



Memorandum

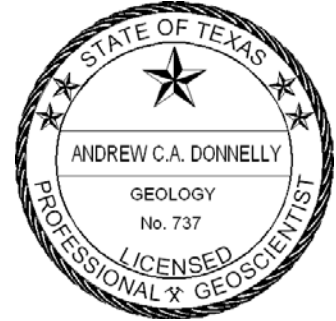
To: Jim Totten, General Manager
Lost Pines Groundwater Conservation District

From: Andrew Donnelly

Copy: Natasha Martin

Date: April 6, 2018

Subject: Review of LCRA Permit Application Packet



DBS&A has reviewed the operating permit application packet submitted by LCRA for eight wells to be completed in the Simsboro Aquifer in Bastrop County. The wells would be located on the Griffith League Ranch property, located between Lake Bastrop and the town of Paige, as shown in Figure 1 below.

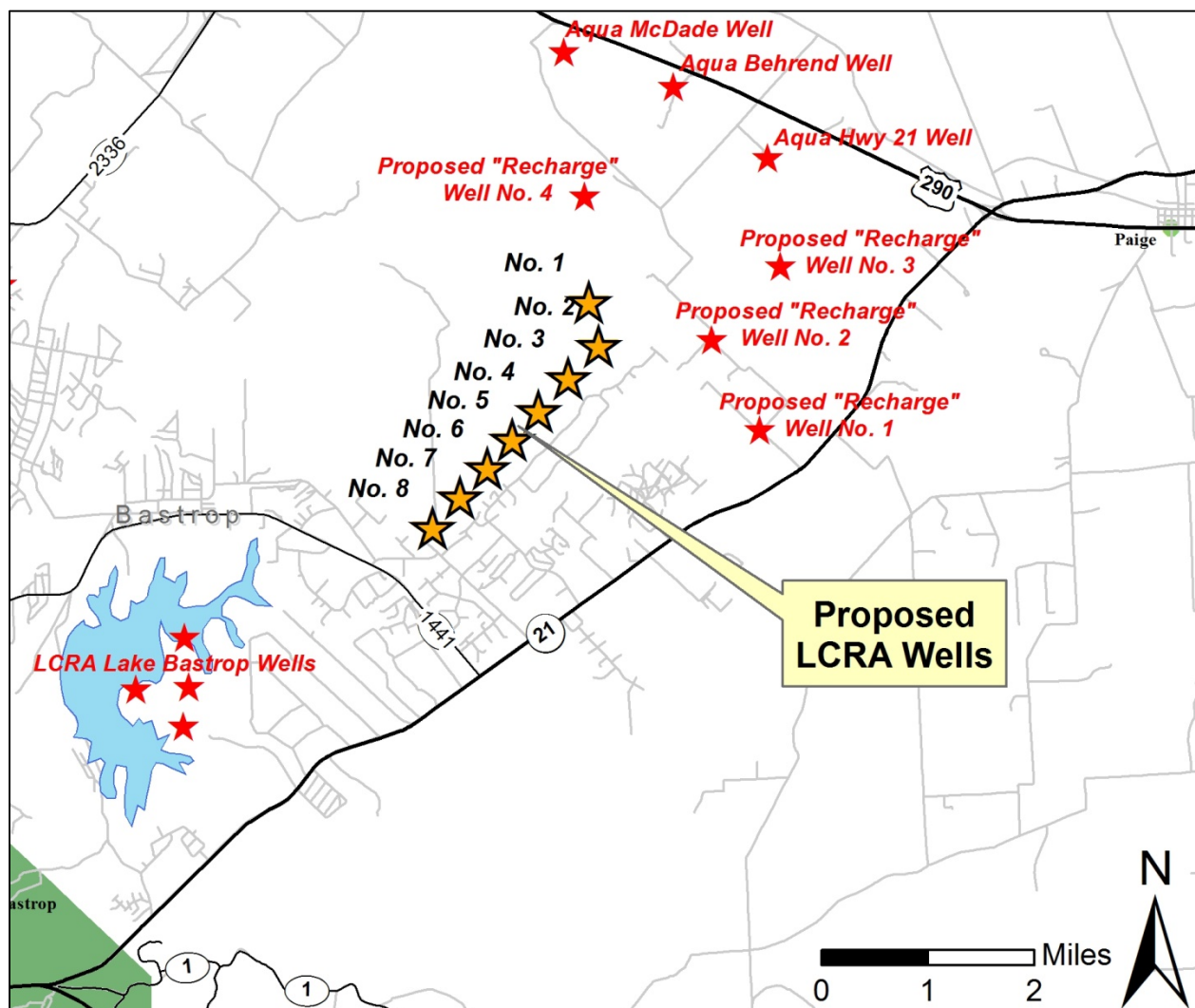




Figure 1. Location of proposed LCRA wells.

The proposed LCRA wells are located near several existing Simsboro Aquifer wells and near several proposed Simsboro Aquifer well locations in the pending Recharge Texas, LP (formerly End Op, LP) permit application. The LCRA wells are:

- as close as 5,200 feet south of the proposed “Recharge” Well No. 4 location
- as close as 5,600 feet west of the proposed “Recharge” Well No. 2 location
- as close as 11,000 feet south/southwest of three Aqua wells (McDade, Behrend, and Highway 21), and
- as close as 13,000 feet from four existing LCRA wells in their Lake Bastrop well field.

The proposed pumpage is to occur in three phases. Phase I consists of 8,000 ac-ft/yr of pumping from wells 7 and 8. Phase II consists of 15,000 ac-ft/yr of pumping from wells 5 through 8. Phase III consists of 25,000 ac-ft/yr of pumping from all eight wells. For the purposes of modeling, it was assumed that Phases I and II would each last for three years, and that Phase I would begin in 2020.

The Central Queen City-Sparta Groundwater Availability Model (GAM) was run with the proposed pumpage added in the model cells in which the proposed wells are located. A map of project-specific drawdown estimated using the GAM is shown in Figure 2, and a close-up map of the project-specific drawdowns using the GAM is shown in Figure 3. The model run results indicate that at the end of 40 years of pumping (in 2060), the project-specific drawdown (drawdown due to the proposed LCRA wells only) is as follows:

- approximately 225 to 250 feet at the three Aqua well locations (McDade, Behrend, and Highway 21).
- approximately 250 to 275 feet at the proposed “Recharge” (End Op) well locations.
- approximately 160 to 180 feet at the existing LCRA wells near Lake Bastrop.

These drawdown estimates are an approximation obtained using the regional-scale GAM, which may not account for local hydrogeologic conditions. However, it is reasonable to conclude that the pumpage from the proposed LCRA wells will result in approximately 200 or more feet of drawdown at nearby permitted wells and the proposed permitted well locations by the year 2060. This model run was completed in the same manner as previous model runs conducted to evaluate permit evaluations requested by the Board, so that a direct comparison to previous model runs can be made.

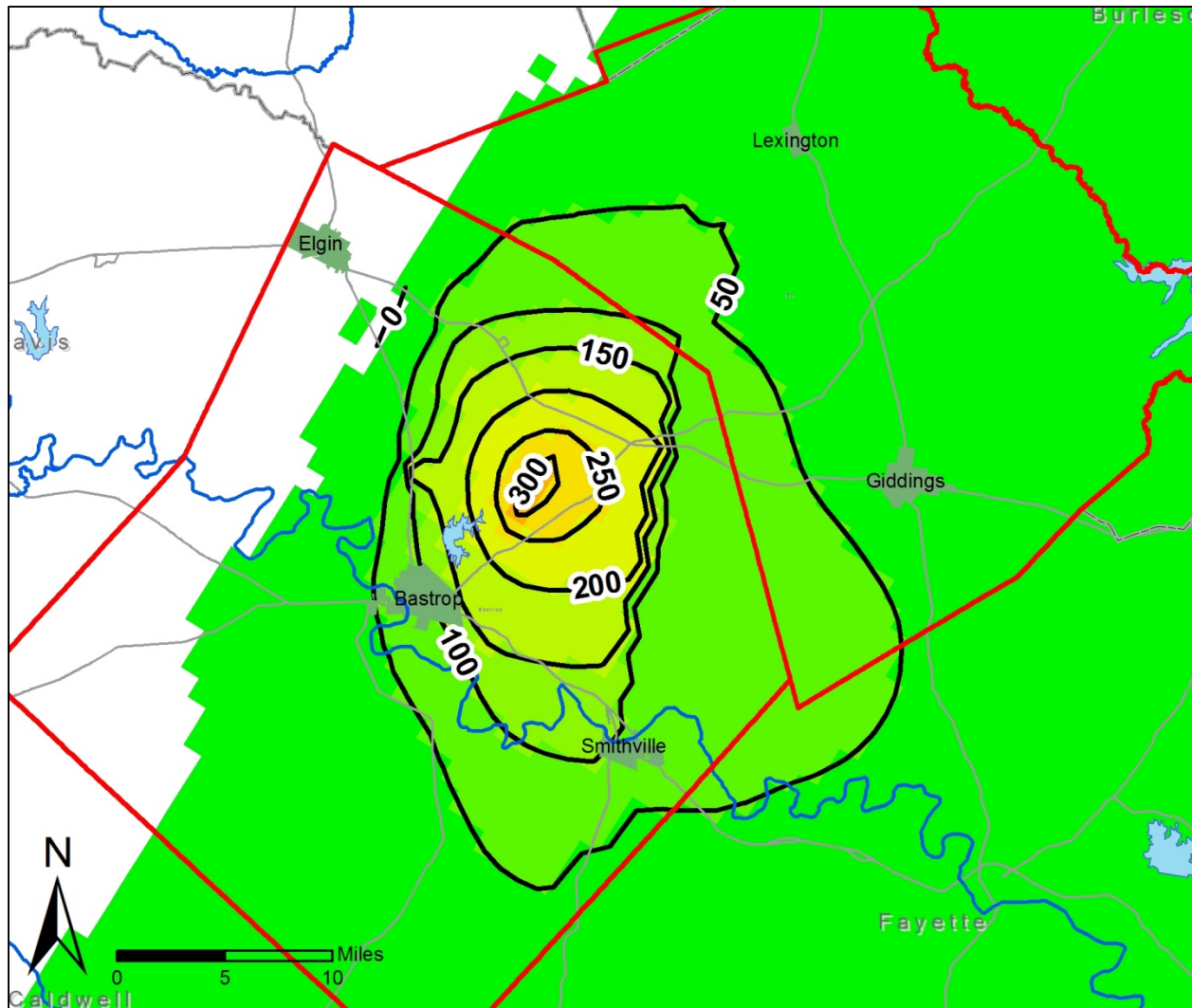


Figure 2. Project-specific 50-year drawdown (in feet) in the Simsboro Aquifer attributable to the proposed LCRA pumpage estimated using the GAM.

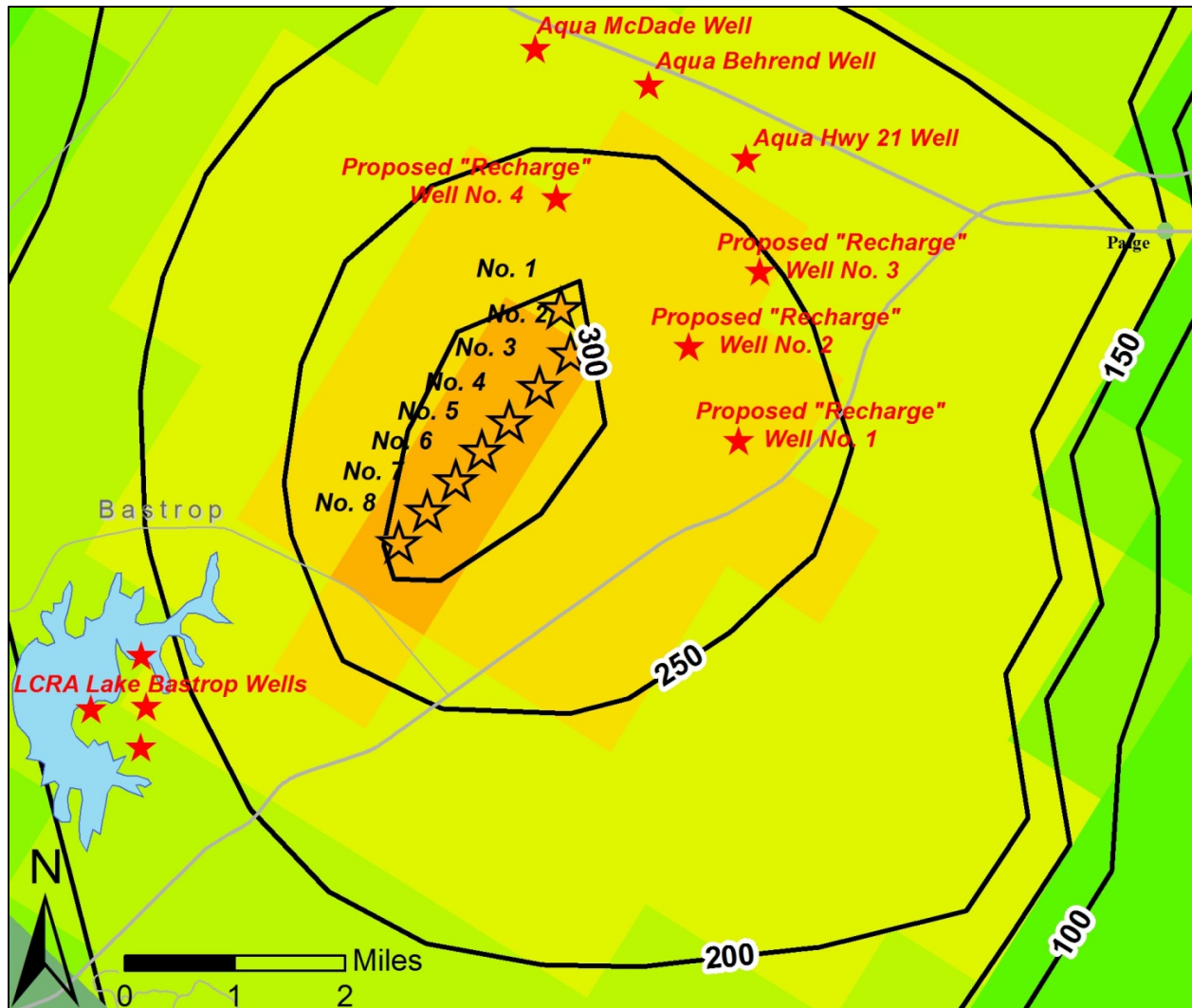


Figure 3. Close up of project-specific 50-year drawdown (in feet) in the Simsboro Aquifer attributable to the proposed LCRA pumpage estimated using the GAM.



Required Application Items

All items required in an operating permit application are present in the application.

Permit Review Items 2 and 8

(2) Whether the proposed use of water unreasonably affects existing groundwater and surface water resources or existing permit holders

The production of 25,000 ac-ft/yr by eight LCRA wells in Bastrop County will impact Simsboro Aquifer water levels in the District. Estimated drawdowns are summarized in Table 1. As indicated in the table, the drawdown estimated to occur due to the proposed project is approximately 60 feet when averaged across the District. A map of project-specific drawdowns estimated using the GAM is shown in Figure 2, and a detailed map of the project-specific drawdowns using the GAM is shown in Figure 3. Although the GAM estimates that the proposed LCRA project pumpage results in over 200 feet of drawdown after full production through 2060 in some nearby wells or proposed well locations, these nearby wells have static water levels that are approximately 550 to 600 feet above the top of the Simsboro Aquifer in the LCRA Lake Bastrop well field, and approximately 900 to 1000 feet above the top of the Simsboro in the three Aqua wells. Therefore, although the proposed LCRA project pumpage will cause water levels in these adjacent wells to decline significantly, this decline may not unreasonably impact these wells or other users in the District.

Table 1. Projected drawdown in 2060 from pumpage included in the LCRA well application

Pumpage	Drawdown (feet)		
	Bastrop County	Lee County	Lost Pines District
LCRA pumpage only	80	37	60
LCRA pumpage + anticipated production from existing LPGCD pumpage and other permits	246	399	318

A quantitative evaluation of the impact of the proposed pumpage on surface water resources within the District is difficult to make. The only quantitative tool available for such a calculation is the GAM, which is not well suited to accurately evaluate impacts to surface water within the District attributable to this application. However, because the majority of the flow in the Colorado River is controlled by the release of water from the Highland Lakes, the impacts from the proposed pumping on flow in the Colorado River is probably small.



(8) Whether granting the application is consistent with the District's duty to manage total groundwater production on a long-term basis to achieve the applicable Desired Future Condition

The average estimated drawdown due to production from these wells is approximately 60 feet when averaged across the entire District. The production from the proposed wells combined with existing sources of groundwater production, including recently approved permits in the District, and groundwater production outside of the District (as modeled in the final Groundwater Management Area 12 GAM run) is estimated to cause 318 feet of drawdown in the Simsboro Aquifer across the District, which is greater than the desired future condition (DFC) for the Simsboro Aquifer in the District of 240 feet.

The Modeled Available Groundwater (MAG) for the Simsboro Aquifer in the District is 32,246 ac-ft/yr in 2020 and 30,843 ac-ft/yr in 2060. The total permitted pumpage in the Simsboro Aquifer is currently 89,021 ac-ft/yr. However, the estimated recent production under these permits has been approximately 13,000 to 17,000 ac-ft/yr. The proposed production of 25,000 ac-ft/yr in this application is greater than difference between the MAG and what is currently being produced under existing permits.

The District's duty to manage total groundwater production on a long-term basis to achieve the DFC will be based on a monitoring network that will be developed for each aquifer for which a DFC has been established. The District's intended approach is to diligently monitor the drawdown within the Simsboro Aquifer across the entire District and manage (i.e., reduce) groundwater production when and if information from the monitoring network indicates that the DFC may be exceeded. If water levels in the Simsboro Aquifer monitoring network indicate the potential for the DFC to be exceeded, then the District's approach is to cut back production for all permitted users. This approach is consistent with the requirement that the DFC be achieved.

Summary

The LCRA application is for eight Simsboro Aquifer wells in Bastrop County for a total of 25,000 ac-ft/yr. The application includes all of the technical items required by the District.

A model run was done to simulate the impact of the proposed pumpage on the aquifer using the same assumptions applied in previous permit evaluations requested by the District Board. The simulated impact of the proposed pumping is approximately 60 feet of drawdown in the Simsboro Aquifer averaged across the District. The total drawdown in the Simsboro Aquifer including the proposed LCRA production is 318 feet across the District, which is greater than the DFC for the Simsboro Aquifer.