Groundwater Reduction Plan Participant Meeting

Wednesday, December 5, 2018

2018 Participant Meeting

- Introductions
- FB Subsidence District Update
- GRP Implementation
  - Integrated Water Resource Plan
- GRP Financial Update
- Questions & Answers

Fort Bend Subsidence District

Robert Thompson
Deputy General Manager

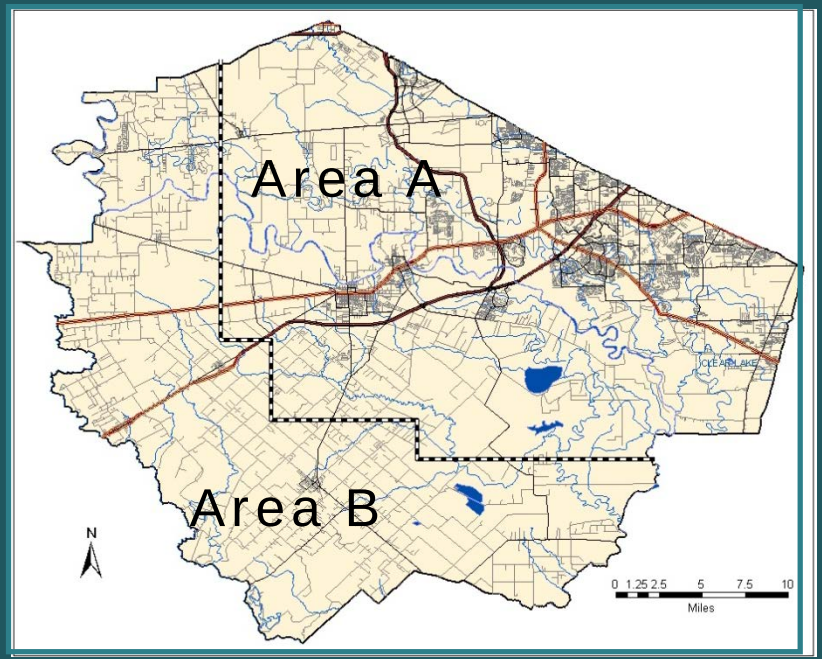
2013 Regulatory Plan
Key Elements

Regulatory Areas & Conversion Requirements

Area A

Reduce GW pumpage by 30%

Reduce GW pumpage by 60% by 2025
Exemptions: Ag. Irrigation, Livestock, and
TWD ≤ 10.0 MGY until alternate water is available



Disincentive Fee currently set in 2013 at $6.50 per 1,000 gallons

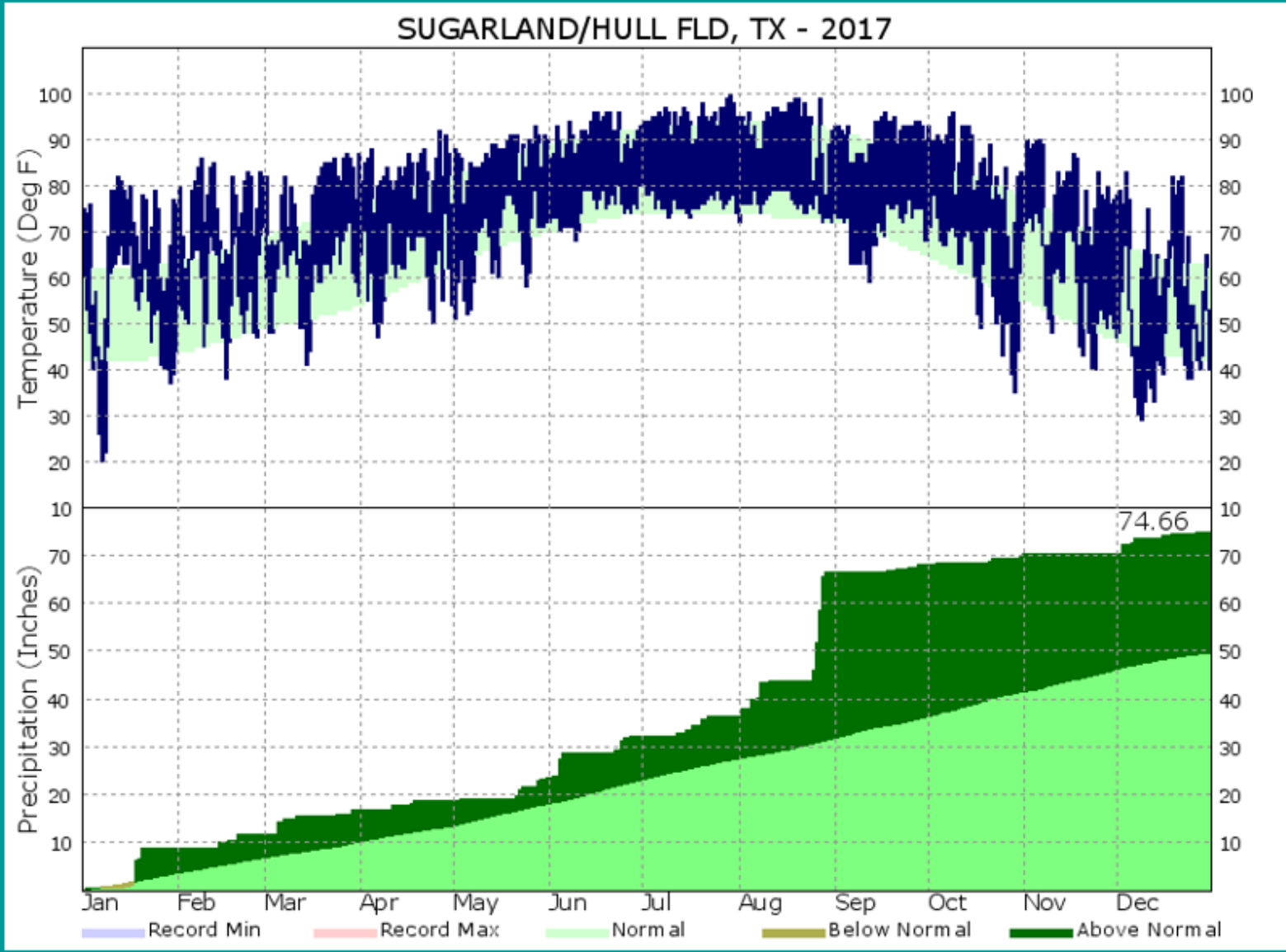
Area B - No scheduled groundwater reductions at this time
FBSD will evaluate need for reduction requirements in the future
Cannot transfer GW to Area A unless use dates back to before Sept. 24, 2003

Important Changes

There have been no changes to the District Plan since it was adopted in 2013.

However, the FBSD Board adopted new Rules on September 28, 2016. There were three significant changes.

1. The one small-well exemption has been removed.
2. New wells for houses and/or irrigation for houses require permits and meters, if other water is available.
3. All wells are now required to be metered except for some wells with an allocation of 1.0 MG or less.

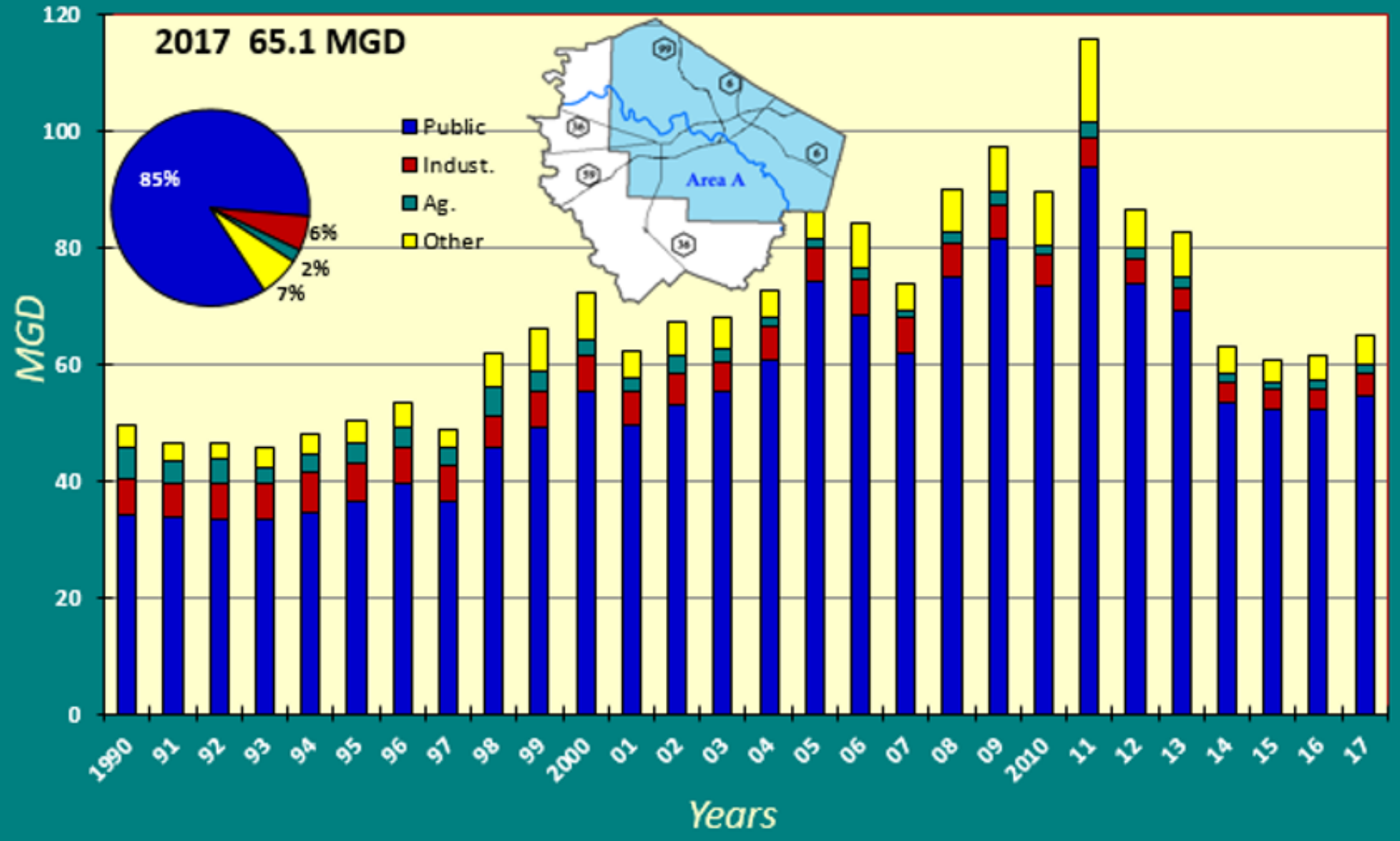


FBSD Exhibit 2

National Oceanic and Atmospheric Administration

Groundwater Withdrawals

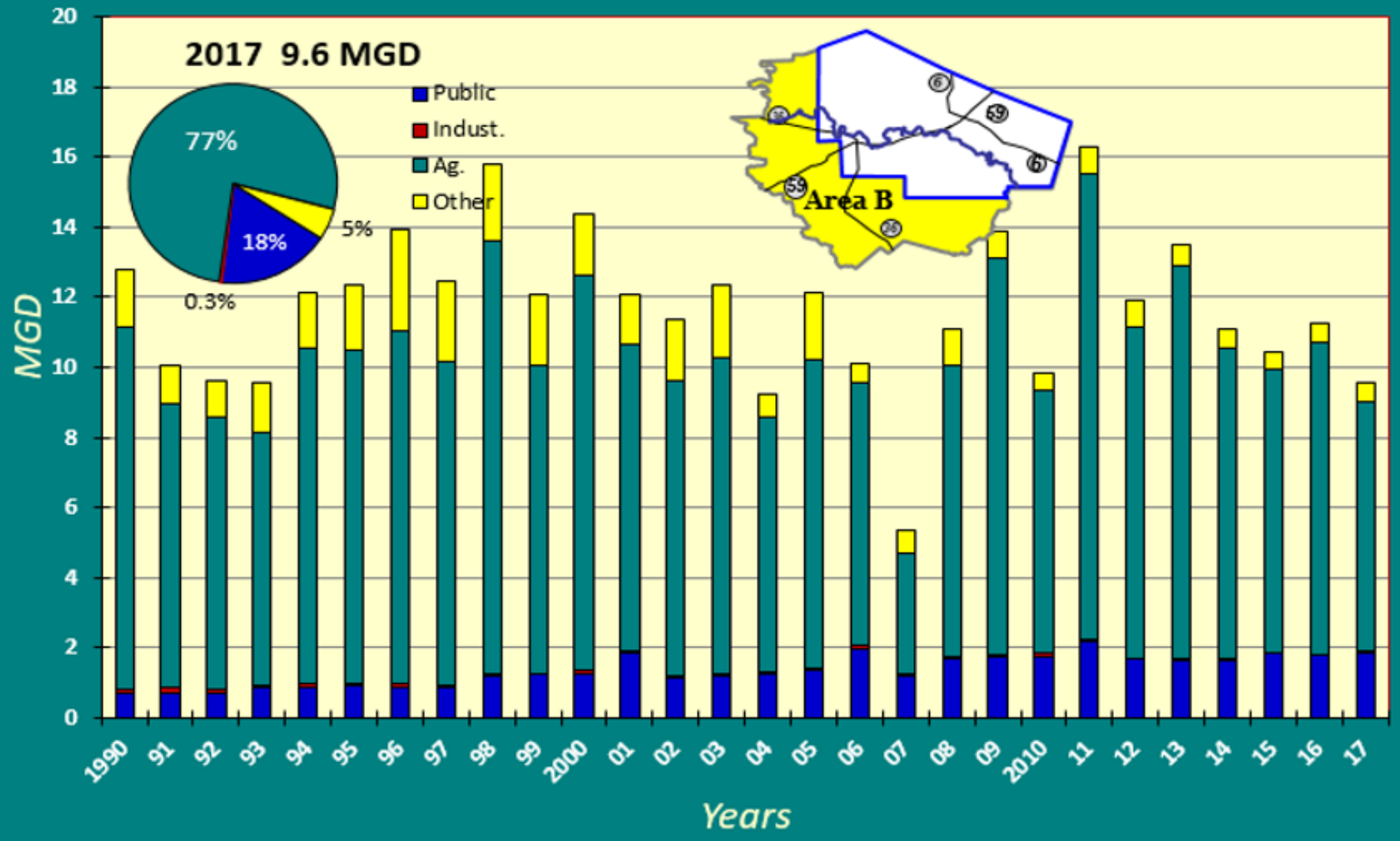
Grouped by Use - Regulatory Area A



FBSD Exhibit 3

Groundwater Withdrawals

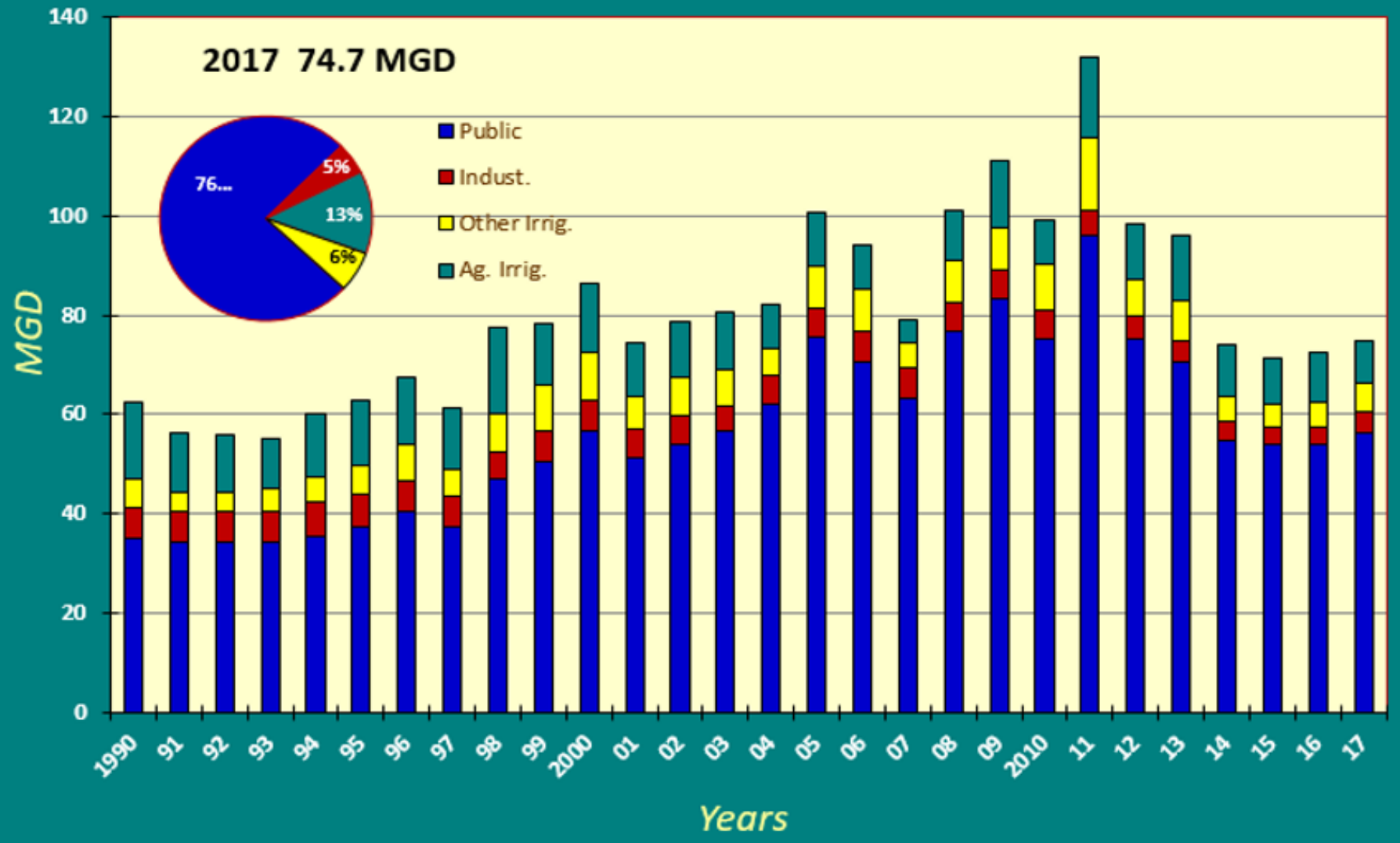
Grouped by Use - Regulatory Area B



FBSD Exhibit 4

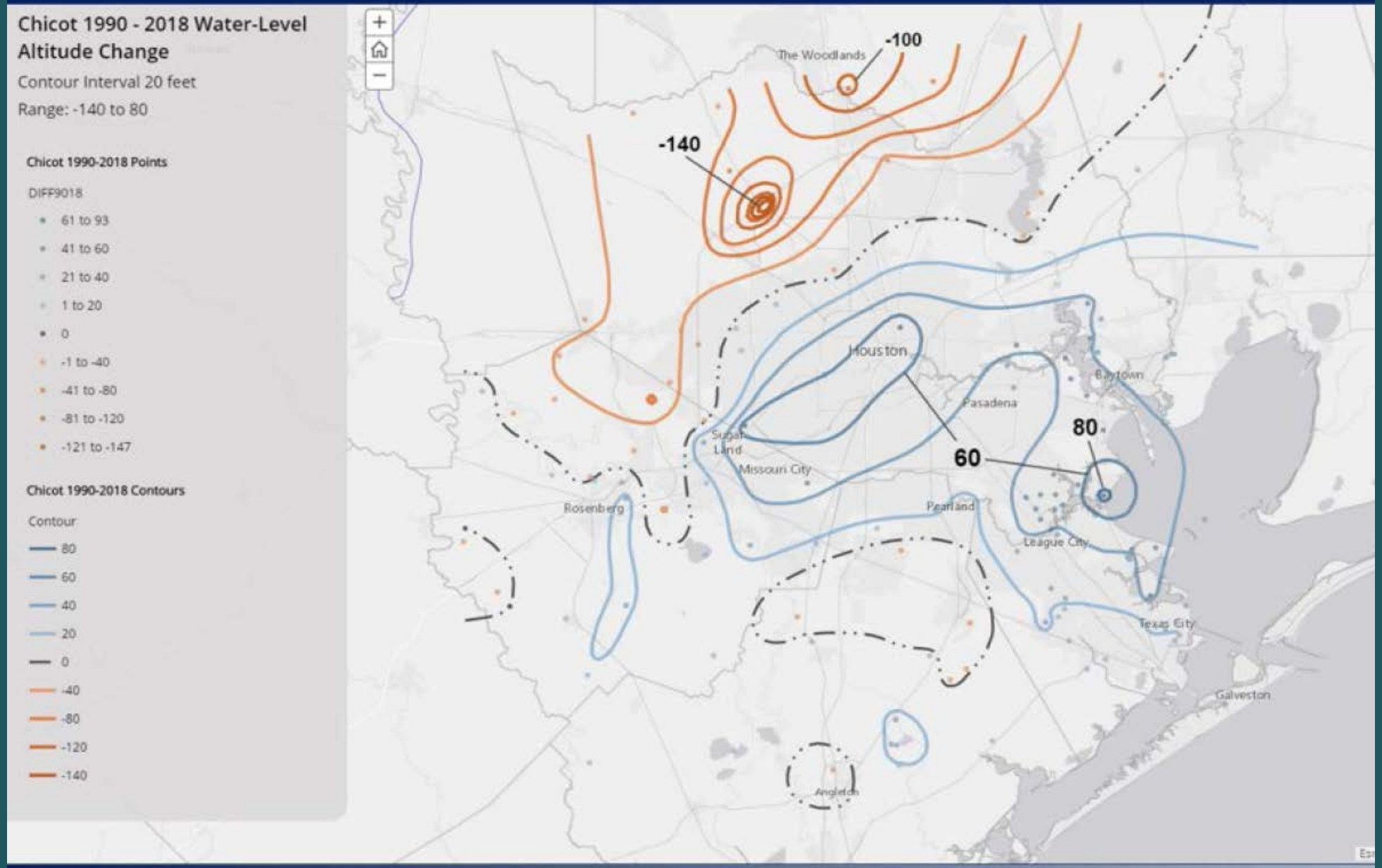
Groundwater Withdrawals

Grouped By Use - Entire District



FBSD Exhibit 5

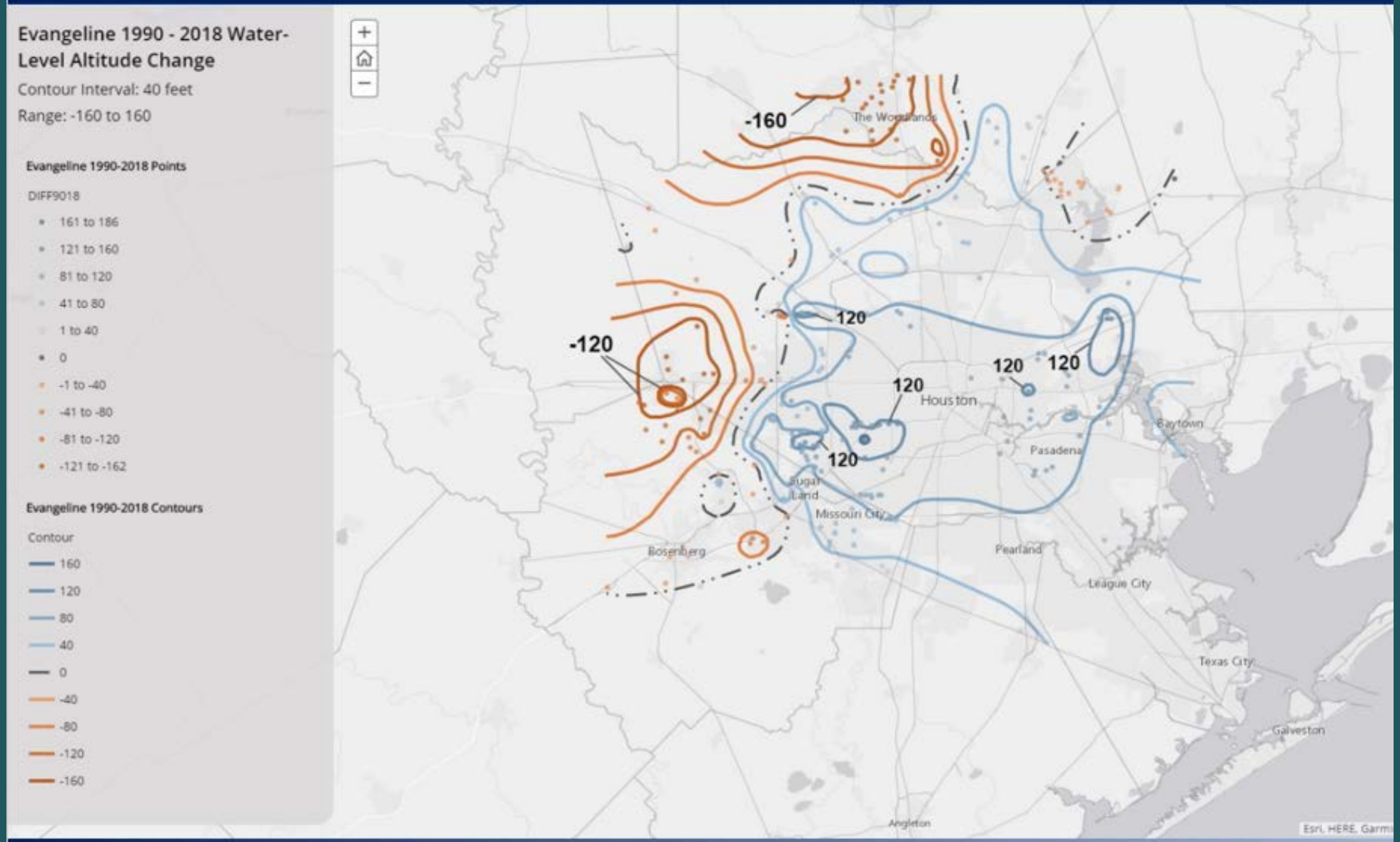
Chicot 1990 to 2018 Water-Level Change



USGS

USGS Exhibit 8

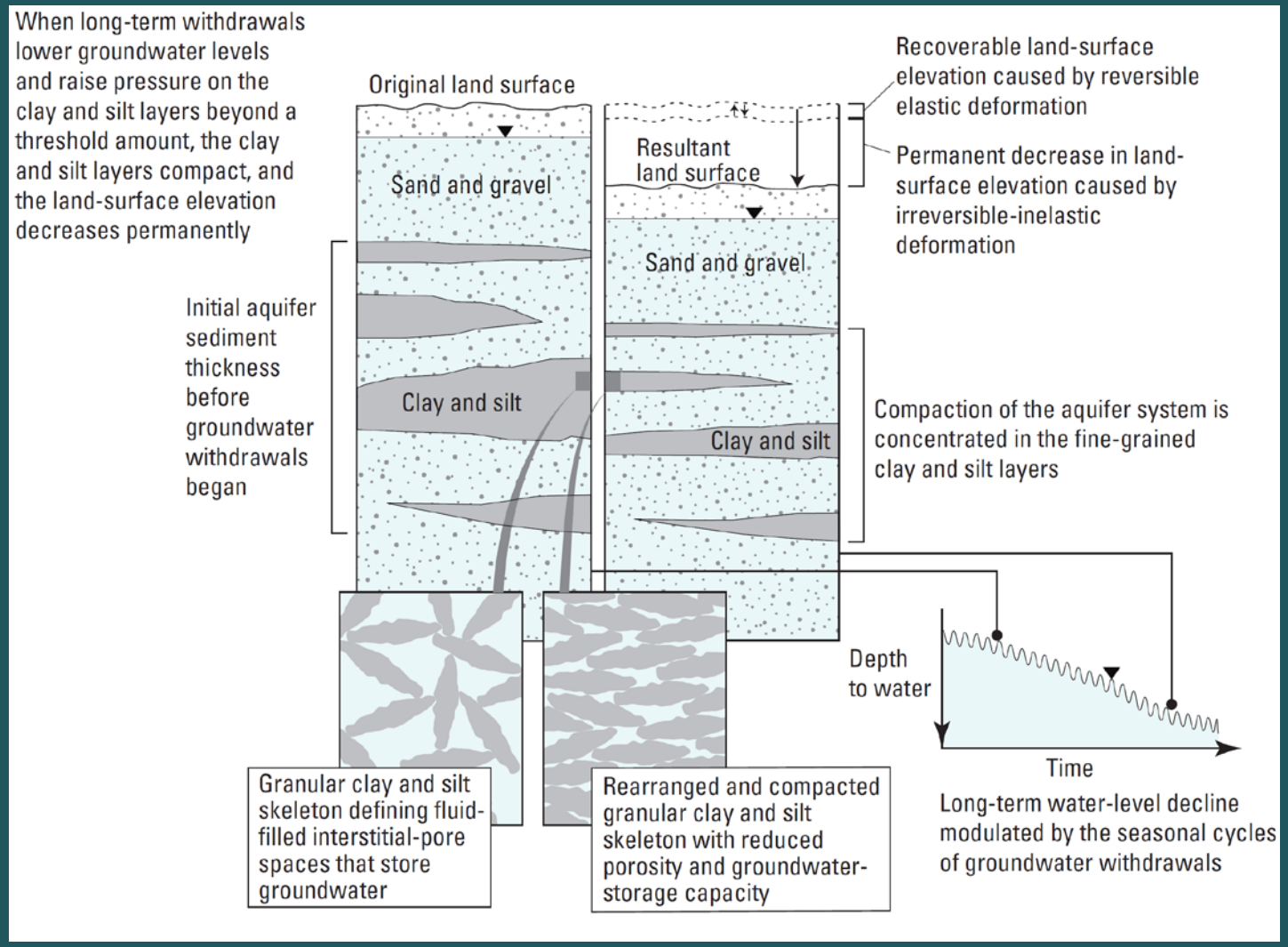
Evangeline 1990 to 2018 Water-Level Change



USGS

USGS Exhibit 12

Compaction Mechanics and Method of Measurement



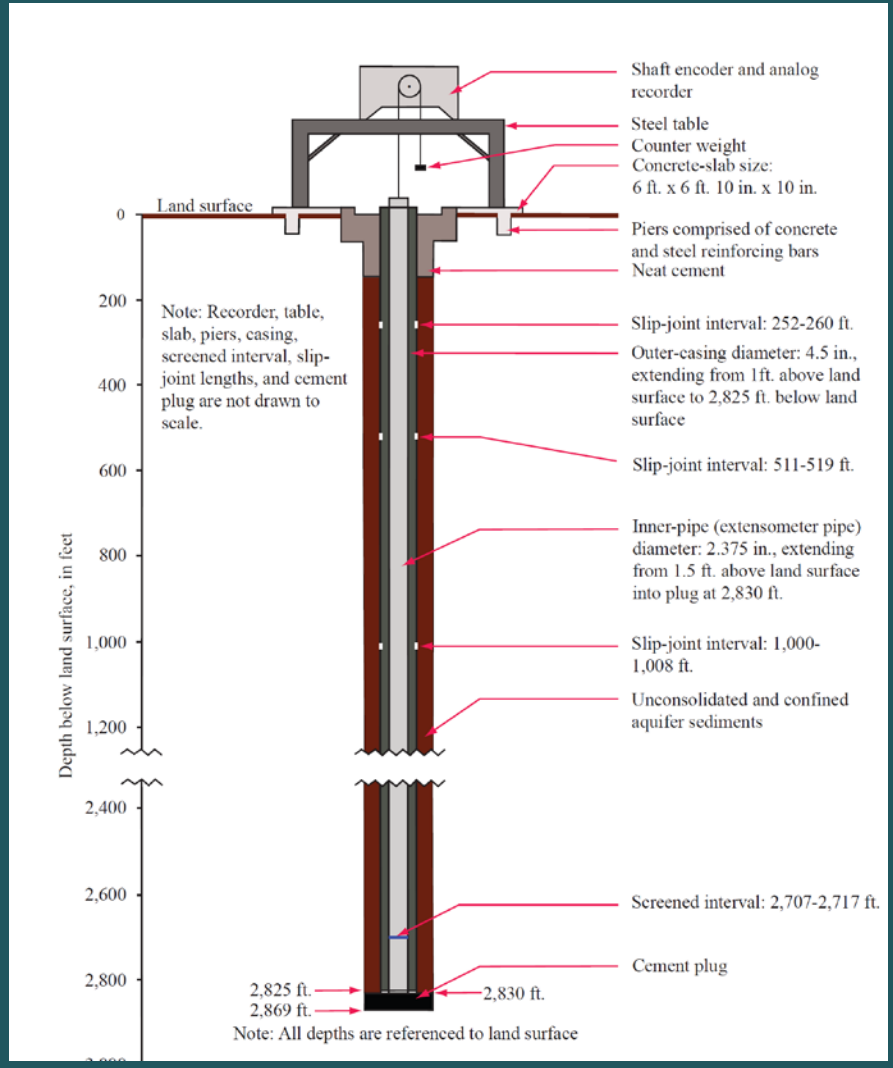
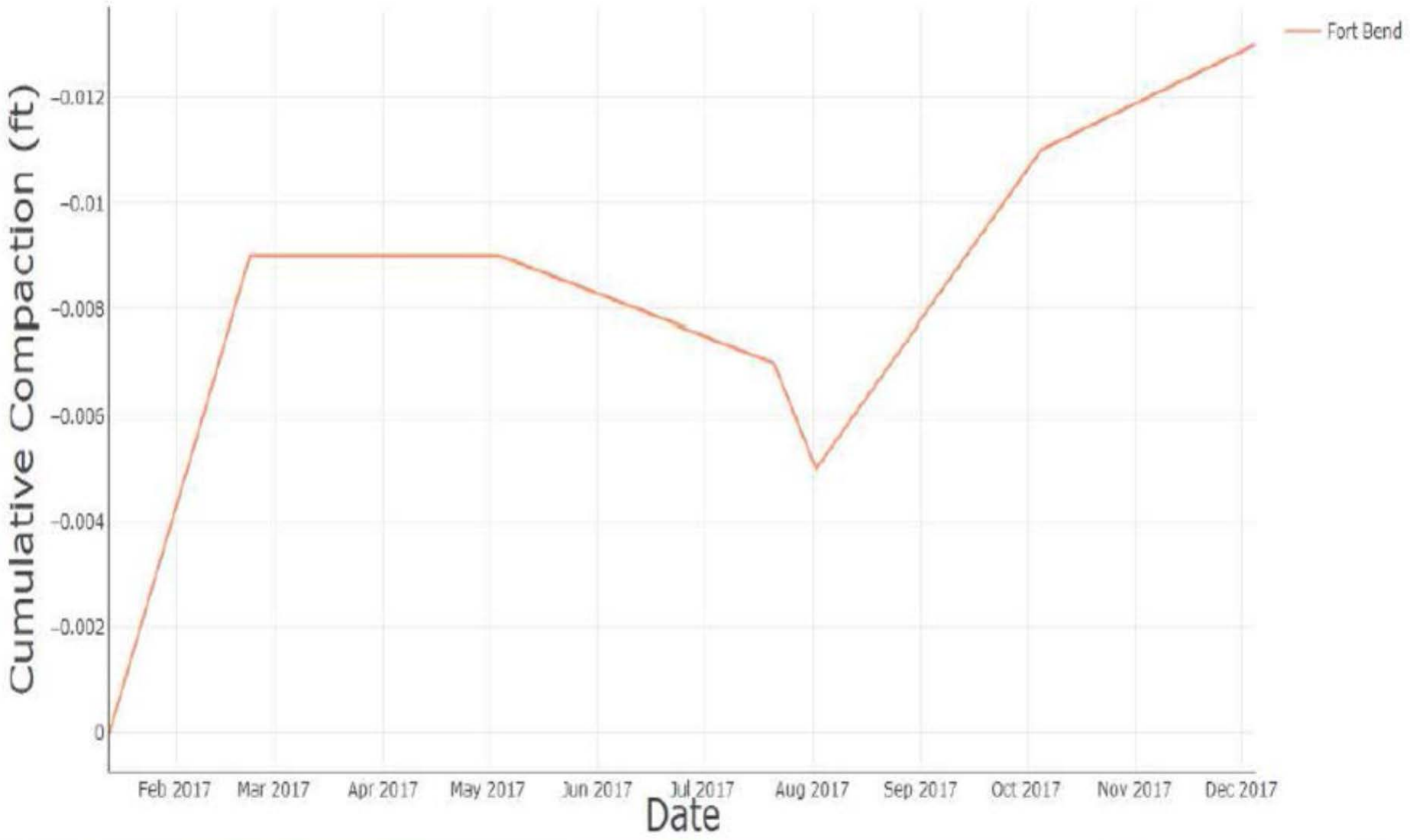
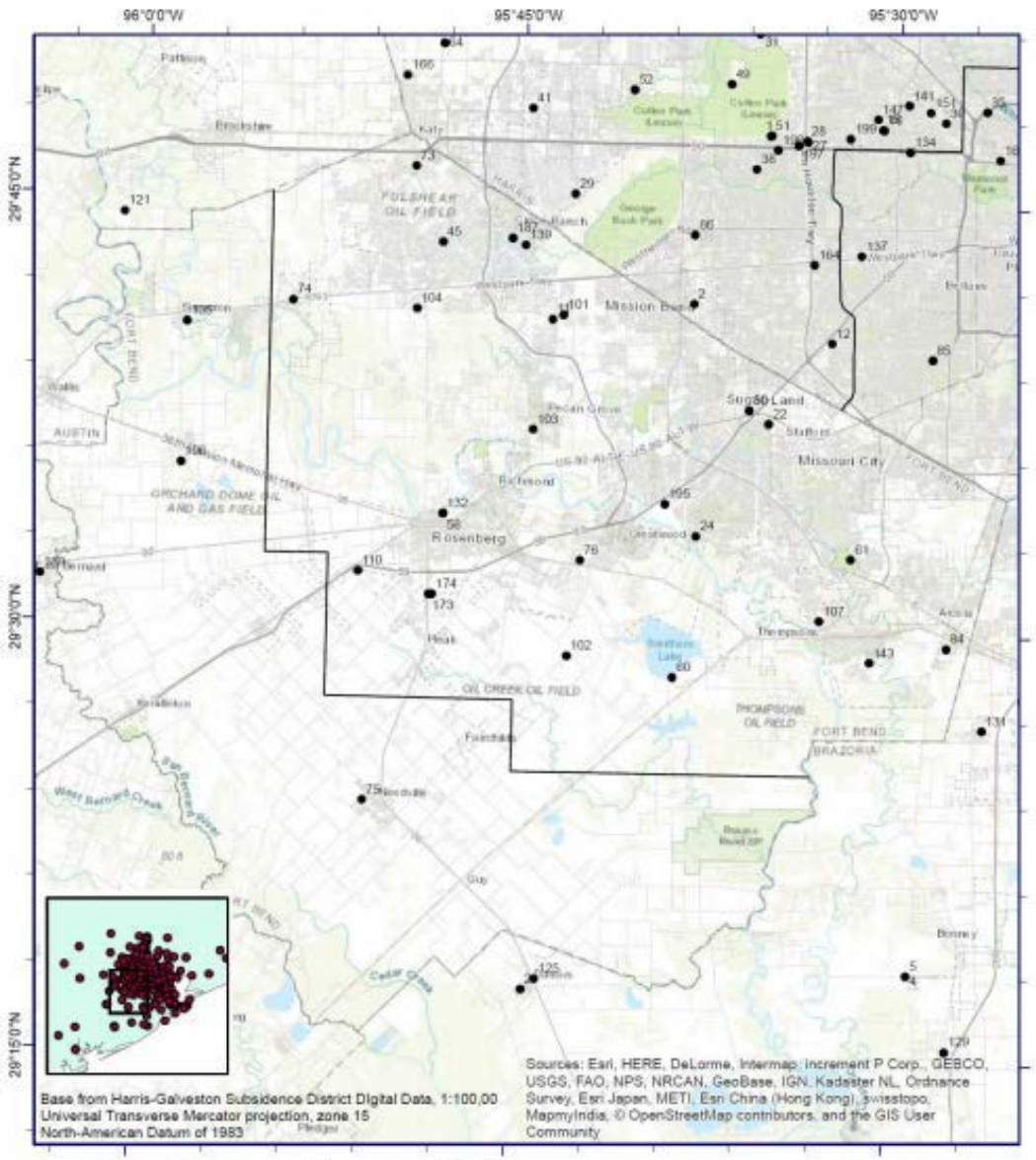


Chart Showing Cumulative Compaction At Cinco MUD

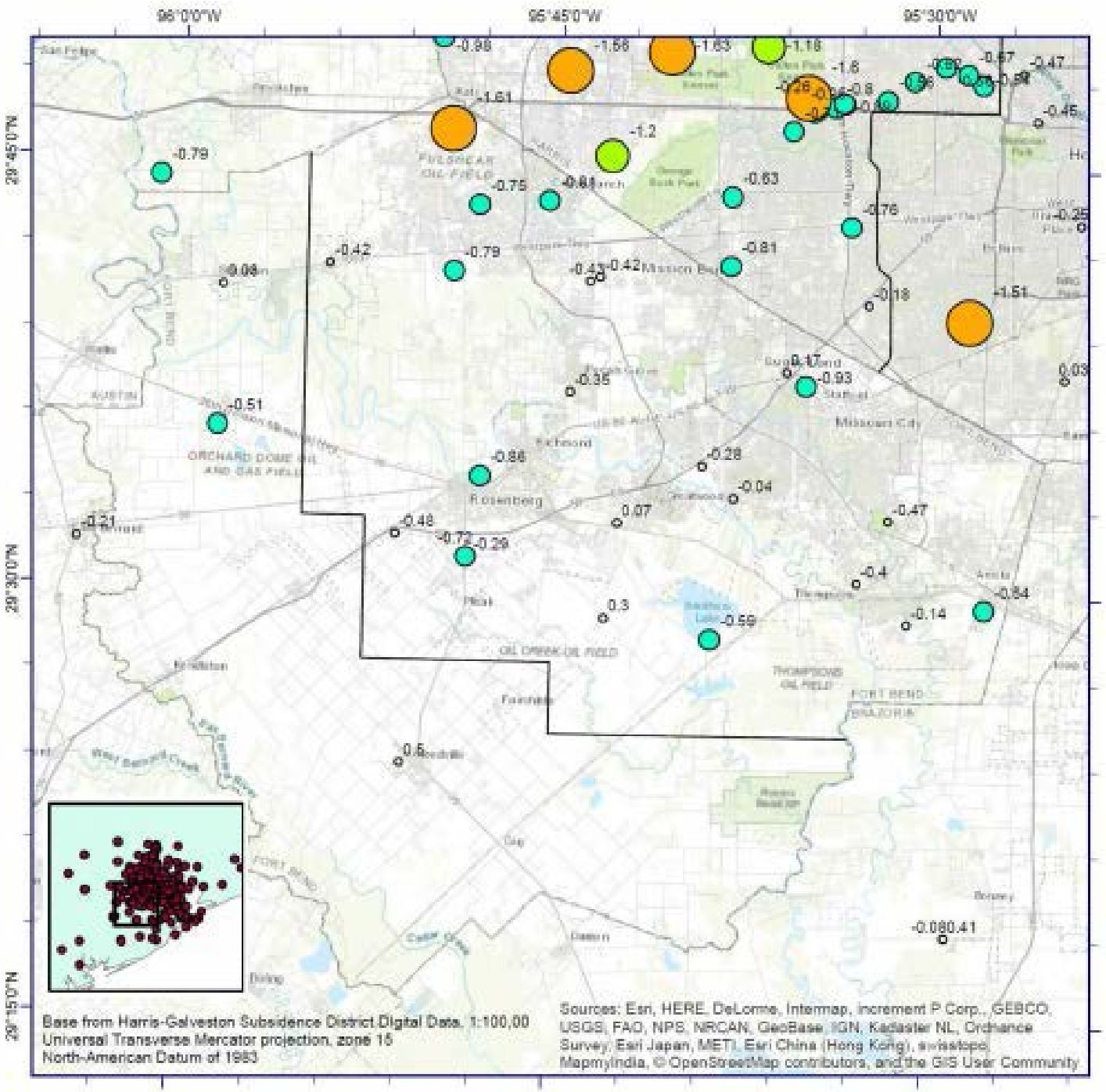


Subsidence Monitoring Sites



FBSD EXHIBIT 12. Subsidence monitoring network in Harris, Galveston, Fort Bend, and surrounding counties operated in cooperation with the University of Houston, Lone Star Groundwater Conservation District, and the Brazoria County Groundwater Conservation District, 2017.

Annual Estimated Subsidence Rate



EXPLANATION

Subsidence Rate (2013-2017) cm/year

- greater than 2.0
- 1.9 - 1.5
- 1.4 - 1.0
- 0.9 - 0.5
- Subsidence rate less than 0.5 cm/year or period of record less than 3 years

0 3 6 12 18 Miles

0 5 10 20 Kilometers

FBSD EXHIBIT 13. Annual estimated subsidence rate, in centimeters per year, from GPS data measured from 2013-2017 at monitoring locations with more than three years of data.

Fort Bend Subsidence District

http://www.**fbsubsidence**.org/

Groundwater Reduction Plan Implementation Update

Katie Clayton, P.E.
Water Resources Manager

GRP Participants

Public Water Systems

- FB 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
- River Pointe Golf
- WSG Sweetwater
- Schlumberger

Property Owner Assoc & Levee Dist

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

GRP Water Demand

Million Gallons per Day (MGD) Average Day

FBSD Year	Demand	Conversion		
April- March		Actual	Required	
2009-10	24.22	1.17		
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	6.75	30%
2015-16	22.87	9.72	6.86	30%
2016-17	22.94	8.96	6.88	30%
2017-18	23.71	9.61	7.11	30%

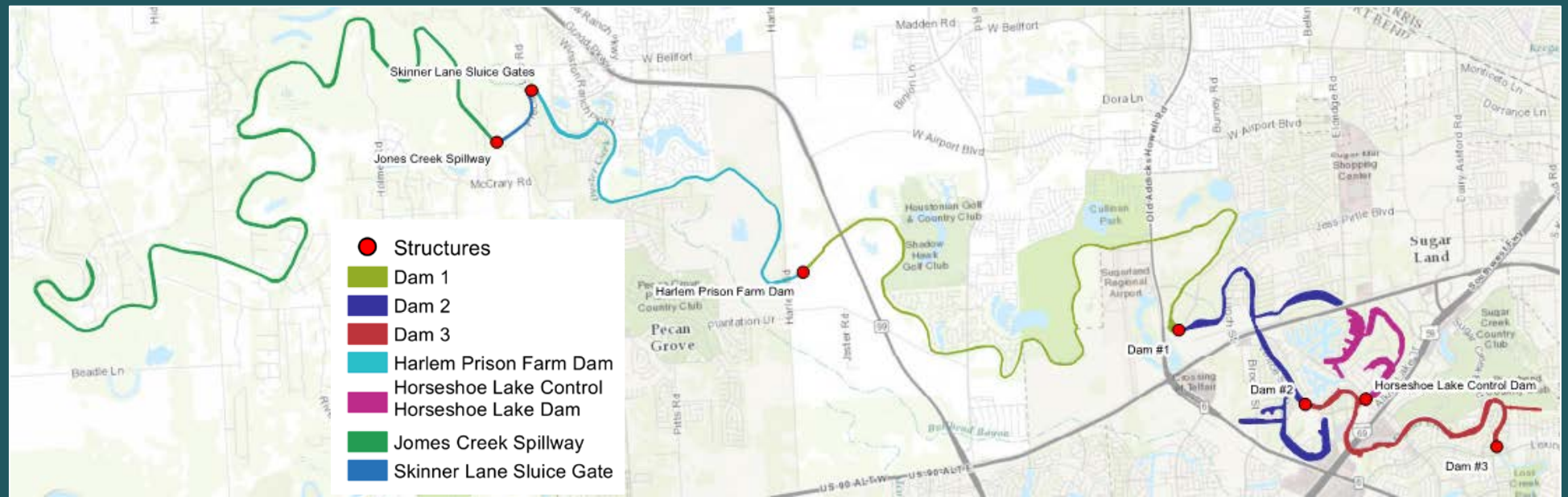
GRP Water Supplies

- Raw Surface Water
  - Oyster Creek Water Right
  - Gulf Coast Water Authority (GCWA)
  - Brazos River Authority (BRA)
- Reclaimed Water from WWTPs
  - North WWTP
  - South WWTP
  - South Reclaimed Water Plant (Riverstone, 2 MGD)
  - West WWTP (New Territory, 2.5 MGD)
- Groundwater
  - Wells supplement peak demands

GRP Water Supplies

Oyster Creek Water Right

- 16 MGD
- Firm Yield approx. 3.3 MGD
- During drought, City will limit to 4.89 MGD *per Settlement Agreement with GCWA*



GRP Water Supplies

Gulf Coast Water Authority (GCWA)

- 10 MGD Firm, plus additional 10 MGD Option
- Current supply utilized at SWTP
- Rate History
  - 10 MGD Take Rate
    - 2015 Rate $ 141.82 per million
    - 2016 Rate $ 192.47 per million
    - 2017 Rate $ 204.35 per million
    - 2018 Rate $ 221.21 per million
    - 2019 Rate $ 241.31 per million
  - 10 MGD Option Rate
    - 2018 Rate $ 44.24 per million
    - 2019 Rate $ 48.26 per million

GRP Water Supplies

Brazos River Authority (BRA)

- 6,388 acre feet per year
- Stored Reservoir Water
- Considered backup water for times of drought, future SWTP expansions
- City assigned this water in contract year 2018
- Anticipate additional water available in Spring 2019
- Rate History
  - 2015 Rate $213.29 per million
  - 2016 Rate $216.36 per million
  - 2017 Rate $220.96 per million
  - 2018 Rate $227.10 per million
  - 2019 Rate $234.77 per million

GRP Implementation Strategy

1. Surface Water Treatment Plant
2. Raw Surface Water Pump Stations
3. Water Reuse / Reclaimed
4. Water Conservation

GRP Implementation Strategy

1. Surface Water Treatment Plant

- Operational and Online November 2013
- 9 MGD - Re-rated to 10.85 MGD
  - *Re-rating provides operational flexibility*
- Designed to expand to 22 MGD
- Over convert dense areas (City Potable Utility) – minimize transmission lines
- Surface water delivered to groundwater plants for distribution and blending to minimize changes in taste
- Provide base load, and meet peak water demands from groundwater

GRP Implementation

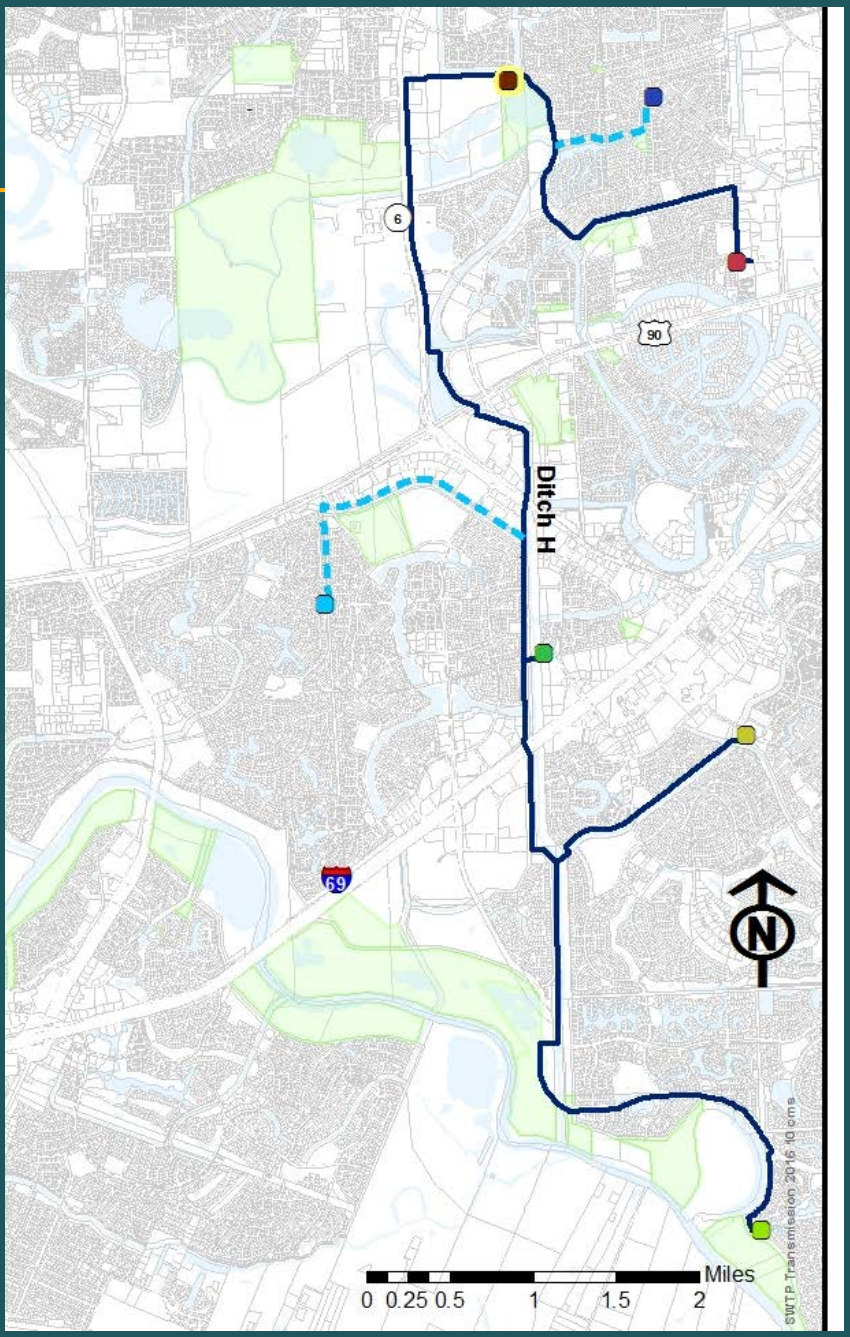
- **SWTP Transmission Lines**

Surface Water Transmission Lines

- Completed
- Future

Water Facilities

- Surface Water Treatment Plant
- Austin Parkway
- First Colony
- Lakeview
- New Territory Homeward Way
- Riverstone
- Woodchester



GRP Implementation Strategy

2. Raw Surface Water Pump Stations

- Lake Pointe Irrigation
- Telfair Lake Filling and Irrigation
- Venetian Estates Lake Filling and Irrigation
- Sugar Lakes Filling

3. Water Reuse /Reclaimed

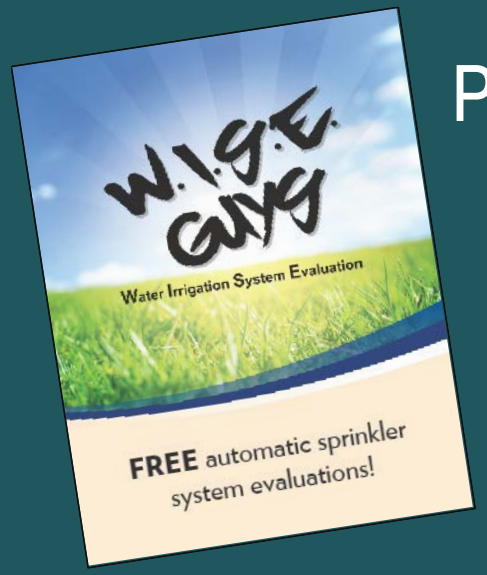
- City's Plant - South WWTP - online September 2015
- LID 7 Plant - West WWTP - New Territory HOA; online June 2018
- North WWTP wash down
- South WWTP wash down

GRP Implementation Strategy

4. Water Conservation

Program Goals:

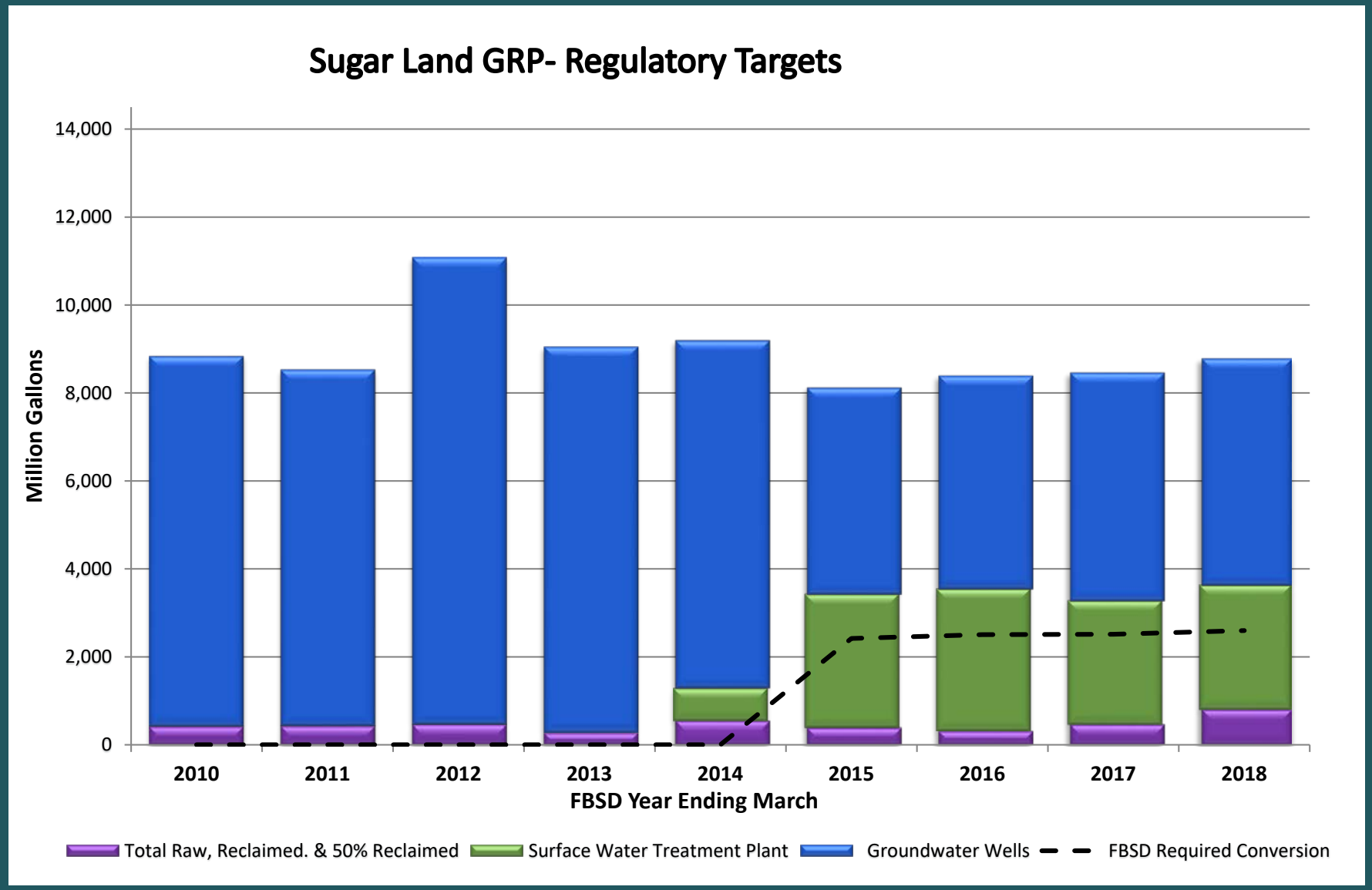
- Partnership & Education; *Not* Restriction & Regulation
- Reduce “wasteful” outdoor use
- Reduce peak demands
- Promote water use efficiency



Programs:

- Residential Irrigation System Evaluations
  - *Free* to Residents in the GRP Planning Area
- WaterWise Education Program

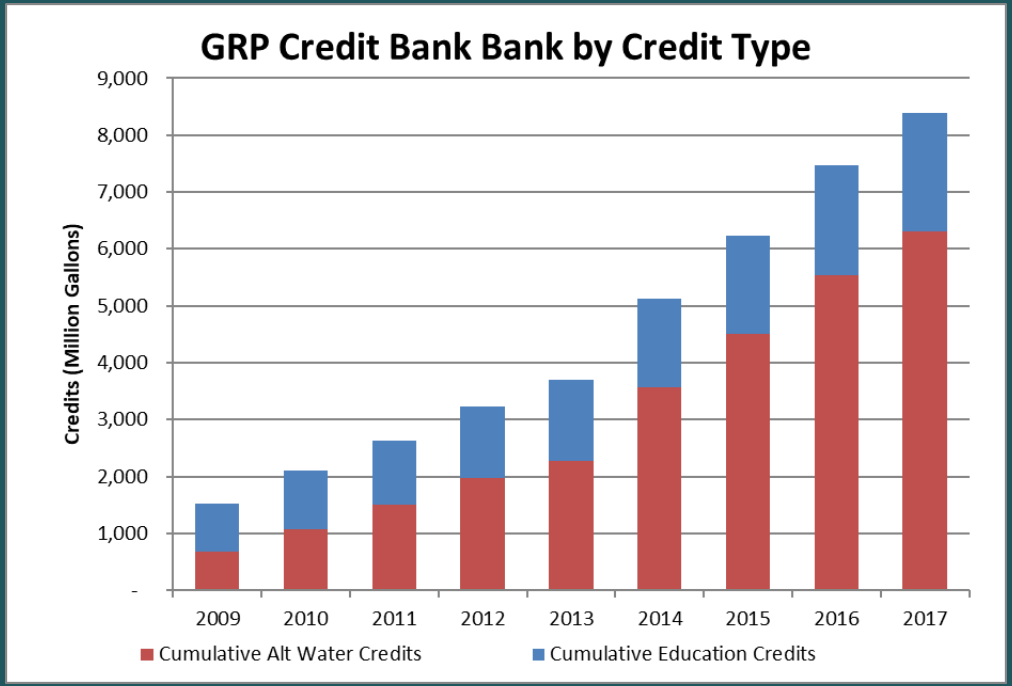
GRP Implementation Strategy



GRP Implementation Strategy

Groundwater Credit Program

1. Early Conversion
   - Raw Water Projects for lake fill & irrigation
   - Surface Water Treatment Plant (Nov.-Mar.)
2. Over convert in Early Years
3. WaterWise Conservation Education
   - Sponsor 4th - 5th Grade Presentations



Credits as of March 2018:

- 8.565 billion gallons
- At current demands, enough credits to offset just over 3 years of FBSD regulations
- $55.6 million Value (Disincentive Fee $ 6.50/1000 gal)

GRP Implementation Strategy

Project In Progress:

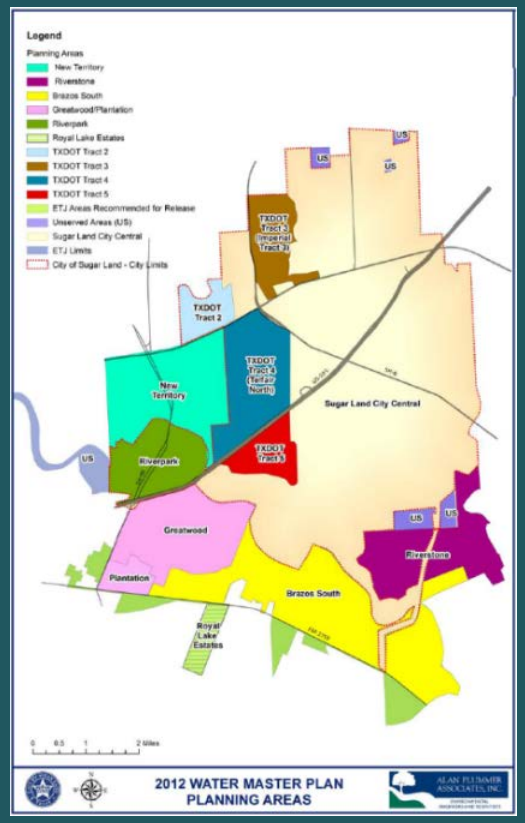
- Integrated Water Resource Plan

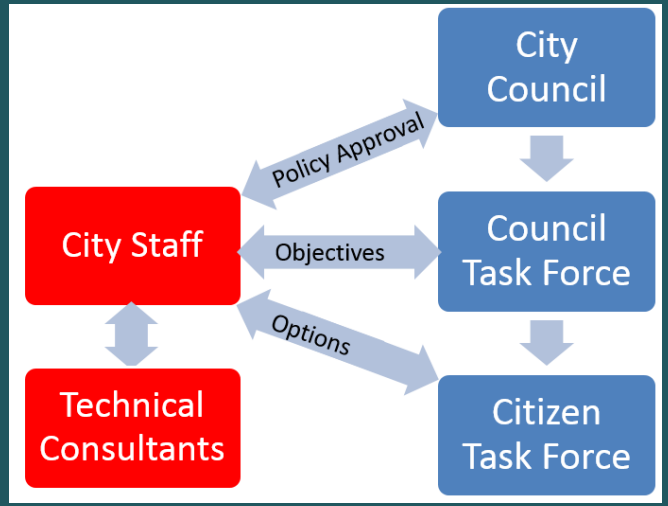
Integrated Water Resource Plan

- Incorporates the economics, reliability, equity, environment, and social aspects of water resource management
- Identify specific objectives for our community
- Outputs can include policy recommendations, management strategies, and capital projects
- Council approval

Integrated Water Resource Plan

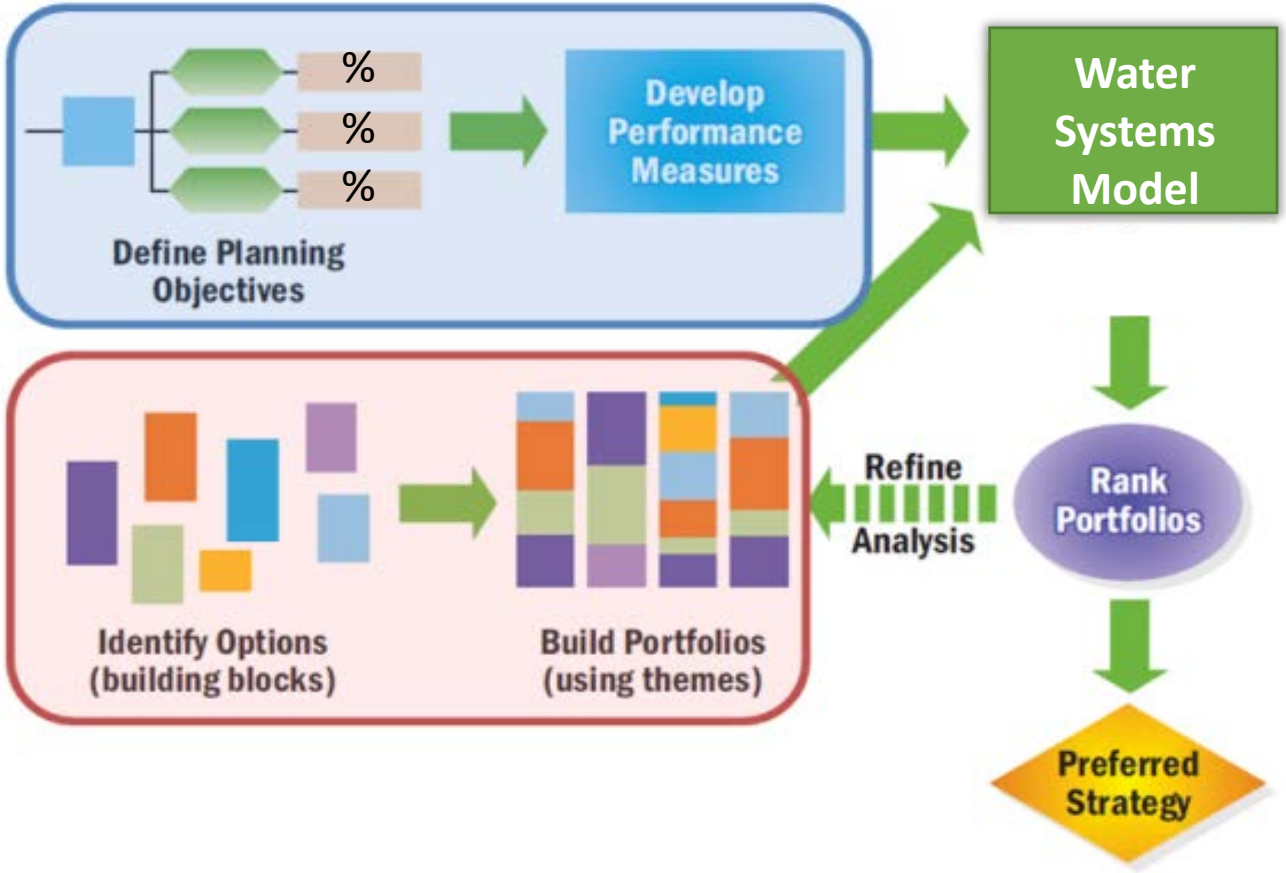
- Project Structure
  - Council Task Force
  - Citizen Task Force
  - Consultants
    - Water Supply Reliability Study
    - Reclaimed Water Supply Study
    - IWRP



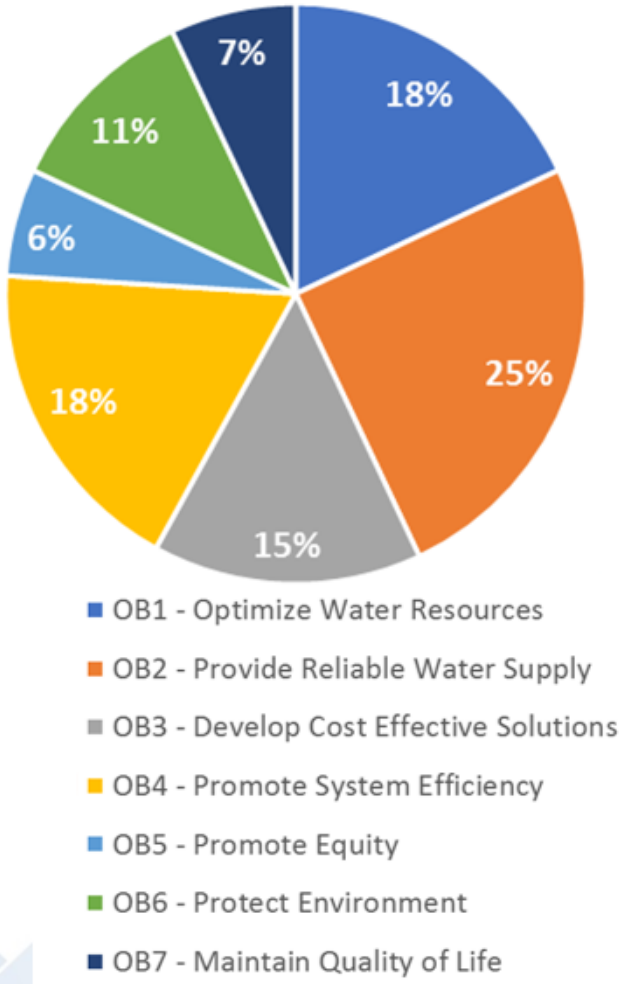


IWRP Update

- ✓ Objectives
  - ✓ Dot Results
- ✓ Performance Measures
- ✓ Existing System T.M.
- ✓ Demand T.M.
- ✓ Reliability Study
- ✓ Gap Analysis T.M.
- ✓ Options
  - ✓ Reuse Study
- ✓ Model
- ✓ First Pass
- • Hybrids
- • Recommendations



IWRP Objectives and Options



Category	Options
Demand Management	Advanced Metering Infrastructure
	Water Loss Control
	Conservation - Basic
	Conservation - Advanced
Reclaimed	On-Site Reuse
	Direct Potable Reuse
	Expanded Reclaimed - South
	Expanded Reclaimed - North
	Wastewater Scalping
New Supply Sources	Brackish Groundwater Desalination
	Seawater Desalination
	Expanded Contracts
Infrastructure	SWTP Expansion
	BRA Contract through GCWA System
	Brazos River Pump Station
Storage	Off-Channel Reservoir
	ASR
Other	Credit Banking

Systems Model

1. Advanced Metering Infrastructure (AMI)

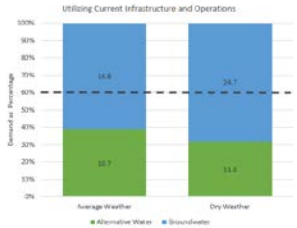
Project Type

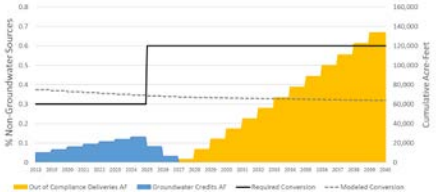
Project Description

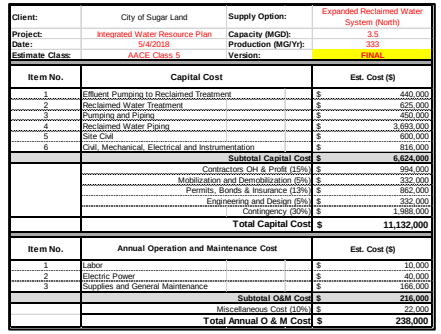
Service Area

Project Considerations

Yield





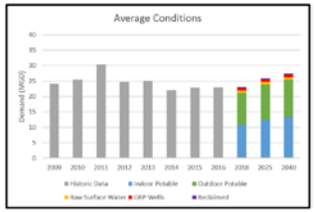


Client:	City of Sugar Land	Supply Option:	Expanded Reclaimed Water System (North)
Project:	Integrated Water Resource Plan	Capacity (MGD):	3.5
Date:	5/4/2018	Production (MG/Yr):	333
Estimate Class:	AACE Class 5	Version:	FINAL

Item No.	Capital Cost	Est. Cost ($)
1	Effluent Pumping to Reclaimed Treatment	$ 440,000
2	Reclaimed Water Treatment	$ 625,000
3	Pumping and Piping	$ 450,000
4	Reclaimed Water Piping	$ 3,693,000
5	Site Civil	$ 600,000
6	Civil, Mechanical, Electrical and Instrumentation	$ 816,000
	Subtotal Capital Cost	$ 6,624,000
	Contractors OH & Profit (15%)	$ 994,000
	Mobilization and Demobilization (5%)	$ 332,000
	Permits, Bonds & Insurance (13%)	$ 862,000
	Engineering and Design (5%)	$ 332,000
	Contingency (30%)	$ 1,988,000
	Total Capital Cost	$ 11,132,000

Item No.	Annual Operation and Maintenance Cost	Est. Cost ($)
1	Labor	$ 10,000
2	Electric Power	$ 40,000
3	Supplies and General Maintenance	$ 166,000
	Subtotal O&M Cost	$ 216,000
	Miscellaneous Cost (10%)	$ 22,000
	Total Annual O & M Cost	$ 238,000

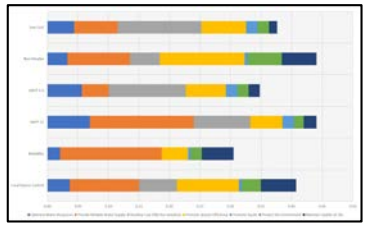
Build Portfolios (using themes)



Model

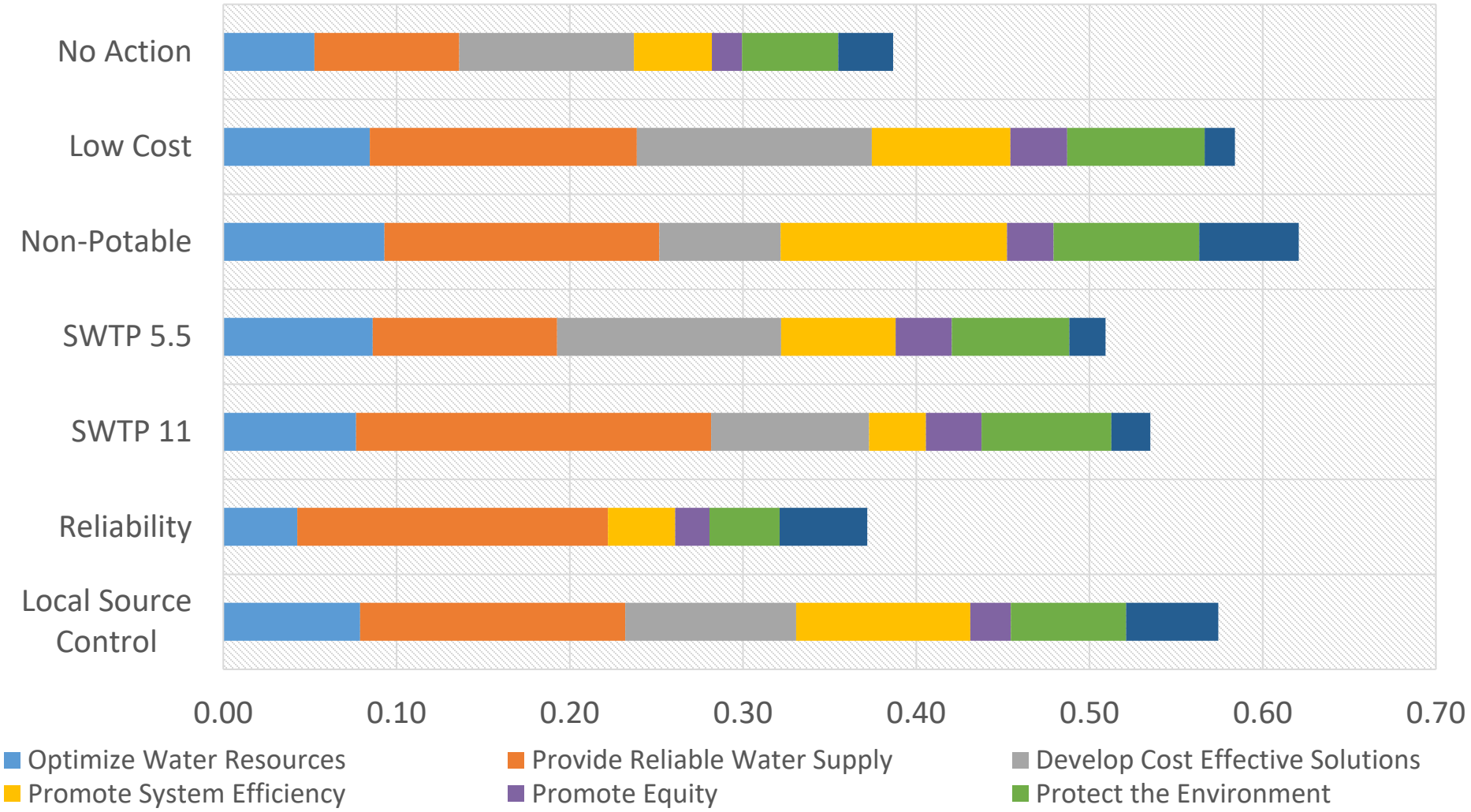
Raw Scorecard

CDP



CITY OF SUGAR LAND Texas

Portfolio Scores



Next Steps

- Finalize recommendations with task forces
  - Continued focus on surface water
  - Increased resiliency through reclaimed, demand management
- Develop implementation plan

Financial Update

Jennifer Brown
Director of Finance

GRP Philosophy

- City Policy adopted in September 2002
  - We will Plan for the City and our ETJ.
- Separate GRP Fund Created, contains all Costs/Expenditures
- 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 disincentive fee of $6.50 per 1,000 gallons

Financial Capacity

- Operations Funded in the Surface Water Fund
  - In FY2019 this will be moved to the System Utility Fund
- City sold 2011 CO's backed by GRP fees
  - More cost effective than revenue bonds
  - GRP Benefits from City's AAA bond rating
  - No bond coverage requirement
- 2011 CO's were Advance Refunded in December 2017
- Total Debt service savings of $14.94 million to maturity
  - ~ $622,000 in debt service savings annually
  - Nearly 13% present value savings

Financial Capacity - Future

- Future rate increases necessary to build capacity for future debt
  - City Policy is to phase in increases gradually vs larger increases less often
- Will need to expand alternate water source usage to meet 2025 conversion requirement of 60% groundwater reduction
- How we get there and how much it costs will be a recommendation of the Integrated Water Resource Plan
  - Completion in early 2019
  - Recommendation for revenue requirements will drive rates
- Recommending a rate model update for FY2020

Surface Water Fund

- FY14 Begin SWTP Plant Operations Mid November
- Final GRP Rate Increase Implemented Jan 2014
- Plant Transitioned to Full City Operations in Summer 2014
- In December 2017, the City annexed most of the ETJ MUDs that were participants in the GRP
  - Recommended consolidating the surface water fund into the System Utility Fund starting with FY19
  - Rating agencies treat them as one fund
  - Continue to track revenues and expenses for GRP/surface water separately

What Can Impact Rates

- FBSD Regulations & Fees
- Future Expansions
- Increased Conversion Requirements
- Dramatic Changes in Pumpage
  - Rainfall- High or Low

Surface Water Fund
Operating Results- Cash Basis

In $M	Revenue	Expense	Net	GRP Rate
FY 11*	106.38	101.36	5.01	0.70
FY 12	10.00	10.32	-0.32	1.32
FY 13	13.15	7.05	6.10	1.50
FY14	13.47	14.40	0.92	1.75
FY15	13.33	14.10	0.77	1.75
FY16*	25.20	25.59	-0.39	1.75
FY17*	26.73	26.61	0.13	1.75

- Includes Bond Proceeds and Capital Projects
- Figures not stated on a GAAP basis
- Net may not add due to rounding

Prior Year
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

Continued…

Prior Year
Capital Improvement Projects

Project Name	Funding
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
Total	$ 130,896,404

Surface Water Fund
FY 18 Estimates

Millions ($)	FY18B	FY18E	Variance
Revenues	$ 103.14	$ 103.48	$ 0.34
Expenses	102.70	100.62	0.22
Net Income	$ 0.44	$ 2.87	$ 2.425

- Note: Totals may not add due to rounding
- Include Series 2017 Refunding Bonds

FY 19-23 Capital Projects

Project Name	FY21	FY22
New Territory GWP Surface Water Conversion	200,000	$ 350,000
SWTP Expansion PER/Design	250,000	700,000
SW Transmission Line to New Territory GWP	200,000	400,000
New Territory GWPs Chloramine Conversion		200,000
Total	$ 650,000	$ 1,650,000

Surface Water Comparative GRP Fees

Per 1,000 Gallons 2018 Rates	GRP Fee	Surface Water Fee
Sugar Land	$1.75	$1.88
Comparative Rates:		
Missouri City (Oct 2018)	1.72	2.25
City of Richmond		2.00
City of Rosenberg	2.20	
North Fort Bend Water Authority (Jan 2018)	3.35	3.70
Pecan Grove	1.50	1.50
West Harris County Water Authority (Jan 2019)	2.95	3.35

Questions?