

WATER MARKET INSIDER

Q4, 2024

THE OGALLALA AQUIFER MARKET ACTIVITY AROUND A FINITE RESOURCE

The Ogallala Aquifer is the largest aquifer within the United States, underlying a total of 111.8 million acres and spanning eight states. It is the source for 40% of all groundwater used for irrigation within the United States and supports the production of nearly \$35 billion in agricultural products each year. Some regions of the aquifer are experiencing unsustainable pumping. The aquifer is projected to be able to sustain current demands for the next 50 years, with many regions of the aquifer expected to run dry in a much shorter time frame. This level of overuse is in part due to the wide variety of groundwater management practices and levels of regulation seen in the states that overlie the aquifer. In some states, water users face strict regulation, while

others have little to no oversight of groundwater pumping or barriers to overuse.

Water markets often develop in areas where scarcity or regulation causes market reallocation of a limited resource. As a result, WestWater has been monitoring the Ogallala region for water market activity. Our research on the Ogallala was last documented in 2017, focusing on market activity in the southern states of the Ogallala Aquifer: Colorado, Nebraska, Kansas, Oklahoma, New Mexico, and Texas. This Water Market Insider provides an update to this prior work, examining the water market in these states to identify trends and the current state of the water market surrounding the Ogallala Aquifer.

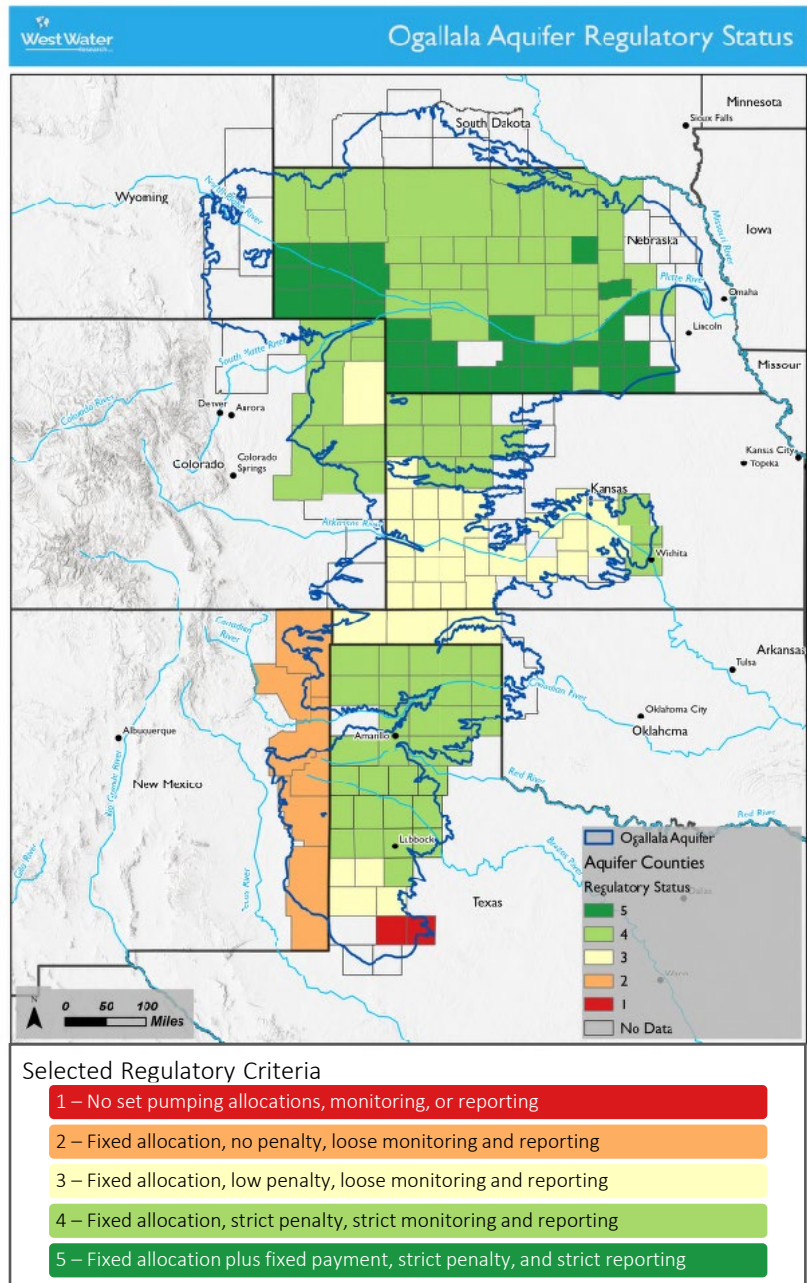
THE OGALLALA AQUIFER: MARKET ACTIVITY AROUND A FINITE RESOURCE REGULATORY ENVIRONMENT

Each of the states examined has some form of regulatory body or entity tasked with overseeing water use. In most states, regulation is a joint effort between a state-level entity or agency and established local districts. Governing bodies such as the Texas Groundwater Development Board or the Colorado Groundwater Commission are examples of state entities with broad initiatives and authority. While state-level bodies exist, the majority of regulation implementation and monitoring is done on a local level, often by groundwater districts, with larger entities offering guidance and recommendation on policy to the districts.

While each state has some form of regulatory policy regarding groundwater use, the policies themselves differ significantly from state to state. The most common types of regulation seen include pumping allocations and limits on permitting of new wells. Pumping allocations have been set throughout the region and generally fall between 1.0 AF per acre to 5.0 AF per acre limit. Well permitting has also become a growing concern in several states and limits on new permits have been observed. However, while some areas are closed to new well appropriations, other areas allow for new well development with few limitations.

Those states with the highest levels of regulation on groundwater use also see the highest levels of water market activity. This is consistent with water market activity observed in other regions of the Western US, with the definition and restriction of water use through regulation driving transaction activity among local water users. As water stress in the Ogallala region increases, regulation and conservation can play a larger role in water markets as historically relaxed states adopt new practices aimed at aquifer recovery.

Figure 1: Regulatory Level by County based on Selected Criteria



THE OGALLALA AQUIFER: MARKET ACTIVITY AROUND A FINITE RESOURCE

MARKET OVERVIEW

Figure 2: Number and Volume of Transactions Each Year by State

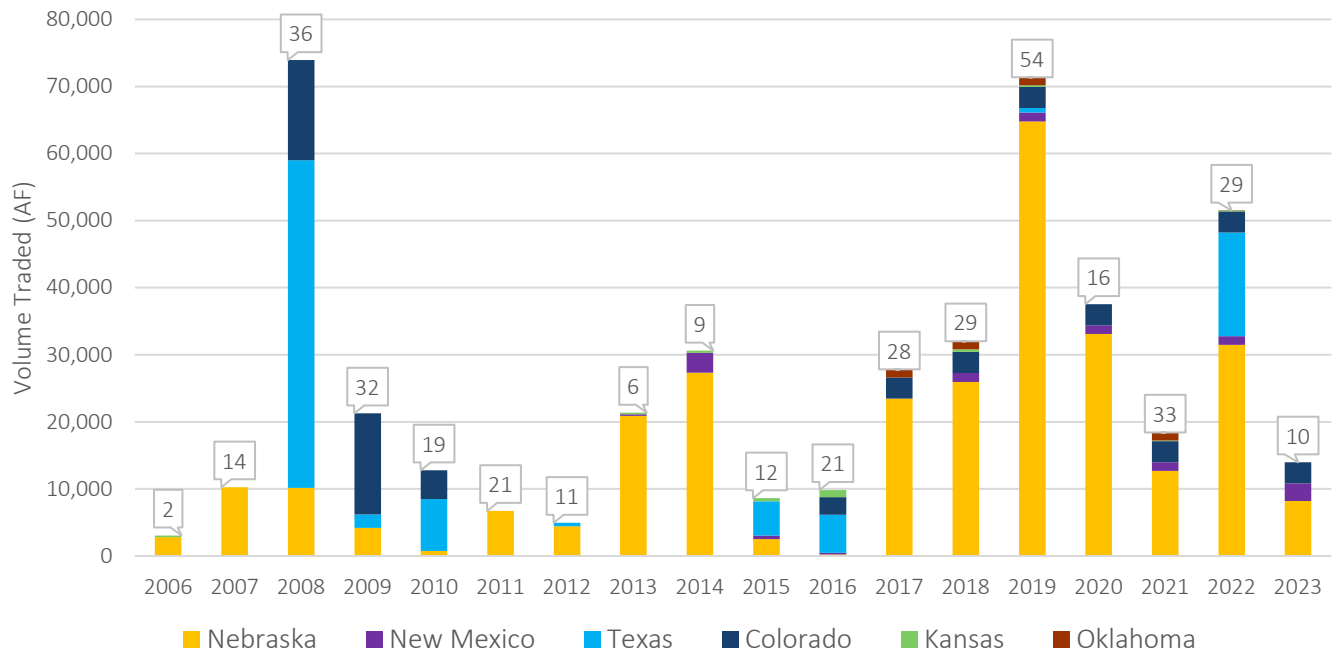


Table 1: Recorded Water Transactions, 2018-2023

State	Leases			Sales		
	No.	Value (\$)	Volume (AF)	No.	Value (\$)	Volume (AF)
Colorado	–	–	–	–	\$57,020,833	22,031
Nebraska	106	\$10,611,511	193,182	2	\$339,795	128
Kansas	10	\$546,197	1,279	–	–	–
New Mexico	9	\$1,645,480	9,232	–	–	–
Oklahoma	46	\$3,671,958	11,323	–	–	–
Texas	–	–	–	3	\$30,340,885	16,663
Total	171	\$16,475,146	215,016	5	\$87,701,513	38,822

THE OGALLALA AQUIFER: MARKET ACTIVITY AROUND A FINITE RESOURCE MARKET OVERVIEW



Overall water trading activity in the Ogallala Aquifer region is volatile and comprised of a mix of consistent programmatic water purchases by local districts and intermittent large-volume purchases by municipal entities. Over the past 15 years, average trading volume has been about 20 trades per year with a volume of 35,000 AF per year. This average blends a range of annual trading from less than 10,000 AF to more than 70,000 AF each year. Prices have increased for both leases and sales over the past 10 years.

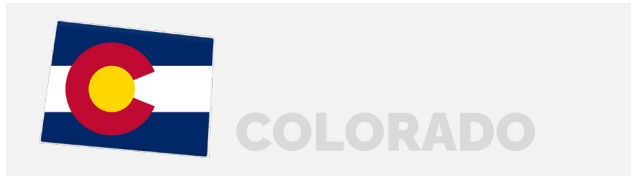
There have been two main drivers of water market activity in the Ogallala Aquifer region: conservation and municipal demands. Conservation efforts have been a key facilitator of water markets in the Ogallala Aquifer region, especially in states such as Colorado and Nebraska. States with strict and defined resource management plans have experienced large volumes of outright purchasing or leasing for groundwater/surface water recovery. Water trades for conservation purposes represent 85% of the total volume transacted in the recent period 2018 to 2023, compared to only 48% of

volume traded in the previous research period (2008 to 2017).

Municipal purchasing has also played a large role in water markets throughout the Ogallala region. The two largest water transactions were completed to support municipal water suppliers. A single transaction from the Canadian River Municipal Water Authority (CRMWA) represented 53% of the total value of all transactions between 2008 and 2017. Similarly, a single transaction from the city of Amarillo represented 26% of the total value of all transactions between 2018 and 2023.

Comparing our previous and current research periods, municipal purchasing activity has slowed, and conservation purchasing has remained constant but has transitioned from sales to leases. The increase in leasing activity has occurred in Nebraska through the Platte River Recovery Implementation Program and annual leasing activity of local Natural Resource Districts (NRDs).

THE OGALLALA AQUIFER: MARKET ACTIVITY AROUND A FINITE RESOURCE STATE-BY-STATE RUNDOWN



The Republican River Water Conservation District (RRWCD) has been the dominant buyer of water entitlements in Eastern Colorado. Since 2016, the RRWCD has spent \$65 million to retire 17,000 irrigated acres using two Federal programs: the Conservation Reserve Enhancement Program (CREP) and the Environmental Quality Incentives Program (EQIP). An additional 8,000 irrigated acres are expected to be retired by 2029 at a cost of roughly \$30 million. After 2029, no set management plans are in place signaling conservation purchasing in Colorado is likely to slow.



Water market activity in Nebraska has been driven by conservation purchasing by local Natural Resource Districts (NRDs) and the Platte River Recovery Implementation Program (PRRIP). These entities have been the most active buyers across the Ogallala region. Water trades in Nebraska have shifted from sales to leases. Looking to the future, NRDs and the PRRIP are likely to continue leasing water to meet their ongoing goals of groundwater sustainability and endangered species recovery.



The Central Kansas Water Banking Association (CKWBA) has emerged as a key facilitator of water transactions in Kansas. The bank provides a platform where users can deposit water into the bank for conservation purposes and transfer water between individual users. Trading activity through the CKWBA remains light, with only 32 water transfers from 2018 to 2024, of which only 10 were compensated trades. In Kansas, conservation purchasing is expected to increase in the near future as the CKWBA has moved their Compensated Allocation Management Program (CAMP) to the forefront of their goals.

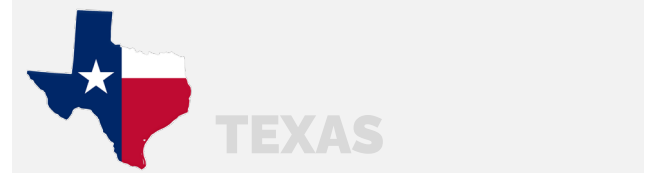


Water market activity in Oklahoma consists of municipal wholesale water trades to serve industrial and commercial uses. Conservation is not expected to play a role in water market activity as management districts and state regulators have not made this a priority.

THE OGALLALA AQUIFER: MARKET ACTIVITY AROUND A FINITE RESOURCE
STATE-BY-STATE RUNDOWN



Water market activity in Eastern New Mexico is driven by industrial buyers, moving water from agriculture into the oil and gas sector. Municipalities have also been a market buyer, with Edmonton Power Corp (EPCOR) entering into several multi-year water leases while awaiting development of the Ute Pipeline project to source water from Ute Reservoir.



Water markets in Texas are driven by municipal demand for new water supplies. Municipal purchases amounted to just over \$30 million to transfer 16,700 AF. Most of this trading value and volume comes from a single large purchase by the City of Amarillo in 2022. Conservation purchasing may be a growing driver of Texas water market activity. The Texas Water Development Board (TWDB) has started to promote water conservation and aquifer storage and recover (ASR) projects due to declining groundwater conditions.



WestWater would like to thank Ben Morrisroe for his research efforts on the Ogallala Aquifer during his 2024 summer internship with us. Ben recently graduated from Colorado State University with a B.S. in Agricultural Business and a minor in Environmental and Natural Resource.

ABOUT WESTWATER RESEARCH

WestWater Research is the leading economic consulting firm in pricing, valuation, and transaction advisory services for water rights and water resource development. Our clients rely on our expertise to make sound water resource management and financial decisions when water demands increasingly outpace available supplies.

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