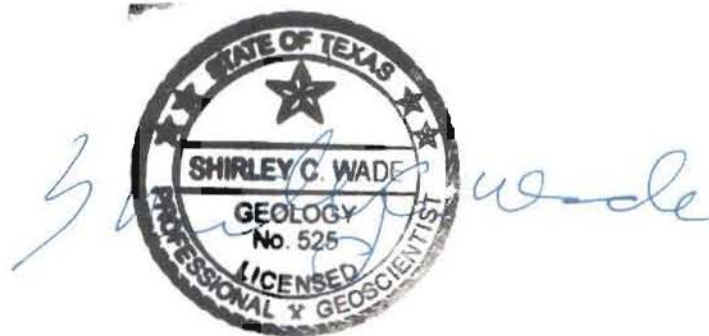


GAM Task 10-020: Model Report

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PURPOSE AND DESCRIPTION OF THE TASK:

In response to a presentation for Groundwater Management Area 13 we informally received a request to provide the depth to aquifer layers from the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers for McMullen County.

PARAMETERS AND ASSUMPTIONS:

This groundwater availability model includes eight layers, representing (from top to bottom):

1. the Sparta Aquifer or its stratigraphic equivalent,
2. the Weches Confining Unit,
3. the Queen City Aquifer,
4. the Reklaw Confining Unit,
5. the Carrizo Aquifer,
6. the Upper Wilcox Aquifer or the upper portion of the Middle Wilcox Aquifer where the Upper Wilcox is missing,
7. the Middle Wilcox Aquifer, and
8. the Lower Wilcox Aquifer.

It should be noted that in the deep, eastern portion of the model the aquifer layers extend beyond the official aquifer boundaries and may contain brackish to saline waters with total dissolved solids exceeding 3,000 parts per million.

Further details about the model can be found in Deeds and others (2003) and Kelley and others (2004).

METHODS AND RESULTS:

Average depth to aquifer layers was determined by first extracting aquifer layer elevation values from the groundwater availability model for the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers. The depth to the top of each of layers 2 through 8 was then calculated for each model cell by subtracting the elevation of the top of the layer from the elevation of the top of the model which represents land surface. The depth values for each model cell were contoured in ArcView 3.2. Maps for each model layer in McMullen County were then created in ArcGIS 9.2 (Figures 1 through 7).

It should be noted that the maps (Figures 1 through 7) depict estimated depth on a one-mile square basis for use in the groundwater availability model. They should not be used on a local scale to determine aquifer depths.

REFERENCES:

- Deeds, N., Kelley, V., Fryar, D., Jones, T., Whallon, A. J., and Dean, K. E., 2003, Groundwater Availability Model for the Southern Carrizo-Wilcox Aquifer: contract report to the Texas Water Development Board, 452 p.
- Kelley, V. A., Deeds, N. E., Fryar, D. G., and Nicot, J. P., 2004, Groundwater availability models for the Queen City and Sparta aquifers: contract report to the Texas Water Development Board, 867 p.

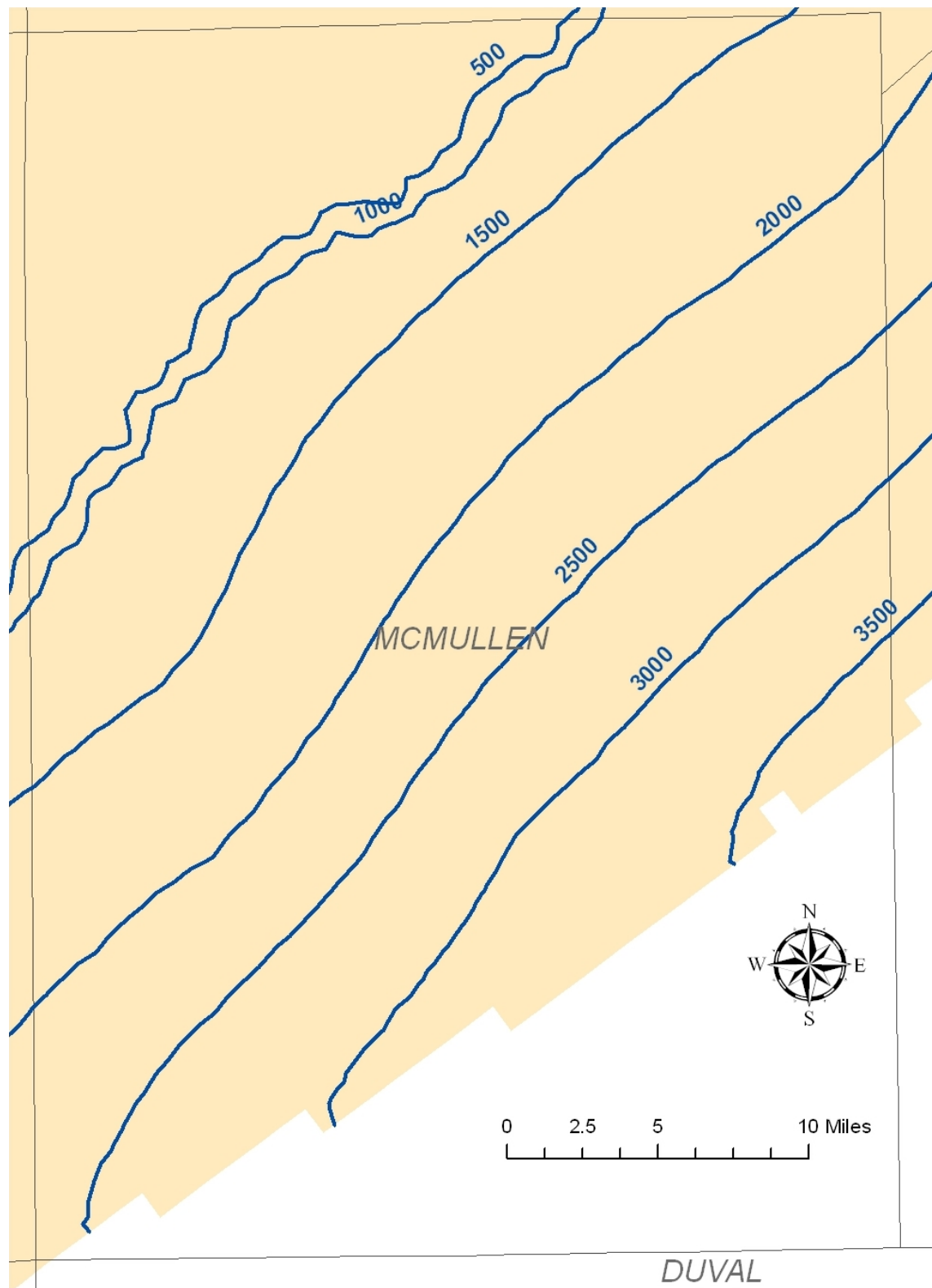


Figure 1. Average depth from land surface in feet to layer 2 from the groundwater availability model for the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers.

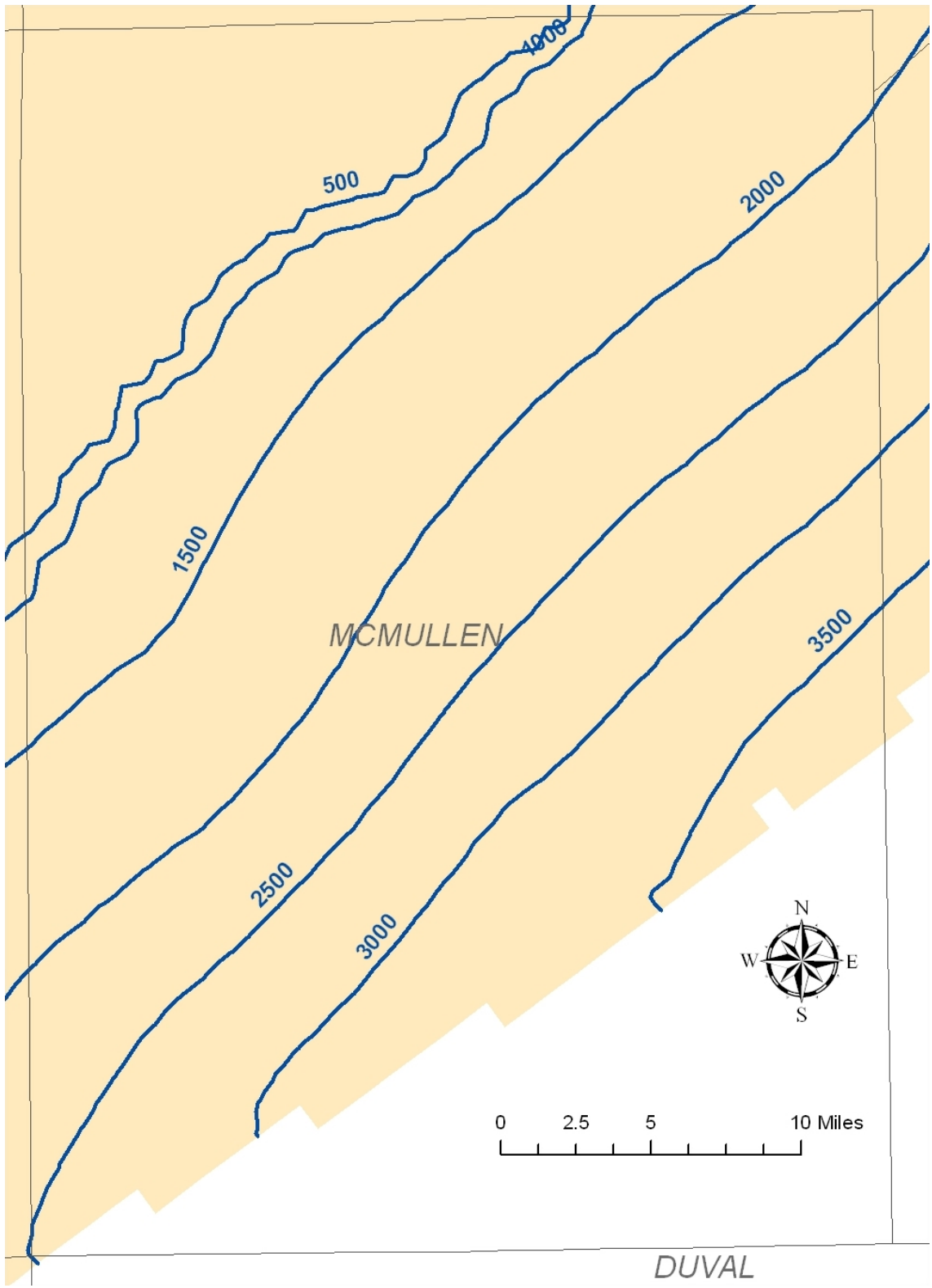


Figure 2. Average depth from land surface in feet to layer 3 from the groundwater availability model for the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers.

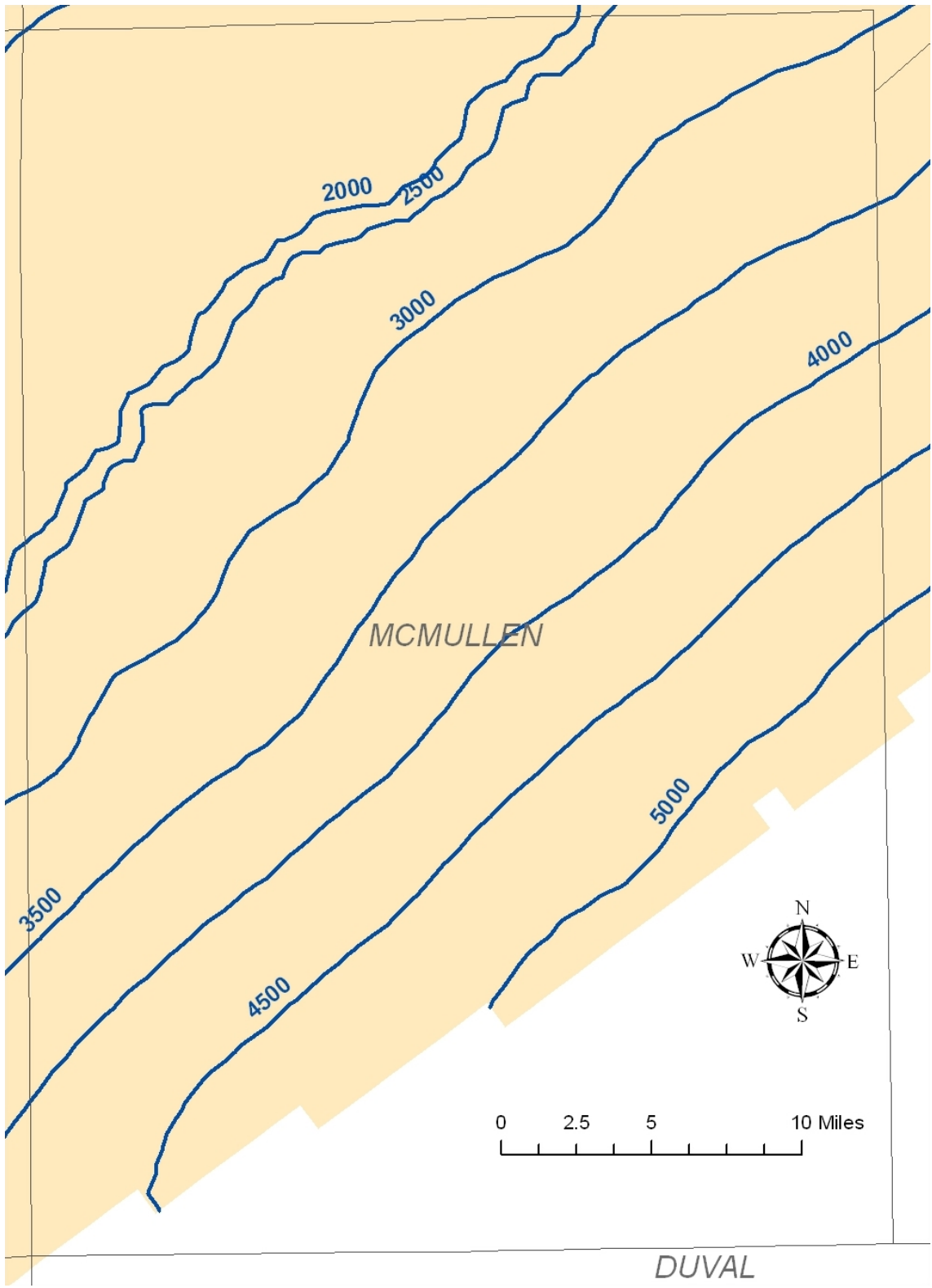


Figure 3. Average depth from land surface in feet to layer 4 from the groundwater availability model for the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers.

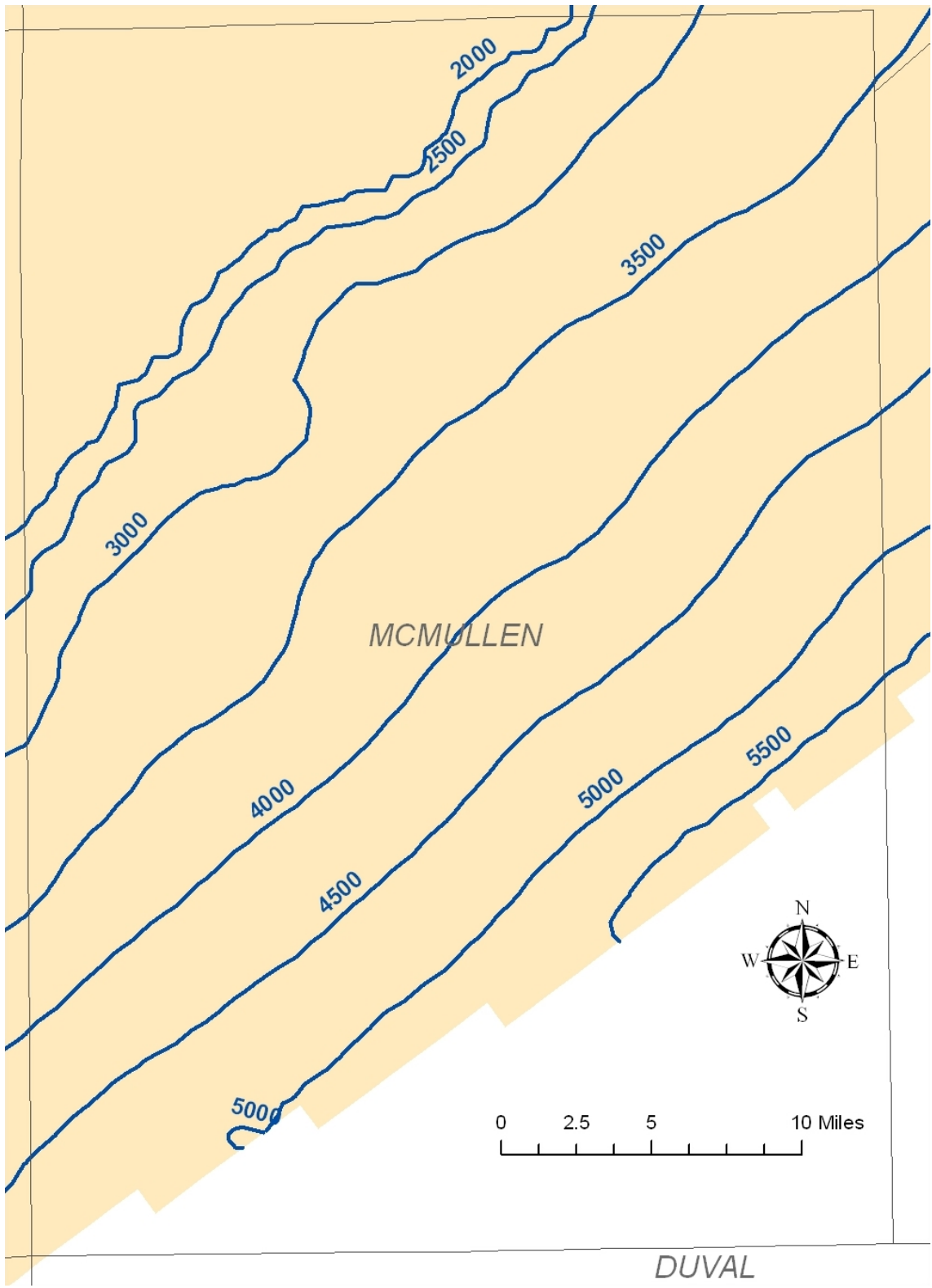


Figure 4. Average depth from land surface in feet to layer 5 from the groundwater availability model for the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers.

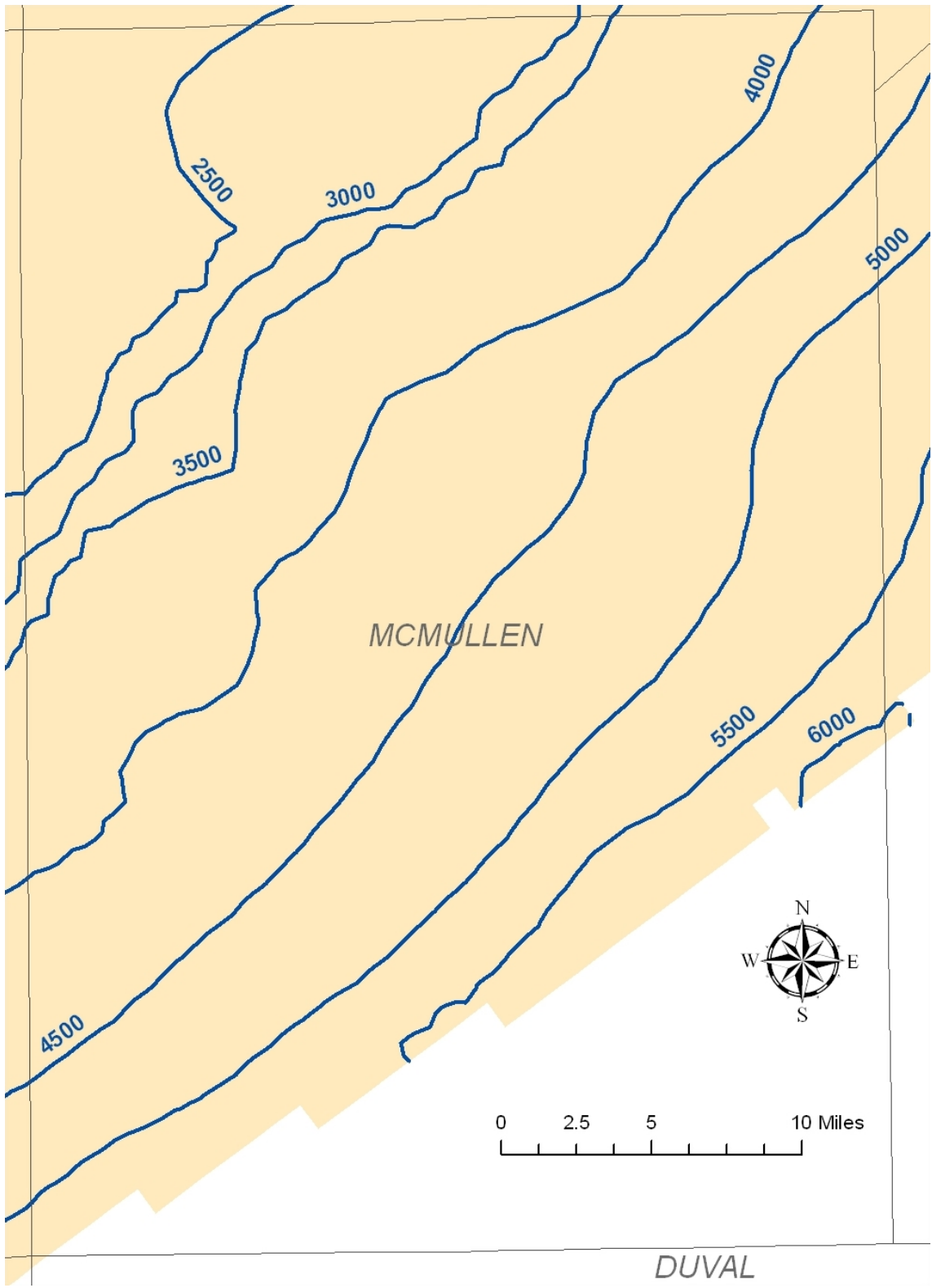


Figure 5. Average depth from land surface in feet to layer 6 from the groundwater availability model for the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers.

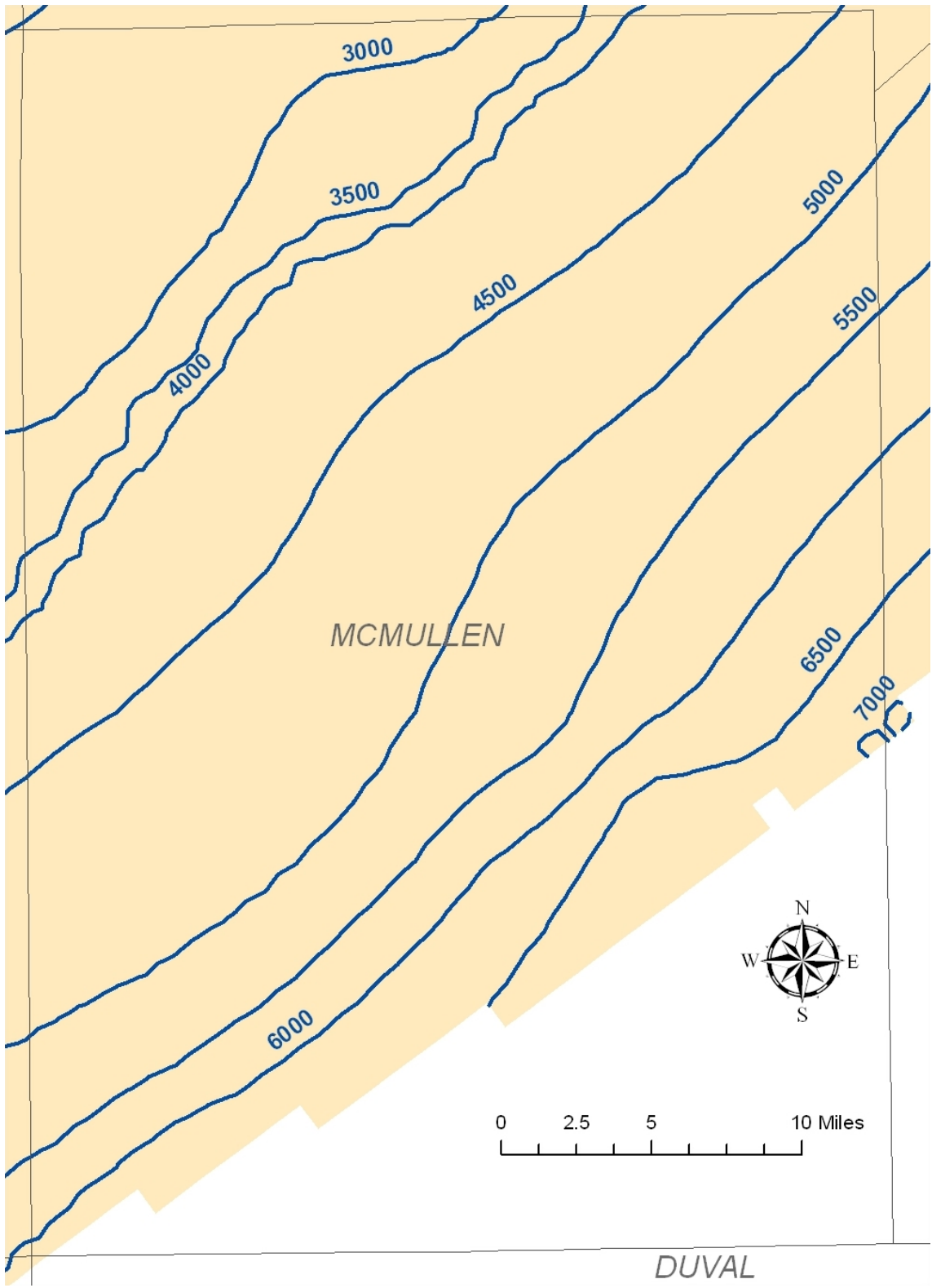


Figure 6. Average depth from land surface in feet to layer 7 from the groundwater availability model for the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers.

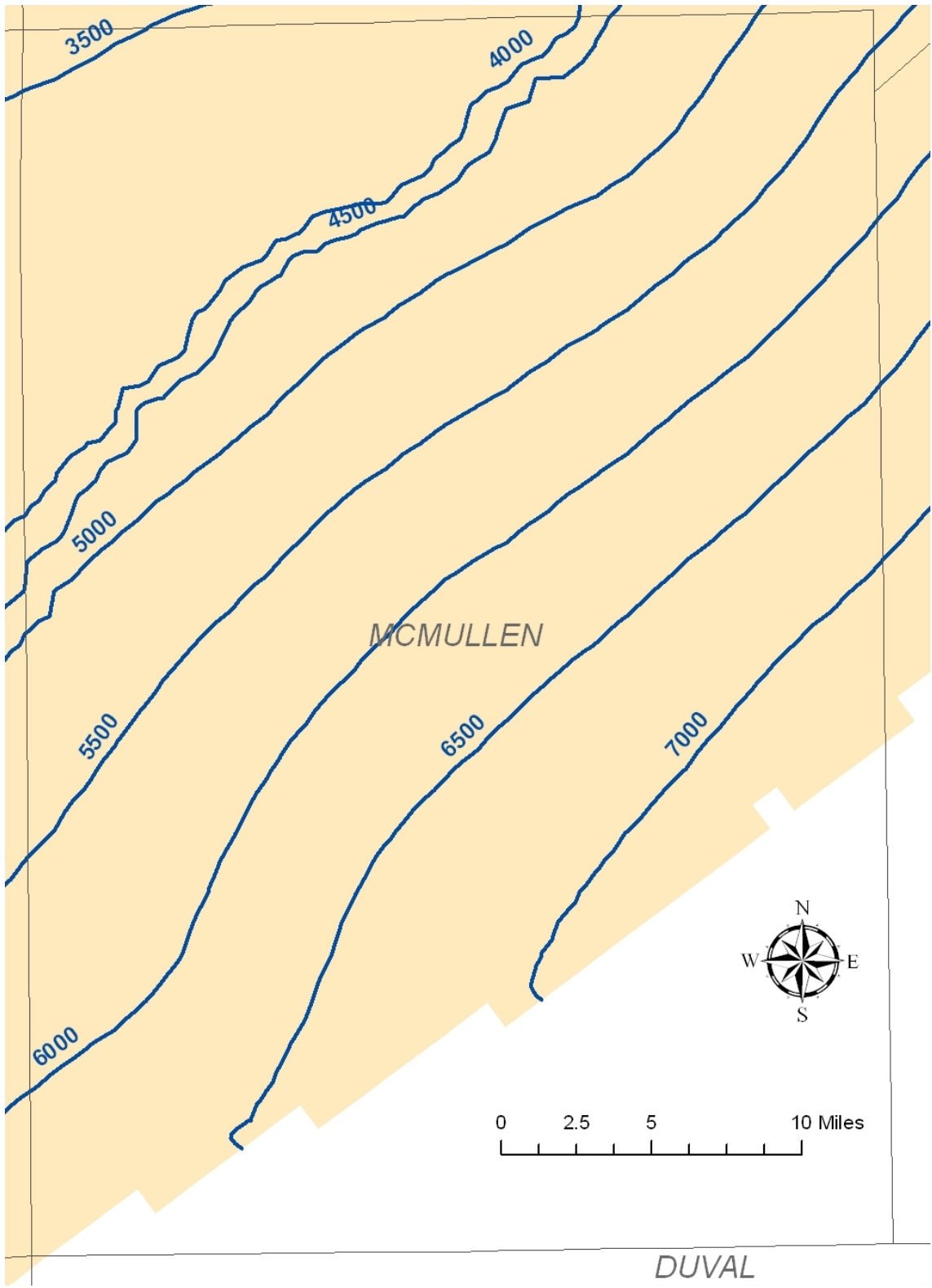


Figure 7. Average depth from land surface in feet to layer 8 from the groundwater availability model for the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers.