

MINUTES
of the
NEBRASKA HOST STATE REPORT
Lied Lodge and Conference Center
Nebraska City, Nebraska
April 13, 2017

Table of Contents

Welcome / Host State Presentation.....4

 A. Nebraska Department of Natural Resources.....4

 B. Nebraska Department of Environmental Quality.....6

**MINUTES
of the
NEBRASKA STATE REPORT
Lied Lodge and Conference Center
Nebraska City, Nebraska
April 13, 2017**

MEMBERS AND ALTERNATES PRESENT

ALASKA	—
ARIZONA	Einav Henenson
CALIFORNIA	—
COLORADO	John Stulp
IDAHO	Jerry Rigby John Simpson
KANSAS	David Barfield Tracy Streeter Kenneth Titus
MONTANA	Tim Davis Jan Langel
NEBRASKA	Jeff Fassett Jim Macy
NEVADA	—
NEW MEXICO	—
NORTH DAKOTA	Jennifer Verleger
OKLAHOMA	Julie Cunningham
OREGON	—
SOUTH DAKOTA	Kent Woodmansey
TEXAS	Jon Niermann
UTAH	Walt Baker

Norman Johnson
Todd Stonely

WASHINGTON

WYOMING

Pat Tyrrell
Chris Brown
Kevin Frederick
Steve Wolff

GUESTS

Ward Scott, Western Govenors' Association, Denver, CO
Duane Smith, D Smith & Associates, Oklahoma City, OK
Katie Miller, Burns & McDonnell, Junction City, KS
Ann Schwend, MT Dept. of Natural Resources & Conservation, Helena, MT
Dave Mitamura, U.S. Army Corps of Engineers, Austin, TX
Sam Radford, NE Department of Environmental Quality, Lincoln, NE
Lauren Dempsey, U.S. Air Force, Travis Air Force Base, CA
Doug Kluck, NOAA National Center for Environmental Information, Kansas City, MO
Julie Ward, NE Department of Natural Resources, Lincoln, NE
Susan France, NE Department of Natural Resources, Lincoln, NE
LeRoy Sievers, NE Department of Natural Resources, Lincoln, NE
Jeremy Goble, NE Department of Natural Resources, Lincoln, NE
Mike Thompson, NE Department of Natural Resources, Lincoln, NE
Robert Swanson, U.S. Geological Survey, NE Water Science Center, Lincoln, NE

WESTFAST

Roger Pierce, Federal Liaison, Murray, UT
Roger Gorke, U.S. Environmental Protection Agency, Los Angeles, CA
John D'Antonio, U.S. Army Corps of Engineers, Albuquerque, NM
Becky Fulkerson, Bureau of Reclamation, Washington, D.C.
Patrick Lambert, U.S. Geological Survey, Salt Lake City, UT
Kevin Werner, National Oceanic & Atmospheric Administration, Washington, D.C.
Danielle Wood, National Aeronatics & Space Administration, Greenbelt, MD

STAFF

Tony Willardson
Michelle Bushman
Sara Larsen
Cheryl Redding

WELCOME / HOST STATE PRESENTATION

Jeff Fassett, Director of the Nebraska Department of Natural Resources and on behalf of Jim Macy, Director of Nebraska's Department of Environmental Quality, welcomed the group to Nebraska for the 183rd meeting of the Western States Water Council. We appreciate you all coming. Nebraskans love this facility, but realize it is not the most convenient place to get to. Hopefully you will enjoy yourselves in the area.

The Council adopted a new routine allowing the host state to go first before launching into the busy committee meeting schedule. Thus, Jeff and Jim tapped a couple of people from their staffs to make presentations. Jeff requested introductions be made around the room prior to the host state presentations.

A. Jesse Bradley, Assistant Director, Nebraska Department of Natural Resources

Using a powerpoint presentation, Mr. Bradley noted that Nebraska is 77,000 square miles, with 93 counties. The population of the state is 1.9 million people. Corn and beef production are the main agricultural sectors. Nebraska is the second largest ethanol producing state and the third largest corn producing state. Cattle outnumber people 3:1 in the state. The eastern part of the state has a very dense population, while the remainder of the state is more rural.

Nebraska is ranked number one in irrigated agriculture across the United States. They have a little over 8.5 million irrigated acres.

The regional High Plains Aquifer or Ogallala Aquifer is a very important water resource to Nebraska, as well as other mid-western states. The Ogallala Aquifer covers most of the state of Nebraska. It is not present in portions of the eastern border of the state due to glaciation. There are areas of the state where the Ogallala or High Plains Aquifer is over 1,000 feet in saturated thickness.

In terms of precipitation distribution and variability, on the western side of the state, they receive on average 10-12 inches/year, compared to the east/southeast portion of the state where they receive 32-40 inches/year. That distribution creates a lot of variability in water supply.

With respect to topography, the central part of the state consists of the Sandhills. The area is sort of a large sponge and creates a lot of recharge and renewable water supplies in Nebraska. It is not uncommon to see recharge rates out of the Sandhills in excess of six inches. This of course creates a lot of groundwater discharge to streams. For the creeks that drain out of the Sandhills, typically in excess of 80% of the discharge is because of the groundwater base flow contribution. That is a significant component. On the eastern side of the state, in the glaciated area, there are much different water resource issues. The pocket aquifers that exist in that part of the state become very important.

Regarding groundwater development, there is heavy, dense irrigation in the Central Platte and upper portions of the Blue River Basin. In terms of fairly densely irrigated areas, it is distributed throughout the Platte Valley, the Republican Basin, Northeast Nebraska and all of the river valleys. There are about 100,000 irrigation wells overall and about 7.5 – 8 million irrigated acres from groundwater.

Looking at surface water and surface water use, there are about 6,500 irrigation appropriations across the state that serve about one-half to one million acres. It is variable as a lot of the acres are co-mingled, where they are served by both surface water and groundwater sources. Producers may toggle back and forth between the sources. Most of the surface water development is in the Upper Platte River Basin, the Republican River Basin, Blue River Basin, and the Niobrara River Basin.

About 85% of the surface water demands serve irrigation. About 80-85% of Nebraska's population is also served by groundwater wells.

In terms of the science and modeling, because of the way Nebraska's water resources are available (in that they rely a lot on groundwater and on surface water), and the fact that these resources are highly connected across the state, it requires a very good sense of that connection and the timing of the impacts from groundwater to appropriately plan. A lot of resources have been invested in the development of groundwater modeling efforts, striving for complete coverage across the entire state. They are very close to achieving that goal.

A significant initiative produced in the last few years is called Insight. This is a process of creating online user interactive web faces that combine much of the information from models, water use reports, streamflow, etc. (water resources data) and put this in a form that stakeholders (non-water resource planners) can effectively understand. Insight contains clickable maps for each basin.

Overall, Nebraska handles water planning through local units of government. There are many agencies involved in water quantity/quality management. The Department of Natural Resources is primarily involved in surface water and quantity. However, they overlap with groundwater quantity. The Department of Environmental Quality (DEQ) deals in the quality arena of surface water, but they also interact with the groundwater pieces as well. The Health and Human Services Department, Department of Agriculture, and the Game and Parks Commission, and others are all involved in water planning in Nebraska. It requires a lot of effective communication and collaboration to ensure they are all working together.

A good part of water planning in Nebraska revolves around natural resource districts (NRDs). There are 23 local NRD units of government across the state, generally drawn on river basin boundaries. These units have a lot of regulatory authority, taxing authority, and authority for managing the groundwater both for quantity and quality.

There are two different doctrines under which they manage water. The Correlative Rights Doctrine applies to groundwater uses. That is regulated through the NRDs. The surface water is administered and regulated through a Prior Appropriations Doctrine. Thus, there is an intermingling of things at play.

Nebraska also has six interstate compacts, agreements, and decrees across the state. There is a decree with Wyoming and Colorado on the North Platte; there is a South Platte compact; the Platte River Recovery Implementation Program; the Republican River Compact; a small compact area on the Niobrara; and the Blue River Basin as well. These compact areas also influence water planning throughout the state.

The basin-wide plans are connected with individual integrated management plans. These occur at the NRD level. They have completed the required and approved plans for about 13 NRDs, and have been working to develop voluntary integrated management plans as well. The purpose of these integrated management plans is to bring together the local NRD that is managing the groundwater resources, with the Department of Natural Resources so they are coordinating their efforts to create the outcomes necessary under legal requirements.

In terms of development of those plans, there is usually a fairly significant stakeholder process associated with each of the plans. Stakeholders come from the groundwater users, surface water users, ag, municipal, industrial, county planners, bankers, municipalities, mayors, and other agencies, both federal and state. There is a whole host of folks who come to the table in these planning activities.

The primary purpose associated with integrated management plans is to protect the water users from negative impacts of new use to meet, interstate obligations, and to ensure there is a long-term solution to water supply issues.

B. Sam Radford, Nebraska Department of Environmental Quality

Samantha Radford of the Department of Environmental Quality (DEQ) noted that the prior presentation provided a general overview of Nebraska's water use and structure. Her department deals with water quality. She stressed that Nebraska is a groundwater state. Two-thirds of the whole High Plains Aquifer storage lies in Nebraska. Unlike many states in the country, Nebraska relies very heavily on groundwater for their drinking water sources. 85% of the state uses groundwater as their drinking water source.

California and Texas are much larger than Nebraska, yet Nebraska irrigates about a million more acres than either state. Almost 92% of the entire land mass in Nebraska is in some kind of production, whether it is ag, rangeland, irrigated or non-irrigated. Thus, it is very important for Nebraska to work to protect their water sources.

The Clean Water Act (CWA) and the Safe Drinking Water Act regulate the surface water. Regulation of groundwater is pretty much left to the state. Nebraska has been regulating

groundwater since the 1970s, mainly through the structure of the NRDs. Jointly, the NRDs and DEQ regulate the quality of the groundwater. The NRDs have provided a great local structure that can be utilized to manage the resource on a local level.

In Nebraska, nitrates are the number one source of non-point source contamination. This is as a result of agricultural practices. Much of the contamination stems from ag practices followed decades ago. The ag industry has become much better in the ways they apply fertilizers and so forth. There is still a lot of work to be done to make improvements, however. She displayed a map indicating areas where nitrate issues need to be addressed.

DEQ tries to focus on voluntary programs. When you talk about changing nitrate contamination, it really suggests a behavioral change. It is difficult to regulate behavioral changes. DEQ is working with the communities and partnering with them as they deal with these changes. DEQ receives CWA Section 319 (non-point source) funding through the Environmental Protection Agency (EPA). The source water protection program and the well-head protection program are all voluntary programs.

The only way to get rid of nitrates in a drinking water system is to treat for it. For a bigger community it is not usually too difficult to build a treatment facility. However, in Nebraska, the median population in the smaller communities is about 300 people. When you consider building a \$500,000 - \$1.5 million treatment plant, that is a huge financial burden to many of the communities. Many communities are aging and/or are getting smaller due to urban flight. The small communities struggle just to maintain the current infrastructure. It is much cheaper to prevent contamination or try to reduce it through best management practices or those kinds of programs than it is to treat. It is only cost effective to treat up to about 15 milligrams per liter. It becomes increasingly more expensive as the nitrate levels go up, so even when nitrate levels are being treated, the communities need to do better land management practices to keep the costs down.

DEQ and four of the NRDs realized that they needed to work with the EPA to get them to understand how groundwater is used in Nebraska. Every state must submit a long-term plan to the EPA for surface water use. Again, surface water is regulated, whereas groundwater is left to the state. In Nebraska, this scenario leaves the state at a bit of a disadvantage since most of the population relies on groundwater for their drinking water. EPA incentivizes the non-point source (the CWA 319 program) and management is left to the state. The NRDs went on an intensive education campaign with the EPA and spent several years to get them to understand that the 319 money could not be applied as groundwater was not eligible to be funded under the EPA's 319 standards. We prioritized human health, but we could not prioritize the money toward actual human health. All of the money was going toward addressing bacteria. By 2013, Nebraska successfully petitioned EPA to allow 50% of the CWA 319 project funds to go to groundwater. The Bazile Groundwater Management Plan was developed with four different NRDs. Now, anyone in the country can do this by responding to a non-point source pollution emergency or an urgent public health issue. The Bazile Groundwater Management Plan is an alternative to the

nine element plans that are now required for funding under the 319 program. The Bazile project is the first in the nation to be eligible for 319 funding to deal with groundwater.

The Bazile groundwater area is located in the northeastern part of the state. It includes 21 townships, and comprises 756 square miles. It is at the intersection of four different NRDs and three river basins, the Niobrara (Verdigre Creek), Missouri tributaries (or Bazile Creek) and Elkhorn (North fork) headwaters. It covers eight public water systems and supplies groundwater as drinking water to 10 communities and 7,000 residents. Public water systems are regulated, but private well users are not. DEQ is hoping to promote better management practices that will improve conditions for everyone.

The Bazile area is plagued by increasing nitrate contamination in the groundwater, despite the NRDs groundwater management plans and elevated phase requirements. The area is mainly sandy rolling hills, with the exception of the northeast corner, which is a glacial till area that provides a buffer to protect the groundwater. The Ogallala Aquifer underlies this entire area and the depth to groundwater is from two – 240 feet. The Aquifer itself is about 400+ feet thick. Groundwater provides a lot of opportunity as a drinking water source and for ag production.

The Bazile plan is a voluntary plan that complements the NRD groundwater management plans. The NRDs all have different regulations and are not consistent across the state. The rules, regulations and triggers across the Bazile plan area are all the same. Education and financial incentives are in place. Again, this deals with behavioral changes. In some instances, it is the public outcry that has created lasting changes. However, when dealing with non-point source pollution, it cannot be seen, touched, nor tasted – so it’s sort of out-of-sight, out-of-mind. Such environmental concerns do not bring about outrage factors or huge events that hasten people to cry for change. Finding ways to get people engaged when everything “looks fine” is a challenge.

DEQ is looking at treating non-point source contamination as a man-made disaster. Nitrate is an invisible contaminant and is a slow onset man-made disaster that is comparable to drought as it creeps in over time without a large event that disrupts the system. Often little is done to protect against the slow creep of nitrates, and often communities wait until they reach the maximum containment level (MCL) of 10mg/l before they begin to worry about such contaminants. Risk experts focus on a specific hazard and how likely it is someone will be exposed to that hazard. Outrage is a combination of more than 20 factors such as fairness of the risk, degree of personal control, decision making processes, voluntarism, and so forth. The statistics are not black and white. This unclarity for the public causes some confusion and complications, but without the public DEQ’s projects and programs would have no support and would not be successful.

A study in Oklahoma determined that where risk is high, but outrage is low, developing public awareness and encouraging on-the-ground best management practices is essential. Based on these findings, DEQ is developing a series of risk communication workshops focused on nonpoint source contamination issues with an emphasis on nitrate in groundwater. Workshop participants will be water, natural resource and agriculture professionals and community leaders

in targeted groundwater planning areas. Improving participation in various on-the-ground nonpoint source, source water protection, and wellhead protection efforts is the purpose of the workshops. Their intent is to provide participants a working understanding of science-based risk communication principles and techniques that will assist them in overcoming communication barriers that can occur between communities, producers, municipalities and regulatory agencies.

They are creating a plan at the state level to educate, inform, and coordinate local contacts and increase participation in on-the-ground implementation of projects that promote best management practices aimed at reducing nitrate contamination throughout the state. With this plan, they hope to share funding and project information and data, and create a cohesive message throughout the state. A small work group will develop the plan. Once a plan has been created, each agency and organization will be asked to review, edit, and approve the plan prior to its implementation.