Playas Recharge the Ogallala Aquifer

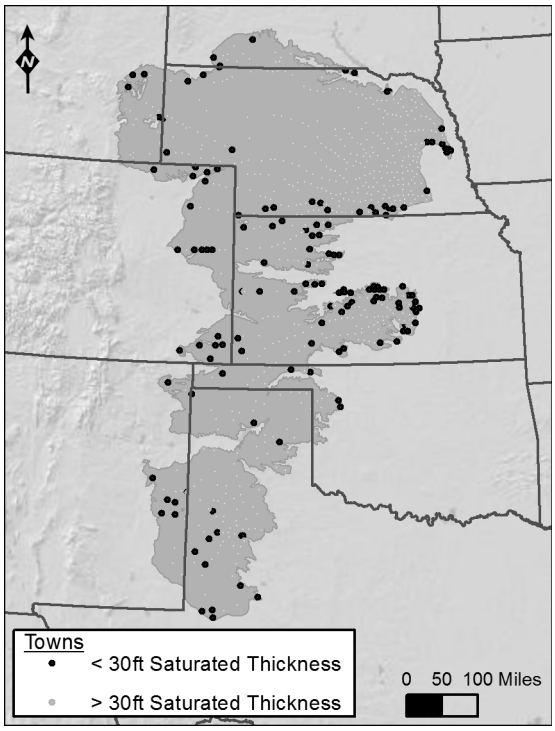
PLAYA LAKES JOINT VENTURE

Helping Towns Provide a Sustainable Water Future

Playas are a primary source of groundwater recharge and can be an important part of a sustainable approach to securing water for communities in the western Great Plains. Throughout the region, aquifer levels are decreasing. Many communities that depend on the High Plains (Ogallala) Aquifer are experiencing declining availability of groundwater. This decline is impacting nearly 150 towns and cities located above these areas (see map), which means their future water supply may be limited. Many of these towns are searching for solutions to continue providing abundant and clean water for residents including drilling more and deeper wells—just to provide the same amount of water. Playa Lakes Joint Venture (PLJV) can help communities prepare for a sustainable water future by cooperatively working to restore playas.

What You Can Do

Towns can restore and conserve playas to help meet future water needs. Restoration includes filling pits, ditches, and diversions, installing native shortgrass vegetation buffers, and managing surface water runoff to flow into playas. By diverting stormwater into the playas, towns can keep roads and property from flooding while increasing the amount of groundwater recharge.



Many towns depend on water from the Ogallala Aquifer. Increasing recharge by restoring and conserving playas can help municipalities develop a sustainable water supply for future generations.

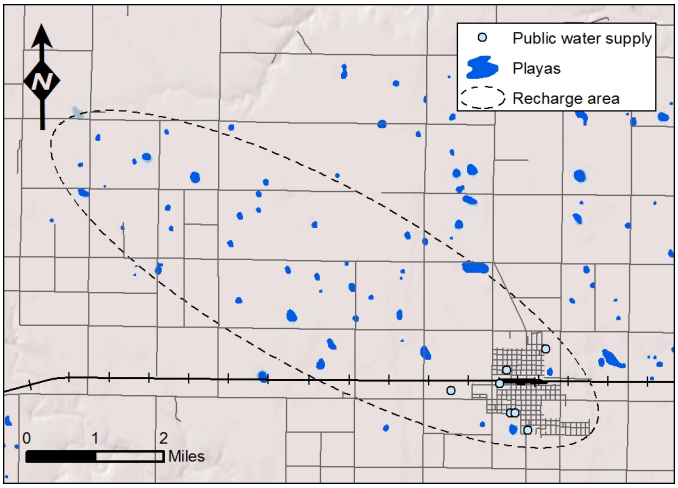
Photo: © photodee / 123RF Stock Photo

Low-tech, low-cost solutions for increasing the amount of water flowing through playas—while limiting sediments and impurities—are available. For example, in New Mexico, several producers have developed innovative methods for diverting water and filtering it before it enters the playa, and the New Mexico Environment Department developed a demonstration project to keep water flowing into playas while removing excess sediment and protecting roads from runoff.

It is also important to reduce or eliminate competing water use. Although playas are a primary source of recharge, withdrawals from irrigation greatly exceed recharge from playas. However, some towns have found that when nearby well use is reduced or turned off, water levels in the aquifer rebound. Around the region, people are talking about and experimenting with how to lessen the amount of water used for irrigation and may be interested in programs which offer technical and financial support to retire irrigation wells near towns and municipal wells. For example, in northwest Kansas, a group of landowners formed a Local Enhanced Management Area and collectively agreed to reduce their total irrigation over a five-year period. The result has been aquifer levels that have stabilized or even increased across the area (*see Learn More*).

How We Can Help

PLJV can work with communities to develop a restoration plan for the playas that feed the aquifer below town wells. This plan will identify opportunities, such as grant programs, to protect healthy playas and conduct restoration work for those that have been modified. Having healthy playas to the northwest of the town's water supply provides the most benefit since water in the aquifer flows in a southeasterly direction.



In this hypothetical example, restoring playas to the northwest of town (those inside the oval) helps provide water to the town wells (represented by the light blue dots).

Benefits You'll See

More Water

Groundwater recharge is a continuous process; the water recharging through playas today will be available for use by the next generation. A healthy, functioning system of playas can provide high-quality water to help support the needs of a small town. Playas across the region recharge at an average rate of about three inches per year*—that's three inches of water the size of the playa moving toward the aquifer each year. For instance, a four-acre playa, which is a very small one, sends an acre-foot of water toward the aquifer each year. That's 325,851 gallons of water, more than enough to supply a couple of families for a year.

Cleaner Water

The benefit goes beyond simple recharge; playas clean the water as it travels toward the aquifer. Studies show that water reaching the aquifer through playas is of higher quality than that going through other pathways. This happens in two ways: first, as rainfall and runoff travel toward the playa, the surrounding grasses trap sediments, which can carry contaminants into the playa; as water moves through the clay floor of the playa, a second cleaning process occurs as the soils beneath the playa remove nitrates and other dissolved contaminants.

Recreational and Educational Opportunities

Healthy playas provide habitat for wildlife and recreational activities for the local community. Wet playas attract thousands of ducks, geese and a variety of shorebirds during migrations, providing local hunting and birdwatching opportunities. Also, playas are a living laboratory where students can learn about wetlands, geology and the history of the region.

**Gurdak and Roe, 2009. This report provides a review of all the playa studies, with calculated recharge rates, up to 2009. Three inches is an approximate average.*

Learn More

Science behind how playas recharge the aquifer
http://pljv.org/playas-recharge

New Mexico playa demonstration project
http://tinyurl.com/nm-playa-demo

Kansas landowners form LEMA to reduce irrigation
http://tinyurl.com/kansas-lema

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