


Upper Trinity Groundwater Conservation District

TREC Course Description & Outline

Description: The Upper Trinity Groundwater Conservation District developed a comprehensive education plan for realtors in the North Texas area to become familiar with groundwater, water wells, and environmental management. With many ranch and suburban homes installing and maintaining wells, realty and title agents will be equipped with state and local tools for their clients to be informed on local governing authorities and how to be a responsible well owner.

Attendees receive a manual along with their course detailing pertinent information for realtors and clients during property closings. Virtual opportunities for attending courses will be available, and district staff will travel to additional locations in the district for interested parties. Maintained records of assessments, and education credits will be available for verification at the District office in Springtown, Texas.

 = web page or PDF document can be found in the accompanying zip drive.

 = Heading topic

 = Sub-heading topic

Course Topics

1. Aquifer & Water Wells (Section duration: 50 minutes)

a. Aquifers in Texas (Section duration: 25 minutes)

- i. Water Cycle & Groundwater movement
- ii. Definitions, Types, & Distribution


1. Aquifer: a geologic formation that houses or transmits water. Texas designates aquifers into major and minor classifications based on their area and volumes.
2. Water Table: the top of the saturated portion of an aquifer, can be seen in water wells as the water surface in the well.
3. Saturated Zone: the portion of the aquifer where void space is completely filled with water. This area is below the unsaturated portion of the aquifer.

iii. Types of Aquifers

1. Major & Minor Aquifer Units (designations)

a. Major Aquifers


- i. Trinity, Carrizo-Wilcox, Gulf Coast, Ogallala

b. Minor Aquifer Units 



i.

2. North Texas Geology

a. Statewide geological formation database 



i.

b. Trends of Trinity Aquifer

i. District map images from model studies

ii. Water availability & Volume use trends

iii. Notable aquifer units

iv. Aquifer responses to groundwater usage

1. Confined (Artesian) versus Unconfined (Water Table)

a. Drawdown & Cones of Depression

2. Examples of groundwater over-usage 

a. Subsidence, water table loss, water quality issues potentially increase, potential negative effects to surface water bodies.



b.

b. Water Wells (Section duration: 25 minutes)

i. Water Well Anatomy – well diagram completions courtesy of TDLR

1. Well Definition & Types – diagrams in PowerPoint file

a. Hand dug, driven, and drilled are common types of wells to be found in North Texas. Advancements in casing and pump technologies have made drilled wells the standard for new homes.

2. Federal Resources “Groundwater and the Rural Homeowner” 



a.

ii. Water well construction & compliance (Entities involved)

1. Texas Commission on Environmental Quality (TCEQ) 

- a. Groundwater Homepage –information on finding water well reports, groundwater contamination viewers, and flood recommendations for well owners.



b.

2. Texas Department of Licensing and Registration (TDLR) 

- a. Technical Guidance on Well Drilling and Pump Installing Operations



b.

- c. Laws and Rules regarding well construction & completion



d.

3. County/Commissioner’s Courts (see county doc. files in file).

iii. Water Well Data Resources

1. Water Well Report Viewer 



a.

2. Submitted Drillers Reports Database (SDR) 




a.

3. Texas Alliance of Groundwater Districts (TAGD) 



a.

iv. Abandoned Wells

1. Significance, Reporting, & Recommendations 

- a. Abandoned wells create environmental and physical risks to homeowners and community members.
- b. TDLR requires abandoned or deteriorated wells be brought into compliance within 180 days of the landowner being made

aware of the well. Landowners can choose to fill and cap the well or bring it back into working order and making sure the appropriate authorities are aware.

- c. TCEQ provides resources and a workbook for landowners to plug their own abandoned wells without necessarily hiring a driller. The full document is available in the zip drive.
- d. Technical Guidance on Abandoned or Deteriorated Water Wells



- e.
- f. Landowner's Guide to Plugging Abandoned Water Wells



- g.
- v. Septic Systems

- 1. General Information and Regulations 

- a. EPA – Types of Septic Systems







- b.
- c. TCEQ – Finding a Licensed OSSF Agent in your county (QR Code located in PowerPoint).

- 2. Septic System Restrictions & Resources

- a. Septic System Basics 



- b.
- c. Regional level (PDF's of permit processes found in zip drive)
 - i. County/Commissioner's Courts

- 1. Montague County OSSF Permit Process 
- 2. Wise County OSSF Permit Process 
- 3. Parker County OSSF Permit Process 
- 4. Hood County OSSF Permit Process 

2. Agency Overview & Water Law (Section duration: 50 minutes)

a. Agencies (Section duration: 25 minutes)

i. TWDB – Texas Water Development Board

1. Regulating Entity Purpose & History
2. GMA's and District Inception
3. Resources

a. Groundwater Hub for data, models, GMA's, and more



b.

c. Financial assistance for entities in Texas – Grants, Loans, Rural Water Assistance Fund, State Water Implementation Funds for Texas



d.

e. Groundwater Data Viewer – Use and Scope

- i. TWDB's managed database on all registered water wells in the state provides realtors and title agents information on the current registered owners of a water well, including information from the driller's report including depth, estimated formation, casing, and pump data. Excellent tool when surveying a property and water availability.



f.

ii. TCEQ – Texas Commission on Environmental Quality

1. Regulating Entity Purpose & History

a. Public Water Systems – Compliance & Reporting

- i. Public water systems report annually to state agencies on their water quality and treatment systems compliance. All systems held to same water quality standards through EPA NPDW standards, found later in course.


2. Resources

a. Groundwater Driller Report Database




- b.
- c. TCEQ Environmental Complaint/Reporting
- d. Complaints fall into various categories and are investigated depending on whether they involve landscape irrigation, On-site Sewage Facilities, or waste disposal.



- e.
- f. Drinking Water Watch  Resources for those supplied with public utility water to view water quality ‘report cards’ of any entity in Texas, including boiling notices and annual quality checks.




- g.
- iii. USGS – United States Geological Survey
 - 1. Groundwater Resources  Includes list of common organic, inorganic, and microbial contaminants found in groundwater.



- a.
- iv. RRC – Railroad Commission
 - 1. Regulating Entity Purpose & History
 - a. Oil/Gas/Fuels in Texas (railroads since transferred under purview of Department of Transportation in 2005).








- 2. Complaint/Reporting Center 

- a.
- 3. Database Resources 
 - a. View any registered oil and gas well, and data on their depth and completion.





- b.

b. Texas Water Law Cases/Legislation (Section duration: 25 minutes)

- i. 1904 - Houston & Texas Central Railroad Co. v. East 
1. Rule of Capture: Definition & Limitations 
- ii. 1917 – Conservation Amendment 
- iii. 1949 – Groundwater Conservation Districts creation
- iv. 2009 – UTGCD voted upon and created in N. Texas 
- v. Chapter 36 Texas Water Code – concerning groundwater conservation district rules & management 
- vi. Groundwater Law – relevant cases
 1. Coyote Lake Ranch v. City of Lubbock
 2. Getty Oil Co. v. Jones
 3. Strata & Fazzino v. Brazos Valley GCD
 4. EAA v. Day & McDaniel
 5. Bragg v. EAA
 6. Kinney County GCD v. Boulware LP


3. GCD/Realtor Resources & District Rules (Section duration: 50 minutes)

a. District Resources (Section duration: 25 minutes)

- i. Registered & Monitoring Wells Databases 
 1. 
- ii. GAM (Groundwater Availability Model)
 1. District database records estimated thickness & distribution of geologic units below a property within county boundaries.
 2. Contact district staff for data regarding a specific address.
- iii. Education & Outreach
 1. Educational opportunities – courses available on the following;
 - a. Texas geology & aquifer units
 - b. Rainwater Harvesting
 - c. Native Plants & Xeriscaping
 2. Water education Trailer
 3. Water quality testing
 - a. E. coli & coliform (free for registered district wells)
 - b. NELAP laboratory locations



- iv. GCD Index (through Texas Alliance of Groundwater Districts) 

- v. Property Documentation Resources 
 - 1. County government records websites
 - 2. Appraisal district database plats
 - 3. Deeds and groundwater rights documentation
 - 4. Groundwater severance
 - a. Definition & occurrences
 - b. Documentation examples & resources

b. District Rules (Section duration: 25 minutes)

i. Scope of District Influence

- 1. Parker, Montague, Hood, & Wise Counties 



a.

ii. Application Process

a. Application submission & fee submission

- i. -\$600.00 application fee + \$100.00 refundable driller deposit
- ii. When the driller submits a completed well report to us to send to the state, UTGCD returns the deposit.

b. Tract Sizes

i. Requirements

- 1. Minimum is two acres unless the property was platted prior to 2009, in which case that property will most likely fall under our rules of exception, listed in District rules document.

c. Public water availability 

- i. Public Utility Commission Database to determine if your property is in a utility district area




ii.

d. Well Spacing Requirements

- i. See District spacing diagram in PowerPoint, but a two-acre tract with an 18.37 GPM well requires 50 feet from property line and 150 feet from adjacent wells. The distances to both respectively increase as the GPM of the well increases.

e. Water Designation & Usage

- i. Domestic, Livestock, Agricultural
 - f. Field Verifications and Approval Letters – see PowerPoint
 - g. Additional documentation
 - i. Deeds, Surveys, Plats, Letters of Authorization
- 2. Oil & Gas Pads/Pipelines – Pressure Cementing
- iii. Exempt versus Non-Exempt Usage
 - 1. Exempt usage definitions
 - i. Domestic
 - ii. Livestock
 - iii. Agricultural
 - 2. Non-exempt usage definitions
 - i. Commercial & Public Utilities
 - ii. Any water producer servicing more than 14 connections more than 365 days per year.
 - iii. Reporting of volumes - Water Production Reports (WPR's)
 - iv. Process & submission - Documentation via website
- iv. Well Transfers
 - 1. Process – paperwork to submit as incoming owner
 - 2. Considerations – usually previous owner information not necessary to complete the transfer in District database.
 - 3. 
- v. Vanity Ponds
 - 1. Definitions & Restrictions
 - a. Domestic use allows for the filling of a pond if less than 1/3 of an acre and installation of artificial liner.
 - b. Any other filling of a pond other than those specified conditions isn't considered domestic use, and thus isn't exempt.
 - c. If the pond falls outside domestic usage, so long as the well system or well systems providing the water to the pond are less than 17.36 GPM, then it would fall under a production-based exemption.
 - d. Fish do not fall under livestock exemptions.
- vi. “What-if” Scenarios
 - 1. If an individual drills a well without an approved application
 - 2. If an individual “moves” the well site before construction

3. If an application contains incorrect information:
 - a. Water usage
 - b. Water volumes
 - c. Well owner
4. If an individual doesn't report usage as a non-exempt system:
 - a. Late reporting
 - b. No reporting
 - c. Changing of meters

vii. Groundwater Availability Studies 

1. Definitions & Application
2. Resources – see specific verbiage on PowerPoint and full links in zip drive
 - a. Parker County
 - b. Wise County
 - c. Montague County
 - d. Hood County

4. Water Quality & Conservation Resources (Section duration: 50 minutes)

a. Water Quality (Section duration: 25 minutes)

i. Public versus private systems

1. Private Systems 

- a. TCEQ Regulatory Guide – sampling for bacteriological contaminants in a private well – see zip drive

2. Public Systems (PWS) 

- a. TCEQ handles water produced and distributed by public water systems, additionally handles compliance and regulation.

ii. EPA Drinking Water Standards

a. NPDWR's (National Primary Drinking Water Regulations) 



- i.
- ii. Additional regulations include treatment of groundwater if being distributed through a public utility. This was issued by the EPA to improve drinking water quality and reduce the impact of micro-organisms that may cause disease.



iii.

iii. Commonly encountered groundwater contaminants

1. Iron & Iron Oxides
2. Salts
3. Hydrocarbons
4. Micro-organisms
5. Fertilizers (Nitrates)

iv. VA Loans & Property Closings

1. Property closings require a NELAP laboratory to certify if water is “safe for consumption” or not. Refer to the pdf of all certified laboratories in the state for specific water testing in your area.

v. Water Well Quality Testing Resources

a. NELAP Laboratories 

b. Agrilife Extension Offices

- i. Some provide water and soil quality testing including pH, TDS, Nitrate levels, and E.coli presences, for a small fee. Agrilife office information found in PowerPoint.

c. Groundwater Conservation Districts

- i. List of neighboring districts who provide educational and testing resources, and points of contact to verify their rules in their respective counties.

b. [Conservation Resources](#) (Section duration: 25 minutes)

i. Master Naturalists & Master Gardener Associations 

1. Both organizations provide resources on land management, water conservation practices, and additional educational topics.

ii. Agriculture Exemptions 

1. View PowerPoint for agricultural exemption requirements, limitations, and the exemption application process.



2.

iii. Water Conservation & Efficiency 

1. Native Plants – utilizing plants familiar to our ecological area of Texas reduces the amount of water and fertilizer these varieties

require, and subsequently reduces the stress on aquifer systems and surface water ways.



- 2.
3. Xeriscaping – utilizing landscape management with focuses on drought tolerant plants and ground coverage that promotes water retention or requires no watering can reduce water well stresses on rural and semi-rural properties.



- 4.
5. Irrigation – When irrigation is necessary, opting for smart systems that allow users to track their water volume usage, or turning off during precipitation events, decreases stress on local aquifer systems.
6. When clients own a property with a water well, practicing conservation and water efficiency methods both increases the life of their well system and septic system, which in turn saves money in the long run.

iv. Rainwater Harvesting

- a. TWDB’s Rainwater Harvesting Manual – a landowner’s guide to designing and implementing their own catchment system regardless of the size of the property.



- b.
2. Benefits
 - i. Reducing erosion and weathering.
 - ii. Reduce strain on water well and utility systems.
 - iii. Soft water easier to treat with reverse osmosis & sediment filters for consumption.
 - iv. Better results when utilizing rainwater for irrigation purposes due to a lack of dissolved solids.
3. Tax Exemptions – see PowerPoint for specific tax codes and what materials fall under the tax exemption rule.
4. Regulation – local HOA’s may have rules, but Texas does not have any statewide regulation against rainwater harvesting.

5. Conclusion & Wrap Up