



Technical Memorandum

TO: File

FROM: Greg Pohll

DATE: June 25, 2024

SUBJECT: 2024 Spanish Springs Valley Groundwater Model Update Summary


The groundwater model for the Spanish Springs Valley (085) hydrographic area was updated using groundwater data collected during the recent drilling of the Spring Creek Well #10, located in the northern portion of the valley. The previous model update was conducted in 2020 and included a complete revision of the conceptual model and full model recalibration (Pohll, 2020). This update revised model hydraulic parameters near Spring Creek Well #10 and did not require modifications to the conceptual model, layer elevations, or model calibration.

The Spring Creek #10 production well was drilled just west of Paradise View Drive in Sparks, Nevada (see Figure 1). The well was drilled to a total depth of 320 feet below land surface and completed with 12 inch casing and a louvered screen from 190 – 305 feet.

Following construction, the well was tested using a constant rate pumping test at 500 gallons per minute for three days. The hydraulic conductivity was estimated at 12 – 15 feet per day. The model previously used a hydraulic conductivity of approximately 50 feet per day in this area but it was solely based on model calibration as there were no hydraulic data available in this area prior to the drilling of Spring Creek #10.

The key model revisions during this update included:

- The hydraulic conductivity in layer 1 (top layer) was downwardly adjusted from 50 feet per day to 12 feet per day based on the aquifer test at Spring Creek #10. A new pilot point was added at the Spring Creek #10 location and the layer 1 hydraulic conductivity was re-interpolated which resulted in a decreased hydraulic conductivity for a radial distance of approximately 3,000 feet from the well.
- The estimated specific yield was not appreciably different at Spring Creek #10 so the specific yield remained at 0.10 in the model.
- Drilling of the Spring Creek #10 monitoring well indicated the geology transitioned from unconsolidated sediments to semi-competent granite at approximately 375 feet below land



surface. This is consistent with the layer geometry in the model with a bedrock transition of approximately 350 feet so no changes were made to the layer elevations.

- No changes were made to model boundary conditions (e.g., recharge, discharge, etc.).

Figure 2 shows the location of the three hydrogeologic zones of interest that were pointed out in Pohll, 2020. In the west zone water levels have continued to increase since 2005 in response to decreased groundwater pumping and increased recharge from excess irrigation of landscaping. In the central area, groundwater levels are neutral to falling slightly as recharge from agricultural irrigation transitions to excess landscape irrigation recharge and less groundwater evapotranspiration. In the east, groundwater levels decreased at an average rate of two feet per year from 2005 – 2021 and then either stabilized or increased slightly after decreased pumping and increased well injection.

References

Pohll, G. 2020. Spanish Springs Groundwater Model, Truckee Meadows Technical Report, 101p.

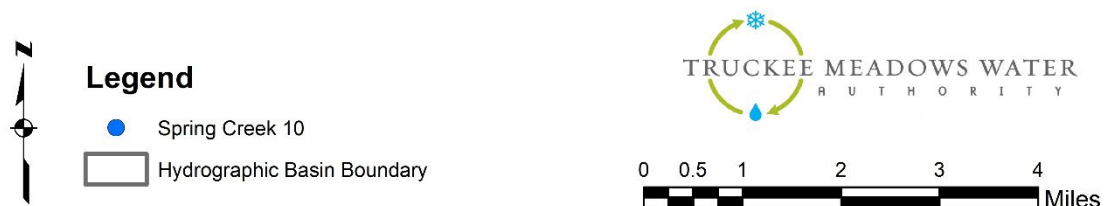


Figure 1. Location of TMWA's new Spring Creek #10 production well.

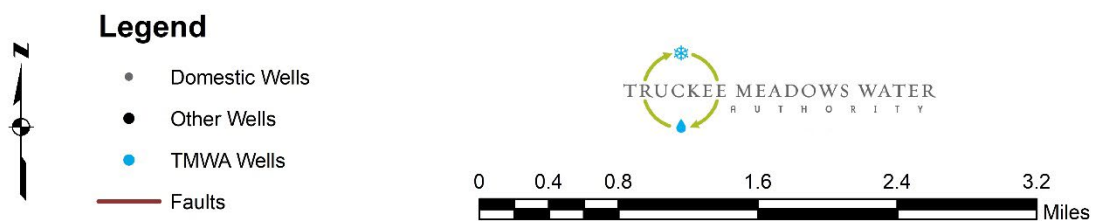
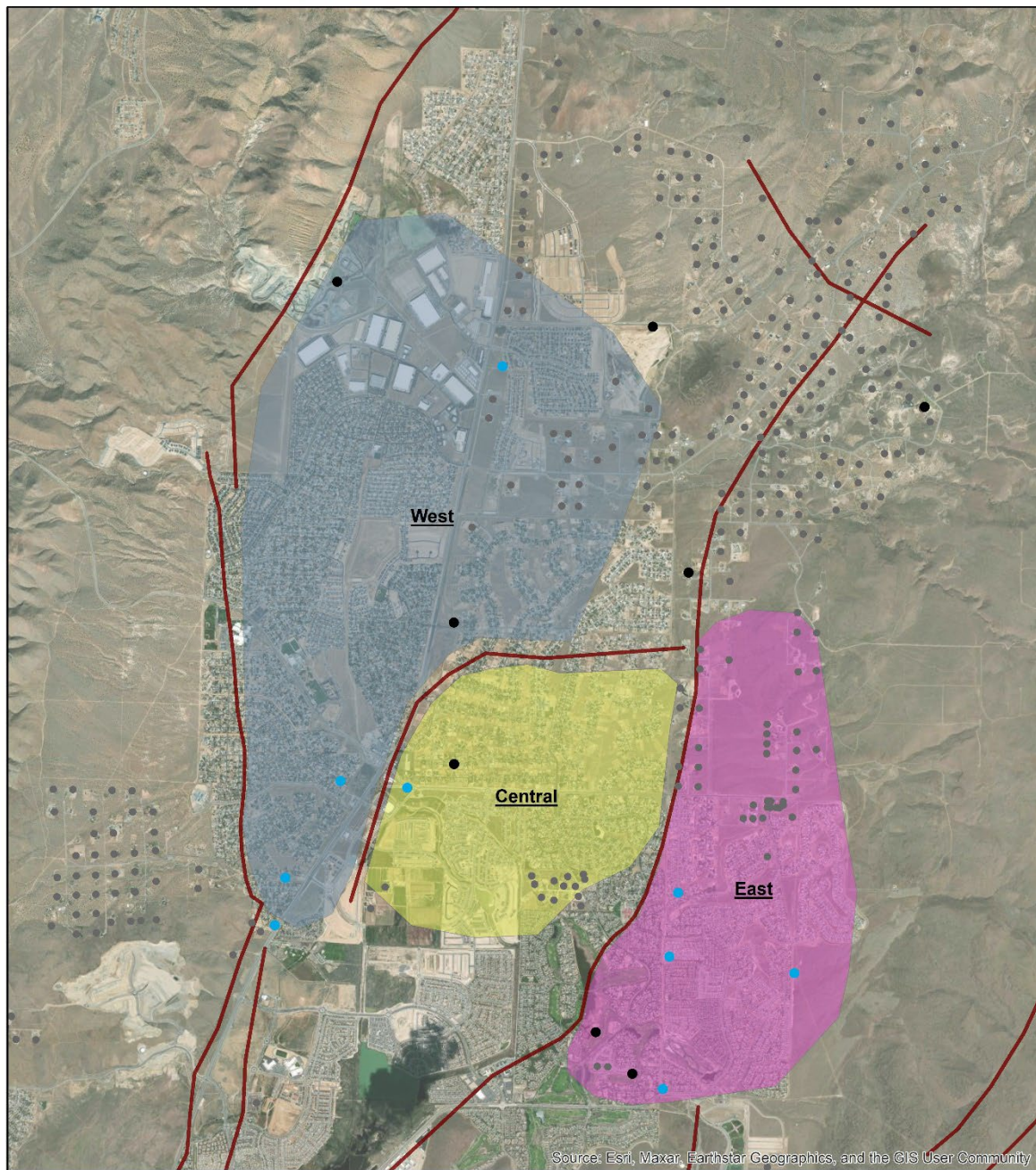


Figure 2. Location of domestic wells, TMWA wells, and wells for commercial, mining, irrigation, or recreation (other). The figure also shows the three hydrogeologic areas of interest and local fault zones.