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Study: Flows in upper Rio Grande to drop

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Higher temperatures, faster snowpack melt and more drought in the Upper Rio Grande Basin are among the challenges water managers in Santa Fe and other communities in Northern New Mexico face due to climate change, according to a study released Dec. 11 by the U.S. Bureau of Reclamation.

The study is meant to help those who rely on the upper Rio Grande plan ahead for floods, dry times and changing precipitation patterns. The study backs up what other scientific studies have predicted is ahead for the region due of climate change.

The 169-page basin study is part of an effort to project the impact climate change will have on water basins around the West. The Upper Rio Grande Basin extends from headwaters of the Rio Grande and Rio Chama in Colorado to the Caballo Reservoir south of Albuquerque. The study was conducted by scientists from the bureau, Sandia National Laboratories and the U.S. Army Corps of Engineers.

A total of 19 basin studies are planned or underway around the West as part of the federal 2009 Secure Water Act.

Over the next few decades, water supplies in the upper Rio Grande are projected to decline by an average of one-third. The San Juan-Chama Project, which diverts about 110,000 acre-feet of water annually from the upper tributaries of the San Juan River to the Rio Grande Basin could see declines of one-fourth, according to the report. Both Santa Fe and Albuquerque now rely heavily on water from the San Juan-Chama Project.

Temperatures in the region are projected to rise 4 to 6 degrees Fahrenheit by the end of the century.

Santa Fe city and county water managers already are looking to add the results of the upper Rio Grande study to their water planning models. Rick Carpenter, project manager for the joint city and county Buckman Direct Diversion, which relies on San Juan-Chama Project water, said the city will plug the climate change data into the city's 40year water planning model. That model was designed to help the city juggle water demand with supplies from the river, reservoirs and wells.

In the upper Rio Grande study, researchers ran climate computer models more than 100 times to project the basin's future water supply through the end of the century. The study assumes water use and water management stays the same. Scientists focused on how temperature and

precipitation patterns have unfolded over the last several decades and what that says statistically about the decades ahead.

“Everything else is held constant so we can isolate the impact of climate change,” said Dagmar Llewellyn, a bureau hydrologist and one of the report’s authors.

Changes in water use through conservation or restrictions, new irrigation techniques and new forms of energy production could all reduce the amount of water people and cities need in the future. “The results of the study can be used as a foundation for scenario planning,” Llewellyn said.

Based on the Upper Rio Grande Basin study and other studies, “the usable water supply is expected to decrease,” Llewellyn said. “Though we don’t expect precipitation to change in terms of the overall annual total, it will change in terms of its timing, its spatial distribution and its form.”

Snowpack is expected to decrease across all elevations and is expected to melt faster than it has in the past. And New Mexico is likely to experience more of what it had this year — drought, and then floods.

The bureau hopes the basin studies will help communities plan their water future using the same set of facts. “The basin study program provides a common technical platform that allows communities to come together and talk about what the future will look like,” said Anne Castle, U.S. Department of the Interior’s assistant secretary for water and science. “That sounds minor, but it is not. Agreeing on the facts is not easy.”

Castle said a reduced water supply is the new reality many communities will have to deal with.