Post Oak Savannah Groundwater Conservation District Annual Update

Presented to

Milam Co. Commissioner's Court
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Serving the citizens of Milam and Burleson Counties

District Education Program

- Public presentations (groups, service clubs, Co. Extension events, Big Spring Clean, etc.)
- Local Water Utilities Annual Workshops
- Website- *www.posgcd.org*
- Newspapers
- Schools- Public and private
  - Water Wise- 4th and 5th grades
  - In person presentations- 6th & 7th grade science
  - Additional resources- Water IQ for all levels
  - Extension Service (beginning 2013)

District Groundwater Conservation Grants

History (since 2006)

- Awarded 47 grants
- 21 different Local Water Utilities (All 7 in Milam Co.)
- Approximately $5.7 Million
- 2012 Recipients ($1,177,012)
  - North Milam WSC $195,000 Burl. Co. MUD #1 $350,600
  - City of Caldwell $213,644 City of Snook $120,793
  - Milano WSC $167,000 Marlow WSC $129,975
- 2013 Budgeted amount of $1 Million

Groundwater Management

- Protection of water levels
  - Overall Desired Future Conditions
  - Shallow zones restrictions
  - District Monitor well network
- Respect for Property Rights
  - To produce
  - When not producing**

Ownership of Groundwater

TWC 36.002 states: The groundwater ownership and rights described by this section: (1) entitle the landowner,... to drill for and produce the groundwater below the surface of real property, subject to Subsection (d), without causing waste or malicious drainage of other property or negligently causing subsidence, but does not entitle a landowner,... to the right to capture a specific amount of groundwater below the surface of that landowner's land; and (2) do not affect the existence of common law defenses or other defenses to liability under the **rule of capture**.

Subsection (d), mentioned above, states:

This section does not... prohibit a district from limiting or prohibiting the drilling of a well by a landowner for failure or inability to comply with minimum well spacing or tract size requirements adopted by the district,... (or) affect the ability of a district to regulate groundwater production as authorized... under this chapter...

Groundwater Management Areas (GCD Joint Planning)

When considering the adoption of Desired Future Conditions it is important to remember Section 36.108(d-2) of Chapter 36, which states:

The desired future conditions … must provide a balance between the highest practicable level of groundwater production and the conservation, preservation, protection, recharging, and prevention of waste of groundwater and control of subsidence …

GCDs can protect existing wells

District Rules

RULE 4.1. REQUIRED SPACING

2. In the Simsboro formation the spacing of a new well shall be as provided in (a) or (b), at the election of the owner exercised when the application for a new well permit is filed:

a. the spacing of a new well from any well existing in that formation shall be a distance of one foot per one gallon per minute of production capacity and one-half foot per gallon per minute from the property line of each adjoining landowner; or

RULE 5.1. MAXIMUM ALLOWABLE PRODUCTION

2. Excluding wells operated pursuant to an historic use permit, in no event may a non-exempt well or well system be operated such that the total annual production exceeds 2 acre feet of water per contiguous acre owned or controlled by the landowner, well owner, or well operator, as applicable. If the production of water for a Management Zone reaches the level at which reductions in the permitted amounts are made under Section 16, the maximum amount of groundwater that is authorized by a permit within that Management Zone shall be reduced by the percentage amount that the permitted production is reduced for that Management Zone under Section 16, unless the Board finds the reduced production will likely be for a limited period. [Amended April 8, 2008]

District Rules

RULE 16.3. MONITORING OF WATER AVAILABILITY. The District will monitor estimated total annual production, water quality, and the water levels. An analysis of the monitoring data will be reported at least once every three years. If, within a Management Zone, the **drawdown based on monitored groundwater levels**, or **total estimated annual production**, or **projected average water level drawdowns**, reach a threshold established in Rule 16.4, then, as determined appropriate by the Board, the District will give notice to well permittees in the affected Management Zone(s) as provided in Rule 16.4. **The District will take action as found appropriate by the Board**, **based on the analysis** of **measured water levels**, **projected average water level drawdowns**, **permitted production**, **current and projected total estimated annual production** and **relevant hydrogeologic and water resource information** including, but not limited to surface water availability and drought conditions, and review and evaluate the current and predicted water availability. **The District may reduce both the maximum acre feet of water per acre of land for which the District may issue a permit and/or the volume of water authorized to be produced under any permit issued by the District** for a Management Zone, as a result of the groundwater availability, total estimated annual production, or groundwater level drawdown within a Management Zone. The **District may also adopt rule changes for a Management Zone if production in that Management Zone is shown to adversely impact groundwater conditions in another Management Zones**. [Amended July 12, 2005] [Amended June 12, 2012]

District Rules

RULE 16.4. ACTIONS ON AQUIFER OR PRODUCTION LEVELS.

4. The **threshold levels will be administered and applied separately to each Management Zone**. As part of the evaluations and determinations, the District will consider the pumping-induced impacts to groundwater resources that occur between or among management zones. The evaluation will determine if pumping or production in one management zone is contributing to adverse impacts to groundwater conditions in another management zone. [Amended June 12, 2012]

RULE 16.5. REDUCTIONS REQUIRED BY REGULATORY ACTION. Notwithstanding any other term or provision of these rules, the **Board may proportionately reduce the maximum amount of water that may be permitted per acre and volume of water authorized to be produced under any permit issued by the Board**, **and may adjust the thresholds** established in Rule 16.4, ******as required by state law ***** or ******by a regional plan or an area or regional agreement mandated by state law ****** and which, by authority of state law, requires water availability or production to be limited or regulated based on water availability within a geographic area that includes land in more than one groundwater conservation district.

District Rules

RULE 16.6. ADJUSTING MAXIMUM PRODUCTION PERMITTED. The maximum groundwater production permitted per acre, the permitted production under any permit issued by the District, and the water drawdown level for a Management Zone **may be adjusted as follows**: [Amended July 12, 2005]

1. If the water drawdown level within a Management Zone, or in an adjacent zone in which the water drawdown level is impacted by production in such Management Zone, exceeds the water drawdown Threshold Level 3 in Rule 16.4, the maximum water production permitted per acre for the Management Zone and the water authorized to be produced under any permit issued by the District for that zone may be reduced. **The required reduction will be determined by the Board based on the evaluation and the evidence received by the Board**. The production in one Management Zone may be reduced to the extent that production in that Management Zone is impacting water drawdown levels in an another zone. [Amended July 12, 2005] [Amended June 12, 2012]

2. The **maximum allowable production of 2 acre feet of groundwater per acre of land, provided in Rule 5.1.2, may be reduced**, and the **maximum allowable production may be established or reduced for any one, or more than one, Management Zone(s).** [Amended July 12, 2005]

District Rules

RULE 16.6. ADJUSTING MAXIMUM PRODUCTION PERMITTED (cont.).

3. **Production authorized under permits issued by the District for any Management Zone may be reduced on a schedule to**, when considered together with future permits for which the authorized production per acre will be at the lower maximum allowable production per acre, generally over a period not to exceed 40 years, reduce groundwater production by an amount required to return the water level in the Management Zone to levels deemed acceptable by the Board based on evidence provided by the general manager, in consultation with the district geohydrologist. [Amended July 12, 2005] [Amended June 12, 2012]

4. The Board may adjust permitted production within a Management Zone, based upon the results of a review, evaluation, study, and monitoring, and any evidence presented at a public hearing, if it finds the adjustment is appropriate. [Amended July 12, 2005] [Amended June 12, 2012]

District Rules

RULE 16.7. PERMIT LIMITATIONS AND REDUCTIONS. The maximum allowable production of water authorized by a permit may be limited, adjusted and reduced as follows:

1. If the maximum allowable production of 2 acre feet of groundwater per acre of contiguous land is reduced for a Management Zone, or if any such reduced maximum of allowable production is thereafter reduced again, a new permit may not be issued for the production of more water than is established under this Section 16 as the maximum allowable production of water per acre of land for the Management Zone; [Amended June 12, 2012]

2. Excluding production authorized by a historic use permit, and production authorized by wells exempt under Rule 7.10(1), the production of water authorized by any permit issued by the District for the production of water is subject to limitation, adjustment and reduction;

3. The **volume of water authorized by permit to be produced in a Management Zone may be reduced by up to two percent per year** with the reduction beginning twelve months after a decision by the Board that such reduction is reasonably required for the conservation and preservation of groundwater, or the protection of the aquifer or groundwater users, within the Management Zone; and [Amended June 12, 2012]

4. **If the Board finds it is necessary to reduce the maximum allowable production per acre, or the permitted production for any Management Zone, more quickly than is provided in Rule 16.7(3), to preserve and conserve groundwater or protect groundwater users within a Management Zone, or to implement reductions required under Rule 16.5, the Board shall establish a schedule for a phased reduction in the maximum allowable production or permitted production for the zone**. [Amended July 12, 2005]

Ways to protect water levels

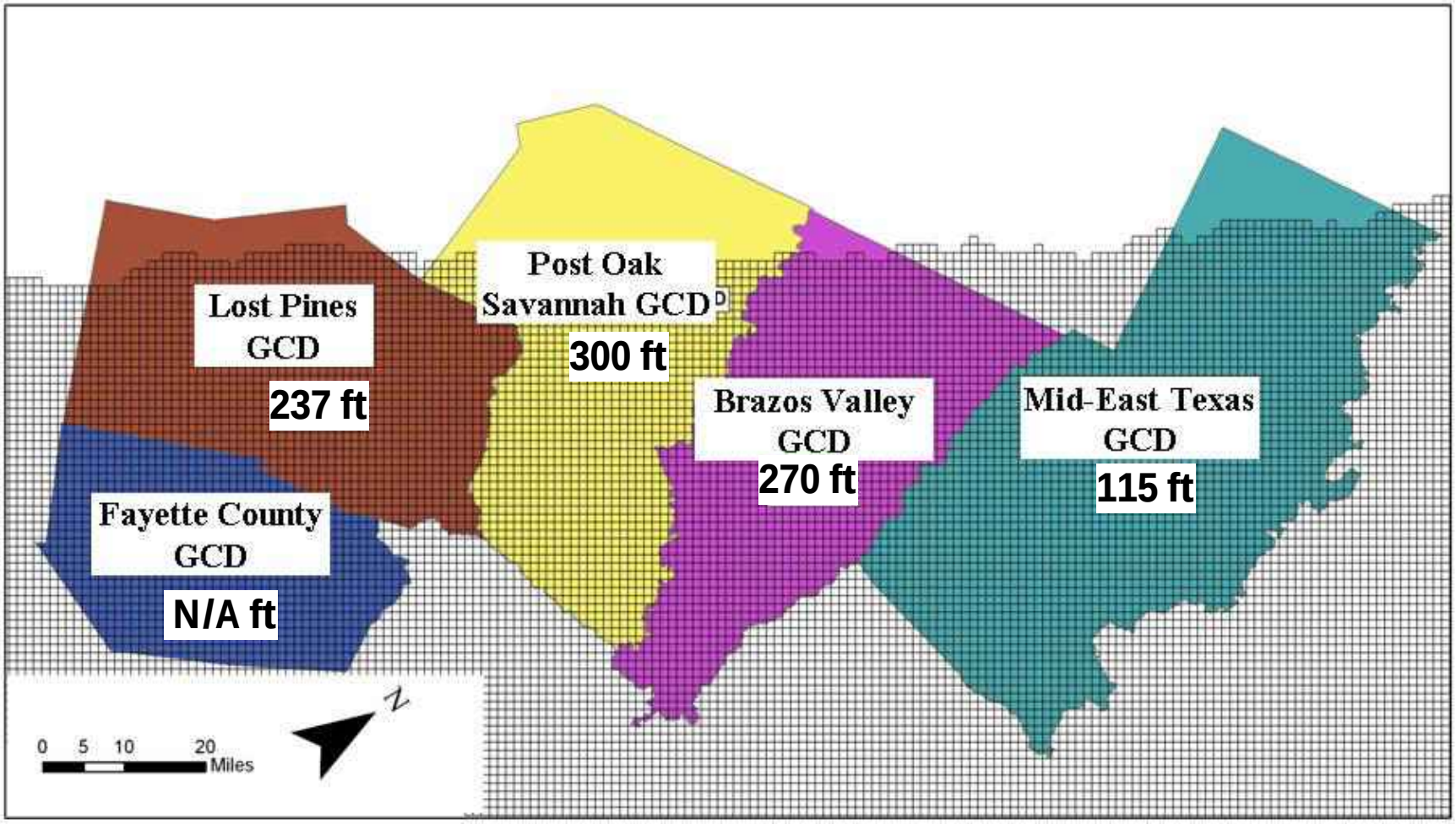
- Well Spacing
- Contiguous Acreage requirements
- Management Zones
- Production per acre
- Total permitted
- Permit requirements
- Five year reviews
- DFC Process (GMA and District)
- Thresholds and Monitoring

Summary of POSGCD Management Strategies

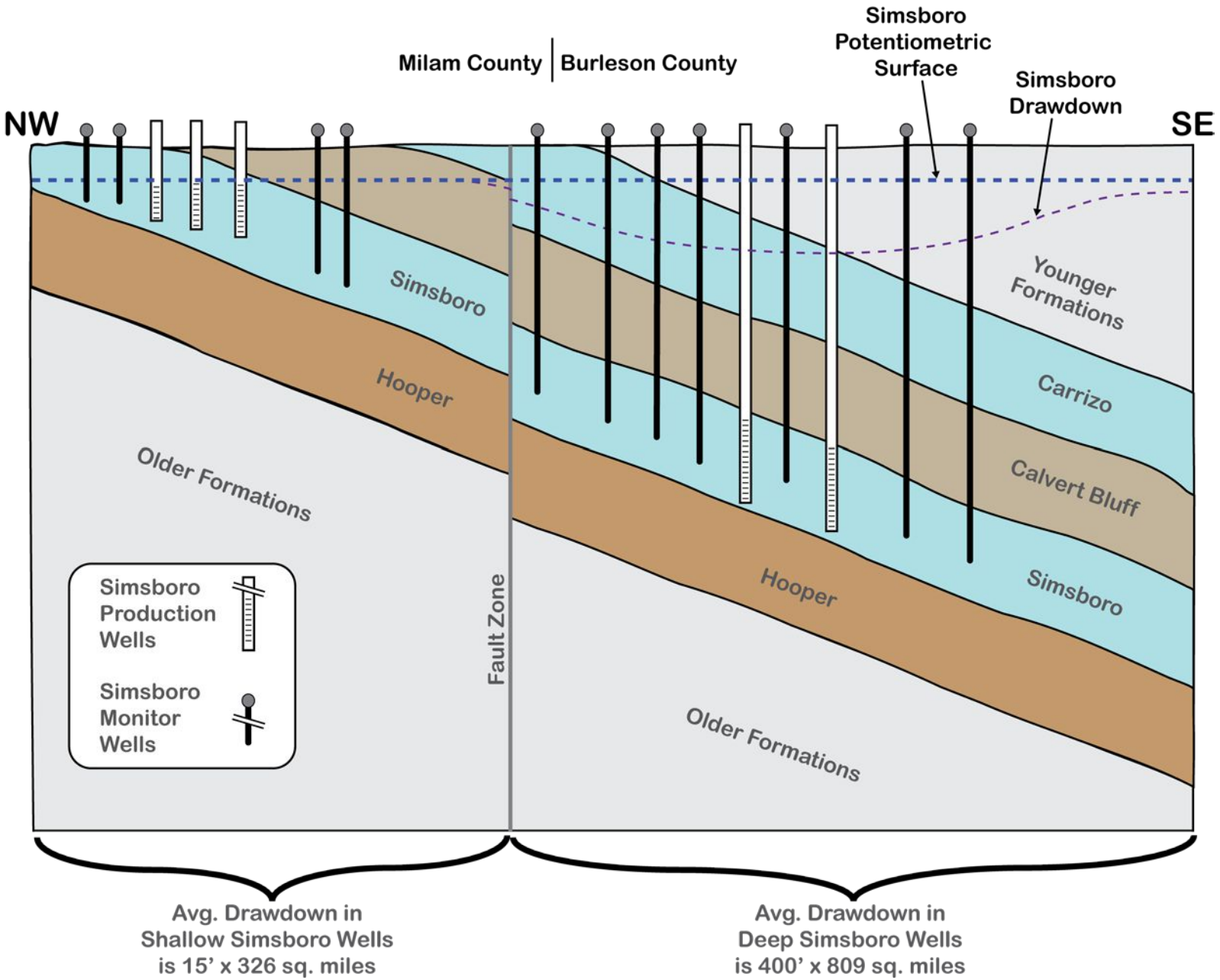
Aquifer/Formation	Over all DFC	DFC- Unconfined Area
Sparta	30	10
Queen City	30	10
Carrizo	65	20
Calvert Bluff	140	20
Simsboro	300	20
Hooper	180	20
Yegua/Jackson	100	15

(These DFCs are expressed as average drawdowns for a 60-year period beginning January 2000 and ending December 2059, for the area covered by each aquifer in Milam and Burleson Counties.)

Adopted DFCs: Expressed in Average across District Simsboro (2000 to 2060)



Schematic Cross Section
Simsboro Drawdown



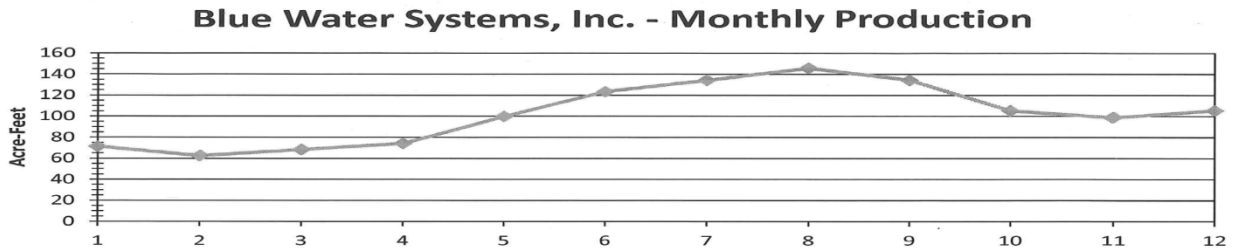
Summary Points

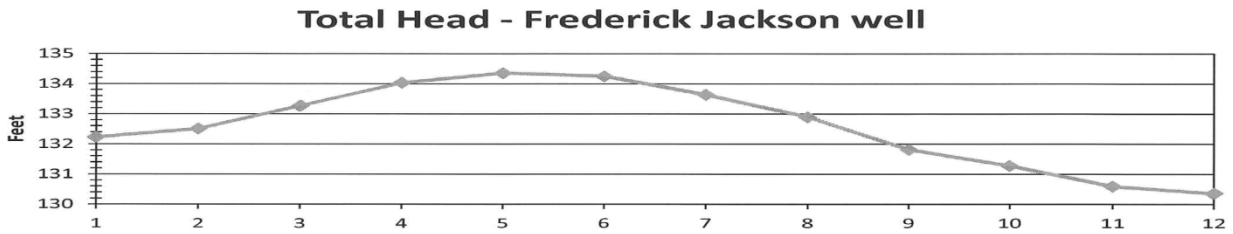
- POSGCD has a Monitoring Network in place for District's Management Zones and is capable of achieving District Management goals

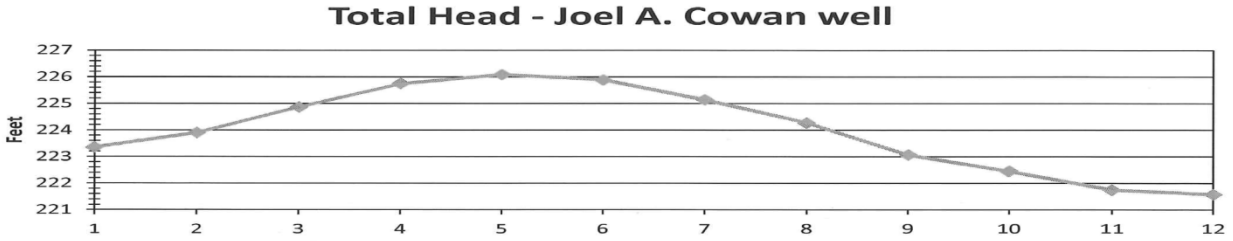
- POSGCD has authority and management plan and rules in place to protect existing wells and users

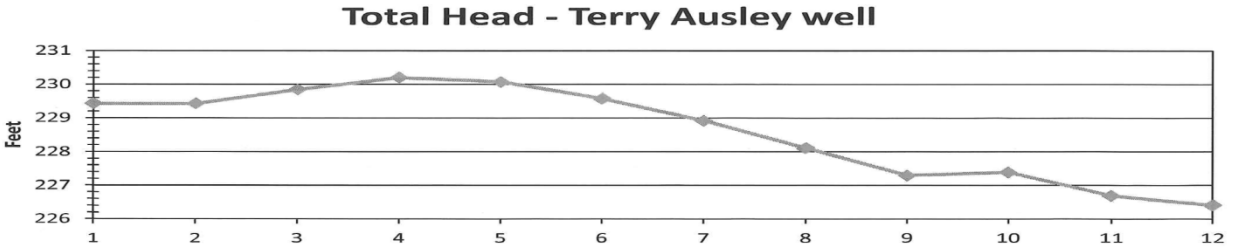
2012 Monitoring in the Deep Simsboro

Draft work- work in progress

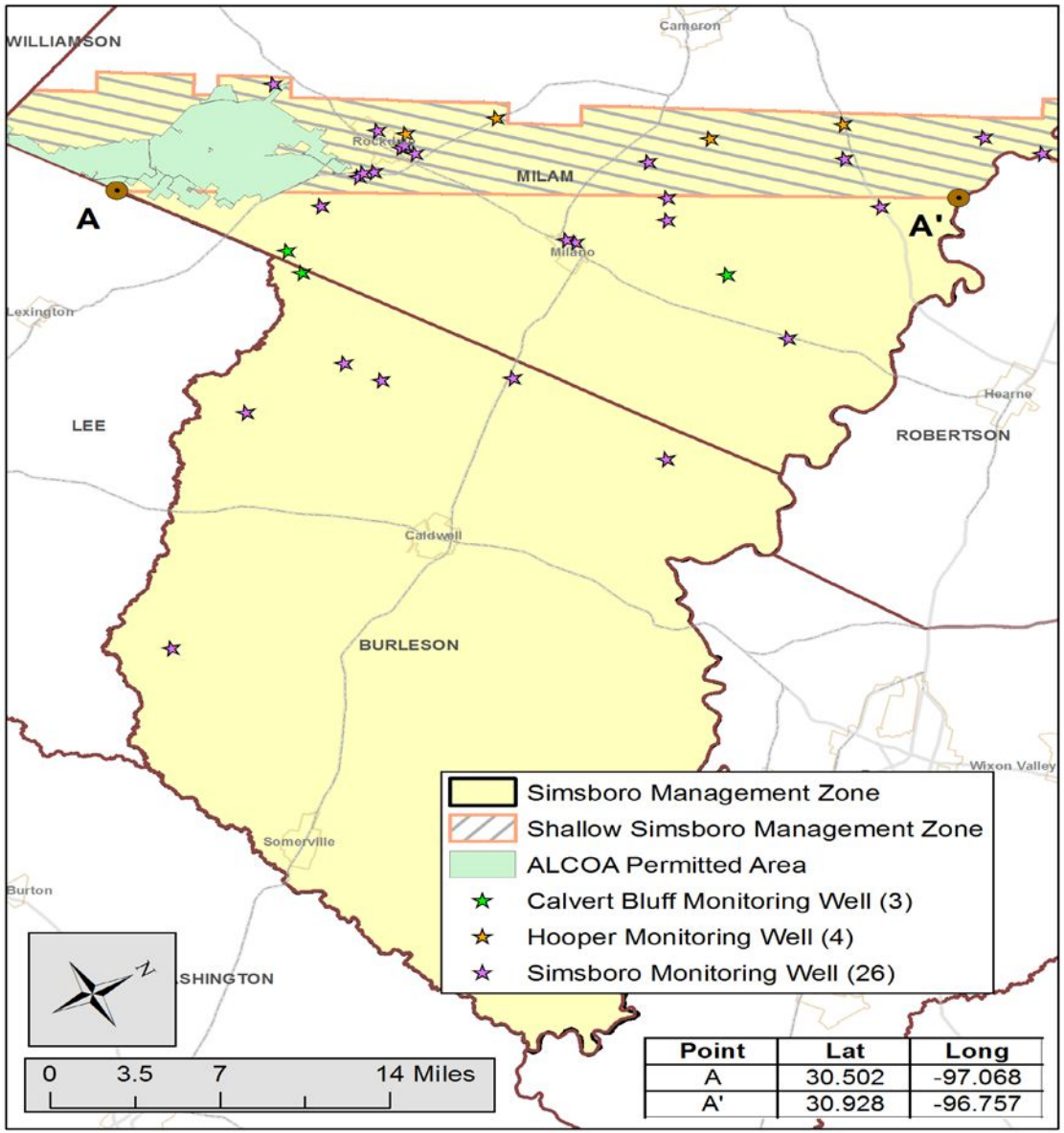


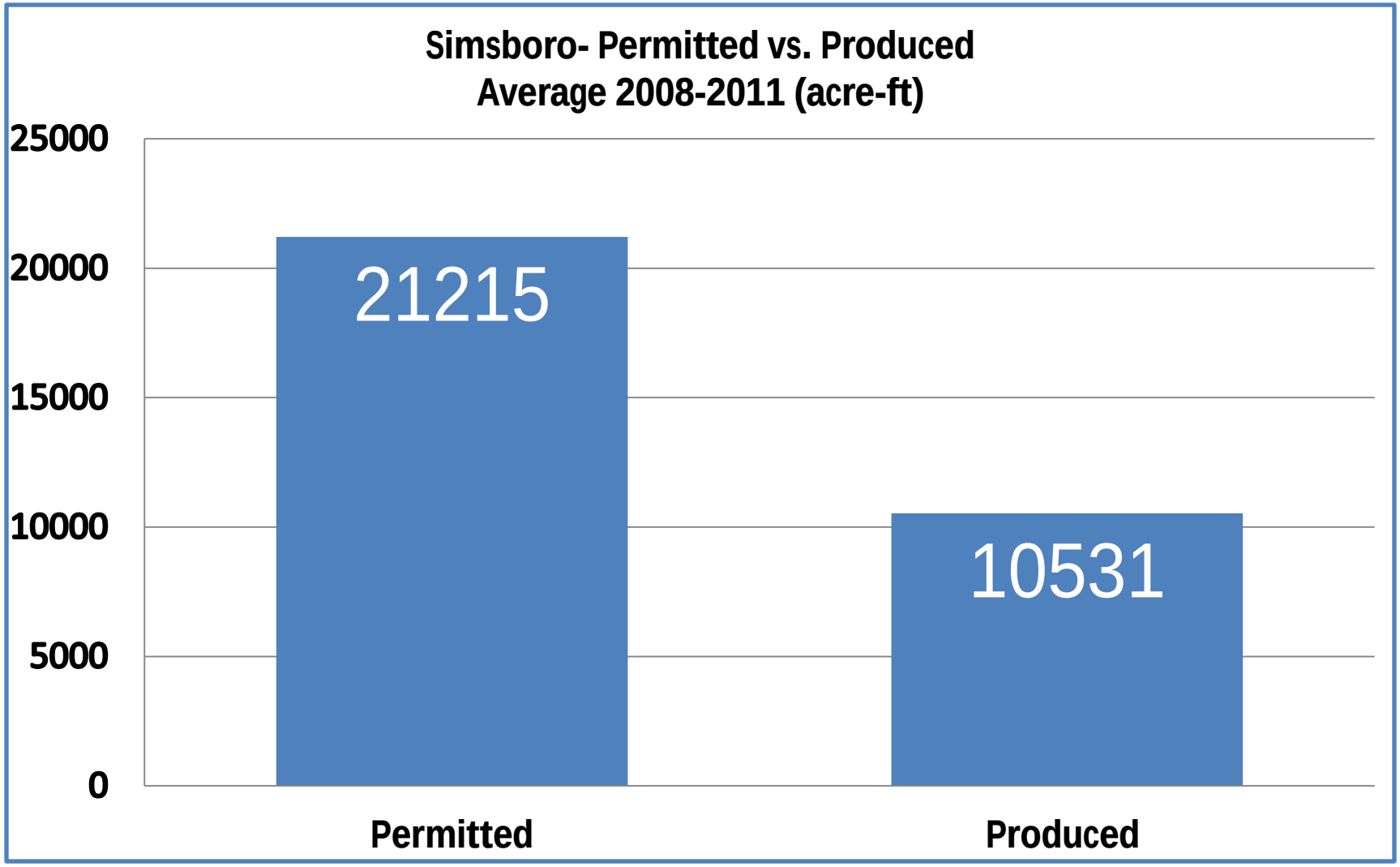






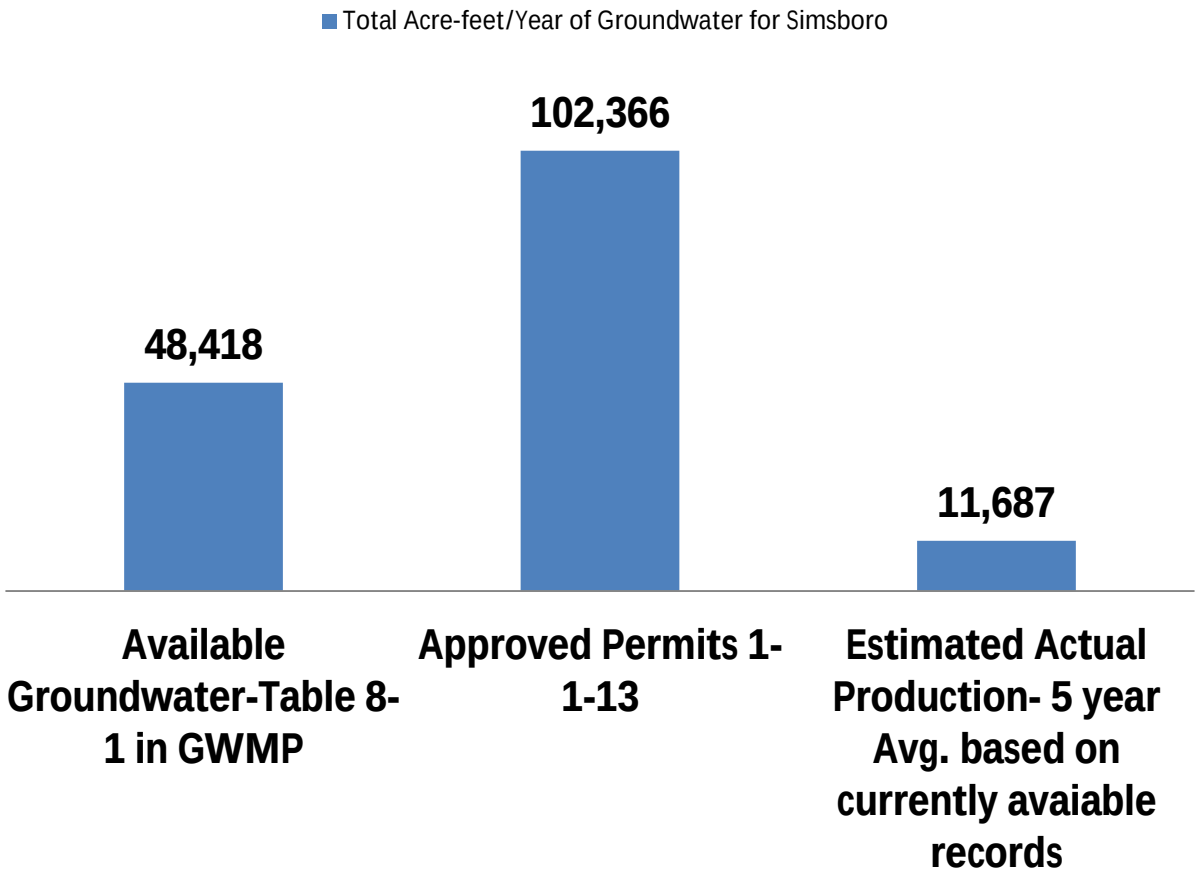
POSGCD Monitoring Locations for Wilcox Aquifer



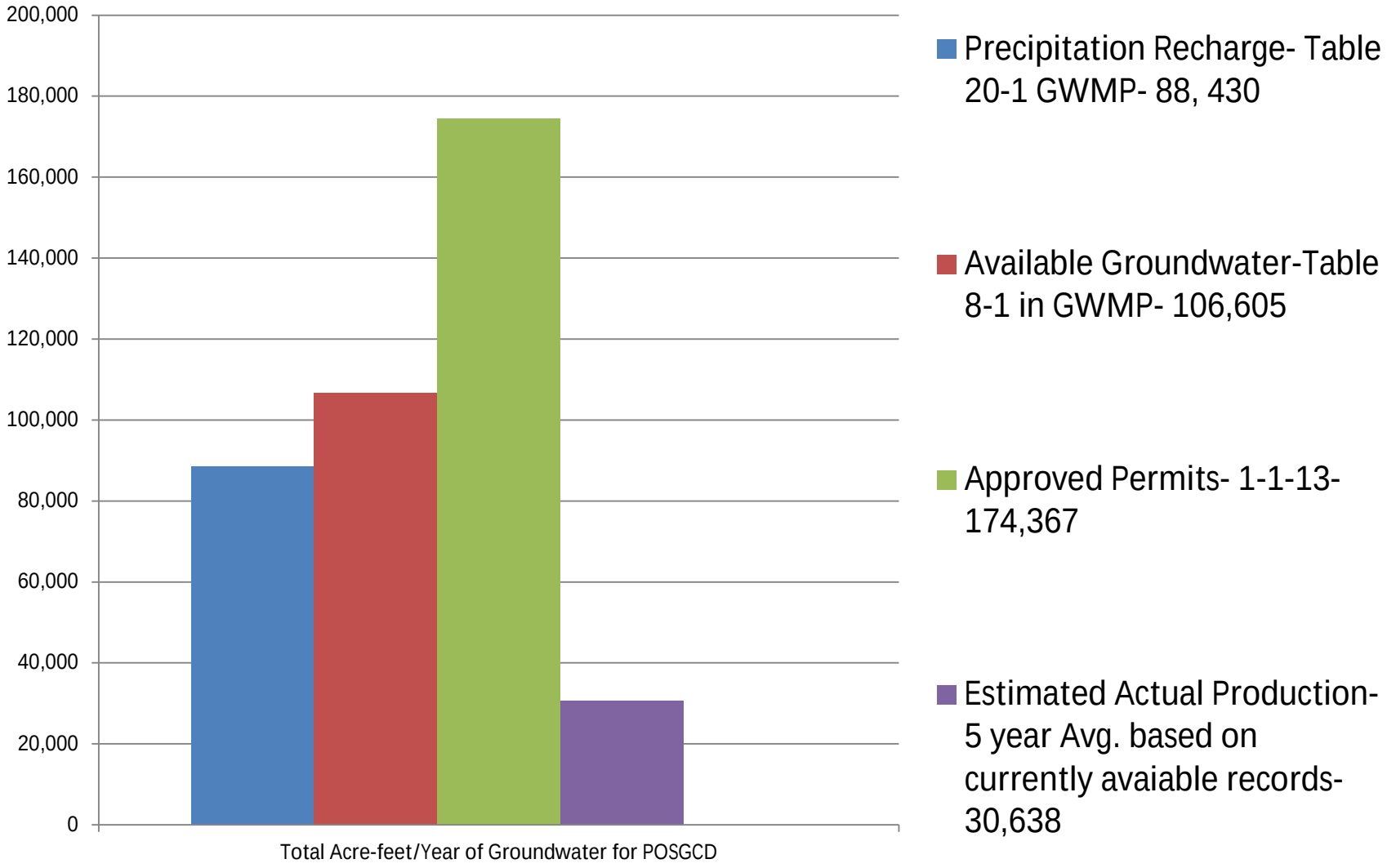


**Does not include BWS and new ALCOA (2012) amounts of 80,993 A/F permitted

Total Acre-feet/Year of Groundwater for Simsboro



POSGCD Total A-F/Year Evaluation



POSGCD Simsboro
Predicted Drawdown Over Time

Year	2020	2040	2060
Drawdown	**196**	**254**	**306**

Note: Draft work in progress; all results are preliminary.

Average Drawdown over entire District from year 2000 to 2060

Questions?

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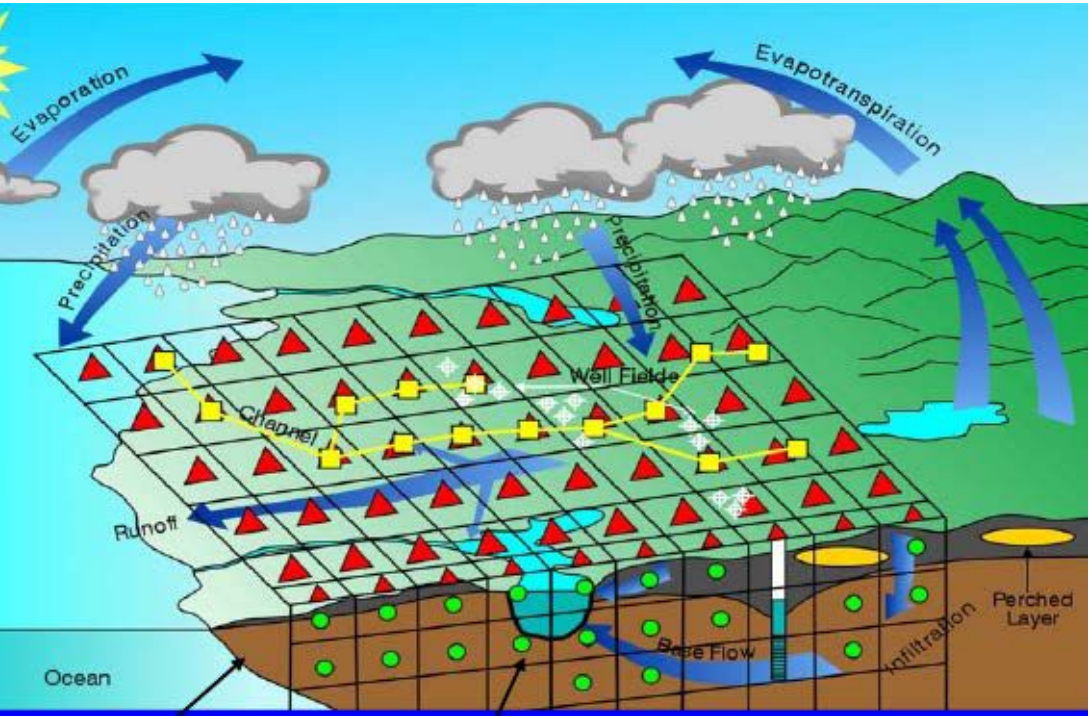
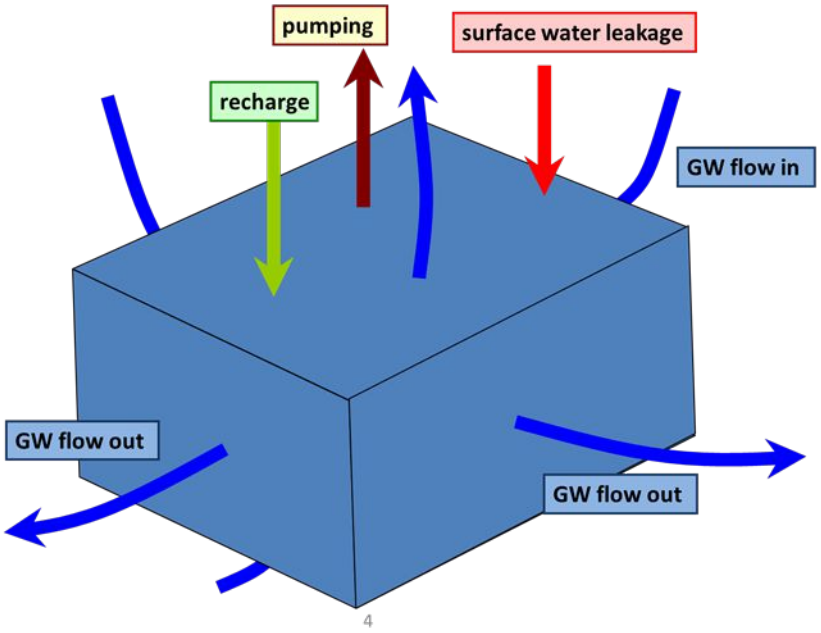
Serving the Citizens of Milam and Burleson Counties

Description of Groundwater Model

- a tool that integrates data and hydrology to predict groundwater flow
- the tool acts like a big Excel spreadsheet where grid cells physically represent "blocks" of aquifer material
- water levels are predicted by solving for a water balance at each block using equations describing groundwater flow





Note: Schematic from MODHMS MODFLOW Manual