

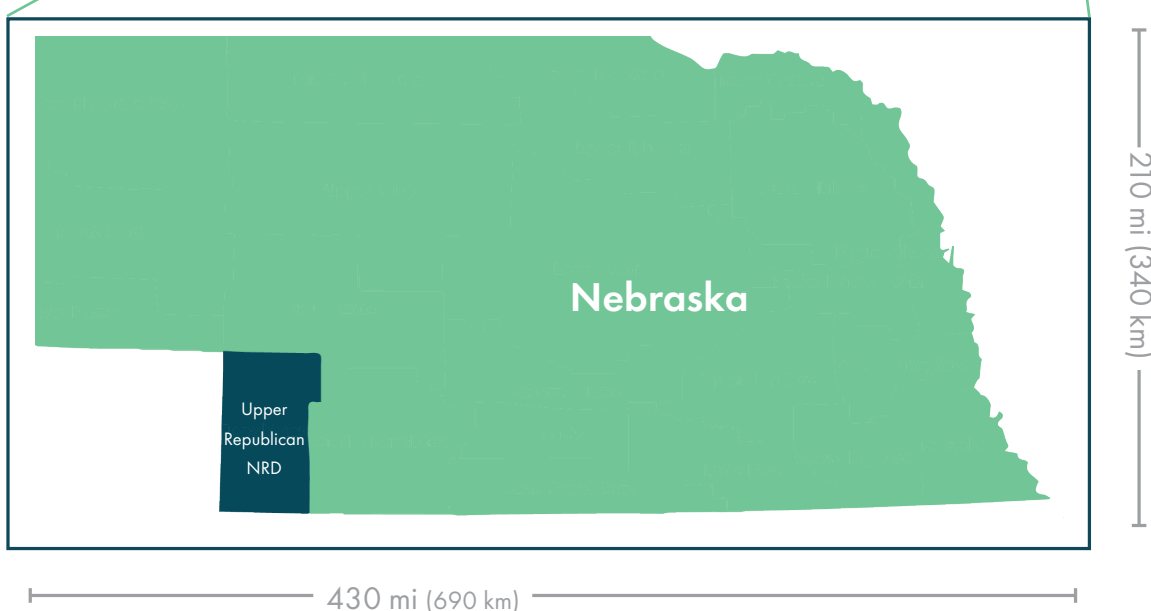
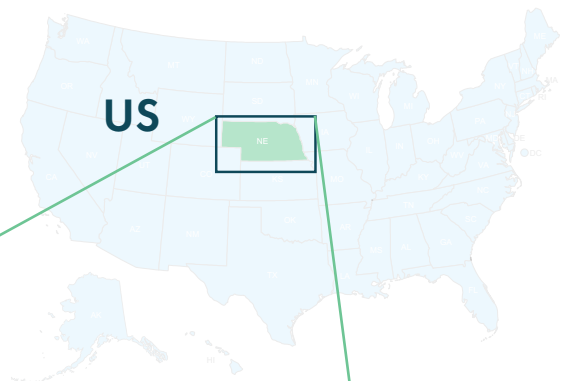
TRANSFERRING GROUNDWATER IN THE HIGH PLAINS

Upper Republican Natural Resources District, Nebraska



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- ▶ In the Upper Republican Natural Resources District (URNRD), water availability for crop irrigation is highly variable. Irrigation demand is generally high due to low average annual rainfall. The URNRD is accountable for the impacts of groundwater pumping on streamflow governed by interstate compact. The district is also concerned about local long-term groundwater depletion.
- ▶ Groundwater use for irrigation is restricted, with mandatory metering and a 5-year allocation system that allows banking of allocation between periods. Many growers are able to use their banked allocation and, to date, have not needed to stop irrigating even during extended drought periods. Growers who have been using their entire base allocation in prior years, however, don't have banked allocations and sometimes need to acquire more groundwater to irrigate their crops, especially during dry years.
- ▶ Growers can formally transfer their groundwater pumping rights separately to land ownership. To be approved, groundwater transfers must be determined to have no net negative impacts on streamflow. Some adjustment to the amount of groundwater rights transferred may be needed to avoid expected net impact resulting from the transfer.
- ▶ Formal groundwater transfers are usually small and, despite the absence of administrative fees, are not very frequent. Transaction activity appears to be positively correlated with crop commodity prices.
- ▶ Informal groundwater transfers are common. These arrangements allow for localized and restricted reallocation of groundwater pumping rights with very little administrative burden and no transfer of the property right.





BACKGROUND

URNRD, in the southwestern corner of Nebraska, shares borders with Colorado and Kansas. The district receives 17-20 inches of rainfall annually. There are 450,000 agricultural acres irrigated with groundwater. Only about 3,000 acres are irrigated with surface water. The main crops are corn and soybeans, though URNRD producers also grow forage, potatoes, and dry edible beans. URNRD sets a 5-year pumping allocation of 65 inches, and meters and monitors all groundwater wells to verify compliance. Banking of unused allocation, called “carryforward” in URNRD, is allowed. Usage above the 65-inch allocation within the given 5-year period is permitted. However, if the usage of carryforward in the grower’s account exceeds 7.5 inches during an allocation period, the grower incurs a quantitative penalty to their future allocation.



GROUNDWATER TRANSFERS

In URNRD, to prevent an increase in water use, the formal groundwater transfer process limits the quantity of pumping rights transferred to the annual average percentage of the allocation that was used from the originating well during the last 5 years. The formal process also requires estimation of the potential impacts of the transfer on streamflow resulting from surface water-groundwater interaction. The district estimates the 50-year impacts of any formal transfer on streamflow (40-year impacts are used in areas not covered by the interstate Republican River Compact). Analyses are based on pre-existing outputs of a hydrological model and do not incur a fee. On average, there are between 6 and 12 formal transfers annually. Together, these don’t exceed more than 3,000 irrigated acres per year. Most transfers are for crop production, but occasionally groundwater has been transferred to feedlots or an ethanol plant. Groundwater transfers need to be approved by the Board of Directors, but the administrative process for informal groundwater transfer agreements is much simpler than for formal transfers. Informal transfers, which allow combining allocations of tracts, do not require stream impact analysis, and as a result, occur frequently. Roughly 70% of wells in URNRD are in pooling agreements.



TRANSFER DIRECTION & BOUNDARIES

Formal groundwater transfers can occur approximately within a 36-square mile block centered on the section of the originating well (a “floating township” in URNRD terminology). Groundwater pumping rights can be transferred further than 6 miles if the transfer reduces expected stream depletion. If the transfer doesn’t lead to higher streamflow depletion based on URNRD’s data, no adjustment is made to the amount of water transferred. Formal transfers from lower to higher streamflow depletion are discouraged, and for them to be approved, the quantity of groundwater pumping rights transferred may need to be adjusted so that there is no net increase in stream impacts. Informal transfers typically allow growers to combine their groundwater allocations across multiple fields within a 36-mile block without needing to account for changes in expected streamflow impacts.



OTHER POINTS OF INTEREST

(i) URNRD was one of the first agricultural water districts in the world to implement mandatory metering for all wells, starting in 1978 and completed by 1982; (ii) URNRD has acquired several large agricultural operations, both in its own area and in adjacent areas, retiring the land from agricultural production and instead using the water rights for stream augmentation to maintain compliance with the Republican River Compact; (iii) Unlike in some other western Nebraska NRDs, there are only three fields within URNRD with both surface and groundwater rights available.

Transfer means a change in the groundwater use location, purpose, or point of withdrawal.

A **formal transfer** is a transfer of a property right. In URNRD, formal transfers of groundwater rights between wells are called “transfers.”

An **informal transfer** is a reallocation of water across space/time without transfer of a property right. Informal transfers, often called “pooling,” allow joint operation of two or more irrigated tracts.

Transfer direction must be considered when there are concerns about impacts of pumping on streamflow.

Transfer boundaries define the area within which groundwater can be transferred.

*Transferring Groundwater Factsheet #2, Upper Republican Natural Resources District
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