



Groundwater Reduction Plan Participant Meeting

November 7, 2013



Presentation Outline

- **Introductions**
- **FB Subsidence District Update**
- **Drought Update – Water Supply Impact**
- **GRP Water Use**
- **Projects and Studies**
 - **Surface Water Conversion**
 - **Reclaimed Water**
- **Financials**
- **GRP Changes – Participant Requirements**



Recap of Fort Bend Subsidence District 2013 Annual Groundwater Report

**Rick Ramirez, PE
Water Resources Manager**

2003 Regulatory Plan Key Elements

Reg. Areas & Conversion Requirements

Area A

Reduce GW pumpage by 30% by 2014

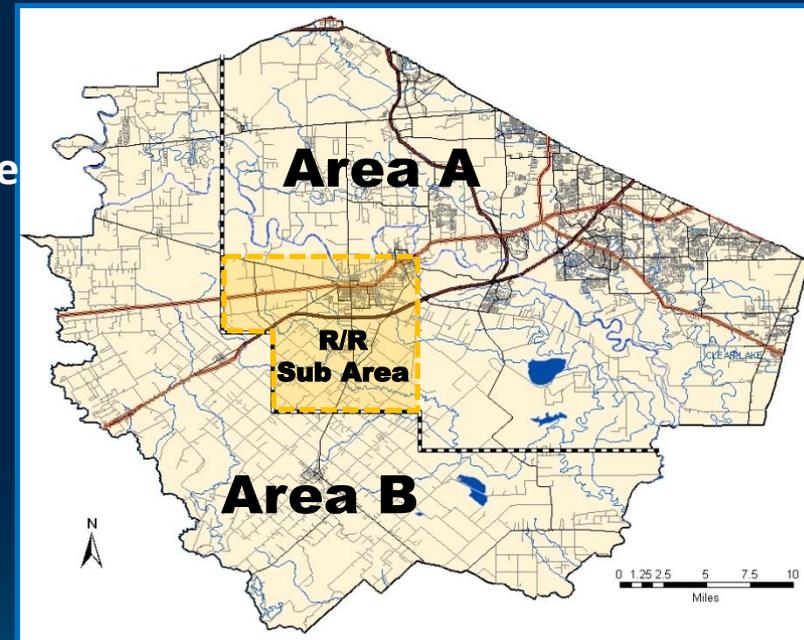
Reduce GW pumpage by 60% by 2025

Exemptions: Ag. Irrigation & Livestock,
TWD \leq 10.0 mg/l until alt. supplies available
will consider Economic Hardships

Richmond/Rosenberg Sub-Area:

Reduce GW pumpage by 30% by 2016

Disincentive Fee currently set in 2013 at \$6.50
per 1000 gallons



Area B - No scheduled GW reductions at this time

FBSD will evaluate need for reduction requirements in future

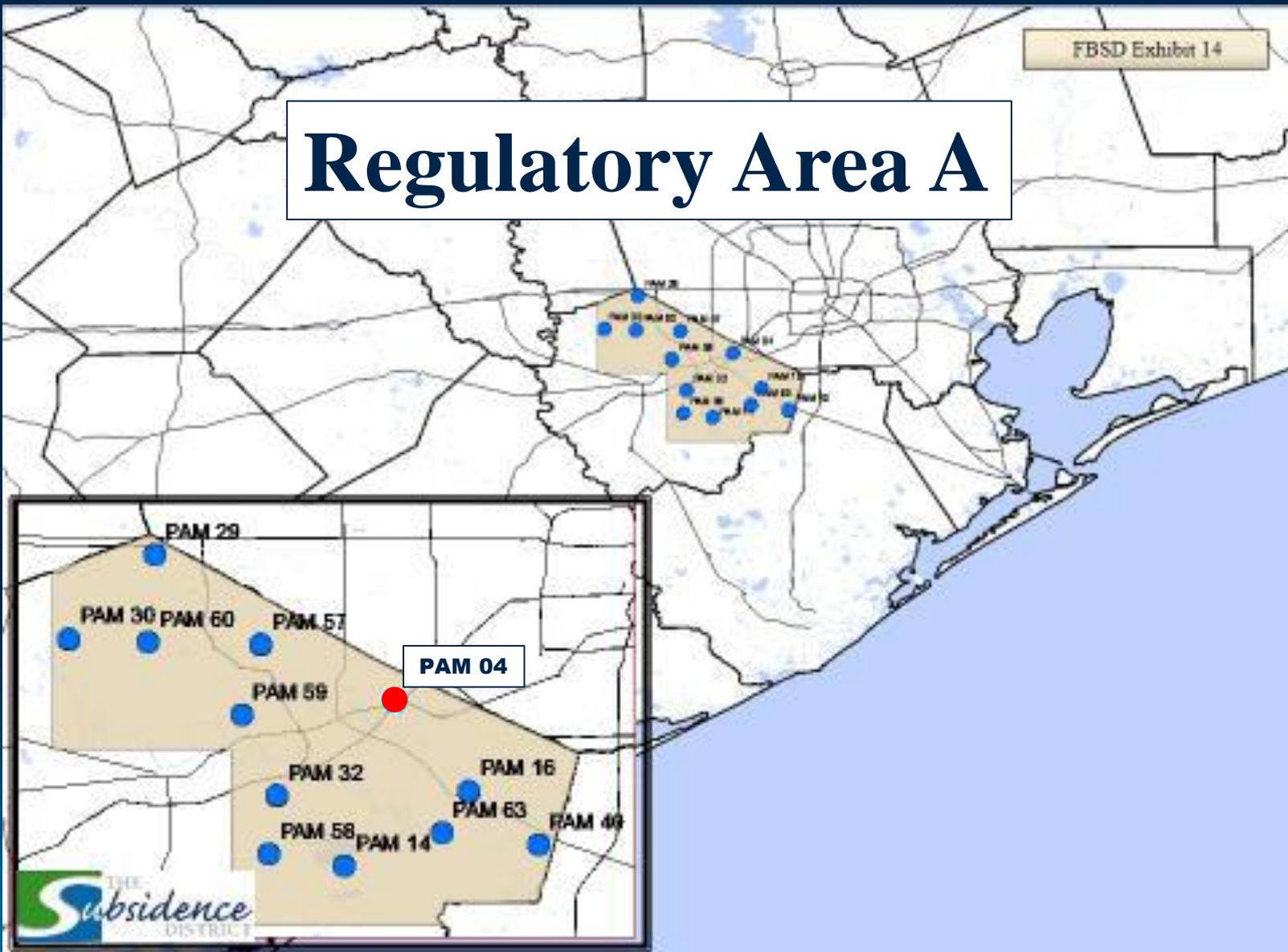
Cannot transfer GW to Area A unless use dates back to before Sept. 24, 2003

Important Changes

➤ Alternative Water Supply Clarification

“Alternative Water Supply” means metered water from any source that meets the regulatory requirements of the Regulatory Plan including but not limited to: surface water, reuse water, treated effluent, desalinated water, or water from a public water supply. Water obtained from any supplier that is in compliance with an approved groundwater reduction plan shall be considered an alternative water supply. Groundwater may only be utilized as an alternative water supply when it is provided as part of an approved groundwater reduction plan. Groundwater withdrawn from any county outside the District does not qualify as an alternative water supply unless the permittee can demonstrate that the groundwater withdrawals will not cause groundwater level declines or subsidence within the District.

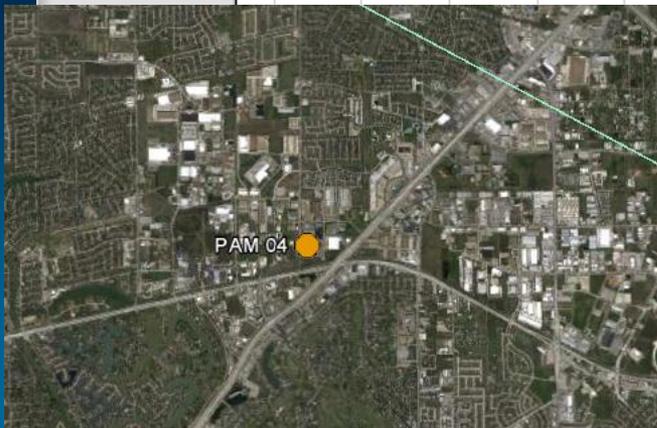
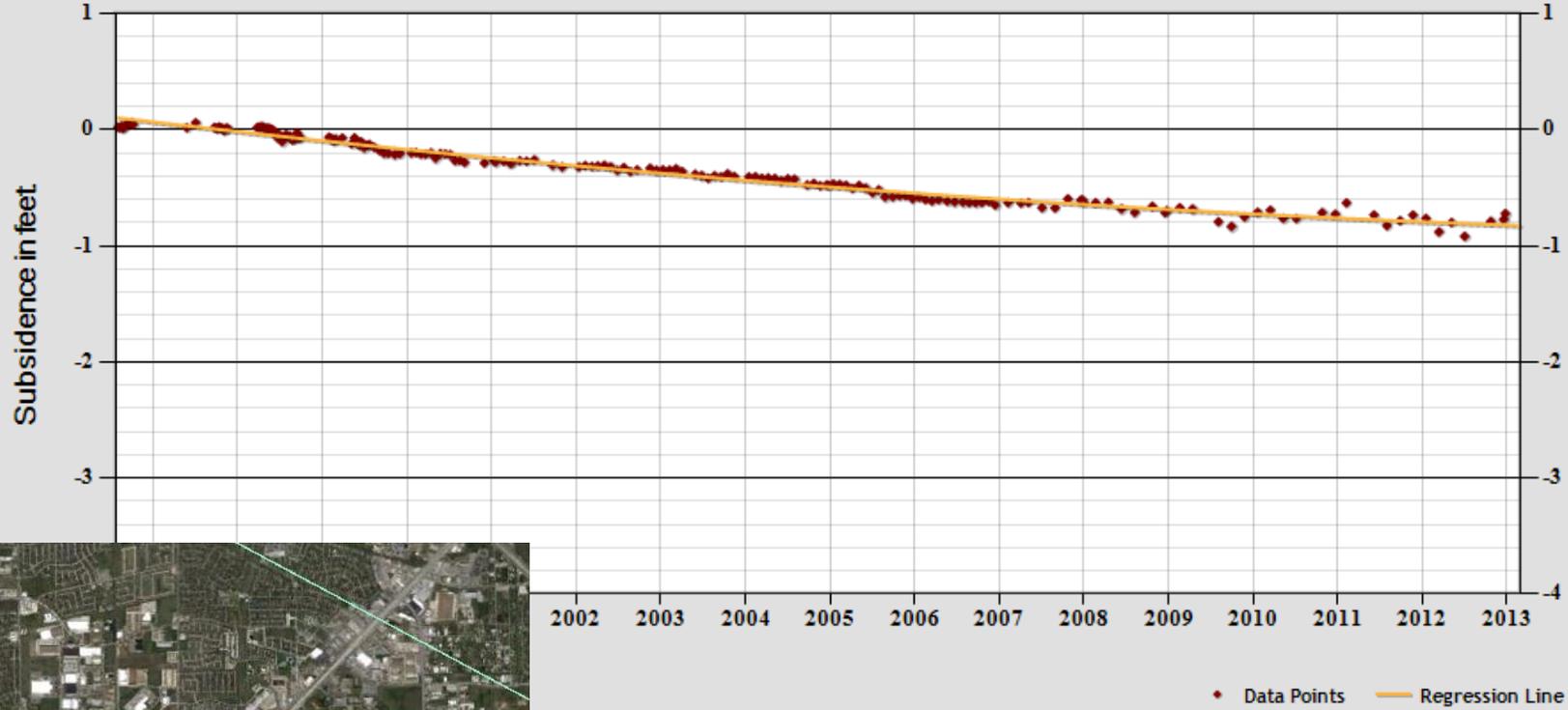
FBSD Subsidence Monitor Site – PAM 04 – Sugar Land

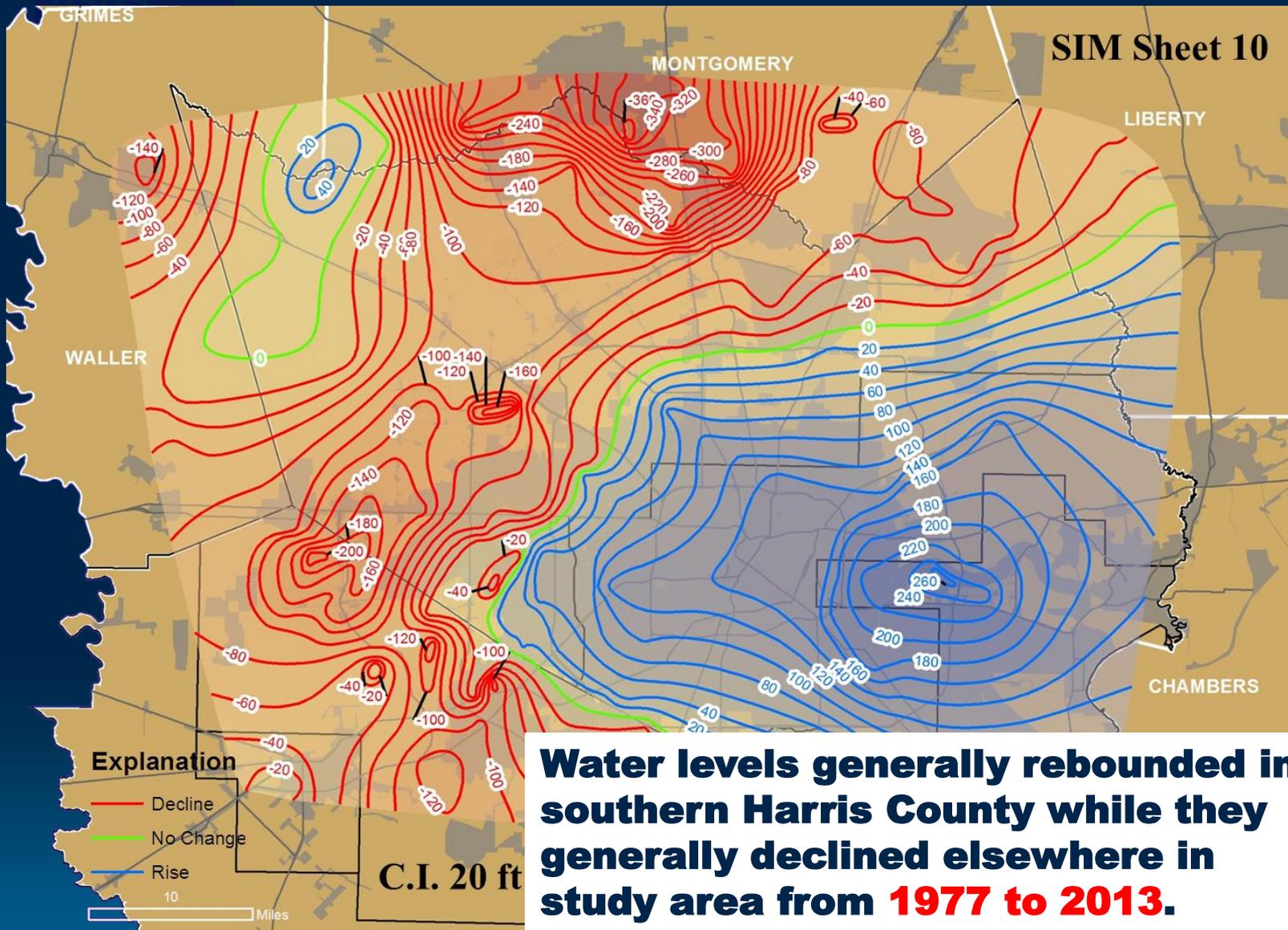


FBSD Subsidence Monitor Site – PAM 04 – Sugar Land

Fort Bend Subsidence District - PAM 04

Subsidence Observations





WALLER

HARRIS

FORT BEND

CHAMBERS

GALVESTON

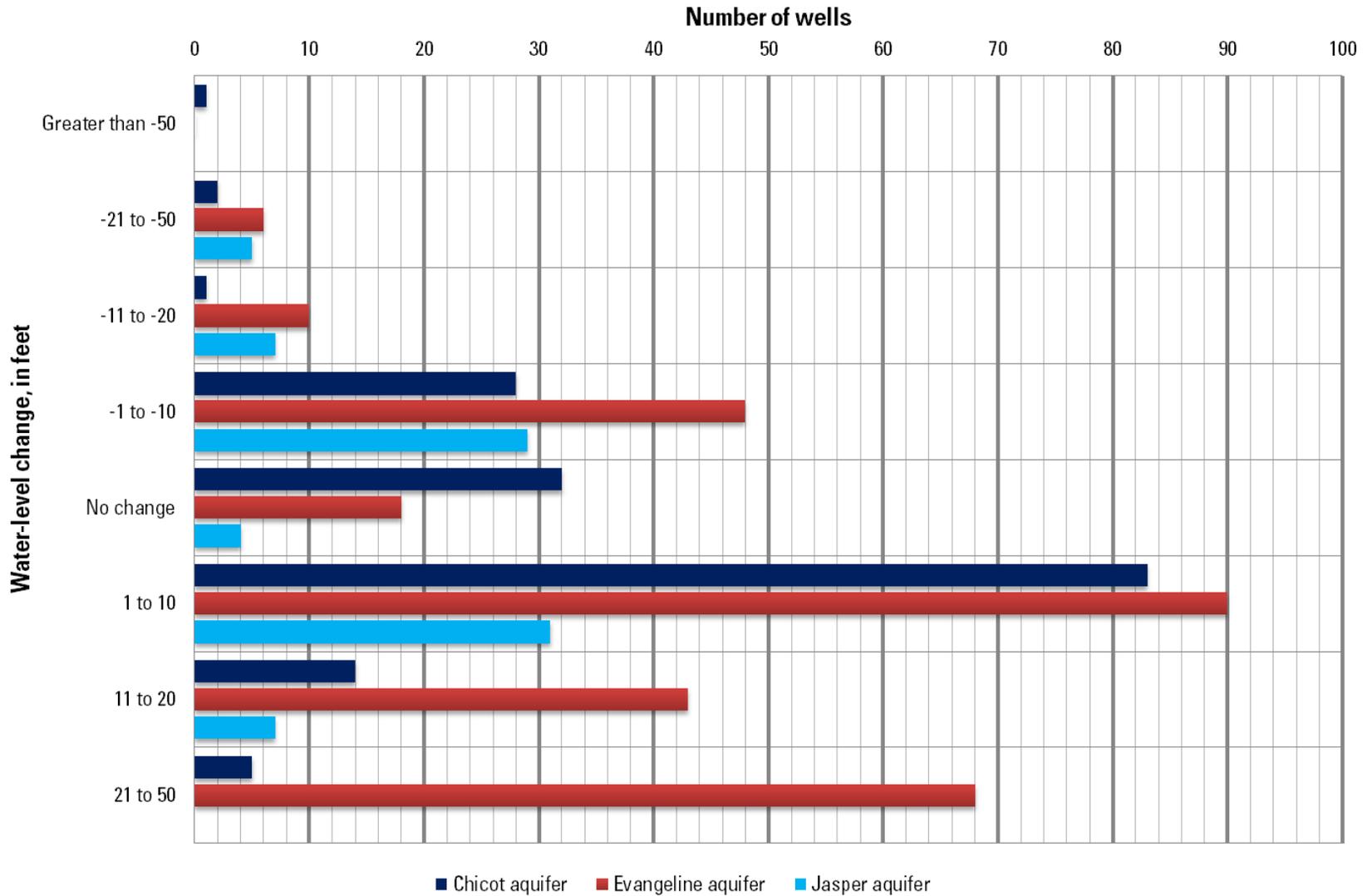
BRAZORIA

Explanation

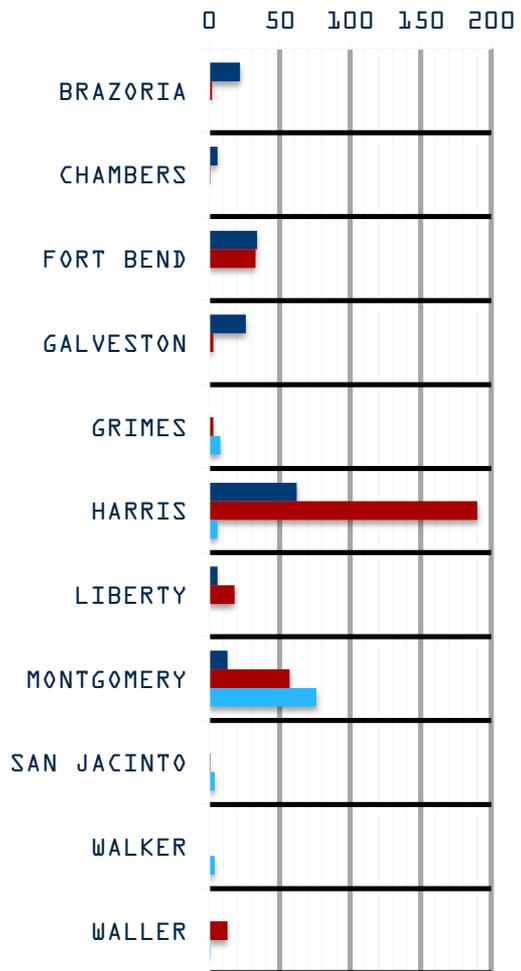
- # Decline of 21 to 37 feet
- # Decline of 11 to 20 feet
- # Decline of 1 to 10 feet
- | No change
- # Rise of 1 to 10 feet
- # Rise of 11 to 20 feet
- # Rise of 21 to 50 feet
- () Rise of 51 to 68 feet

Water levels generally raised throughout the Evangeline Aquifer from 2012 to 2013.

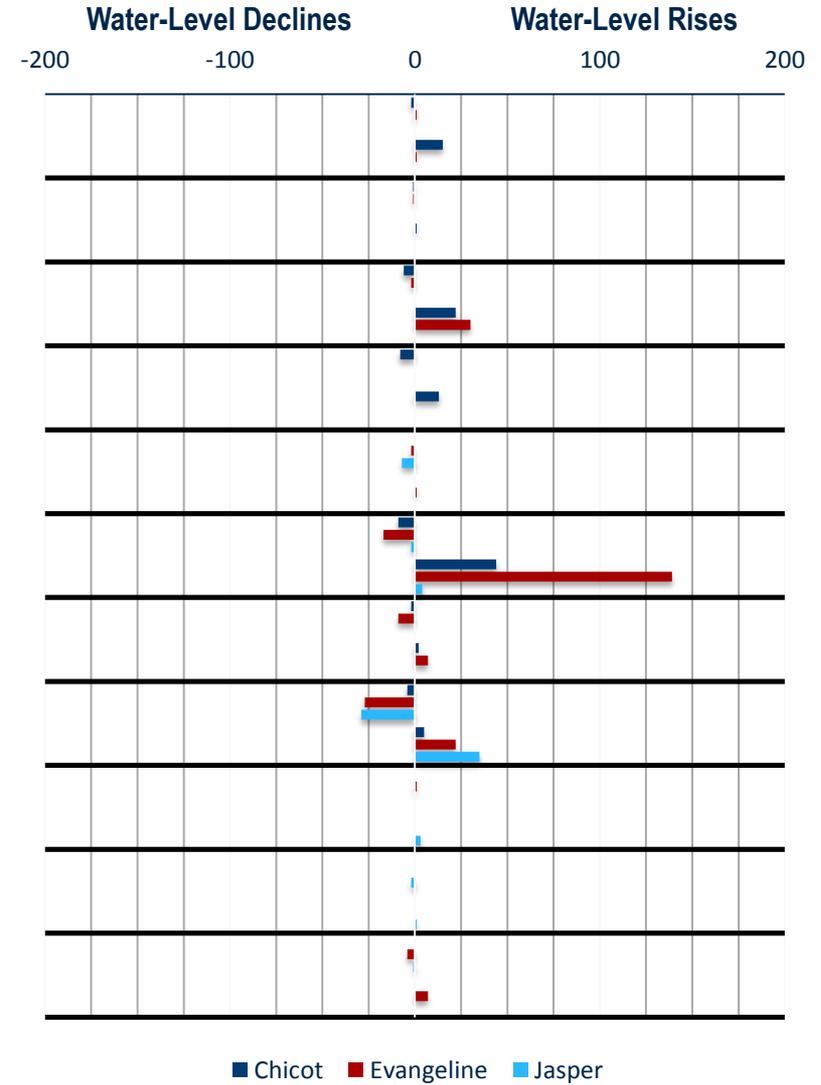
Water-level changes, 2012–13



Total number of wells measured



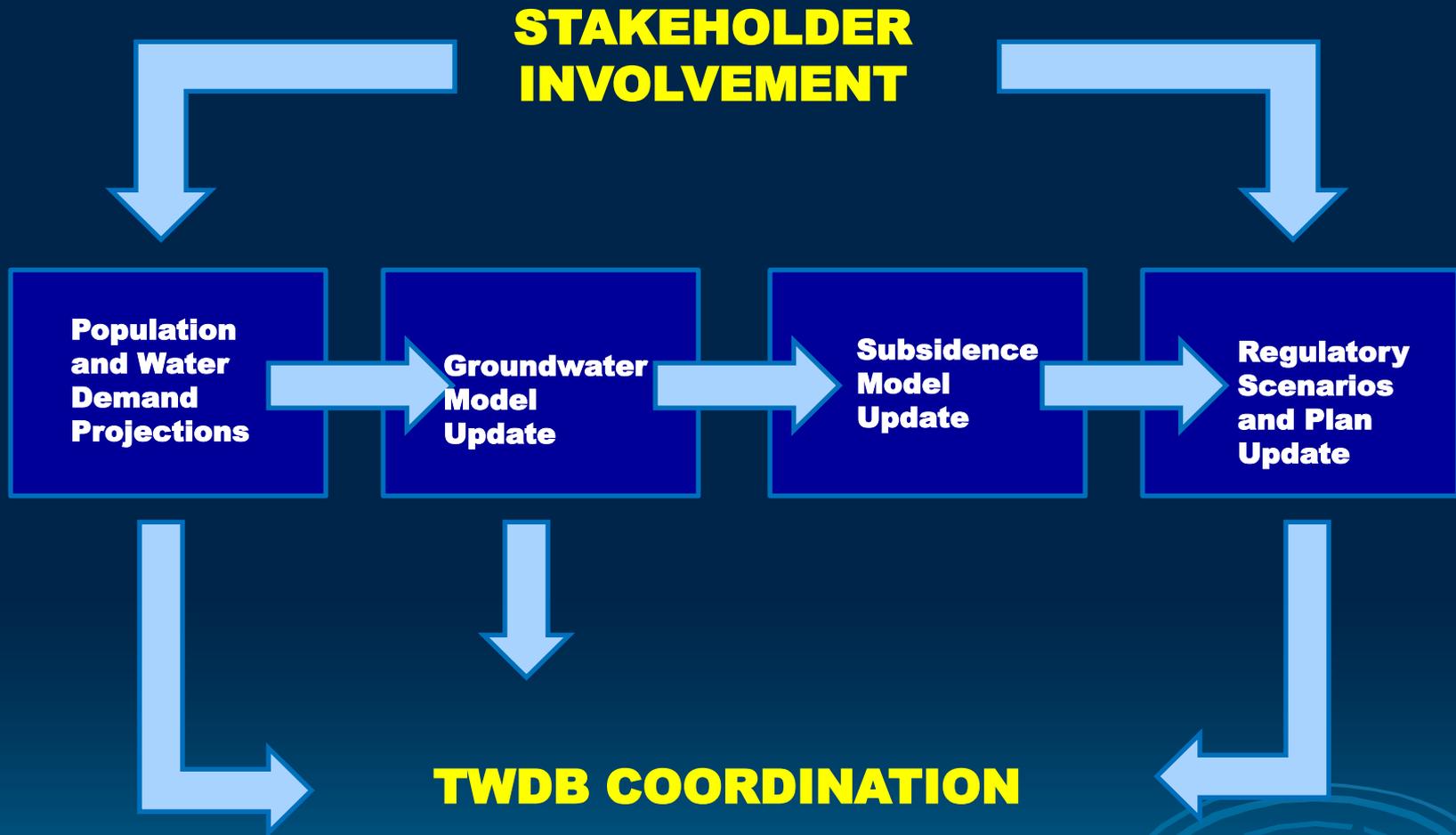
Distribution of water-levels in wells rising or declining in selected counties



Subsidence Change Table

PAM Sites		First	Subsidence (feet)	
ID	Location	Observation	2012	Cumulative
04	Sugar Land (FB)	8/2/1996	0.01	-0.75
10	Rosenberg (FB)	1/15/1999	-0.02	-0.22
14	Smithers' Lake (FB)	11/17/2000	0.04	-0.18
16	Kitty Hollow Park (FB)	11/9/2000	-0.03	-0.32
21	Pearland (B)	1/30/2002	0.05	-0.13
29	Katy (FB)	4/28/2007	-0.10	-0.37
30	Fulshear (FB)	5/8/2007	-0.07	-0.07
31	Needville (FB)	5/8/2007	-0.08	0.03
32	Greatwood (FB)	5/8/2007	-0.02	0.02
40	Arcola (FB)	5/8/2007	0.14	-0.06
41	SW 610 Loop (H)	6/27/2007	0.03	0.01
42	Hwy 6 at Bissonnet Rd. (H)	7/5/2007	0.01	-0.08
57	S. Cinco Ranch (FB)	2/19/2009	-0.04	-0.16
58	George Ranch (FB)	8/4/2010	-0.12	-0.03
59	Pecan Grove (FB)	7/28/2010	-0.05	-0.07
60	Fulshear Gaston rd (FB)	2/8/2012	-0.14	-0.14
61	Simonton (FB)	2/16/2011	-0.09	-0.11
62	Orchard (FB)	2/16/2011	-0.02	0.02
63	Brazos river pump inlet (FB)	1/18/2012	0.07	0.07
67	Rosenberg at Highway 59 (FB)	2/9/2011	-0.06	-0.01
Cooperative CORS Sites		First	Subsidence (feet)	
ID	Location	Observation	2012	Cumulative
ANG5	US Coast Guard - Angleton (B)	1/1/2008	-0.02	-0.13
COH1	City of Houston – Southwest (H)	1/1/2007	0.01	-0.09
COH2	City of Houston – South (H)	1/1/2007	0.00	-0.09
TXAG	TxDoT - Angleton (B)	1/1/2007	-0.02	-0.10
TXHE	TxDoT - Hempstead (W)	1/1/2007	-0.04	-0.17

Regulatory Plan Update – Key Focus Areas



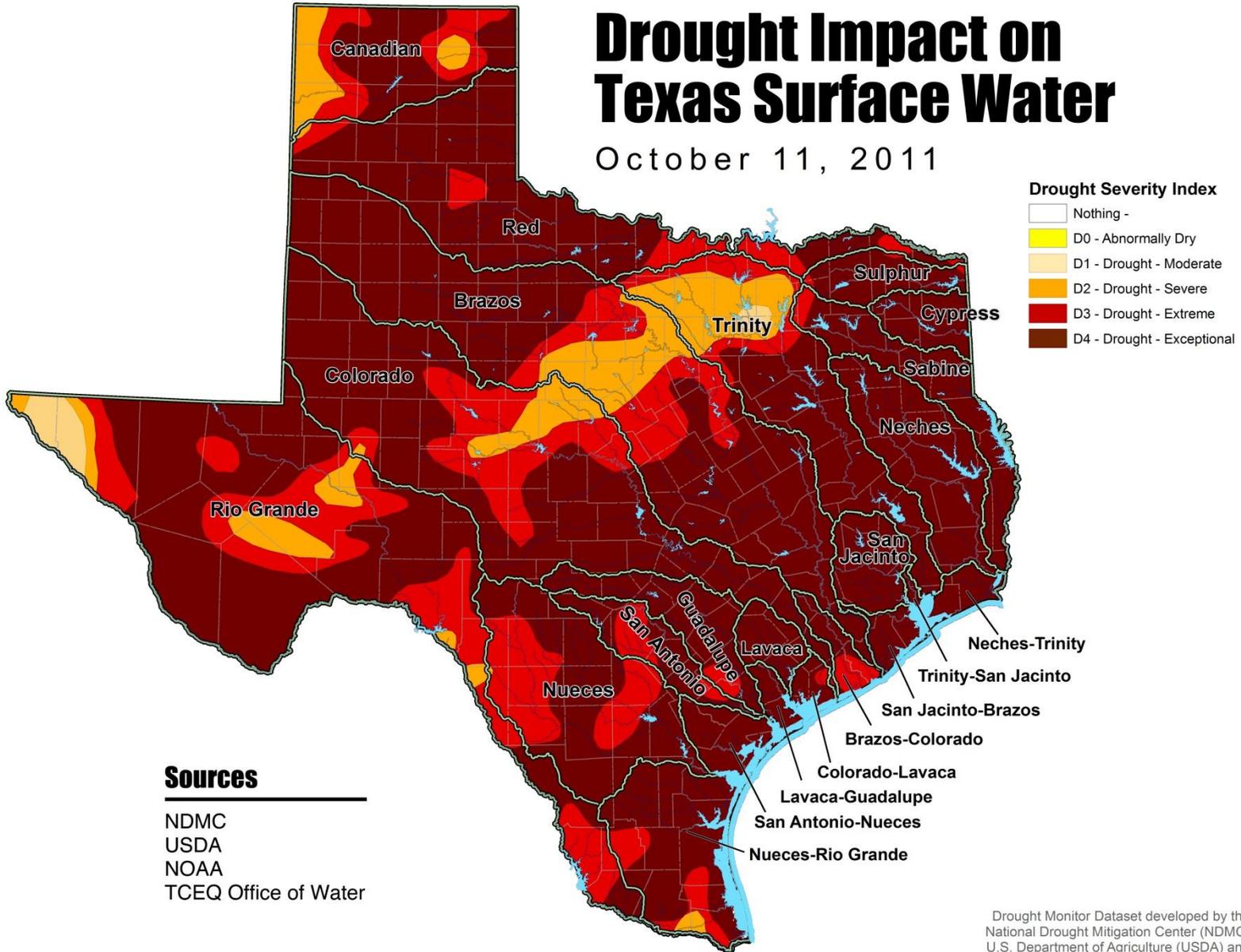


Drought Update Water Supply Impact

**Rick Ramirez, PE
Water Resources Manager**

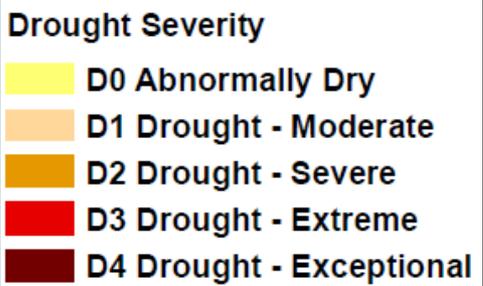
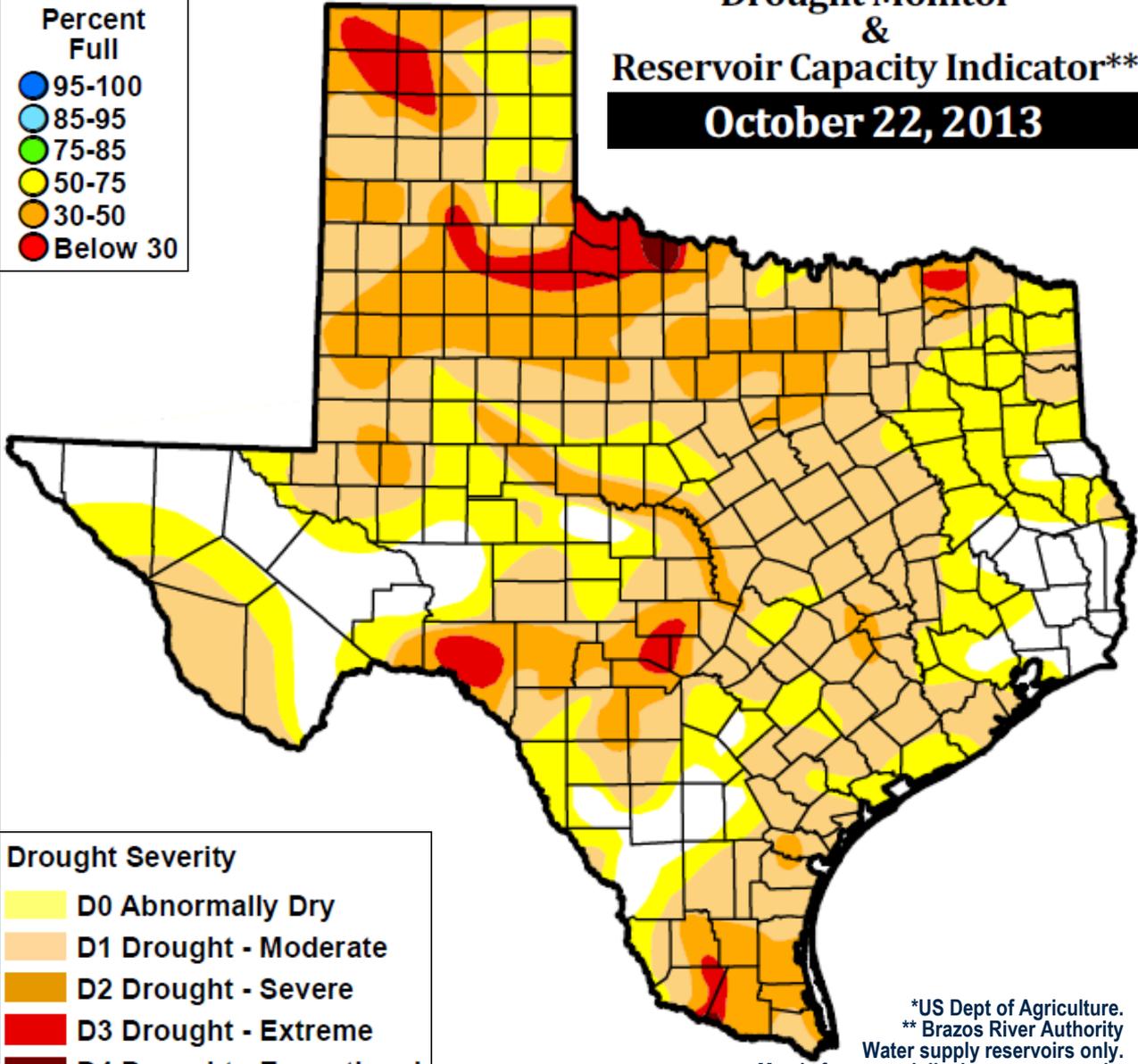
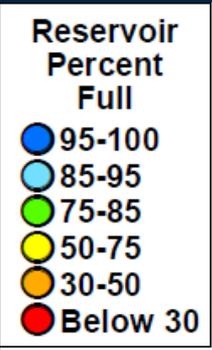
Drought Impact on Texas Surface Water

October 11, 2011



Drought Monitor* & Reservoir Capacity Indicator**

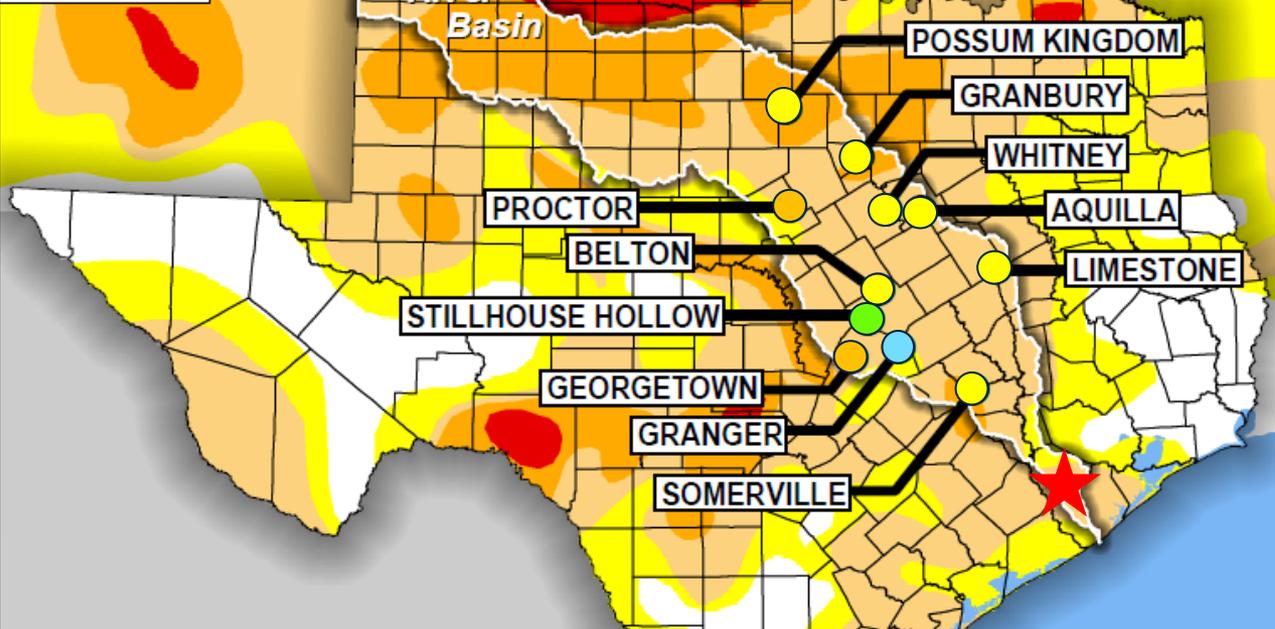
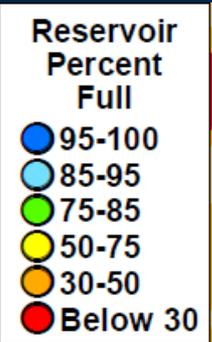
October 22, 2013



*US Dept of Agriculture.
** Brazos River Authority
Water supply reservoirs only.
Map is for general display purposes only.

Drought Monitor* & Reservoir Capacity Indicator**

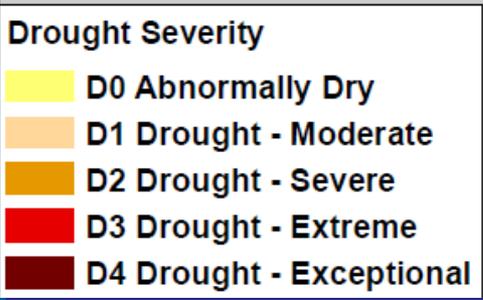
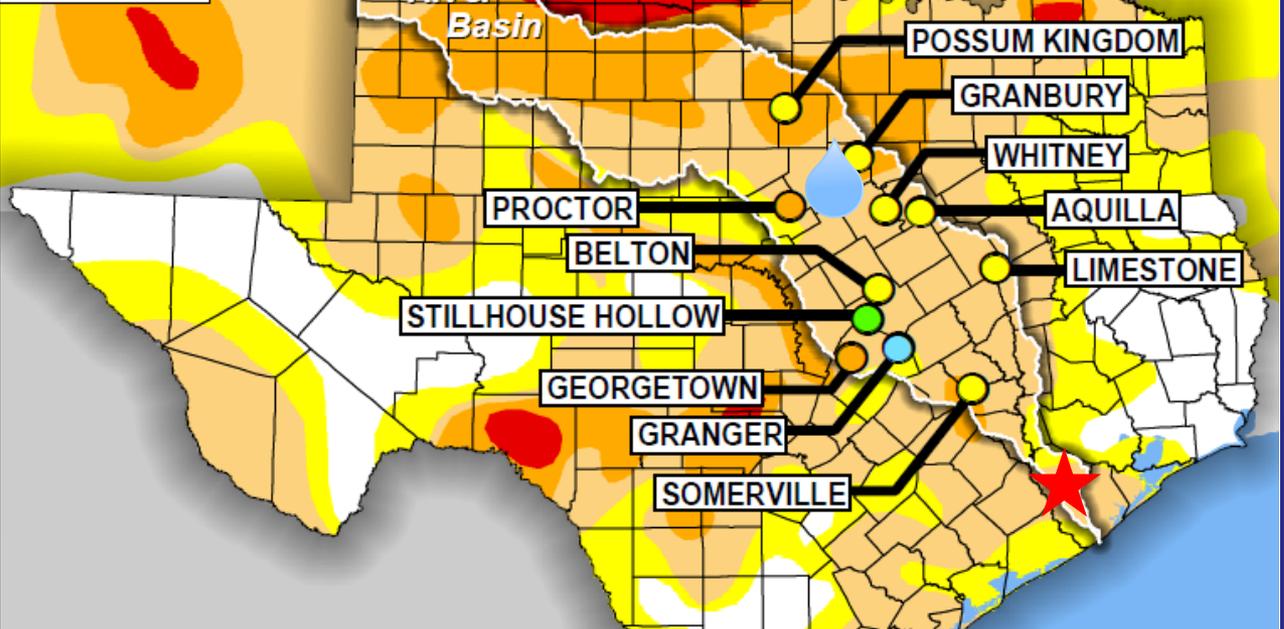
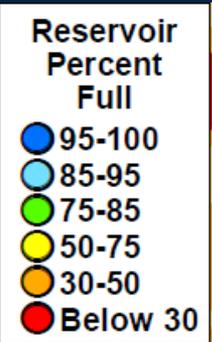
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Drought Monitor* & Reservoir Capacity Indicator**

October 22, 2013



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 Map is for general display purposes only.

Drought Update

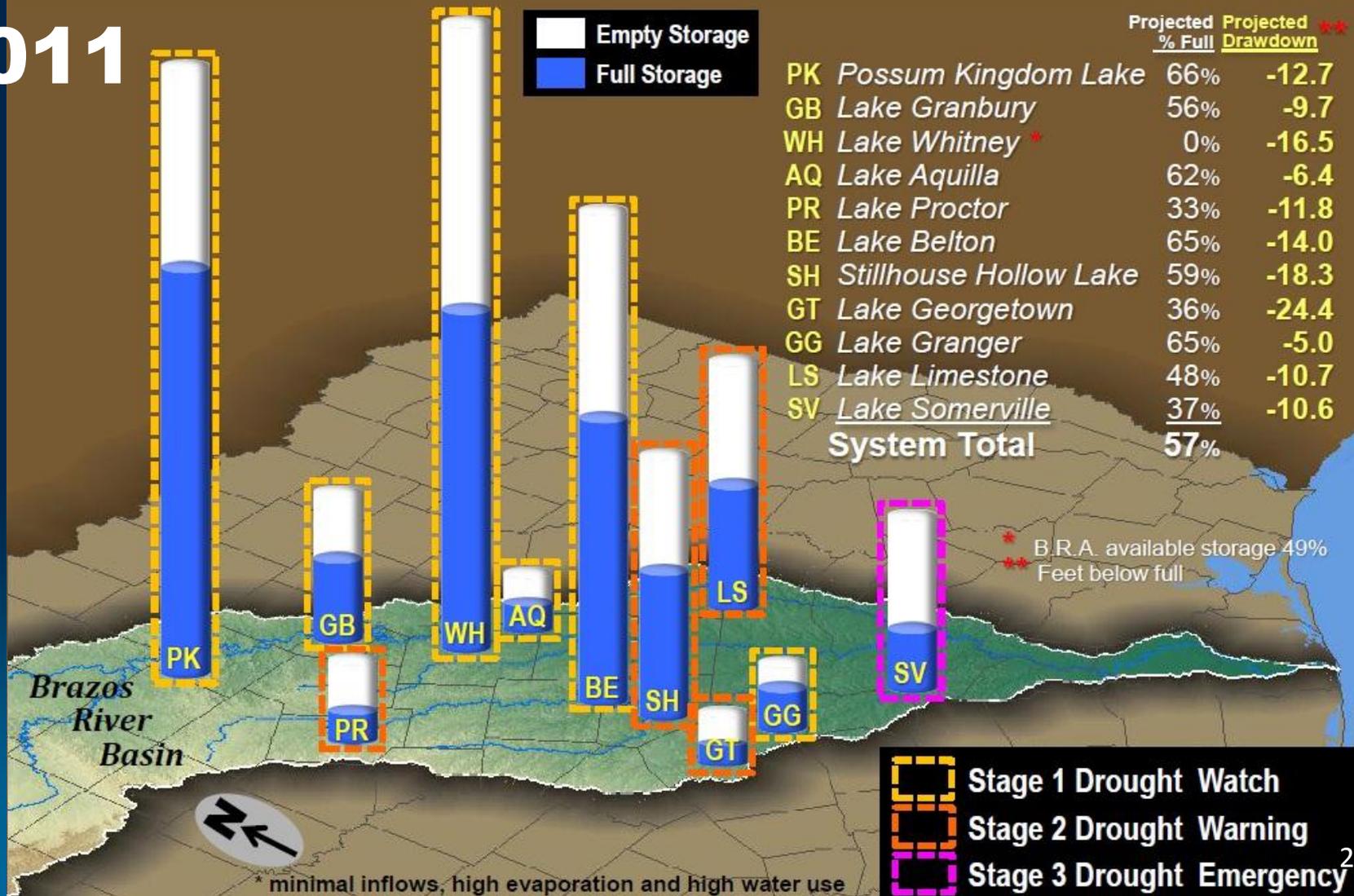
- **2013 was the worst 1 year drought in Brazos River Basin**
- **Governor's Disaster Proclamation Renewed**
- **Curtailment of Water Rights - Brazos Basin 1960**
- **TCEQ –11.053. Emergency Order Concerning Water Rights. Rulemaking to allow suspension and adjustments of water rights by the TCEQ executive director.**
- **www.tceq.texas.gov/response/drought**
- **www.brazos.org**

Brazos River Reservoir System

Combined Storage of Authority System is Below Stage 1 Drought Watch Storage Trigger

Projected Available Storage on October 31, 2011 (assuming continued drought conditions*)

2011

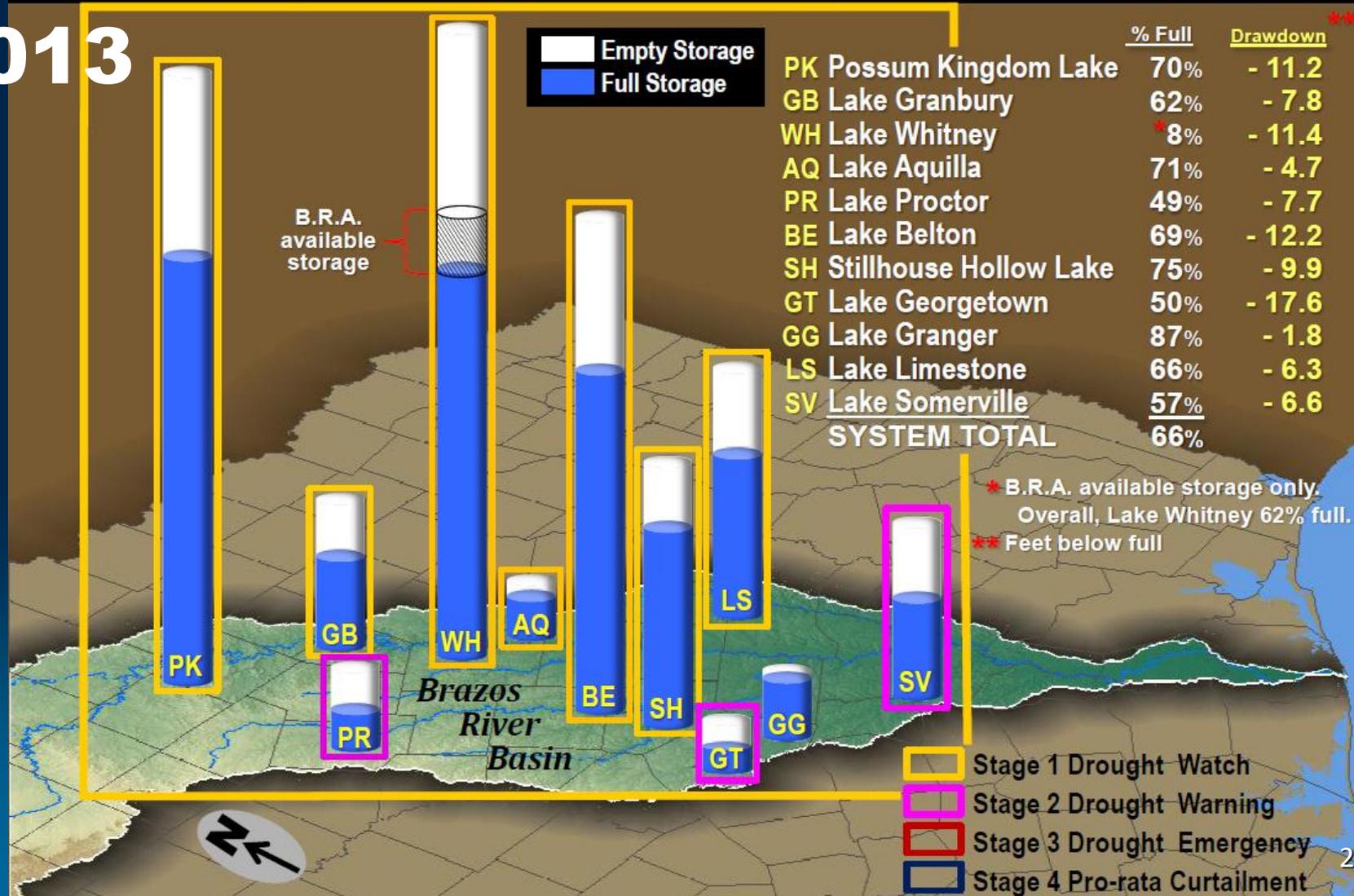


Brazos River Reservoir System

B.R.A. Water Supply Reservoirs "PERCENT FULL" for October 23, 2013

Combined Storage of Authority System is Below Stage 1 Drought Watch Storage Trigger

2013



GRP Water Supply Sources

- GRP long term surface water needs
 - 9 MGD in 2013, 27 MGD in 2025
 - Current Sources
 - Oyster Creek Water Right
 - Gulf Coast Water Authority Contract Water
 - BRA Reservoir Contract



Raw Water Supply

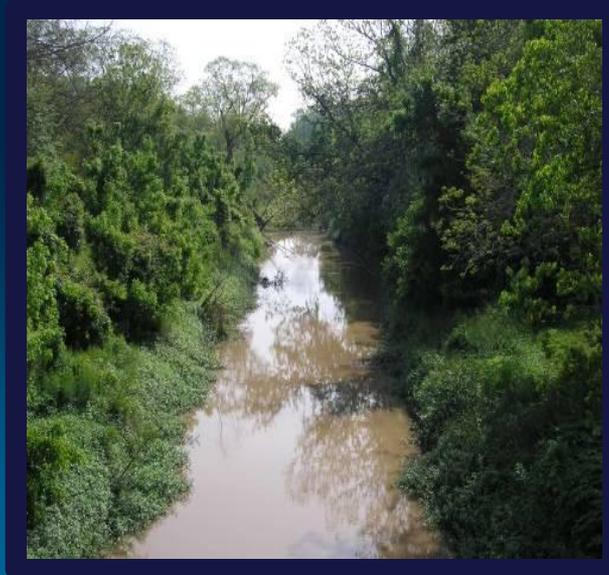
- **Oyster Creek Water Right**
 - **16.3 MGD (on paper)**
 - **During drought City will limit Agricultural Use to 4.89 MGD per Settlement Agreement with Gulf Coast Water Authority (GCWA)**
 - **No annual payment for water**

Raw Water Supply

- **GCWA Contract (Take or Pay)**
 - **20 MGD**
 - **Take Rate: \$175.00 per MG**
 - **Take Rate triggered when City exercises (takes) water use**
 - **Option Rate: \$26.59 per MG**
 - **City currently paying (reserve rate)**

Raw Water Supply

- **Brazos River Authority (BRA)**
 - **6,388 AC-FT**
 - **Considered backup water for times of drought**



Raw Water Supply

- **WCID No. 2 – Lease Agreement**
 - **6.5 MGD**
 - **Will be used along with Oyster Creek Water Right to supply water to the Surface Water Treatment Plant**



GRP Update

Rick Ramirez, PE
Water Resources Manager

GRP Participants

Public Water Systems

- ◆ FB MUD 106 (Greatwood)
- ◆ FB MUD 112 (New Territory)
- ◆ Plantation MUD (Tara Plantation)
- ◆ Tx Dept of Criminal Justice
- ◆ Royal Valley Utilities
- ◆ City of Sugar Land

Private Businesses

- ◆ Texas Par Golf
- ◆ River Pointe Golf
- ◆ WSG Sweetwater
- ◆ Schlumberger

Home Owner Assoc & Levee Dist

- ◆ Royal Valley HOA
- ◆ Avalon CAI
- ◆ Sugar Mill CAI
- ◆ Sugar Lakes HOA
- ◆ First Colony Comm Association
- ◆ New Territory Res. Comm Assoc.
- ◆ River Park HOA
- ◆ LID 17 (Telfair Levee Dist.)
- ◆ Venetian Estates
- ◆ City Airport

GRP Water Demand

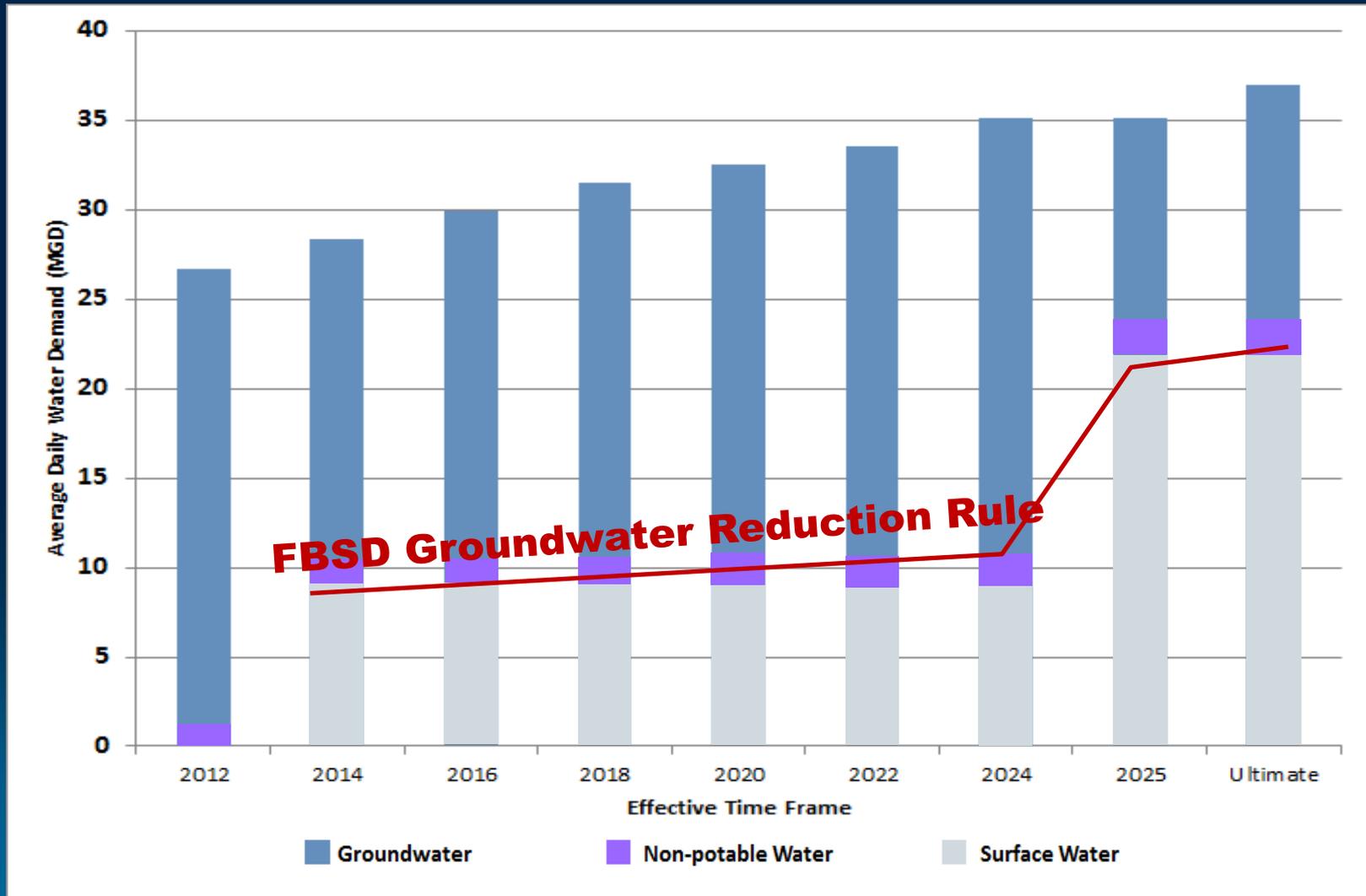
Million Gallons per Day (MGD) Average Day

Year	Demand		Conversion
➤ 2009	24.2		1.2
➤ 2010	25.4		1.2
➤ 2011	30.3		1.2
➤ 2012	24.7		0.5
➤ 2014	27.87*	30%	8.4
➤ 2024	34.6 *	30%	10.4
➤ 2025	34.6 *	60%	20.7
➤ Ultimate	36.4 *	60%	21.9

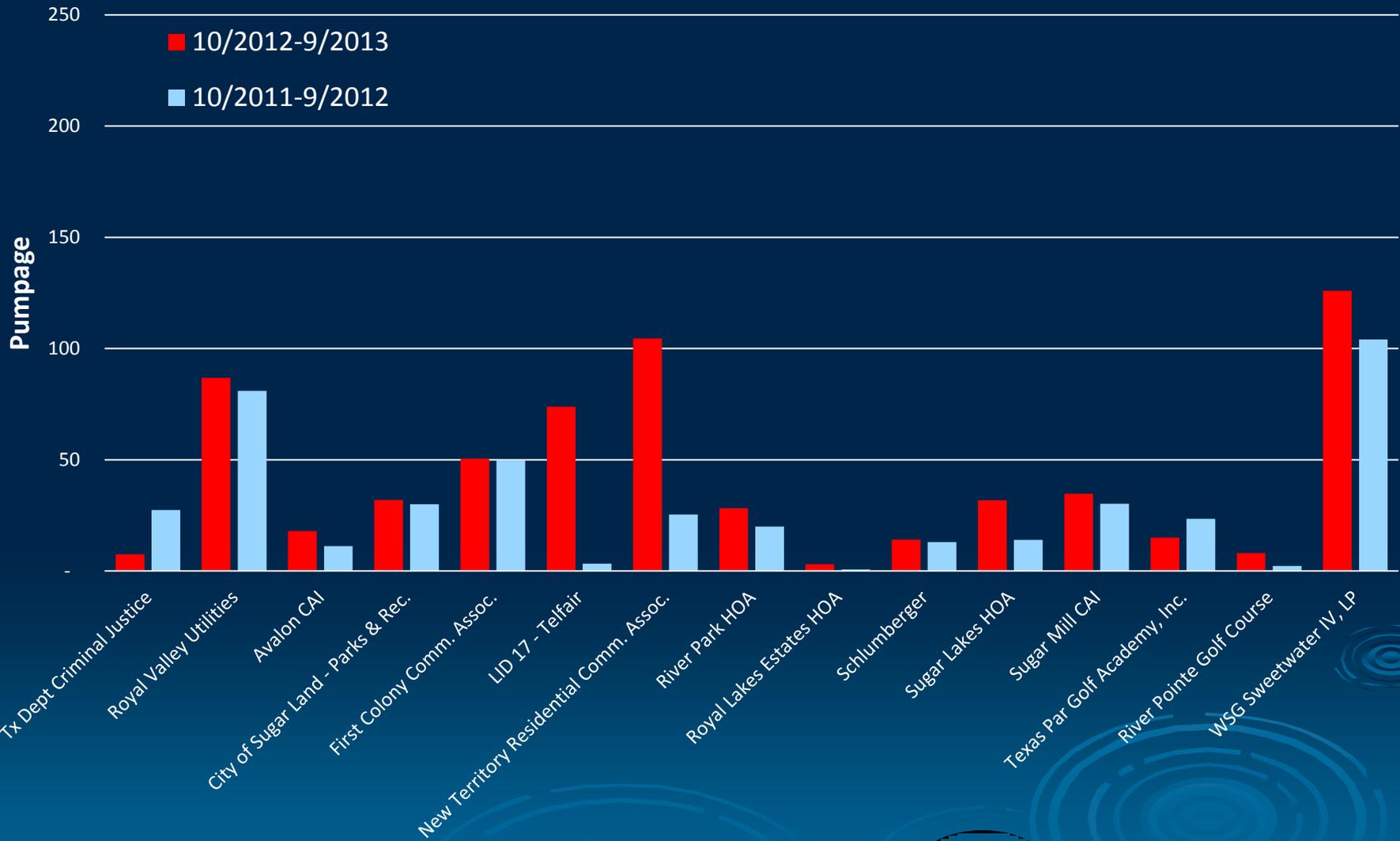
***Estimated**

GRP Water Demand

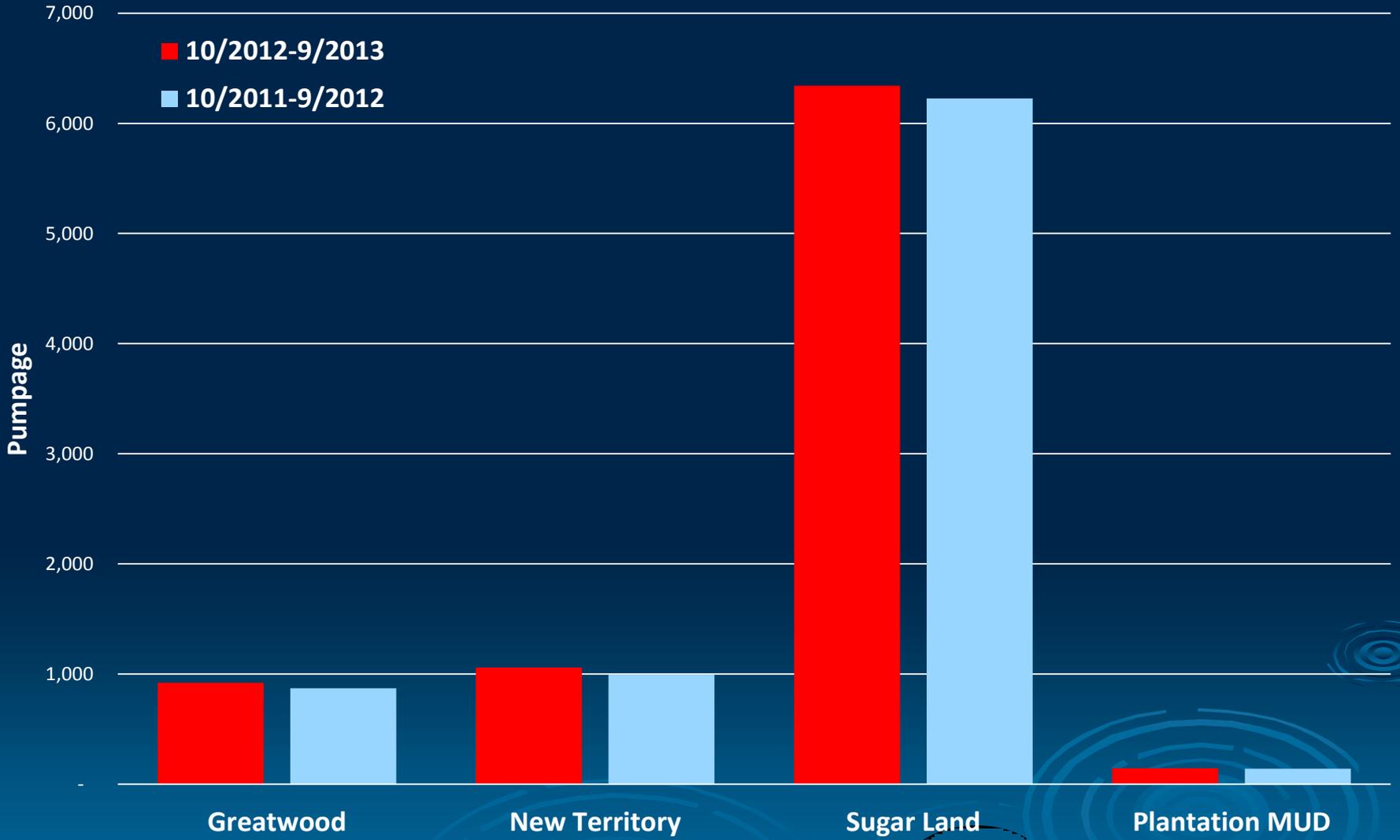
Million Gallons per Day (MGD) Average Day



GRP Participants (Million of Gallons)

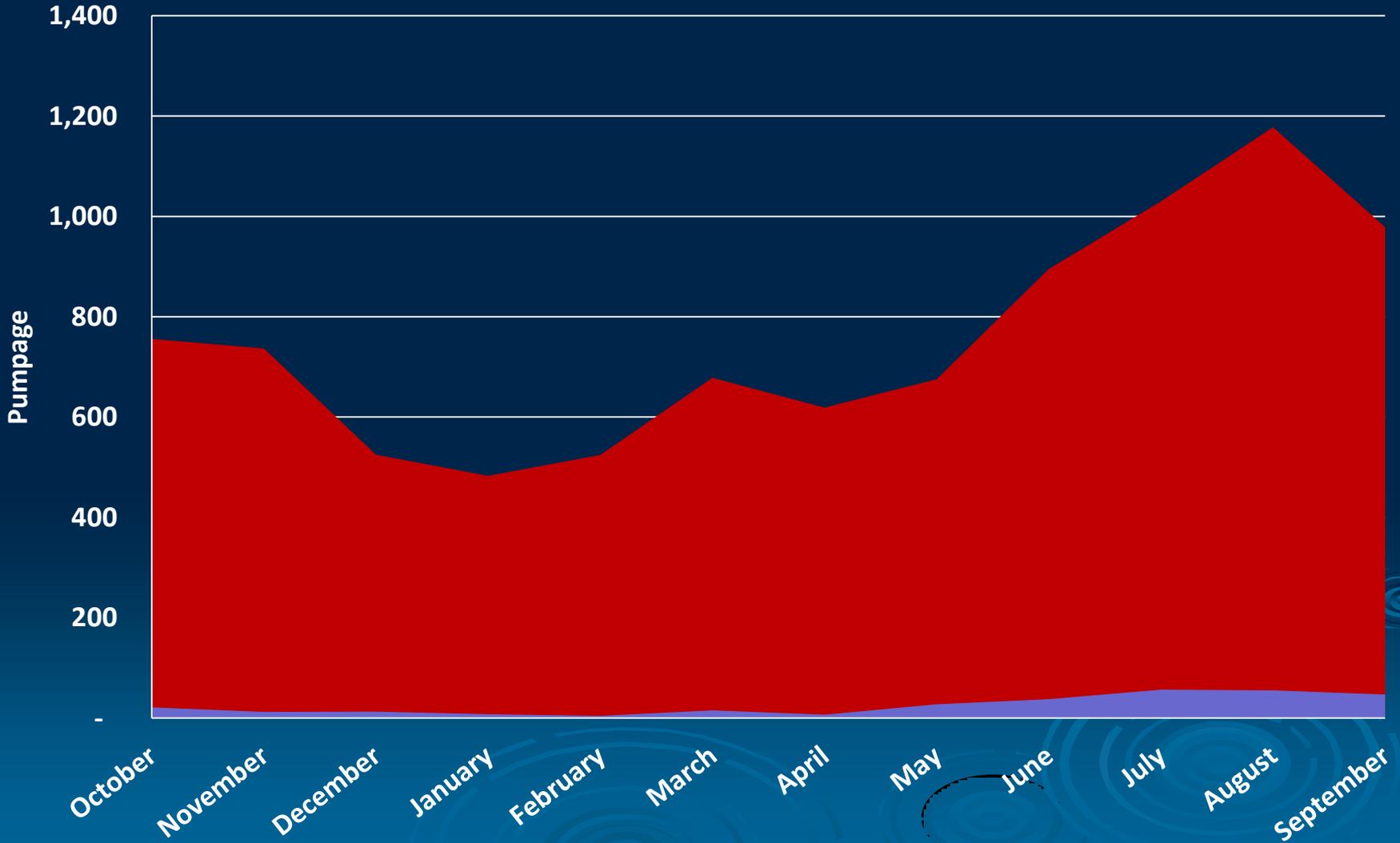


POTABLE WATER WELLS (Millions of Gallons)



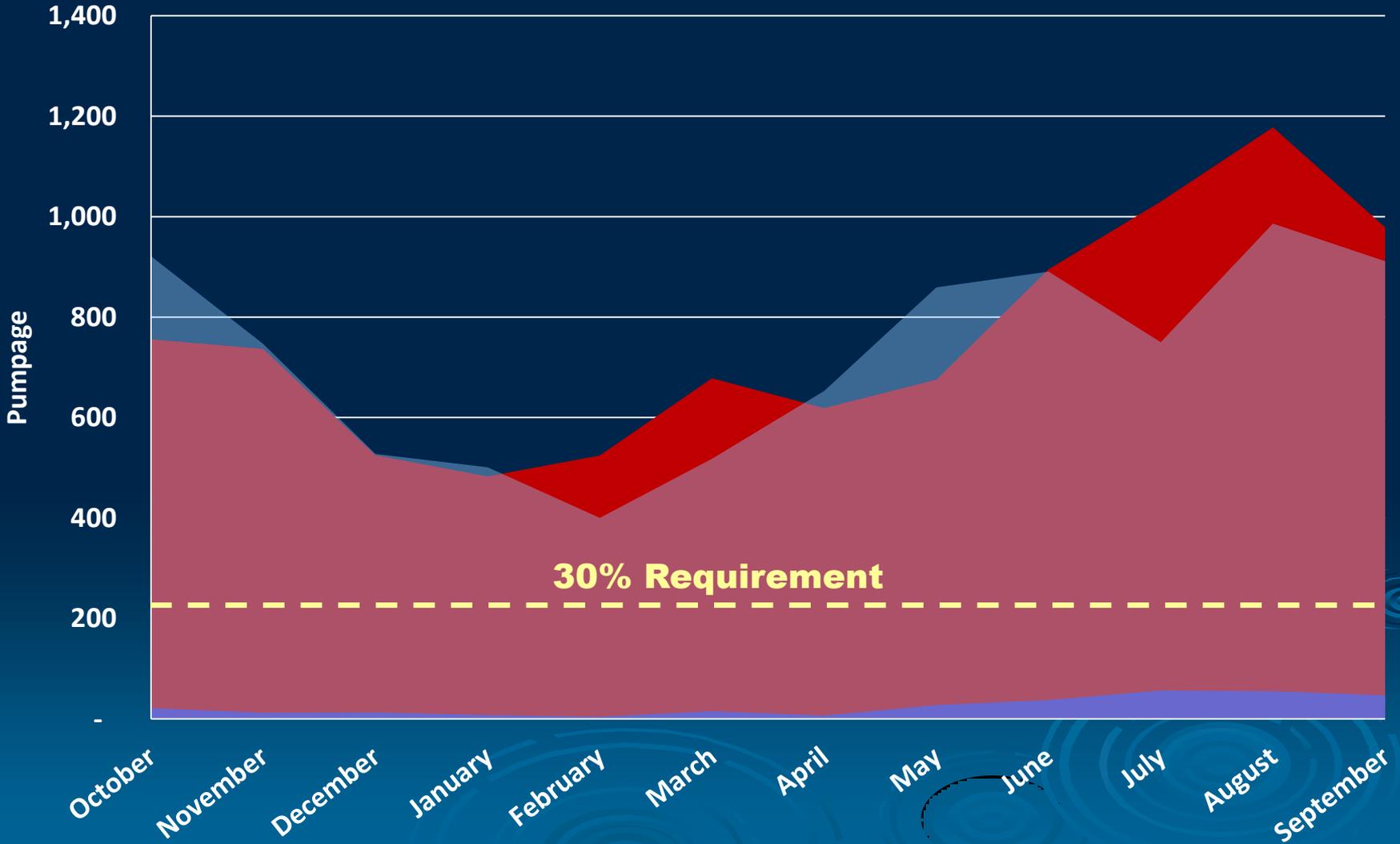
FY12-FY13 ACTUAL PUMPAGE (Millions of Gallons)

■ 2013 Pumpage ■ Non-Groundwater



FY12-FY13 ACTUAL PUMPAGE (Millions of Gallons)

■ 2013 Pumpage ■ 2012 Pumpage ■ Non-Groundwater



GRP Participant Water Use

- **2013 Drought Created increase in water use**
- **Overall use is up 5% from FY12**
- **July saw a 37% increase from last year's usage**
- **Water Conservation Important**
- **Post 2014 conversion:**
 - **Thoughtful management of water use**
 - **Potential for Implementation of Water Conservation and Drought Contingency Plans**



GRP Implementation

Rick Ramirez, PE
Water Resources Manager

GRP Implementation Strategy

4 Strategies

1. Surface Water Conversion
2. Water Conservation
3. Water Reuse /Reclaimed
 - Obtained TCEQ 210 for reuse at the 3 Wastewater plants in 2008
4. Non-potable surface water use
 - GRP assumes 2 MGD

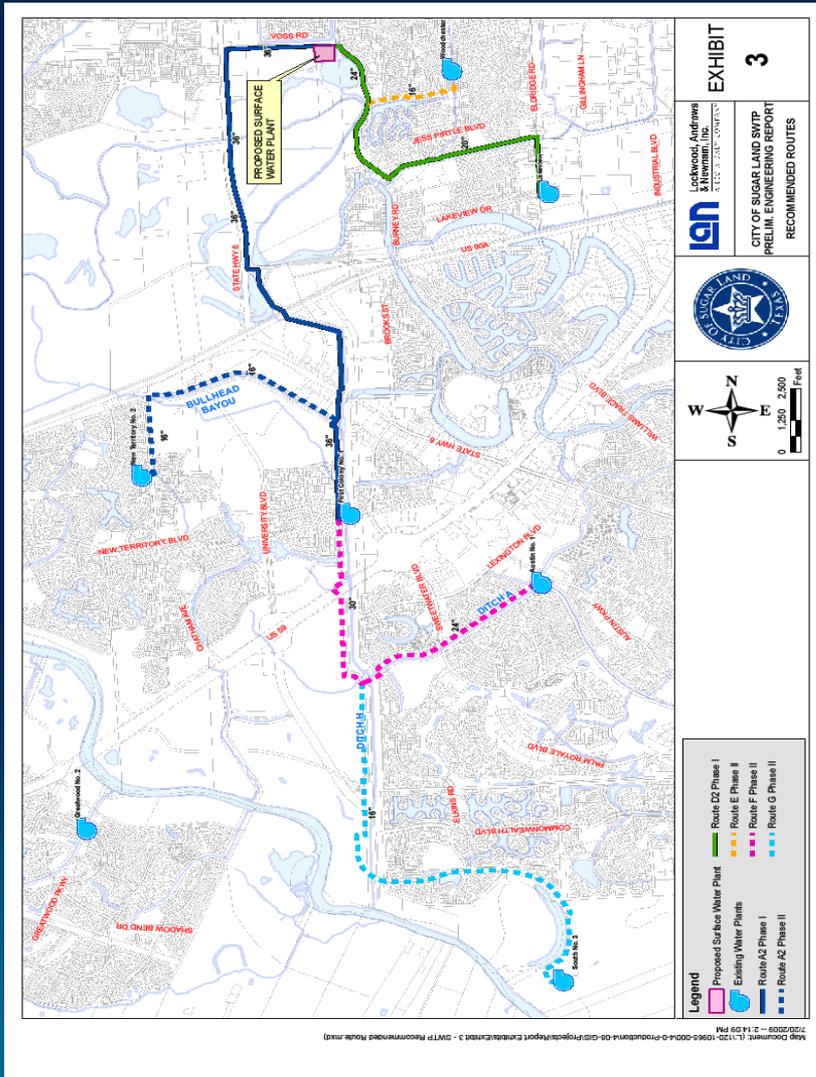
SWTP Implementation Strategy

- **Surface Water Plant Size**
 - 9 MGD operational end of 2013
 - Expand to 22 MGD in 2025
 - MF/UF Membrane Filtration (RO provision 2025)
- **Build base load plant - 9 mgd 365 days year**
- **Over convert dense areas – minimize transmission lines**
- **Surface water delivered to groundwater plants for distribution and blending to minimize changes in taste**
- **Peak water demands met from groundwater**

Surface Water Conversion Projects

- 9 MGD Surface Water Treatment Plant Expandable to 22 MGD
- Transmission Lines
- Groundwater Plant Improvements

Transmission Lines



- Two Construction Contracts
 - Lakeview WP line:
 - Completed in 2012
 - First Colony WP line:
 - Completed in 2013

Groundwater Plant Improvements

- **Construction: 6/12 – 8/13**
 - **Disinfection:**
 - **Converted to chloramines in Sept. 2013**
 - **Increased pumping capacity**

SWTP - Complex Project

- **Construction Manager At Risk (CMAR):**
 - Construction will be completed in Nov. 2013
- **Construction Budget \$ 69 M**
- **Integration of Ground and Surface Water Supplies - Ensures superior water QUALITY**
- **Balance Water Demands to Meet Minimum Conversion Requirements - Ensures QUANTITY**
- **Complex Instrumentation and SCADA Systems Needed to Achieve Objectives**

SWTP Permitting

- Permitted for 9 MGD
- City will be able to re-rate the plant to a higher capacity

Surface Water Plant





727.520.8181
www.aerophoto.com

City of Sugar Land, TX Surface Water Treatment Plant Facility

Image # 131003 6328
Date 10.03.13



727.520.8181
www.aerophoto.com

City of Sugar Land, TX Surface Water Treatment Plant Facility

Image # 131003 6331
Date 10.03.13

Raw Water Intake





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www.aerophoto.com

City of Sugar Land, TX Surface Water Treatment Plant Facility

Image # 131003 6328
Date 10.03.13



727.520.8181
www.aerophoto.com

City of Sugar Land, TX Surface Water Treatment Plant Facility

Image # 131003 6329
Date 10.03.13

Membrane Building



Membrane Building



Additional Projects

- **South Plant - Riverstone Reclaimed Water Project**
- **Oyster Creek Water**
 - **Riverbend Golf Course**
 - **Sugar Creek Golf Course**

Groundwater Credits Earned

- **Early Conversion Credits –
Non-Potable Projects Completed**
 - Lake Pointe Irrigation
 - Telfair Lake Filling
 - Venetian Estates Lake Filling and Irrigation
 - Orchard Irrigation
 - Sugar Lakes Pump Station
- **WaterWise Conservation Education**
 - Presentations to 4th - 5th Graders in Ft. Bend
- **Total Credits (3/2013): 3.898 billion gal**
- **Value (\$ 6.50/1000 gal) = \$ 25,342,863.00**

Groundwater Summary

FBSD Permit Year (April 1 - March 31)		
Certificates Pending	Value: Cost of Surface Water (FY 13) per 1,000 gal	\$ 4.26
Surface Water Use <i>for Permit Year April 2012 - March 2013</i>	246,000,000	
	246,000,000	\$ 1,047,960.00
Actual Certificates in Safe		
WaterWise Credits (2004-2007) (from MUDs 106,108,109,117)	548,710,000	\$ 2,337,504.60
WaterWise Credits (2007 - Current)	878,892,000	\$ 3,744,079.92
Early /Over Conversion Credits	2,225,300,000	\$ 9,479,778.00
Total	3,652,902,000	\$ 15,561,362.52
	Total Pending + Actual	3,898,902,000 \$ 16,609,322.52
	Value: Fort Bend Subsidence District Disincentive Fee per 1,000 gal	\$6.50
	Value of Certificates using Disincentive Fee	\$25,342,863.00

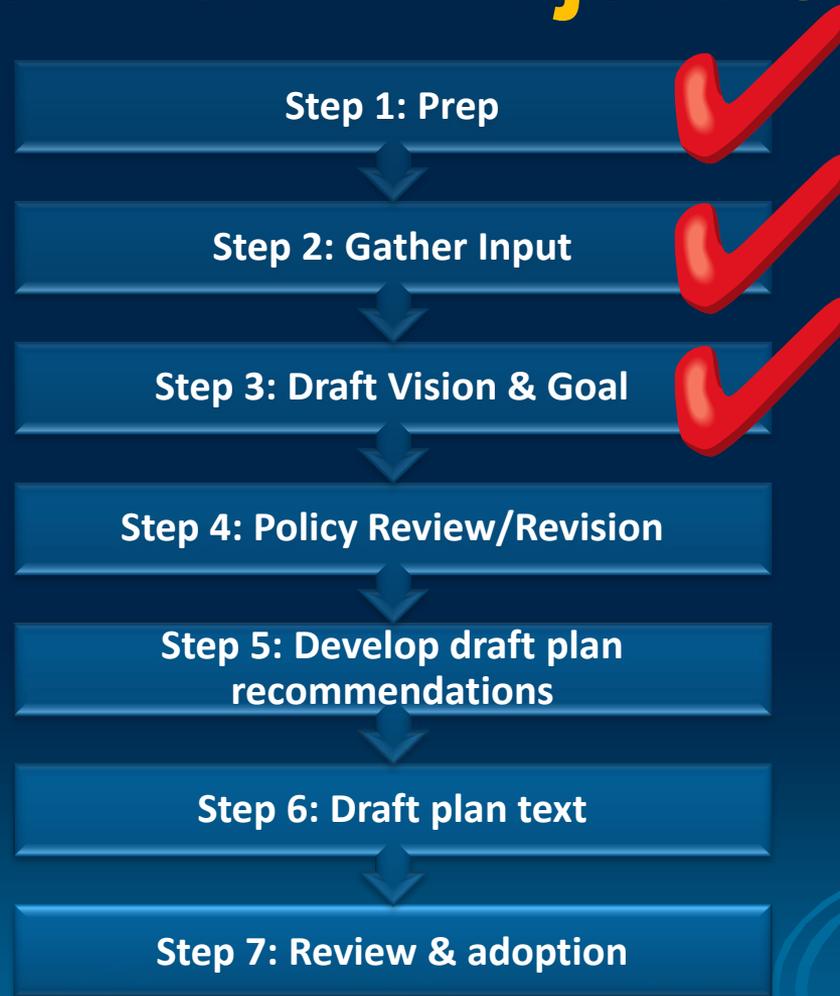
Sugar Land's Planning Process

Phase I – Traditional Master Plan

- System Assessment
- Hydraulic Model
- GRP Update
- Capital Improvement Program

Phase II – Water Resource Strategy and Policy Development

Master Plan Project Steps



Water Master Plan - Next Steps

- **Develop policy papers**
 - **Staff and Consultant**
- **Council Workshop to review draft policy recommendations**
- **Develop draft recommendations for strategies and initiatives**
- **Public feedback on draft plan recommendations**



Financial Update

Jennifer Brown

Director of Budget & Research

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**
 - **Enterprise Fund Separate from Water Utilities**
 - **Only Accounts for Surface Water Activities**
- **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**
- **No increase in GRP Rate scheduled for at least next 5 years**

Surface Water Fund

- **Ended FY13 on Target with Budget**
- **Expenditures Increased due to Debt Service Payments for 2011 CO's**
- **Savings Recognized in FY13; delay in opening SWTP**
- **FY14 Begin SWTP Plant Operations Mid November**
- **Delay Final GRP Rate Increase to Jan 2014**

What Can Impact Rates

- **FBSD Regulations**
- **Future Expansions**
- **Dramatic Changes in Pumpage**

Surface Water Fund

5 Year Forecast

\$ Millions	FY14B	FY15E	FY16E	FY17E	FY18E
Revenues	13.98	14.78	15.07	15.37	15.41
Expenses	-15.62	-14.70	-14.85	-15.09	-16.12
Net Income	-1.64	0.08	0.22	0.28	-0.71
End Balance	8.56	8.65	8.87	9.15	8.44
Balance Policy					
<i>50% of Budget</i>	7.81	7.35	7.42	7.55	8.06
Est. GRP Rate per 1,000 gallons (Jan. 1)	\$1.75	\$1.75	\$1.75	\$1.75	\$1.75

Capital Improvement Projects

Project Name	Prior Years
North WWTP Reclaimed Water	\$1,365,000
Non-Potable Reuse Study- SWWTP	150,000
SCADA – Communication Conversion	385,000
SWTP – O & M Manual and SOP	418,000
Water Plant Upgrades for Conversion	9,600,000
SW Transmission Line	19,051,956
Surface Water Treatment Plant	81,873,111
SWTP CT Study & Tracer Testing	75,000
SWTP Computerized Maintenance	550,000
AMIL Gates Replacement Study	140,000
SWTP Raw Water Monitoring System	150,000
Sugar Lakes Non-Potable Water Pump Station	335,500
SWTP Membrane Acceptance & LRV Demo Test	180,000
Total	\$114,273,567

FY14 to FY18 CIP

Project Name	FY17	FY18
Riverstone GW Plant Improvements	275,000	2,090,000
Riverstone GW Plant Connections	990,000	7,150,000
Total	\$1,265,000	\$9,240,000

Surface Water Fund Operating Results

	Revenues	Expenses	Net	GRP Rate
FY 08	\$4,864,709	\$2,636,519	\$2,228,190	\$0.25
FY 09	2,487,817	1,345,424	1,142,393	0.25
FY 10	4,379,854	1,984,577	2,395,278	0.60
FY 11	106,376,359	101,363,160	5,013,199	0.70
FY 12	9,996,039	10,320,727	-324,688	1.32
FY 13P	11,638,978	10,543,604	1,095,374	1.50

Surface Water Comparative GRP Fees

District	Rates
North Fort Bend Water Authority (2016)	\$3.55
North Fort Bend Water Authority (2013)	\$2.15
West Harris County Water Authority	\$1.90
City of Sugar Land	\$1.75
Fort Bend County WC&ID No. 2	\$1.65
Missouri City	\$1.40
Richmond	\$0.75
Rosenberg	\$0.60

Questions?

- Are these meetings frequent enough?
- Are you interested in receiving quarterly reports?
- What additional information do you need?
- We are happy to attend your HOA, board or customer meetings.

Much More Information

- **Contact Information: 281-275-2450**
- **Rick Ramirez:**
 - rxramirez@sugarlandtx.gov
 - **281-275-2451**
- **GRP Website:**
 - <http://www.sugarlandtx.gov/grp>

Planning for Sugar Land's Future Water Today

