

## EXECUTIVE SUMMARY

### Description of Planning Process

The "*Regional Water Planning Handbook*", December 1994, provided by the New Mexico Interstate Stream Commission outlines the purpose and method for developing regional water plans for entities within the State of New Mexico. This handbook includes the template that should be followed when completing the water plan. This template lists all of the required elements for a water plan to be considered complete.

The planning process for the completion of the Lea County 40-year Water Plan (Plan) began in September 1998 when the Lea County Water Users Association (LCWUA) awarded the contract to Leedshill-Herkenhoff, Inc. (LHI). John Shomaker & Associates and Montgomery & Andrews, PA have sub-consulted with LHI in development of the Plan.

Four public meetings were held during the planning process of the Plan in different municipalities throughout Lea County. Each meeting was well attended and beneficial to both the consultant team and the communities. Numerous other meetings were held between the consultants, the steering committee, and/or the LCWUA Board of Directors. These meetings were advertised and made open to the public.

### Findings

#### *Water Supply*

Ground water resources in Lea County include hydrogeologic strata within five underground water basins declared by the New Mexico Office of the State Engineer (NMOSE). The basins from north to south are the Lea County Underground Water Basin (UWB), a very small portion of the Roswell UWB, the Capitan UWB, the Carlsbad UWB, and the Jal UWB. There are no perennial streams in the County, and surface water is limited to stockponds, playas, and ephemeral drainage.

Ground water in the Lea UWB is present in the Ogallala aquifer, which is part of the High Plains aquifer. Water from the Lea UWB is used for agriculture, domestic, municipal, domestic, livestock, commercial, oil and gas, mining, and industrial purposes. Ground water in the Basin is being pumped out at a faster rate than it is being recharged. Historic water level declines from pumping near Hobbs and along the New Mexico-Texas state line are as great as 50 to 70 feet.

The Jal UWB is the smallest in Lea County, and is the only other basin in the County that provides water for municipal use. The City of Jal is the primary user of water in the Basin. Historic ground water diversions from the Basin have had little impact on water levels, indicating that recharge is about in equilibrium with the amount of water being removed by pumping.

The other UWB's in the County provide water for livestock, domestic, mining, and the oil and gas industry. Water use in these UWB's is fairly limited because aquifers are unable to provide adequate quantities of water to wells for large users, or the water quality is poor.

The annual ground water diversion in Lea County in 1995 was 179,341 acre-feet, the majority of which was from the Lea UWB. Ground water diversions from Lea County are projected to more than double by the year 2040, primarily in response to increased agricultural demands for the dairy industry. While an ample number of water rights exist to meet this projected demand, the reality is there physically not enough water in the Basin to maintain an annual diversion of this magnitude.

#### *Water Demand*

The largest type of user of water in Lea County is non-municipal irrigation. The NMOSE has on record a total of 2,007 non-municipal wells with an associated water right of 344,625 acre-feet. The next largest user group is municipalities, with water rights of 48,035 acre-feet.

Water demand in Lea County increased 33% from 1985 to 1995 and is presently about 180,000 acre-feet per year. Similar increases in water use from 1985 to 1995 occurred in Irrigated Agriculture (33%), Public Supply (26%), Domestic (40%), Livestock (106%), and Commercial (21%) use categories. During 1995 to 1998 Industrial use increased 69%. Decreases in water use occurring during 1985 to 1995 in the Mining (-26%) and Power (-22%) categories; these declines are attributed increases to process efficiency. Present water use by category, as a percentage of Lea County's total, is 78% Irrigated Agricultural, 10% for Public Water Supply, 7% Mining, and 3% Power. Present water use by Domestic, Livestock, Commercial Reservoir Evaporation, and Recreation uses are all less than 1% of the total use.

Over the next 40 years –if unrestrained-- the water use in Lea County is estimated to increase to approximately 360,000 acre-feet, 105% greater than the 1995 total; this assumes the current CRP acreage returns to irrigated farmland. The largest part of this increase is anticipated to come from Irrigated Agricultural, which is projected to require 290,000 acre-feet in 2040, in response to demands for feed from Lea County's expanding dairy industry. If the current CRP acreage remains fallow, the estimated total annual water use in year 2040 is estimated to be a 340,000 acre-feet per year (of which Irrigated Agricultural will require about 270,000 acre-feet), a 94% increase compared to 1995.

All other water use categories are expected to increase in Lea County over the next 40 years. Specifically, 55% Public Supply, 58% Domestic, 364% Livestock, 58% Commercial, 134% Industrial, 32% Mining, 57% Power, and 55% Recreation are estimated above 1995 uses. These other categories account for a total of approximately 70,000 acre-feet per year of the total annual 2040 estimate.

## **Water Plan Alternatives**

Water plan alternatives for Lea County are intended to accomplish one or more of three things. 1) Conserve water, 2) Develop additional supplies, and 3) Management strategy for all water resources. Water conservation measures which will be evaluated include use of low energy precision applicators for irrigation, soil moisture monitoring, more dryland farming, xeriscaping, installation of low flow plumbing fixtures, implementation of an inclining block-rate rate structure for billing, and public education efforts to encourage water conservation. Methods of developing additional water supplies are development of deep aquifers, treatment of lower quality water, water importation, aquifer recharge, and cloud seeding. A management strategy for all water resources will include trying to get the Lea UWB closed to new appropriations, utilizing a ground-water flow model to predict the impacts from ground water pumping as well as ground water recharge projects, monitoring seasonal water level fluctuations, and monitoring water quality.

## **Recommended Water Plan for the Region**

The recommendations made within this report suggest ways Lea County can become proactive in managing its own water-related issues. The plan notes the supply problems that will occur if the County as whole does not implement a strategy to make their resource last longer. The recommended plan for Lea County involves evaluating the feasibility of the alternatives mentioned above, and implementing the alternatives that will prolong ground water resources in the County.