

Exhibit No. 7

**TGI's Aquifer Evaluation Report on Corpora Well Nos. 1 through 12, inclusive,
dated March 17, 2023**



March 17, 2023

Sandra C. Ryan Trust
13839 Zane Wallace Rd.
Hearne, Texas 77859

Bernadette C. Priestly Trust
13839 Zane Wallace Rd.
Hearne, Texas 77859

Re: Aquifer Evaluation Report –
Permit Amendment to Add Beneficial Uses to Wells BVDO-0090, BVDO-0091,
BVR-0985, BVDO-0055, and BVR-0380 and Drilling and Production Permit
Application for Proposed Thirteen (13) Wells To Be Completed in the Simsboro
Aquifer, Robertson County, Texas

Dear Sandra and Bernadette:

Per your request and in compliance with the rules of the Brazos Valley Groundwater Conservation District (BVGCD), Thornhill Group, Inc. (TGI) provides herein an evaluation of the projected effect of producing 21,257 acre-feet of water per year from thirteen (13) proposed new production wells to be completed in the Simsboro aquifer on the properties identified as 000031-000790, 000031-003683, 000031-003690, 000031-003692, 000044-000050, 000134-000020, 000155-000341, 000166-000227, 000181-000020, 000181-000055, 000219-000240, and 000331-000060 in the Robertson County Central Appraisal District (CAD) database located in Robertson County. TGI conducted its evaluations and prepared this report in compliance with the rules and guidelines provided by the BVGCD, specifically in Rule 8.4(b)(7)(B) for wells (and multiple wells) capable of producing 800 or more acre-feet per year. Additionally, the aquifer evaluation report provides sufficient information to validate your Permit Amendment to add additional beneficial uses to your existing permitted Simsboro wells.

TGI's evaluations focused on assessing local aquifer conditions and parameters, and the extent to which production from the subject wells may influence other groundwater users in the BVGCD. TGI's evaluations are based on previous investigations conducted, including permit applications and field-testing. Additionally, TGI relied upon reported data, published reports, the applicable groundwater availability model (GAM), and TGI's extensive experience with and knowledge of the Simsboro aquifer in Central Texas, within the BVGCD, and

particularly in Robertson County. Specifically, TGI's work was conducted to accomplish the following goals:

- ❖ Assess the local hydrogeologic setting, focusing on the physical characteristics and hydraulic parameters of the local Simsboro aquifer;
- ❖ Estimate and calculate the potential short-term and long-term drawdown at each of the wells, including interference drawdown between wells;
- ❖ Establish a target maximum proposed pumping rate for each well and for the aggregated well field;
- ❖ Model the feasibility of the targeted pumping rate and the potential impacts (e.g., artesian pressure reduction) to the aquifer and other nearby well owners (e.g., drawdown); and,
- ❖ Provide this Hydrogeological Evaluation Report in compliance with District rules.

For convenience, applicable illustrations and supporting documentation are included in the following attachments:

- Attachment 1 – Figures
- Attachment 2 – Tables
- Attachment 3 – Reference Materials
- Attachment 4 – Selected References

Proposed Pumping Location and Permit Pumping Rates

Figure 1 provides a map showing the locations of the proposed wells and the outlines of the six (6) distinct contiguous properties on which the proposed well permits are sought. Proposed well identifications, coordinates, and estimated land-surface elevations in feet above mean sea level (MSL) as obtained from the National Elevation Dataset (NED) are presented on the following page, along with the proposed maximum production rate and annual allocation in acre-feet.

<u>Well Identification</u>	<u>Latitude*</u>	<u>Longitude*</u>	<u>NED Land Surface Elevation (ft AMSL)</u>
Corpora_1	30.967132° N	-96.681905° W	318
Corpora_2	30.930936° N	-96.703854° W	285
Corpora_3	30.931603° N	-96.720836° W	284
Corpora_4	30.934607° N	-96.709457° W	282
Corpora_5	30.939189° N	-96.647752° W	294
Corpora_6	30.928505° N	-96.667226° W	291
Corpora_7	30.941075° N	-96.664942° W	304
Corpora_8	30.862142° N	-96.648896° W	273
Corpora_9	30.866236° N	-96.641341° W	271
Corpora_10	30.828601° N	-96.637179° W	270
Corpora_11	30.830612° N	-96.633565° W	270
Corpora_12	30.784337° N	-96.560379° W	250
Corpora_13	30.784810° N	-96.554918° W	250

*Coordinate system is NAD83 State Plane Texas Central (feet) (EPSG 32039) converted to NAD83 (EPSG 4269).

<u>Well Identification</u>	<u>Maximum Pumping Rate (GPM)</u>	<u>Annual Permit Allocation (AF)</u>
Corpora_1	1,000	1,290
Corpora_2	1,050	1,370
Corpora_3	1,650	2,093
Corpora_4	1,050	1,370
Corpora_5	1,125	1,449
Corpora_6	2,750	3,542
Corpora_7	1,125	1,449
Corpora_8	1,700	2,174
Corpora_9	1,700	2,174
Corpora_10	550	885
Corpora_11	550	885
Corpora_12	800	1,288
Corpora_13	800	1,288

The proposed well locations comply with the BVGCD rules regarding spacing between wells and allocation of acreage per well. All wells are within or exceed the ½ foot per GPM rule for spacing distance from property lines, and do not violate the 1 foot per GPM rule for spacing distance from other wells completed in the same aquifer. Figures 2 through 2-E show all

BVGCD registered Simsboro wells within 1 (one) mile of the proposed wells at a 1-inch to 1,000 foot scale. Note that only properties A, B, C, and D have Simsboro wells within the 1-mile radius. Figure 3 shows locations for BVGCD registered wells within five (5) miles of the proposed wells.

Hydrogeologic Conditions and Aquifer Characteristics

Surface Geologic Setting

Figure 4 is a surface geology map that shows the general trend in strike along outcrops is southwest to northeast. Beds dip normal to the trend in strike direction at an increasing rate towards the coast. The wedge of sediments that make up the area of interest thicken gulfward and represent a repeating pattern of transgressional and regressional depositional environments that were deposited between 35 to 65 millions years ago. In general, coarser grained near-shore or terrestrial deposits are bounded by much finer marine shales and clays. A representative hydrostratigraphic column is presented below:

All seven contiguous properties overlie surficial Quaternary Alluvium and terrace deposits. These units were deposited by the ancient and present day Brazos River and consist of sedimentary deposits of various grain sizes, along with lenses and structures typical of

Period	Series	Strata	Hydrogeologic Unit
Tertiary	Eocene	Jackson Group	Yegua-Jackson Aquifer
		Yegua Fmn.	
		Cook Mountain Fmn.	Confining Unit
		Sparta Sand	Sparta Aquifer
		Weches Fmn.	Confining Unit
		Queen City Sand	Queen City Aquifer
		Reklaw Fmn.	Confining Unit
		Carrizo Sand	Carrizo-Wilcox Aquifer
		Calvert Bluff Fmn.	
	Simsboro Fmn.		
	Paleocene	Hooper Fmn.	
		Miday Fmn.	Confining Unit

riverine deposits. Underlying the surficial alluvium at each property is a progression of regional stratigraphy from the Calvert Bluff to the Sparta Sand, working from north to south.

At properties A, B, and C the Calvert Bluff is found underneath the alluvium and terrace deposits, with a small amount present at the surface on the very eastern edge of property C. Underlying properties D and E are the Reklaw and Queen City Formations, respectively. Depending on depth of incision of the Brazos River, the Weches may be present underneath

property E, or more likely the first unit encountered in the subsurface is the Queen City owing due to relative thinness of the Weches. The Weches Formation is a quartz sand interbedded with layers of clay and hydraulically behaves as a confining layer between the Sparta and Queen City Aquifers. Moving down the stratigraphic column, the Queen City is a Minor Aquifer of Texas that is composed of laminated or thinly stratified sands and sandy clays. It is hydraulically separated from the Carrizo-Wilcox by the Reklaw Formation, which is dominated by sand and clay beds with the latter traditionally being found in the upper part of the formation and acting as a hydraulic barrier to the vertical migration of subsurface water to the underlying formations of the Carrizo-Wilcox Aquifer. At the most southern property, F, the Sparta Sand is likely to be the immediate unit underneath the surficial alluvium. The Sparta Sand is the youngest and stratigraphically the highest formation encountered across all properties. In terms of lithology, it is predominately a clastic sedimentary sandstone with varying degrees of silts and clays with incidental beds of coal. It is a Minor Aquifer of Texas.

Faults associated with the Milano Fault Zone are present at property B. There are no mapped faults at any of the surrounding parcels although the southernmost two properties are separated from the rest by another normal fault. In all cases, the eastern fault block is the downthrown side.

[Simsboro Aquifer Conditions and Hydraulic Parameters](#)

The target water bearing formation for all proposed wells is the Simsboro Formation. A table of the representative depths to top and bottom of the Simsboro as well as total saturated thickness is presented on the following page. This data is extrapolated from the most recent version of the TWDB Central Portion of the Sparta, Queen City, and Carrizo-Wilcox Aquifer Groundwater Availability Model (GAM). Geophysical logs from the nearby Brazos Valley Farms property (CS-1, CS-2, and CS-3) as well as the Bureau of Economic Geology were evaluated to support the depths reported by the GAM, and they are in general agreement.

<u>Well Identification</u>	<u>Extracted GAM Heads (ft AMSL)</u>	<u>Simsboro Top (ft AMSL)</u>	<u>Artesian Head (ft)</u>
Corpora_1	242	-382	623
Corpora_2	247	-344	591
Corpora_3	251	-189	440
Corpora_4	249	-344	593
Corpora_5	233	-563	796
Corpora_6	236	-494	730
Corpora_7	237	-503	740
Corpora_8	215	-703	918
Corpora_9	212	-784	996
Corpora_10	204	-882	1,086
Corpora_11	204	-874	1,078
Corpora_12	168	-1,352	1,521
Corpora_13	165	-1,362	1,527

Water levels rise a minimum of 440 feet above the top of the Simsboro Aquifer for the given proposed well locations. At all proposed well locations, the aquifer is under artesian conditions and with several hundred feet of available drawdown. This is further supported with reported water levels from BVGCD monitoring wells. To the north, BVR-1506 and BVDO-0055 show depths to water of 125 and 150 feet bgl. Near the City of Hearne, levels increase to 150 to 175 feet bgl (State Well No. 59-04-701). Towards the south, BVGCD monitoring well BVDO-0152 reports a static water level of 275 feet bgl.

Projected Effects of Proposed Pumping

The immediate impacts from production will be drawdown at the pumping wells. As the wells pump, artesian pressure or potentiometric head around the wells will decline forming a cone of depression. As production continues the cone of depression will extend radially from the well field until an aquifer boundary is reached or the production rate reaches equilibrium with the captured groundwater flows. Reduction in artesian pressure is the only anticipated measurable effect from the proposed pumping. The aquifer will remain completely full and there will be only an infinitesimal reduction in storage. There may be some inter-aquifer leakage induced from the overlying Calvert Bluff; however, the amount of leakage will serve to lessen the artesian drawdown in the Simsboro and will likely not result in any identifiable water-level changes in the Calvert Bluff due to the stratification in the geologic layers.

Drawdown Simulations Using the GAM

TGI utilized the most recent version of the Central Portion of the Sparta, Queen City, and Carrizo-Wilcox Aquifers GAM to calculate drawdown due to the proposed pumping for continuous pumping periods of one (1) year and 10 years. Figure 5 and Figure 6 provide maps showing modeled drawdown contours after one (1) year and 10 years of pumping at the maximum authorized rate, respectively. Table 1 provides modeled drawdown at specific registered and permitted Simsboro well sites within 5 miles of the proposed well locations.

Due to the grid scale (i.e., one mile) and configuration in the model, the GAM does not provide an accurate spatial representation of drawdown at the well site and in the immediate surrounding area, and the simulation likely predicts less drawdown than will actually occur near the pumping well. The GAM drawdown results at some distance from the proposed well field are probably more representative of the actual aquifer conditions and the potential results from pumping.

Note that several of the wells designated by the BVGCD as “Simsboro” wells may not actually be deep enough to penetrate the Simsboro aquifer. TGI did not attempt to verify the completion intervals of those wells, but simply reported the dataset as provided by BVGCD. Based on the geologic structure, estimates of current artesian head, and drawdown calculated from the GAM simulations, the Simsboro aquifer will remain full and under artesian conditions in the well-field area and within the five-mile radius.

Drawdown Simulations Using Analytical Modeling

As stated previously, due to the scale and configuration of the GAM grid, the GAM probably does not provide accurate drawdown calculations for the specific well sites and areas in the immediate vicinity of the proposed well field. Therefore, for comparison purposes and per

the BVGCD rules TGI used an analytical modeling program based on the Theis non-equilibrium equation to calculate theoretical potentiometric head declines at and surrounding the proposed production wells. TGI has used the Theis model for several submittals to the BVGCD as well as for evaluations and submittals to numerous districts across the State of Texas. The Theis model incorporates many assumptions, most of which are sufficiently satisfied in the local Simsboro aquifer. However, the Theis model assumes an aquifer that is uniform over an infinite area. To account for recharge boundaries and possible inter-aquifer leakage into the Simsboro, TGI modeled long-term pumping (i.e., from one to 10 years) by incorporating a leaky artesian storage coefficient. A table of the transmissivity and storage coefficient values utilized in the analytical modelling by time step is presented below:

<u>Well Identification</u>	<u>Transmissivity (gpd/ft)</u>	<u>1-Year Storage Coefficient (-)</u>	<u>10-Year Storage Coefficient (-)</u>
Corpora_1	45,000	0.0005	0.003
Corpora_2	50,000	0.0005	0.003
Corpora_3	50,000	0.0005	0.003
Corpora_4	50,000	0.0005	0.003
Corpora_5	55,000	0.0005	0.003
Corpora_6	55,000	0.0005	0.003
Corpora_7	55,000	0.0005	0.003
Corpora_8	70,000	0.0005	0.003
Corpora_9	70,000	0.0005	0.003
Corpora_10	80,000	0.0005	0.003
Corpora_11	80,000	0.0005	0.003
Corpora_12	90,000	0.0005	0.003
Corpora_13	90,000	0.0005	0.003

While the Theis model likely provides more reliable results within and near the well field, it probably overstates drawdown at distance from the pumping center. Also, the Theis model is more accurate for shorter pumping durations; therefore, the 10-year calculation likely overestimates drawdown.

Figure 7 and Figure 8 provide the Theis-modeled drawdown contours for pumping periods of one (1) year and 10 years, respectively. Table 1 provides the tabulated drawdown at specific Simsboro well sites, based on the locations and designations of aquifers provided by BVGCD in their database files. Estimated drawdowns due to pumping of the proposed wells for both the GAM and analytical modelling is presented in the following table:

Well Identification	1-Year GAM Drawdown (ft)	10-Year GAM Drawdown (ft)	1-Year Analytical Drawdown (ft)	10-Year Analytical Drawdown (ft)
Corpora_1	58	68	95	108
Corpora_2	71	79	115	129
Corpora_3	65	73	110	123
Corpora_4	65	76	108	122
Corpora_5	80	90	127	140
Corpora_6	59	70	97	110
Corpora_7	58	69	101	114
Corpora_8	44	56	80	93
Corpora_9	35	49	58	70
Corpora_10	30	44	47	58
Corpora_11	31	45	49	60
Corpora_12	71	79	112	126
Corpora_13	71	82	122	135

For all proposed wells, the calculated drawdown at 1 (one) year and 10 years in both the GAM and analytical modelling is less than the available artesian head extracted from the GAM and further supported with nearby geophysical logs and district monitoring well data. It is highly likely that all wells will only experience an infinitesimal reduction in pore pressure at depth even under the longest evaluated time frame. The aquifer will remain completely saturated at the proposed well sites and the surrounding well field area.

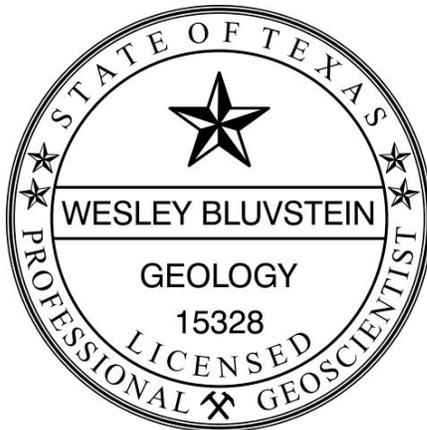
It is worth noting that the nature of the modelling assumes constant pumping for the entire duration being evaluated, i.e. 1 and 10 years. In reality, it is not feasible or practical for a well to pump continuously for 10 years or even 1 year. Breaks in pumping due to well maintenance, operation schedules, and demand needs will allow for recovery periods, and ultimately that will likely decrease the observed drawdown.

Conclusions

Based on our review of the BVGCD rules and the work conducted as described herein, TGI concludes the following:

- ❖ The proposed well and pumping amounts can be completed and produced in accordance with the well spacing and production-based acreage (i.e., allocation) rules set forth by the BVGCD;
 - Specific capacities determined from existing well records, testing conducted by BVGCD representatives on nearby wells (March 18, 2009), current available drawdown, and predicted drawdown all demonstrate that the wells will be capable of sustaining their target rates;
- ❖ The predicted drawdown derived from the Theis analytical model are more accurate than the GAM predictions for the proposed well sites and areas near the well field;
- ❖ GAM-predicted drawdown probably provides a more reasonable estimate of future impacts at greater distances from the proposed well field and for longer time periods; and,
- ❖ Production from the proposed pumping will cause only infinitesimal reduction in aquifer pore pressure as the Simsboro will stay completely full and groundwater in the formation will remain under artesian pressure within the well-field area and the five-mile study radius.

We very much appreciate the opportunity to again assist you in our specialty. If you have any questions, please call.



The seal appearing on this document was authorized by Wesley Bluvstein, P.G. on March 17, 2023.

Attachments

Sincerely,
THORNHILL GROUP, INC.

Wesley Bluvstein, P.G.