



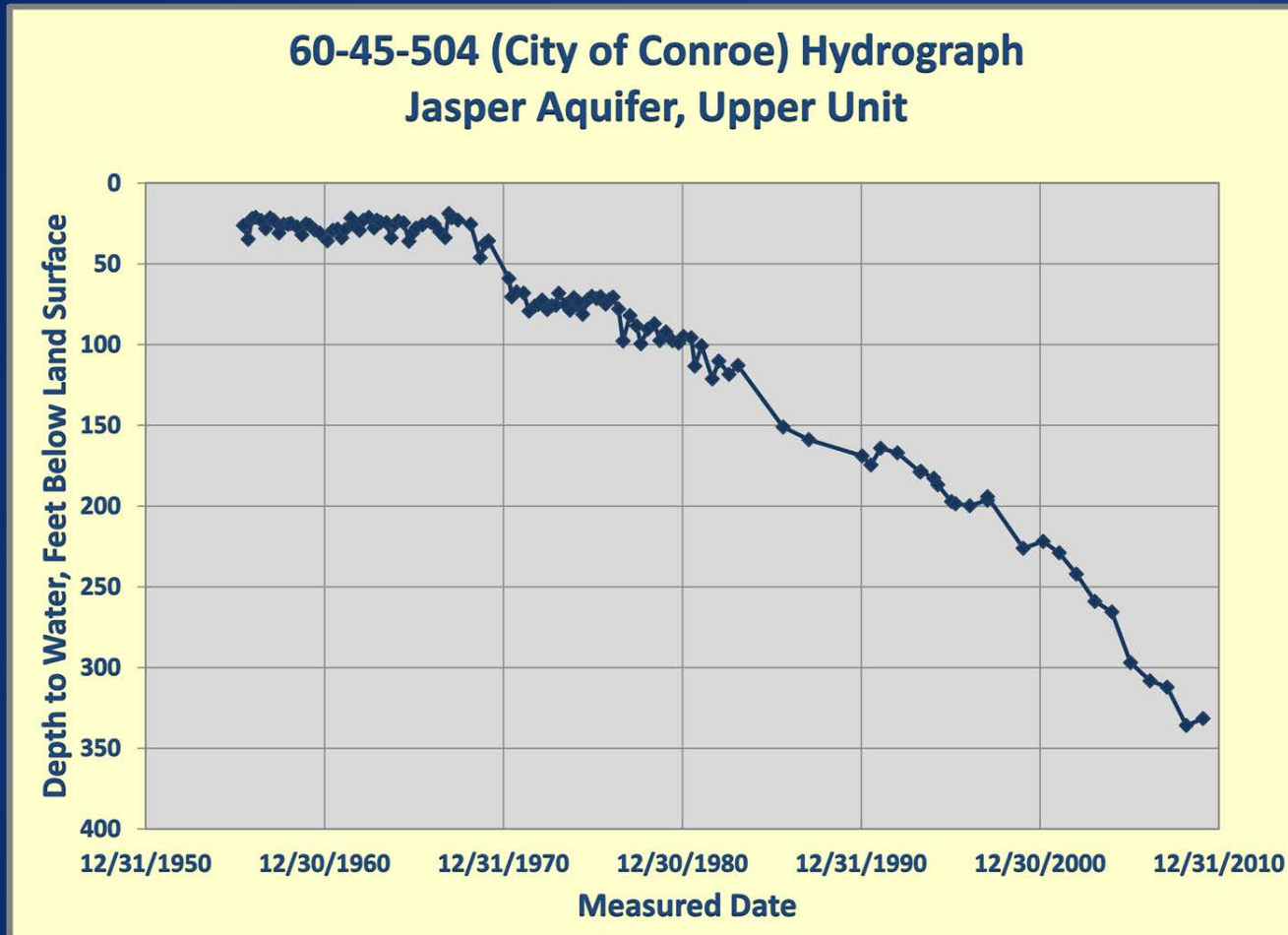
**ALTERNATIVE DFC DISCUSSIONS FOR THE
GULF COAST AQUIFER WITHIN
GROUNDWATER MANAGEMENT
AREA 14**

**Prepared for The
Joint Planning Committee Meeting**

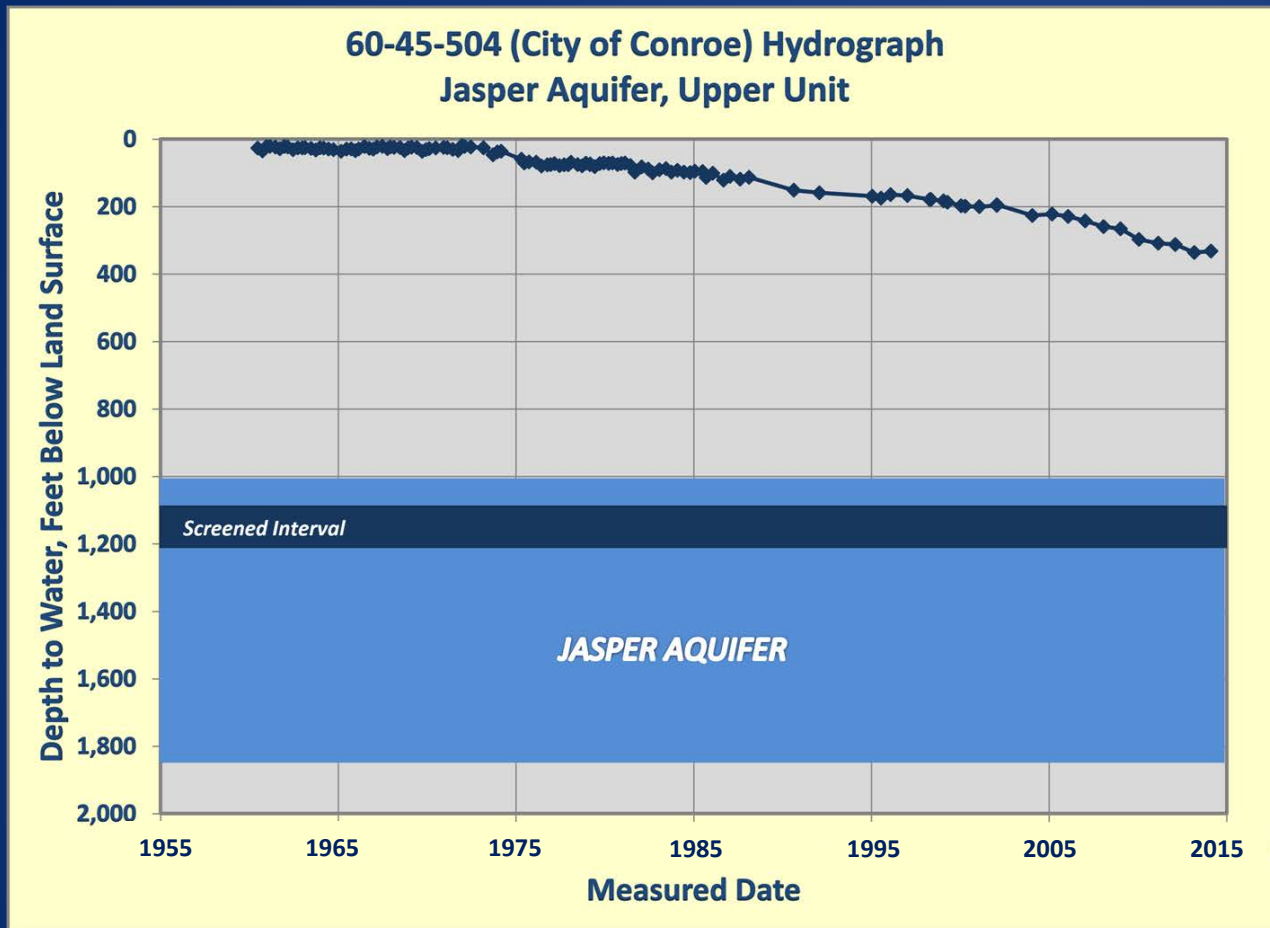
**Presented by
MONTGOMERY COUNTY
INVESTOR-OWNED UTILITIES**

May 28, 2015

Brief Object Lesson

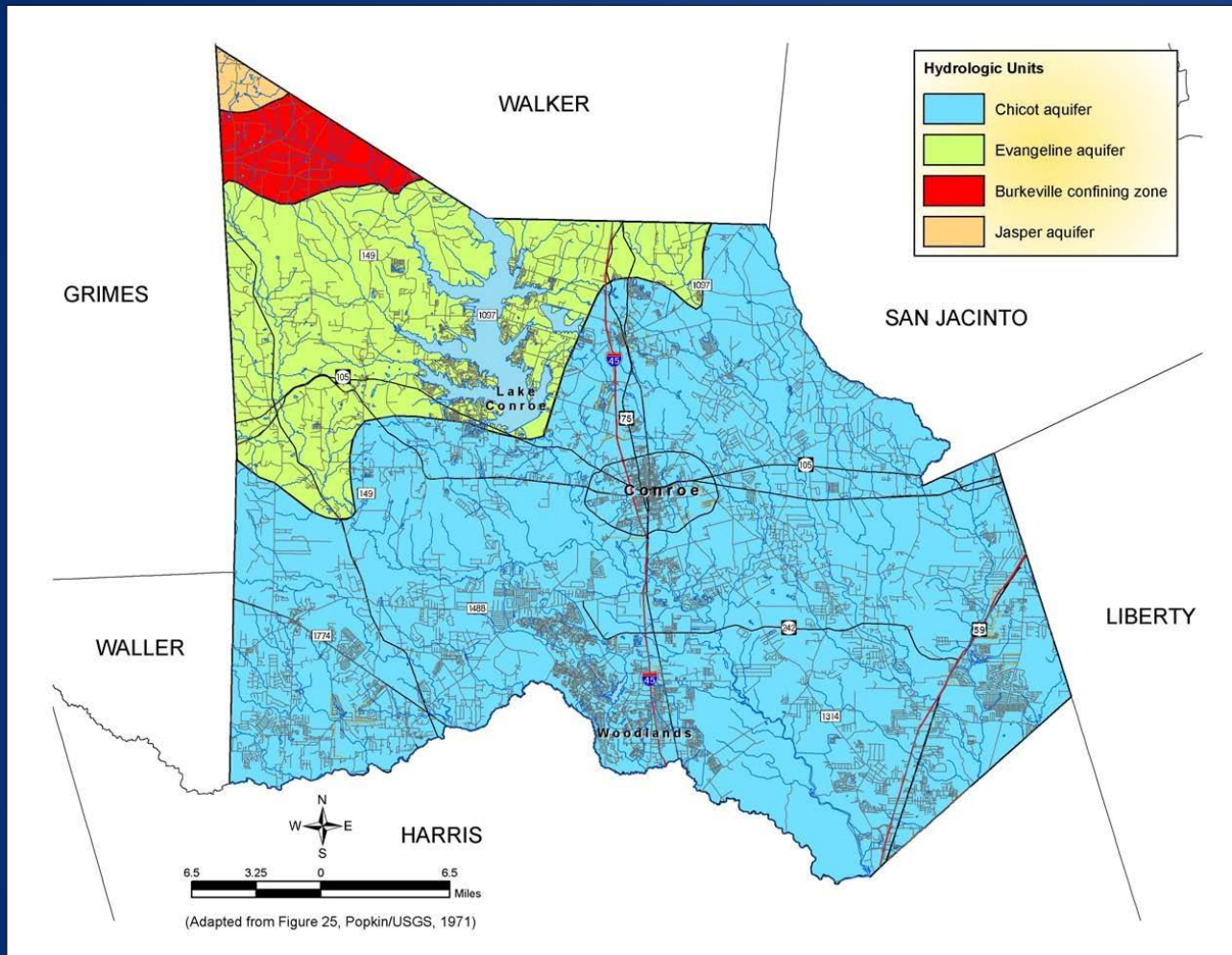


Brief Object Lesson



Brief Object Lesson

Figure 9. Outcrops of Hydrologic Units in Montgomery County.



Brief Object Lesson

MONTGOMERY COUNTY MAG

Aquifer/Formation	Approx. Outcrop Area*	Calculated Recharge Rate**	Selected MAG	
			2010	Proposed 205***
Chicot	510,000 acres (73%)	46,750 AFY	1,722 AFY	14,000 AFY
Evangeline	155,000 acres (22%)	14,200 AFY	38,298 AFY	26,000 AFY
Burkeville	28,300 acres (4%)	2,600 AFY	0 AFY	0 AFY
Jasper	4,300 acres (1%)	390 AFY	21,614 AFY	24,000 AFY
TOTAL	697,600 acres	63940 AFY	61,634 AFY	64,000 AFY

NOTES:

* Outcrop areas are only approximated from map provided in 2004 LSGCD report

** Recharge rate is based on LSGCD's selected value for recharge rate across the entire county of 1.1 inches per year - these are approximations

*** Approximate value from Freese & Nichols June 2014 presentation to GMA 14

**** Recharge values in the 2008 LSGCD Management Plan are derived from GAM values provided in this table

Introduction

- Problems with GMA 14 DFCs and Process
- Ramifications
- Recommended Alternatives will be Submitted

“Nature, within the past decade, has inscribed upon the wide-spreading Texas landscape grim warnings of greater disasters to come if development of the State’s water resources is neglected.”
- State Water Plan...1961!!!

Problems – An Overview

DFC/MAG Process Has Become a Policy-Driven, Administrative Process at the Expense of Good Science and Law

“An estimate of groundwater availability requires the guidance of policy as well as the procedures of science...Although science is required to quantify groundwater availability, policy is the most important factor that influences the final value. **Depending on policy, groundwater availability can range from a very large number to zero for the same aquifer.**”

However, it is important to note that in Texas, groundwater availability numbers **are planning tools and not pumping limits.**
– Mace, Mullican III, and Way 2001 – TWDB

“Perhaps you didn’t notice it, but the ground – or, more accurately, the groundwater policy – shifted beneath your feet on September 1, 2005...House Bill 1763...became effective.”

– Mace, Petrossian, Bradley, Mullican III and Christian 2006 - TWDB

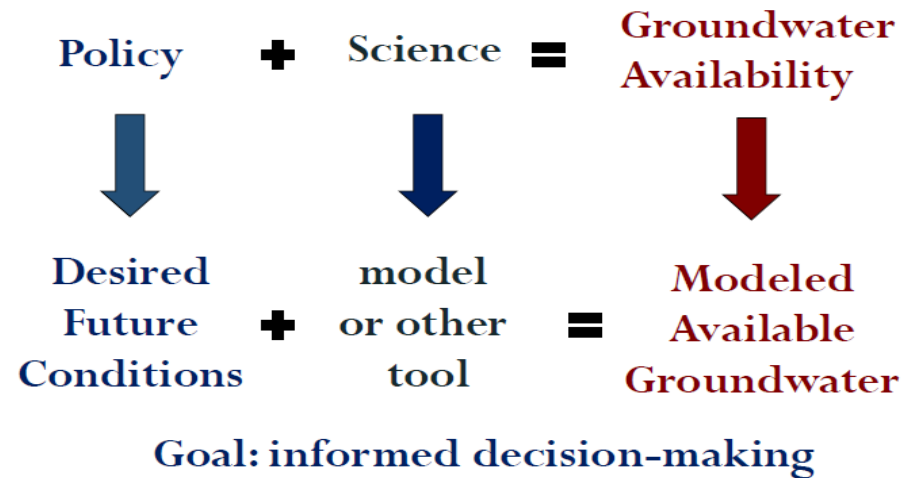
Problems - Specifically

Figure by
Cindy Ridgeway
and
Larry French
- TWDB

INTERRELATED ISSUES

- Reverse Engineered
- Not Per Aquifer Capability
- “Factors” Not Addressed
- Modeling
- Measured vs. Modeled
- Single GCD/County DFCs

What is Groundwater Availability?



- The Texas Water Code requires that regional water plans be “consistent with the desired future conditions...” (Texas Water Code Section 16.053(e)(2-a))
- RWPGs “shall use Modeled Available Groundwater volumes for groundwater availability...” (Title 31 TAC Section 357.32(d))

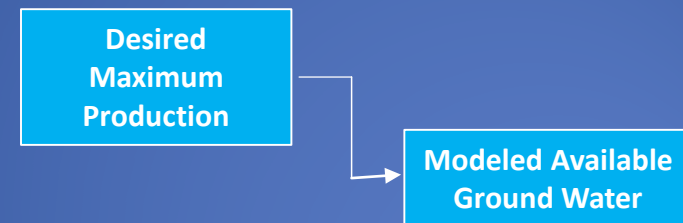
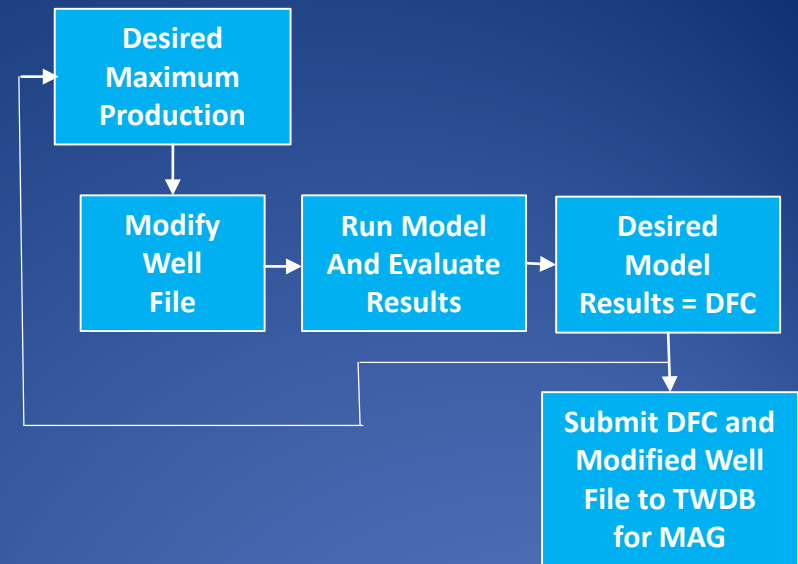
Problems - Specifically

INTERRELATED ISSUES

➤ Reverse Engineered

Prescribed pumping often based on predicted demands from the regional/state water plan – or other pre-set pumping limit

GMA 14 Reverse Engineering



Problems - Specifically

INTERRELATED ISSUES – Reverse Engineering Cont...

Intended DFC to MAG Process

1. Evaluation
 - Physical Availability
 - Environmental Factors
 - Economic Factors
2. Select future ground-water conditions that address these factors (DFC)
3. Estimate the amount of pumpage (MAG) that conforms to DFCs



Reverse-Engineered DFCs

1. Predict pumpage locations and amounts
2. Model the predicted pumpage
3. Accept model results as DFCs
4. Predicted pumpage becomes MAG

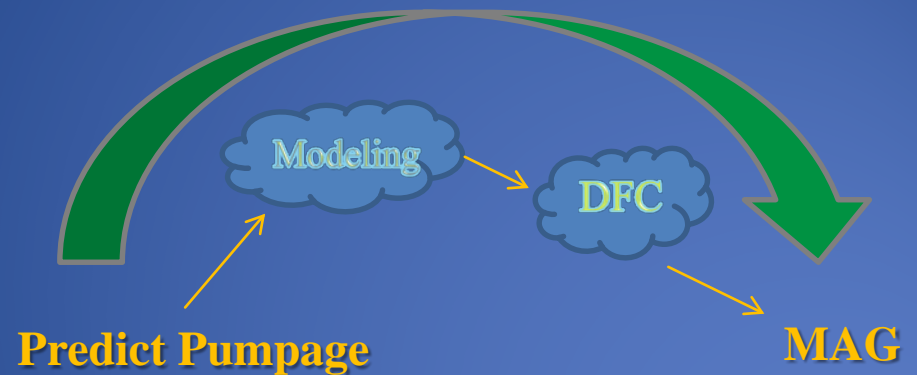


Illustration from RW Harden & Associates, Inc.

Problems - Specifically

INTERRELATED ISSUES

➤ Reverse Engineered

➤ Not Per Aquifer Capability

- ✓ “Like beauty, availability is in the eye of the beholder”
- ✓ “What do you want your aquifer to look like in the future?”
 - Mace et al 2006
- ✓ “Some of the desired future conditions are being driven by...a fundamental misunderstanding of how groundwater aquifers behave...”
- ✓ ...groundwater districts now have the power to enforce the resulting managed available groundwater determination that may, in effect, ignore the capability of the aquifer to produce water...”
 - Mr. Jack Hunt - TWDB

Problems - Specifically

INTERRELATED ISSUES

- Reverse Engineered
- Not Per Aquifer Capability
- “Factors” Not Addressed-----

Per §36.108(d) – Especially...

- ❖ Water balance – TERS and recharge, inflows and discharge
- ❖ Socioeconomic impacts
- ❖ Impacts on private property rights

And per §36.108(d-2)...

- ❖ Balance between highest practicable level of groundwater production and conservation, etc...

Problems - Specifically

INTERRELATED ISSUES

- Reverse Engineered
- Not Per Aquifer Capability
- “Factors” Not Addressed
- Modeling -----

- ❖ Normal modeling limitations – scale, intended purpose, error
- ❖ Changes from NGC GAM to HAGM – for example from 8 feet to 31 feet in Waller Co. for the Evangeline
- ❖ Problems with the HAGM – boundary conditions significantly affecting drawdown, etc...
- ❖ Subsidence predictions

Problems - Specifically

INTERRELATED ISSUES

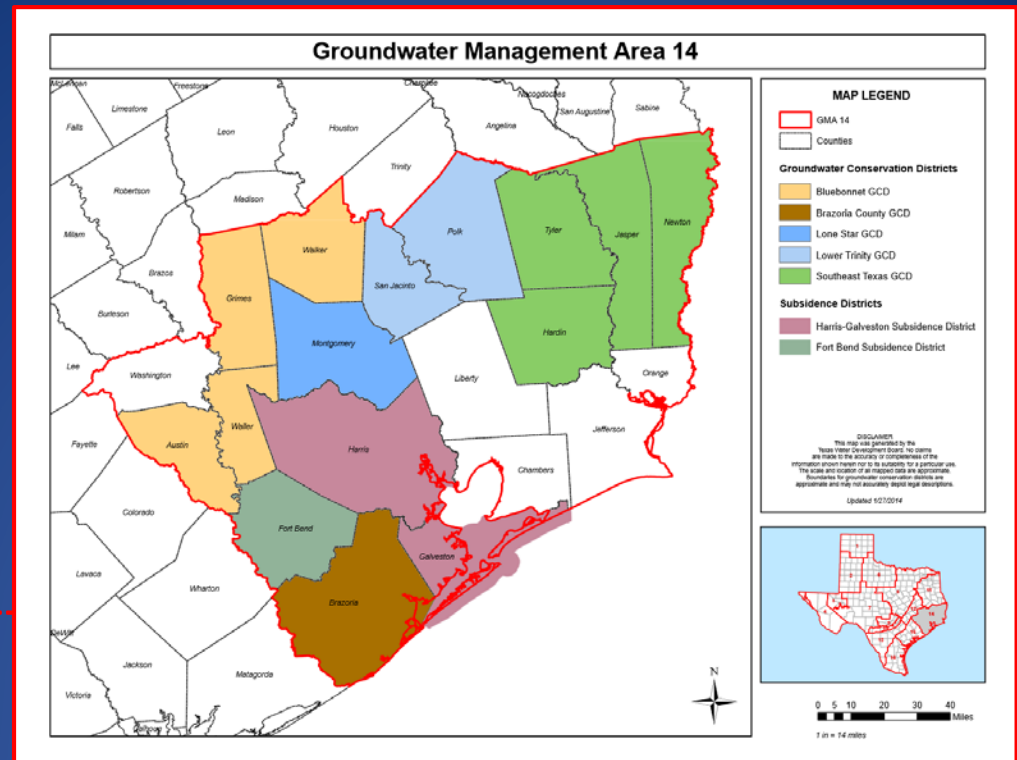
- Reverse Engineered
- Not Per Aquifer Capability
- “Factors” Not Addressed
- Modeling
- Measured vs. Modeled-----

- ❖ Do we take groundwater “out of inventory” based on models – for how long?
- ❖ Adequate monitoring networks? Artesian drawdown vs. water table
- ❖ How do we know if subsidence by 2070 has exceeded “...approximately 0.04 feet” from 1890 conditions?

Problems - Specifically

INTERRELATED ISSUES

- Reverse Engineered
- Not Per Aquifer Capability
- “Factors” Not Addressed
- Modeling
- Measured vs. Modeled
- Single GCD/County DFCs-----
 - Different rules



Ramifications of the Process

INTERRELATED ISSUES

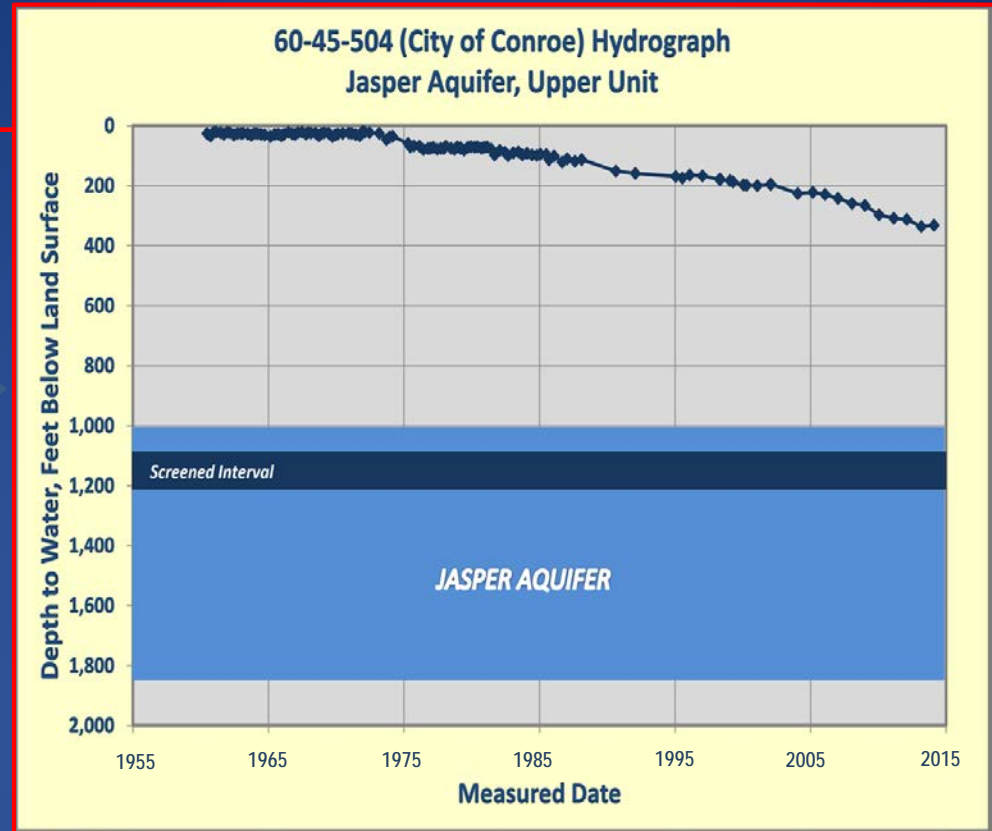
- False Water Shortages
- Dysfunctional Planning
- Economic Impacts
- Infringes on Property Rights

Ramifications of the Process

INTERRELATED ISSUES

➤ False Water Shortages-----

“If Montgomery County continues to rely 100% on groundwater, we will soon run the well dry. - SJRA

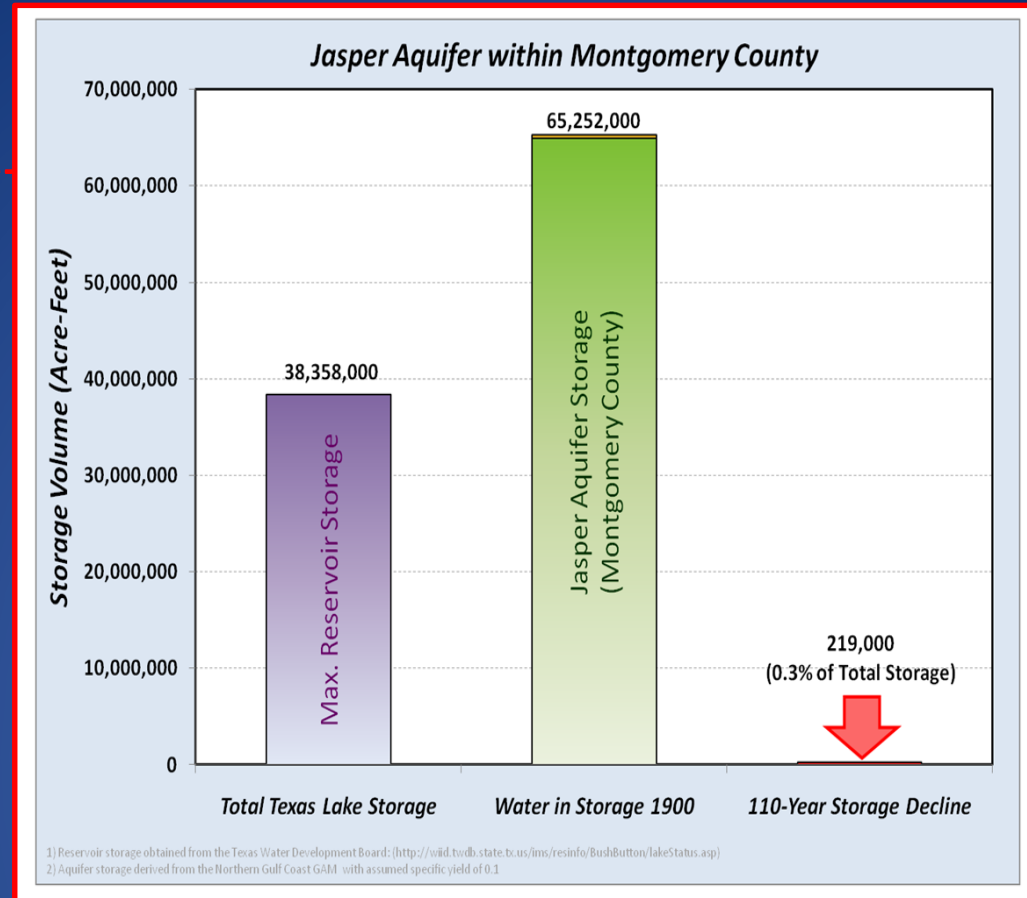


Ramifications of the Process

INTERRELATED ISSUES

➤ False Water Shortages---

“The underground aquifers that we rely on for our water supply are rapidly running out...” - SJRA



Ramifications of the Process

INTERRELATED ISSUES

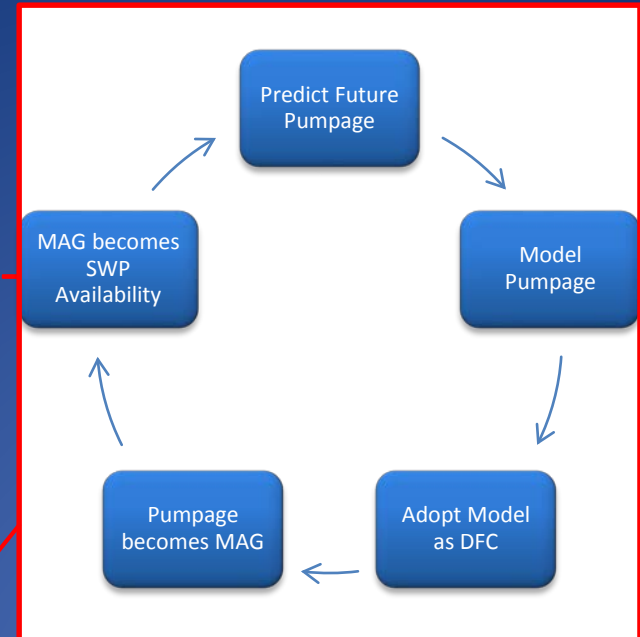
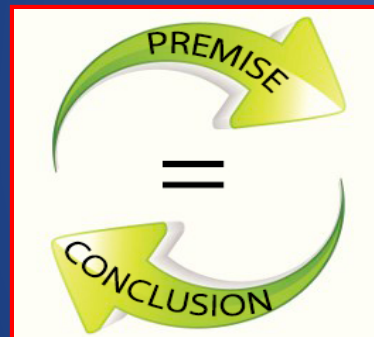
➤ False Water Shortages

➤ **Dysfunctional Planning**

- “Adaptive Management” / “Iterative Process” ---OR---

- **CIRCULAR REASONING**

○ Logical Fallacy



James Bené, RWH&A

“Regulatory Feedback Loop”

Ramifications of the Process

INTERRELATED ISSUES

- False Water Shortages
- Dysfunctional Planning
- Economic Impacts-----

- ❖ Real comparisons of water supply alternatives based on true availability of groundwater – not based on prescribed plans
- ❖ Economic growth vs. impediment to growth
- ❖ Health and safety
- ❖ Costs of subsidence vs. water supply alternatives

Ramifications of the Process

INTERRELATED ISSUES

- False Water Shortages
- Dysfunctional Planning
- Economic Impacts
- Infringes on Property Rights---
 - ❖ SB 332
 - ❖ Day Case
 - ❖ Bragg Case

Recommendations for Alternative DFCs

GENERAL DESCRIPTION

- Coterminous with aquifer boundaries (at least GMA-wide)
 - Each zone – Chicot, Evangeline, Jasper
- Based on water balance (especially storage)
 - Example – Jasper aquifer remains at least 95 percent full by 2070

Specific DFC Recommendations from IOUs
Will be Provided to LSGCD/GMA 14

Storage-Based DFCs

ACCOMPLISH THE FOLLOWING

- Take into account the true aquifer capabilities
- Remove arbitrary nature of artesian drawdown DFCs
- Eliminate reverse engineering
- Allow for more informed/accurate planning
- Allow for economic choices
 - E.g., deep water levels, more wells vs. surface water conversion
- Still allow for all Chapter 36 protections
 - Subsidence and water quality
- Consistent with law, property rights and history

With Questions or Comments, Please Contact:

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