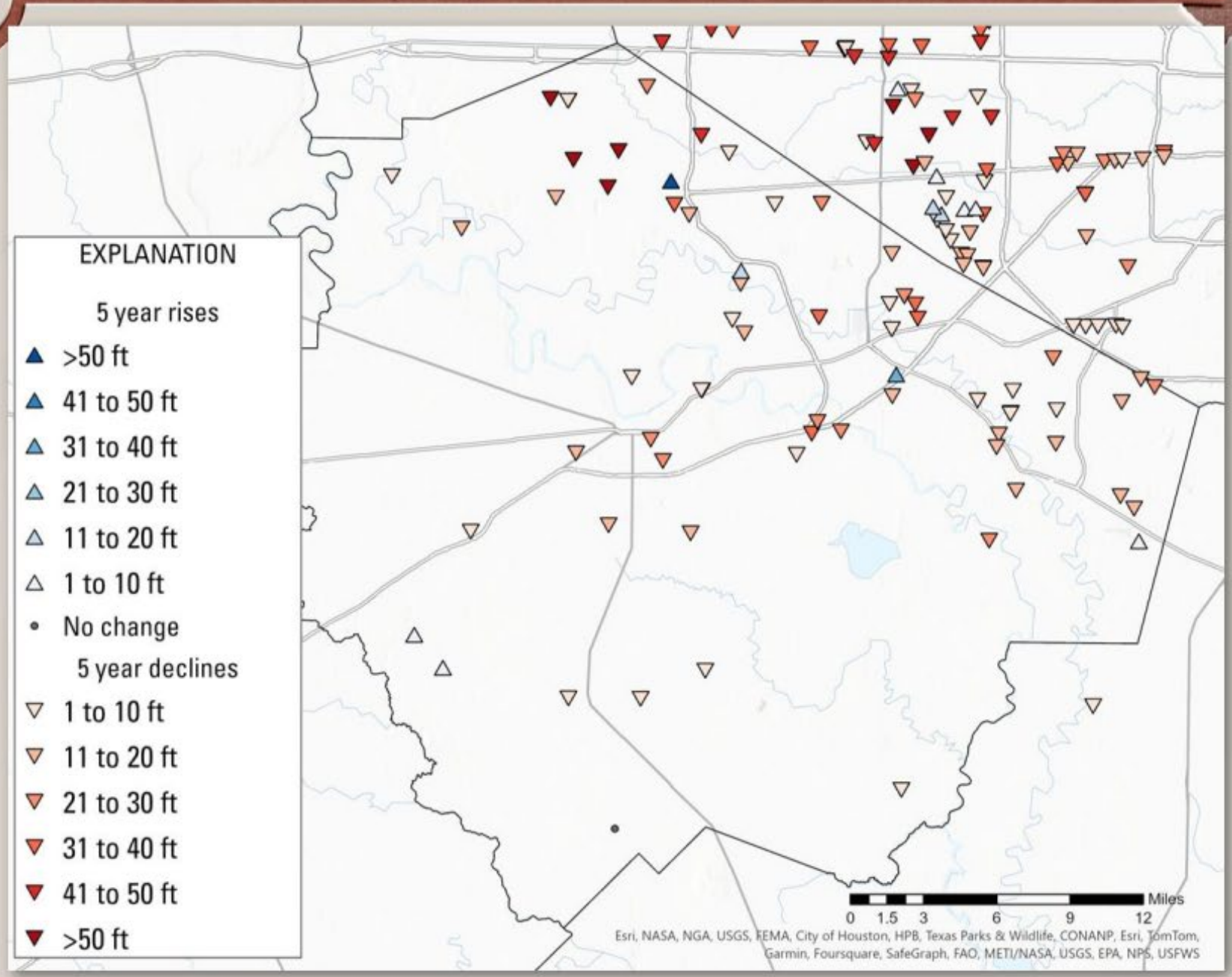
2019 to 2024 Water-Level Change

Chicot and Evangeline (undifferentiated)

- 70 water-level pairs
  - Mostly declines
    - More than half (~57%) are declines of less than 20 ft.
  - Largest declines (>50 ft):
    - Northern Fort Bend County
  - Largest rises (> 50 ft):
    - 1 in northern Fort Bend County



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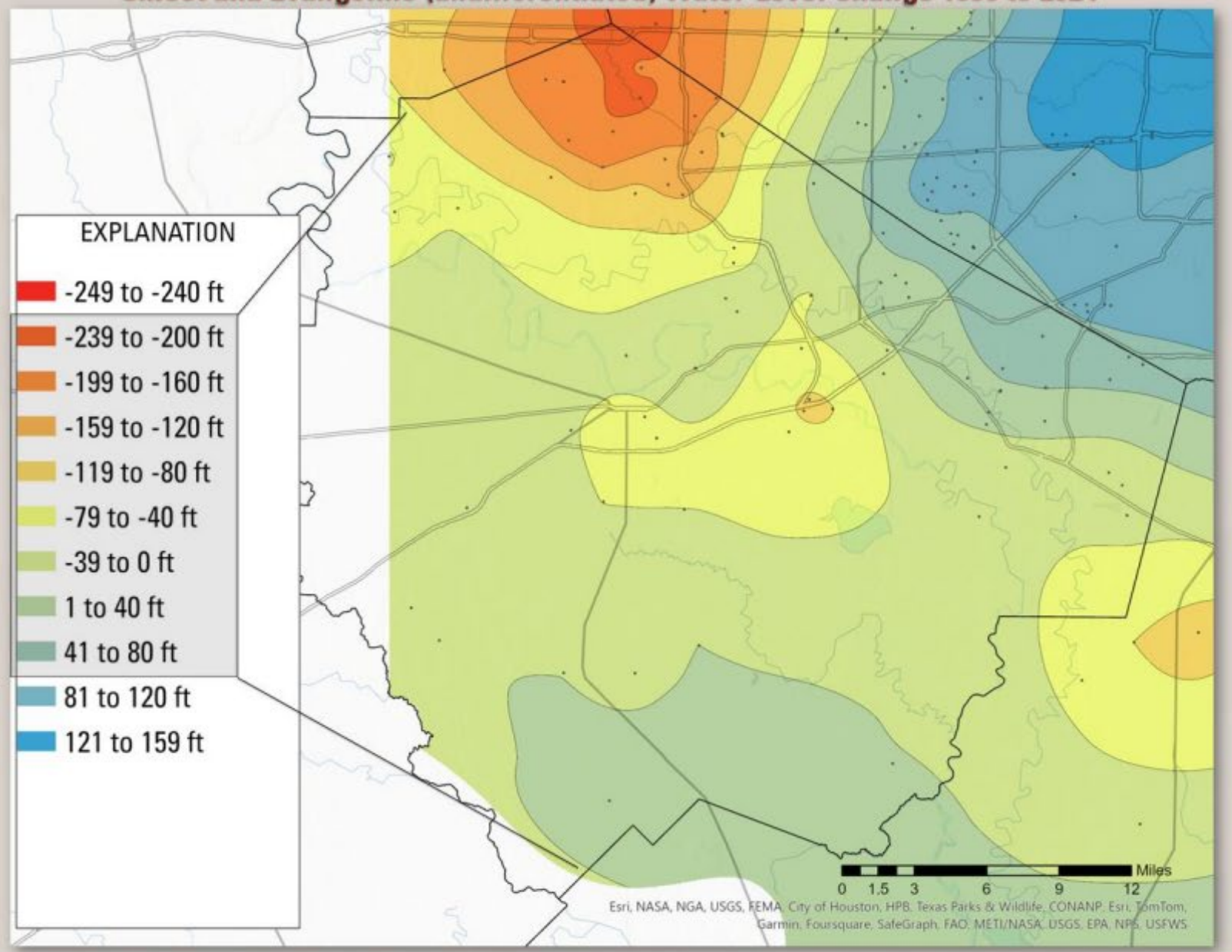
Long term change

Water level rises along the north-eastern border with Harris County and the southern border of Brazoria County

Water-level declines across much of the county with larger declines in the northern portion of the county



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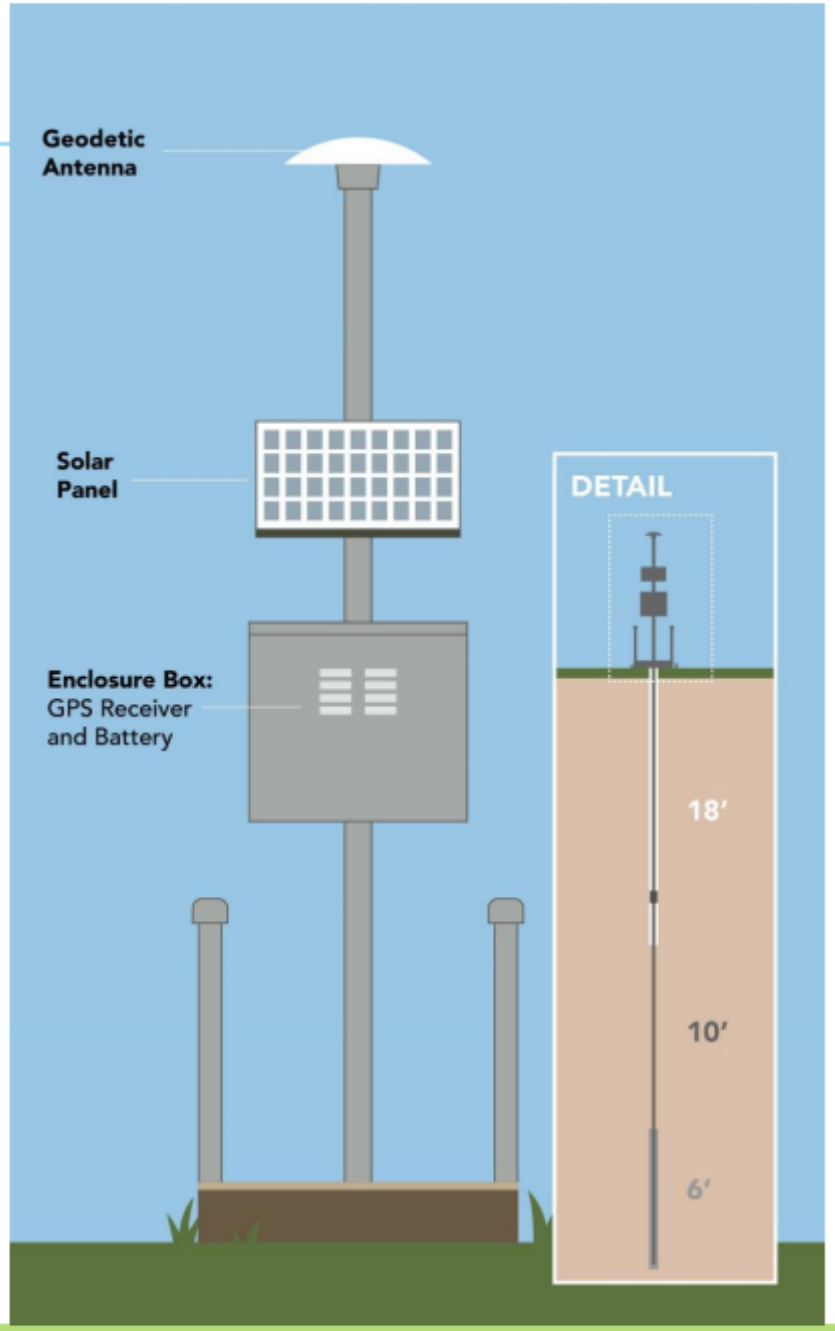
Subsidence Monitoring

All FBSD operated global positioning system (GPS) stations are constructed in a custom design.

GPS data are collected for one week every two months.

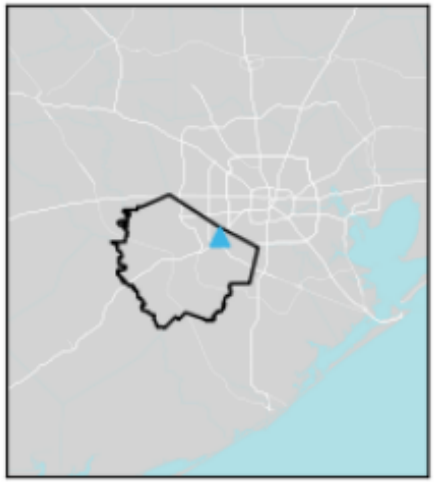


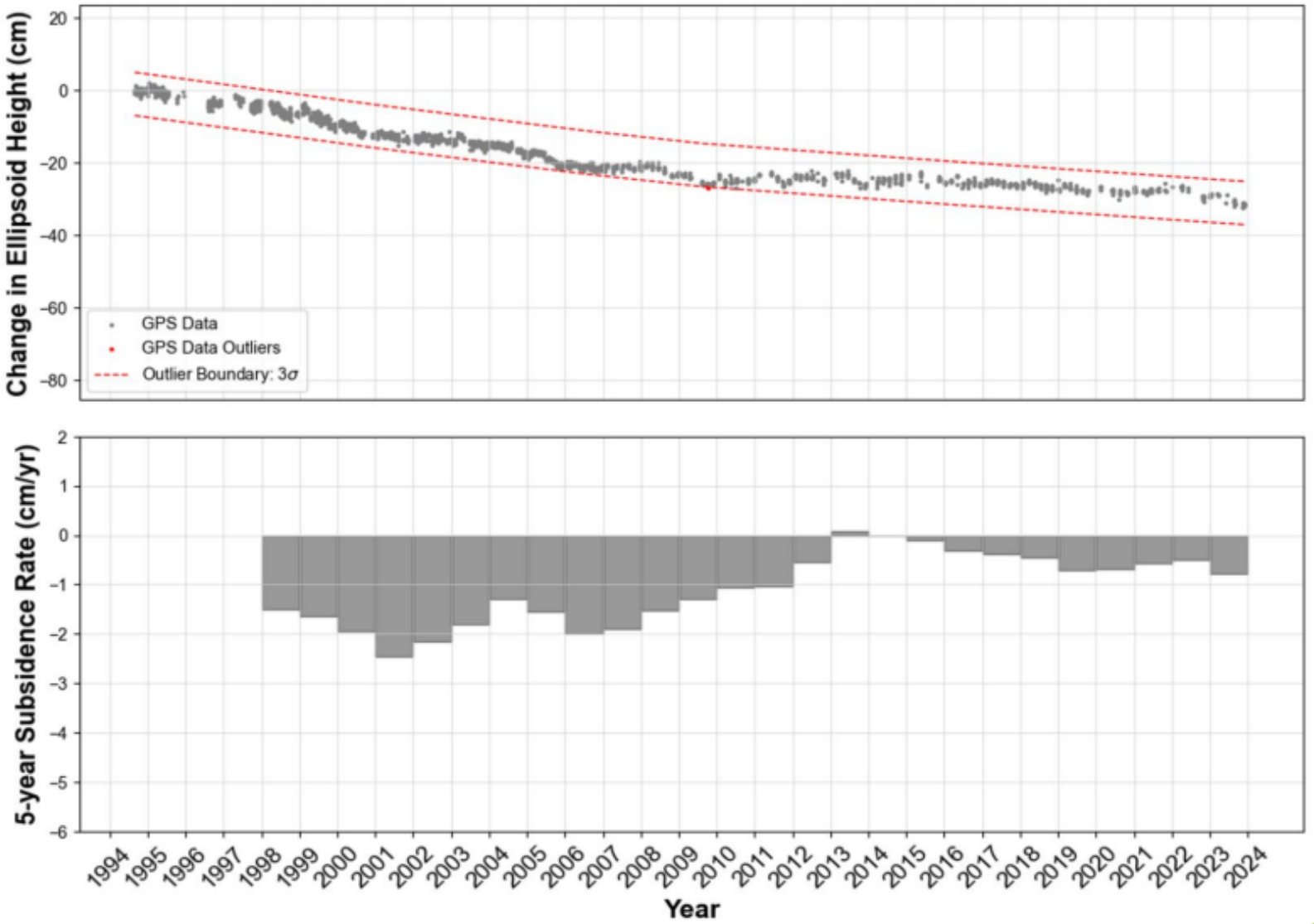
FORT BEND SUBSIDENCE DISTRICT

Subsidence Data near Sugar Land, TX 2007 – 2023

FORT BEND SUBSIDENCE DISTRICT

- GPS station P004, located in Sugar Land, has measured a total of approximately 31.3 cm of subsidence since 1994.
- 2019-2023 average annual subsidence rate is 0.77 cm/yr.



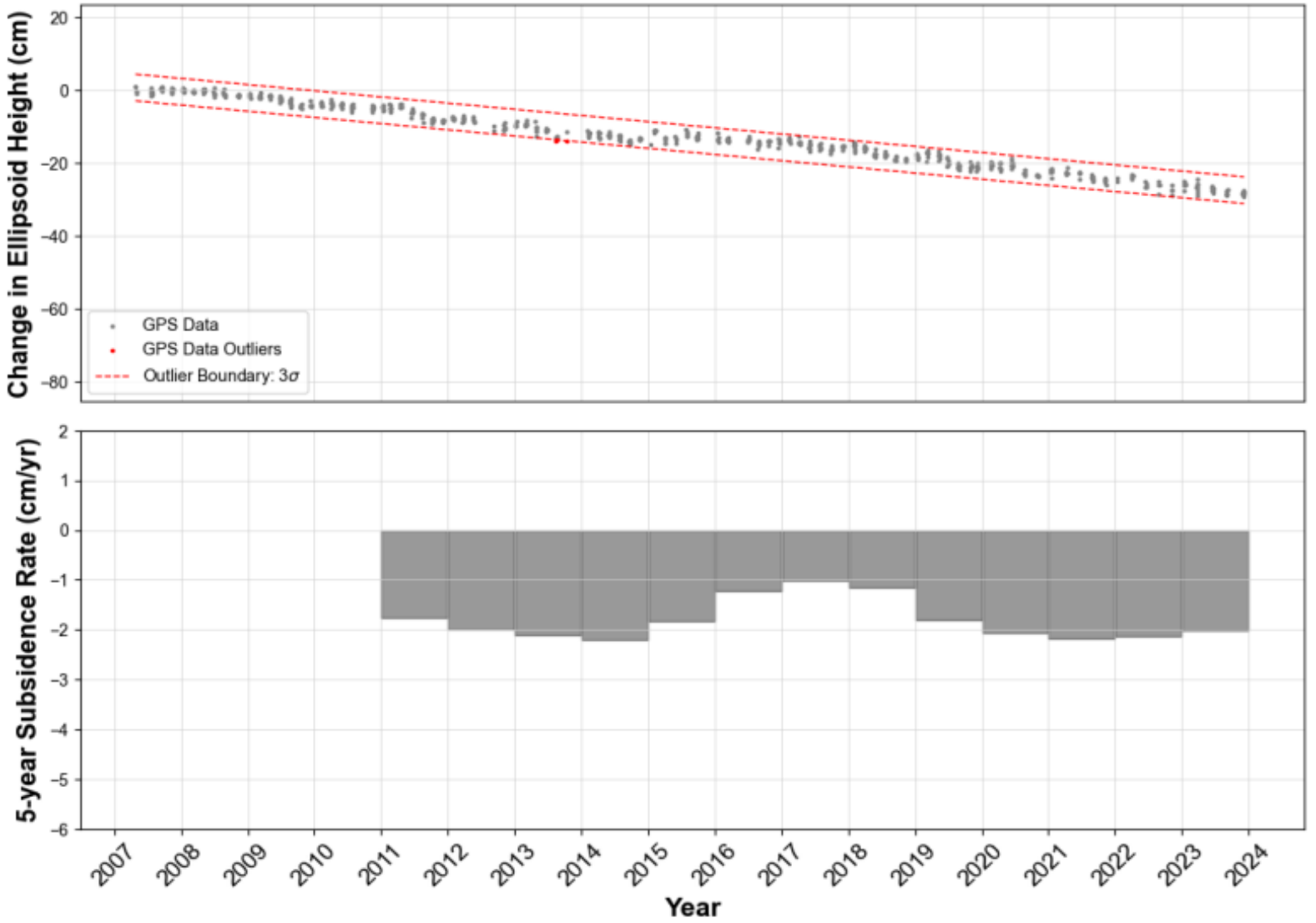


Processed GPS data (source: UH) over period of record. Processed GPS data (gray circles) located inside the outlier boundary (red dashed lines) are used when calculating subsidence rates. Processed GPS data identified as outliers (red circles) are not considered by the District when calculating subsidence rates and are shown for informational purposes only.

Subsidence Data near Katy, TX 2007 – 2023

FORT BEND SUBSIDENCE DISTRICT

- GPS station P029, located in Katy, has measured a total of approximately 28.5 cm of subsidence since 2007.
- 2019-2023 average annual subsidence rate is 2.03 cm/yr.



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Annual Groundwater Reports

FORT BEND SUBSIDENCE DISTRICT

FBSD Annual Groundwater Reports can be found on our website:

- FBSUBSIDENCE.ORG/science
- OR scan the QR code:

Joint Regulatory Plan Review

FORT BEND SUBSIDENCE DISTRICT

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.

JRPR Findings | Subsidence

FORT BEND SUBSIDENCE DISTRICT

The **District's Regulatory Plan** sets a reasonable and attainable target for groundwater use within the District and has shown positive results in reducing subsidence rates.

Short-term projections (2025-2050) show the effectiveness of the current Regulatory Plan in minimizing subsidence within Fort Bend County.

Long-term projections (2050-2100) reveal additional subsidence in Area B and in the southern portion of Area A as well as along the border with adjacent counties to the south and north.

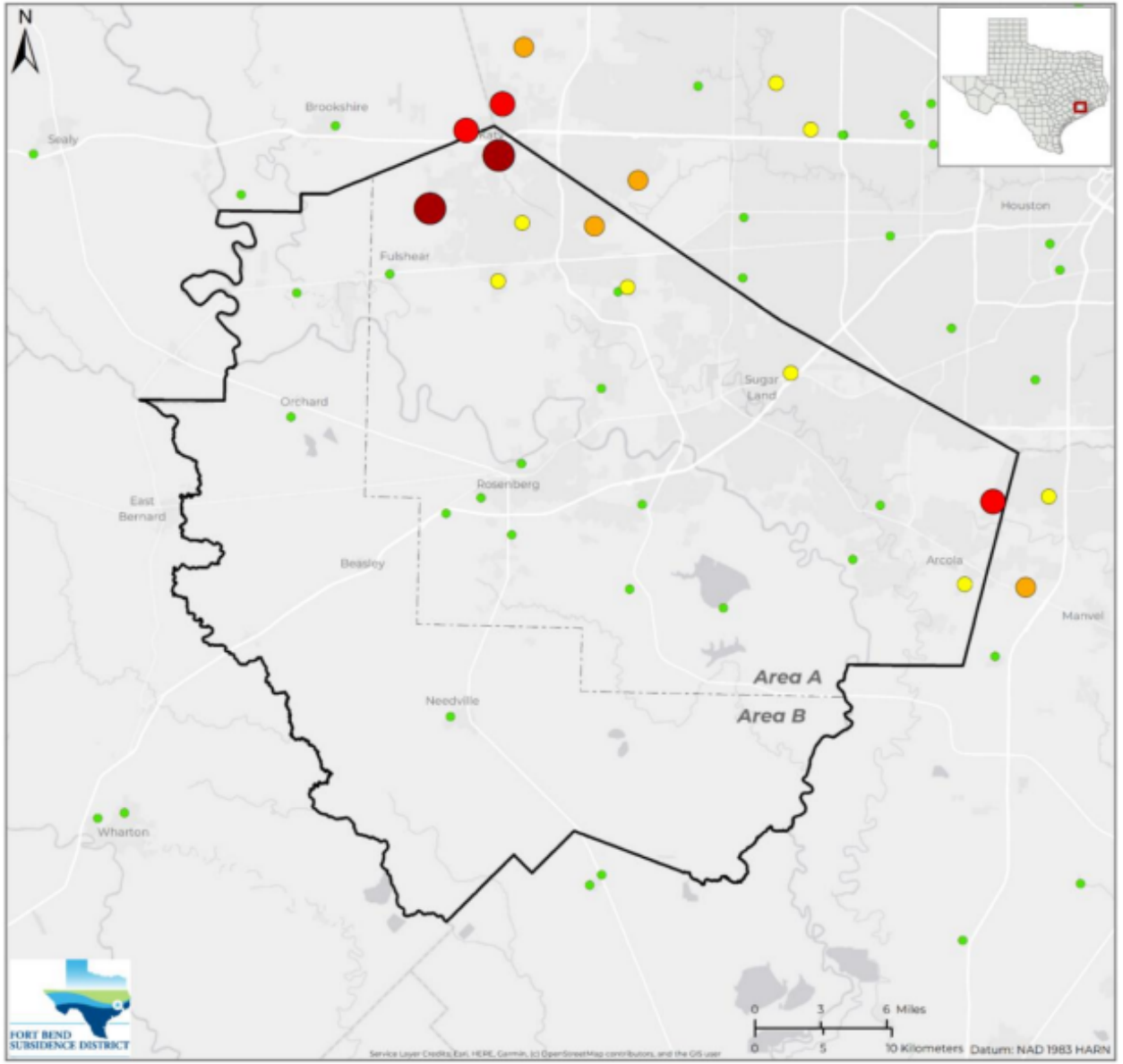
JRPR Findings | Future Planning

FORT BEND SUBSIDENCE DISTRICT

- Most of Fort Bend County will continue to experience rapid population growth, with the largest areas of growth in Regulatory Area B and south of the Brazos River.
- Alternative water supplies are available in sufficient quantities to support projected growth, though the source and time-to-delivery will vary within the District.
- Additional resources will need to be dedicated to research and monitor the impact of groundwater use on subsidence in the areas of current and future growth.

2019 – 2023 Annual Rate of Subsidence

Annual subsidence rate, in centimeters per year (cm/yr.), estimated from GPS data collected at active stations with three or more years of data averaged from 2019 to 2023.



EXPLANATION

Average Annual Subsidence Rate (cm/yr.) Estimated from GPS Data Collected from Active GPS Stations from 2019 to 2023

- Greater than 2.0
- 2.0 - 1.5
- 1.5 - 1.0
- 1.0 - 0.5
- Less than 0.5

Contact Information

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FORT BEND
SUBSIDENCE DISTRICT

Groundwater Reduction Plan Implementation Update

Margo Watson
Water Resources Manager

GRP Participants

Public Water Systems

- FBC MUD 192 (Greatwood Lake)
- Plantation MUD (Tara Plantation)
- Royal Valley Utilities
- City of Sugar Land
  - Greatwood *(annexed Dec 2017)*
  - New Territory *(annexed Dec 2017)*

Private Businesses

- Texas Par Golf Academy
- River Pointe Golf
- Sweetwater Golf, LLC
- Schlumberger

Property Owner Assoc & Levee Dist

- Avalon CAI
- Sugar Mill CAI
- Sugar Lakes HOA
- First Colony Community Assoc.
- First Colony Property Owners Assoc.
- New Territory Res. Comm. Assoc.
- River Park on the Brazos Property Owners Assoc.
- Royal Lakes Estates HOA
- Sugar Land Business Park
- FBC LID 17 (Telfair Levee Dist.)
- Oyster Creek Property Owners Assoc.

GRP Historic Water Demand

Million Gallons per Day (MGD)

FBSD Year	*Demand*	*Conversion*	
April- March		*Actual*	*Percent*
2010-11	**25.43**	**1.20**	
2011-12	**30.37**	**1.29**	
2012-13	**24.70**	**0.67**	
2013-14	**25.03**	**3.38**	
2014-15	**22.09**	**9.39**	**42%**
2015-16	**22.87**	**9.72**	**42%**
2016-17	**22.94**	**8.99**	**38%**
2017-18	**23.71**	**9.97**	**41%**
2018-19	**22.63**	**9.62**	**42%**
2019-20	**24.24**	**9.81**	**40%**
2020-21	**24.12**	**9.54**	**40%**
2021-22	**21.00**	**8.23**	**39%**
2022-23	**26.08**	**9.91**	**38%**
2023-24	**26.48**	**8.71**	**33%**

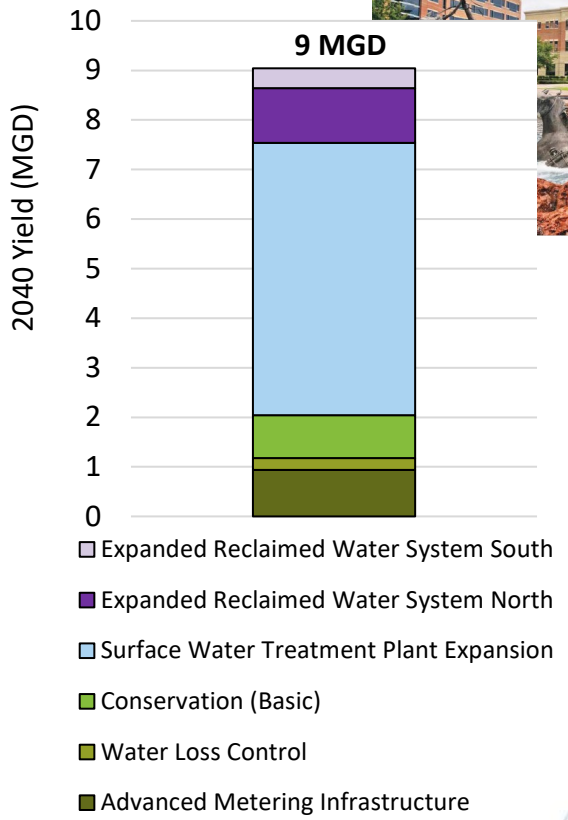
GRP Implementation Strategy

- **Secure surface water supplies**
  - Oyster Creek Water Right
  - Gulf Coast Water Authority (GCWA)
  - Brazos River Authority (BRA)
- **Surface Water Treatment Plant**
  - 10.85 MGD Facility completed November 2013
- **Raw Surface Water Pump Stations**
  - Pump stations to fill amenity lakes
- **Water Reuse / Reclaimed**
  - South Reclaimed Facility (Riverstone)
  - West Reclaimed Facility (New Territory)
  - Internal reuse at WWTPs
- **Water Conservation**
  - Education and Outreach

Integrated Water Resource Plan

- Recommended by:
  - Council Task Force
  - Citizen Task Force
  - City Council- approved 3/19/2019

- Recommended Projects:
  - Basic Conservation
  - Advanced Metering Infrastructure
  - Water Loss Control
  - Surface Water Treatment Plant Expansion of 5.5MGD
  - Expanded Reclaimed Water Facilities
  - Groundwater Credit Banking



IWRP Implementation

2019

- City Council approval of IWRP

2020

- Rate Study Ph1
- BRA Water Supply Contract
- Policy Review and Update
- Water & Wastewater Master Plan Updates

2021

- Rate Study Ph2
- Completed PER of SWTP Expansion, SWTP Transmission Lines, and Groundwater Plant Conversions
- Advanced Metering Infrastructure Contract
- Conservation and Water Loss Control Programs

IWRP Implementation

2022

- Conservation Programs
- Water Loss Control Programs

2023

- Advanced Metering Infrastructure implementation
- Conservation Programs
- Water Loss Control Programs

2024

- Continuation of 2023 programs

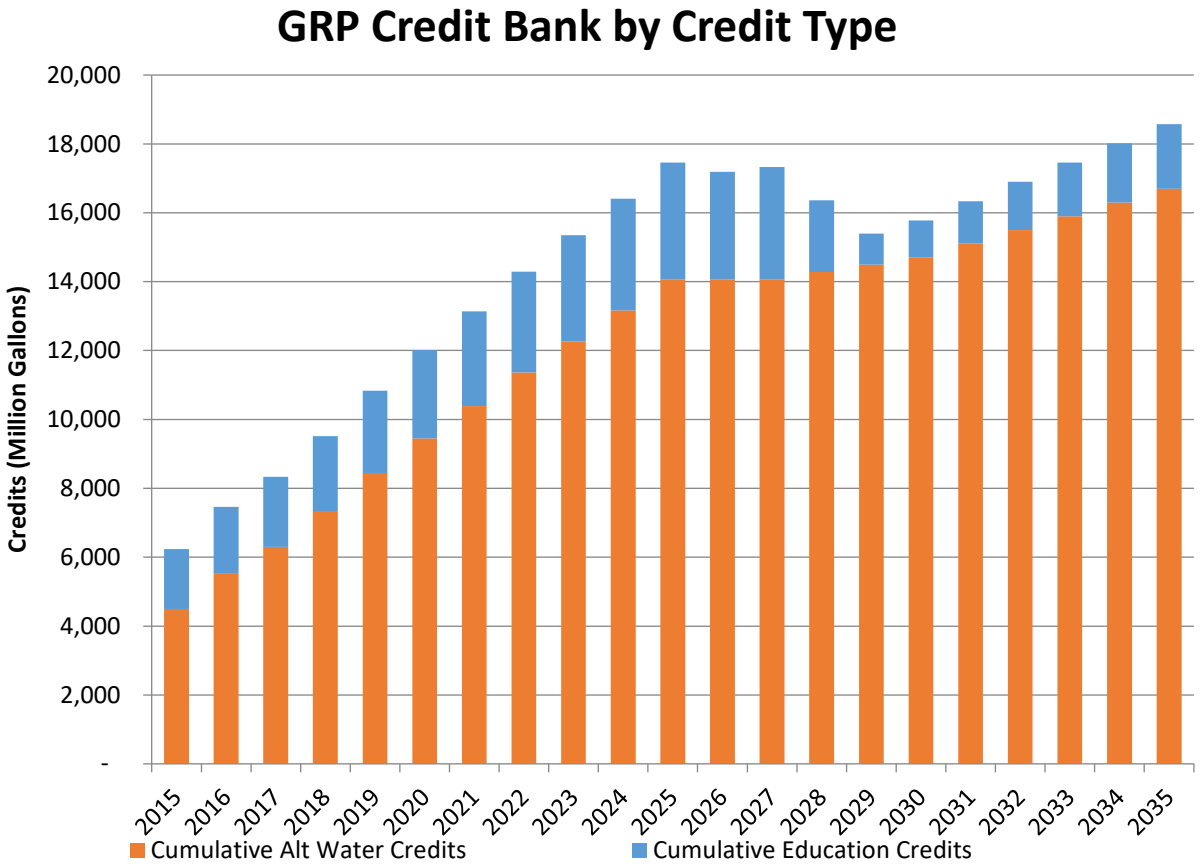
2025

- Update to the IWRP
- Looking into additional conservation programs

IWRP Implementation

Groundwater Credit Bank

- Ability to utilize groundwater credits for 2027 conversion plan
- SWTP Expansion delay by 2 years per Utility Rate Study
- Utilize education credits prior to expiration
- Maintain healthy credit bank for to offset risks



Financial Update

Crosby Qui
Sr. budget & Strategy Analyst

GRP Philosophy

- City Policy adopted in September 2002
  - Plan for the City and our ETJ
  - Surface Water Fund to Account for Costs
- Costs of Surface Water Conversion Shared Equally among GRP Members
- Blended Rate for all Members
  - All Participants Pay Based on Same Rates
- GRP Participants avoid FBSD disincentive fee
  - $6.50 per 1,000 gallons

GRP Finances and Rate Study

- Operations funded in the System Utility Fund
- Consultant update the Utility Rate Model and develop a 10-year forecast for IWRP Implementation and strategic decision making
- Calculate rates necessary to generate revenues for:
  - Operating Needs
  - Capital Projects Funding

Utility Rate Study

- Variables analyzed that impact the rate model
  - Weather (normal vs wet vs dry year)
  - Residential consumption impacts to revenue
    - Volumetric block rates
    - Downward trends in consumption over time
  - Water Loss
  - Raw Water Costs
  - Strategic Use of Fund Balances
  - Bond Ratings
    - Impact of all-in bond coverage
  - Five-Year Capital Improvement Program
    - O&M impact of CIP projects
    - Asset Management and Reinvestment

Rate Study Implementation Plan

- Meet financial objectives for the Utility System
  - Fiscally responsible government
  - Focus on financial resiliency of the system
  - Where possible take steps to improve bond rating
- Use the groundwater credits to delay capital construction where possible
  - Build flexibility to address outcomes of ongoing initiatives (Delay SWTP expansion by 2 years)
- Utility Rates
  - Benchmark our rates with our regional partners
  - Build options to fund the projects with fewer total rate increases (10/10/7 Plan adopted by Council- implementation complete)
  - Options that meet bond coverage requirements
  - Use cash reserves to minimize rate increases

Future Financial Needs

- Model showed rate increases needed to support future debt to be issued to meet 60% Groundwater Reduction Mandate
  - Council Finance/Audit Committee developed the 10/10/7 plan
  - Plan implemented from FY21-FY23
- In September, City Council approved rates effective January 1, 2025
  - GRP Fee $3.45
  - Surface Water Fee $3.71
  - 3.0% Increase

Prior Years Capital Improvement Projects

Project Name	Funding
Newland Water Connection	443,732
Oyster Creek Raw Water Use	7,000
Non-Potable Water/ Pump Stations	503,623
Assets Purchased - WCID#1	49,561
Surface Water Transmission Lines	16,900,068
Surface Water Treatment Plant	81,935,521
Water Plant Upgrades	8,337,800
SCADA Comm. Conversion	385,000
SWTP OM Manual and SOP	417,830
SWTP Computerized Maintenance System	473,479
SWTP CT Study/Tracer Test	75,000
SWTP Raw Monitoring System	29,000
SWTP Membrane & LRV Test	155,000
Brooks Lake Wier/AMIL Gates	4,620,000
Dam 3 Flood Control Improvements	88,800
Riverstone Groundwater Plant Improvements	5,950,000
Transmission Line to Riverstone GW Plant	10,525,000
SWTP Expansion	495,689
SW Transmission Line to NT	350,411
SWTP Yard Pipe & Aerial Crossing Recoating	300,000
Groundwater Plant Surface Water Expansion	200,000
Telfair Raw Water Pump Station Rehab	260,000
Advanced Metering Infrastructure	8,025
SWTP Rehab Phase 1 –Chem System Replacement/Improvement	964,000
Total	**$ 133,474,539**

Prior Years Capital Improvement Projects

Project Start FY	Project Name	Budget	Actuals Thru 2024
2020	Surface Water Treatment Plant Expansion	$ 495,689	$ 258,018
2020	Surface Water Transmission Lines	350,411	141,609
2021	Groundwater Plant SW Conversion	200,000	165,380
2021	Advanced Metering Infrastructure (AMI)	8,025	-
2023	Telfair Raw Water Pump Station Rehab	260,000	46,496
2024	SWTP Rehab Ph1 - Chem Sys Replacement/Improvements	964,000	147,325
Total		$2,278,125	$758,828

Surface Water Operating Results*

Millions ($)	FY21	FY22	FY23	FY24*
Revenues	$ 16.46	$ 24.19	$27.87	$26.00
Expenses	14.87	15.27	15.50	16.93
Net Income	$ 1.59	$ 8.92	12.37	9.08
GRP Rate	**$2.50**	**$3.01**	**$3.25**	**$3.35**

* Unaudited: Not Stated on a GAAP Basis
Excludes Capital Projects and Bond Proceeds
Revenues include Sale of Water to 3rd party

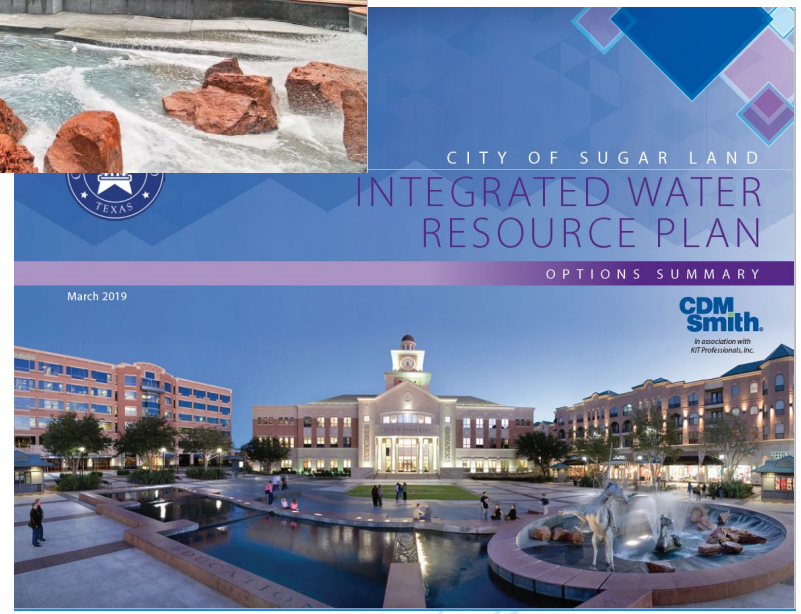
FY25-29 Capital Projects

PROJECT NAME	2025 ESTIMATE	2026 ESTIMATE	2027 ESTIMATE	2028 ESTIMATE	2029 ESTIMATE	2025-2029 TOTAL
Surface Water Treatment Plant Expansion	$ -	$4,305,000	$79,170,000	$-	$-	$83,475,000
Surface Water Transmission Lines	-	2,388,000	16,873,000	-	-	19,261,000
Groundwater Plant Surface Water Conversion	-	1,254,000	11,789,000	-	-	13,043,000
Telfair Raw Water Pump Station Rehab	527,000	-	-	-	-	527,000
SWTP Rehab Ph 1	6,425,000	-	-	-	-	6,425,000
Reclaimed Water – South of the Brazos Ph 1	2,783,000	-	-	-	-	2,783,000
North WWTP Reuse PER	-	-	-	527,000	-	527,000
SWTP Rehab Ph 2	-	429,000	4,859,000	-	-	5,288,000
Reclaimed Water South of the Brazos – Transmission Lines Ph 1	-	96,000	1,104,000	-	-	1,200,000
TOTAL FUNDING	**$9,735,000**	**$8,472,000**	**$113,795,000**	**$527,000**	**$-**	**$132,529,000**

Surface Water Comparative Rates

Per 1,000 Gallons Water Rates	GRP Fee	Surface Water Fee
Sugar Land	$3.35	$ 3.57
Sugar Land- Jan 2025	3.45	3.71
Comparative Rates:		
Missouri City (Oct 2023)	2.39	
City of Richmond (Oct 2024)		2.98
City of Rosenberg (January 2025)	2.75	2.75
North Fort Bend Water Authority (Jan 2024)	4.55	4.90
West Harris County Water Authority (Jan 2024)	3.95	4.35

Questions?



www.sugarlandtx.gov/iwrp

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