

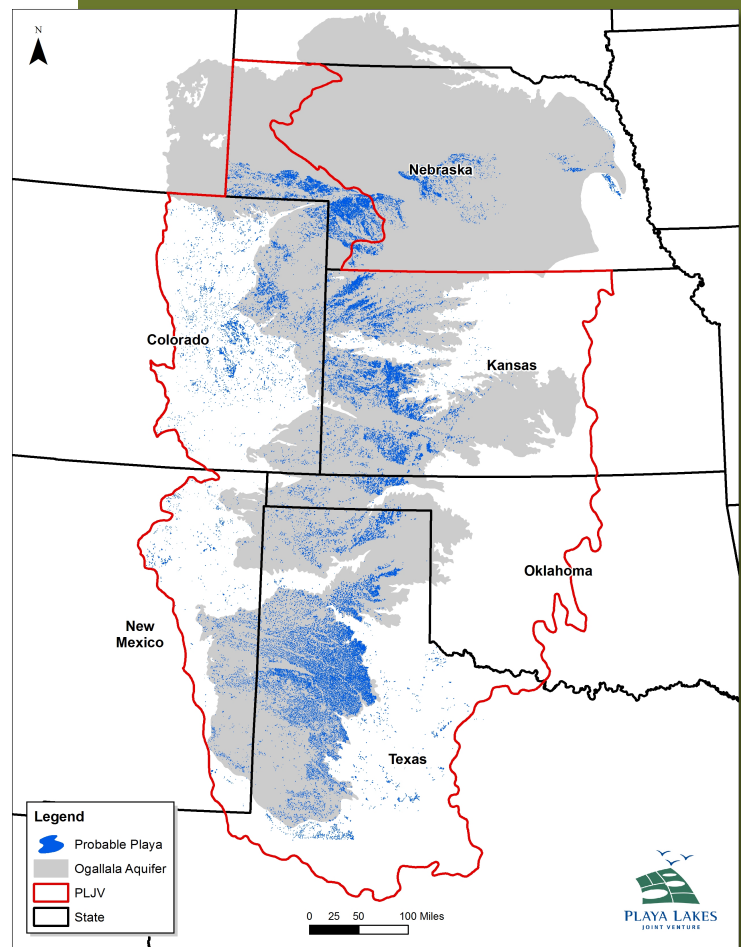
Playas & the Ogallala Aquifer



the connection

The abundant water found in the Ogallala Aquifer, which underlies parts of eight states, drives much of the agricultural production in the western Great Plains. This water resource—responsible for 30 percent of all the groundwater used for irrigation in this country—transformed the ‘Dust Bowl’ of the 1930s into an agricultural production engine that now supplies one-fifth of the wheat, corn, cotton and cattle produced in the United States. But the aquifer can’t last forever, not at this rate. In large areas of Texas, Oklahoma and Kansas, the water level in the aquifer has declined by 50 to 175 feet since pumping began. In many areas, wells are being decommissioned as their ability to supply water dwindles.

As communities struggle to deal with drought and declining water tables, a major, yet relatively unknown, natural resource is playing a critical role in replenishing and protecting the region's water supply. Research has shown that playas—shallow, seasonal wetlands scattered across the western Great Plains—are the primary source of recharge for the Ogallala, contributing up to 95 percent of the overall return of water to the aquifer. Playas lie at the lowest point in a large, closed watershed, collecting rainwater and runoff from surrounding uplands. During dry periods, a playa develops deep cracks and fissures in the clay bottom, which are channels for recharge. Maintenance of functioning playas is critical to sustaining irrigation-based agricultural economies of the western Great Plains. But many of the approximately 80,000 playas throughout the region are not able to recharge the aquifer at all. To function properly, playas need excess sediment removed, a filtering grass buffer around the edges, and a watershed that allows water to reach the playa.

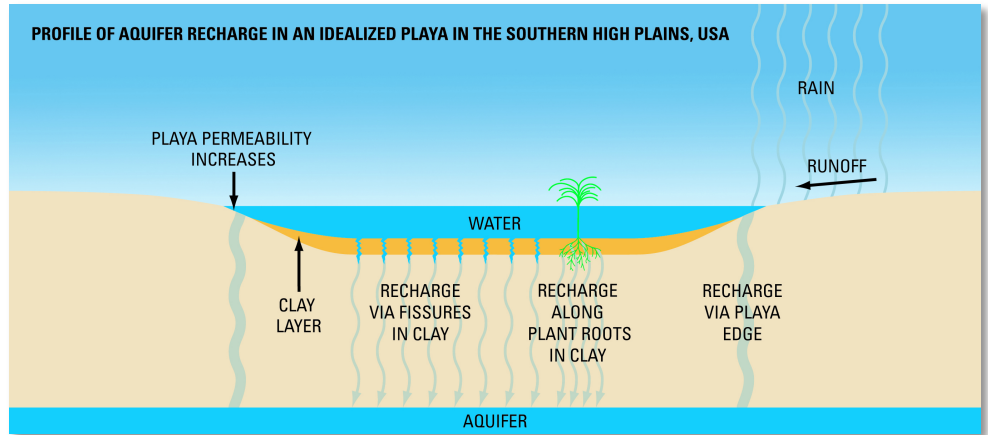


Ogallala Aquifer and Probable Playas

Wondering how many playas are in your backyard? Playa maps are available from the Playa Lakes Joint Venture that identify the locations of more than 75,000 playas in counties across six states in the region. These maps can help people identify wetland resources on their properties or in their area. Visit our website: www.pljv.org/landowners/playas/find-playas

how aquifer recharge works in an idealized playa

Aquifer recharge occurs through playa basins and along the perimeter of playas. When a dry playa receives a surge of water from rainfall or associated runoff, water flows into the playa basin and penetrates the clay layer through large cracks and plant root openings in the floor. These cracks eventually swell shut and become impermeable as the clay absorbs more water. Recharge also occurs along playa perimeters where clay is thin or non-existent.



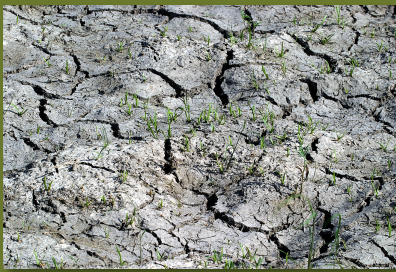
healthy playas are critical for groundwater recharge

Current research on playas in the Southern High Plains of Texas found that recharge rates in playa basins exceeds three inches per year in unaltered playas. But more than 70 percent of playas have been altered from their natural state by tilling, pitting, intentional filling or filling through additional accumulated sediments.

Of all these, culturally accelerated sedimentation is the most critical threat to playa function, especially in regard to groundwater recharge. Culturally accelerated sedimentation occurs on all playas that are surrounded by tilled lands. Water from rain and irrigation carry soil into playas, gradually filling them. Build-up of additional sediments reduces the volume of water playas can hold and increases the rate of water loss through evaporation, thus limiting recharge.

help protect playas through conservation practices

Conservation practices used to protect playas include establishing native grass buffers around playa perimeters to filter out soil and agricultural contaminants present in runoff, and filling in man-made pits so water can reach the entire basin and all recharge pores. There are several Farm Bill programs available to private landowners wanting to protect playas on their land. Contact your local Natural Resources Conservation Service center for more information.



Dry Playas Still Function

One might think that a dry playa doesn't have much to offer. But the truth is that playas require periods of drying out for proper function. During dry periods, cracks that are essential for aquifer recharge form in the clay bottom. When this layer dries, it develops deep cracks and fissures, which are channels for recharge. If playas never dried out, recharge to the Ogallala Aquifer would be significantly compromised.

Playa Lakes Joint Venture
2575 Park Lane, Suite 110
Lafayette, CO 80026
303.926.0777

www.pljv.org