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**Study: Ground pumping depleting Big Mac levels**

By LORI POTTER , Hub Staff Writer

**HOLDREGE — Groundwater pumping along the North Platte River and its tributaries in the Nebraska Panhandle is depleting inflows to Lake McConaughy by an average of 123,000 acre-feet a year, according to a water study made public for the first time Friday.**

Lytle Water Solutions President Bruce Lytle of Highlands, Colo., reported his findings at the Central Water Users annual meeting.

The water users are customers of Holdrege-based Central Nebraska Public Power and Irrigation District. They irrigate 112,000 acres in Gosper, Phelps and Kearney counties with surface water stored in and transported from Lake McConaughy.

So what would 123,000 a-f more water in the lake mean to the district?

“A full delivery each of the last five years for our customers,” said CNPPID General Manager Don Kraus, and \$1.5 million in annual revenues if the water had run through Central’s hydropower plants.

Central irrigators last had a full 15-inches-per-acre water supply in 2004. Lake levels as low as 25 percent of full in recent drought years forced allocations of 6.7 or 8.4 inches per acre since 2005.

The 2009 allocation is 8.4 inches over 10 weeks. CNPPID Civil Engineer Cory Steinke said Lake McConaughy should hold 900,000 a-f of water by the end of March, which is 53 percent of full.

Kraus said he’s often asked by Central irrigators why groundwater irrigators upstream of Lake McConaughy still can pump 12 to 14 inches per acre.

Central filed an appeal in Scotts Bluff County District Court of a 12-inch allocation for the Pumpkin Creek watershed set by the Scottsbluff-based North Platte NRD. CNPPID officials say it’s not low enough to reverse streamflow depletions.

As part of the \$260,000 he has been paid by Central so far, Lytle previously did a stream depletions study on the Pumpkin Creek watershed.

His job for the basin study was to address major Cooperative Hydrology Study model deficiencies that are acknowledged by COHYST partners — state agencies, public power and irrigation districts, several NRDs — and peer groups, but not yet fixed.

Lytle’s model focused on manmade streamflow effects. It estimated current and future streamflow depletions linked to pumping from aquifers connected to the North Platte River and its tributaries.

“It’s all one system,” Lytle said, which means streamflows are changed when wells capture return flows from other irrigation projects, precipitation, seepage from reservoirs and canals, and even water coming directly from a stream.

He determined there can be “immediate and substantial” stream responses when nearby wells are turned off. The lag effect means full recovery can take many years. If groundwater use stays the same, depletions can continue to get larger.

Lytle’s observations started with the history of irrigation development. He said there were no upstream irrigation wells when Lake McConaughy was built and fewer than 700 by 1970. Nearly 700 were added after 1997, bringing the current total to 2,684.

His model shows annual depletions to Lake McConaughy inflows at 24,000 a-f in 1970, 78,000 a-f in 1997 and 123,000 a-f today. He projects lag-effect depletion growth at 141,000 a-f by 2050.

“This is not the effects of the drought,” Lytle said. The model ran data from irrigation and non-irrigation seasons, so pumping effects could be isolated.

COHYST models “severely underestimate” river depletions resulting from groundwater use. Lytle said his model shows streamflow depletions 4.4 times greater than the COHYST models.

Similar results were seen when measuring recovery potential.

Lytle’s model predicts that if all North Platte Basin irrigation wells were shut down, there would be a 62 percent recovery of streamflows in five years and a 73 percent recovery after 10 years.

Kraus and Drain acknowledge that it’s not realistic to shut down 2,684 wells. However, Drain said there was a 2005 proposal that asked the NPNRD to cut pumping in half to reduce river depletions.

A written report from the Lytle study will be done in April, Kraus said, and will be posted on Central’s Web site. A peer review is scheduled in June.

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