UPPER BIG BLUE NRD

WATER QUALITY MANAGEMENT PLAN AND VOLUNTARY INTEGRATED MANAGEMENT PLAN

One District, Two Plans, One Water

Draft Minutes from Stakeholder Meeting 3

September 10, 2018
7:00 p.m. - 9:00 p.m.

Upper Big Blue NRD Office
319 E. 25th St.
York, NE 68467

Attendees

See attached attendance sheet

Agenda

1. **Welcome** provided by Steve Wolf, JEO Consulting Group
    - Introductions by Stakeholders
    - Other observers are in the room and we may provide them time to provide comments at the end. However, purpose of meeting is for the stakeholders.
    - Follow up Discussion: What kind of things did you observe in materials since our last meeting?
        - Marty – mentioned that really good information was shared at the last meeting. Modeling tools and concepts are really helpful.
        - Comment – when talking about monitoring wells it has to be there 90 days, it's a short period of time. But with municipal wells we'll put it in and it may take us nine months or so to get to that well. We like to keep it there to do the draw down tests. We can't meet the 90-day timelines. We abandon it at the end of the monitoring. But we need longer than the 90 days to meet regulations.
        - Rod – that 90-day rule is statute.

2. **Water Quantity**
    - NRD actions/efforts – presentation by Marie Upper Big Blue NRD
        - Groundwater works on the correlative rights system
        - Currently the district has a groundwater management plan.
            - This does not include any discussion of surface water.

        - Rule 5 – all water quantity hinges on GW quantity charts set in 1978. This chart provides benchmarks about where groundwater levels have to be.
        - The NRD takes new measurements each year, each well is done within a few days of each other.
        - Voluntary Water Quality Management Plan
            - Can build off existing rules but draws in hydrologically connected areas.
        - In 2005, they hit the allocation trigger from Rule 5.
            - Began putting in metering on all new or existing high capacity wells (pump over 50 gallons per minute)
    - Currently the board sets allocations
        - These were based on yearly metering data
        - First allocation is 30 inches over 3 years
        - Second allocation is 45 inches over 5 years
    - Additional programs set up to help farmers be efficient with their water
        - Water Quality Management Area came into Phase II
            - Water Mark Sensors helped lead to a Soil Moisture discount (available at a 50% discount)
        - Recently elected to pilot a Variable Rate Irrigation Program
            - May not be a water savings program, but is a water application efficiency program

- NeDNR actions/efforts – presentation by Jeremy Gehle, NeDNR
    - Surface Water
        - Comes from rivers, lakes, and streams. Supplied by precipitation.
        - Rather than correlative rights, surface water is regulated by prior appropriation doctrine (first in time, first in right)
        - Since we rely on precipitation, the supply of surface water is as reliable as the weather.
    - NeDNR has several offices to administer throughout the state of Nebraska
        - The Blue River Basin is covered out of the Lincoln office
        - Department is charged with administration and data collection for water based on:
            - Blue River Compact
            - Surface Water Rights
        - Data Collection
            - 250 stream gages across the state
        - Surface Water Permitting
            - Applications can be for any use or purpose (irrigation, storage, municipal, recreation, wetland enhancement, etc.)
            - Have to provide a map with the number of acres planning to apply water to. Appropriation is based on this.
        - Can also require annual reports from irrigators or water users
    - What happens when people run short of water?
        - Department gets a call for a request for water

        - Have to go through and verify the report
        - If verified, then will go through and shut down junior water users and ensure all senior appropriators are pumping what they're allocated
    - The Blue River Compact
        - Approved in 1972, Priority Date of Nov 1, 1968
        - First compact in the nation to include water quality between NE and KS
        - Unique aspect: There is a section of the river between KS and Beatrice where wells can be administrated as if they have surface water rights.
            - It's up to the Department to administrate wells in the same way as surface water in order to sustain flows for the compact.

- Joint NRD/NeDNR – presentation provided by Marie, Jeremy, Jennifer
    - How do we manage ground water quantity and surface water quantity as one in the hydrologically connected areas?
    - The idea of this plan is to be PROACTIVE. We want to be continually engaged between state, agencies, and local stakeholders
    - What is the data we have built so far?
        - INSIGHT is a website that provides a variety of data and information about the basin.
        - Includes Long Term Water Balance
    - Water Budgets
        - Water uses and supplies across the basin
    - Integrated management will look at all activities and help determine which activities are impacting the amount of water in the stream. What is depleting the flows to the stream?
        - A broad range of complicated components go into determining groundwater depletion.
    - A lot of data and information to capture, how do they collect that across the region? They look at groundwater models. There is a joint groundwater modeling effort going on between NRD and NeDNR. Does include Upper Big Blue, Little Blue, Lower Big Blue, and Tri-Basin NRDs.
        - Marie: We currently require that any water user that comes in and wants to pull more than 500 acre-feet annually needs to complete a hydrologic evaluation. This new model will help communities avoid going to engineering firms to do an evaluation, as those could be run for communities internally.
        - With this model, also looking to include contaminant transport and scenarios. Ergo, a multi-purpose model.

    Discussion
        - Tim Richtiq: what did you say was the water usage for those evaluations? Can you give me an idea of who that would include?
            - 500 acre-feet. Ethanol manufacturers, City of York, Nitrogen plant by Geneva, power plants

- Tim Richtiq: How much water do beef (meat or industrial) processing plants use?
    - The largest user that they have in the district is the ethanol plant. Seward could, but to increase by 200 acre-feet would take quite a bit of development.
- Teresa: Is farmland in Crete part of our district?
    - No, it is not. There might be a subdivision within the district, but not much. We come right up to the edge of the city.
    - So for our area the dairy would probably be our biggest user.
    - Maria: Even they don't use that much water (over 500 acre-feet)
    - Once they have used their water (first use) through their wastewater system, it doesn't count towards their allocation. So recycling water is basically free water.
- Other Nonstakeholder Comment: How much water fills Memorial Stadium? How does it relate to water usage by the farmers?
    - Roughly equivalent of 4 pivots
- Luke: Aurora and York have some ethanol plant so looks like there are increases there. Is there any thought about that could have an influence?
    - Have to keep in mind that these maps are for visual purposes and should not be used explicitly. Example: a group of wells was measured and four were down one foot, but one was down almost five feet. So that one well made the 'red blob' north of Seward.
- Mark: So of those five wells in your example, how do you weight those wells?
    - Marie: So when you have wells, they aren't on a perfect grid. For each well we use a "Thiessen Polygon Method of Weighting" within GIS. Now instead of by hand, GIS can help us calculate weights. We set the parameters and GIS gives us the polygon. Each polygon has a different area which is then weighted.
    - Each well represents a certain amount of area. They further apart wells are, the more they represent.
- Teresa: Do surface water users have to have flow meters? Do they use flowmeters? How do you measure the flow?
    - Jeremy: There's not a blanket coverage for surface water. However, the UBB is one of the few areas in the state that do require meters during times of shortage and the requirement for meters for SW is primarily for the need of water administration.
    - As soon as there's a closure on the river, basically everyone above that requires meters on the river. Different types of meters allow for faster recording.
- Tom: Is there a setback between streams and irrigation wells?

- Jeremy: No. One of the requirements for the permit is to file your map. They can be side by side.

- Mark: About the modeling, according to the data only one-half of a percent of irrigated acres in UBB are fed by surface water. If you're tying stream depletion into it, how big of an area in the district is that? Does that affect 10% of our irrigators?
  - That's why we're doing a model. Answers depend on who you ask. In the preliminary work done, we're talking a few thousand acres.
  - We're working jointly to get a model that we both (both NRD and NDR) feel is correct. And we're in the early stages of that.
  - Hydrologically connected is a scientific idea. Management perspective doesn't think 1000 years ahead. There is a limitation to what we look at. For management we look at 10% over 50 years. Over 50 years, did pumping affect 10% of the system? That's how it works in the State of Nebraska.
- Greg: How sensitive is the model? How fine is the detail for it?
  - This model will be far more detailed (than the original models). It has a 160-acre grid (1/4 section), and will have a 5-layer model integrated into it. New modeling packages and algorithms will be used. Daily rainfall versus seasonal rainfall averages. All in all, far more detailed.
- Greg: So the assumption of conductivity through the aquifer will have an impact?
  - Maria: Yes, there is some stream bed conductivity data available that will be incorporated in.
  - Jennifer: Computing power has changed tremendously and allows us to calculate a much larger area. We can store, analyze, and keep it organized.
- Rod: Going back to what Mark said, this is a voluntary program and we're really looking for ways to avoid regulations that might affect integrated management. There are a lot of things we can do voluntarily to reduce water impacts before ever having to be regulated. That's what we want to pick your brain about.
- Other Stakeholder: What's the percentage of people who aren't using meters (either for wells or surface water) right now?
  - For SW, it's more the norm than not to use a meter. Probably 75% for SW in the UBB district. For wells everyone must have a meter.
- Marty: When talking about irrigators, some will do better than others. What's the percentage of people of who do good versus those who waste a lot of water?
  - Marie: Yes. Within the system, we do look at "pooling" – different landowners and wells based on operations pool water together then break it down into segments for efficiency. However, have to look at additional factors (i.e. rainfall).

- TAC member (Steve Melvin): This past year working with the NRD, I reviewed a bunch of charts for how wet the fields are kept and roughly 12% keep the fields really wet. About 80% use all the same model of equipment. Another 10-12% who are fairly wet. About 15-20% who are doing a really great job.
- Marty: working with the City of Hastings, we see it's really a social/economic relationship. People who can afford the water, will use more water.

3. **Stakeholder Discussion** facilitated by Steve Wolf, JEO Consulting Group

- What steps would you like the NRD and NeDNR to take together?
  - Tom Weber: We have two entities coming together. One is going to lead, and one is going to follow. And I would prefer that the NRD takes the lead over DNR simply because of public input and local control.
    - Steve: Clarifies that the state really does want the district to figure this out. The State will check things because they have certain things to look at, they're there to provide quality control but not to micromanage.
    - Jennifer: Our constraint is the state statute that we have to meet. However, within that there is a lot of wiggle room. And for voluntary plans there are very few hard requirements.
  - Mark: Surface water side is roughly 75% metered currently. We farmers use groundwater and have for years with wells that are metered. I would like to see a quantified amount that is being used from the surface water.
  - Greg: One step that you should continue doing is maintain the voluntary aspect. We don't want to get to the regulatory side.
  - Teresa: One of the things the NRD could do is help copay like the NRCS EQIP program, for water sensing probes.
    - Greg: it's a great product. It helps actually show if it rains 2", how much of that actually runs off?
    - Teresa: That might be something for those irrigators that leave their fields super wet. They probably are on an electric system and are afraid that if they get shut off they won't get enough water.
    - Greg: We rely somewhat on the forecast. Trusting the forecast is sometimes hit or miss.
  - Tim: The reuse of water. Look at what the city discharges into the stream instead of the land application of treated waste water. We should put it back to use instead of sending it down the stream. We should put it back to use, unless you have high sodium levels, which can affect crop yields.
  - Dan: We had cost share for watermark sensors for years. I like the idea of the electronic sensors. There isn't a cost share for that right now is there?
    - Rod: No there is not right now. There are some other NRDs who have – we could use those as an example.
    - Dan: Could experiment with one. Have people use one, get used to it, experiment. My neighbor was watering twice as much as me this summer, but he's a young guy who had an agronomist who said he

needed the water. He was way overwatering. But I was using the watermark sensors. If there was something electronic someone younger would be on it. Educating is a slow process.
    - Luke: Proactive approach is important. Over the last few decades, our problems are from less diversification. Most producers are maximizing production. How do we change the market production value? We used to have more pasture and grasslands. How do we voluntarily increase crop diversification?
    - Mick: Continued education – especially with the general public who may not have a great understanding of water use.
    - Bill: It's remarkable how since the 60's, how effective Nebraska is about knowing where the water is and how it's used. I'm worried about the future and how these are things we have to do. We can improve modeling, but what assumptions are there, that we are not asking about are actually there?
        - What if the drought cycle of 2012 came back for 10 years? Is that an assumption as something to even think about?
- Ideas on Goals
    - Steve: Already touched on goal of diversifying crops and the value of education
    - Marty: I was glad to hear that modeling may include travel of contaminants within the aquifer. A joint modeling has a lot of data and a lot more complex, but whatever we can do to address both quantity and quality is great.
    - Tom: We need to make sure that our watersheds are fully developed. We put dams in (the Lower Big Blue) and really helped control our water and the flooding issues.
    - Greg: Agrees with Tom in regards to surface water, but in regards to groundwater concerns if we have limitations then we're diminishing the margin of leeway. If we have another 2012 situation, I would like to build in more reserve.
        - Suggesting a reservoir for surface water to capture rainfall, rather than allowing it to runoff.
        - Education side: is there a way we can reduce evaporation with what we have captured, can we keep it there? Lake Wanahoo has massive amounts of water go over the spillway.
        - We won't see another big lake, but we can put in small structures.
        - Couldn't the capture be at the top of the field instead of downstream?
            - Yes.
            - Then we have to intercept and hold the water closer to the field that has contaminants so then we need biological remediation. This takes a more integrated approach to looking at our watershed. This means looking at things at a smaller scale. If we're talking about ways to improve groundwater we have to have a modeling component of how that impacts surface water.
    - Brandon: Talking a lot about irrigation but consider the people further out (Utica and Timora) there's 7 or 8 miles of water that flows right into the creek. When you get out there isn't a lot of irrigation where there isn't groundwater.

Talk to them about where their water is going (Surface Water), there's a lot of water and nutrients coming from these sources. There's a lot of young people out there who would take these ideas on, but there are also a lot of people who won't change unless they're forced to.

- Are there any current water quantity areas of concern?
    - Brandon: For contamination in surface water in relation to groundwater, we see contamination of nitrates in groundwater, are we also seeing that in surface water? Is there any relative connection?
        - Carla: Not sure about surface water in particular. I know up by Bazile they're really connected but no answer as to this particular area.
        - Rod: The testing for surface water is fairly limited. Perhaps we should do more for that.
        - Adam: There is some stream sampling being done but is pretty limited. Generally, in surface water streams have typically lower rates of nitrates due to biological activity.
    - Greg: Is there any part of the district that is less responsive to recovery after having a drawdown?
        - Marie: There are areas that have a bigger influence (south of Sutton/Grafton). It's not uncommon to see 4 to 8 feet of change between years, where other parts of the district stay pretty even.
        - Data doesn't currently show any specific areas that have consistent problems. Changes are dependent on precipitation.
        - Rod: Southern parts of the district have declined more than the rest of the district. Since the 80s there have been recovering – which the entire district experienced.
    - Mark: When we go back to the 60s and 70s, how much data do we have to look at when discussing well monitoring?
        - Rod: We have quite a bit of data, although not as much as we have now, in the five groundwater districts (Fillmore, Clay, Seward, Hamilton, York)
        - Marie: USGS has historical data along with the old groundwater district data. That data goes into the model. Really good data starts in the 50s.
        - Luke: Did USGS data start in the 50s?
        - Marie: There is data from USGS all the way back to the 40s.
    - Mark: I don't have a lot of concerns. When we look at the UBB and the charts, it looks like people have done a really good job conserving water and taking into consideration the amount of land developed over the course of time. However, we can always be more efficient.
    - Teresa: Are there wells in the district that are going unused?
        - There are about 12,000 registered wells with about 11,000 of those active. The others are unused, but the farmers choose to not abandon them for various reasons.
    - Luke: CPNRD is fully appropriated and to my understanding, we are not. At what point do we decide we are fully appropriated?

        - Jennifer: There are rules based on how we designated fully appropriated areas following statute. There's the 65/85 % rule – how often the district meets it's designated beneficial uses.
        - Luke: are you talking about surface water?
        - Jennifer: It's the amount of water in streams and surface sources but we account for hydrologically connected groundwater and how its connected to the steam.
        - Luke: I'm thinking about groundwater specifically.
        - Jennifer: So there is no fully appropriated rule based on GW.
        - Rod: There is actually, but that's not what it's called. When groundwater levels drop below the red line [on chart provided] that's the trigger.
        - Luke: So that curtails new wells.
        - Rod: It's written in our rules that if we hit that point there is a moratorium on drilling.
    - Mark: Will that be part of the modeling? Do we know how close we are to being fully appropriated?
        - Those are different things. We wouldn't use this to determine fully appropriated as we're talking groundwater here.
        - Rod: Current reports say the basin will not be "fully appropriated in the foreseeable future" but what that means is up for discussion.
        - Jennifer: It takes more surface water administration to get to that designation.
        - Greg: Then maybe that should be added to the goals. To be responsive to a change of the cycle, early enough. Monitor weather and changes to climate to watch for impacts to fully appropriated status.
- Any perspectives on water quantity limitations in District?
    - No Comments.
- What are the perspectives from friends, neighbors, or others and their feedback?
    - Dan: I haven't heard anything. Even in a dry year we're still coming in way under our allocation. Economics really take care of that. At the end will there be a report for each well and how many inches can be put on from each well? Area wide average?
        - Rod: The area wide averages we have, we can publish those maps. Sending individual data back is a challenge. The board/NRD is looking into generating that sort of data, but with the plethora of wells, landowners, etc. it's a challenge that they haven't figured it out yet.
    - Marty: For moratorium of wells it really just matters how much water is being put on versus one well or five wells.
    - Brandon: How do you guys determine the City's water needs for the year?
        - Marty: For Hastings, we average about 7 inches per acre (of city area). However, that does not include power production as power production is not just for the City of Hastings but instead provides power for the entire Midwest. Power production is out of our control. For irrigation, when comparing summer to winter months, we do about 7 to 8 inches per green acre.

- Luke: Perspective on water quantity, the NRD is concerned about the people who use a heavy hand who are typically not big NRD supporters.

4. Stakeholder Research Assignment

- Hand out provided and explained by Adam Rupe, JEO Consulting Group.
- Each stakeholder was tasked with drafting one goal for water quality management, and one goal for water quantity management.

5. Stakeholder Roundtable

- Mark: When looking at the people at the table when discussing surface water, there are some of us who use surface water but a lot of us aren't. I'd like to see more people involved on that side of it.
- Nick: As I think of this model, I want to make sure we don't limit ourselves with this model. Be sure we have the ability to continue to build to it.
- Luke: Collaboration between NeDNR and the NRD is good, I appreciate that. Continuation of that is important.
- Dan: Quality issues – education over the past five/ten years. Regulation of nitrogen application will help improve quality.
- Teresa: When we talked about the city water use, it would be important to the people in town if we could recognize how they're putting as much water on their lawn as farmers put on their farms.
    - Once start talking about how much water they use then ease into water quality issue discussion.
- Tim: When in Kansas if you stayed under 700-acre feet you were fine, but if you went over you were penalized. That gave them incentive to start looking at what water was used for.
- Marty: I just appreciate everyone's comments. We think everyone deserves a certain amount of water to keep their lawns green, but we should be taxing people who go way over. Water Rate Structures.

Next Meeting Date

- November 27, 2018 at 7 p.m.