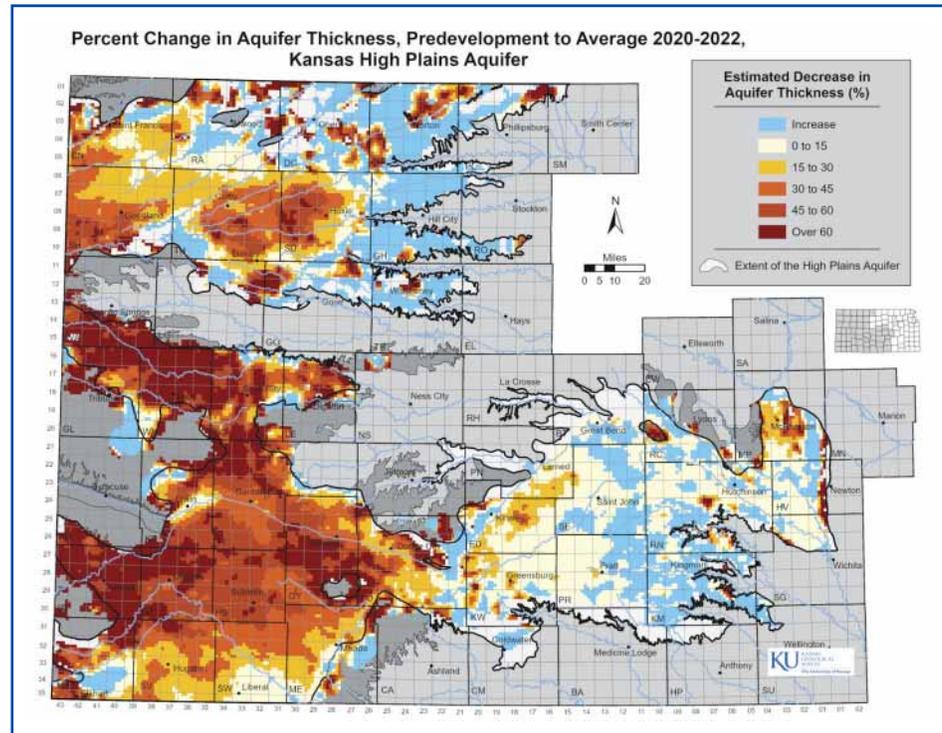


An Extremely Serious Situation . . .

Water Systems That Depend on the Ogallala Aquifer Need to Plan for Their Futures

As a Source Water Protection Specialist on the staff at Kansas Rural Water Association, my job is to help water systems think about and deal with potential sources of contamination to their drinking water supplies. But in Kansas, we also have to think about long-term water availability and the effects of drought. Water systems in western Kansas that rely on the Ogallala Aquifer as their sole source of water need to plan now for their futures. While the stated water policy in Kansas is to conserve and extend the life of the Ogallala Aquifer, that does not necessarily mean “make it sustainable”. In some places, the Aquifer is already gone. Researchers have largely concluded that parts of the aquifer are effectively exhausted for most irrigation in Greeley, Wichita, and Scott counties. In other areas, it soon will be. Aquifer lifetimes depend on many factors, including local aquifer qualities, economic forces, and water management. But without a broad change in statewide policy, the current trajectory of water use will drain the Ogallala Aquifer to a point that will make it no longer economically feasible to support widespread irrigation and the agriculture economy in western Kansas. And the problem of groundwater decline in the Ogallala doesn't just affect people in western Kansas. Groundwater and surface water are interconnected. Groundwater pumping in western Kansas effectively



This graphic shows the percent change in aquifer thickness in the High Plains Aquifer from predevelopment to the present. The areas of increase in the western third of Kansas are areas of thin saturated thickness with little to no groundwater development and are of no practical importance. (Source: Kansas Geological Survey)

starves the headwaters of several major streams that ultimately flow into central and eastern Kansas. The most prominent example would be the decline in streamflow in the Smoky Hill River due to the over-appropriation of groundwater in western Kansas. Similarly, the depletion of the Arkansas and the Republican rivers has been detrimental to Kansas due to the overuse of groundwater in upstream states.

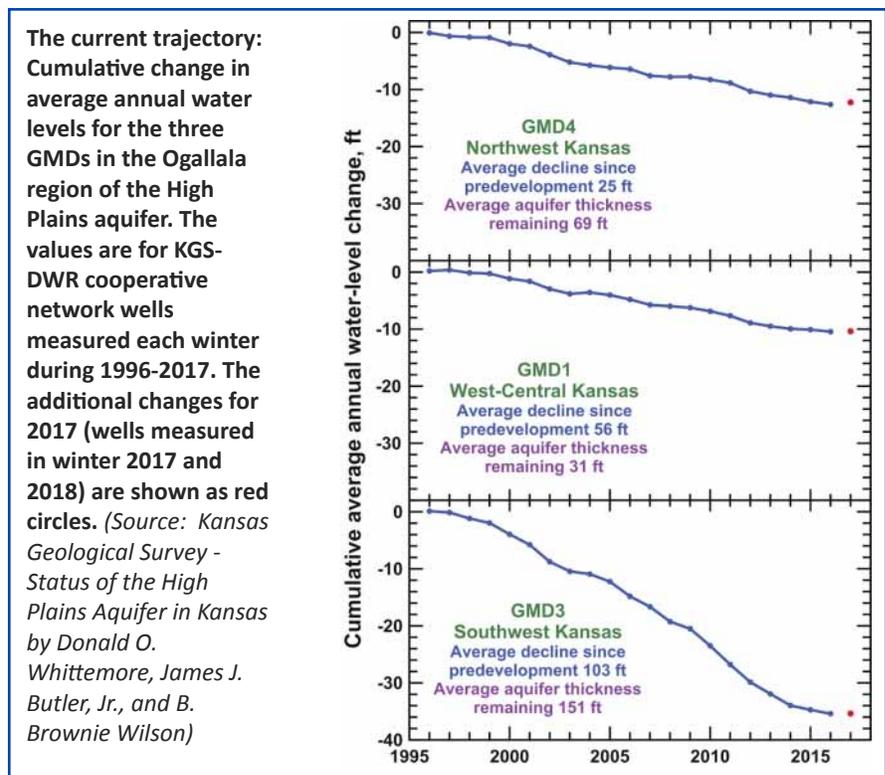
To make matters worse, a severe to extreme drought has been affecting the western portions of the state for most of this summer. Not only do the drought conditions prompt irrigators to

pump extra water from the Ogallala Aquifer, it also means less recharge will occur to replenish it. Rumors have swirled in the irrigation community about the potential for overpumping forgiveness by state regulators. Drought term permits were created to deal with the issue during the 2011 and 2012 droughts, but that was an emergency measure that was allowed only one time. There are, however, Multi-Year Flex Accounts that allow water right holders to exceed their authorized quantities during dry years in exchange for pumping considerably less during better years. And over the summer, DWR received such

applications in the hundreds. During 2011 and 2012, water level declines in some worse-hit areas of the Ogallala Aquifer were in the neighborhood of 10 to 15 feet per year. And with this year's drought, it would not be inconceivable to see such declines again and possibly worse.

All of this is the backdrop for continued focus in the Kansas Legislature on the future of the Ogallala Aquifer. The Kansas Legislature on August 29 and 30, 2020 held a special interim session on water. The joint committee was chaired by Garden Plain Republican Senator Dan Kerschen, with presentations by KDA Division of Water Resources Chief Engineer Earl Lewis, KWO Director Connie Owen, KDA Division of Conservation Director Andrew Lyon, KDHE Deputy Secretary and Director of Environment Leo Henning, and others.

Some of the most compelling testimony was delivered with empirical data by Jim Butler, a water resource scientist at the Kansas Geological Survey. He prefaced his remarks to the committee with a map showing the percent change in aquifer thickness from pre-development to present, stating that the Ogallala Aquifer has been heavily pumped for decades, adding that it's pretty clear that if we continue with business as usual, "It's not going to end well." But while the hour is late, he said, all is not lost. But the only realistic option, he continued, is to reduce pumping. The Sheridan County 6 Local Enhanced Management Area (LEMA), which I've previously written about (November 2018, *The Kansas Lifeline*), continues to show promise as the prime example of how to stabilize water level declines in the Ogallala. In that area, irrigators agreed to a 20 percent reduction in water use, but then managed a remarkable 30 percent reduction in water use. These reductions in pumping, according to KGS, have resulted in a 58 percent reduction in the water level decline rate. While water levels are still declining on average by about five

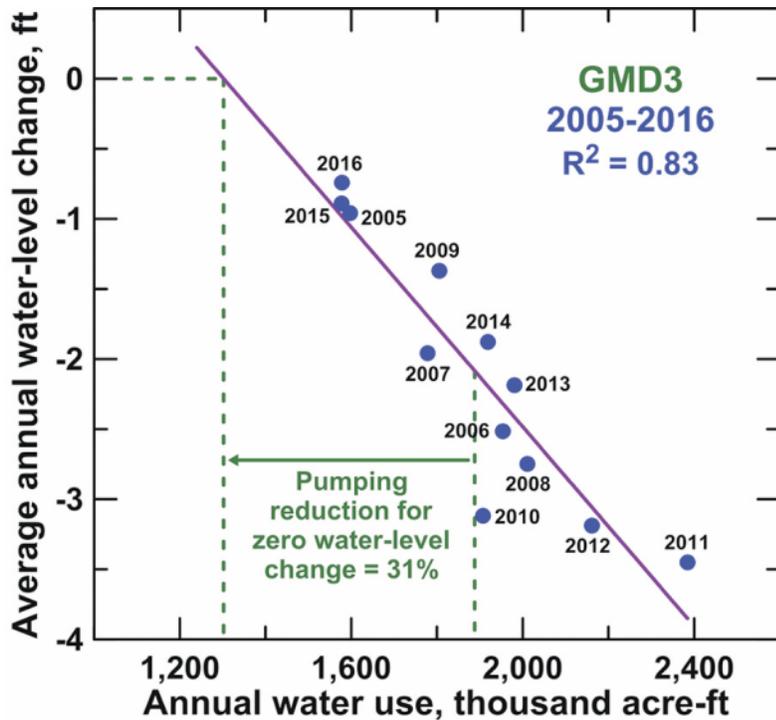


inches per year, that is far less than the nearly two feet per year that had been occurring before the implementation of the conservation measures. Another example showing promise is the Wichita County Water Conservation Area – now also a LEMA – where water users voluntarily committed to a 25 percent reduction in water use. So far, however, the reductions in water use have not significantly impacted those irrigators' bottom lines. With the help of soil moisture probes, they've just learned to use water more efficiently. Agricultural economic analyses, such as those conducted by Bill Golden at K-State, have shown that reductions of 15 to 20 percent are achievable without substantially affecting net income.

In response to questions by committee members, Butler also touched on the issue of water quality in the Arkansas River as it crosses the Kansas-Colorado border. An estimated two to ten metric tons of naturally occurring uranium are transported annually into Kansas in Arkansas River water. Uranium-rich waters cross the state line and drain into the Ogallala

and alluvial aquifers upstream from Garden City. Since the river disappears above Garden City, the contamination now becomes more and more concentrated in the aquifer over time. The uranium not only accumulates in the groundwater but also on sediments of the alluvial and High Plains aquifers and in the soils underlying the ditch-irrigated areas and other areas where groundwater used for irrigation has been affected by Arkansas River infiltration. While uranium is naturally occurring as surface water comes into contact with sediments in Colorado and has been flowing into Kansas for a long time, the concentrations of uranium are exacerbated by human activities related to irrigation in both

Since the river disappears above Garden City, the contamination now becomes more and more concentrated in the aquifer over time.



This graphic shows the average annual water-level change versus annual water use for Southwest Kansas GMD 3 for 2005-2016. The estimated pumping reduction from the average water use for 2005-2016 to that needed to achieve a zero water-level change is shown by the vertical dashed green lines. Water-use reductions needed for more intensely pumped areas would be greater. Agricultural economic analyses have shown that reductions of 15 to 20 percent are achievable without substantially affecting net income. (Source: Kansas Geological Survey - Status of the High Plains Aquifer in Kansas by Donald O. Whittemore, James J. Butler, Jr., and B. Brownie Wilson)

KDHE Director Leo Henning testified that there are at least 200 communities in Kansas with upward trending nitrate levels in their public water supply wells, most of which are the direct result of agricultural activities.

Kansas with upward trending nitrate levels in their public water supply wells, most of which are the direct result of agricultural activities. The current makeup of GMD boards, Griggs said, does not serve the municipalities and residents of cities that have to absorb the costs of water treatment resulting predominantly from irrigated agriculture.

While it feels like the State might be on the cusp of a major shift in water policy and finally ready to deal with long-term declines in the Ogallala Aquifer, the legislative direction is not exactly clear. Senator Ron Ryckman remarked that the information presented during the summer session was "very enlightening and very sobering". The committee's Vice-Chair Ron Highland remarked that they're not hearing enough from municipalities and domestic water users, saying, "Everybody needs to come to the table because it involves everybody, no matter what end of the state you live on, this is a serious situation."

states. Butler said there's no clear path forward to resolve that issue. Butler told the committee that this issue is an "existential threat," noting that Lakin has already spent six million dollars on a reverse osmosis water treatment plant to deal with the contaminant. Lakin residents' water bills doubled as a result. Downstream communities should expect the same outcome.

The structure of agencies . . .

The structure of state water agencies was again a topic of discussion during the committee hearing. As pointed out by Washburn Law Professor Burke Griggs, Kansas is the only state in the union with a state water engineer subordinate to the state Secretary of Agriculture, a political appointee of the Governor. Therein lies a perfect conflict of interest baked into our water

policy, he told the committee. Should the powers of the Chief Engineer be subject to veto by the Secretary of Agriculture? Moreover, he questions whether the Groundwater Management Districts fully represent the water-using public within their regional boundaries, including domestic users, municipalities, and industries that also rely on dependable water supplies. He argues that irrigation and agriculture interests may be over-represented by irrigation water right owners within each district's boundaries. Griggs argues that representation in the GMDs should be reformed to serve the interests of the entire population (the entire water-using public) within the boundaries of GMDs, not just irrigation and agriculture interests. KDHE Director Leo Henning testified that there are at least 200 communities in

Ken Kopp, P.G., Water Rights/Source Water Specialist, joined KRWA as Water Rights/Source Water Specialist in early 2016. He also serves as KRWA Assistant General Manager. He worked for



twenty-three years at the Kansas Dept. of Agriculture, Division of Water Resources and most recently was New Application Unit Supervisor.



1165 W 149th St.
Olathe, KS 66061
(913) 829-3300

**Carson Mulholland
Sales**

Mobile: (913) 972-8165
E-mail: camulholland@winwaterworks.com

**Chris Caruthers
Sales**

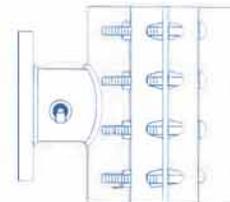
Mobile: (913) 963-8684
E-mail: cdcaruthers@winwaterworks.com

- ADS - HDPE Storm Pipe, Detention, Retention
- Apco/Crispin/Cla-Val/Val Matic - Specialty Valves
- Ay McDonald - Brass Water Service Products
- Cherne - Muni & Test Balls
- Clay & Bailey - Castings
- Clow Valve - Valves & Fire Hydrants
- Contech - Corrugated Metal Culvert
- Deeter/Neenah Foundry - Castings
- DFW/NDS - Couplings & Drainage Products
- Diamond Plastics - PVC Pipe
- Dura Plastics - PVC Pressure Fittings
- EBAA Iron - Megalugs & Restraints
- Fernco - Repair Couplings
- Hersey/Mueller Systems - Water Meter Systems
- Highline - Valve & Curb Boxes
- Hydrant Repair Parts - Hydrant Extensions & Parts
- Infiltrator Systems - Septic Chamber Systems
- Integrity Fusion Products - HDPE Fusion Fittings
- JM Eagle - PVC & HDPE Pipe
- Kennedy & M&H Valve - Valves & Fire Hydrants
- McWane - Ductile Iron Pipe
- Multi-Fitting - PVC Sewer Fittings
- North American Pipe - PVC Pipe & Rest. Jnt. Pipe
- Pipelife/Jet Stream - PVC Pipe
- Plastic Trends - PVC Sewer Fittings
- Romac Industries - SS Repair Clamps & Grip Rings
- Sigma - DI Fittings & Valve Boxes
- Smith Blair - Tapping Sleeves & Clamps
- Tyler Union - DI Fittings & Valve Boxes
- United Pipe & Steel - PVC, Steel & Copper Tube
- US Pipe Fab - Fabricated Flange Pipe
- Watts - Backflow Preventors
- Wilkins - PRV Valves

RENTAL & SERVICE
Live Main Taps (4"-24")
Tap Machine Rental (3/4" - 2")
Hydrostatic Test Equipment Rental
Electrofusion Machine Rental



**WHOLESALERS OF PIPE
VALVES - FITTINGS
WATERWORKS - SANITARY
SEWER
STORM SEWER**



"BEST SERVICE IN TOWN"