

Railroad Commission of Texas The Geologic Advisory Unit James Harcourt P.G., P.M.P, M.B.A. Valerie Atkins, Program Analyst

Groundwater Protection Determinations • Using On-Line Forms GW-1 & GW-2











Table Of Contents



- Who is the GAU (Geologic Advisory Unit)
- What Groundwater Criteria Do We Protect?
- Classic GW-2 Letters
- New Format GW-2 Letters
 - Class II Injection, Disposal & No/May Harm Letters (H-1,W-14,H-15)
 - Class V & VI Geothermal, Carbon Capture and Storage (CCS)
 - Geologic Hazzard Statements
- Online filing for GW-1 letters



The GAU



- Technical Permitting Department
 - Underground Injection Control (UIC)
 Oil and Gas activities
 - Solution Mining, CCS, Hydrogen
 - Environmental Permits and Support
 Tanks, Pits, Haulers
 - Engineering Unit
 - Technical support and review
 - Geologic Advisory Unit (GAU)
 - $_{\odot}$ Groundwater Advisory, Location, Mapping
 - Geologic Investigative Unit
 - $_{\odot}$ Severance Tax and Administrative Unit
 - GAU joined RRC in 2011, State Agency est. 1930





Who Needs a Water Board Letter?



- Anyone in Oil & Gas: Drilling, Recompleting, Plugging, Mechanical or Sonic Testing (MIT), or Injecting in Texas
 - Most field activities under Jurisdiction of the Railroad Commission
 - GAU Issues 50 150 letters a day
 - \$250 regular 437.50 expedite
- Search by County & Abstract to



CO

sequestration

Geotherma

What Do We Protect ?



Surface Casing: Requires Base of Usable Quality Water (BUQW)

- <u>Texas Economic Code Rule 3.30(B)(i)</u>...base of usable-quality water (**BUQW**)
 - (generally, less than 3,000 mg/L total dissolved solids, but may include higher levels of total dissolved solids if identified as currently being used or identified by the Texas Water Development Board as a source of water for desalination...

Plugging: Includes protection for BUQW, Superior Quality Water, & Fresh Water

- EPA Secondary Drinking water standards are 500 TDS
- EPA considers 1,000 TDS "Safe" for drinking, you can survive on much higher for a time
- <u>Texas State Water Code 27.002 (8) "Fresh water"</u>
 - Means water having bacteriological, physical, and chemical properties which make it suitable and feasible for beneficial use for any lawful purpose

Underground Injection Control: Includes protection for Underground Source of Drinking Water (USDW)

- <u>40 CFR Section 144.3 Underground Source of Drinking Water (USDW)</u>
 - (a) supplies any public water system, or contains sufficient quantity of ground water to supply public water system and currently supplies drinking water for human consumption or contains fewer than 10,000 milligrams/liter of Total Dissolved Solids (TDS)









Classic Water Board Letters

- Date Issued
 - Good for 5 years from this date
 - GAU Number (Primary Key)
- Demographics
 - Letters can be ordered by anyone
 - Valid Letters can sometimes be used by others depends on recommendation (Research it!)
- Purpose and Location
 - Some Letters can be used for several purposes depends on activity (Research it!)
 - Shallow, medium, deep
- Location
 - Letters are issued to a location
- Determination
 - Depths to bottoms of water bearing zones



Shallow Reason for Filing



- [SWR 99] Cathodic Protection Wells (<.01% ordered)
 - Top of Second Water Zone
- [SWR 100] Seismic/Microseismic Wells (<.01% ordered)
 - Order A GW-1 if Well is >30' (SWR 99 & SWR 100)
 - GW-1 determines if you must Order A W-1 (Permit)
 - Must submit well schematic of CP/MS well with W-1
 - GW-2 for CP/MS wells cannot be used for other purposes





Medium Depth Letters

(1/2 of 80%)

- GW-2 Letters are Medium Depth (80% GW-2's Ordered)
 - Superior Water, Usable Water
 - SWR 13: New Drills
 - Re-entry, Recompletion
 - SWR 14: Plugging
 - SWR 15: H-15 (wide area discontinued) = (1/2 of 80%)
 - SWR 13: O&G Water Supply
 - SWR 13: P-13 Conversion to Water Well (<.1%)
 - <u>Typically controversial</u>



New Drill [Multipurpose]



- Surface Casing and Cementing
 - SWR 13: Set and cement surface casing protect usable quality water strata (BUQW)

Chicot

Jasper

Evangeline

- Casing shoe set at or 200' below BUQW
- Identify all unique water bearing formations
 ✓ Prevent underground mixing & pressure loss

Gulf Coast Example:

- 4 Gulf Coast Aquifers4 Protection Depths
- Variable protection depths



Well Plugging [Multipurpose]



- SWR 14: Requires plugs to isolate Base of Usable Water Strata
- Separate all Usable Water Strata as determined by the GAU
 - Multiple zones may be identified on GW-2
 - 100' Plugs centered at GW-2 depths
 - Effects areal extent given

Example:

- 4 Gulf Coast Aquifers
- 4 Protection Depths (1 to 1 relationship)







Areal Extents (asking for a lot!)

- Areal extent given depends on hydrogeology
 - Surface Elevation
 - Stratigraphic Dip
- SWR 14 requires 100' plugs centered on Protection Depths

 The areal extent is limited to a BUQW change of 50-100 ft over the
 - area requested



Deep Letters (UIC & CCS, 25% ordered, most complex)



- Previous Class II W-14 Determinations Included External Letters
 - e-mailed separately to Operators & UIC
 - This information is now included in GW-2's

New Purposes for CCS Available (more later)

- Special Injection Permits Unit (SIP)
 - Class VI (CCS) Carbon Sequestration
 - Form H-2 Create, Operate, Maintain a Brine
 - Form H-4 Application to Create, Operate and Maintai Hydrocarbon Storage Facility
 - Class V Geothermal (Auxiliary HVAC, Energy Produc



Additional information is required for UIC Wells



- Must Attach to GW-1 Request
 - Form H-1/H-1A or W-14 (injection interval)
 - Representative well log required for W-14
- Base of USDW Statement Is Listed in the GW-2 (<10K TDS)
 - No injection allowed into Underground Sources of Drinking Water (USDW)*
- Class II GW-1 Includes Geologic Isolation Statements
 - Depth to Bottom of isolation or shallowest occurrence
- Class II, VI Include "No Endangerment" language
 All H-1, H-2, H-4 Purposes for filing will receive USDW statements

New Class VI GW-2 Letters 2 Phase Process



- Class VI Carbon Sequestration
 - $_{\odot}$ Capture of Industrial CO2
 - Permanent CO2 Storage
 - $_{\odot}$ Climate Change Driven
 - $_{\odot}$ 45Q Tax Credit
 - o Exceeds Class II AGI Standards
- Phase I Stratigraphic Test Wells
 - o Use Purpose Test Well for New Drills
 - $_{\odot}$ Attach CSS Data Sheet
 - $\,\circ\,$ GW-2 Includes BUQW and USDW
 - $_{\odot}$ No Isolation Statement
- Phase II SIP Review is Completed
 - No Deficiencies
 - o Characterization
 - o Injection Test
 - o Operation
 - o Expansion/Monitor
 - o Close Out
 - Reason for filing Class VI (CCS)
 - No Harm Language Required
 - Separate GAU Workstation Review Required

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	Menu	•	Groundw	ater App	olication	: GW-1				
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			Filing Info	ormation						
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2. New Perm	-									
4. Reason for					Zip Code	•				
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Rev. 02/2014

New Combined GW-2 Format for Injection Well & Geologic Isolation



Calling the Bottoms of Protected Groundwater and Top of Geologic Isolation



Groundwater Advisory Unit

On-Line Login Valerie



https://webapps.rrc.state.tx.us/security/login.do

🔛 Login	×	Q New Tab	×		Explosion damage	es bridge lin 🗙	+	\sim	—		×
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The RRC Online System allows authorized entities to electronically file certain forms with the Railroad Commission online or through EDI. Forms processed through this system are ones containing data that has been migrated from the Commission's mainframe to an open system environment. Through the RRC Online System, forms can be filed online over the Internet using a web browser, or data files can be uploaded through the application.

1	How to Obtain a User ID:
	To utilize the Online Filing system, you must have a User ID that is assigned to you by your company's designated Security Administrator. A company or individual may designate a Security Administrator by completing the Security Administrator Designation (SAD) form and mailing it to the RRC. When the SAD form is processed, the Security Administrator will receive a User ID and a temporary initial password. The Security Administrator will be able to log into the RRC Online System using their assigned User ID and create User IDs for users within their company. They will also be able to assign certain electronic filing rights for those accounts, and perform account maintenance activities (such as resetting passwords) when needed. If you are uncertain whether your company has a security administrator, please email the Commission at rcconline-security@rrc.texas.gov .

- 1. Read the requirements for participating in online filing.
- 2. Print the SAD form.
- 3. Complete and sign the form then mail it to the RRC, following instructions on Page 2 of the form. When the form is processed, the designated security administrator will receive a User ID and temporary password by email.
- 4. The security administrator will log into the system and assign User IDs and filing rights.



GW-1 Administrative Filing

- Groundwater Determinations can be ordered two ways
 - Use the RRC On-Line System
 - Download a PDF form on the GAU Website
 - Email the completed GW-1 form to gau@rrc.texas.gov
 - Send the completed GW-1 form through regular mail





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Groundwater Advisory Unit (GAU)

NOTICE: As part of the RRC Texas Olifield Relief Initiative, the GAU has identified areas with consistent groundwater protection depths in the following fourteen (14) North Central Texas counties: Archer, Baylor, Callahan, Foard, Haskell, Jones, Knox, Shackelford, Stephens, Taylor, Throckmorton, Wichita, Wilbarger, and Young. Go to our North Central Texas Area page for more information.

GAU provides Groundwater Protection Determinations for surface casing, underground injection and other underground activities.

If you are an oil or gas operator in Texas, the Railroad Commission of Texas may require you to obtain a Groundwater Protection Determination, which states the base of usable-quality groundwater and additional isolation zones that should be protected for a well or multiple wells within a specified area.

Groundwater Protection Determination Request (Form GW-1)

To request a Groundwater Protection Determination, submit the following documents

- 1. A Form GW-1, which can be completed in two different ways:
- By online filing (RRC Online System)
 - Google Chrome 37.0+ is recommended. Other browsers cause known technical issues.
 - JavaScript must be enabled.
 - · Pop-up blocking software must be disabled.
- Using the Interactive PDF
- 2. A scaled map showing the well location and surrounding survey lines;
- A copy of the electric log, if you are plugging, re-entering an existing well, or converting to a water well (Form P13, Application of Landowner to Condition an Abandoned Well for Fresh Water Production); and
- 4. Application fee (Expedited fee, optional)

For detailed information regarding the Form GW-1 on the Online System refer to the Groundwater Application User's Guide. The online Groundwater Application will only allow oil and gas operators who have registered with the Railroad Commission of Texas by filing an annual Organization Report (Form P-5). If you are not a registered P-5 operator, you will be required to submit the Form GW-1 using the Interactive PDF format version. For instructions on filing the Form GW-1 by PDF go to the Instructions for Completing Form GW-1 (PDF) page.

- Indwater Advisory Unit (GAU) Links
- GAU Home Page
- Payments
 Oil & Gas Waste Disposal Wells Application
- Oli & Gas Waste Disposal Wells Applicatio
 Seismic Survey Application
- Instructions for Completing the Form GW-1
- (PDF)
- How the RRC Protects Groundwater
 North Central Texas Area
- North Central Texas Area
 Researching Groundwater Protection
- Determinations and Data

Menu and User Guide



- My Applications (Status)
 - Check application status
 - "Draft" means not submitted
- Search for previous filings
- New Application
- User Guide

Menu	4
Home	
☆ RRC Online	
☆ GW-1 Home	
My Application	s
🗋 Draft	
🕆 Submitted	
C Returned	
1 Issued	
🗋 Withdrawn	
Search	
All Applications	
Application	
New Application	
Help	
(? User Guide)	

Reason for Filing: Areal Extent or Well Specific



- Specify wells in "Remarks" or attachment
- Show requested area on map (lease, survey, etc.)

Groundwater Application	: GW-1		
Filing Information			
	duction Well', data fields will be prepopulated if availab ation Fee with Surcharge totaling \$250 will be payable o		om an entered API Number/DP Number. Data will not be prep tial submission of this application.
Reason for Filing*	Choose	-	API Number 42- 000-00000
Areal Extent*	Radius	•	Radius Distance
Previous GAU No. for this well	Section Abstract	*	Rig On Location
Submission Date*	League Labor	÷.	Regular Register NO. Number
Operator Information	Porcion		
Are you filing for P5 Operator? 🗸	Share		
Search Operator	Tract		
	Block		
Operator Name [*]	Lot Lease	-	rator Number Number

GW-1 Online Application 1 of 7



- Main menu
- Check the status of your applications
- Start a new application
- Search applications

S Groundwater Application	× +
	lot secure uat.rrc.state.tx.us/gw1/
💴 Groundwater Advisor 📃 S	ST-1 / Area Designati 🕹 oilandgascontacts.pdf 🧧 Oracle PeopleSoft Sig 😔 RRC Inside 🛞 The Texas General La 💴 Texas RRC - Hearings 🔇 RULES 🔇 RRC Surface Casing E 📙 CASES 🙇 Online ST-1 Assignm 🤇 Texas.gov Digital Ide
	Railroad Commission of Texas
Menu 💽	Groundwater Application : GW-1
¢ Home	Application Count :0 My Applications
★ RRC Online	Showing 0-0 out of 0 applications
n GW-1 Home	GAU Number 💠 Application Status Submitter Name 🜣 Operator Name 💠 County 🗢 Lease Name 🜣 Well Number 🗘
My Applications	Date Submitted \diamond All
Draft	No results found for search.
 Submitted Returned 	Showing 0-0 out of 0 applications
☐ Issued	
Withdrawn	
All Applications	
Application	
New Application	
? Help	
? User Guide	

GW-1 Online Application 2 of 7



- Click "NEW APPLICATION"
- Fill out the boxes with the red *

RALEDAD COMMISSION OF TEAS		Railroad Commission of Texas	User: Matthew Acock Log Ot
Menu	Groundwater Application : GW-1		
¢ Home			
	Filing Information		
	If Reason for Filing is 'New Production Well', data fields	will be prepopulated if available from an entered API Number/DP Number. Data will no totaling \$250 will be payable on initial submission of this application.	ot be prepopulated for any other Reason for Filing.
My Applications			
🗈 Draft	Reason for Filing* Choose	 API Number 42- 000-00000 	DP Number
Submitted	Areal Extent* Choose	 Radius Distance 	Expedite Expedite Fee with Surcharge is \$187.50
Returned	Previous GAU No. for		
	this well		
Withdrawn	Operator Information		
	Search Operator		
All Applications	Search Operator		
Application	Operator Name* Name	Operator Number* Number	
New Application	Address1*	Address2	
? Help	*		
? User Guide	City*	State*	
	Zie Ood *		
	Zip Code*		
	Well Identification		
	County*	District	
	Lease ID Number	Lease Name* Name	
	Well Number	Alternate Well ID	
	GPS Coordinates		
	Select the format and datum for the well surface location State Plane X- and Y-Coordinates cannot be entered with	h a decimal point. If needed, either round or truncate and enter as a whole number.	
		Disclaimer RRC Online RRC Home Release : 2.2.5 Contact	

GW-1 Online Application 3 of 7



 Here is where you will enter the coordinates and survey information

		Railroad Commission of Texas	User: Matthew Acock Log Ot
Menu	Groundwater Application : GW-1		
¢ Home	Well Number	Alternate Well ID	•
 n RRC Online n GW-1 Home 	GPS Coordinates Select the format and datum for the well surface location		
My Applications		al point. If needed, either round or truncate and enter as a whole n	umber.
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Returned	Latitude	Longitude	
	Degrees 00.000000	-000.000000	
Withdrawn	_		
	Survey Information		
All Applications	Survey*	Abstract Number	
Application New Application	Block	Township	Section
? Help			
? User Guide	Tract	Lot	
7 Oser Guide	League	Labor	
	Porcion	Share	
	Reference Lines		
	The distance (in feet) is measured from the surface hole location the survey line.	of the well and intersects the survey line at right angles. The direct	ion is determined based on the direction from the surface hole location of the well to
	Reference Line* Choose	First Distance*	First Direction*
		Second Distance* Sec	ond Direction*
	Upload Files		
	IMDODTANT: Click Unload to unload the celected attachmente		•
		Disclaimer RRC Online RRC Home Release : 2.2.5 Contact	

GW-1 Online Application 4 of 7



- This is the Section where you will need to upload the required attachments.
- No Special Characters (!@#\$%^&*) or Spaces

	Railroad Commission of Texas User: Ma	tthew Acock <mark>Log Ot</mark>
Menu	Groundwater Application : GW-1	
¢ Home	The distance (in feet) is measured from the surface hole location of the well and intersects the survey line at right angles. The direction is determined based on the direction from the surface hole location	of the well to
★ RRC Online	the survey line.	
My Applications	Reference Line* Choose First Distance* First Distance*	
🖻 Draft	Second Distance* Second Direction*	
Submitted		
Returned	Upload Files	-
☐ Issued	IMPORTANT: Click Upload to upload the selected attachments	
a Withdrawn		
₽ Search	+ Choose J Upload	
All Applications	Choose File Type* Map Cancel	
Application		
New Application	File Name File Size File Type Upload status No results found for search. File Size File Type Upload status	
? Help	(1 of 1) (1 of 1) 10 V	
7 User Guide		
	Additional Information	-
	Total Vertical Depth* Elevation*	
	Formation at Total Remarks	
	250 characters remaining.	
	Save Next	-
	Disclaimer RRC Online RRC Home Release : 2.2.5 Contact	

GW-1 Online Application 5 of 7



- "Next" at bottom of page accepts the terms and proceeds to payment.
 - Missing data is highlighted in red and pink
 - If system will not let you continue to next page and you do not have any highlighted errors, your application has probably "timed out" in the background

Upload Files							-
IMPORTANT: Click Upload to upload the selected a	tachments						
Choose File Type* Map	-		+ Choose J Uploa	d 🥥 Cancel			
File Name	File Size		File Type		Upload status		
No results found for search.							
		(1 of 1)	14 <4 Þ> Þ1	10 🔻			
Additional Information							-
Total Vertical Depth*			Elevation*				
Formation at Total Vertical Depth			Remarks				
						,	
				250 characters remain	ning.		
	Save	Next					

GW-1 Online Application 6 of 7



- Certification statement: Select to "Accept", then the "Payment" button to proceed to payment.
- The Payment screen is on the Comptroller web site

RAEROAD COMMISSION OF FEMAS	Railroad Commission of Texas	ser: Matthew /
Menu 💽	Groundwater Application : GW-1	
¢ Home	Complete the Application Submission Process	
	View Application	
n GW-1 Home		
My Applications	Step 1: Read the statement in the box below and click the Accept box to digitally sign the application.	
🕆 Draft	Step 2: Click the Payment box to pay fees. Payment is made at initial submission. No fees will be charged for resubmission.	
Submitted	Step 3: Once the payment is complete, select the RETURN button at the bottom of the page to go back to the submit application screen.	
Returned		
Issued	I declare under penalties prescribed in Texas Natural Resources Code Section 91.143, that I	
Withdrawn	am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that the data and facts stated therein are true, correct, and	
P Search	complete, to the best of my knowledge.	
All Applications		
Application		
New Application		
? Help		
? User Guide		
	Accept Payment Cancel	

Payment



- "Print Confirmation" here (It's now or never!)
- Push "Return" to go back and finalize submitting the GW-1. Otherwise, the GW-1 remains in "**Draft**" status (**not submitted**)

Select	Quantity				
		Contact Information	Verify Information	Pay Fee	Confirmation
GAU No: 340120					
Name	HEATHER HES	SKEW			
Company Name	RRC OPERATIN				
Phone Number	(512) 463-3184				
Email	Heather.hesske	w@rrc.texas.gov			
Fee Description	n	Amount		Quantity	Total
GAU - Surface Casing		\$ 250.00		1	\$ 250.00
RRC Fee					\$ 250.00
Texas.gov Price					\$ 255.88
	Payment Ir	nformation			
Payment Amount	\$255				
Date and Time		3/2022 11:02:11 AM			
Trace Number		RM007JJ0428X			
Authorization Code	TES				
Register Number	3519	300			

Disclaimer | RRC Online | RRC Home | Contact

Correct Zip Code Needed



- Correct Zip Code Needed for All Credit Card and Debit Payments
 - Zip Code must match the Bank filed address for Card
 - This is the screen where it says "CUSTOMER ADDRESS"

GW-1 Online Application 7 of 7



- After finding your paid for application in your draft queue, hit the **ACTIONS** button and select **edit and submit**.
- This takes you back into your application and then go down to the bottom and hit **NEXT.** This takes you to the submittal screen that will now take your application to the online system to start the approval processing.

	Railroad Commission of Texas
Menu 💽	Groundwater Application : GW-1
o Home	
☆ GW-1 Home	View Application
My Applications	
🗅 Draft	I declare under penalties prescribed in Texas Natural Resources Code Section 91.143, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that the data and facts stated therein are true, correct, and complete, to the best of my knowledge.
Submitted	supervision and direction, and that the data and facts stated therein are true, correct, and
Returned	comprete, to the best of my knowledge.
Issued	
Withdrawn	
P Search	3
All Applications	Accept Submit Cancel
Application	
New Application	
? Help	
? User Guide	

Questions ?





Questions?