UNDERSTANDING GROUNDWATER/SURFACE WATER INTERACTIONS ALONG THE TRUCKEE RIVER, EASTERN TRUCKEE MEADOWS, NEVADA

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Abstract The Truckee River and surrounding aquifers in the Truckee Meadows are sources for municipal water and some agricultural irrigation. The purpose of this study was to evaluate groundwater discharge into the Truckee River in the eastern Truckee Meadows. For much of the past the Truckee River was primarily gaining, but increased groundwater pumping has caused some sections to convert to losing reaches. Hence understanding groundwater and surface water interactions is key to managing water resources in the Reno and Sparks metropolitan area. Different methods are considered to estimate groundwater/surface water interactions in the eastern portion of the Truckee Meadows. A standard discharge differencing method is compared against estimates derived from detailed temperature data gathered along the streambed. A third method involves assessment of the potentiometric surface along the river corridor. This information will provide useful information on seasonal variations of the regional aquifer and its interactions with the Truckee River. Several data analyses using temperature as a tracer were used to verify and quantify groundwater discharge into the river. The amount of groundwater discharge into the river was quantified using a temperature mixing model and temperature data from ten sites over the span of six months. Results from the model indicate that groundwater discharge makes up 10-20% of the stream flow of the Truckee River in the study area.