



# Groundwater Reduction Plan Participant Meeting October 23, 2014





# 2014 Participant Meeting

- **Introductions**
- **FB Subsidence District Update**
- **Sugar Land Water Master Plan Update**
- **GRP Implementation**
- **GRP Financial Update**
- **Questions & Answers**

# Fort Bend Subsidence District

**Mike Turco, General Manager**

**Robert Thompson, Deputy General Manager**



# Fort Bend Subsidence District

# 2013 Regulatory Plan Key Elements

## Reg. Areas & Conversion Requirements

### Area A

**Reduce GW pumpage by 30% by 2014**

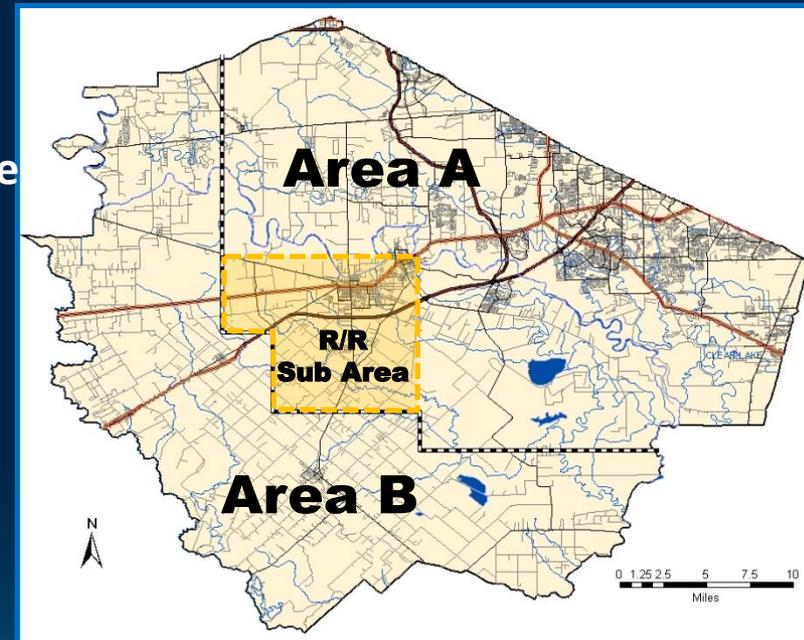
Reduce GW pumpage by 60% by 2025

Exemptions: Ag. Irrigation & Livestock,  
TWD  $\leq$  10.0 mgy until alt. supplies available

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

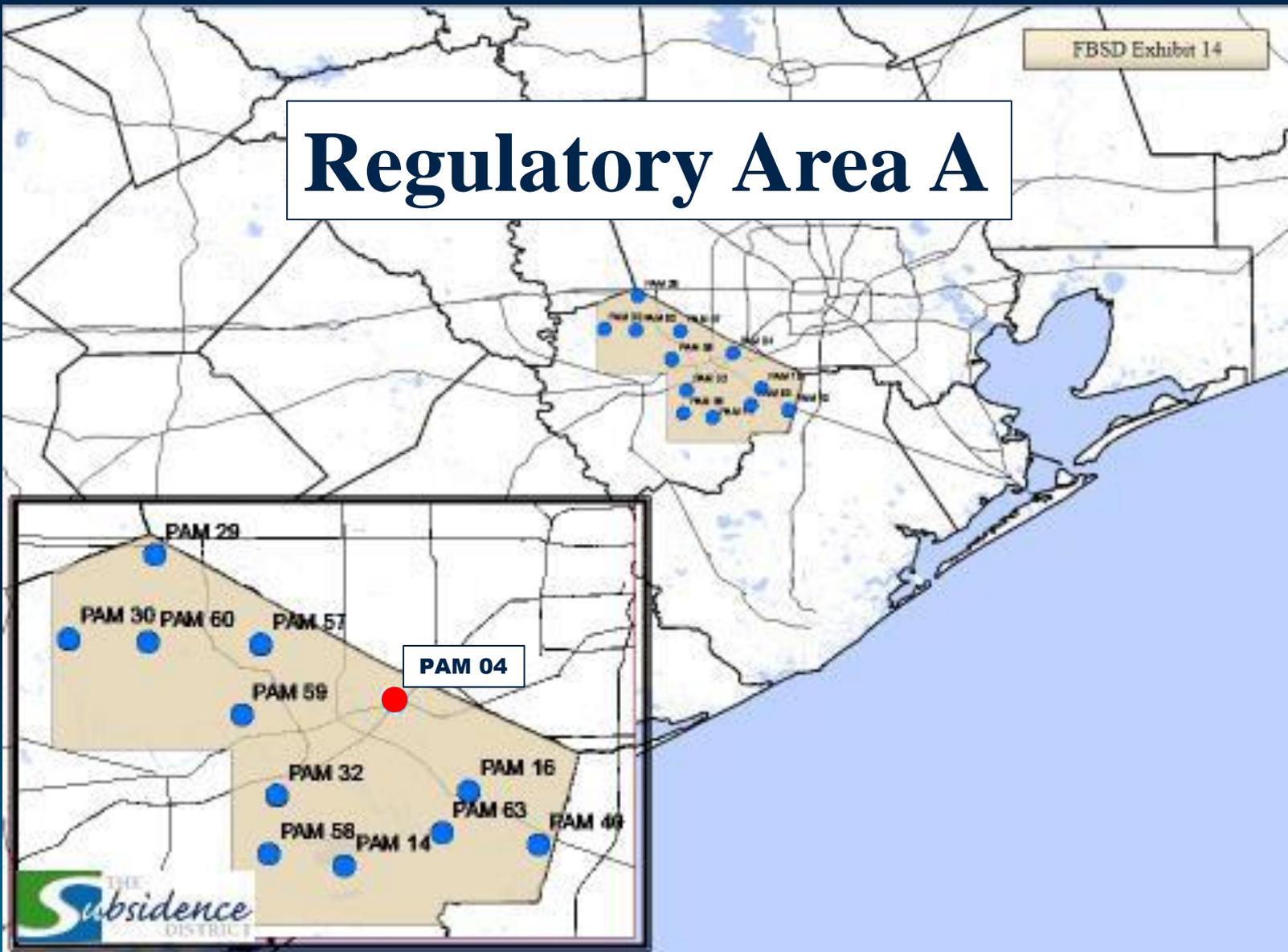
Cannot transfer GW to Area A unless use dates back to before Sept. 24, 2003

# 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 Groundwater withdrawn from any county outside the District does not qualify as an alternative water supply unless the permittee can demonstrate that the groundwater withdrawals will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.

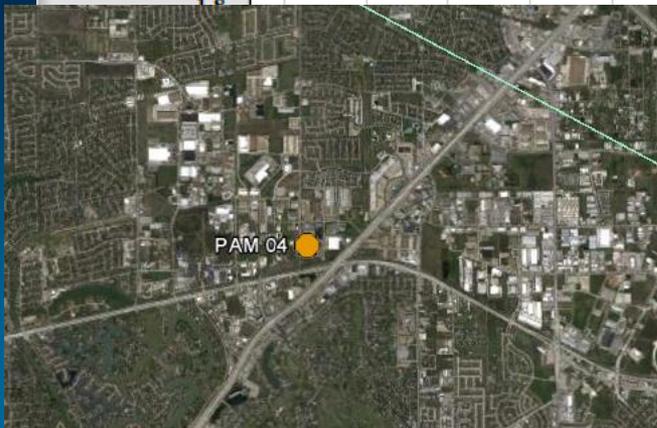
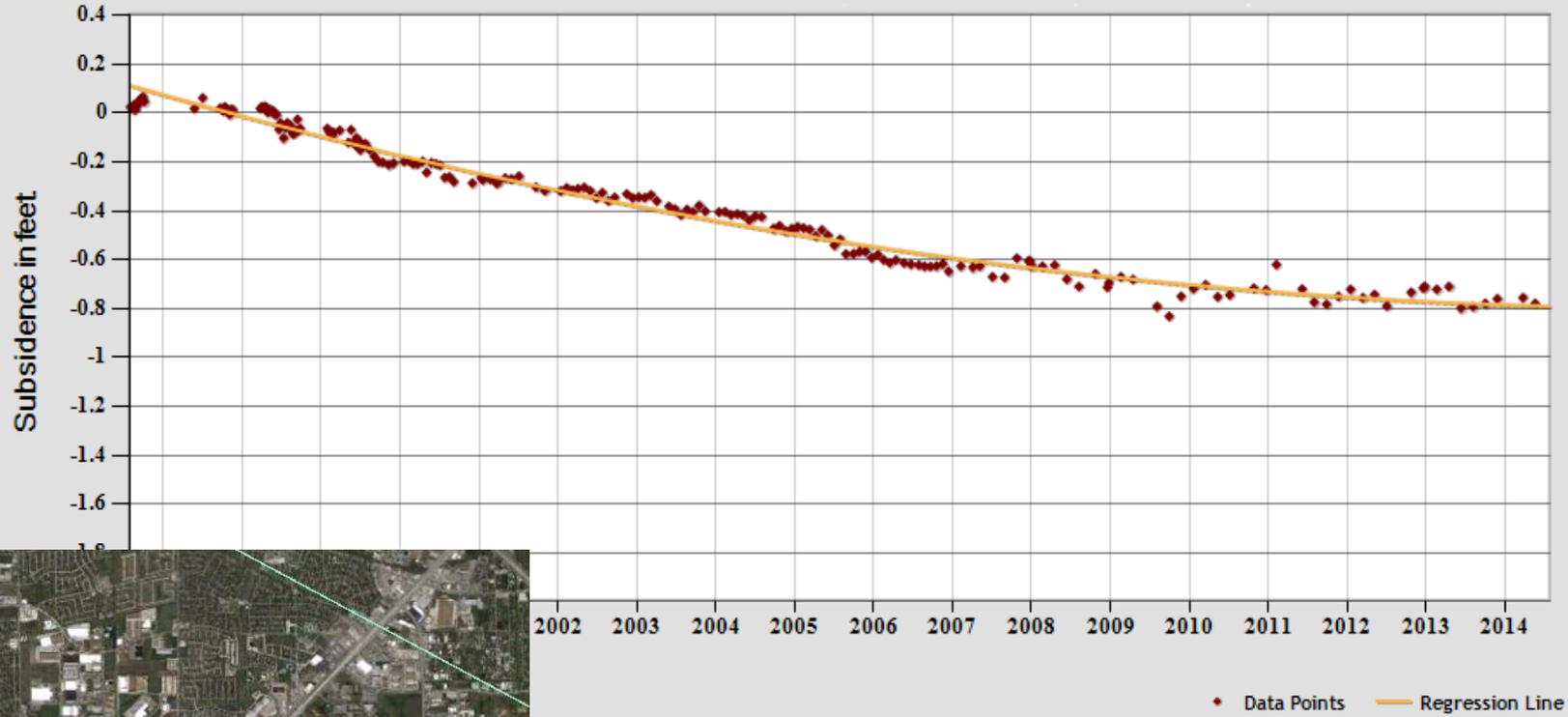
# FBSD Subsidence Monitor Site – PAM 04 – Sugar Land

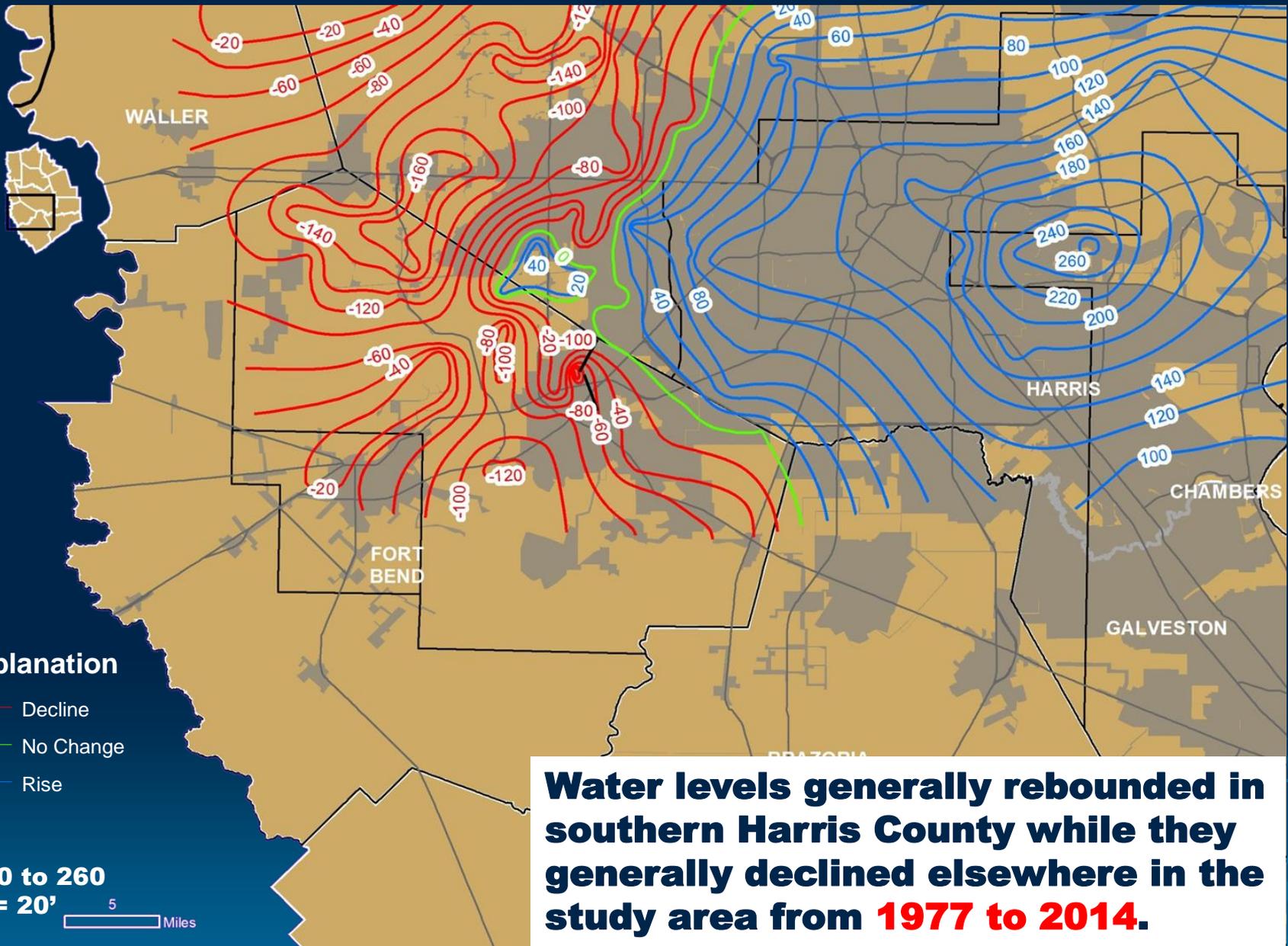


# FBSD Subsidence Monitor Site – PAM 04 – Sugar Land

## Fort Bend Subsidence District - PAM 04

*Subsidence Observations*





# 1977-2014 Water Level Change in the Evangeline 9



WALLER

HARRIS

FORT BEND

CHAMBERS

GALVESTON

BRAZORIA

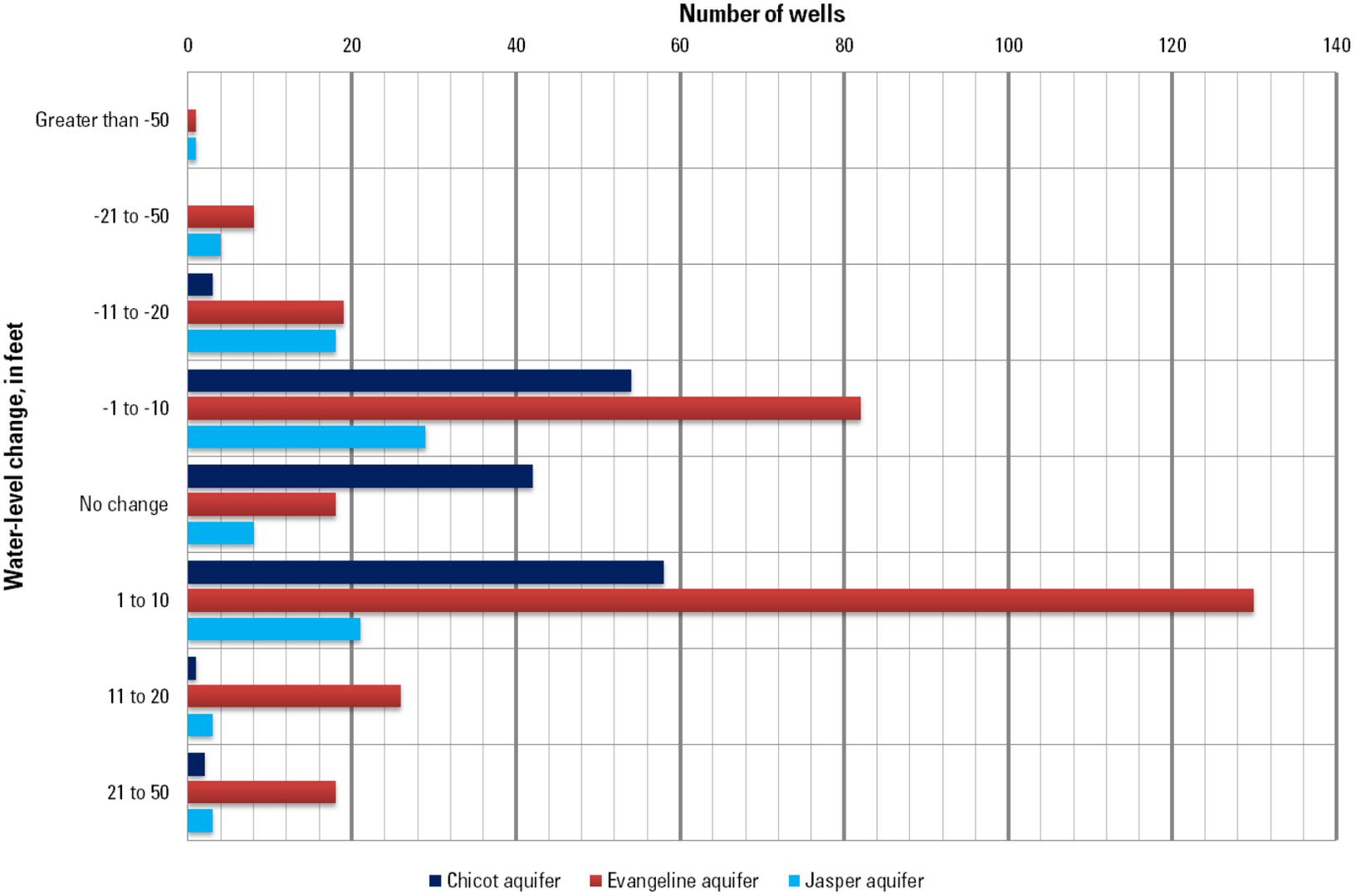
**Explanation**

- 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 2013 to 2014.**

**2013–14 Water-Level Change – Evangeline Aquifer**

# Water-level changes, 2013–14



## 2013-2014 Water-level change summary

# Subsidence Change Table

PAM Sites		First	Subsidence (feet)	
ID	Location	Observation	2013	Cumulative
04	<a href="#">Sugar Land (FB)</a>	8/2/1996	-0.05	-0.76
10	<a href="#">Rosenberg (FB)</a>	1/15/1999	-0.06	-0.20
14	<a href="#">Smithers' Lake (FB)</a>	11/17/2000	-0.10	-0.28
16	<a href="#">Kitty Hollow Park (FB)</a>	11/9/2000	-0.03	-0.30
21	<a href="#">Pearland (B)</a>	1/30/2002	-0.04	-0.13
29	<a href="#">Katy (FB)</a>	4/28/2007	-0.10	-0.43
30	<a href="#">Fulshear (FB)</a>	5/8/2007	-0.03	-0.03
31	<a href="#">Needville (FB)</a>	5/8/2007	0.02	0.08
32	<a href="#">Greatwood (FB)</a>	5/8/2007	-0.05	0.02
40	<a href="#">Arcola (FB)</a>	5/8/2007	-0.06	-0.17
41	<a href="#">610 Loop Southwest (H)</a>	6/27/2007	-0.01	0.04
42	<a href="#">Highway 6 at Bissonnet Road (H)</a>	7/5/2007	-0.04	-0.11
57	<a href="#">South Cinco Ranch (FB)</a>	2/19/2009	0.02	-0.10
58	<a href="#">George Ranch (FB)</a>	8/4/2010	-0.08	-0.08
59	<a href="#">Pecan Grove (FB)</a>	7/28/2010	-0.06	-0.06
60	<a href="#">Fulshear at Gaston Road (FB)</a>	2/8/2012	0.02	-0.02
61	<a href="#">Simonton (FB)</a>	2/16/2011	-0.07	-0.05
62	<a href="#">Orchard (FB)</a>	2/16/2011	-0.06	0.03
63	<a href="#">Missouri City at Brazos River Pump Inlet (FB)</a>	6/7/2011	-0.06	0.00
67	<a href="#">Rosenberg at Interstate 69 (FB)</a>	2/9/2011	-0.04	-0.03
Cooperative CORS Sites		First	Subsidence (feet)	
ID	Location	Observation	2013	Cumulative
ANG5	<a href="#">US Coast Guard – Angleton (B)</a>	1/1/2008	-0.01	-0.12
COH1	<a href="#">City of Houston – Southwest (H)</a>	1/24/2007	0.03	-0.05
COH2	<a href="#">City of Houston – South (H)</a>	1/24/2007	0.04	-0.04
DWI1	<a href="#">SMRTNT – Clute (B)</a>	8/27/2009	0.01	-3.70
TXAG	<a href="#">TxDoT – Angleton (B)</a>	1/23/2007	-0.01	-0.07
TXHE	<a href="#">TxDoT – Hempstead (W)</a>	1/23/2007	0.06	-0.12
TXRS	<a href="#">TxDoT – Rosenberg (FB)</a>	5/15/2011	0.01	0.00
TXWH	<a href="#">TxDoT – Wharton (WH)</a>	3/27/2010	0.15	0.17



# Sugar Land Water Master Plan

**Robert Valenzuela, P.E.**  
**Director of Public Works**

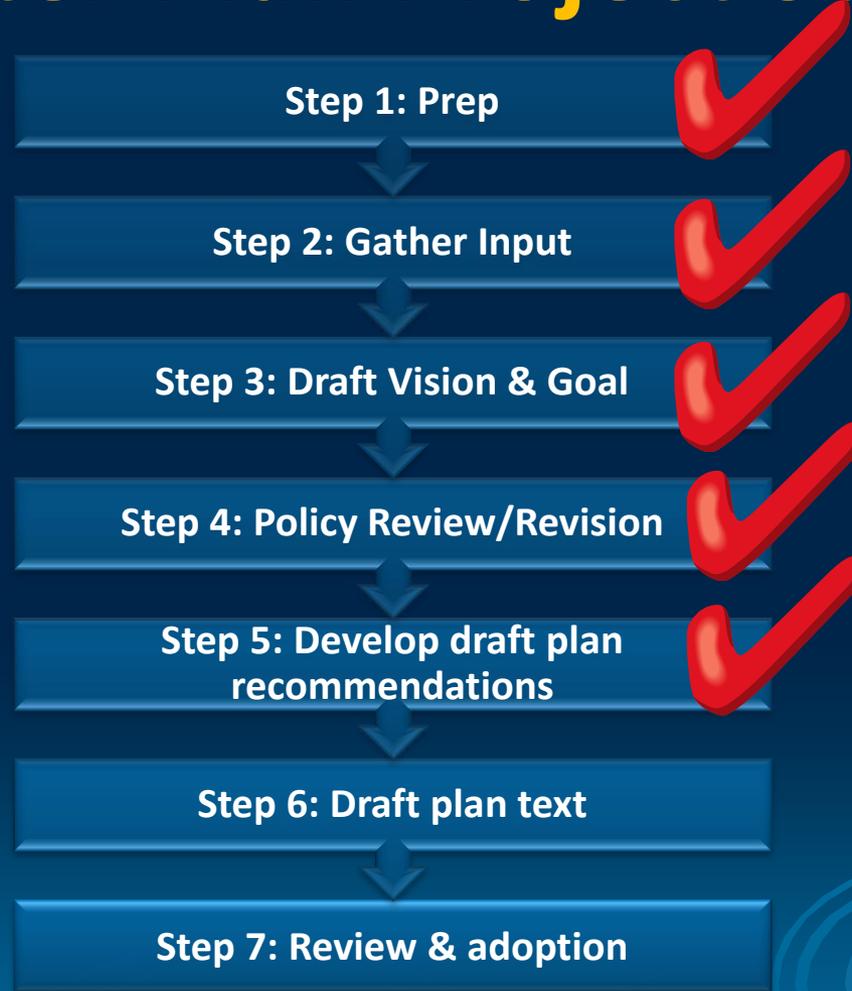
# Water Master Plan Update

## Phase I – Traditional Master Plan

- System Assessment
- Hydraulic Model
- GRP Update
  - Population
  - Water Demands
- Capital Improvement Program

## Phase II – Water Resource Strategy and Policy Development

# Master Plan Project Steps



# Water Master Plan

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



# Groundwater Reduction Plan Implementation Update

**Robert Valenzuela, P.E.**  
**Director of Public Works**

# 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 Lakes Estates 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.)

# GRP Water Demand

Million Gallons per Day (MGD) Average Day

<i>Year</i>	<i>Demand</i>	<i>Conversion</i>	
2009	24.22		1.17
2010	25.43		1.20
2011	30.37		1.29
2012	24.70		0.67
2013	25.03		3.38
2014	27.87	30%	8.36
2024	34.56	30%	10.37
2025	34.58	60%	20.75
Ultimate	36.45	60%	21.87

# GRP Water Supply

## ➤ Raw Surface Water

- GRP long term conversion requirements:
  - 9 MGD in 2013, 22 MGD in 2025
- Current Sources
  - Oyster Creek Water Right
  - Gulf Coast Water Authority
  - Brazos River Authority

## ➤ Reclaimed Water from WWTPs

## ➤ Groundwater

- Wells will supplement peak demands

# Raw Water Supply

## ➤ Oyster Creek Water Right

- 16.3 MGD (on paper)
- During drought City will limit Use to 4.89 MGD per Settlement Agreement with Gulf Coast Water Authority (GCWA)
- Annual cost < \$7,000

# Raw Water Supply

## Gulf Coast Water Authority

- **New GCWA Water Supply Agreement:**
  - 10 MGD Take @ \$141.82 per million
  - 10 MGD Option @ \$23.69 per million
  - Cost savings to the GRP \$670,000
  
- **Old Agreement w/ GCWA:**
  - 20 MGD @ \$175.00 per MG
  
- **Interim Agreement w/ WCID #2**

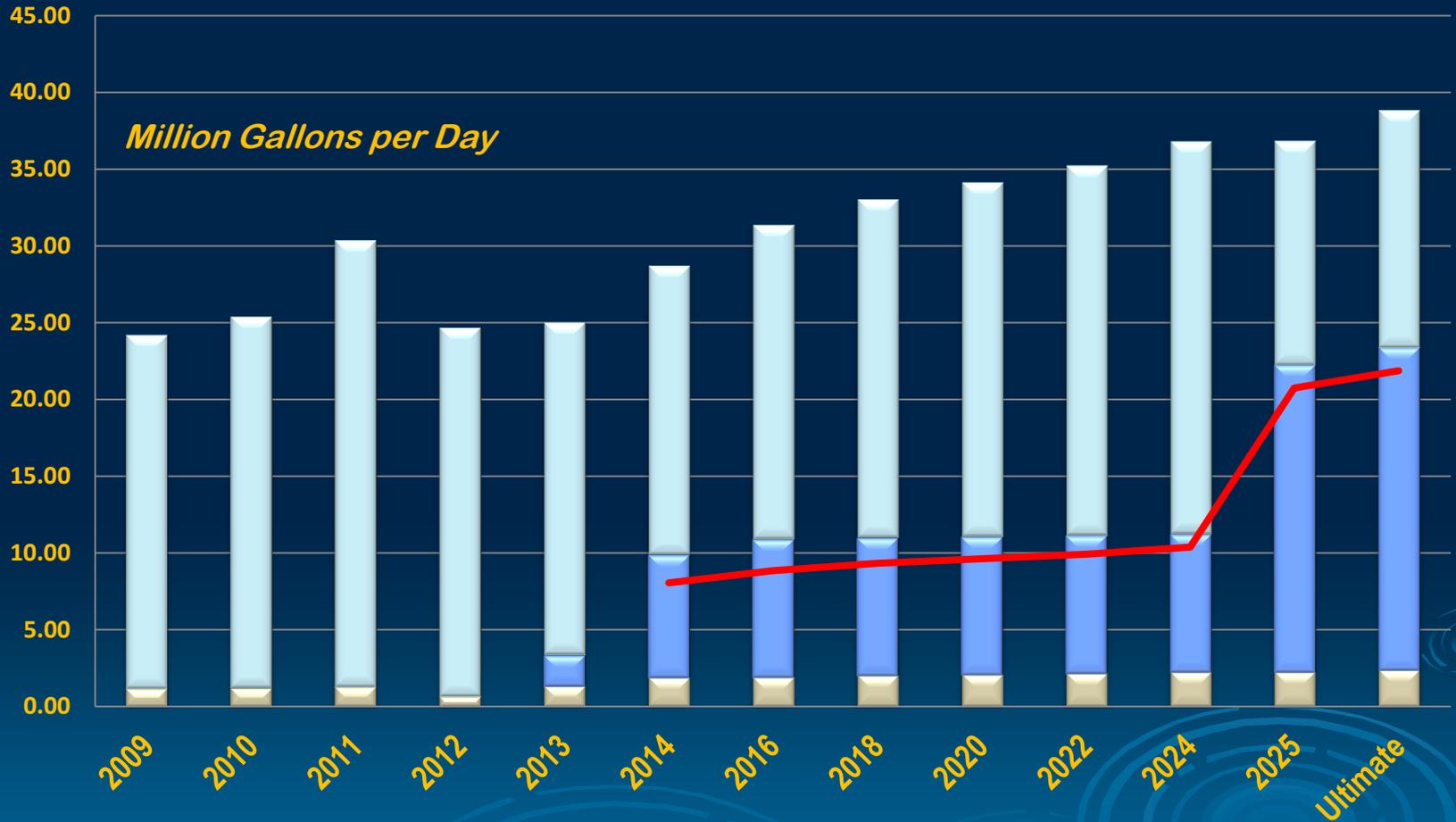
# Raw Water Supply

## Brazos River Authority (BRA)

- 6,388 AC-FT
- Stored Reservoir Water
- Considered backup water for times of drought

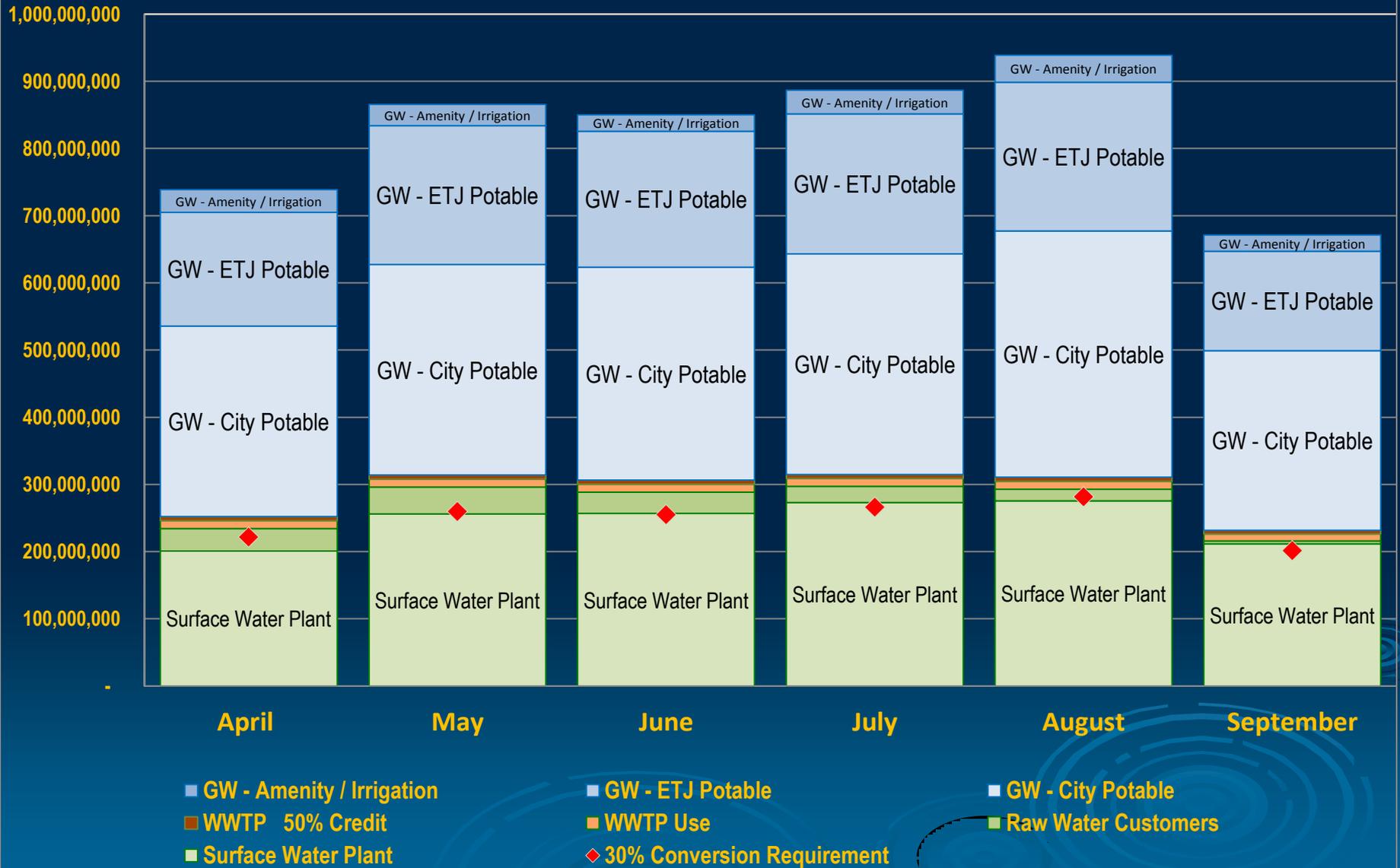
# GRP Conversion Projection

Groundwater SWTP Raw- & Reclaimed Water Required Conversion



*Actual Pumpage: 2009 – 2013* *FBSD Permit Year*  
*Projected: 2014 - Ultimate*

# Sugar Land GRP Monthly Production ~ April - September 2014



# GRP Implementation Strategy

## Four Implementation Strategies

1. **Surface Water Treatment Plant**
  - 9 MGD till 2025 expansion to 20 MGD
2. **Raw Surface Water Pump Stations**
  - GRP assumes 2 MGD
3. **Water Reuse /Reclaimed**
  - South WWTP
  - New Territory (West) WWTP
  - North WWTP
4. **Water Conservation**

# Surface Water Treatment Plant



# GRP Implementation Strategy

## 1. Surface Water Treatment Plant

- Operational and On-line November 2013
  - 9 MGD - potential to re-rate to 10.85 MGD
  - Expand to 20 MGD in 2025
- 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
  - Peak water demands met from groundwater

# SWTP Implementation Strategy

## Transmission Lines

### Completed Projects

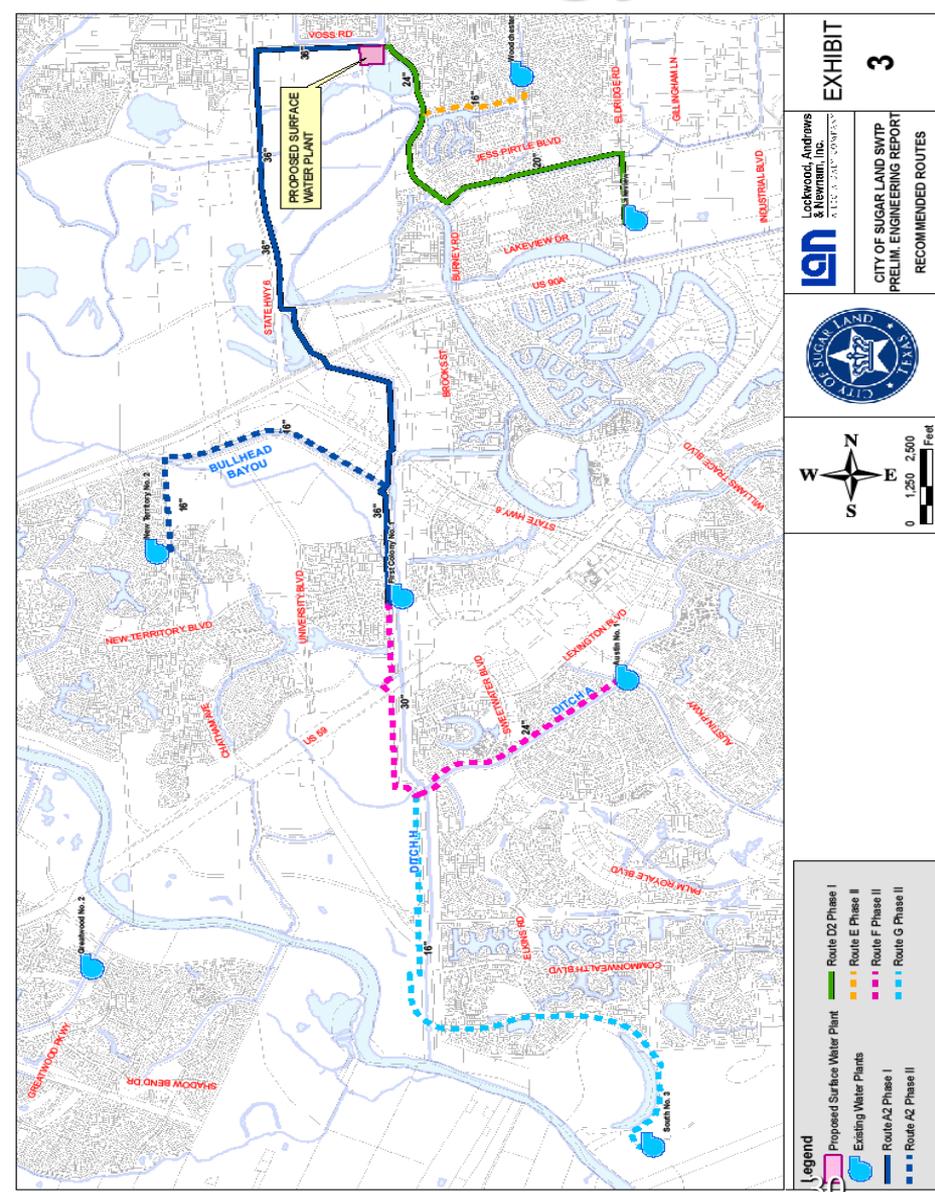
- Lakeview WP line
- First Colony WP line

### Current Project

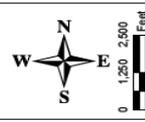
- Riverstone

### Future Project

- Austin Parkway
- New Territory



Lockwood, Andrews & Newnam, Inc.  
**EXHIBIT 3**  
 CITY OF SUGAR LAND SWTP  
 PRELIM. ENGINEERING REPORT  
 RECOMMENDED ROUTES



Map Document: L:\1702-10965-0004-0-Production\05-03\Projects\Report\Exhibits\Exhibit 3 - SWTP Recommended Routes.mxd  
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# SWTP Implementation Strategy

## Groundwater Plant Improvements

- **Converted to chloramines Disinfection  
Sept. 2013**
- **Increased pumping capacity**

# GRP Implementation Strategy

## 2. Raw Surface Water Pump Stations

- Lake Pointe Irrigation
- Telfair Lake Filling
- Venetian Estates Lake Filling and Irrigation
- Orchard Irrigation
- Sugar Lakes Pump Station

## 3. Water Reuse /Reclaimed

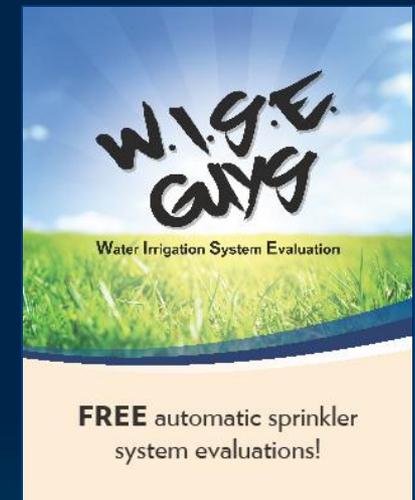
- South WWTP
- New Territory (West) WWTP
- North WWTP

## 4. Water Conservation



# Water Conservation

- **Current Goal:**
  - Reduce “wasteful” outdoor use
  - Reduce peak demands
- **Partnership & Education;**  
*not* Restriction & Regulation



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

# Groundwater Credits Earned

## 1. Early Conversion

- Raw Water Projects
- Surface Water Treatment Plant (Nov.-Mar.)

## 2. Over Conversion

## 3. WaterWise Conservation Education

- Presentations to 4<sup>th</sup> - 5<sup>th</sup> Graders

### ➤ Total Credits as of March 2014:

**5.025 billion gal = conversion for 1.5 years**

### ➤ Value: Disincentive Fee \$ 6.50/1000 gal = \$32,664,073



# 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**
  - **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 anticipated for at least next 5 years**

# 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**
- **Projections Show the Fund Ending Slightly Better than Budget**

# What Can Impact Rates

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

# Surface Water Fund

## 5 Year Forecast

<b>\$ Millions</b>	<b>FY15B</b>	<b>FY16E</b>	<b>FY17E</b>	<b>FY18E</b>	<b>FY19E</b>
<b>Revenues</b>	<b>15.87</b>	<b>16.40</b>	<b>17.79</b>	<b>17.89</b>	<b>18.16</b>
<b>Expenses</b>	<b>15.06</b>	<b>13.46</b>	<b>14.59</b>	<b>14.48</b>	<b>14.73</b>
<b>Net Income</b>	<b>0.81</b>	<b>2.94</b>	<b>3.20</b>	<b>3.41</b>	<b>3.43</b>
<b>End Balance</b>	<b>12.84</b>	<b>15.78</b>	<b>18.99</b>	<b>22.39</b>	<b>25.82</b>
<b>Est. GRP Rate per 1,000 gallons (Jan. 1)</b>	<b>\$1.75</b>	<b>\$1.75</b>	<b>\$1.75</b>	<b>\$1.75</b>	<b>\$1.75</b>

# 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
<b>Total</b>	<b>\$114,273,567</b>

# F15-19 Capital Projects

Project Name	FY15	FY16	FY17
Brooks Lake Weir / AMIL Gate Repl	1,714,600		
Dam 3 Improvements	90,000		
Riverstone Water Plant Improvements		310,000	2,500,000
Riverstone Water Plant Connections		1,200,000	8,300,000
Oyster Creek Raw Water Monitoring		30,000	
<b>Total</b>	<b>1,804,600</b>	<b>1,540,000</b>	<b>10,800,000</b>

# 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 13	13,149,299	7,047,527	6,101,772	1.50
<b><i>FY14P</i></b>	<b><i>13,159,784</i></b>	<b><i>14,736,193</i></b>	<b><i>-1,576,408</i></b>	<b><i>1.75</i></b>

# Surface Water Comparative GRP Fees

	Per 1,000 gallons
Sugar Land	1.75
Comparative Rates:	
Missouri City	1.65
West Harris County Water Authority	1.90
North Fort Bend Water Authority	2.20

# City of Sugar Land Public Works

## 281-275-2450

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**GRP Website:** [\*\*www.sugarlandtx.gov/grp\*\*](http://www.sugarlandtx.gov/grp)

# Questions?

