



Railroad Commission of Texas Drilling Insight & Casing Estimator GIS Site

DICE

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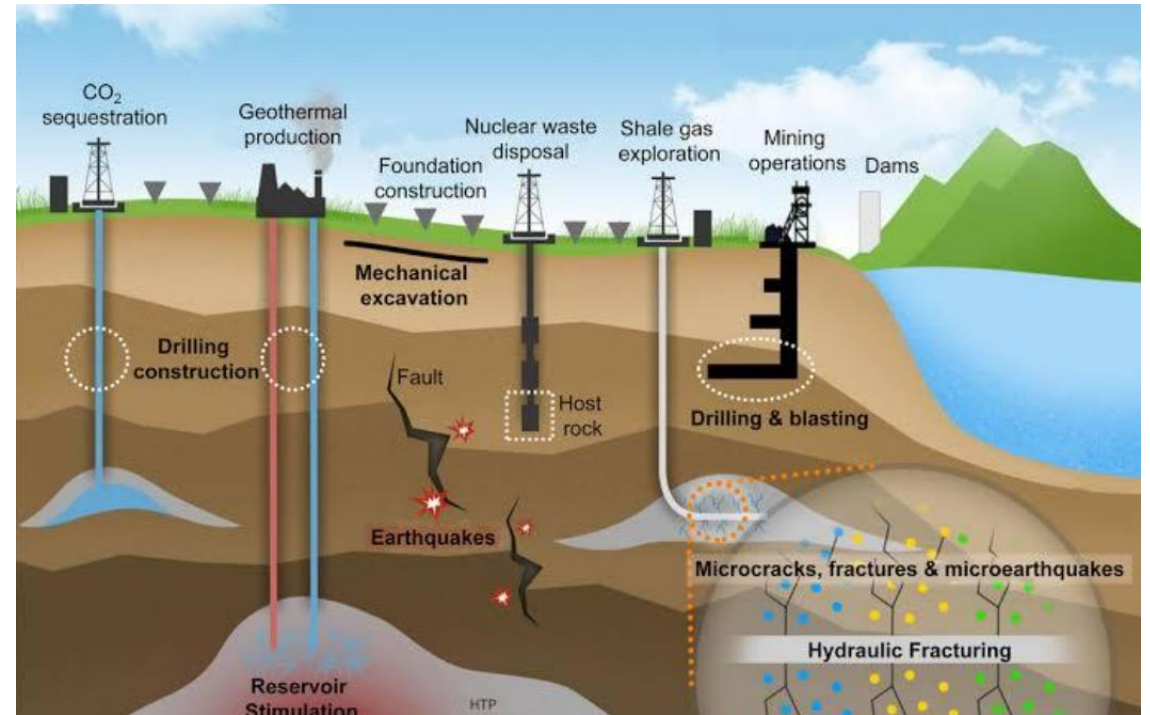
June 2025



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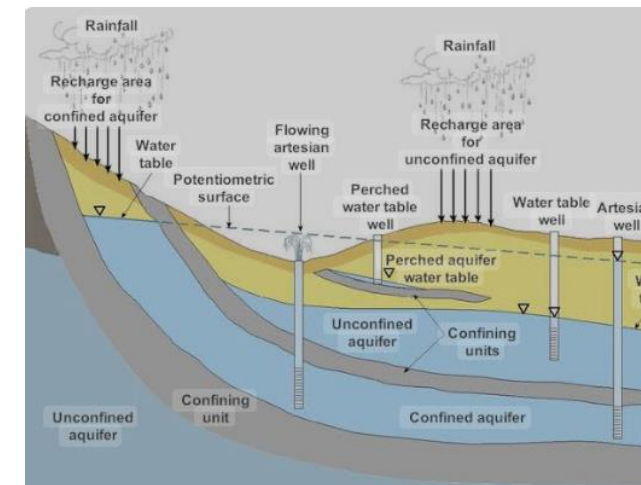
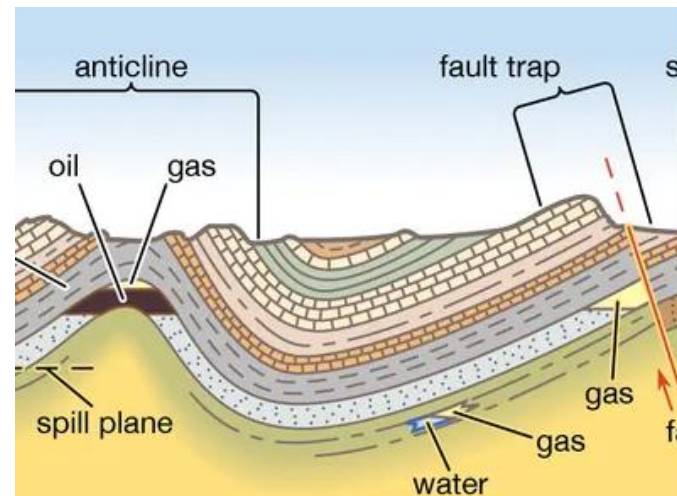
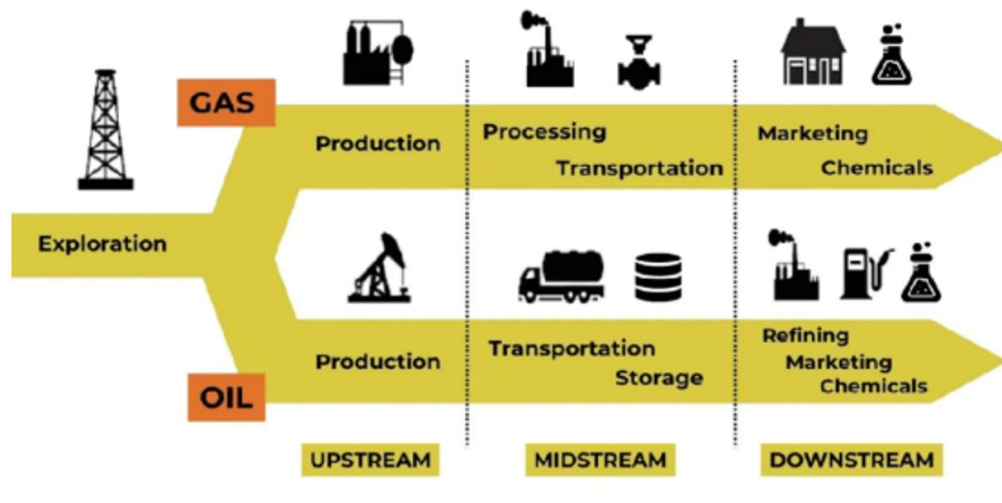
- Engineering Vs. Geologic GIS Information
- DICE vs. Public GIS Layers
- Accessing DICE Site
- Drop-Down and Look Around
- What additional GIS Layers Do Operators want?
- Questions



Engineering Vs. Geologic GIS Information



- Engineering - the branch of science and technology concerned with the design, building, and use of engines, machines, & structures (Wells, Pipes)
- Production - processes involving extracting, processing, quantifying, and transporting oil and natural gas from the earth



- Geology - the science that deals with the earth's physical structure and substance, its history, and the processes that act on it

Navigation to Public GIS & DICE Sites



- RRC Home Page
 - Link to GIS Resources
 - Two GIS Resources
 - Public GIS & DICE
- Why are there Two?
 - How are they different?
- Search by Browser
 - RRC Public GIS Viewer
 - Drilling and Insight Casing Estimator

DICE vs. Public GIS Layers

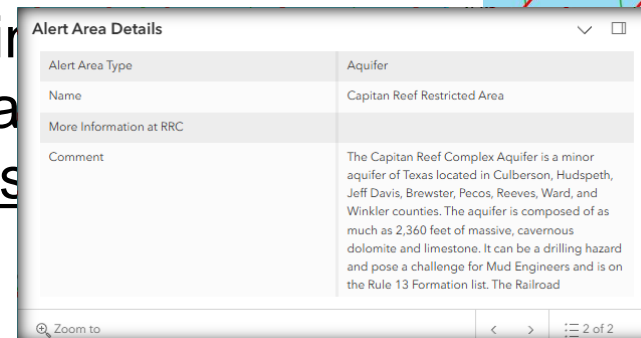
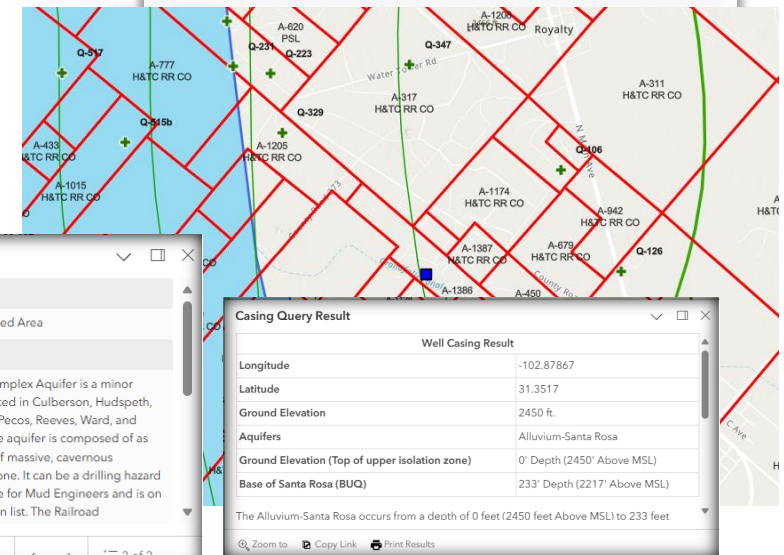
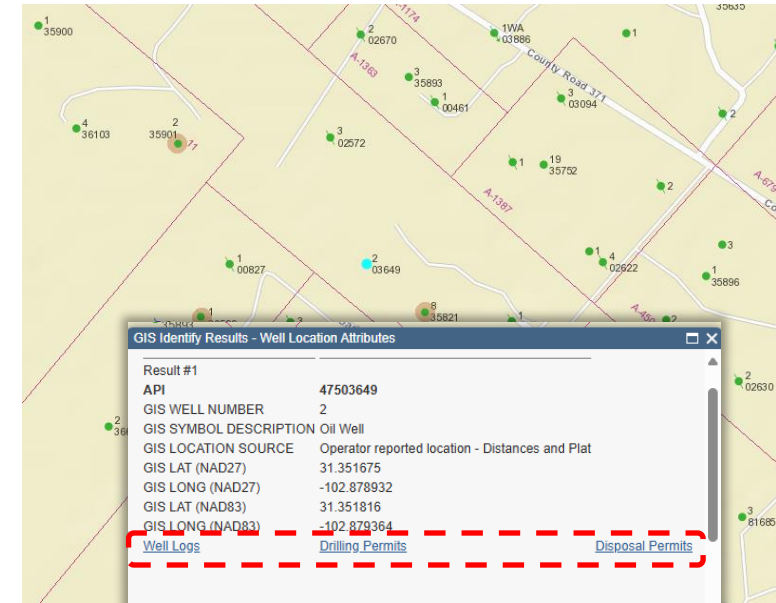


- Public GIS Viewer

- Regulated RRC Asset Engineering Information
- Production & Permitting Information
- Spatial inventory regulated assets
- RRC Data Only
- 95% of all RRC Engineering and Production Information

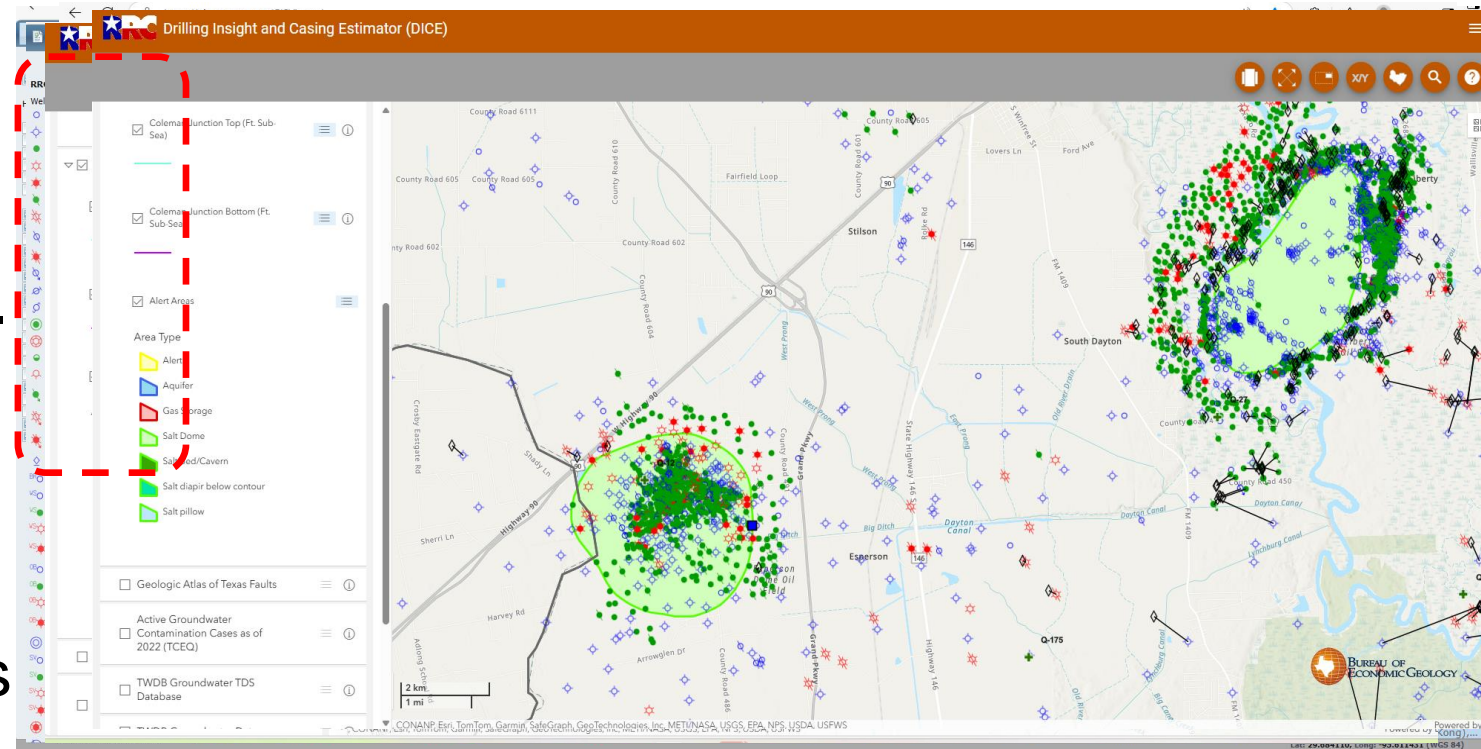
- Drilling Insight and Casing Estimator (DICE)

- Geologic and Hydrogeologic Data
- Groundwater Depth Interpretations (Peer Reviewed)
- Known Casing Area (no Waterboard letter needed)
- Geologic & Natural Drilling Alerts
- District Office ID'ed Casing and Plugging
- Published Peer Reviewed Geologic Ha
- Data from Multiple agencies and Publis



Public GIS Viewer

- Inventory of regulated oil field assets
 - Spatial representation of Texas RRC regulated assets
 - Access to 95% of all electronic asset database information at RRC
 - Hyperlinks to business and production information
 - Multiple Layers
- GIS Data Opportunity
 - Hydrogeology, Drilling Hazards
- Drilling Insight & Casing Est.
 - Groundwater Data
 - Structural Geology
 - Drilling Hazards & Alerts
 - Many Published Data Sources



DICE vs. Public GIS Layers Continued



- Public GIS Viewer Data Set Key or Layers
 - Regulated engineering assets
 - Wells
 - Pipelines
 - Clean up sites
 - RRC data only (RRC is responsible)
- DICE (Drilling Insight Casing Estimator) Key
 - Geology
 - Groundwater Depths
 - Aquifers
 - Drilling Alerts
 - Faults
 - Seismic Response & Investigation areas
 - Salt structures
 - Multiple Agency & Published Data
 - Citing, Update Frequency, Accuracy
 - (RRC is NOT Responsible)

The screenshot displays the DICE interface with a list of layers on the left and two detail pop-ups on the right. The layer list includes:

- Logged Well
- Oil and Gas Wells
- Original Texas Land Survey
- County Boundaries
- Progress
 - Casing Data Available
 - Log Scanning Completed
- Geologic Atlas of Texas Faults
- Public Drilling Alerts
- Geologic Atlas of Texas Faults
- Active Groundwater
 - Contamination Cases as of 2022 (TCEQ)
- TWDB Groundwater TDS Database
- TWDB Groundwater Data
- TWDB Minor Aquifers
- TWDB Major Aquifers
- Seismic Response Areas (SRAs)
- Seismic Investigation Regions (SIRs)

Two detail pop-ups are shown:

- Layer Details - Geologic Atlas of Texas Faults**
 - Layer Data Source:** Bureau of Economic Geology
 - Texas Surface Faults at 250K Map Scale
 - More Information:** <https://store.beg.utexas.edu/25-geologic-atlas-of-texas>
 - Source Agency Contact Phone Number:** 512-471-1534
- Layer Details - TWDB Major Aquifers**
 - Layer Data Source:** Texas Water Development Board
 - The 9 major aquifers of Texas as defined by the TWDB, Updated December 2006.
 - More Information:** <https://www.twdb.texas.gov/mapping/gisdata.asp>
 - Source Agency Contact Phone Number:** 512-463-7847

Joint Venture between UT BEG & RRC & GAU



- Data Sets provided by State & Federal Agencies & Peer Reviewed Data Sets
 - RRC
 - UT BEG
 - TCEQ
 - TWDB
 - EPA
- UT Bureau of Economic Geology (BEG)
 - Hosts Site, Maintains, Updates, and Contributes Content
- RRC provides most of the Funding, Creative Direction, some of the content
 - TCEQ funded site 2004 – 2011 (1M)
 - RRC is not liable for the accuracy of Non-RRC data sets
 - 225K/Year, 5 Million invested to date by State Agencies
- UT BEG can add most any geologic or hazard information requested
 - What do you want to see?
 - What will help you?

Drilling Insight and Casing Estimator

- Geologic, Hydrogeologic, Drilling Alerts & Hazards Information
 - Salt Piercement Structures
 - Known Casing Depth Area
- Groundwater Protection Information
 - Interpreted Counties (dark)
 - Scanned Counties (dashed)
 - 90% O&G Counties Interpreted
 - Priority is Gulf Coast Counties
- Data Source Identification
- Query Tools
 - Roll Curser for Descriptions

Layer Details - Oil and Gas Wells

Layer Data Source
Railroad Commission of Texas (RRC)

Oil, gas, injection and other wells regulated by the Railroad Commission

Drilling Insight and Casing Estimator (DICE) Logged in as: James Harcourt

Oil and Gas Wells

- Original Texas Land Survey
- County Boundaries

Progress

- Casing Data Available
- Log Scanning Completed

Public Drilling Alerts

Protected Base of Usable Quality Water (BUQW)	Depth (752' Below MSL)
Base of USDW:	1281' Depth (1265' Below MSL)
Base of Chicot Minor Aquifer:	1555' Depth (1539' Below MSL)
Base of Evangeline Minor Aquifer:	3684' Depth (3668' Below MSL)
Base of Burkeville Confining Unit:	4390' Depth (4373' Below MSL)
Base of Jasper Minor Aquifer:	6361' Depth (6345' Below MSL)
Base of Cathoula Confining Unit:	9233' Depth (9216' Below MSL)

7 Water Calls

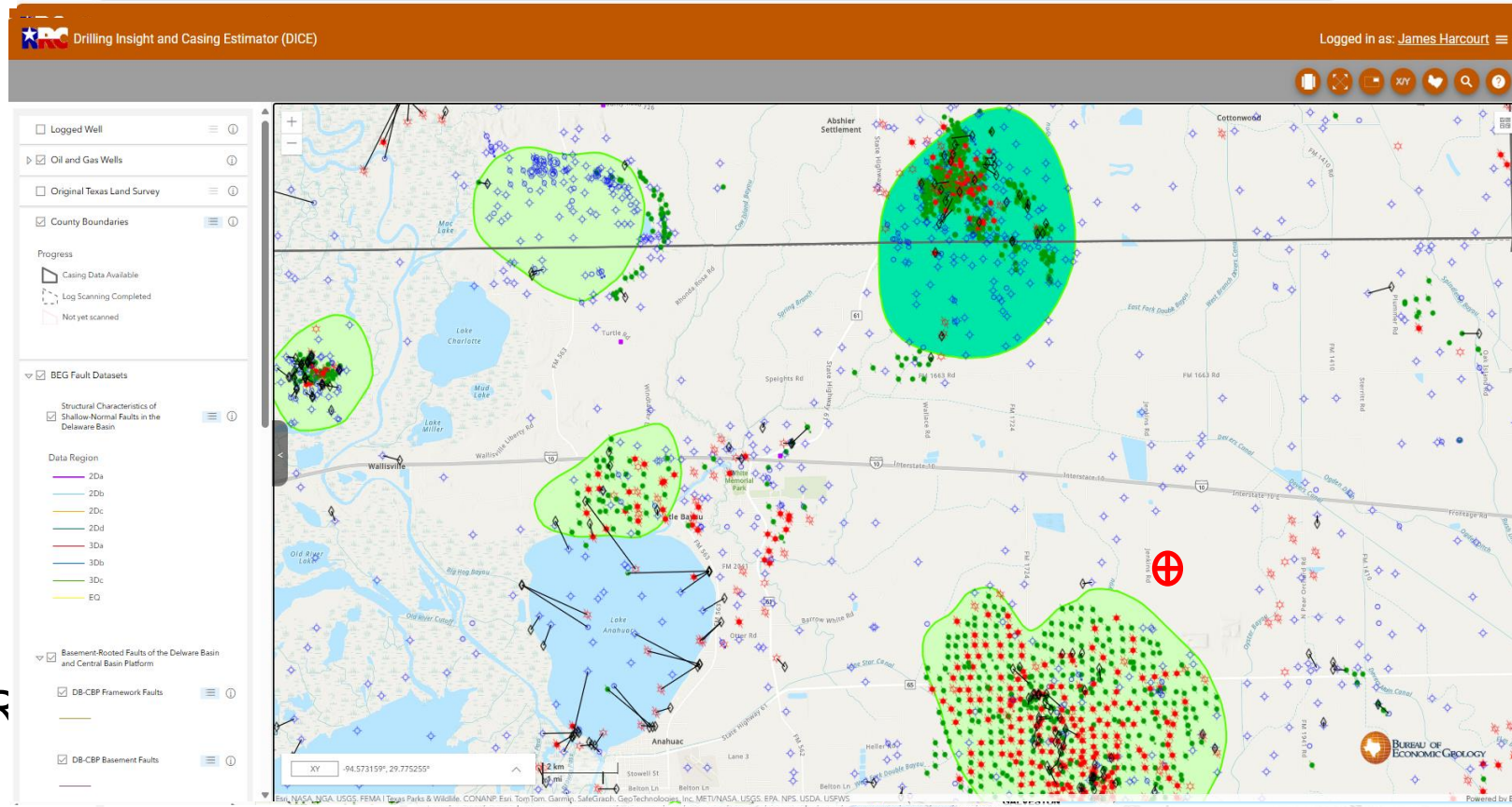
The base of the Healthy Quality Water is estimated to occur at a depth of 748 feet (752 feet)

Zoom to Copy Link Print Results

BUREAU OF ECONOMIC GEOLOGY
Powered by Esri

Drop Down and Look Around

- Setting Surface Casing or Plugging
 - Location of Groundwater
 - 1 Mile Away
- Plugging SWR 14
 - Location of Groundwater
 - Caustic formations (Salt)
 - Disposal formations
 - Overpressure formations
- Class II Injection Info
 - USDW
 - Confinement
 - Artificial Penetrations AOR
 - Seismicity and Faults
- Class VI (CCS)
 - Most Comprehensive and Subordinate Review

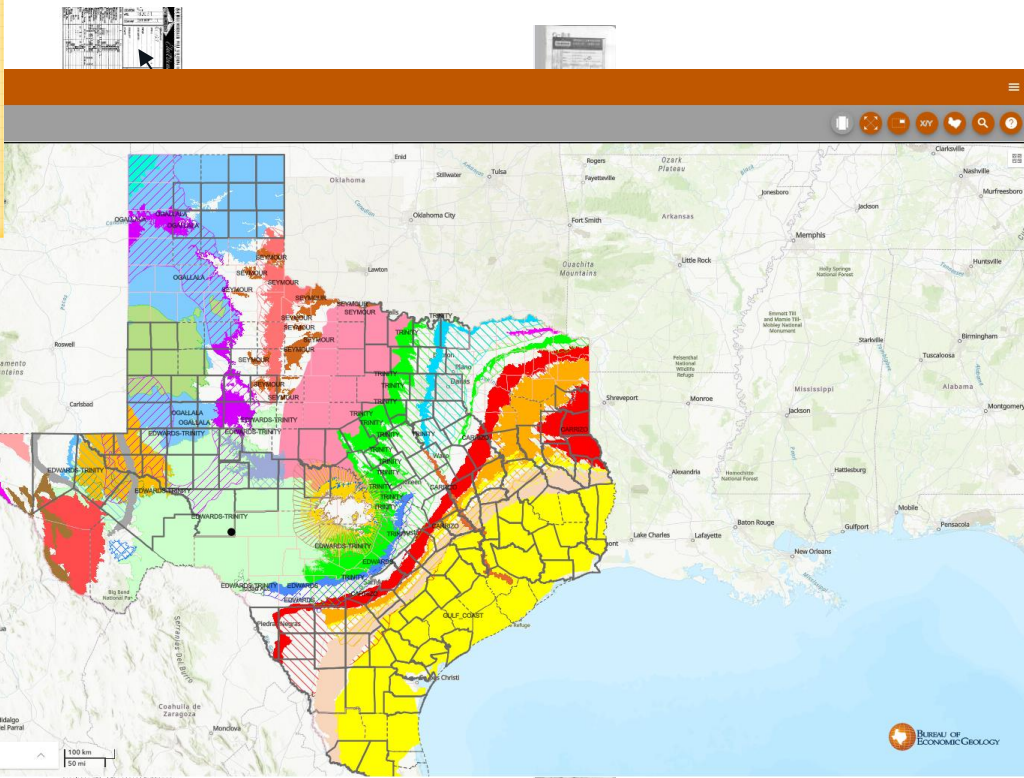




Finding Groundwater in non-interpreted Counties

- Uninterpreted County's
 - No casing depths listed
- A. Find Groundwater info
 - Turn on TWDB layers
 - Zoom in
 - 380' and 403', 259 mg/L
- B. Find/review type Well Logs
 - Deep Groundwater
 - 750', 849'
- C. View Major Aquifers
- C. View Minor Aquifers

A	B	C	D	E	F	G	H	I	J	K
Longitude	Latitude	OBJECTID	PickName	TopOrBase	PickDepth	GroundW	QNum	County	QWellID	PickElevMSL
-94.4403	29.7632	4999	Catahouli base		9979.971	19.34124	Q-85	CHAMBER	50455	9960.83
-94.4279	29.80489	5045	Catahouli base		9745.022	14.68011	Q-85A	CHAMBER	50374	9730.87
-94.4304	29.695010	50345	Jasper Mi base		7698.145	7.34854	Q-432	CHAMBER	50670	7600.8
-94.4279	29.854889	50468	Evangelin base		3995.756	14.68011	Q-413a	CHAMBER	51010	3891.08
-94.5099	29.682103	50374	Protected base		787.6883	6.971496	Q-134b	CHAMBER	50963	780.897
-94.4403	29.792919	50445	USDW base		1211.296	20.37127	Q-616a	CHAMBER	50964	-1309.9
-94.5316	29.76373	50790	Anahuac top		7729.063	20.71804	Q-263b	CHAMBER	51374	7699.54
-94.4304	29.695010	50351	Catahouli base		10401.05	7.34854	Q-432	CHAMBER	50677	10393.7
-94.5041	29.689077	50627	USDW base		1095.238	10.00471	Q-417a	CHAMBER	51203	1085.23
-94.5305	29.719953	50245	Jasper Mi base		7123.563	10.67268	Q-936a	CHAMBER	50756	7112.89
-94.4135	29.752320	49996	Burkeville base		4900.894	15.7239	Q-87	CHAMBER	50462	4885.17
-94.4205	29.782919	50423	Protected base		778.1745	20.37127	Q-616a	CHAMBER	50974	775.103
-94.5433	29.794171	50629	Catahouli base		9452.074	22.94602	Q-120g	CHAMBER	51255	9429.13
-94.5041	29.689077	50620	Catahouli base		10262.63	10.00471	Q-417a	CHAMBER	51183	10252.6
-94.4691	29.742119	49979	USDW base		1121.516	14.9070	Q-79a	CHAMBER	50443	1106.61
-94.4279	29.80489	50477	Catahouli base		9745.022	14.68011	Q-616a	CHAMBER	51020	9739.97
-94.5337	29.687523	50643	Protected base		865.6797	8.43913	Q-648a	CHAMBER	51209	857.241
-94.4304	29.695010	50334	Chicot Mi base		1779.002	7.34854	Q-432	CHAMBER	50808	1771.85
-94.4205	29.782919	50451	Protected base		773.1745	20.37127	Q-616a	CHAMBER	50990	775.103
-94.4205	29.782919	50428	Catahouli base		9977.721	20.37127	Q-616a	CHAMBER	50964	9957.35
-94.4304	29.695010	50363	Catahouli base		10401.05	7.34854	Q-432	CHAMBER	50893	10393.7
-94.4279	29.80489	50471	Jasper Mi base		7014.967	14.68011	Q-613a	CHAMBER	51013	7000.13
-94.4403	29.792919	50457	Jasper Mi base		7189.87	20.37127	Q-616a	CHAMBER	50997	7180.45
-94.4176	29.895818	50798	Catahouli base		9971.222	20.43534	Q-844a	CHAMBER	51181	9950.79
-94.4277	29.678749	50350	Evangelin base		4422.434	6.423319	Q-933c	CHAMBER	50955	4416.01
-94.4877	29.69542	50419	Catahouli base		10384.87	10.36663	Q-106a	CHAMBER	50949	10354.3
-94.4176	29.795518	50728	Chicot Mi base		1677.26	20.43534	Q-844a	CHAMBER	51175	1669.59

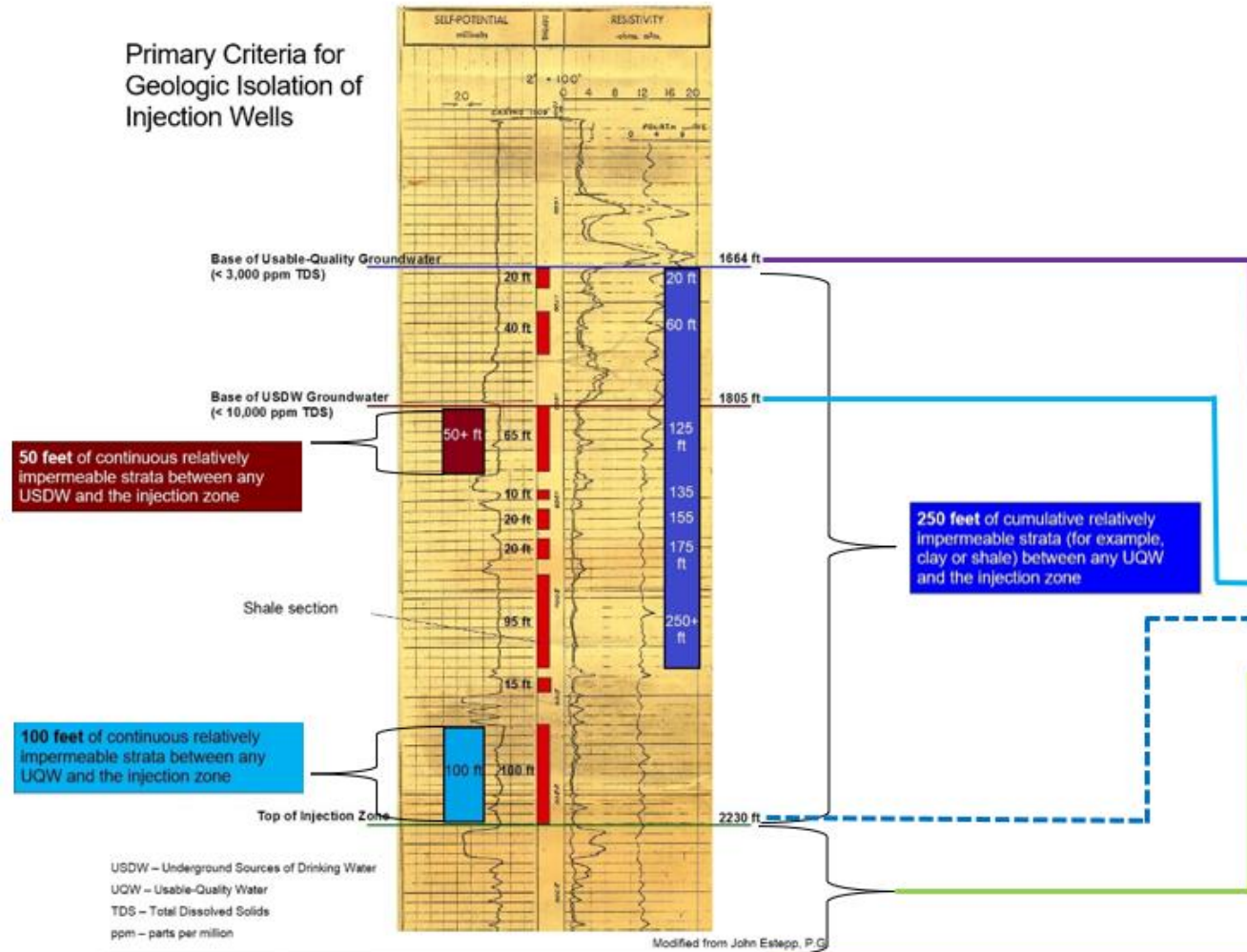


- TWDB Minor Aquifers
- TWDB Major Aquifers
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From Well Log to Groundwater Letter



Primary Criteria for Geologic Isolation of Injection Wells

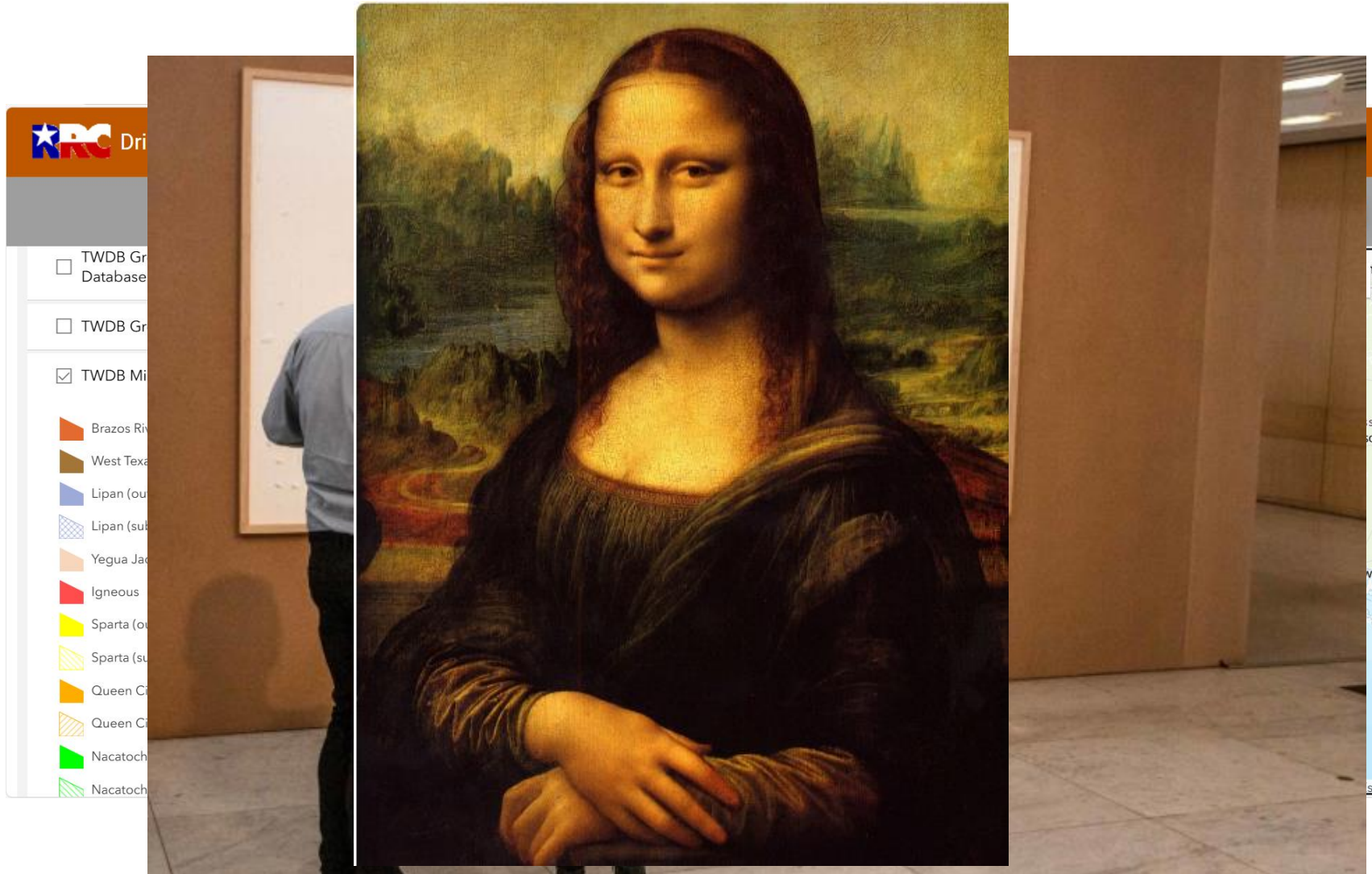


GROUNDWATER PROTECTION DETERMINATION		Form GW-2
Groundwater Advisory Unit		
Date issued:	10 March 2021	GAU Number: 296480
Attention:	STATE OF TEXAS 123 Sam View Dr. Canada, TX 12345	API Number: 12345678 County: Martin Lease Name: Bodacious SWD
Operator No.: 012345		Lease Number: Well Number: 1 Total Vertical: 2300 Latitude: 32.164950 Longitude: -101.981790 Datum: NAD27
Purpose:	Injection into Non-producing Zone (W14)	
Location:	Survey-T&P RRC Co. Survey, Abstract-A-0000, Block-22, Section-1	
To protect usable-quality groundwater at this location, the Groundwater Advisory Unit of the Railroad Commission of Texas recommends:		
The Base of Usable-Quality Water-bearing (BUQW) strata is estimated to occur at a depth of 1,664 feet at the site of referenced well.		
The BASE OF UNDERGROUND SOURCES OF DRINKING WATER (USDW) is estimated to occur at a depth of 1,805 feet at the site of the referenced well. (For UIC Purposes Only)		
Geologic Isolation occurs at 2,230 feet measured depth at the site of the referenced well. (For UIC Purposes Only)		
*Injection into the subsurface interval 2,235 - 4,100 feet, as listed on the W14 application dated March 10, 2021, WILL NOT ENDANGER the freshwater strata in this area. (For UIC Purposes Only)		
This recommendation is applicable to all wells within a radius of 200 feet of this location.		
Note: Unless stated otherwise, this recommendation is intended to apply to wells drilled within 200 feet of the subject well. Unless stated otherwise, this recommendation is for normal drilling, production, and plugging operations only.		
This determination is based on information provided when the application was submitted on 03/10/2021. If the location information has changed, you must contact the Groundwater Advisory Unit, and submit a new application if necessary. If you have questions, please contact us at 512-463-2741 or gau@rrc.texas.gov.		
Groundwater Advisory Unit, Oil and Gas Division		
Form GW-2 Rev. 02/2014	P.O. Box 12967 Austin, Texas 78771-2967	512-463-2741 Internet address: www.rrc.texas.gov

Endangerment language regarding proposed injection zone risk to protected groundwater given geologic isolation and mineralogy:

- Will Not Endanger** – Suitable for Injection
- Will Endanger** – Not Suitable for Injection
- May Endanger** – Inconclusive, more evidence is needed, do not inject
- Is Endangering** – Currently in violation of EPA requirements

What GIS Layers Do You Need?



Questions?