

3.2.15 Marble Falls

The Marble Falls aquifer is a limestone aquifer that occurs in 8 counties in the Llano Uplift area in Central Texas, as shown in Figure 55. Groundwater from the Marble Falls aquifer is currently used mostly for livestock purposes, although small amounts are also used for municipal purposes. The towns of San Saba and Rochelle are the two largest communities that have historically withdrawn groundwater from the Marble Falls aquifer for public supply use. Most of the production from the Marble Falls aquifer occurs in Mason County.

A generic cross section of the Marble Falls aquifer is shown in Figure 56. The Marble Falls Formation is a Pennsylvanian age, fine-grained, thinly to thickly bedded limestone, with some interbedded shale. It occurs in several separate outcrops, primarily along the northern and eastern flanks of the Llano Uplift region where it reaches a thickness of up to 600 feet. The down-dip extent of the aquifer has not been explored.

Recharge to the Marble Falls aquifer is from precipitation on the outcrop areas. Discharge is mainly to numerous large springs emanating from the aquifer, and to wells. Groundwater flow is generally from the outcrop areas in a down-dip direction. Groundwater occurs in solution cavities that have formed along fractures and faults in the limestone. Where underlying beds are thin or absent, the Marble Falls and Ellenburger-San Saba aquifers may be hydrologically connected. The aquifer is capable of producing small to moderate quantities of water to wells, with well yields increasing significantly with acidizing. Wells completed in the Marble Falls aquifer generally produce less than 100 gpm, although some irrigation wells have been reported to produce as much as 200 gpm. Very few data exist on the overall aquifer characteristics of the Marble Falls aquifer. However, based on well yields and aquifer characteristics of similar aquifers, transmissivities are estimated to average less than 5,000 gpd/ft, storage coefficients are estimated to average 1×10^{-4} , and specific yields are estimated to average 0.02.

As indicated in Figure 55, existing data for the Marble Falls aquifer show that it contains mostly fresh water in outcrop areas and becomes mineralized a short distance down-dip from the outcrop areas. However, very few data exist to evaluate the brackish water that is present.

Summary

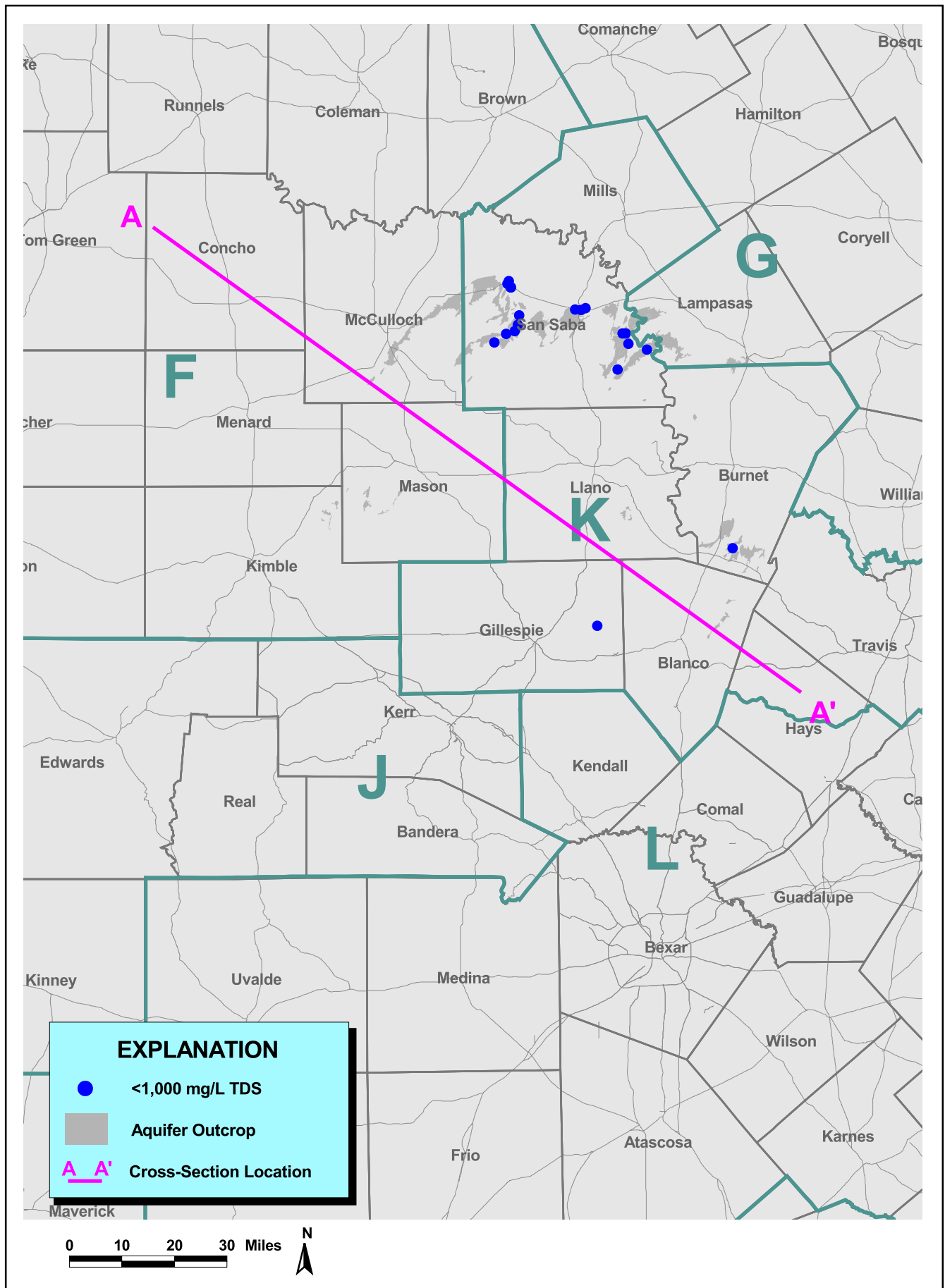
Most wells producing from the Marble Falls aquifer produce fresh groundwater on the outcrop, while groundwater becomes highly mineralized within a relatively short distance of the down-dip. However, because the areal extent of the Marble Falls aquifer is relatively limited, and because much of the existing data indicate that the aquifer has limited groundwater availability, the Marble Falls aquifer must be considered a very limited source of brackish groundwater.

Availability- LOW- The limited overall extent of the aquifer makes it a poor candidate as a brackish water source.

Productivity- UNKNOWN- The aquifer characteristics of the Marble Falls in the down-dip areas where brackish groundwater may be available are unknown.

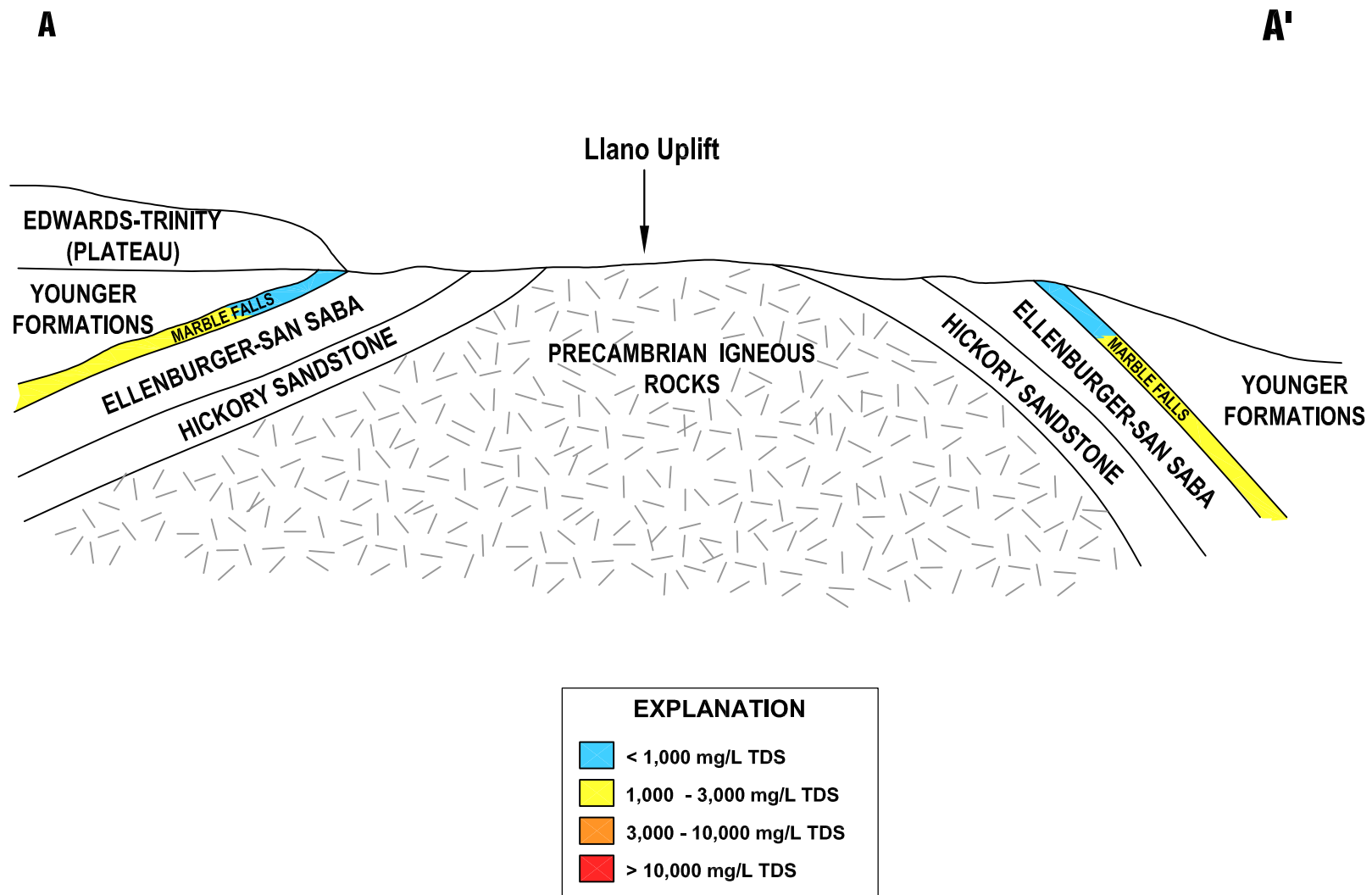
Source Water Production Cost- MODERATE to HIGH- Due to the presumed deep nature where brackish groundwater would be located, and the low productivity of the aquifer, relative costs are expected to be moderate to high.

Summary of Brackish Water In the Marble Falls Aquifer			
<i>Region</i>	<i>Availability</i>	<i>Productivity</i>	<i>Source Water Production Cost</i>
F- Region F	Low	Unknown	Moderate to High
G- Brazos	Low	Unknown	Moderate to High
J- Plateau	Low	Unknown	Moderate to High
K- Lower Colorado	Low	Unknown	Moderate to High
L- South Central Texas	Low	Unknown	Moderate to High



GROUNDWATER QUALITY IN THE MARBLE FALLS AQUIFER

FIGURE 55
LBG-GUYTON ASSOCIATES



**SIMPLIFIED CROSS SECTION OF THE MARBLE FALLS
AQUIFER WITH GENERALIZED WATER QUALITY RANGES**
(Modified from Barker and others, 1994)

FIGURE 56