WATER WOES

THE TRUE COST OF CARBON CAPTURE IN IOWA

Summit Demands Our Water

Summit Carbon Solutions is proposing carbon capture projects at 31 ethanol plants across Iowa. Locally, statewide and regionally, these projects threaten to deplete public water resources in our aquifers.

Water would be used in Summit's operation to capture carbon dioxide at the ethanol plants for dewatering, dust control, hydrostatic testing, and to cool the carbon dioxide because compression of the carbon dioxide generates heat. The amount of water that would be needed for the production of ethanol and Summit's proposed carbon capture projects far exceeds the water usage for communities in a 10-mile radius surrounding the plants.

Many water uses in Iowa like power generation, public water and irrigation use water from Iowa's alluvial aquifers, which can recharge relatively quickly as compared to Iowa's deep aquifers. 90% of the water used for ethanol production comes from Iowa's deep aquifers which are in danger of not being adequately recharged.

Iowa's water resources are not endless. If Iowa DNR continues to hand out water withdrawal permits like candy when Iowa has never done a comprehensive study to determine how much water we have, Iowa is facing a looming water crisis. As we will show in this report, that is what is happening now.

In order to protect Iowa's water resources, **Iowa Department of Natural Resources and any other water authority must deny any water usage permits for Summit Carbon Solutions** and other water requests for carbon capture projects. There must be a **thorough study on Iowa's deep bedrock aquifers** to understand how much water is available and how it should be allocated to ensure Iowans can meet water needs for humans, livestock and industries.

Aquifer Levels Declining

There are no reliable numbers for the amount of water in all of these aquifers, nor a comprehensive understanding of how quickly and substantially the aquifers are being depleted because the necessary studies have not been undertaken. However, local data show that the water levels in a majority of the Cretaceous (Dakota) aquifer wells in northwest Iowa show long-term declines between 1984 and 2021 - see graph below. The Jordan Aquifer levels are declining an even greater amount, by more than 50 feet in some areas. Obviously, this pattern is not sustainable.

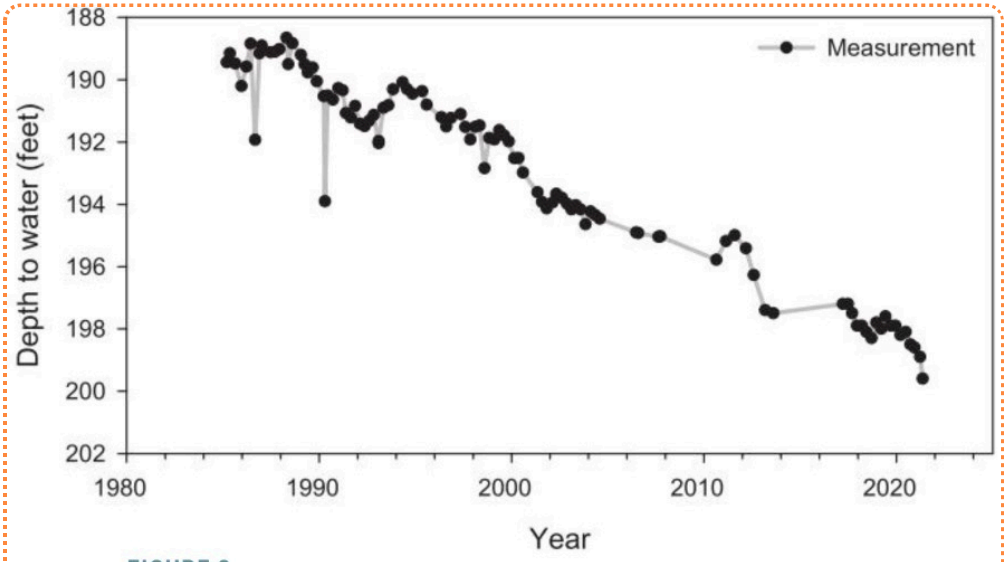


FIGURE 2.
Data from a Cretaceous Dakota aquifer well illustrating a steady decline in water levels over time.

From The IGS Geode, Activities of the Iowa Geological Survey, p. 10. 2020-2021

Summit's Statewide Impact

13.5 billion

Potential total annual water consumption at Summit's 31 partner ethanol plants with capture facilities

Water use for ethanol plants in Iowa can range from 195 million gallons per year to 646 million gallons per year, depending on the size and amount of ethanol production per plant. At the present time there are 42 ethanol plants in Iowa that consume 13.5 billion gallons of water annually.

If Summit's project is approved, Summit's 31 partner ethanol plants with capture facilities would consume as much water as Iowa's 42 ethanol plants currently use today.

The water would be used to compress the carbon dioxide so it can be transported in pipelines to be sequestered underground in other states or used to extract oil and gas from depleted oil and gas wells.

Summit's water needs for CCS are equivalent to adding 10 or 11 more ethanol plants in Iowa.

3.36 billion

Annual water consumption of Summit's 31 capture facilities, if approved

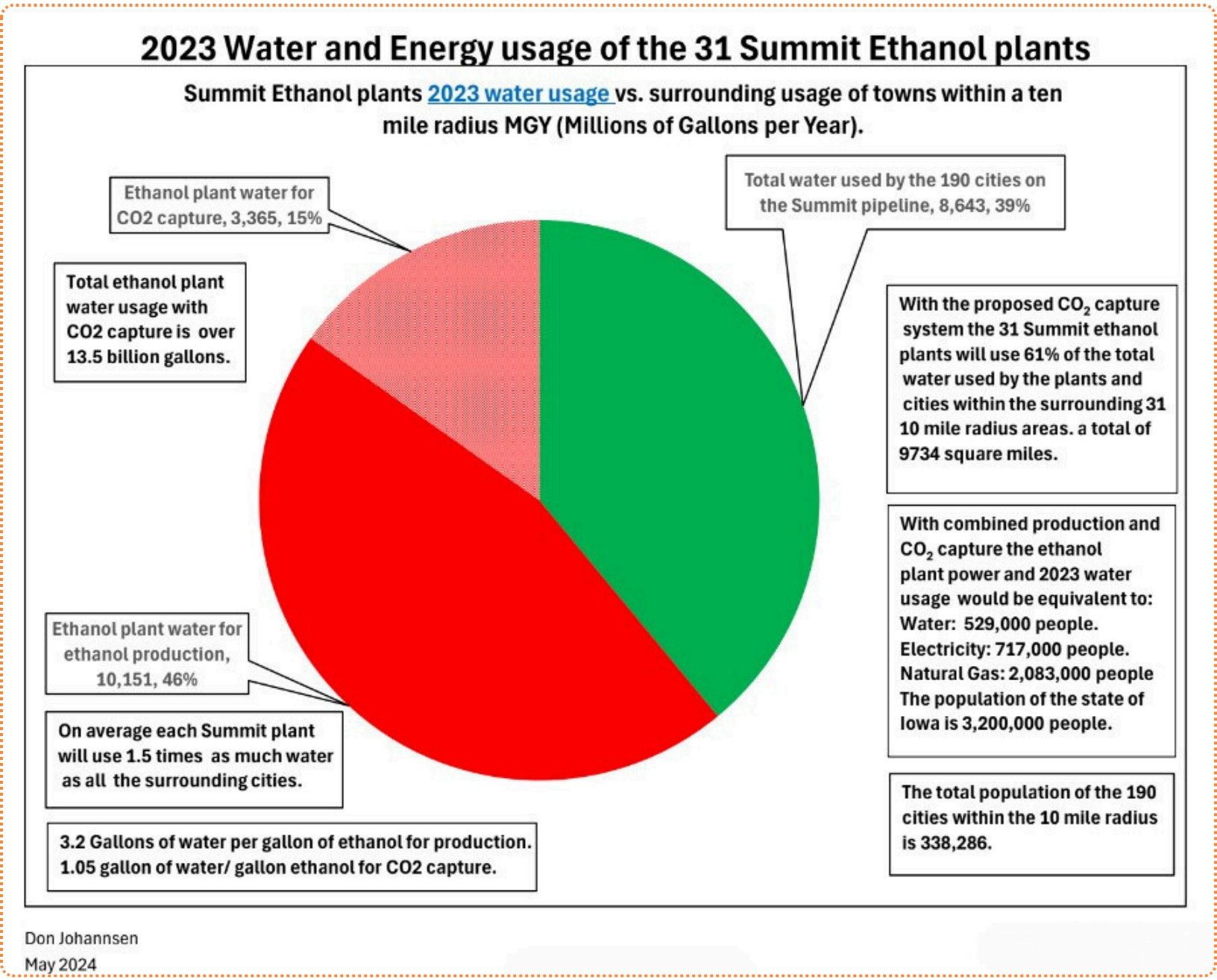
529,000 people

Water usage for ethanol production and CCS at Summit's 31 ethanol plants is equivalent to water usage of 529,000 people

With the proposed CO2 capture system, the 31 Summit ethanol plants would use 61% of the total water used by cities and industry within each surrounding 10-mile radius—a total of 9734 square miles.

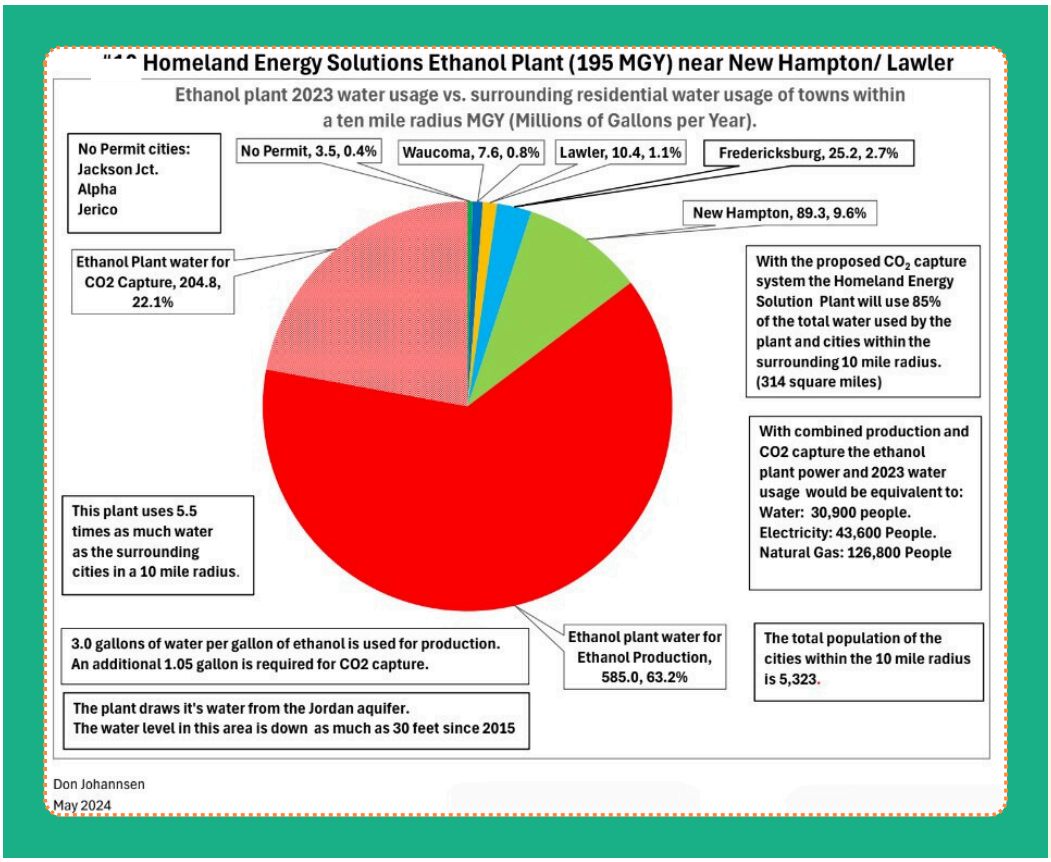
Water for Summit Capture Facilities would significantly impact the aquifers and the communities surrounding the ethanol plants

If Iowa DNR approves Summit's water requests, the water use for the ethanol production and the carbon dioxide capture process at many of the 31 ethanol plants would surpass the usage of the cities and towns within 10 miles of the ethanol plant.

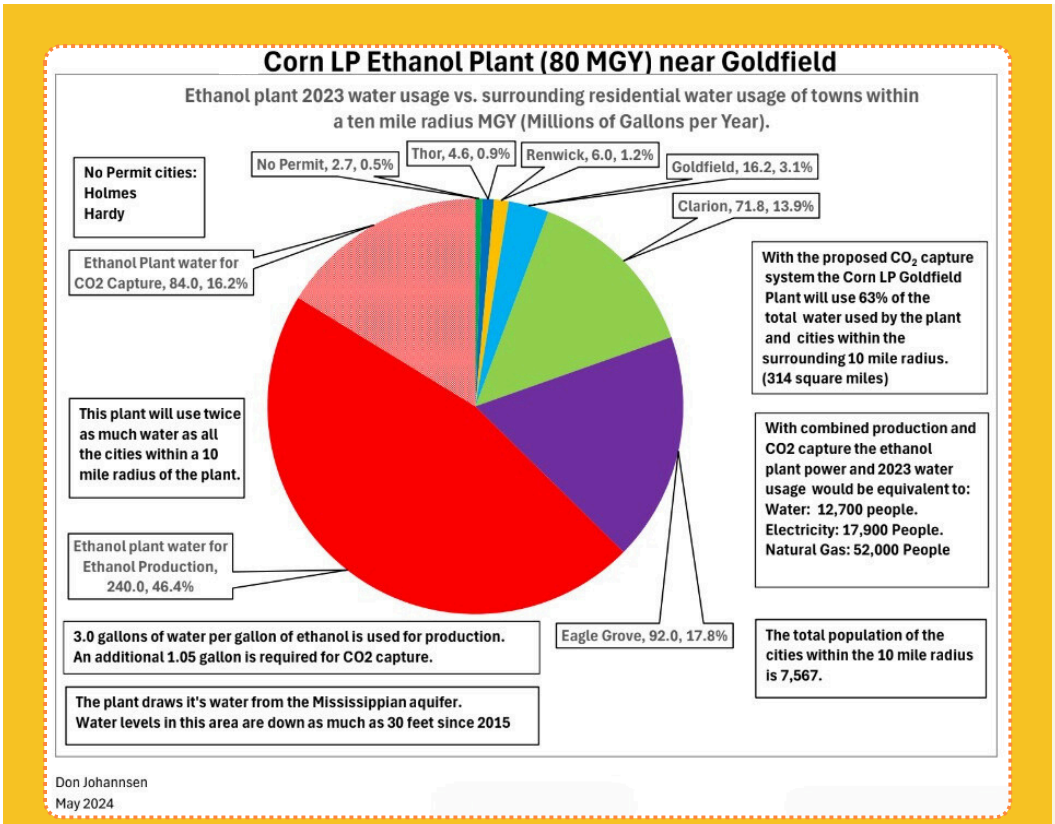


Summit's Local Impact

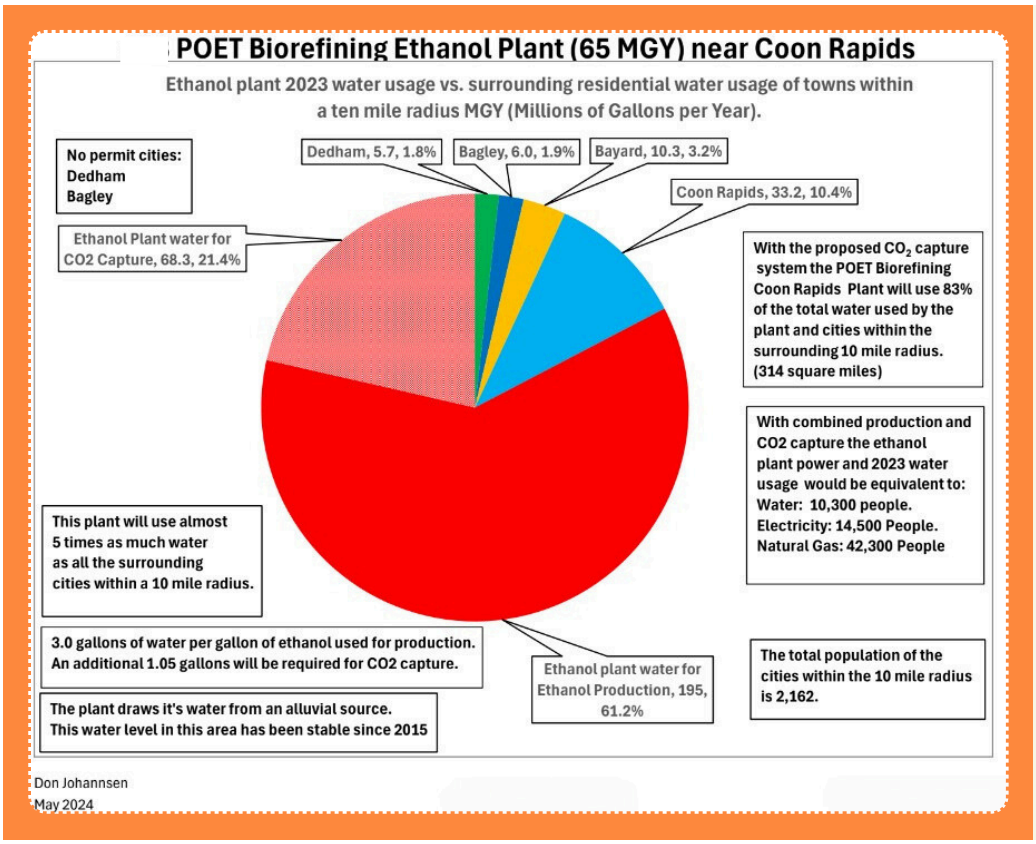
Across the state Summit's local water usage exceeds the water usage of people in the surrounding towns. Major increases in water usage can lower the water levels in surrounding areas significantly, drying up private wells in the area. If Summit's project is approved, it is unknown how private well users in the area would be impacted.



With the proposed CO2 capture system the Homeland Energy Solution Plant would use 85% of the total water used by the plant and cities within the surrounding 10 mile radius.



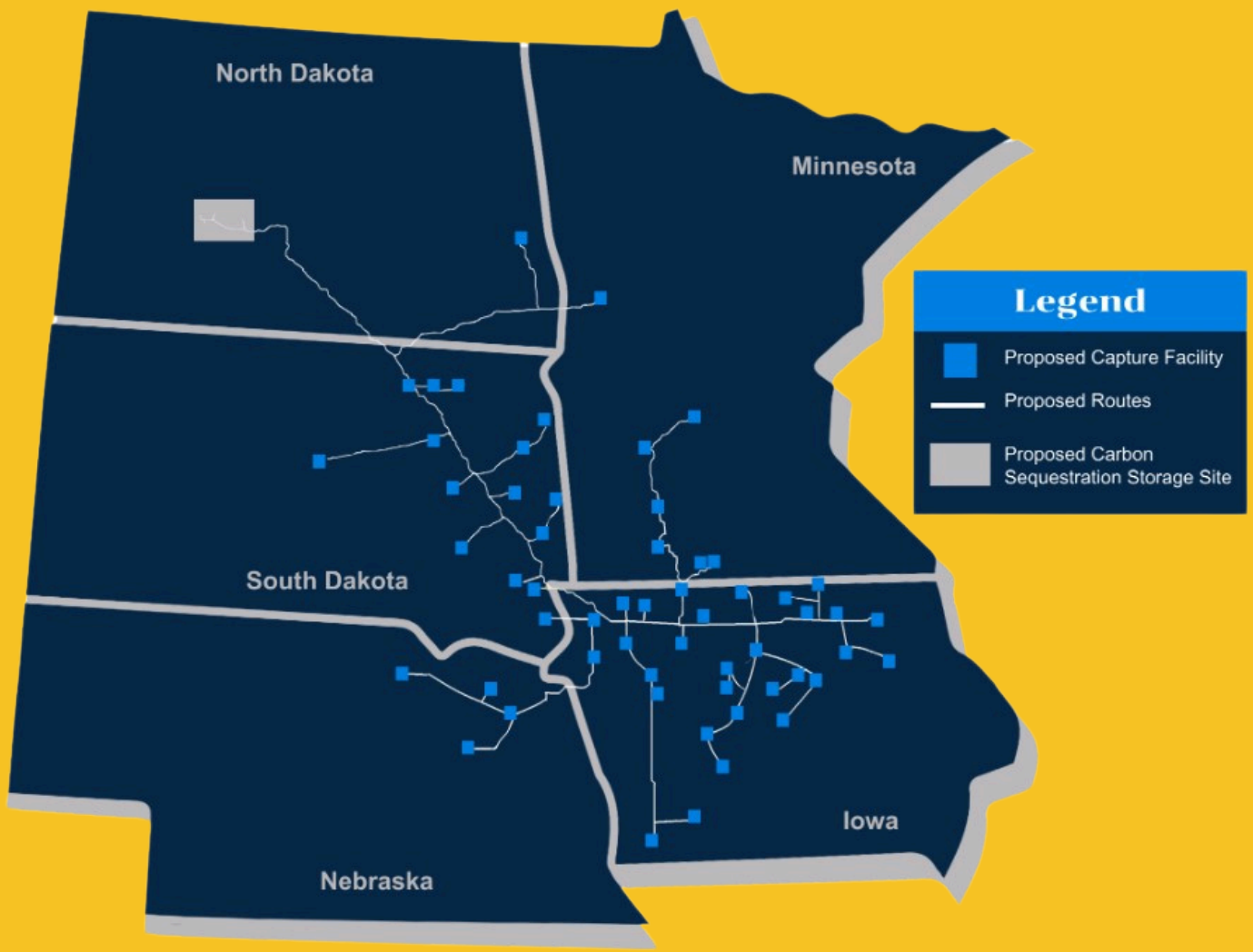
With the proposed CO2 capture system the Corn LP Goldfield Plant would use 63% of the total water used by the plant and cities within the surrounding 10 mile radius.



With the proposed CO2 capture system the POET Biorefining Coon Rapids Plant would use 83% of the total water used by the plant and cities within the surrounding 10 mile radius.

Summit's Regional Impact

Aquifers don't stop at state borders - they span many states. The impact of water usage in one place impacts water in other places. Summit's cumulative impact to our water in the Midwest is astonishing.



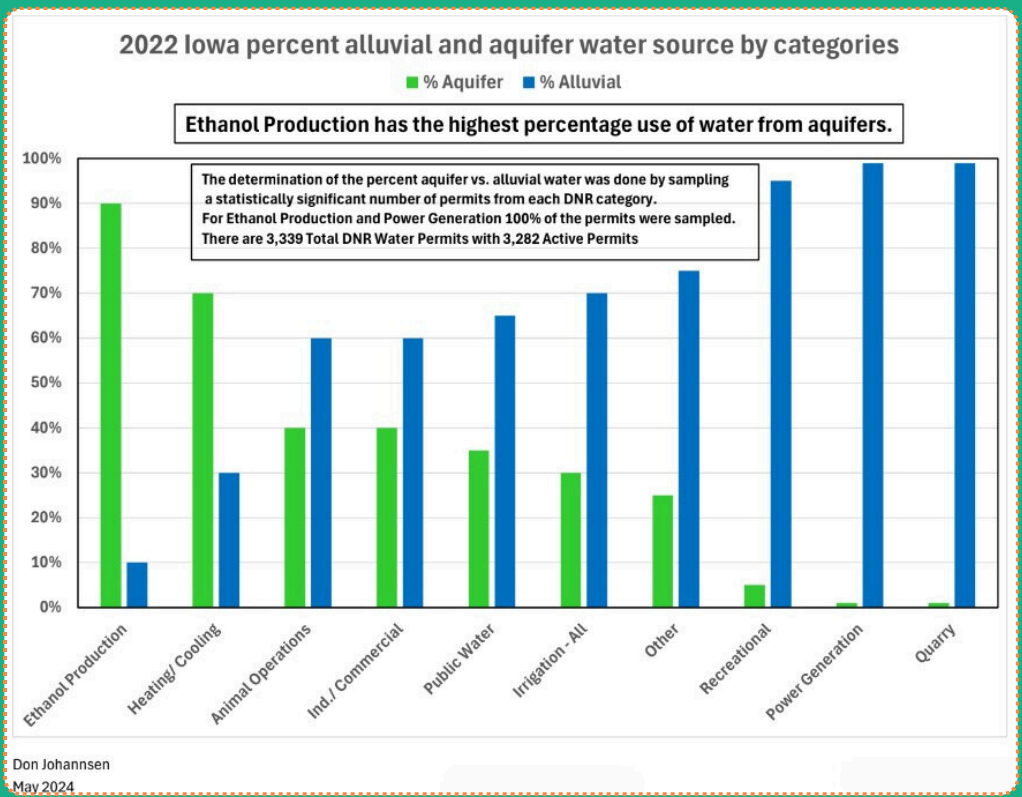
Ethanol & aquifers

Iowa has alluvial and deep bedrock aquifers. Alluvial aquifers are shallower and are located along rivers. Alluvial aquifers generally recharge from local precipitation, river infiltration, and discharge from adjacent geologic units making them relatively quicker to recharge with an average annual rainfall. However, Iowa's deep bedrock aquifers take hundreds, if not thousands, of years to recharge, and overuse threatens to deplete this necessary resource.

Iowa has four major deep bedrock aquifers: Cretaceous (Dakota), Mississippian, Silurian-Devonian, and Cambrian-Ordovician (Jordan). These aquifers are at different depths, even in different parts of the state, and somewhat overlap in the areas of the state in which they occur. In order for aquifers to remain viable, the water in them must be replenished, or recharged.

While most of the consumption of water in Iowa draws from alluvial sources that can be replenished when adequate rains come along, ethanol -- and likewise the proposed carbon capture facilities on ethanol sites -- is an outlier, drawing 90% of their water from the aquifer sources that cannot be naturally renewed.

Bottom line: a confined aquifer cannot be recharged by natural means (rivers, rainfall, etc.) -- it is a source that we are consuming and cannot be renewed.



Read the Full Report Here

Contact Us

For further information, please reach out to us at iowa.chapter@sierraclub.org or 515-277-8868.

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