Beef Producers Act on Groundwater

Eastern Washington beef producers and feedlot operators go proactive on issues relating to groundwater protection.

Story & photos by ***Ed Haag***

In June 1995, the lives of the county commissioners of three central Washington agricultural counties got a whole lot more complicated. A Water-Resources Investigations Report released by the U.S. Geological Survey (USGS) National Water-Quality Assessment (NAWQA) Program stated 19% of 573 wells in the three-county area exceeded the U.S. Environmental Protection Agency (EPA) maximum nitrate level (MCL) for drinking water. These concentrations included USGS samples from 1942 to 1994, although 93% of the data was from 1980 to 1994. The primary contaminants were nitrates. The primary suspect was agriculture.

The three counties identified in the report were part of the Columbia Basin, a 26,000-square-mile desert plateau, almost half of which was transformed after World War II into high-production agricultural land with the construction of the Grand Coulee Dam and the diversion of millions of gallons of water from the Columbia River onto newly planted crops.

The area in which the wells were tested covered a total of 13,000 square (sq.) miles with 8,000 sq. miles of cropland, 4,000 sq. miles of rangeland and 1,000 sq. miles of forest or water.

The report hypothesized that nitrogen (N) fertilizers applied to fields were the primary source of nitrate in shallow groundwater. It added that nitrogen fertilizer not used by crops was being carried to the underlying aquifer by water percolating through the soil. It drew the conclusion, from the locations of the well samples that exceeded maximum contaminant level, that there was an association between irrigated agriculture, high nitrate concentrations and high frequency of contamination of groundwater in the study area.

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Time for local response

Feedlot operator Mike Para recalls the fallout from the report.

"It was proposed that the area be designated a sole-source aquifer," he says. "If that happened, the federal agencies would have been given a whole lot of control over what we could and couldn't do as a community."

Rather than waiting for that to happen, county officials working with leaders from various economic sectors both in and outside of agriculture sought a mutually agreeable alternative to the proposed federal designation.

"What we wanted was to keep the response local," Para says. "That way we could be sure to get everyone on board."

That alternative turned out to be a Ground Water Management Area (GWMA), a county, state and federally sanctioned, proactive, voluntary, local planning effort to address water quality issues while lessening the need for mandated control measures such as the sole-source aquifer designation.

The concept was not new. During the last 20 years GWMAs have become a popular rural alternative to EPA intervention. From Virginia's Chesapeake Bay to California's San Joaquin Valley, local administrators have tailored their own GWMAs to meet the specific needs of their communities.

"Ours in the Columbia Basin has been created to specifically address nitrate levels in the groundwater," says Carol Miller, project coordinator for the Basin GWMA.

Call to action

In 1997 an agreement was struck between the county commissioners of Adams, Franklin and Grant counties to form the Columbia Basin GWMA, and in 1998 the Washington State Department of Ecology formally designated the three-county area as a GWMA.

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►Feedlot owner Mike Para was directly involved in developing BMPs for beef and dairy industries to protect groundwater quality in his area.

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The designation set into action a locally managed process to identify and carry out specific procedures to reduce the pollution. These included water monitoring, plan development, implementation, research and public education.

"GWMA keeps the regulatory people at bay and gives us enough time to come up with our own solution," says Paul Stoker, former rancher and the GWMA's executive director since 2001. "The alternative was to be federally regulated as a 'sole-source aquifer' under the Safe Drinking Water Act."

The process was designed to pull together government entities, industry associations and environmental organizations in an inclusive transparent process. For Stoker this was one of the most powerful aspects of the program.

"We had people from every segment of the community — from the cities to the rural areas — happily participating in the process," Stoker says. "It managed to bring everyone together to work on an issue they had in common."

Assessment of the problem

In fall 1998, as part of the GWMA's mandate, 575 wells were tested in the tri-county area. It was one of the largest mass well-sampling events ever conducted in Washington state. Test results were received in March 1999. Thirty-nine percent of the wells tested had nitrate levels below 3 parts per million (ppm); 37% were between 3 ppm and 10 ppm; and 24% exceeded 10 ppm, which represented the threshold for the federal safe drinking water standard.

While the boards of county commissioners of Adams, Franklin and Grant counties would oversee the activities of GWMA, its groundwater executive board was charged with developing a region-wide plan.

Don Fancher, feedlot owner from George, Wash., and former chairman of the Dairy, Feedlot and Cattlemen (DFC) Ground Water Advisory Committee is one of a number of livestock managers involved in drafting groundwater guidelines for Adams, Franklin and Grant counties.

Fancher's committee was one of five, with each volunteer committee representing specific industries or segments of the population that might have an effect on groundwater quality. Each of the five committees was responsible for developing best management practices (BMPs) for its industry and was charged with participating in the hiring of technical advisors who would help local producers develop effective manure management plans.

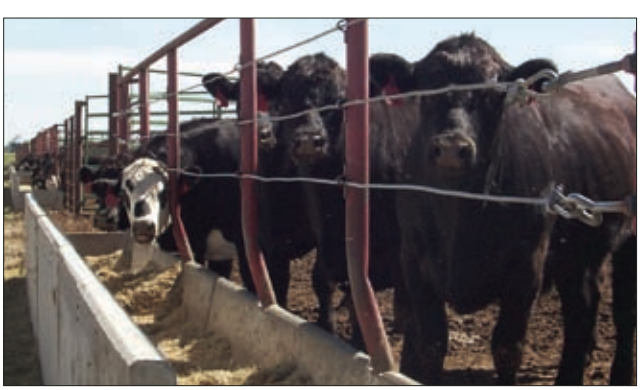
Members of each committee also appointed individuals to represent their industry and county on GWMA's 15-member executive board.

When interviewed in 1999, Fancher stated he saw technical services as critical to the success of the program. Without access to that expertise he questioned whether or not most livestock operators would have the resources to proceed.

"Some feedlots can spend $50,000 in consulting fees before they turn a spoonful of dirt," Fancher says. "A lot of us can't afford that."

He sees feedlot owners and other beef producers as more than willing to take responsibility for their own operations provided the expectations are fair and based on good science rather than on speculation and conjecture.

►**Above:** GWMA-based research is leading to major voluntary changes in local irrigation practices.



►**Right:** GWMA-supported research confirmed that feedlot manure judiciously applied to fields did not have a measurable effect on groundwater quality.

High-stakes effort

Para, another feedlot owner to serve on the DFC committee, shared that view when he was interviewed in 1999.

"What we are trying to do is to stay in business, be good neighbors and keep government agencies happy," he says. "It is our land and our livelihood. Being good stewards makes economic sense to us."

Para practices what he preaches. "We have been running nitrate tests on water samples for 6 years," he says. "I do it for my own sake because if we have high-nitrate water it will affect my cattle."

He has yet to detect a reading higher than the countrywide background level of 3 ppm.

Fancher, too, has had his groundwater tested.

"The EPA says you can only have up to 10 parts per million before you have a nitrate problem in your ground," he says. "We have never exceeded the 3-parts-per-million mark."

Both Para and Fancher continued to serve on their committee until 2001 when a completed draft of their 'best use practices' and guidelines was sent to the county commissioners marking the end of the planning stage of the process.

For Fancher, the work accomplished by he

and his fellow committee members was well worth the effort, and he is convinced that the beef industry must continue to maintain a strong voice in the GWMA. Anything less could prove economically disastrous.

"Remember, the reason why we got involved in this is so that we can try writing the guidelines we can live with," Fancher says. "Otherwise we are out of business."

The work continues

While the planning stage is over, GWMA's work continues, Stoker says. "We have completed and have ongoing a number of projects that fall under our mandate."

In 2002, a preliminary report was issued on the mapping of more than 9,700 wells in Adams, Franklin and Grant counties, placing them in context with the area's 15,000,000-year geologic history and the hydrologic structure of the 6,000-square-mile tri-county area. As Stoker notes, this process was essential to the task of determining hydrologic recharge and flow patterns.

Within the same timeframe, GWMA officials completed and reported on a research and demonstration project designed to determine BMPs for the application of wastewater to agricultural fields and a three-year dairy and feedlot study to evaluate the effect of fall applications of manure in relation to the winter leaching of nitrates below the predicted root zone of specific crops.

"What this study determined was that you can put appropriate levels of manure on your fields without any significant leaching of nitrates below the crop root zones," Stoker says.

On the education front, GWMA initiated a program to take 10-foot-deep soil samples in irrigated production fields to present to farmers a view of the nitrogen accumulation within the soil profile as a result of previous seasons' decisions. The effort is an in-school program teaching kindergarten through 12th-grade students about groundwater flows and BMPs, and an ongoing general education and free well-testing program serving persons in rural areas of the Columbia Basin, whose primary source of drinking water comes from privately owned wells.

Stoker notes that one very successful federally funded USDA-NRCS project GWMA has recently participated in was a cost-share program designed to encourage growers to purchase moisture-monitoring equipment that allows for more efficient irrigation water management.

"The response to this program has exceeded our expectations and budget," Stoker says. "I believe we could sign up some real large numbers of acres if there was enough funding to support the move."

While the acceptance by the community of GWMA's locally initiated programs is gratifying, Stoker sees an even greater satisfaction in the most recent set of well test results. As part of its ongoing mandate, GWMA has been retesting, every 24 months, the 575 wells it originally tested in fall 1998.

"We knew what we were doing would eventually make a difference to the nitrate level in the groundwater, but even the most optimistic of us didn't expect what the results of our last set of tests clearly shows," Stoker says. "The percentage of wells that exceeded drinking standards (10 ppm or greater) dropped a full percentage point between 1998 and 2007."

In 2005 GWMA was expanded to include adjacent Lincoln County.