

PRAIRIELANDS GROUNDWATER CONSERVATION DISTRICT
ELLIS, HILL, JOHNSON AND SOMERVELL COUNTIES

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September 12, 2013

Rules Coordinator
Railroad Commission of Texas
Office of General Counsel
P.O. Drawer 12967
Austin, Texas 78711-2967

Re: Comments on proposal to amend 16 T.A.C. § 3.9 and 3.46 – “Disposal Wells” and “Fluid Injection into Productive Reservoirs”

To The Honorable Railroad Commission of Texas and Staff:

The Prairielands Groundwater Conservation District (“District”) greatly appreciates the work undertaken by the Commission and its staff to propose the much needed changes to Rules 3.9 and Rule 3.46 (regarding “Disposal Wells” and “Fluid Injection into Productive Reservoirs”). The District has been following this rulemaking closely given its legislative mandate to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater throughout Ellis, Hill, Johnson, and Somervell Counties.¹ Located in the Barnett Shale region, we have experienced an explosion of oil and gas activity in recent years, including a substantial increase in disposal wells. More generally, it was recently reported that nearly 3.5 billion barrels of wastewater was disposed in Texas in 2011, up from 46 million barrels in 2005. Potential impact on groundwater from this substantial amount of waste disposal has become a significant concern for the District.

¹ TEX. WATER CODE ANN. § 36.0015 (West 2013); Act of May 31, 2009, 81st Leg., R.S., ch. 1208, 2009 Tex. Gen. Laws 2859, codified as Chapter 8855 of the Texas Special District Local Laws Code.

JOSHUA GRIMES, GENERAL MANAGER
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The District welcomes the proposed amendments to Rules 3.9 and 3.46, which generally heighten groundwater protection from underground waste disposal. Requiring an applicant for a disposal well to provide notice of the application to the local groundwater district will assist our ability to protect groundwater.² Similarly, the proposed amendments provide for impermeable separation between injection intervals and usable-quality water (and to a lesser degree between injection intervals and Underground Sources of Drinking Water).³ The amendments also seek to protect groundwater from migration of displaced formation fluids and contaminants through orphaned wells.⁴ The Commission will have the ability to take a broader look at existing wells nearby the proposed injection well that may serve as potential pathways for such migration before determining whether to issue a disposal well permit.⁵ While the District strongly supports the proposed amendments (with various recommendations for further protection), the District primarily submits the comments below to ensure that Rules 3.9 and 3.46 are amended in a manner that affords adequate protection to Underground Sources of Drinking Water (“USDWs”), which the Commission has defined as aquifers or portions of aquifers containing up to 10,000 mg/L of total dissolved solids.⁶

Protecting USDWs from oil and gas waste disposal is critical towards long term sustainability of water supply in Texas. Demand for brackish groundwater traditionally discounted as unusable due to high concentrations of total dissolved solids has become more desirable. This trend will only continue in light of potential desalination facilities and advancements in water treatment capabilities. Evidencing the extent brackish groundwater in Texas in need of protection is a map created by the Texas Water Development Board attached to this letter as Attachment 1, depicting the vast number of water wells detecting concentrations of total dissolved solids between 3,000 and 10,000. Protecting all USDWs in Texas, not just usable-quality water, from oil and gas waste disposal is consistent with other regulatory requirements for groundwater quality protection that stem from the Safe Drinking Water Act.⁷

The District’s role in groundwater regulation has culminated in a wealth of information, putting it in a unique position to offer valuable insight for achieving reasonable and important protections. We hope the Commission considers the following comments, and we encourage the Staff to reach out to us (and all groundwater districts) for any additional information.

The District has used blue font for its recommended changes, and has included a brief explanation for each recommendation. For your consideration the District submits the following comments:

- 1) The Commission Staff originally proposed that 16 T.A.C. § 3.9(a)(1)(B)(ii) be amended as follows: **“It is the intent of this section that the applicant demonstrates, and the director finds, that ... all usable-quality water and underground sources of drinking water ... will be isolated and sealed off to effectively prevent contamination and harm from migration of injected fluids or displaced formation fluids;”**

Unfortunately, in the latest proposed rule amendments issued August 12, 2013, the Commission has now proposed that 16 T.A.C. § 3.9(a)(1)(B)(ii) be amended as follows: **“It is the intent of this section that the applicant demonstrates, and the director finds, that ...all usable-quality water [and underground sources of drinking water] will be isolated and sealed off to effectively prevent contamination and harm from migration of injected fluids or displaced formation fluids;”**

² 16 TEX. ADMIN. CODE § 3.9(e)(2)(E) (as proposed).

³ 16 TEX. ADMIN. CODE § 3.9(c)(1) (as proposed).

⁴ 16 TEX. ADMIN. CODE § 3.9(g)(1) (as proposed).

⁵ 16 TEX. ADMIN. CODE § 3.9(g)(1) (as proposed).

⁶ 16 TEX. ADMIN. CODE § 3.30(e)(7)(B)(ii).

⁷ 42 U.S.C. § 300h (2013).

The District strongly supports the initial version of the proposed rule change, which appropriately requires that both USDWs and Usable Quality Water are isolated and sealed off in order to prevent contamination. The District objects to the new version of the proposed rule because it affords less protection to USDWs. Adequately protecting USDWs is critical to the sustainability of water supply in Texas and is consistent with requirements of the Safe Drinking Water Act.⁸

- 2) The District recommends 16 T.A.C. § 3.9(c)(1) be amended to read as follows:

“Before **any intervals** [~~such formations~~] are approved for disposal use, the applicant shall show that within the **intervals** [~~formations~~] are separated from **usable quality water and underground sources of drinking water** [~~freshwater formations~~] by impervious beds which will give adequate protection to such **usable quality water and underground sources of drinking water**. **The applicant shall show that such geologic separation consists of a minimum of 250 feet of impermeable strata between any underground source of drinking water [the base of usable quality water] and [the top of] the injection interval and that the 250 feet of impermeable strata includes at least one zone with a continuous thickness of at least 100 feet. In addition, the applicant shall show that there is a minimum of 100 feet of continuous impermeable strata between the base of the deepest underground source of drining water and the top of the injection interval.**

The purpose for this comment is so that the Commission does not allow for less protection of USDWs than is afforded to usable-quality water. Notably, the initial proposed intent of 16 T.A.C. § 3.9(d)(3)(C) was to effectively isolate and seal off usable-quality water **and** USDWs from contamination. As indicated in the previous comment, that initial intention of Rule 3.9 should be adopted. Equal protection of all USDWs is critical to the sustainability of water supply in Texas. The requirements of the Safe Drinking Water Act contemplate protection for all USDWs.⁹ An impervious layer of at least 250 feet with a continuous thickness of at least 100 feet between the injection interval and any USDW will better ensure protection of USDWs. It is also important that all USDWs, including those that may be below the injection interval are protected. Rule 3.9(c)(1), as currently proposed, appears to allow for injection of waste disposal even if there is not 250 feet of impermeable strata separating the injection interval from usable quality water or a USDW that is **below** the injection interval.

- 3) The District proposes 16 T.A.C. § 3.9(c)(2) be amended to read as follows:

“The applicant must submit a **Groundwater Protection Determination** letter from the Groundwater Advisory Unit [~~of the Oil and Gas Division~~] stating that the use of such formation will not endanger the **usable quality water underground sources of drinking water** [~~freshwater strata~~] in that area and that the formations to be used for disposal are not **underground sources of drinking water** [~~freshwater formations~~]. **To obtain the Groundwater Protection Determination, the applicant shall submit to the Groundwater Advisory Unit all of the following information:**

(A) one copy of the completed Form W-14 (Application to Dispose of Oil & Gas Waste by Injection into a Porous Formation Not Productive of Oil or Gas);

(B) one copy of a scaled map showing the proposed well location and surrounding survey lines; [a plat with each survey identified, and]

⁸ *Id.*

⁹ *Id.*; 40 C.F.R. § 144.12 (2012).

(C) a copy of the current Groundwater Protection Determination for the well, or, if no Groundwater Protection Determination exists or the Groundwater Protection Determination is over ~~five (5)~~ one (1) year[s] old, a completed Form GW-1 (Groundwater Protection Determination Request);

(D) a copy of a representative electrical log that includes the log header and the interval from the sand surface through the injection interval for an existing well or for a nearby well that is deep enough to show the proposed injection interval, if the disposal well application is for a new well. If such a log is not available, a copy of a representative electrical log that includes the log header and the interval from the land surface through the base of the deepest underground source of drinking water, and, if available, through the proposed injection interval; and

(E) upon request, additional electric logs run on wells in the area.

Prior to issuing the Groundwater Advisory Letter, the Groundwater Advisory Unit shall request and consider groundwater quality data and current groundwater usage data of the aquifer or portions, therein, from the local groundwater conservation district with jurisdiction over the location of the proposed disposal well, if any such district exists.

The District strongly supports the proposed change that prohibits injection intervals from being located in USDWs. The practice of injecting oil and gas waste directly into USDWs should not be tolerated. The purpose of the District's proposed changes is to provide the Groundwater Advisory Unit with all available information prior to making a determination that the proposed disposal well will not endanger USDWs. Groundwater conservation districts have substantial data and information that the Groundwater Advisory Unit may benefit from during its analysis.

The purpose for this recommendation is also to account for the substantial changes that can occur to an aquifer over the course of five years.

Additionally, the District respectfully requests description of the methodology used by the Groundwater Advisory Unit when determining whether usable-quality water or underground sources of drinking water will be endangered from waste disposal.

- 4) The District proposes 16 T.A.C. § 3.9(d)(3)(D) be amended to read as follows:

“An application for a new disposal well permit under this section shall contain ... a Groundwater Protection Determination stating the protection depth to which ~~usable-quality water~~ underground sources of drinking water must be protected, and that the formations or strata to be used for disposal are not underground sources of drinking water. The date of issuance of the Groundwater Protection Determination shall be no more than one year ~~five years~~ prior to the date the disposal well permit application is filed with the commission.

The purpose for this comment is to adequately protect USDWs and afford the same protections to USDWs that the Commission has proposed for usable-quality water. Notably, the initial proposed intent of 16 T.A.C. § 3.9(d)(3)(C) was to effectively isolate and seal off usable-quality water **and** USDWs from contamination. As indicated in previous comments, the District supports adoption of the initial changes to Rule 3.9(a)(1)(B)(ii). Equal protection of all USDWs is critical to the

sustainability of water supply in Texas. Moreover, the requirements of the Safe Drinking Water Act contemplate protection for all USDWs.¹⁰

The purpose for this recommendation is also to account for the substantial changes that can occur to an aquifer over the course of five years.

- 5) The District recommends that 16 T.A.C. § 3.9(d)(3)(E) be amended to read as follows:
“An application for a new disposal well permit under this section shall contain ... a map showing the location of all wells of public record within ~~[both the one-quarter mile and one-half mile]~~ a one mile radius of the proposed disposal well. The map shall indicate the commission-designated operator of each well and unexpired drilling permit within ~~[one-half]~~ one mile of the proposed disposal well. The map shall indicate all lessees of record for tracts that have no designated operator and all owners of record of unleased mineral interests within one-half mile of the proposed disposal well. For a commercial disposal well permit application, the map also shall outline the proposed disposal well tract and the surface tracts that adjoin the proposed commercial disposal well tract, and indicate the owners of record for the proposed disposal well tract and the adjoining surface tracts. For a commercial disposal well, the proposed disposal well tract includes the associated storage and/or receiving facilities, even if such facilities are located on a different tract;”

The purpose for this recommendation is to adequately protect USDWs by accounting for the ability of displaced formation fluids or contaminants to migrate laterally further than one-half mile. Moreover, it is important to fully understand the extent of nearby wells that may be directly impacted, or that may serve as pathways for migration of contaminants into USDWs.

- 6) The District recommends that 16 T.A.C. § 3.9(d)(3)(E) be amended to read as follows:
“An application for a new disposal well permit under this section shall contain ... a table of wells of public record ~~[that penetrate the proposed disposal interval and]~~ that are within a ~~[one-quarter]~~ one mile radius of the proposed disposal well. The table shall include the well identification, date drilled, total depth, current status, and the plugging dates of those wells that are plugged. The table shall identify any wells that are unplugged, improperly plugged, or orphaned. ~~[, and that penetrate the proposed injection interval.]~~ In addition, the table shall identify any wells within the ~~[one-quarter mile]~~ one mile radius that lack cement behind the casing through the proposed disposal interval.

The purpose for this recommendation is to account for the ability of displaced formation fluids or contaminants to migrate laterally further than one-quarter mile and it is important to fully understand the extent of nearby wells that may serve as a pathway for vertical migration of these displaced formation fluids or contaminants. Moreover, wells that do not penetrate the disposal interval can also serve as pathways for disposed waste through lateral communication with improperly plugged deeper wells.

- 7) 16 T.A.C. § 3.9(e)(2)(F) as proposed states: **“On or not more than 30 days before the applicant ~~[mails or]~~ files the application with the commission, the applicant shall give notice of the application to the following affected persons and local governments: the groundwater conservation district, if the well is to be located in an area covered by a groundwater conservation district that has an established mailing address.”**

¹⁰ *Id.*; 40 C.F.R. § 144.12 (2012).

The District strongly supports this proposed amendment because it is critical for the District to be aware of potential waste disposal activity within its jurisdiction. Currently, the burden is on the districts to monitor on a daily basis whether any applications are being filed for disposal wells to be located within the district's jurisdiction.

- 8) In order to allow sufficient time for affected persons to evaluate an application for a disposal well, the District recommends that 16 T.A.C. § 3.9(e)(5) be amended to prohibit the Commission from approving any application fewer than **30** days after notice has been given to all affected persons as required by 16 T.A.C. § 3.9(e).
- 9) In order to allow sufficient time for affected persons to evaluate an application for a disposal well, the District recommends that 16 T.A.C. § 3.9(e)(6) be amended to prohibit the director from administratively approving the application no fewer than **30** days from the date the Commission receives the application, the date of the required individual notice, or the date of publication, whichever is later.
- 10) The District recommends that 16 T.A.C. § 3.9(g)(1) be amended to read as follows:
“Except as otherwise provided in this **subsection** [~~paragraph~~], the applicant shall review the [~~date of~~] public record for **all** wells [~~that penetrate the top of the proposed disposal interval~~] [~~zone~~] within a [~~1/4~~] **one** mile radius of the proposed disposal well to determine if all [~~abandoned~~] wells have been **cased and cemented or** plugged in a manner that will prevent the movement of fluids from the disposal interval [~~zone~~] into [~~usable-quality water~~] **underground sources of drinking water** [~~freshwater strata~~]. ... **The director shall not approve a permit application under this section for a disposal well for which the area of review includes any orphaned wells that penetrate the top of the injection interval. The applicant shall review the public record for all wells that penetrate the proposed disposal interval within a [~~1/4~~] 1 mile radius of the proposed disposal well to determine if all wells are cemented across the injection interval in such a manner as to prevent the movement of fluids from the disposal interval into [~~usable-quality water~~] underground sources of drinking water.**

The purpose for this recommendation is to account for the ability for displaced formation fluids or contaminants to migrate laterally further than one-quarter mile and it is important to fully understand the extent of nearby wells that may serve as a pathway for vertical migration of these displaced formation fluids or contaminants. For example, wells that do not penetrate the disposal interval can also serve as pathways for disposed waste that is released from faulty injection well construction or other leakage.

Additionally, it is critical that the Commission adopt language protecting USDWs, which is consistent with the requirements established by the Safe Drinking Water Act. The proposed changes to Rule 3.9(g)(1) initially included language to this effect. Unfortunately, the Commission has altered the language in the version of proposed rule changes issued on August 12, 2013.

- 11) The District strongly supports the addition of 16 T.A.C. § 3.9(h)(2), prohibiting the Commission from approving an application for a disposal well permit under this section for any well in which the surface casing is not set and cemented from the ground surface to the base of usable-quality water as determined by the Groundwater Advisory Unit.
- 12) The District recommends that 16 T.A.C. § 3.9(h)(3) be amended to read as follows:

“The Commission shall not approve an application for a disposal well permit under this section for any well in which the production casing is not cemented across [and extending at least 600 feet above the base of] the deepest underground source of drinking water and extending to the base of the surface casing.”

Requiring production casing to be cemented across the injection interval and extending only 600’ of cement above the base of the deepest USDW exposes USDWs located below the surface casing to introduction of displaced formation fluids or contaminants. On the other hand, requiring cementing the entire production casing to the bottom of the surface casing better protects USDWs from displaced formation fluids and contaminants. Protection of USDWs is consistent with the requirements of the Safe Drinking Water Act.¹¹

13) The District recommends that 16 T.A.C. § 3.9(j)(E) be amended to read as follows:

“Prior to beginning injection and subsequently after any work over, an annulus pressure test must be performed. The test pressure must equal the maximum authorized injection pressure [or 500 psig, whichever is less], but must be at least 200 psig. Unless the district office has approved shorter notice, the appropriate district office must be notified at least 48 hours before the test is conducted to give the district office an opportunity to witness the test. The test must be performed and the results submitted in accordance with the instructions of Form H-5 (Disposal/Injection Well Pressure Test Report).”

The purpose for this recommendation is to ensure that the mechanical integrity of the well is tested with at least the maximum authorized injection pressure.

14) The District seeks additional information from the Commission Staff as to what specific parameters define a failed mechanical integrity test in the context of 16 T.A.C. § 3.9(m)(2).

15) The District recommends that 16 T.A.C. § 3.9(m)(4)(A)(i) be amended as follows:

“The test pressure for wells equipped to dispose through tubing and packer shall equal the maximum authorized injection pressure [~~or 500 psig, whichever is less~~], but shall be at least 200 psig.”

The purpose for this recommendation is to ensure that the mechanical integrity of the well is tested with at least the maximum authorized injection pressure.

16) The District recommends that 16 T.A.C. § 3.9(m)(4)(G)(i) be amended to read as follows:

“... A pressure test may be rejected by the **director** [~~commission or its delegate~~] after consideration of the following factors: the degree of pressure change during the test, if any **(a pressure test that demonstrates a 5% or more change over a one-hour period shall be rejected);**”

The purpose of this recommendation is to ensure well integrity so that underground sources of drinking water will not be affected from waste disposal activity.

17) To the extent practicable, the District recommends that all changes made pursuant to the comments submitted herein with regard to Rule 3.9 be similarly applied to Rule 3.46 (regarding “Fluid Injection into Productive Reservoirs”).

¹¹ *Id.*; 40 C.F.R. § 144.12 (2012).

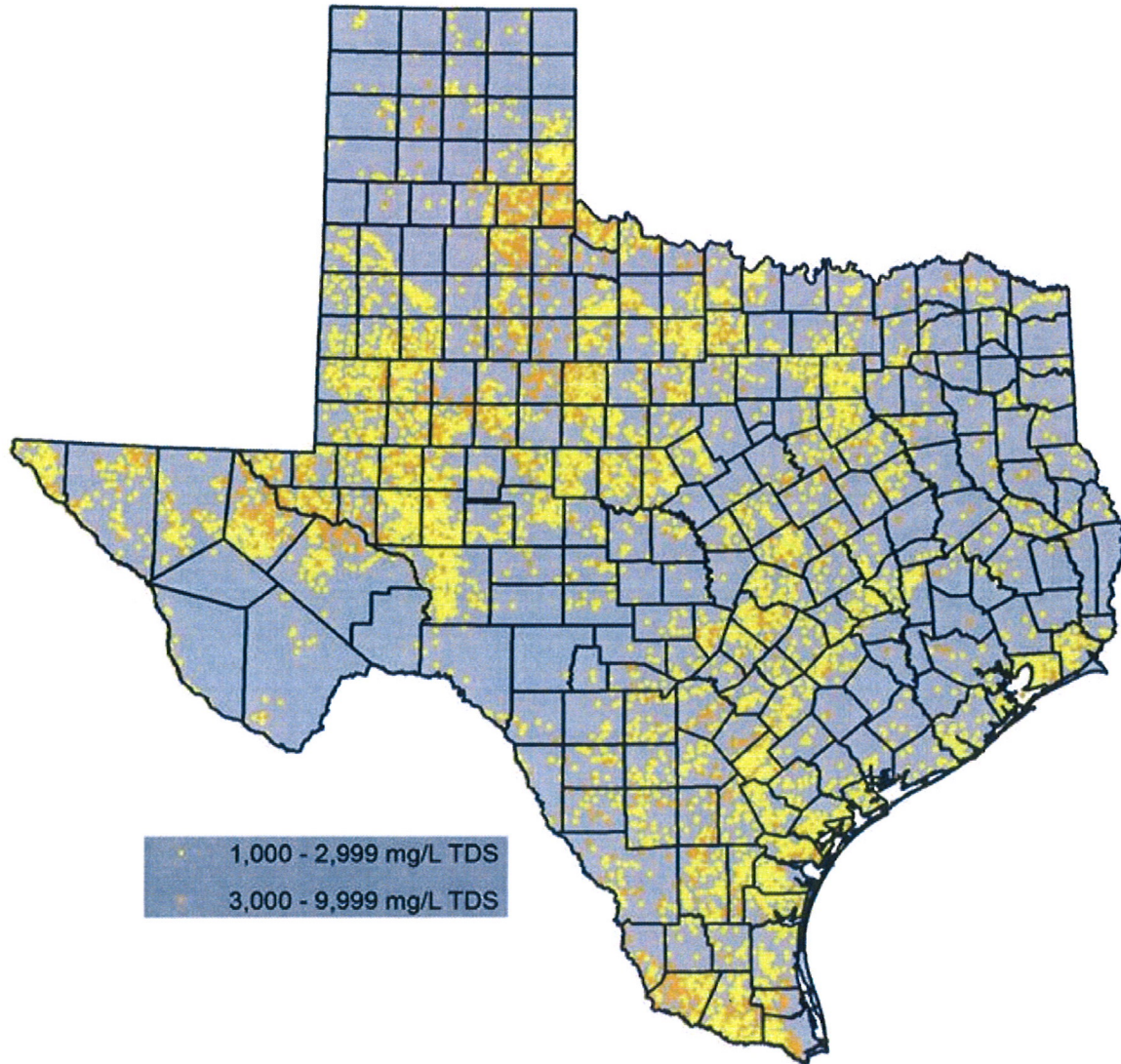
Thank you again for the opportunity to provide these comments and take part in the rulemaking process. We appreciate the good work that the Commission and its Staff have done drafting the proposed amendments and taking steps in the right direction for protecting groundwater, which is vital to the well-being of all Texans.

Sincerely,



Josh Grimes
General Manager

Brackish Wells in the Groundwater Database



Source: Texas Water Development Board Groundwater Database. Each well has a TDS measurement within the range of brackish groundwater (1,000 to 10,000 milligrams per liter). If a well had more than one TDS measurement, the most recent measurement was used.

This map was generated by the Texas Water Development Board using geographic information system software. No claims are made to the accuracy or completeness of the information shown herein or to its suitability for a particular use.