



# Water Supply and Water Quality Issues in Oil and Gas Development

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## *Why do I care about Texas water law?*

- Water Supply
  - Hydraulic Fracturing
    - Shale gas
    - Oil recovery
- Storage of water
- Disposal of wastewater
  - Underground injection
  - Discharge

## Overview

- Texas Surface Water Law
  - Chapter 11 of the TWC
    - TCEQ Authority
    - Water Rights Permits
- Texas Groundwater Law
  - Chapter 36 of the TWC
    - Ownership of Groundwater
    - Role of GCDs
- Water Supply Contracts
- Wastewater Disposal
  - Chapters 26/27 TWC



## Texas Surface Water Law



## Texas Surface Water Law

### Evolved from Two Doctrines of Water Law

- Riparian Doctrine
  - Private water rights are tied to the ownership of land bordering a natural stream or river
  - No longer available except for domestic and livestock purposes
- Doctrine of Prior Appropriation
  - Water rights are acquired through express appropriation by compliance with statutory requirements

## Texas Surface Water Law

### Prior Appropriation Doctrine

- Spanish civil law doctrine
- Acts of 1889, 1895, and 1913
  - All unappropriated water is the property of the state and available for appropriation by the state
- Water Rights Adjudication Act of 1967
  - Refined extent of appropriations and reduced non-domestic and livestock riparian claims to appropriative rights
- Prior appropriation--“First in time is first in right”

## Texas Surface Water Law

Currently...

- With few exceptions, anyone seeking a surface water right must comply with the Texas Water Code (the “TWC”) and the Texas prior appropriation system in allocating water rights.



## Water Rights Permit Exemptions TWC Sections 11.142, 11.1421, 11.1422

1. 200 acre feet (or less) dam or reservoir for domestic and livestock purposes
2. 200 acre feet (or less) dam or reservoir for fish and wildlife purposes
3. Using water from the Gulf of Mexico for drilling and producing petroleum
4. Constructing a reservoir for sediment control as part of a surface coal mining operation
5. Using water from the Gulf of Mexico for mariculture activities
6. Using water to irrigate historic cemeteries

## Oil and Gas Exploration/Production

- No exemption for oil and gas exploration or production purposes
- Exempt dams or reservoirs for domestic and livestock purposes may not be used for oil and gas exploration or production purposes



## Chapter 11 of the TWC

- Provides the legal foundation for surface water rights in Texas.
- Outlines the requirements to apply for and secure a surface water right and codifies the prior appropriation doctrine.
- TWC Section 11.002 defines a “water right” as a right to “impound, divert, or use state water.”

## TWC Section 11.021(a)

- “State water” defined:
  - The water of the ordinary flow, underflow, and tides of every flowing river, natural stream, and lake, and of every bay or arm of the Gulf of Mexico, and the storm water, floodwater, and rainwater of every river, natural stream, canyon, ravine, depression, and watershed in the state is the *property of the state*.

## TWC Section 11.022

- The right to the use of state water may be acquired by appropriation in the manner and for the purposes provided in this chapter. When the right to use state water has been lawfully acquired, it may be taken or diverted from its natural channel.



## TWC Section 11.023

Purposes for which water may be **appropriated, stored or diverted**:

- Domestic and municipal
- Agricultural and industrial
- **Mining and recovery of minerals**
- Hydroelectric power and navigation
- Recreation and pleasure, public parks and game preserves
- Or for any other beneficial use.

## TWC Section 11.121

### Permit Required

- No person may appropriate any state water or begin construction of any work designed for the storage, taking, or diversion of water **without first obtaining a permit** from the commission to make an appropriation.

## Types of Water Rights Permits

1. Perpetual Permits – TWC Section 11.121
  - General authorization to divert, store, and use water
2. Seasonal Permits – TWC Section 11.137
  - Issued in same manner as a general permit
  - Right to take, use, or divert water under seasonal permit is limited to the portion or portions of the calendar year stated in the permit

## Types of Water Rights Permits

### 3. Temporary Permits – TWC Section 11.138

- No notice or hearing required if water appropriation is less than 10 acre-feet for less than 1 year
- Must be for beneficial purpose and not interfere with prior appropriations
- Maximum of 3 years for permit

### 4. Term Permits – TWC Section 11.1381

- A permit for a term of years for the use of unused appropriated water when there is insufficient unappropriated water in the source supply to satisfy the application.

## Types of Water Rights Permits

5. Permit to use water from exempt dam or reservoir for nonexempt purpose – TWC 11.143
  - The owner of a dam or reservoir exempted under TWC 11.142 for domestic and livestock purposes or fish and wildlife purposes must obtain a permit to use water from the dam or reservoir if for non-exempt purpose.
  - Owner may obtain a regular permit, a seasonal permit, or a permit for a term of years.

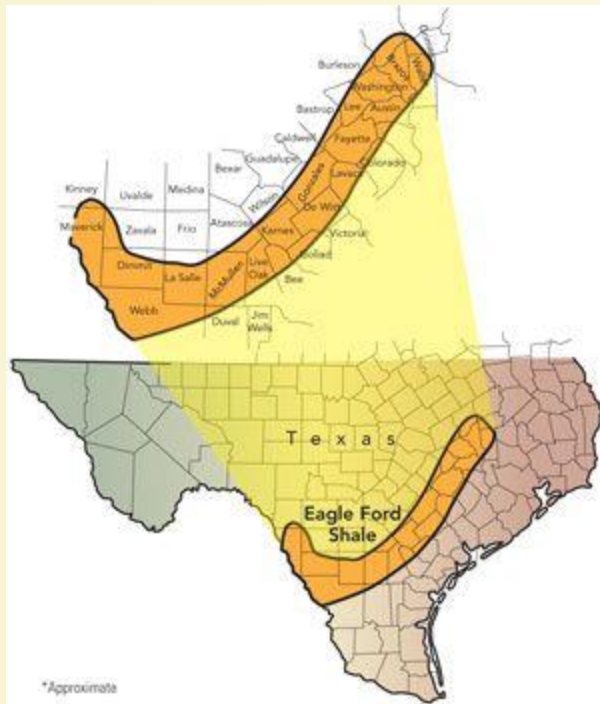
## Water for Oil and Gas Exploration and Production

- Water use for oil and gas in exploration and production
  - Drilling operations
    - Each well requires approximately 250,000 gallons of water—less than 1 acre-foot
  - Well completion – Fracking
    - Approximately 3.5 million gallons of water required per well—about 10 or 11 acre-feet

## Water for Exploration and Production

- Diversion and storage authorization
  - Annual amount of diversion and rate of diversion
  - On-channel storage / off-channel storage
    - Permit authorization needed for on-channel storage
    - Permit authorization needed for storage of state water in off-channel structure

## Rio Grande Permitting Regime



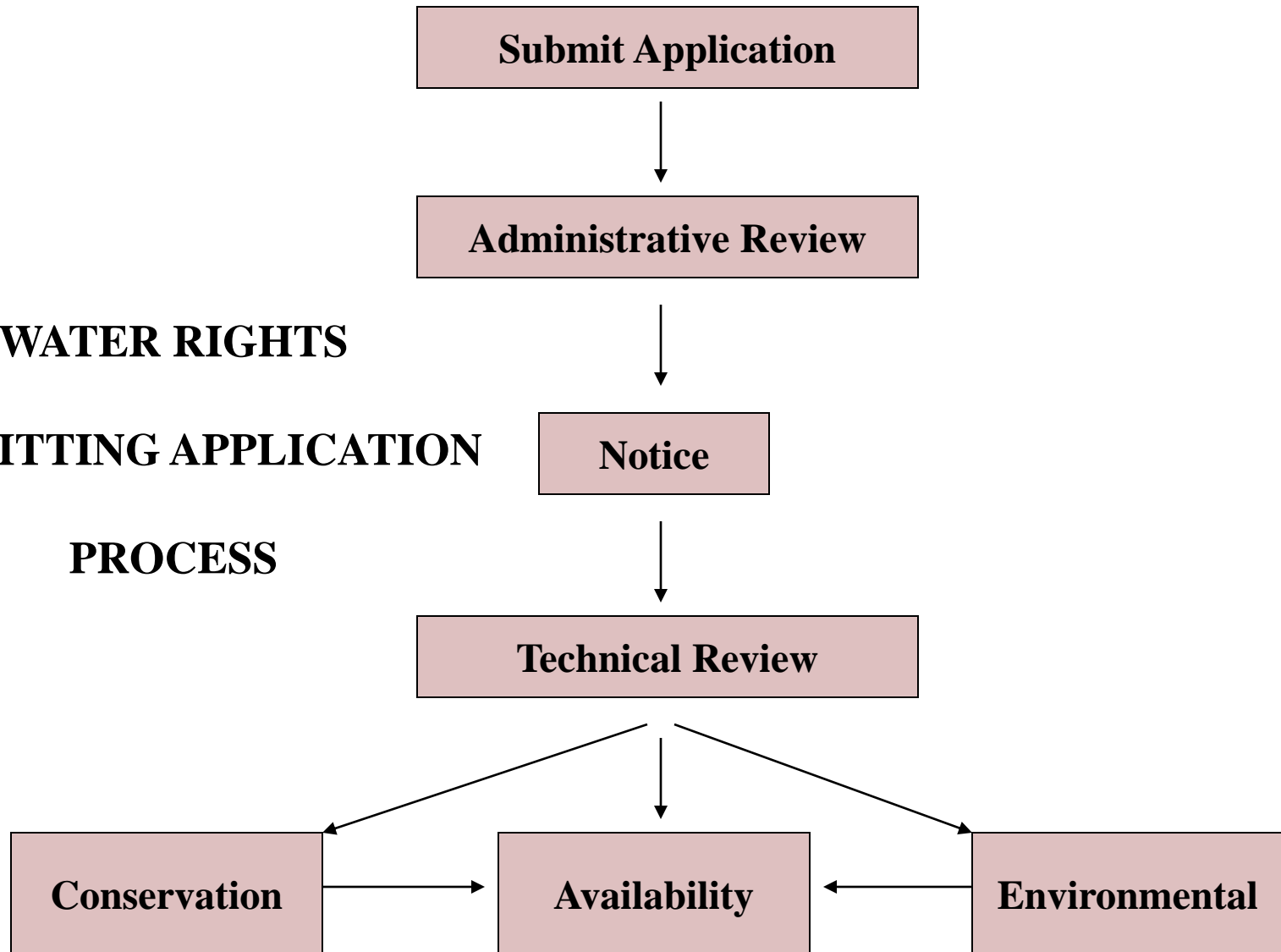
- Eagle Ford Shale Demands
  - Water supply for fracking
- No unappropriated water available
- Watermaster enforced
- Only water right holders can contract to purchase water
- *Potential rulemaking effort to facilitate purchases*

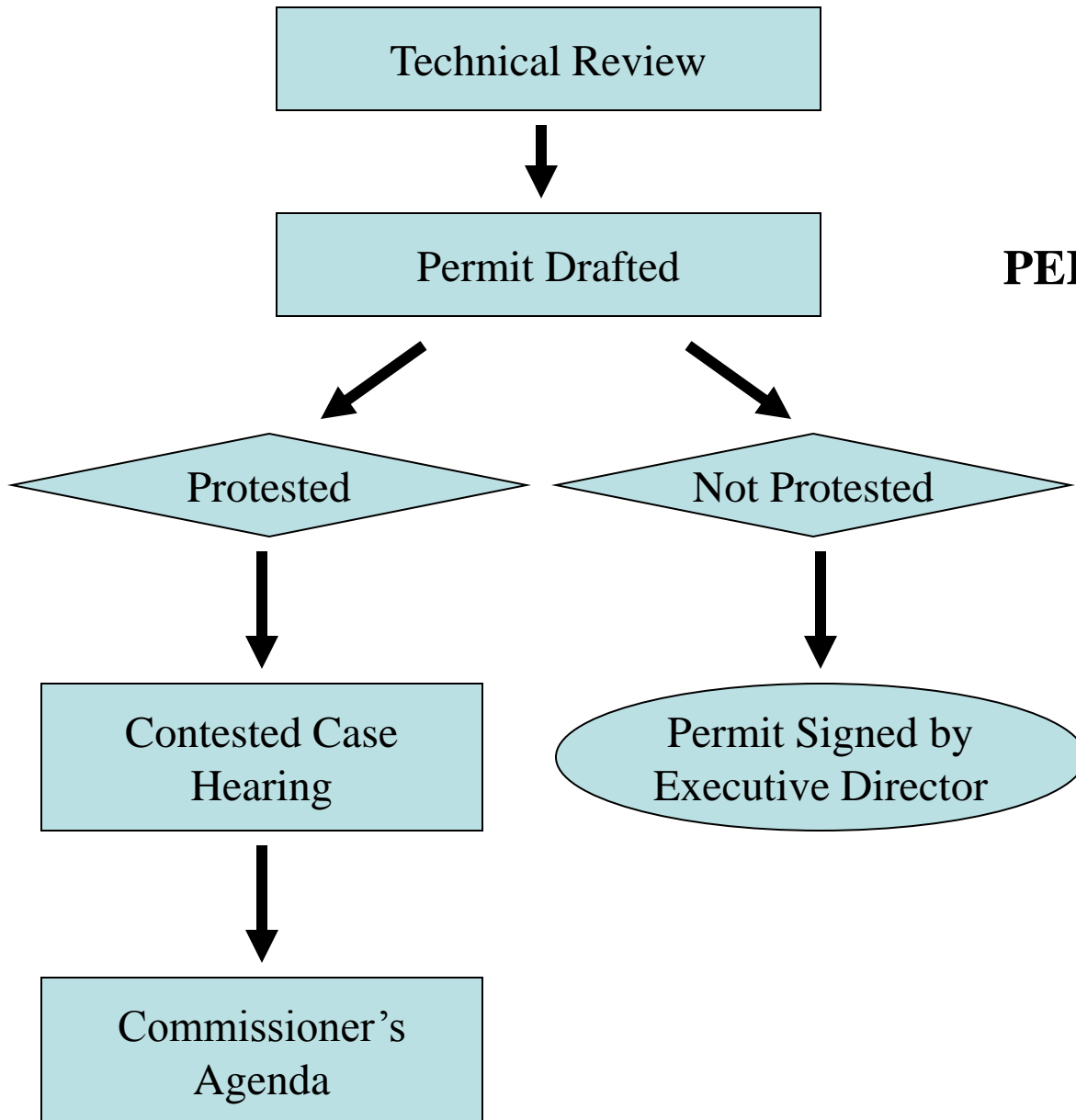
## TWC Section 11.134

### Requirements for Obtaining a Water Right Permit

- Unappropriated Water Available
- Beneficial Use Requirement
- Impairment of Existing Water Rights
- Not Harmful to the Public Welfare (social, economic, environmental)
- Environmental Impacts
- Consistency with Regional and State Plans
- Conservation and Drought Contingency Plans

**WATER RIGHTS  
PERMITTING APPLICATION  
PROCESS**





## **WATER RIGHTS**

## **PERMITTING APPLICATION**

## **PROCESS**

(continued)

## Administrative Review

- General provisions for reviewing all administrative actions
  - Provisions of 30 TAC Chapter 281
- Application must include information necessary for TCEQ staff to review and fully consider request
  - Provisions of 30 TAC §295.1 - §295.16
- Applicant must remit appropriate fees
  - Provisions of 30 TAC §295.131 - §295.140
- Commission must be able to prepare notice of application

## Notice Requirements

- Notice requirements found in Title 30, Section 295.151 to 295.161 of the Texas Administrative Code
- Water rights applications under TWC Sections 11.121 and 11.143 require notice by publication and mail to
  - Other water right holders in the river basin
  - All navigation districts within the river basin
  - All other persons TCEQ considers as being affected by the issuance of the water right permit
- No notice required for a temporary water rights application for the use of 10 acre-feet or less for 1 year or less.

## TCEQ Technical Review

- Resource Conservation Review
  - Water conservation standards
  - Consistency with State Water Plan
- Environmental Review
  - Water quality impacts of project
  - Protection for aquatic and riparian habitat
- Water Availability Review
  - WAM run 3 (full use; no return flows)



## Developing a Draft Permit

- All technical disciplines prepare memoranda regarding their review of the application
- If technical review demonstrates compliance with statutory and regulatory requirements, a draft permit is prepared
- Special conditions included as needed
- Applicant and Executive Director negotiate draft permit

## TWC Section 11.135

### Issuance of Permit

- Use and purpose of water appropriation
- Volume of water to be appropriated
- Description of source of supply of water to be appropriated



## Enforcement

- Failure to comply with TWC Section 11.121 and acquire a permit may result in:
  - Civil penalties of up to \$5,000 for each day a person willfully takes, stores, or diverts state water without a permit
    - Injunction
  - Administrative penalties of up to \$5,000 for each day a person willfully takes, stores, or diverts state water without a permit

## Texas Groundwater Law



## Texas Groundwater Law

- Rule of Capture
  - English common law doctrine
  - Affirmed by Texas Supreme Court in 1904
  - Texas Supreme Court reaffirmed rule of capture in 1999
  - Surface estate owner has the right to pump groundwater from beneath the surface of surface estate
  - Rule of the “biggest pump”

## Texas Groundwater Law



### Rule of Capture

- Cannot sue neighbor for injunctive relief or damages resulting from the neighbor's depletion of the groundwater resources, except for:
  - Wasteful pumping
  - Pumping with malicious intent to injure neighbor
  - Negligent pumping which causes subsidence

## Texas Groundwater Law

- Chapters 35 and 36 of the Texas Water Code regulate groundwater law and groundwater conservation districts
- TWC Section 36.002
  - “The ownership and rights of the owners of the land and their lessees and assigns in groundwater are hereby recognized, and nothing in this code shall be construed as depriving or divesting the owners or their lessees and assigns of the ownership or rights, except as those rights may be limited or altered by rules promulgated by a district.”

# Confirmed Groundwater Conservation Districts

1. Anderson County UWCD
2. Bandera County River Authority & Ground Water District
3. Barton Springs/Edwards Aquifer CD
4. Bee GCD
5. Blanco-Pedernales GCD
6. Blanton GCD
7. Brazos Valley GCD
8. Brewster County GCD
9. Brush Country GCD
10. Central Texas GCD
11. Clear Fork GCD
12. Clearwater UWCD
13. Coastal Bend GCD
14. Coastal Plains GCD
15. Coke County UWCD
16. Colorado County GCD
17. Corpus Christi ASRCD
18. Cow Creek GCD
19. Crockett County GCD
20. Culberson County GCD
21. Duvall County GCD
22. Edwards Aquifer Authority
23. Elgin GCD
24. Elgin County UWCD
25. Fayette County GCD
26. Fox Crossing Water District
27. Garza County UWCD
28. Gateway GCD
29. Gillespie GCD
30. Goliad County GCD
31. Gonzales County UWCD
32. Guadalupe County GCD
33. Hays Trinity GCD
34. Headwaters GCD
35. Hemphill County UWCD
36. Hickory UWCD No. 1
37. High Plains UWCD No. 1
38. Hill Country UWCD
39. Hudspeth County UWCD No. 1
40. Iron County WCD
41. Jeff Davis County UWCD
42. Kennedy County GCD
43. Kimble County GCD
44. Kinney County GCD
45. Lipan-Rio Grande WCD
46. Live Oak UWCD
47. Llano Estacado UWCD
48. Lone Star GCD
49. Lone Wolf GCD
50. Lost Pine GCD
51. Lower Trinity GCD
52. McMullen GCD
53. Medina County GCD
54. Menard County UWCD
55. Mesa UWCD
56. Mesquite GCD
57. Mid-East Texas GCD
58. Middle Pecos GCD
59. Middle Trinity GCD
60. Neches & Trinity Valleys GCD
61. North Plains GCD
62. North Texas GCD
63. Northern Trinity GCD
64. Panhandle GCD
65. Panola County GCD
66. Pecan Valley GCD
67. Permian Basin UWCD
68. Pineywoods GCD
69. Plateau UWCD and Supply District
70. Plum Creek CD
71. Post Oak Savannah GCD
72. Prairielands GCD
73. Presidio County UWCD
74. Real-Edwards C and R District
75. Red River GCD
76. Red Sands GCD
77. Refugio GCD
78. Rolling Plains GCD
79. Rock County GCD
80. San Patricio County GCD
81. Sandy Land UWCD
82. Santa Rita UWCD
83. Saratoga UWCD
84. South Plains UWCD
85. Southeast Texas GCD
86. Southern Trinity GCD
87. Starr County GCD
88. Sterling County UWCD
89. Sutton County UWCD
90. Tarrant County GCD
91. Trinity Glen Rose GCD
92. Upper Trinity GCD
93. Uvalde County UWCD
94. Victoria County GCD
95. West-Tex GCD
96. Winters GCD

## Pending Groundwater Conservation Districts

- 81. Lavaca County GCD
- 82. Pending Election Results
- 83. Created by the 80th Legislature
- 84. Created by the 81st Legislature

## Subsidence Districts

- Harris-Galveston Subsidence District
- Fort Bend Subsidence District

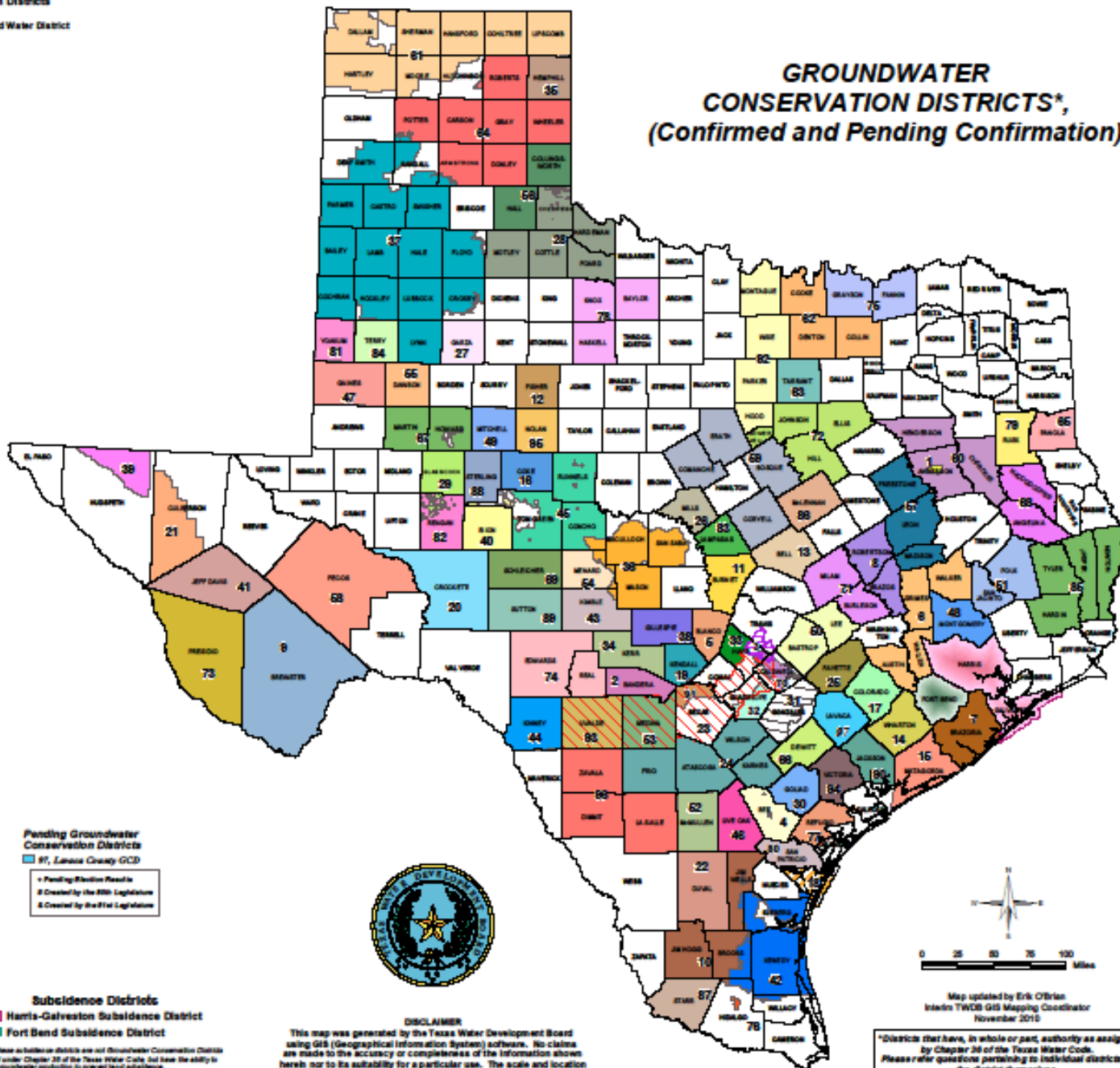
NOTE: These subsidence districts are not Groundwater Conservation Districts as defined under Chapter 39 of the Texas Water Code, but have the ability to provide groundwater protection to prevent land subsidence. (Refer to Article 1037 from the 73rd Legislative Session)



## DISCLAIMER

This map was generated by the Texas Water Development Board using GIS (Geographical Information System) software. No claims are made to the accuracy or completeness of the information shown herein nor to its suitability for a particular use. The scale and location of all mapped data are approximate.

# GROUNDWATER CONSERVATION DISTRICTS\*, (Confirmed and Pending Confirmation)



Map updated by Erik O'Brien  
Interim TWDB GIS Mapping Coordinator  
November 2015

\*Districts that have, in whole or part, authority as assigned by Chapter 39 of the Texas Water Code. Please refer questions pertaining to individual districts to the district themselves.

## TWC Section 36.0015

- In order to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater, and of groundwater reservoirs or their subdivisions, and to control subsidence caused by withdrawal of water from those groundwater reservoirs or their subdivisions, consistent with the objectives of Section 59, Article XVI, Texas Constitution, groundwater conservation districts may be created as provided by this chapter.  
**Groundwater conservation districts** created as provided by this chapter are the **state's preferred method of groundwater management** through rules developed, adopted, and promulgated by a district in accordance with the provisions of this chapter.

## Groundwater Conservation District (GCDs)

- TWC Chapter 36 sets out the general powers of GCDs
  - A GCD may make and enforce rules, including rules limiting groundwater production based on tract size or the spacing of wells, to provide for conserving, preserving, protecting, and recharging of the groundwater or of a groundwater reservoir or its subdivisions in order to control subsidence, prevent degradation of water quality, or prevent waste of groundwater and to carry out the powers and duties provided by this chapter.
  - A GCD may require permits for drilling, operation, use and /or transport of groundwater

## TWC Section 36.117(b)(2)

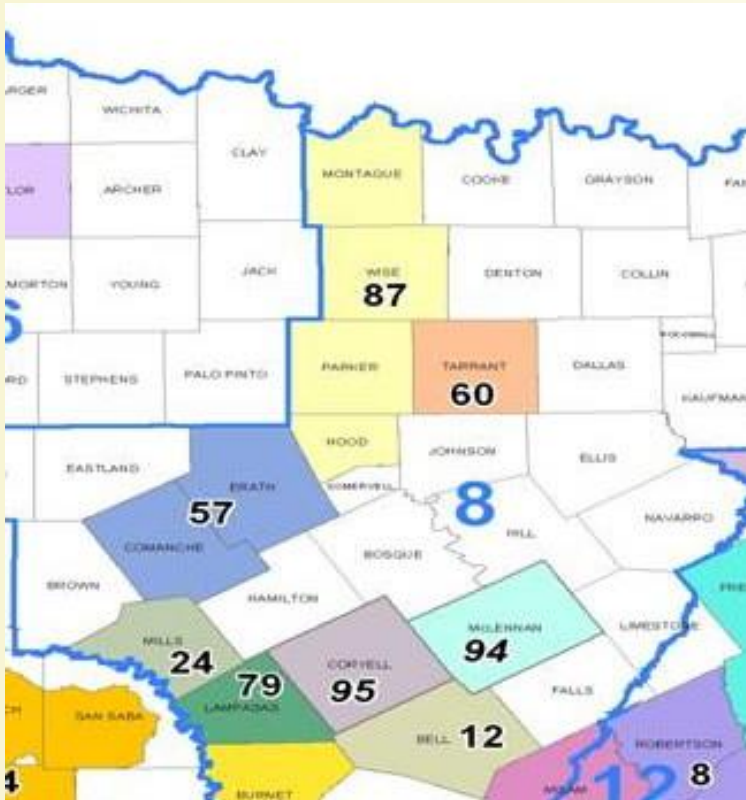
Oil and gas water well exemption:

- A district **may not require** any permit issued by the district for the drilling of a water well used **solely to supply water for a rig that is actively engaged in drilling or exploration operations** for an oil or gas well permitted by the Railroad Commission of Texas **provided that**
  1. the person holding the permit is responsible for drilling and operating the water well and
  2. the well is located on the same lease or field associated with the drilling rig.

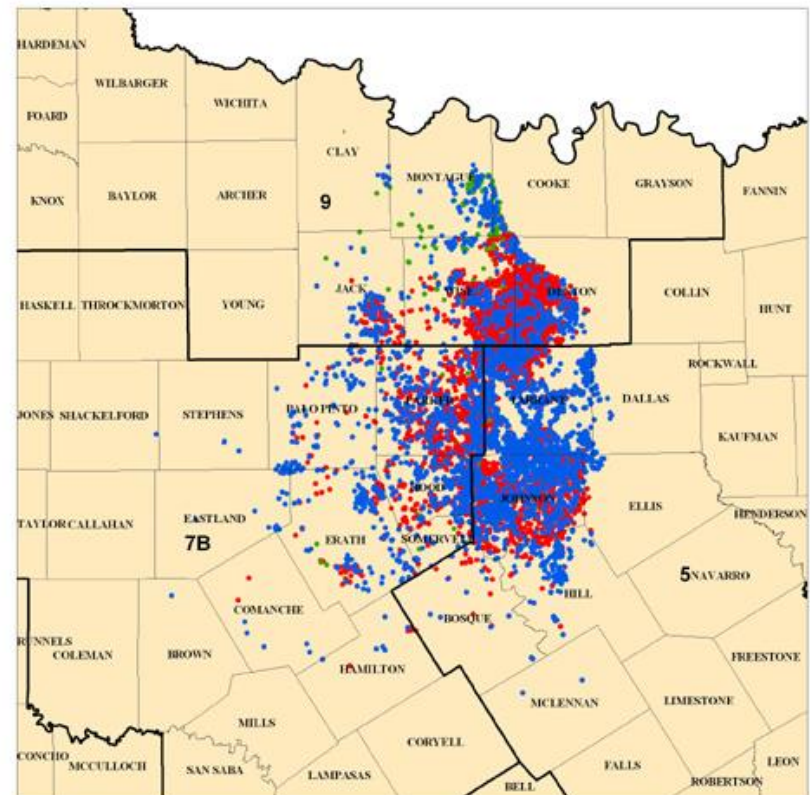
## TWC Section 36.111

- Reporting requirement for exempt wells
  - Districts may require records and reports be made of the drilling, equipping, and completing of water wells and for the production and use of water.
  - District may require reporting of groundwater withdrawals using reasonable and appropriate reporting methods and frequency.

## Upper Trinity GCD



Pale yellow – Upper Trinity GCD

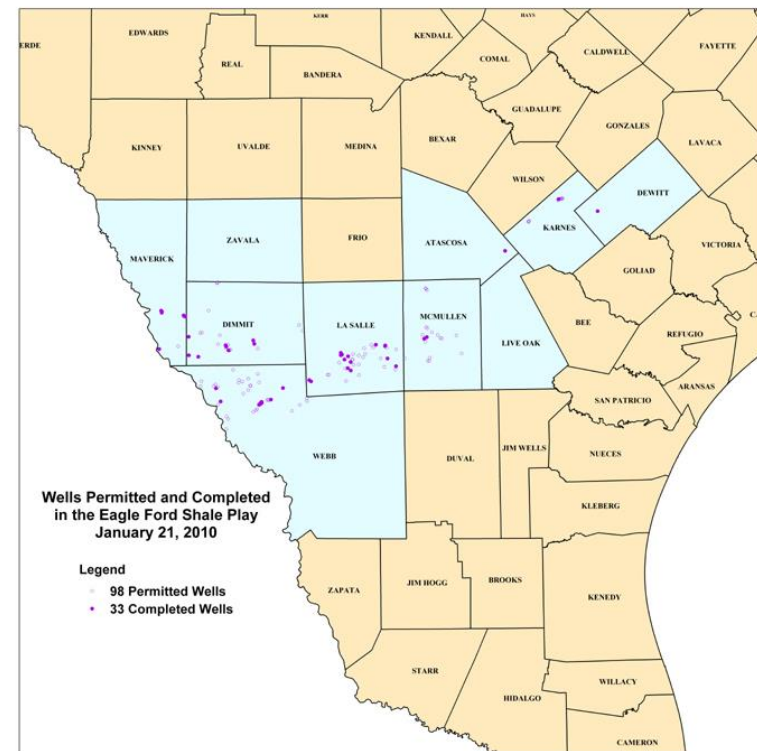
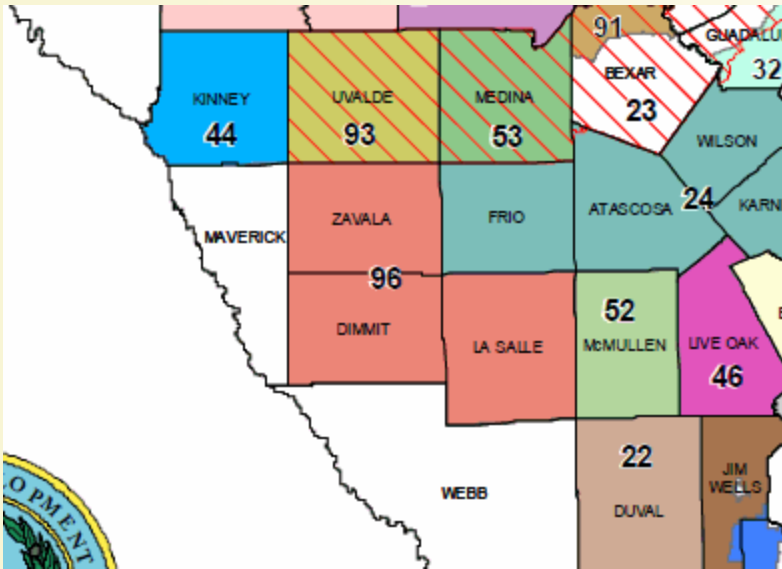


Blue – drilling permits, Red – gas wells  
Green – oil wells

## Upper Trinity GCD

- Includes Hood, Montague, Parker, and Wise Counties
- Additional requirements for exempt wells
  - Must register exempt wells
  - Must report groundwater withdrawals
  - Must comply with GCD's well spacing requirements
  - May be assessed production fees

## Wintergarden GCD



**Coral Area – Wintergarden GCD**

## Wintergarden GCD

- Includes Zavala, Dimmit, and LaSalle Counties
- Additional requirements for exempt wells
  - Must register exempt wells
  - Must pay registration fees
  - Must comply with GCD's well spacing requirements

## GCD Enforcement

- Producing groundwater in violation of GCD rules is declared to be illegal, wasteful per se, and a nuisance.
  - Adjacent landowner or landowner within ½ mile of illegal well may sue the owner of the well for injunction and damages
  - GCDs may also enforce rules against violators by seeking:
    - Criminal penalties
    - Injunction
    - Civil penalty of \$10,000 per day per violation, with each day of continuing violation constituting a separate violation

## Water Supply Contracts



## Water Supply Contracts

- Surface Water
- Groundwater
- Reclaimed Water



## Surface Water Supply Contracts

- General requirements for contracts for “state water”
  - Title 30, Sections 297.101 to 297.108 of TAC
  - Each supplier of **treated** or **untreated** state water possessing a valid water right shall make application for an amendment based upon the supplier’s contractual arrangements with a purchaser or submit a copy of the contract to TCEQ
  - Contract to include vicinity map showing the diversion point and place of use
  - Purchaser and supplier shall submit annual reports to TCEQ pursuant to Title 30, Sections 295.202(d) of TAC

## Surface Water Supply Contracts

- Required terms for contracts for “state water”
  - Title 30, Section 295.101 of TAC
  - Cost of water to purchaser
  - Effective date and termination date of contract
  - Average quantity of water being furnished on an annual basis, or total quantity if for less than one year
  - Location of purchaser’s diversion point
  - Statement that contract’s effectiveness is dependent upon supplier and/or purchaser’s compliance with TCEQ’s rules

## Surface Water Supply Contracts

- Exceptions to requirement of amending water right or requiring submittal of contract for “state water”
  - Sales of untreated water conveyed by supplier through a canal or pipeline for the purpose and for use in the area authorized in the water right
  - Sales of treated water supplied through a public or private municipal or rural water supply system for the purpose and use authorized and in the area authorized in the water right
  - Deliveries of treated sewage effluent for the purpose and use authorized and in the area authorized in the water right
  - 3 years or less of sales of untreated water from the perimeter of a reservoir for any purpose authorized in the water right in amounts not exceeding 10 acre-feet per year

## Downstream Sales of Surface Water

- Special requirements for downstream sales of water from a storage reservoir
  - Title 30, Section 297.103 of TAC
  - If a contract which obligates a supplier to provide for or contemplate diversion of water by the purchaser from streamflows other than those resulting from releases of water from storage under the contract, the supplier shall make releases of diversions within the limits of the supplier's water right or the contract.

## Downstream Sales of Surface Water

- If a contract which requires a supplier to supply water from storage to a purchaser provides for or contemplates diversions of water by the purchaser from streamflows **other than those resulting from releases of water from storage for the purchaser's use under the contract**, and neither the purchaser or supplier has a right to such diversions, then:
  - Purchaser shall obtain a regular, term or temporary permit for such diversions; or
  - Supplier shall apply for a regular, term or temporary permit or an amendment to the supplier's water right for such diversions

## Upstream Sales of Surface Water

- Special requirements for upstream sales of water from storage
  - Title 30, Section 297.104 of TAC
  - If a contract provides that a purchaser may divert water upstream of a supplier's storage reservoir in a manner which impairs the supplier's water right then
    - Purchaser shall obtain a permit to the extent of the maximum annual diversion of water allowed for the term of the contract; or
    - Supplier shall obtain a permit to the extent of the maximum annual diversion of water allowed for the purchaser for the term of the contract

## Groundwater Supply Contracts

- General Considerations
  - Groundwater law is in a state of flux
  - Who to contract with?
    - Groundwater trucking companies
    - Landowners with groundwater wells
    - Landowners with groundwater, no wells
      - May need a hydrogeologist to determine availability of groundwater
      - May contract to drill well on Landowner's property

## Groundwater Supply Contracts

- General considerations
  - Regulatory requirements if water supplier is in a GCD
    - Who must comply with GCD rules?
    - Is the well exempt or is a permit required?
    - Who pays any associated fees of the GCD?
  - Contracting with a landowner
    - Make sure they own both land and water rights
    - Ask for legal documents (deed records) to prove ownership
    - If you drill a well on landowner's property, what will happen to the well once water supply no longer needed

## Reclaimed Water Supply Contracts

- Reused or **reclaimed water** is domestic or municipal wastewater effluent treated to quality suitable for use
- Reclaimed water delivered directly from WWTP
- Reclaimed water can be used for irrigation, industrial, or commercial purposes
- Title 30, Chapter 210 of TAC governs use of reclaimed water
- Chapter 210 applies to producers, providers, and users of reclaimed water

## Terms and Considerations for All Water Supply Contracts

- Costs
  - Cost of water supply in place and cost to deliver/transport
- Quantity of water needed
  - Reliability considerations to ensure that water is provided in amounts required
- Quality of water is adequate for purpose of use
- How will water will be transported to place of use
  - Via truck, pipeline, or ditch
- Easements for diversion point, well, and/or delivery system

## Discharge and Disposal of Water



## Discharge and Disposal of Oil and Gas Waste

- Discharge into “waters of the United States”
  - Governed by the Clean Water Act
  - Regulated by the National Pollutant Discharge Elimination System (NPDES) permitting program
    - TPDES permit from RCT
- Disposal by well injection
  - Safe Drinking Water Act (SDWA)
    - Underground Injection Control (UIC) Program
    - UIC permit from RCT

## TPDES Discharge Authority

- TWC Section 26.131(b): RCT may issue permits for discharge of waste resulting from oil and gas exploration and production into waters of the State.
  - Discharge must meet TPDES water quality standards (WQS) set by TCEQ.
  - WQS include standards for salts (TDS, chlorides, sulfates) that may impact WQS compliance and therefore RCT's action on discharge application.

## UIC Disposal Authority for Oil and Gas Waste

- TWC Section 27.031: No person may continue using a disposal well or begin drilling a disposal well or converting an existing well into a disposal well to dispose of oil and gas waste without first obtaining a permit from the RCT.

## RCT Enforcement

- Violations of rules for UIC disposal may be enforced by the RCT using:
  - Injunction
  - Up to \$10,000 per day in administrative penalties
  - Up to \$5,000 per day in civil penalties
- Violations of rules for TPDES discharge may be enforced by the RCT using:
  - Injunction
  - Up to \$10,000 per day in administrative penalties
  - Up to \$10,000 per day in civil penalties

## Questions?

