

COMMENTS ON DEVELOPMENT OF GROUND-WATER RESOURCES,
CURRENT INVESTIGATIONS, AND PLANS FOR FUTURE STUDIES IN NEW MEXICO*

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Withdrawal of water from ground-water reservoirs in New Mexico seemingly has stabilized since about 1955. In 1955 the volume of water pumped from ground-water sources was estimated to be about 1,500,000 acre-feet. Of this amount approximately 1,300,000 acre-feet, or 87 percent, was pumped for irrigation. In 1956 and 1957 it is estimated that about the same volumes of water were pumped for irrigation. Municipal and industrial uses probably have increased in the past few years, but the amounts of ground water pumped for these purposes have not been tabulated since 1955. Judging from the amount of water pumped by the city of Albuquerque, the increase may be about 10 percent. In 1955 Albuquerque pumped about 26,000 acre-feet, in 1956 about 30,000 acre-feet, and in 1957 about 28,000 acre-feet.

Greater precipitation in 1957 than in 1955 or 1956 tended to diminish the need for irrigation water and also some uses of municipal water. A reduction in cotton allotments reduced the use of water for cotton, but additional water was used on the remainder of the acreage for other crops. Some additional land has been put under irrigation. These and other factors apparently offset each other to the extent that about the same quantity of water was needed in 1955, 1956, and 1957, as mentioned.

The volume of ground water pumped in the State, large though it is, has no real significance unless the pumpage in each area is compared with the total amount of water available there. Much of the land in the State favorable for irrigation from ground-water supplies appears to have been developed at this time. Intensive studies have been and are being made in these areas by the Geological Survey in cooperation with various State agencies to learn more precisely the amount of water available or the changes in water levels that have resulted or are likely to result during development. Several large areas about which we know little at present, in the west-central, northwestern, and northeastern parts of the State, may contain ground water in sufficient quantities for irrigation. In general, however, on the basis of the general geology, it seems that the amount of fresh water in these areas is not as great as in those areas where ground water already is being utilized for irrigation.

Plans for further ground-water studies in New Mexico by the Geological Survey in cooperation with various State and local agencies include investigations in those areas where little is known of the ground-water resources and a continuing appraisal in those areas where ground water presently is being utilized in large amounts.

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Investigations of general ground-water resources on a county or part-county basis have been under way since 1948 in cooperation with the New Mexico Bureau of Mines and Mineral Resources, a division of New Mexico Institute of Mining and Technology, and the State Engineer Office. These studies have resulted in the publication of several basic areal reports on parts or all of several counties. Currently, basic reports are being prepared on Quay County and parts of Lea and Valencia Counties. It is anticipated that under this program a study of northern San Juan County will be started in the near future. It is planned, of course, to study the remaining counties of the State in this manner as funds permit, but it will require several years to complete such studies at the present level of activity.

The cooperative program with the State Engineer involves both the general county studies and detailed appraisal of the ground-water resources in those areas of the State where ground water has been developed intensively or where such development is related to surface-water supplies, such as in the Pecos and Rio Grande valleys. The purpose of the detailed studies is to determine the hydraulic characteristics of the water-bearing beds, the effects of pumping as reflected in changes in water levels, and the amount of water in storage. When these facts are known, the effects of continued or additional development on the ground-water supply or related surface-water supplies can be computed. Studies currently are under way in parts of the High Plains, the Pecos valley southward from the vicinity of Roswell, the Albuquerque area in the Rio Grande valley, the Gallup area in McKinley County, Grant County, Guadalupe county, and topographically closed or nearly closed basins such as Estancia and Tularosa Valleys and basins in the southwestern part of the State. General plans include beginning intensive studies in the near future of a major part of the Rio Grande Valley.

Other cooperative programs now in progress include those with the Pecos River Commission, the Pecos Valley Artesian Conservancy District, and the Jicarilla Indian Tribe. Studies for the Pecos River Commission involve consumptive use of water by phreatophytes, quality-of-water problems, and accountability of water in the Pecos Valley southward from the vicinity of Lake McMillan. The program with the Pecos Valley Artesian Conservancy District includes a study of the saline-water area in the vicinity of Roswell and an investigation of the recharge area of the Roswell basin. A program of observing fluctuations or trends in quality of ground water in the Roswell basin near the Pecos River also has been started. The program with the Jicarilla Indian Tribe involves a general appraisal of ground-water resources in the southern part of the reservation in Rio Arriba and Sandoval Counties, particularly in regard to the potential for irrigation supplies.

Some of the State agencies such as the New Mexico Bureau of Mines and Mineral Resources and the State Engineer Office also carry on ground-water studies independently of their cooperative programs with the Geological Survey. .

In summary, investigations of the ground-water resources already under way in the State and plans for additional studies are substantial. The magnitude of the effort reflects the State's commendable interest and concern for its water resources.