

HYDROLOGY AND ADMINISTRATION OF DOMESTIC WELLS IN NEW MEXICO

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ABSTRACT

Domestic wells in New Mexico are the subject of proposed policy on permitting and water planning. Legislative, administrative and regional discussions have taken up the subject of domestic well impacts on water resource sustainability, the value of water rights, subdivision growth, state obligations to deliver water to downstream states and other concerns. The hydrology of domestic wells is pertinent background for addressing these issues.

The status and operation of domestic wells in providing water service is outlined in terms of hydrologic conditions that affect household-water service from domestic wells. A properly-constructed well has allowance for future changes in aquifer water levels. Reasons for failure of domestic well service are related to as-built construction, electrical, mechanical, and aquifer conditions. Problems with domestic well-water service are more often related to well construction than to aquifer condition. Documentation of serviceability at the time of drilling or resale commonly is lacking. The average cost of domestic well service is comparable to that of public-water system service, except in remote areas where wells may cost less than piped water. Individual homeowners may construct and use wells with any yield and service-life, although county approval of subdivision proposals requires that water be shown to be available for specified periods and rates. A standard protocol for showing domestic well-water availability is not yet established, but would involve testing, recovery observation and computation.

Concerns about local domestic well interference or large numbers of regional domestic well's mutual interference are examined in terms of aquifer hydraulics. Domestic wells in poor aquifers generally do not interfere with one another because the area of influence is small, and do not interfere in good aquifers because the impact is small. Stream depletion from domestic wells is calculated by the New Mexico Office of the State Engineer to range from about 300 acre feet per year to 3000 acre feet per year among the mainstem rivers of the

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state in year 2000. Growth of domestic wells has been at a historical rate of 3.5 percent per year up to a year 2000 level of 136,816 permitted wells. Growth to year 2040 is projected to add 66,200 domestic wells. Reducing or eliminating the growth of domestic wells would have a quantifiable future impact on the water resource.

The foreseeable hydrologic results of several proposed management interventions in domestic well permitting are quantified by model calculation. Domestic wells average about 0.3 AFY of use, and about 0.1 AFY as consumption. Aquifer water-levels are simulated to decline 0 to 2 feet in most areas and up to 13 feet in the densest areas of domestic well growth to year 2040. Capping domestic well use at 0.5 to 1.0 AFY would save a few hundred AFY of water use.

The policy of intervening in growth of future domestic well permitting would be expected to save about 5,000 AFY by curtailing service from 66,000 domestic wells in the next 40 years. The 66,000 households would likely be hooked-up to community public water systems and then would consume an equivalent or greater amount of water in the alternative case. No area of the state qualifies as a critical management area on the basis of resource depletion due to the impact of domestic wells alone. Denying, reducing the amount of, or requiring indoor use only from domestic well permits could be counter productive if households hook-up to public-water service with a higher rate of use from the same aquifers. Metering would be costly to the user and to the administrative agency, with little associated benefit. A historic 40-percent non-compliance devalues the use of metering data. Requiring properly-constructed wells would reduce problems with water-service to residents of households who would be the beneficiaries of the added cost. A policy apparently beneficial to users and administrators of well-water service is to mandate proper construction, testing and certification of domestic wells when drilled or sold.