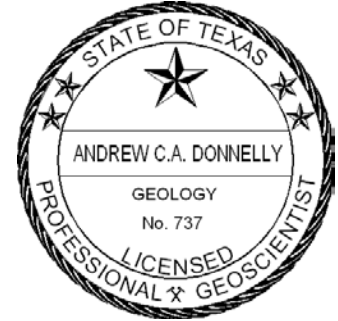




## Memorandum



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

**From:** Andrew Donnelly

**Copy:** Natasha Martin

**Date:** October 28, 2020

**Subject:** Review of Manville Tonka Application Packet

---

DBS&A has reviewed the operating permit application packet submitted by Manville Water Supply Corporation (Manville) for two wells to be completed in the Hooper Aquifer in Lee County. The proposed well locations are very near the Lee County-Williamson County line, as shown in Figure 1 below.

The proposed Manville wells will be approximately 700 feet deep and are not located near any other existing registered Hooper Aquifer wells within the District. These wells are located within approximately 2,500 feet of an existing Hooper Aquifer well in Williamson County that is owned and operated by the City of Hutto (Figure 1). There are currently no District spacing rules for wells in the Hooper Aquifer.

The requested permitted pumpage is 564 acre-feet per year (ac-ft/yr) for each well for a total of 1,128 ac-ft/yr. It was assumed that the entire amount of pumpage would begin in 2021 for the model simulation.

The updated Central Queen City-Sparta Groundwater Availability Model (GAM) was run with the proposed pumpage added in the nodes in which the proposed wells are located. A map of project-specific drawdown only estimated using the GAM is shown in Figure 2. The model run results indicate that at the end of 50 years of pumping (2070), the maximum project-specific drawdown is approximately 50 feet. The closest well to the proposed wells is located in Williamson County, and the predicted project-specific drawdown at this well is between 25 and 30 feet after 50 years of pumping.

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 Manville wells will result in several tens of feet of drawdown in the immediate area near the proposed well locations. However, the estimated drawdown is predicted to decrease significantly at distance from the wells. This model run was completed in the same manner as previous model runs conducted to evaluate permit evaluations requested by the Board, but this evaluation was completed using the updated GAM.

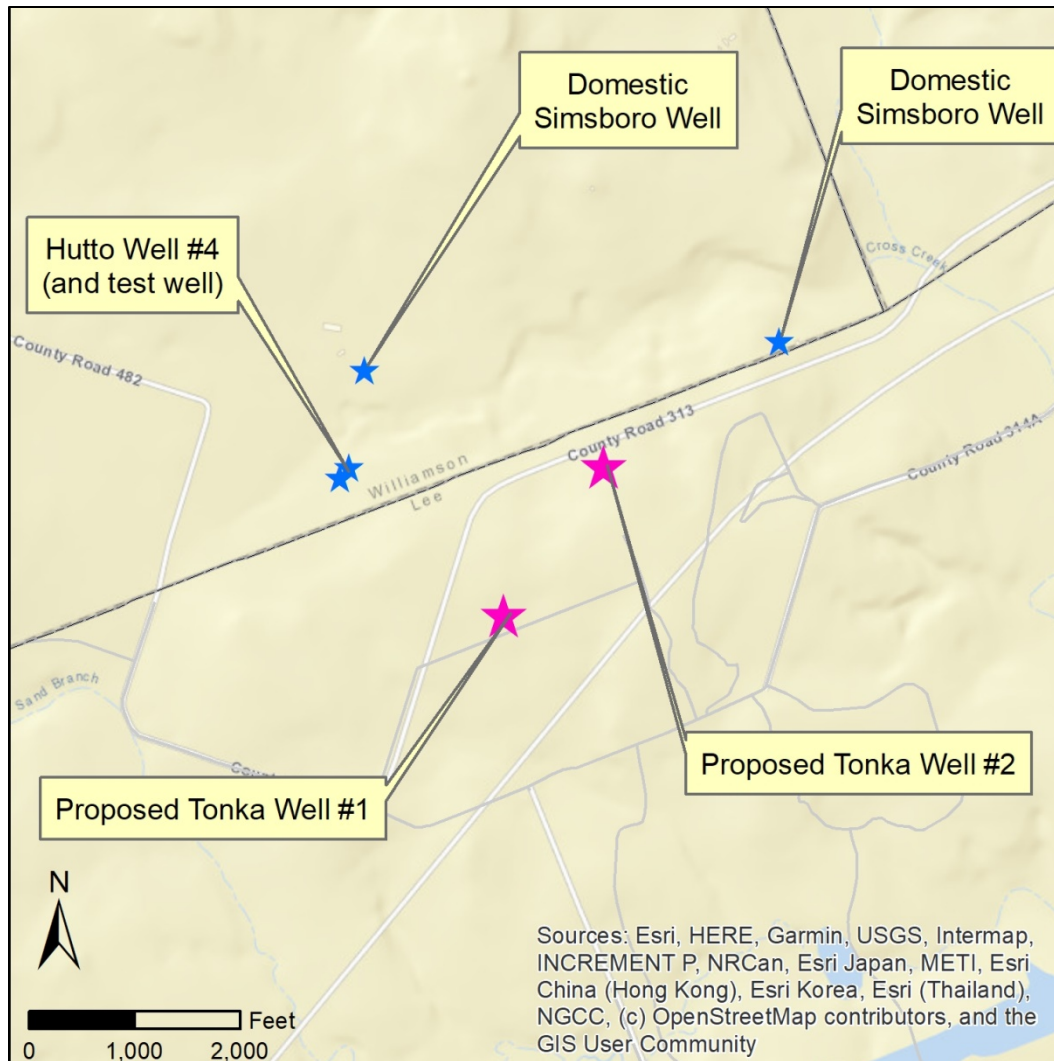


Figure 1. Location of proposed Manville wells.

Because several recent permit applications were granted with a “phased in” approach to pumpage, where the permitted amount of pumping increased over several stages, a simulation was also completed where the Manville pumpage was increased in three stages as follows:

- Stage 1- Pumpage in each well is 200 ac-ft/yr for two years (2021 and 2022)
- Stage 2- Pumpage in each well is 400 ac-ft/yr for two years (2023 and 2024)
- Stage 3- Pumpage in each well is the full 564 ac-ft/yr for the remainder of the simulation

The difference between the simulation with the full pumpage starting in 2021 and the simulation where the pumpage is phased in over three stages was less than 0.1 feet of average drawdown across the District after 50 years.



### Required Application Items

All items required in an operating permit application have been received by the District.

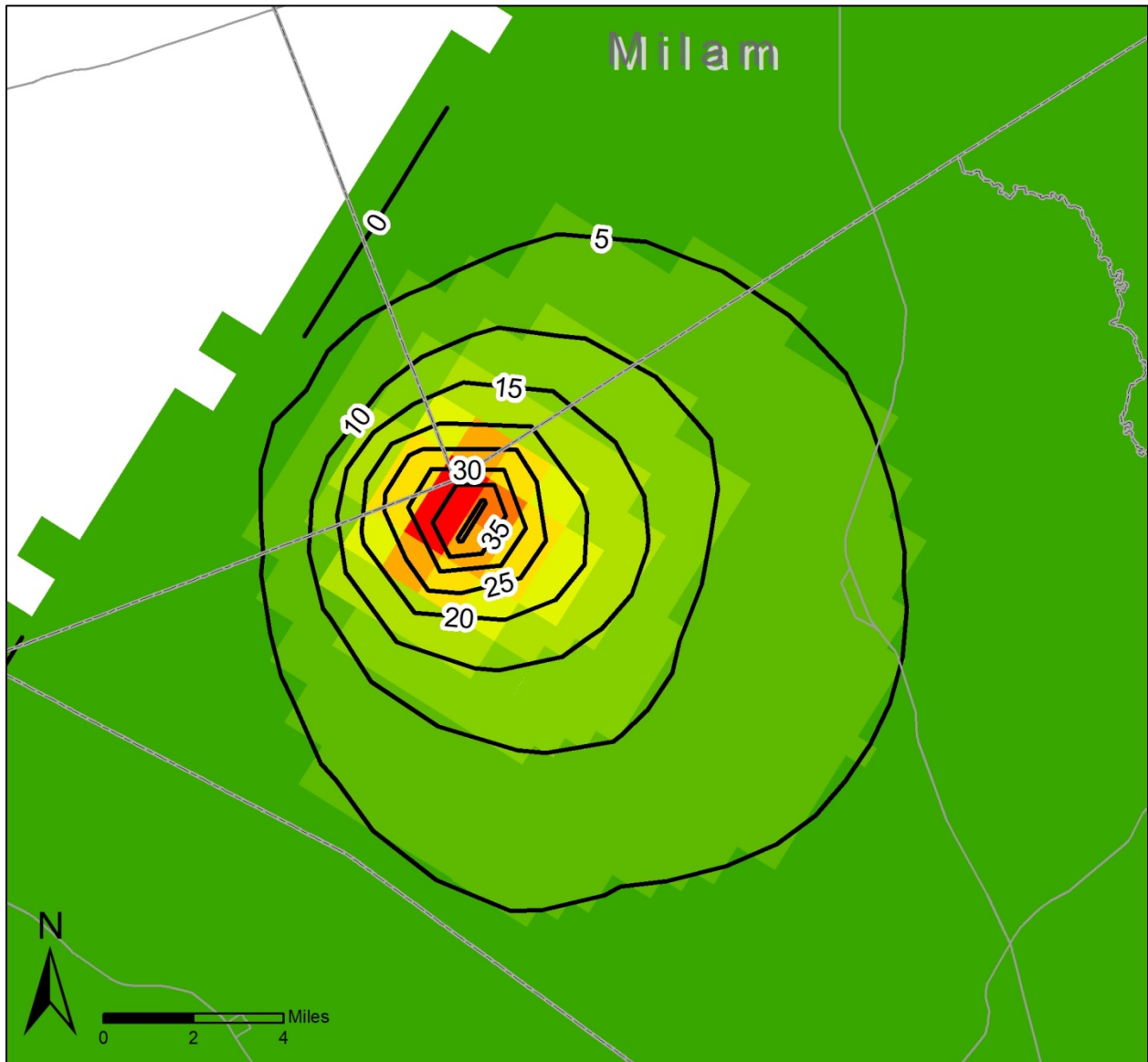


Figure 2. Project-specific 50-year drawdown (in feet) in the Hooper Aquifer attributable to the proposed Manville pumpage estimated using the updated GAM.



**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 1,128 ac-ft/yr by two Manville wells in Lee County will impact Hooper 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 2 feet when averaged across the District. A map of project-specific drawdowns estimated using the GAM is shown in Figure 2. Although the GAM estimates that the proposed Manville project pumpage results in approximately 50 feet of drawdown after full production through 2070 at the proposed well locations, there are no nearby registered wells within the District screened in the Hooper Aquifer.

**Table 1. Projected drawdown in 2070 attributable to pumpage included in the Manville well application**

Pumpage	Drawdown (feet)		
	Bastrop County	Lee County	Lost Pines District
Manville pumpage only	0.6	4.3	2.2
Manville pumpage + anticipated production from existing LPGCD pumpage and other permits	99	298	185

A quantitative evaluation of the impact of the proposed pumpage on surface water resources within the District was made using the updated GAM. However, it should be noted that the GAM is not well suited to accurately evaluate impacts to surface water within the District attributable to this application because of the limitations inherent in a regional groundwater flow model and its ability to simulate all components of groundwater flow that contribute water to surface water in the region.

The predictive simulation results also indicate that pumping 1,128 ac-ft/yr of groundwater from the Hooper Aquifer will have a negligible impact on surface water. The simulation results indicate a net decrease of 23.6 ac-ft/yr in the Colorado River (the river and tributaries included in the model), and a net decrease of less than 1 ac-ft/yr in the Brazos River tributaries. These modeled impacts are small because the location of the pumpage is in Lee County, many miles from the Colorado River and its tributaries, and the proposed pumping is updip of the Brazos River tributaries. Most of the drawdown attributable to the proposed pumpage occurs in the artesian portion of the Hooper Aquifer in northern Lee County, where it will not impact surface water features that are included in the GAM.



### **(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 the proposed Manville wells is approximately 2 feet when averaged across the 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 the District as included in the final Groundwater Management Area 12 GAM run) is about 185 feet of drawdown in the Hooper Aquifer across the District. This value is 20 feet greater than the desired future condition (DFC) for the Hooper Aquifer of 165 feet.

The current Modeled Available Groundwater (MAG) for the Hooper Aquifer in the District is 713 ac-ft/yr in 2020 and 1,255 ac-ft/yr in 2070. The total permitted pumpage in the Hooper Aquifer is currently 1,801 ac-ft/yr. However, the estimated recent production under these permits has been less than 800 ac-ft/yr.

The District's approach to managing 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 monitor the drawdown within the Hooper Aquifer across the District, and reduce groundwater production when and if information from the monitoring network indicates that the DFC may be exceeded. If water levels in the Hooper Aquifer monitoring network indicate the potential for the DFC to be exceeded, then the District would cut back production for all permitted users. This approach is consistent with the requirement that the DFC be achieved.

### **Summary**

The Manville application is for two Hooper Aquifer wells in Bastrop County for a total pumping amount of 1,128 ac-ft/yr. All of the required technical items have been received by the District.

The simulated impact of the proposed pumping is approximately 2 feet of drawdown in the Hooper Aquifer averaged across the District. The total drawdown in the Hooper Aquifer including the proposed Manville production is 185 feet across the District, which is greater than the DFC for the Hooper Aquifer. The proposed pumpage has a negligible simulated impact on surface water.