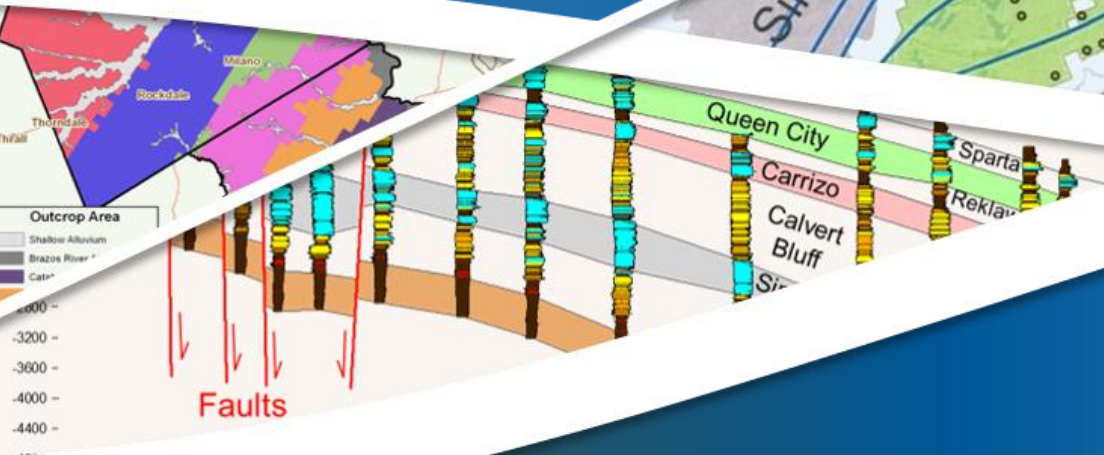


Possible Development of a Mitigation Plan for Post Oak Savannah Groundwater Conservation District

Presented To:



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Outline

- Motivation for a Shallow Well Mitigation Program
- Background
 - Mechanisms Which can Impair Shallow Wells
- Benefits of the Program
 - Stakeholders
 - District
- Program Considerations
 - Eligibility
 - Claim process
 - Funding
- Mitigation Plan Development
 - Schedule
 - Cost

Motivation

- Pumping of groundwater in the District can lead to impacts on existing wells
 - This can be a cumulative effect from historical users as well as more recent or future pumping
- Shallow wells are especially vulnerable to impairment with regards to both productivity and water quality
- The District can support stakeholders within the District to mitigate impaired wells while also gathering greater knowledge (based upon data) of the shallow groundwater system
 - This serves as a benefit for stakeholders while providing the information to improve groundwater management in the outcrop areas (monitoring, spacing, DFCs)

Background – Impairment of Shallow Wells

- Potential causes of shallow well impairment:
 - Drought
 - Increase in pumping by well owner
 - Increase in pumping in the area by others
 - Changes in groundwater quality from drawdown
 - Surface contamination impacting shallow groundwater
- Potential types of shallow well impairment
 - Reduced well yield
 - Impacts to water quality

Benefits of Program

- Benefits to Stakeholders
 - Affected well owners benefit because the District shares financial cost of mitigating impairment
 - Impaired wells could be mitigated by:
 - Lowering pumps,
 - Deepening wells,
 - Reducing local and/or regional pumping; or potentially
 - Providing alternative water supplies
- Benefits to District
 - Stakeholder goodwill
 - Increased monitoring in shallow zones improves District's understanding/ability to manage in those areas
 - Allows for additional flexibility in setting goals for managing groundwater by providing a safety net to impacted well owners
 - Management goals benefit from increased monitoring in affected areas where claims are made

Program Considerations: Eligibility

- Primary Requirements
 - register well with District
 - provide information about the well required by the program
 - allow a pre-mitigation well assessment
 - allow POSGCD access to monitor well for water levels and water quality
- Other Possible Requirements
 - provide production history
 - grant POSGCD use of borehole camera to confirm well condition and construction
 - allow continual metering of well pumping at District discretion
 - Allow continual monitoring of water levels at District discretion

Program Considerations: Claim Process

- **Options for Demonstration of Impairment**
 - Owner must be active in program for a minimum time period
 - POSGCD mitigation committee will establish impairment criteria
 - Mitigation plan will explain process for applying for financial assistance and type of compensation available
 - Owner will describe how productivity or quality has been impaired and what compensation is sought
 - Mitigation committee will direct investigations to evaluate well owner's claim of impairment
 - Final evaluation of claim by POSGCD mitigation committee
- **Mitigation Committee**
 - Similar concept as the POSGCD Grants Committee
 - Equal number of members from both counties
 - GM an optional member

Program Considerations: Funding

- Program funding from District fees
- Funding goals established in mitigation plan to be developed this year
- Initial funding amount will be based on input from wide range of sources (stakeholders, drillers, POSGCD board) and review of other mitigation plans.
- Sustaining funding goals would be determined by Mitigation Committee with guidance from Mitigation Plan

Mitigation Plan

- Formal documentation of mitigation program rules/guidelines
- Developed under the guidance of the Mitigation Committee with input from General Counsel
- Schedule
 - Draft plan presented to full POSGCD board in late Spring/early Summer
 - Stakeholder meeting in late Summer/early fall for additional public discussion
 - Final plan presented in late Fall
- Estimated cost for plan development: \$25,000
- Example Mitigation
 - Gonzales UWCD
 - San Antonio Water System
 - Alcoa

Gonzales UWCD Mitigation Program

- Started 2010
- 150 well mitigated, \$1 MM in funding thus far
- Funded by permittees with well fields that pumping greater or equal to 3,000 AFY from Carrizo Aquifer
- Major concern are wells that no longer flow
- All wells in Carrizo Aquifer eligible
- District has a list of pre-qualified well drillers
- District developed Mitigation Fund Unit Cost Schedule



Questions ?

Mitigation Fund Unit Cost Schedule

SMALL CAPACITY/SHALLOW WELLS (4" – 6" Dia. Wells to 800 FT)

ITEM NO.	ITEM DESCRIPTION	UNITS	UNIT COSTS
Section 1.0: Well Data Collection			
1.1	Well Data Collection *	EA	190.80
1.2	Diagnostic Evaluation (pumping test, water quality)	EA	286.20
1.3	Equipment and Labor to Remove/Reinstall Existing Pump	EA	434.60
1.4	Downhole Camera Survey (up to 800 ft)	Per Foot	2.65
1.5	Mobilization/Demobilization < 50 Miles Roundtrip	Lump Sum	169.60
1.6	Mobilization/Demobilization > 50 Miles Roundtrip	Per Mile	2.12

* Well use, pump setting, well construction details, well condition, contact well driller for construction details.

ITEM NO.	ITEM DESCRIPTION	UNITS	UNIT COSTS
Section 2.0: Pump Removal/Installation Services			
2.1	Equipment and Labor to Remove Existing Pump	EA	265.00
2.2	Equipment, Labor and Materials to Install Electrical Pump to 100 FT (Includes 1 HP pump w/ check valve, 1 HP control box, 1 ¼ column pipe (Sch 80 PVC), #12 electrical wire, well seal)	EA	2,230.24
2.3	Equipment, Labor and Materials to Install Electrical Pump to 200 FT (Includes 1 ½ HP pump w/ check valve, 1 ½ HP control box, 1 ¼ column pipe (Sch 80 PVC), #10 electrical wire, well seal)	EA	2,971.18
2.4	Price per foot over 200 ft (includes pipe and wire)	Per Foot	3.71
2.5	Doleflow valve (15 gpm)	EA	116.60
2.6	Pressure relief valve	EA	42.40
2.7	Pressure control switch	EA	42.40
2.8	PVC Electrical Conduit, Wiring, & Misc. Fittings	Per Foot	6.41
2.9	Electrical Junction Box	EA	53.00
2.10	Pre-Pressurized Tank (80 gal capacity, includes cement pads)	EA	667.80
2.11	Portable Well Enclosure Panels (4)	Total	424.00
2.12	Mobilization/Demobilization < 50 Miles Roundtrip	Lump Sum	169.60
2.13	Mobilization/Demobilization > 50 Miles Roundtrip	Per Mile	2.12

Section 3.0: Solar Pump Installation

3.1	Equipment and Labor to Install Solar Pump and all Associated Equipment to 200 FT	EA	689.00
3.2	Solar Pump System (11 gpm pump and 2 solar panels)	EA	7,300.00
3.3	Add Additional Solar Panel	EA	1,272.00
3.4	Mobilization/Demobilization < 50 Miles Roundtrip	Lump Sum	169.60
3.5	Mobilization/Demobilization > 50 Miles Roundtrip	Per Mile	2.12

Section 4.0: Water Well Drilling Services

4.1	Equipment, Materials, and Labor to Install 4" Dia. Well to 800 FT	Per Foot	18.00
4.2	Equipment, Materials, and Labor to Install 5" Dia. Well to 800 FT	Per Foot	28.00
4.3	Equipment, Materials, and Labor to Install 5" Dia. Well to 800 FT	Per Foot	32.00
4.4	Borehole seal with pelletized bentonite	Per Foot	9.00
4.2	Construct Concrete Well Pad	EA	434.60
4.3	Equipment and Labor to Develop Wells	EA	1,590.00
4.4	Mobilization/Demobilization < 50 Miles Roundtrip	Lump Sum	530.00
4.5	Mobilization/Demobilization > 50 Miles Roundtrip	Per Mile	4.24

Section 5.0: Plugging and Abandonment Services

5.1	Equipment, Materials, and Labor to Plug and Abandon a 4" Dia. Well to 800 FT	Per Foot	6.36
5.2	Equipment, Materials, and Labor to Plug and Abandon a 5" Dia. Well to 800 FT	Per Foot	8.48
5.3	Equipment, Materials, and Labor to Plug and Abandon a 6" Dia. Well to 800 FT	Per Foot	10.60
5.4	Mobilization/Demobilization < 50 Miles Roundtrip	Lump Sum	2,650.00
5.5	Mobilization/Demobilization > 50 Miles Roundtrip	Per Mile	4.24

The unit costs above are based on typical pump removal and installation, well drilling, and well plugging conditions. On occasions where these typical conditions are not met the hourly rate below may be added to the unit costs with prior approval from the district.

Hourly Rate

\$95.40/hr

Background - Available Drawdown

