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Snow to Water . . . A Long Way to Go!

My Science Fair project used experimentation to test how long it will take to refill the San Luis Valley unconfined aquifer in Subdistrict 1. I hypothesized that it would take 100 years to refill the unconfined aquifer.

To conduct this experiment I collected data from the past 30 years. I gathered data on how much water the farmers pull out of the aquifer, the amount of water sent through the Rio Grande Compact, the amount of water diverted from the Rio Grande River, and the average Snow Water Equivalent that the San Luis Valley receives. I found the correlation of all the data I collected which provided me the estimated answer to my problem.

My hypothesis was incorrect. If everything was to stay the way it is now and the unconfined aquifer is refilled to its historical level in 1976, which is 0, it will take 146.5 years, but by removing 40,000 acres of crop production, it will take 12.8 years. By maintaining the level of the aquifer between -200,000 and -400,000 Acre-Feet below the 1976 level, it will take about 82.5 years to refill the unconfined aquifer to that level. By removing 40,000 acres from farming production, and only refill the unconfined aquifer to -388,128 and everything else was to stay the same, it will take about 6.8 years to refill the unconfined aquifer. The quickest way to refill the aquifer is by eliminating 40,000 acres of farming production.