# 2025 Annual Groundwater Report

Public Hearing
April 30, 2026

FORT BEND
SUBSIDENCE DISTRICT

# 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.

# Annual Groundwater Reports

FORT BEND SUBSIDENCE DISTRICT

Each year, the Fort Bend Subsidence District publishes an Annual Groundwater Report to provide the latest information on subsidence in our region. This report encompasses data collected for the previous calendar year and includes the following elements:

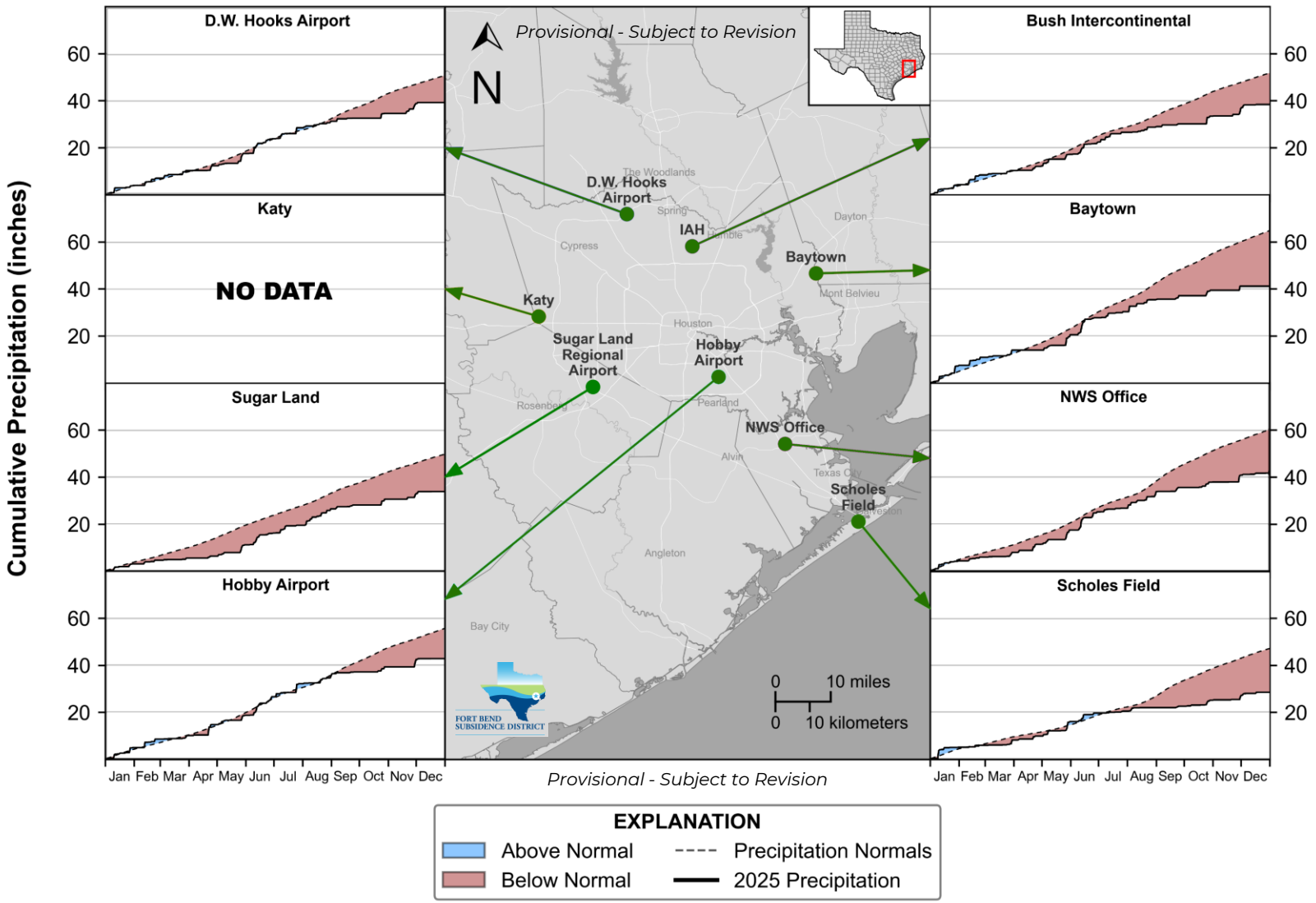
- Climate Conditions
- Water Use
- Groundwater Levels
- Measured Subsidence

The results of the Annual Groundwater Report ultimately tell the story about our region's subsidence mitigation efforts and help to better inform local decision-makers with data that can be used to build a more resilient community.

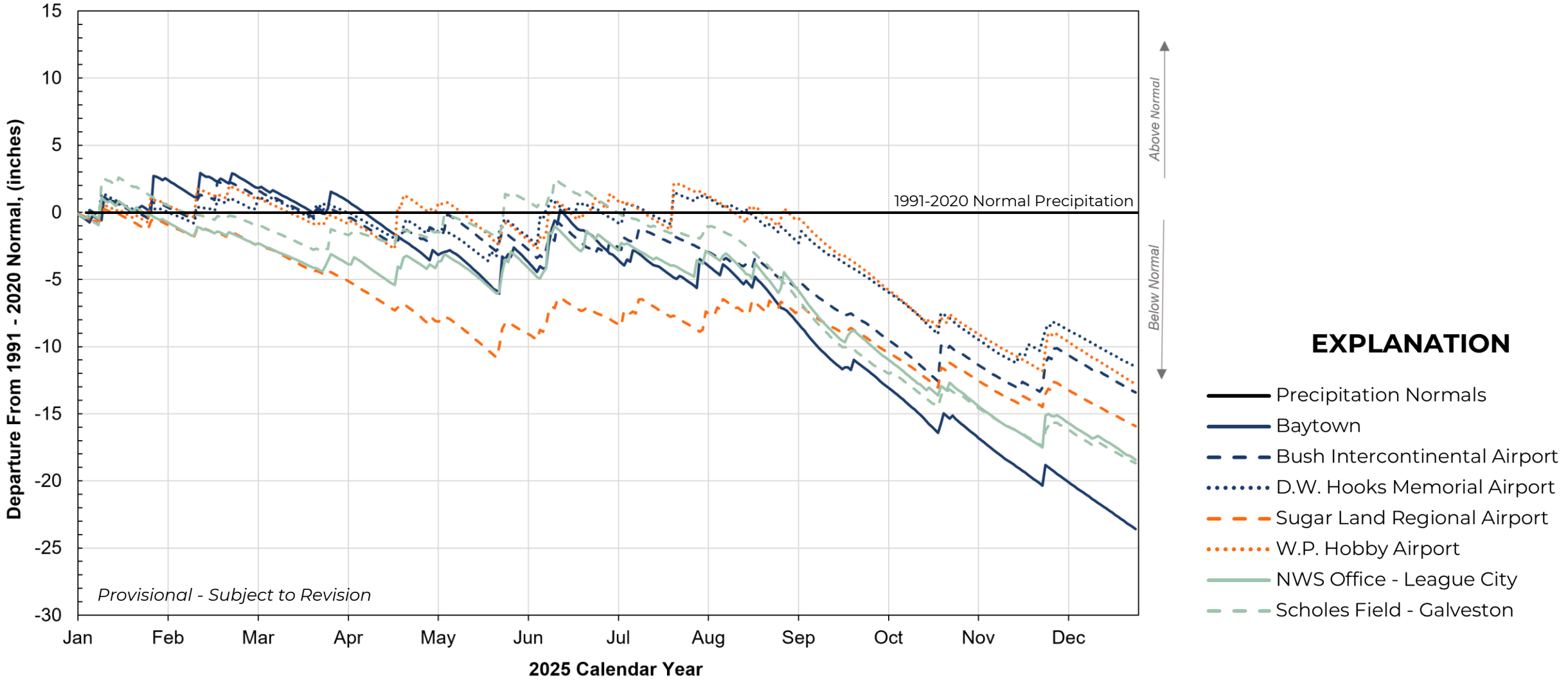
# Table of Contents

# Exhibit 1

Location of National Weather Service (NWS) climate stations used for rainfall data for the 2025 calendar year.

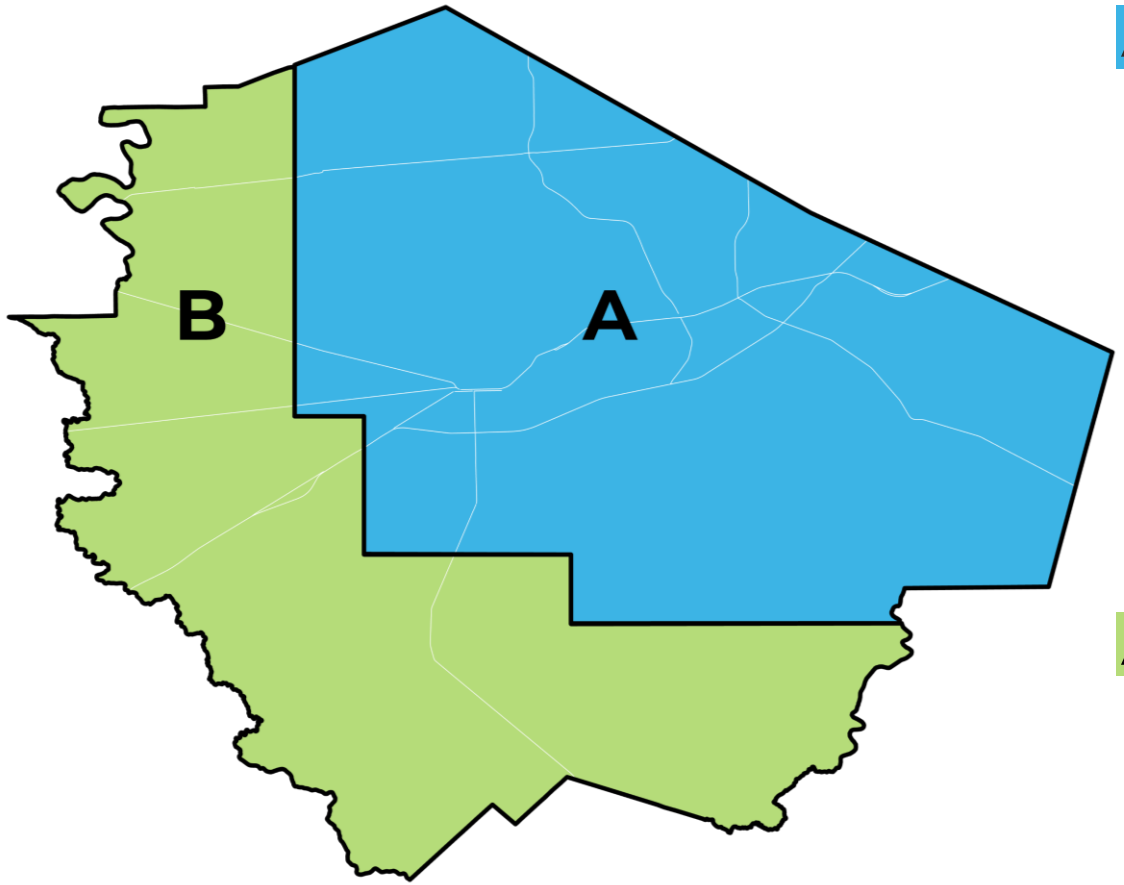


# **Exhibit 2** 2025 Precipitation Data



# Table of Contents

# FBSD Regulatory Areas

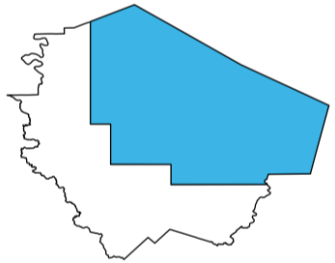


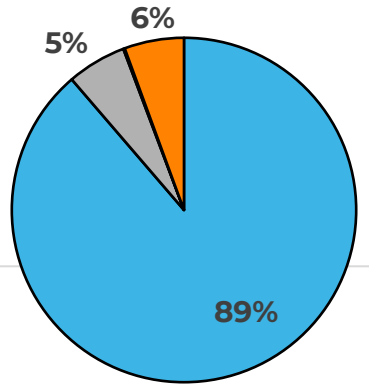

**Area A:** no more than 40% of Total Water Demand (TWD) may be sourced from groundwater.

- Permittees operating within an approved Groundwater Reduction Plan have the following requirements:
  - 2030 – no more than 40% of TWD from groundwater

**Area B:** beginning in 2035, no more than 40% of TWD may be sourced from groundwater.

# Exhibit 3 Regulatory Area A






## Regulatory Area A

Groundwater Withdrawals Grouped by Use

Public Industrial Agricultural Other

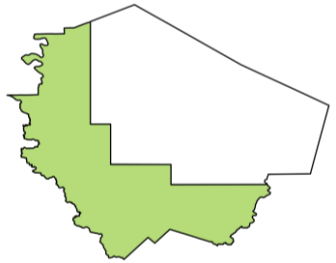
Million Gallons per Day (MGD)

120
90
60
30
0

1990 91 92 93 94 95 96 97 98 99 2000 01 02 03 04 05 06 07 08 09 2010 11 12 13 14 15 16 17 18 19 2020 21 22 23 24 25

Years

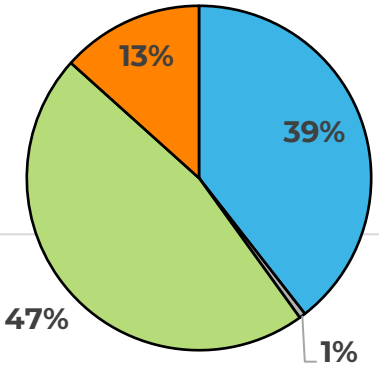
# **Exhibit 4** Regulatory Area B

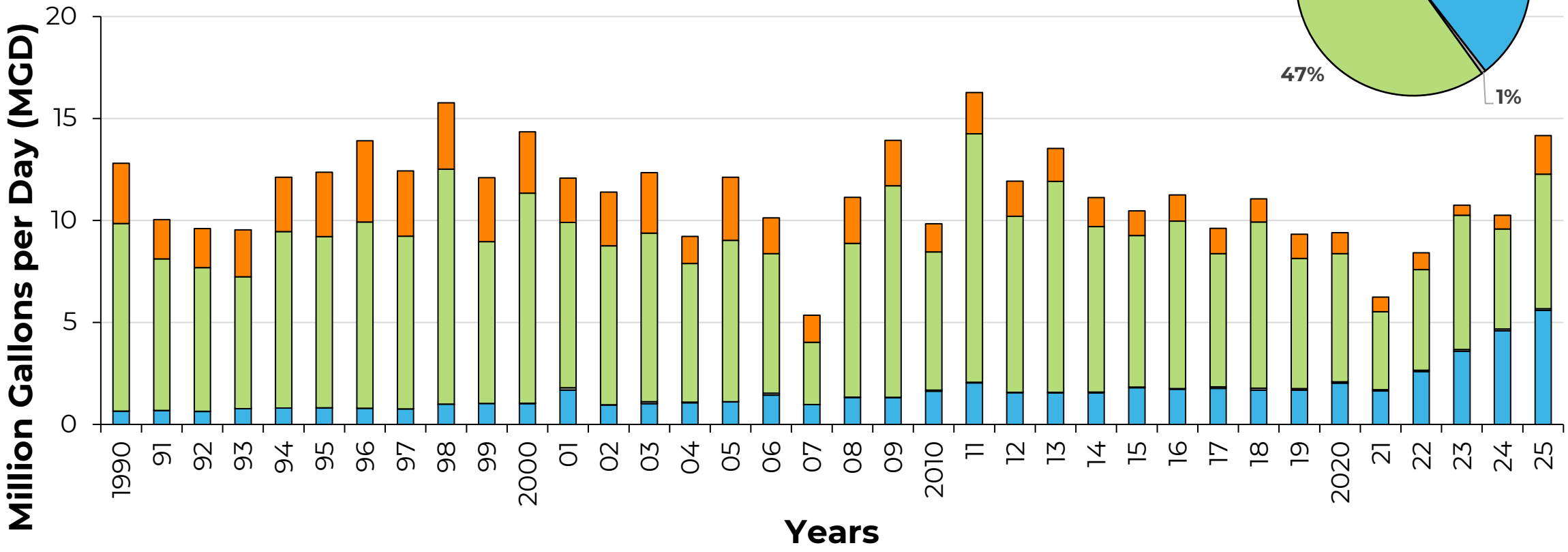


**2025: 14.2 MGD**

## Regulatory Area B

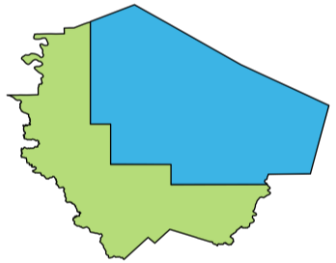
Groundwater Withdrawals Grouped by Use



# **Exhibit 5** Entire District by Regulatory Area

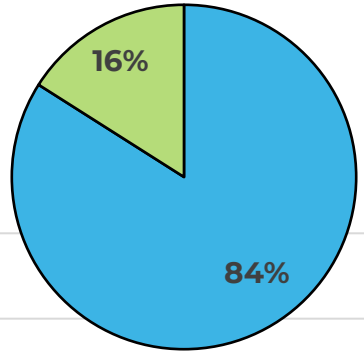
FORT BEND SUBSIDENCE DISTRICT

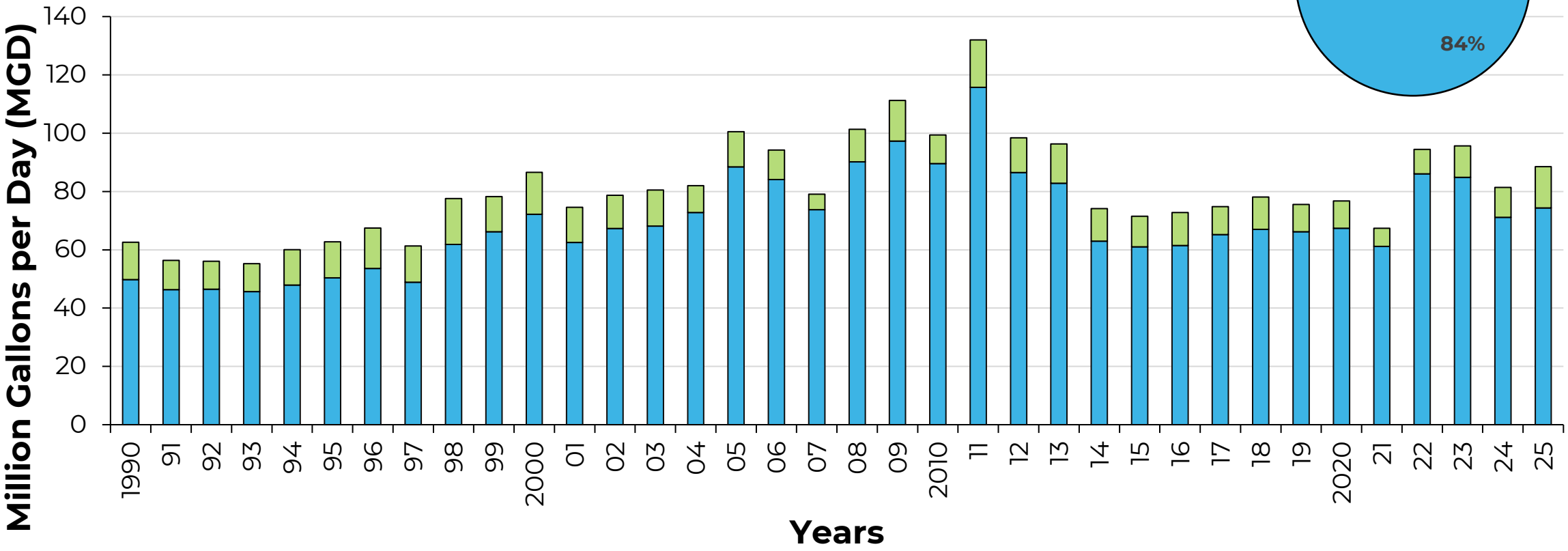


**2025: 88.5 MGD**

## Entire District

Groundwater Withdrawals Grouped by Area

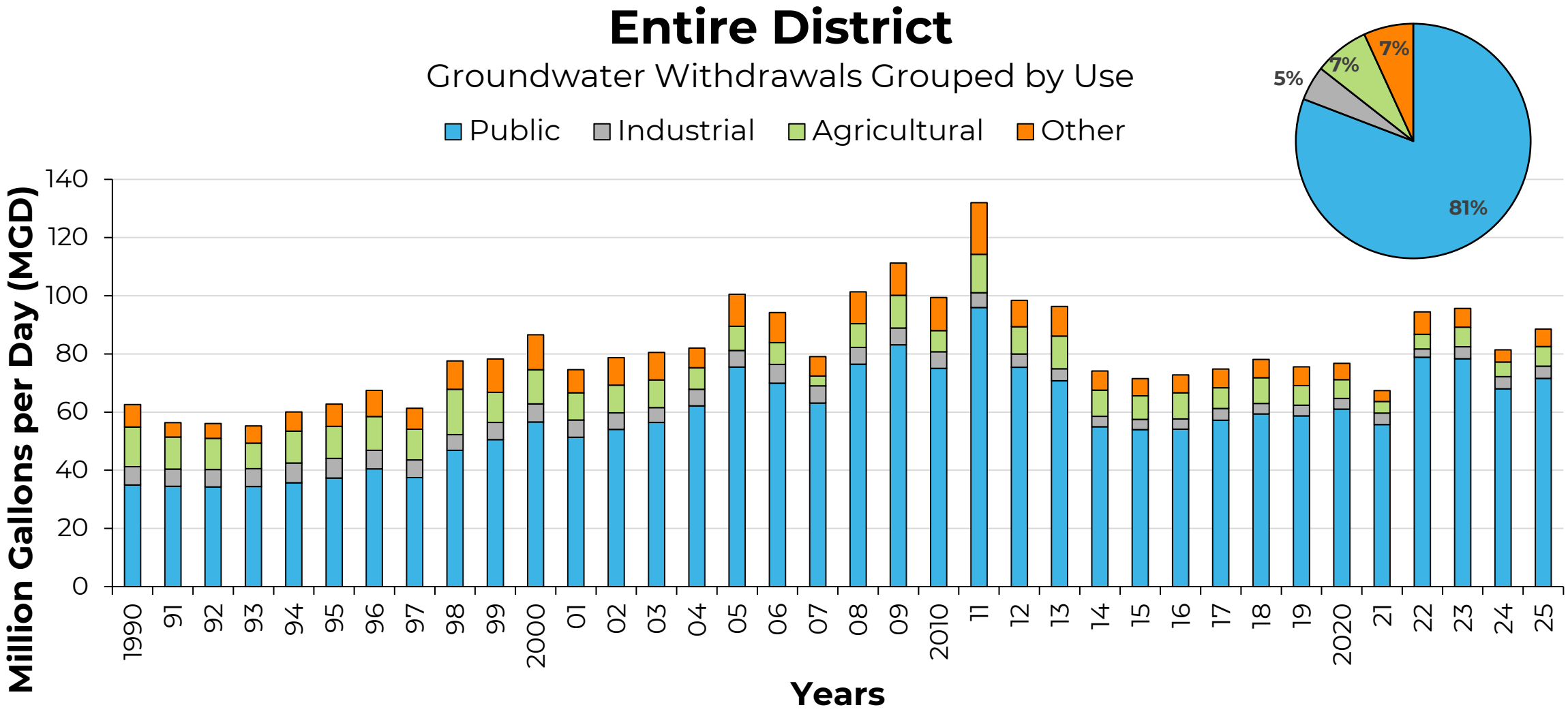


# Exhibit 6 Entire District by Use Type

FORT BEND SUBSIDENCE DISTRICT

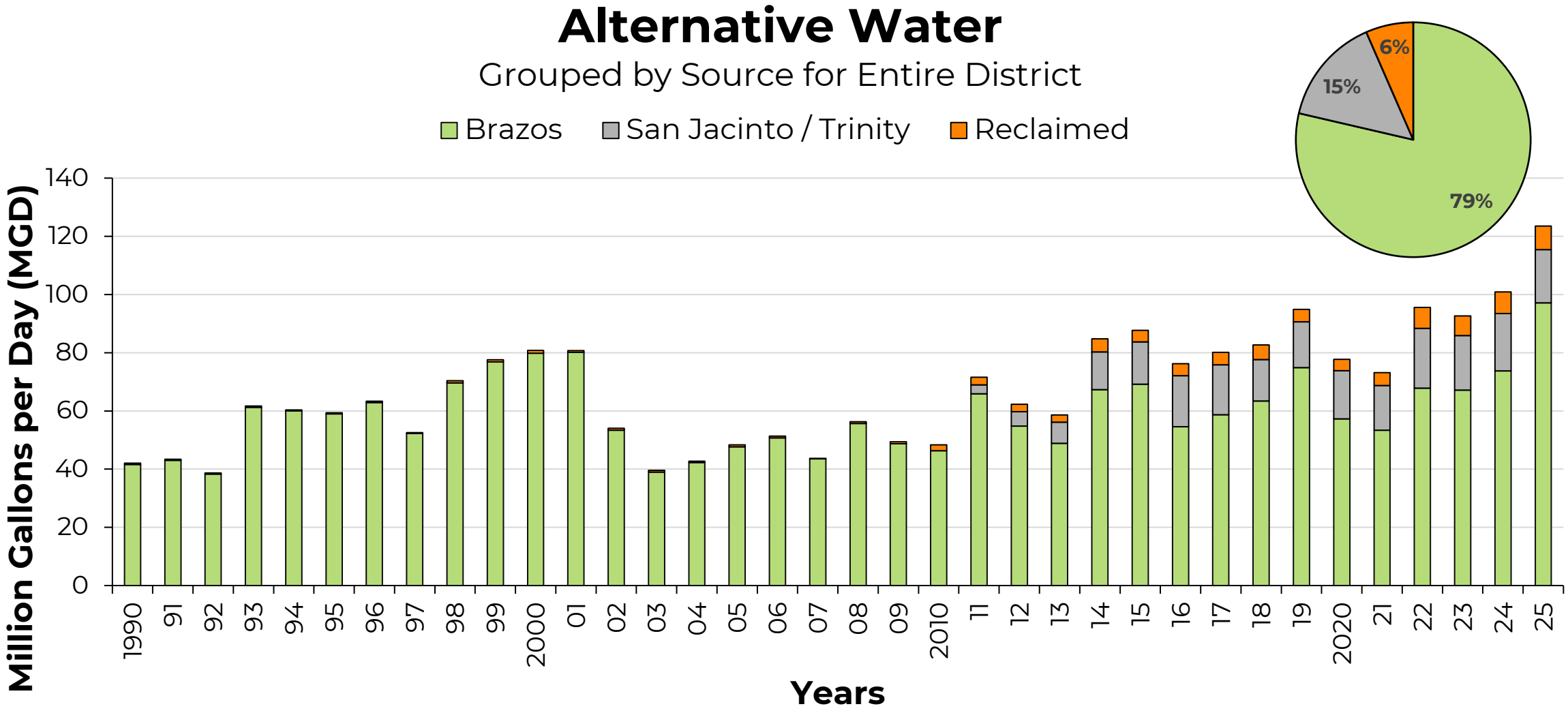
**2025: 88.5 MGD**



# Exhibit 7 Alternative Water Use

FORT BEND SUBSIDENCE DISTRICT

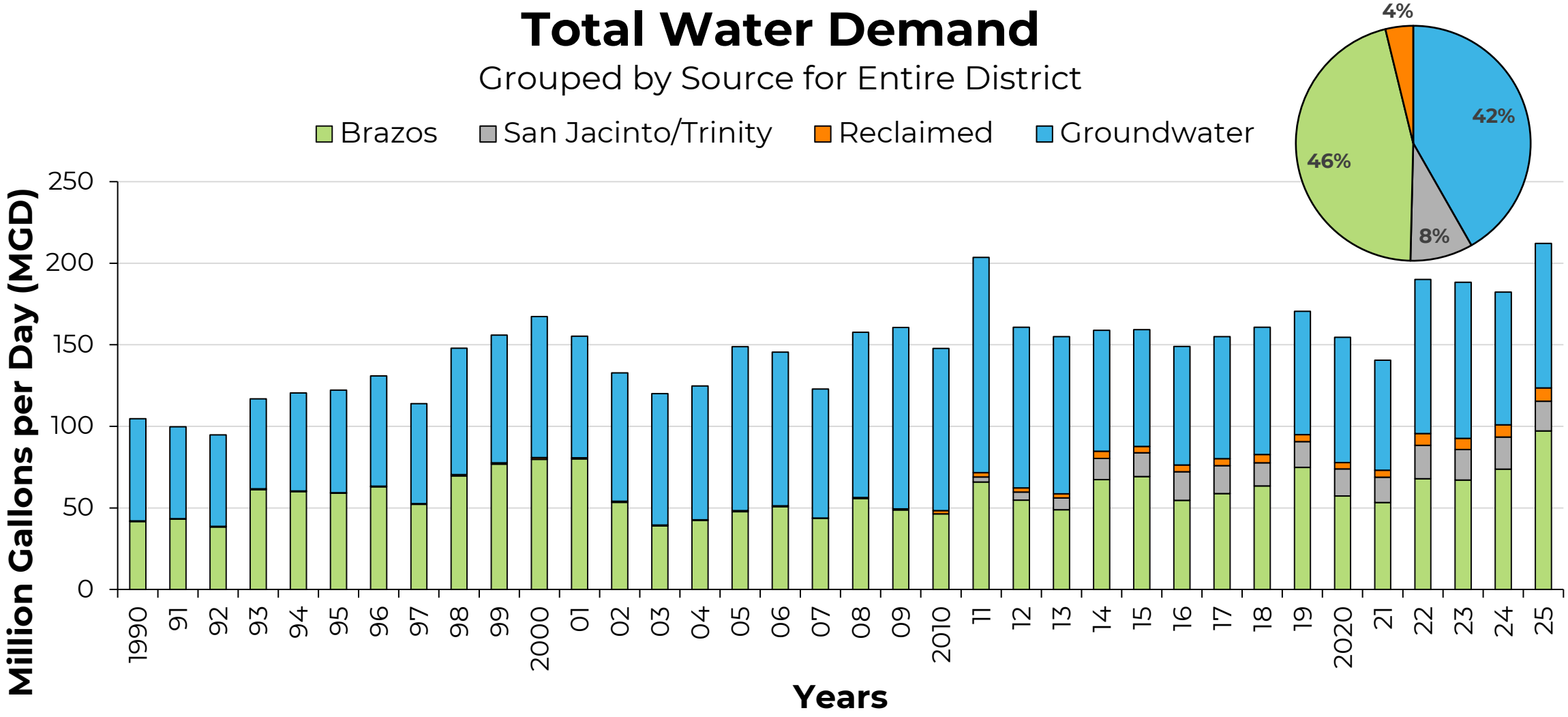
**2025: 123.5 MGD**



# Exhibit 8 Total Water Demand

FORT BEND SUBSIDENCE DISTRICT

**2025: 212.1 MGD**



USGS
science for a changing world

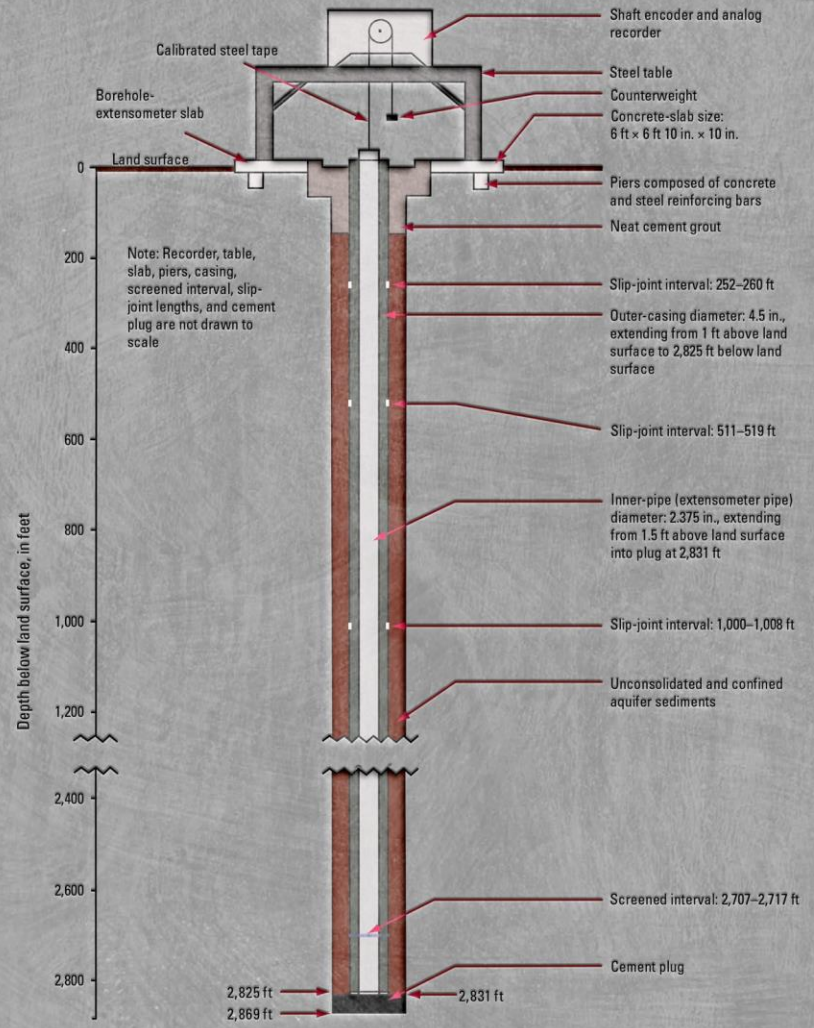



DIAGRAM OF A BOREHOLE EXTENSOMETER

HARRIS-GALVESTON SUBSIDENCE DISTRICT

FORT BEND SUBSIDENCE DISTRICT

# Groundwater-level Altitudes, Long-Term Change & Compaction

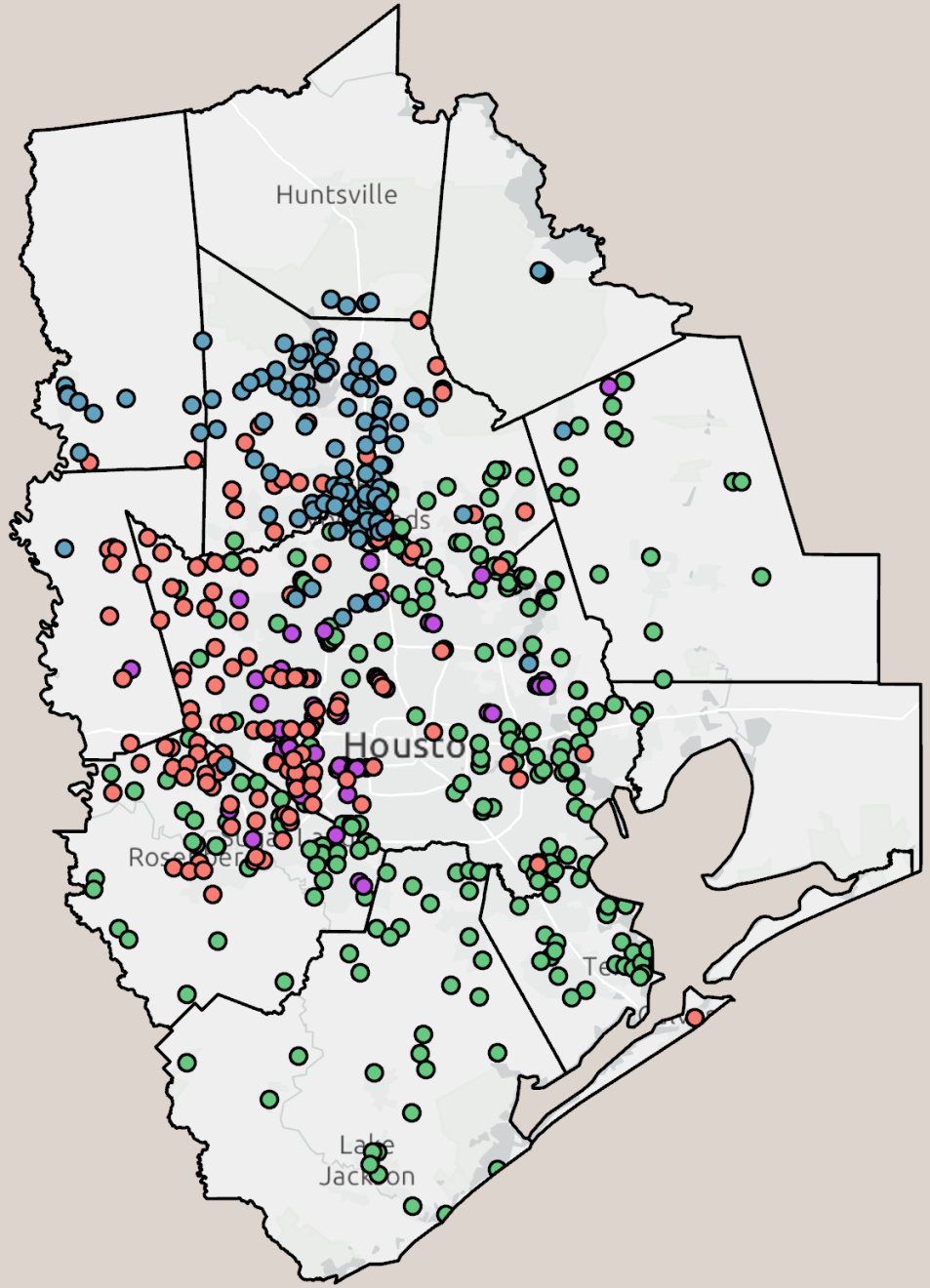
## CHICOT/EVANGELINE AND JASPER AQUIFERS

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

# 2026 Water-Level Map Series

Chicot and Evangeline Aquifers (undifferentiated)
- 2026 Water-Level Altitude
- 2025 to 2026 Water-Level Change
- 2021 to 2026 Water-Level Change
- 1990 to 2026 Water-Level Change

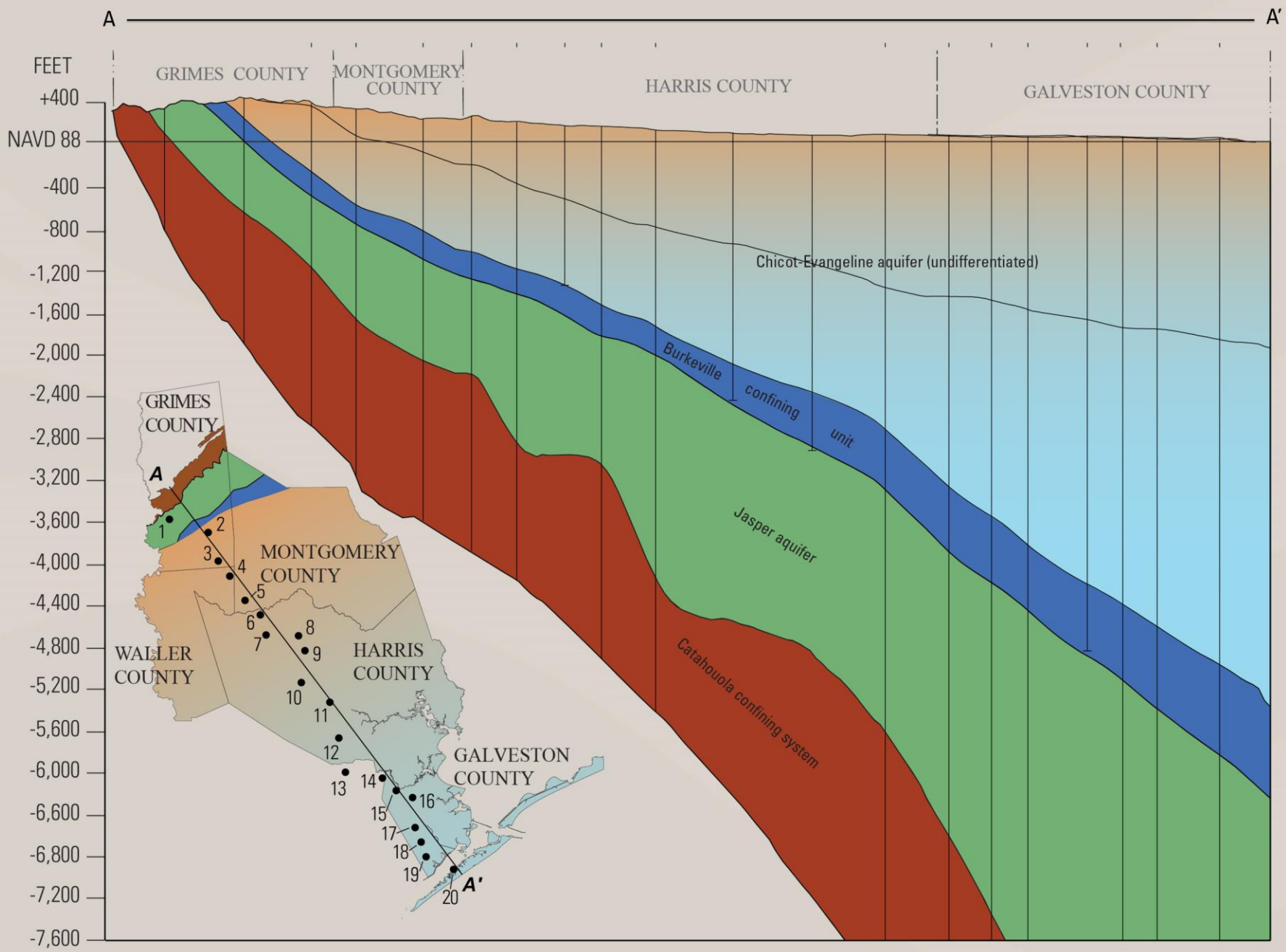
Compaction 1973 to 2025
- Compaction Data from 13 Extensometers



# Geology and Hydrology

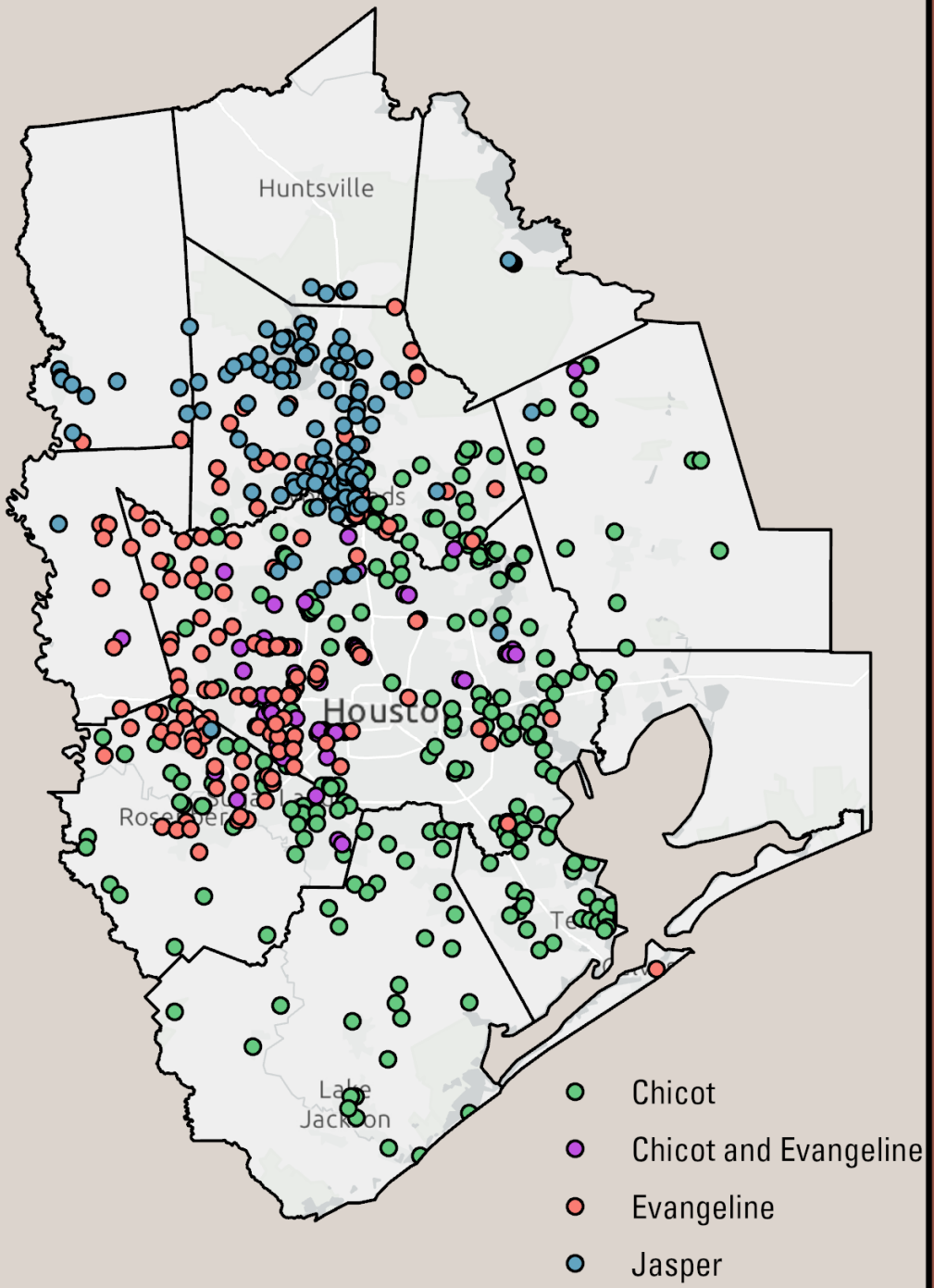
| Geologic timescale | | Geologic unit[1] | | Hydrogeologic unit[1] |
|---|---|---|---|---|
| System | Series | | | |
| Quaternary | Holocene | Alluvium | | Chicot and Evangeline aquifers (undifferentiated) |
| | Pleistocene | Beaumont Formation | | |
| | | Lissie Formation | Montgomery Formation | |
| | | | Bentley Formation | |
| | | Willis Sand | | |
| Tertiary | Pliocene | Goliad Sand (upper part) | | |
| | | Goliad Sand (lower part) | | |
| | Miocene | Lagarto Clay (upper part) | | |
| | | Lagarto Clay (middle part) | | Burkeville confining unit |
| | | Lagarto Clay (lower part) | | Jasper aquifer |
| | | Oakville Sandstone | | |
| | Oligocene | Frio Formation | | Catahoula confining unit |
| | | Vicksburg Formation | | |
| Lower Oligocene- and pre-Oligocene sediments | | | | |

[1]Modified from Young and others (2012, 2014) and Young and Draper (2020).



# Well Network

- Data collected across 11 counties
- Data collection:
  - early December to early March
- Well types:
  - Public Supply, Irrigation, Industrial, Observation
- Number of wells measured
  - 530 - Chicot and Evangeline (undifferentiated)
  - 106 - Jasper
- Number of measurements used to create the altitude maps
  - 502 - Chicot and Evangeline (undifferentiated)
  - 106 - Jasper
- Data were estimated for:
  - 43 wells in the Chicot and Evangeline (undifferentiated)
  - 19 wells in the Jasper



# Water-Level Altitude

## Chicot and Evangeline (undifferentiated)

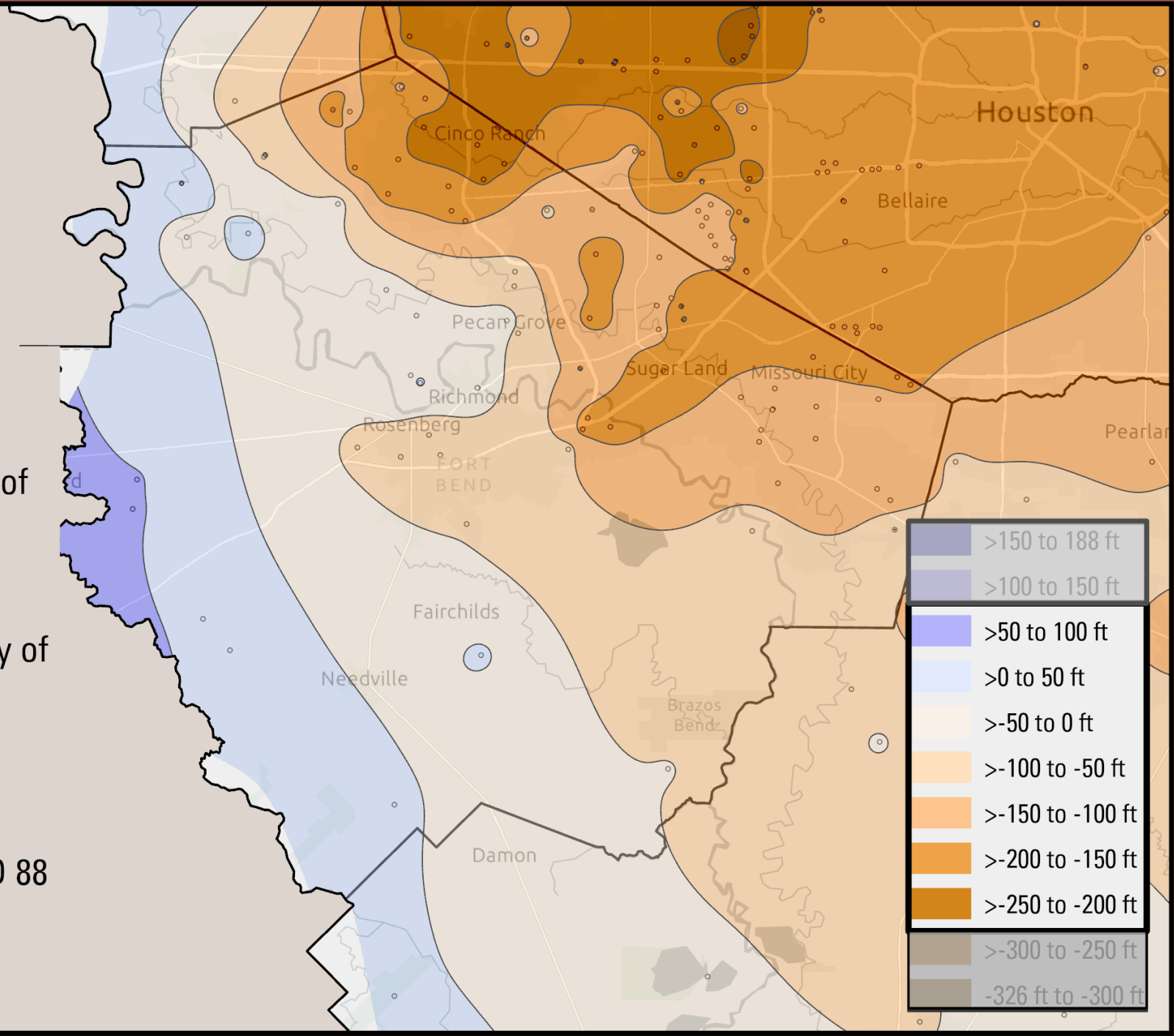
Altitudes are referenced from NAVD 88

Lowest altitudes are in the northern portions of Fort Bend County

Highest altitudes are at the western boundary of the study area

Range of altitudes:

-250 ft below NAVD 88 to 100 ft above NAVD 88

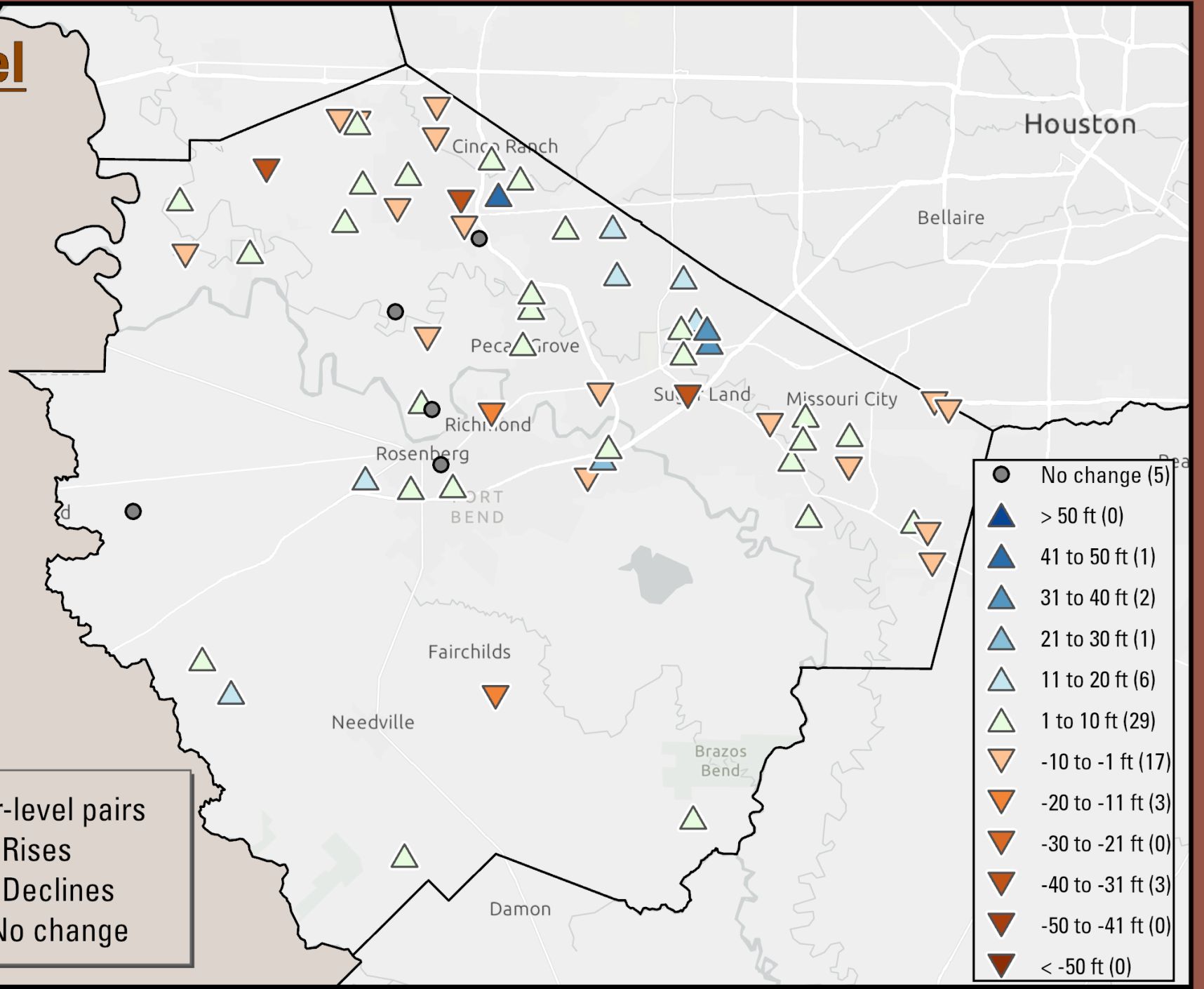


# 2025 to 2026 Water-Level Change - Chicot and Evangeline (undifferentiated)

Most of the rises and declines were in the range of 1 to 10 ft.

The largest declines (> 30 ft) were in northern and east-central Fort Bend County

The largest rise (>40 ft) was in northern Fort Bend County




67 water-level pairs

- 58% Rises
- 34% Declines
- 7% No change

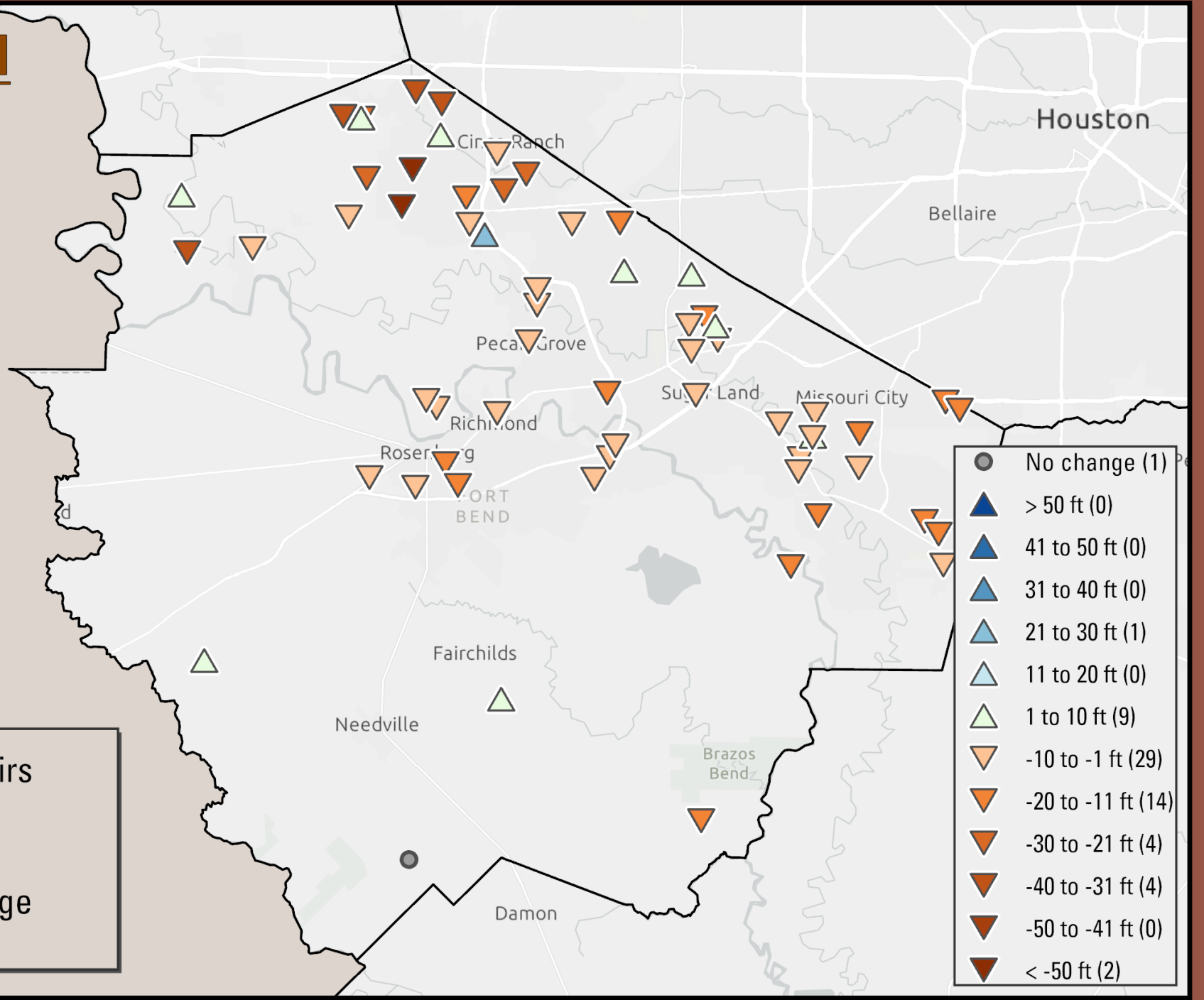
# 2021 to 2026 Water-Level Change - Chicot and Evangeline (undifferentiated)

Predominantly declines across the entire study area for the period

The largest declines were concentrated in the northern portions of Fort Bend county

Rises were limited with most of them being in the 1 to 10 ft range and one in northern Fort Bend of 21 ft.

64 water-level pairs
- 16% Rises
- 83% Declines
- <2% No change



# Long Term Change 1990 to 2026

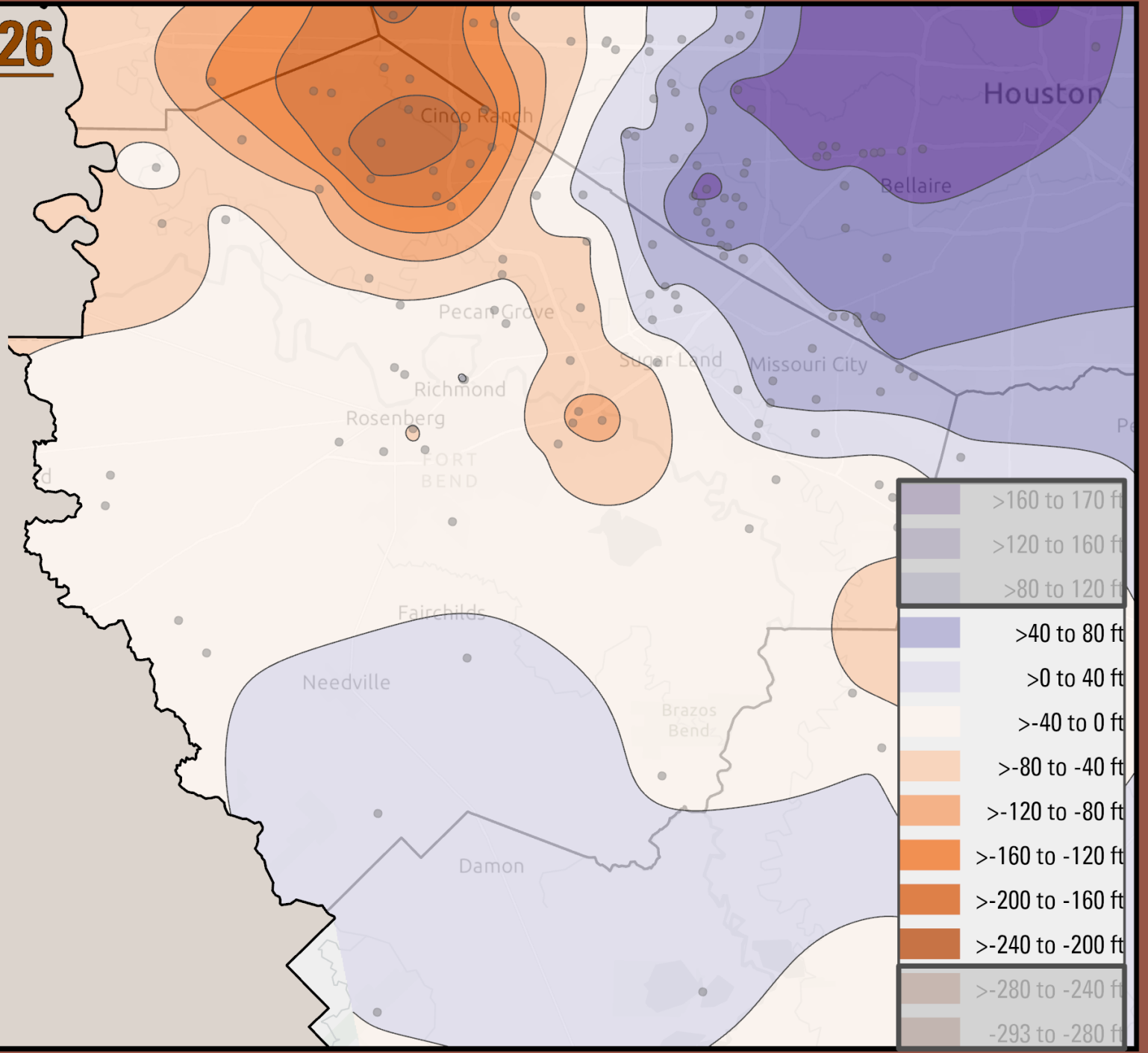
## Chicot and Evangeline (undifferentiated)

Water-level rises:

- Eastern portion of Fort Bend County along the border with Harris County
- Southern portion of Fort Bend County

Water-level declines:

- Declines of <40 ft. across central Fort Bend County
- Largest declines in northern Fort Bend County of between 200 and 240 ft.

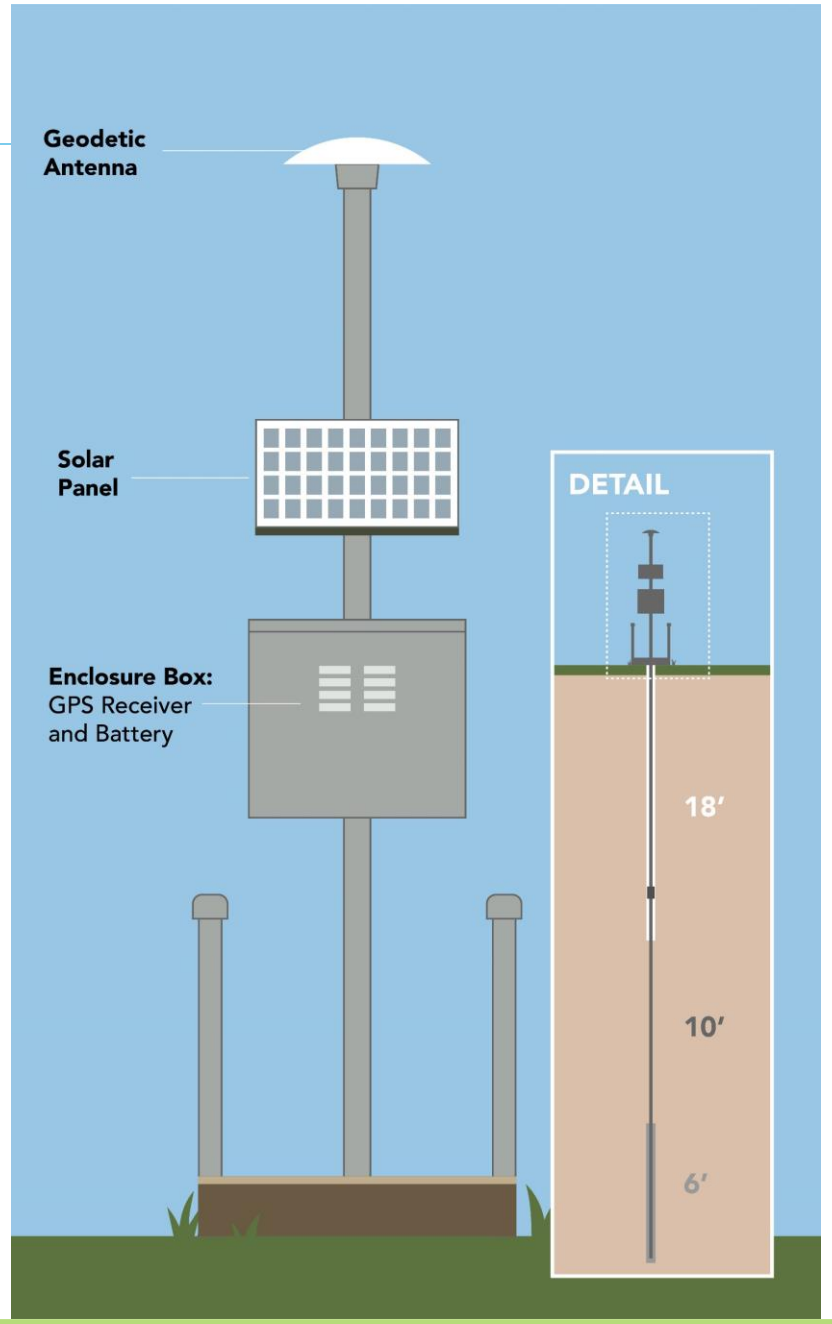


# Table of Contents

# Subsidence Monitoring

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

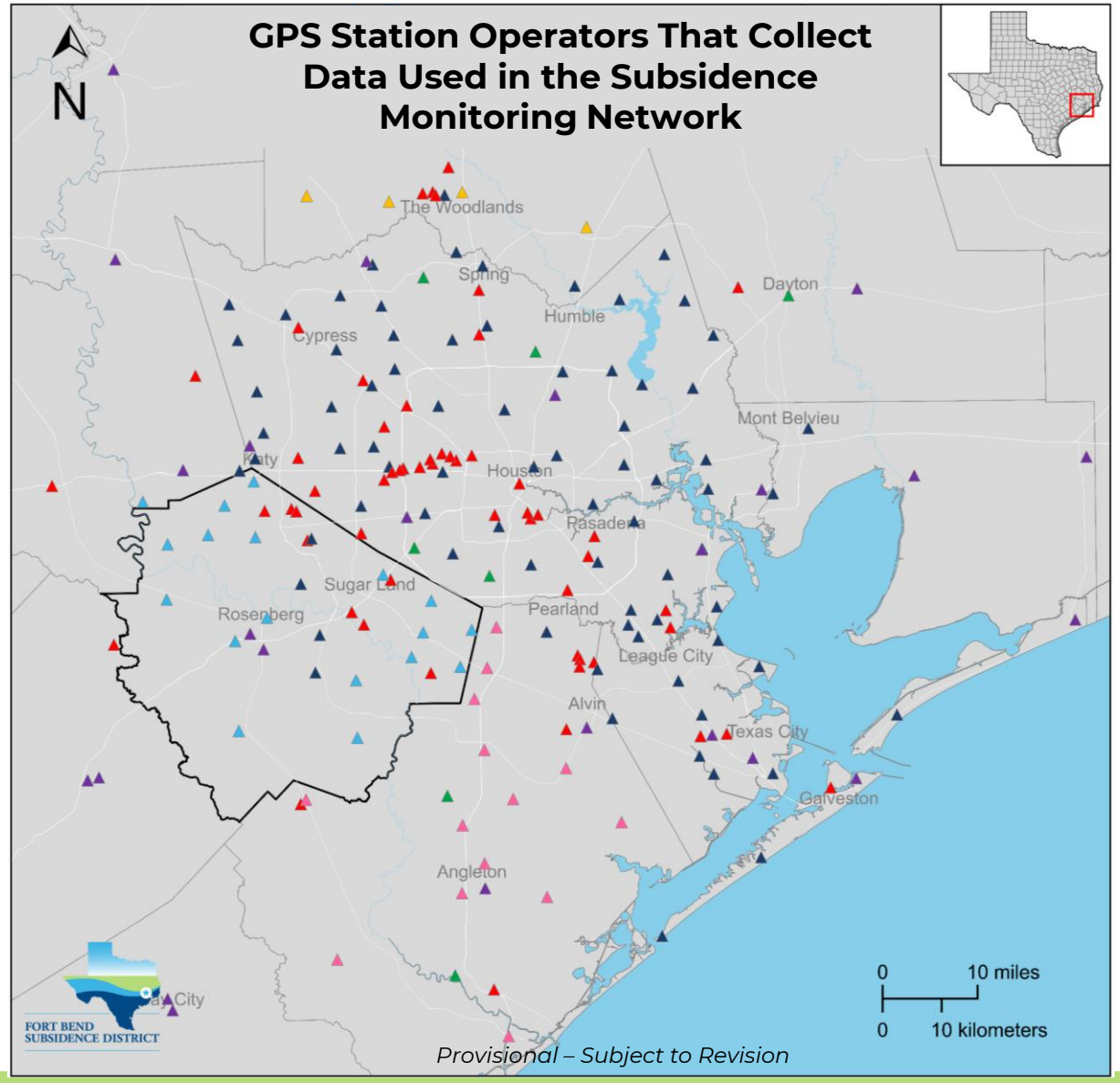
GPS data are collected for one week every two months. A conversion to continuous monitoring (data collection every day of the year) began in 2023 and will continue through 2027.




FORT BEND SUBSIDENCE DISTRICT

# **Exhibit 9** Subsidence Monitoring Network

Location and operator of GPS stations that monitor land surface deformation periodically or continuously within southeast Texas in 2025.



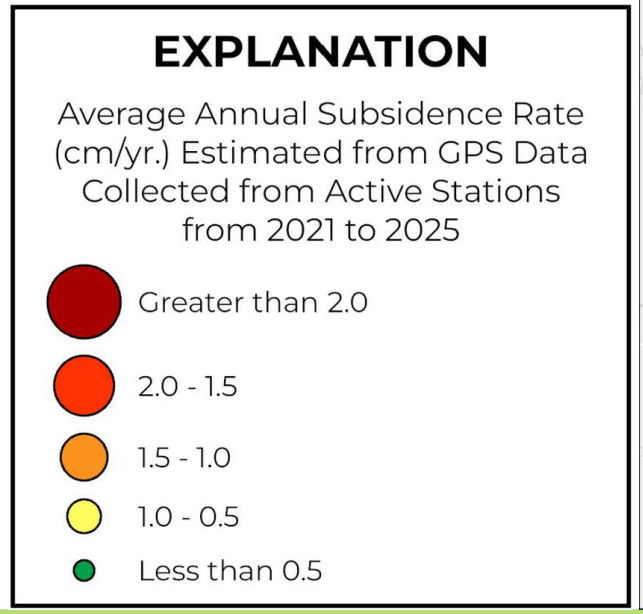

**EXPLANATION**

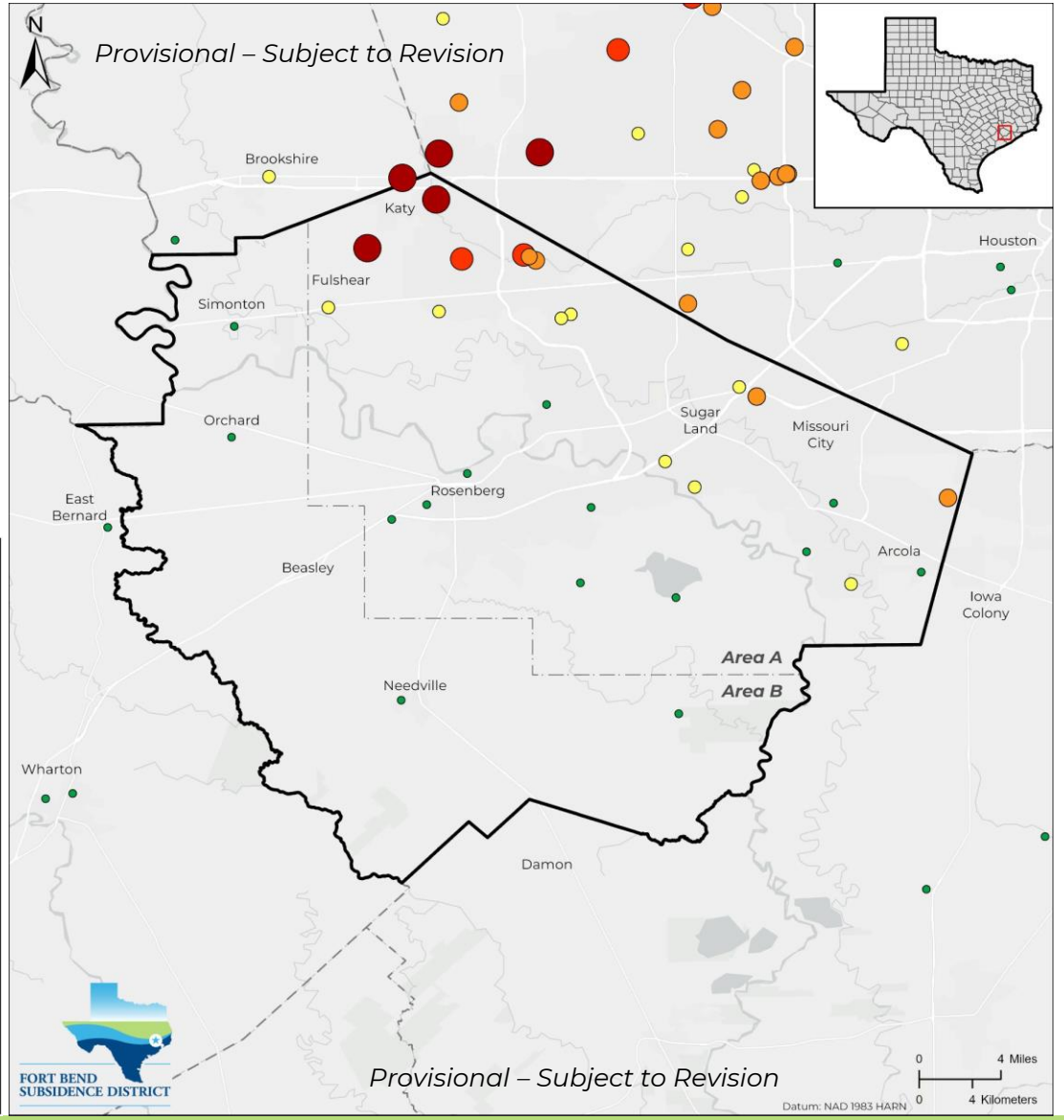
- FBSD Jurisdiction
- Harris-Galveston Subsidence District
- Fort Bend Subsidence District
- University of Houston
- Texas Department of Transportation
- Brazoria County Groundwater Conservation District
- Lone Star Groundwater Conservation District
- Other Operators

# **Exhibit 10** Subsidence Rates in Fort Bend

FORT BEND SUBSIDENCE DISTRICT

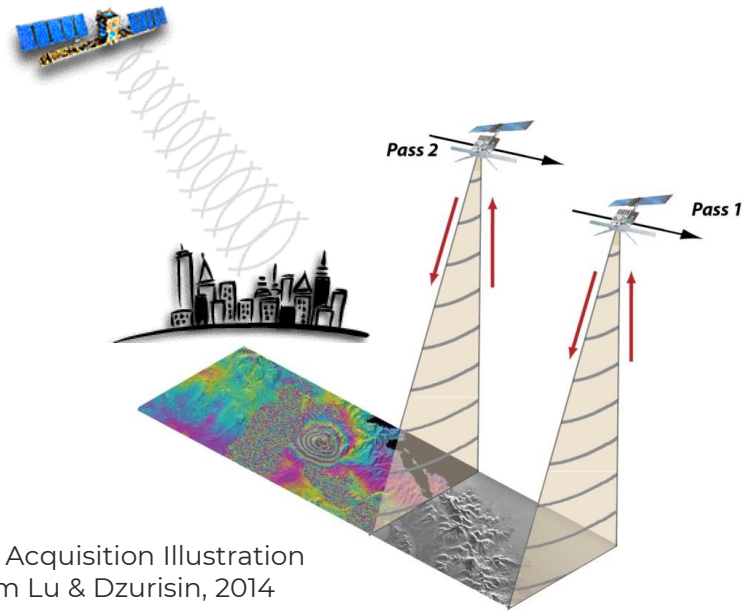
Annual subsidence rate, in centimeters per year (cm/yr.), estimated from GPS data collected at active stations with three or more years of data averaged from 2021 to 2025.



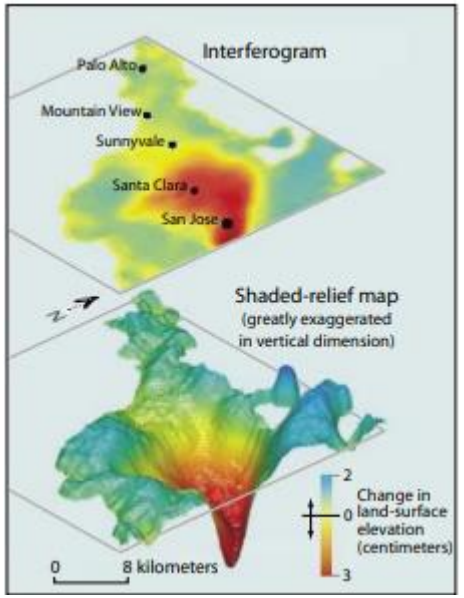
# Interferometric Synthetic Aperture Radar (InSAR)

- Synthetic aperture radar (SAR) data are generated by transmitting radio waves from the sensor to the ground and back to the sensor.
- InSAR compares two SAR images of the same area at different times to detect small changes in distances between them. This processed pair of SAR images is the interferogram.
- Processing techniques can be used to achieve an accuracy of millimeters.




InSAR Acquisition Illustration
from Lu & Dzurisin, 2014

Processing

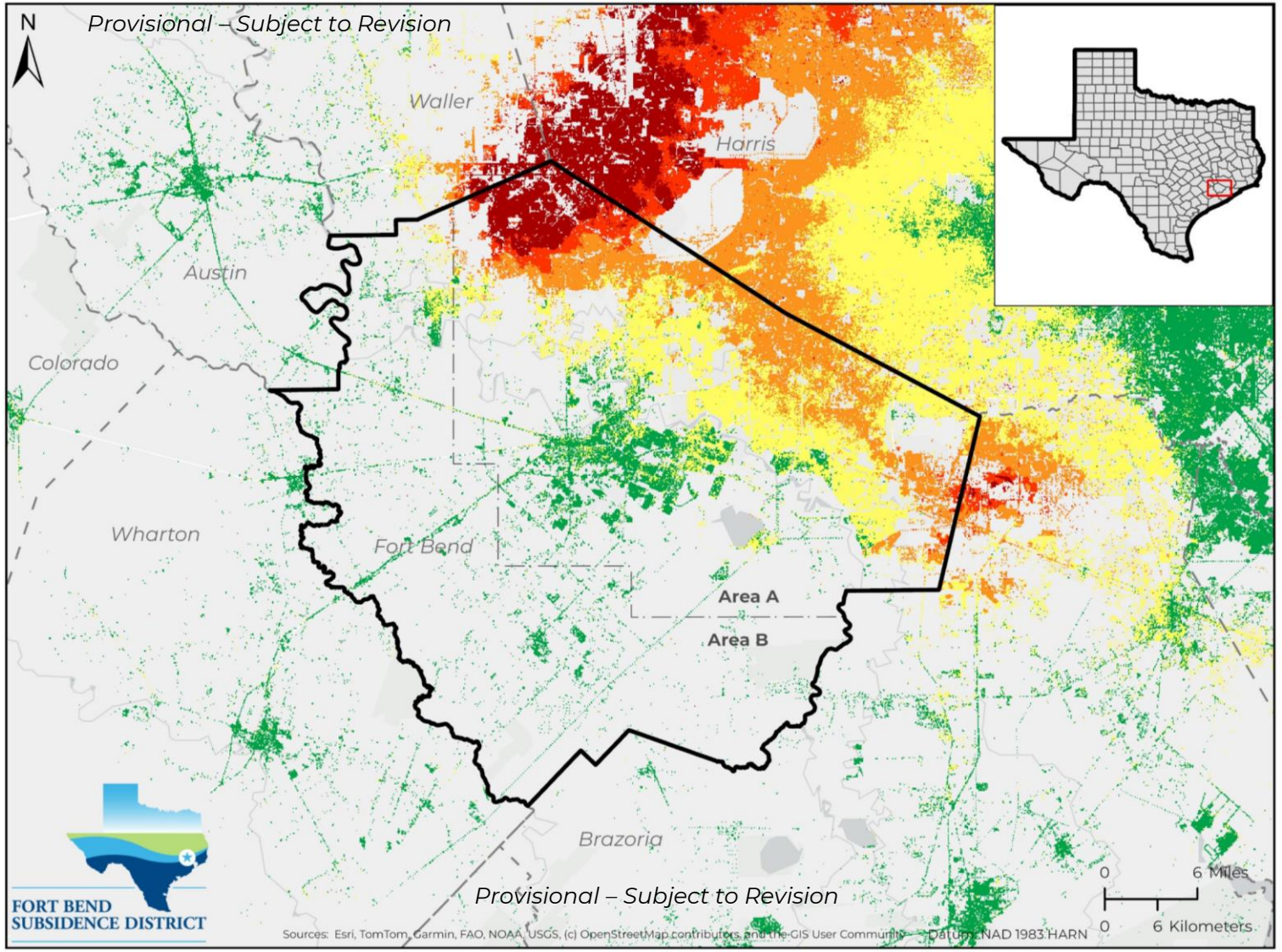



Interferogram (top) and
3-D topography (bottom)
from USGS Fact Sheet 2005-3025

# Exhibit 11 Subsidence Rates from InSAR

FORT BEND SUBSIDENCE DISTRICT

Annual subsidence rate, in centimeters per year (cm/yr.), estimated from Sentinel 1A derived time-series interferograms averaged from 2021 to 2025.




**EXPLANATION**

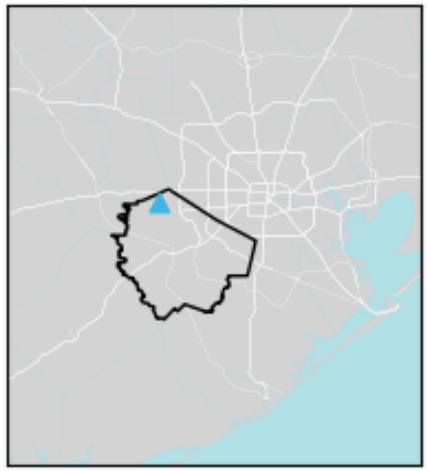
Sentinel-1 Derived Average Annual Subsidence Rate (cm/yr.) Processed from 2021 to 2025

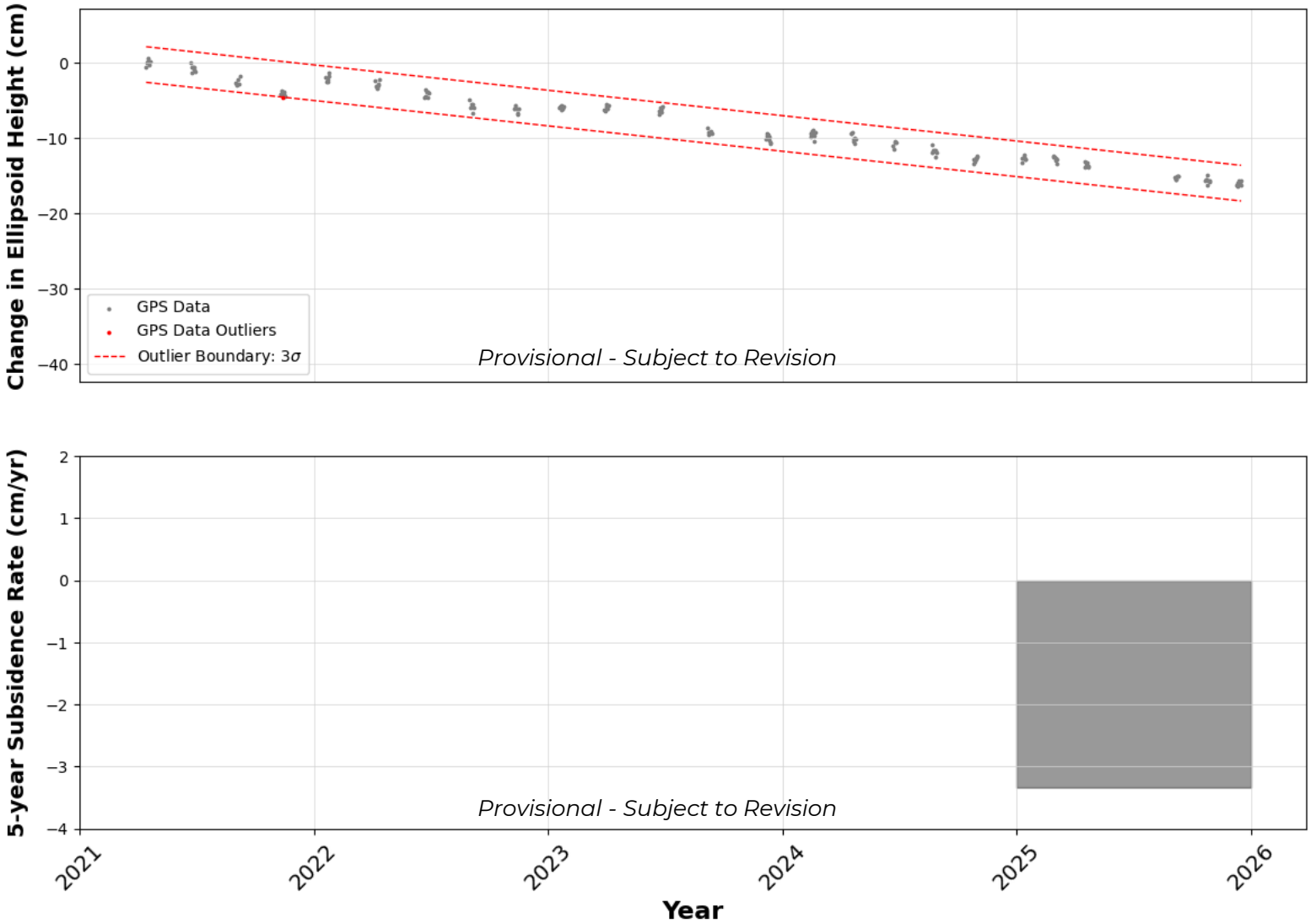
- Greater than 2.0
- 2.0 - 1.5
- 1.5 - 1.0
- 1.0 - 0.5
- Less than 0.5

Gray areas show no data as the accuracy of InSAR decreases in rural areas due to tropospheric errors and decorrelation in vegetated areas.

# **Exhibit 12** Subsidence Data in Katy/Fulshear

- GPS station **P111**, located in Katy, has measured a total of approximately 15.3 cm of subsidence since 2021.
- 2021-2025 average annual subsidence rate is **3.32 cm/yr**.



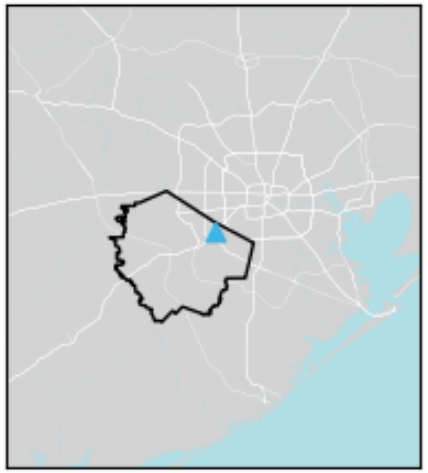


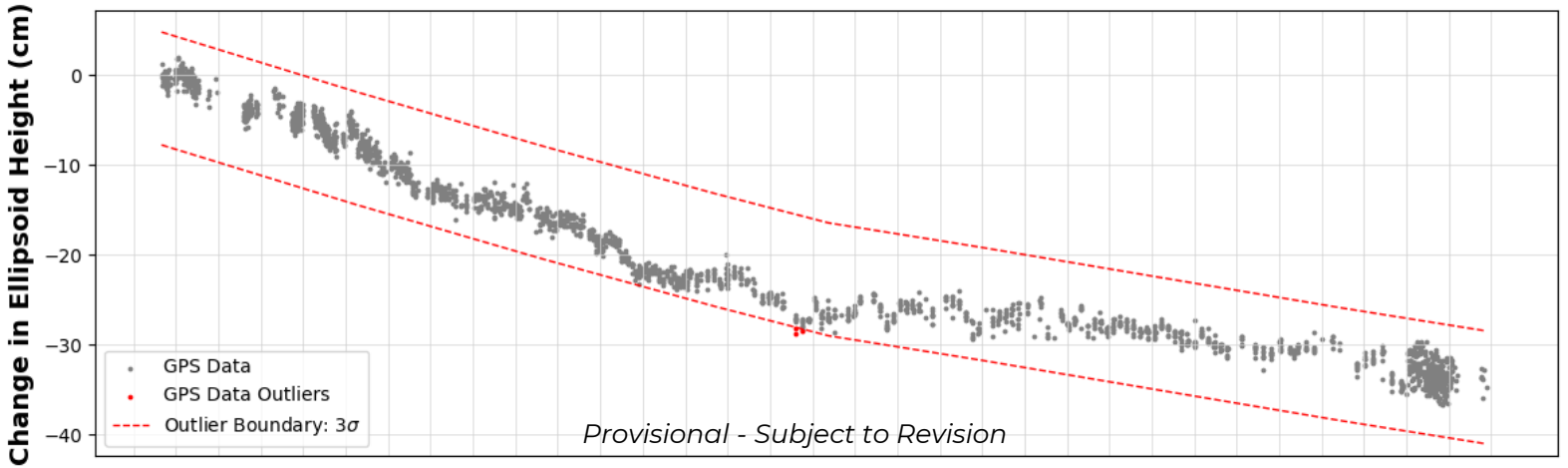

Processed GPS data (source: UH) over period of record. Processed GPS data (gray circles) located inside the outlier boundary (red dashed lines) are used when calculating subsidence rates. Processed GPS data identified as outliers (red circles) are not considered by the District when calculating subsidence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

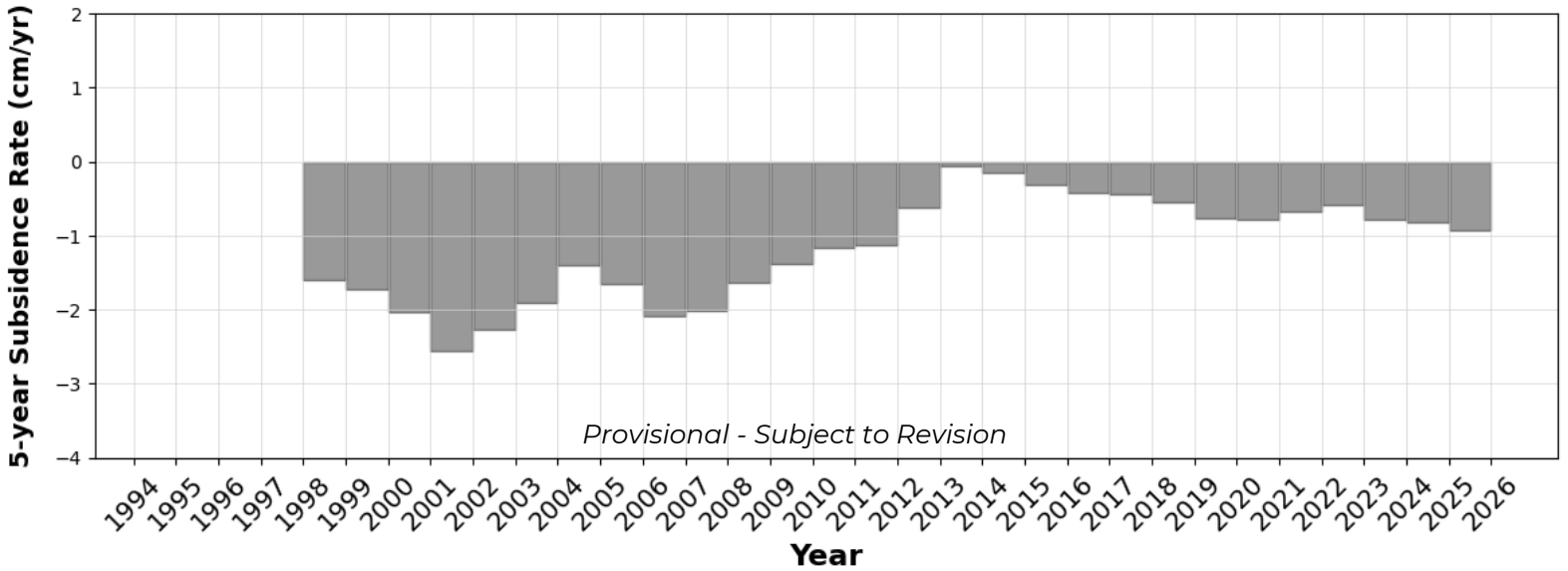
# **Exhibit 13** Subsidence Data in Sugar Land

FORT BEND SUBSIDENCE DISTRICT

- GPS station **P004**, located in Sugar Land, has measured a total of approximately 33.1 cm of subsidence since 1994.
- 2021-2025 average annual subsidence rate is **0.86** cm/yr.





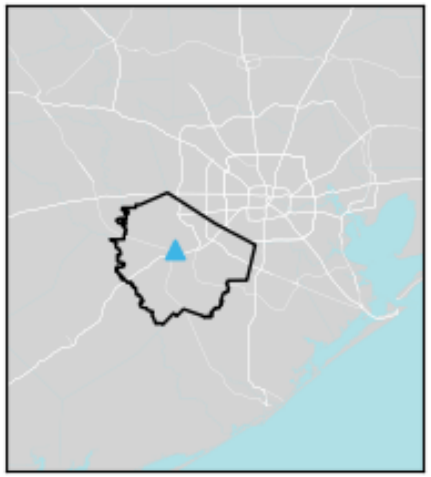




Processed GPS data (source: UH) over period of record. Processed GPS data (gray circles) located inside the outlier boundary (red dashed lines) are used when calculating subsidence rates. Processed GPS data identified as outliers (red circles) are not considered by the District when calculating subsidence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

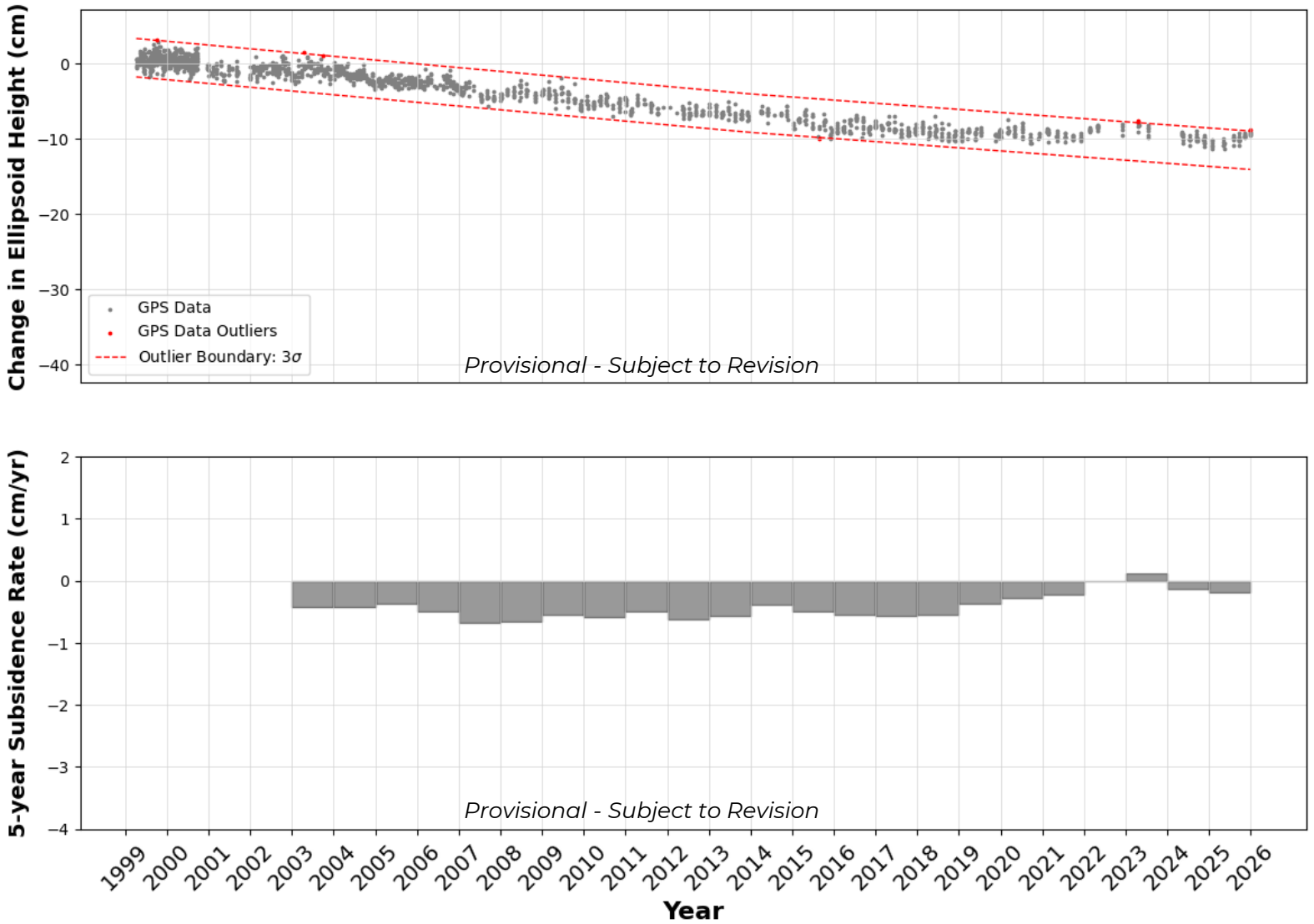
# **Exhibit 14** Subsidence Data in Rosenberg

FORT BEND SUBSIDENCE DISTRICT

- GPS station **P010**, located in Rosenberg, has measured a total of approximately 9.9 cm of subsidence since 1999.
- 2021-2025 average annual subsidence rate is **0.23** 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.



# Testimony and Public Comment

FORT BEND SUBSIDENCE DISTRICT

Any person who wishes to present testimony, evidence, exhibits, or other information may do so in person, by counsel, via email to **fbinfo@subsidence.org**, or any combination of these options.

# Thank You for Attending!

FORT BEND SUBSIDENCE DISTRICT

- The record will be open until **May 8, 2026**. You may provide comments by sending an email to **fbinfo@subsidence.org**
- The 2025 Annual Groundwater Report will be presented for approval to the Fort Bend Subsidence District Board of Directors at their next meeting on **May 27, 2026.**
- Upon Board approval, the 2025 Annual Groundwater Report will be posted on our website, **fbsubsidence.org**, located within the Science & Research section.

Scan the QR code to visit the Annual Groundwater Reports page on our website. →

# Contact Information

301 Jackson St. Ste 639
Richmond, TX 77469

(281)342-3273

fbinfo@subsidence.org

www.fbsubsidence.org

FORT BEND
SUBSIDENCE DISTRICT