Water Committee Meeting
Thursday, August 29, 2019 7:30 AM
Lower Platte North NRD Office
P.O. Box 126
Wahoo, NE 68066

1. UNFINISHED BUSINESS

2. REGULATORY

2.A. GROUND WATER MANAGEMENT AREA

2.A.1. Variance Request from 2010

The variance LPN-V-010-052 was approved in the Fall 2010 for 135 acres. (approval letter attached) The land was not developed, but the person is now wanting to put on a swing arm pivot and include the extra acres. The land currently has 117.81 certified acres. Is the variance still valid?

The attached letter, dated 12/15/2010, states that a producer has one calendar year to purchase and install equipment or the permit would be adjusted accordingly for irrigated acres. Committee felt that the producer should submit a new variance request.

2.A.2. Variance Request in the Hydrologically Connected Area (Limited Development Area)

Applications for new irrigated acres are due by September 15, 2019. The District has received 10 new applications totaling 603 acres.

2.A.3. Variance Requests in the Non-Hydrologically Connected Area (Normal Development Area)

The District has 5 applications up for review in the Non-Hydrologically Connected Area totaling 90.0 acre feet. Per the Groundwater Management Area Rules and Regulations, the Board can approve up to 75 acre feet per year. Attached is the list of applications.

Staff and Committee discussed the variance and it was determined that only one variance met the 300 point threshold, which was adopted by the LPNNRD Board in June 2019.

2.A.4. Variance Requests in the Restricted Development Areas

2.A.5. Well Permit Program

2.A.5.a. Well Permits Approved in 2019

The total number of approved permits for 2019 is 19

Location of Approved Well Permits for 2019: Correct as of 8/28/2019

County	Irrigation - New	Irrigation - Replacement	Stock	Commercial	Municipal	Other	Total
Butler		1					1
Colfax		1					1
Dodge	1	1				1	3
Boone	6						6
Madison							0
Platte		4					4
Saunders	1		1		1	1	4
Total	8	7	1		1	2	19

2.A.5.b. Irrigation Well Permit

Tom Weber, NDOT, emailed the NRD with this situation. NDOT is building the new Highway 30 in the Rogers to North Bend area now. When we acquired property from Duane Emanuel (west of North Bend, west of County Rd 5 and between US Hwy 30 and County Rd S, - see legal description below), our design plans called for moving irrigation water from Duane's current well (see the green circle on the attached aerial photo/plan) through a pipe under the new highway (see the green arrow) to a new riser on the southeast side of the new highway (see the green X) to enable Duane to continue irrigating that southeast property.

However, it now appears that we won't be able to run that pipe under the highway after all. We are now proposing to drop a new well approximately where that green X is located. The existing well (the green circle) would still be used to irrigate the area northwest of the new highway.

Can staff sign a new well permit when it is received? No new acres will be added.

The Committee instructed that under these circumstances, staff could sign the well permit when it is received.

2.A.5.c. Well Permits - Livestock

The LPNNRD has received 3 wells permits for poultry operations in Butler County. Locations are SE SE 7-15N-1E, NW NE 16-15N-1E, NE SE 8-15N-1E. The nearest flight line is about 3 miles north but there is other irrigation in the area.

Staff and Committee looked at AEM flight information for this area and it appears that water would be sufficient.

2.A.6. Water Flow Meters

I took one of the questions from last month's Committee Meeting for the Committee to answer.

1. Are we willing to put any money towards this activity?
1a. If we are going to put money towards this activity are we going to have cost share with producers? If so what rate?

Committee had great discussion on the process of implementing flow meters within the District. It was recommended that a tier cost-share with set amounts be explored. An example would be, if producers install meters in year 1 they would get $1,000, year 2 - $800 and year 3 - $600. The installation of flow meters should be over a 3 - 5 year period with producers realizing that a date after this time, flow meters would became mandatory. The purpose of installing flow meters for the NRD is to get a better understanding of sustainable aquifers for future generations. This will also allow the LPNNRD to be pro-active instead of re-active if water consumption becomes an issue. A producer can utilize the flow meter on how the well is actually performing and increase irrigation management efficiency. The Committee recommended to start setting aside funding, like $200,000 a year, into a sinking fund for the purpose of a grant match. Committee directed staff to obtain information on how many meters are actually installed in the District.

2.A.7. Voluntary Integrated Water Management Plan - LPNNRD

Nebraska Department of Natural Resources will be at the Water Committee on Thursday, October 3 at 9 am. They will discuss the current V-IMP along with the proposed draft 10/50 boundary. All directors are welcome to attend.

2.A.8. Cost Share Programs

2.A.8.a. Irrigation Well Sample Kits

2.A.9. LPNNRD Operator Certification

2.B. CHEMIGATION

August 2019 Update:

We have 665 renewals and 54 new permit applications for a current total of 719 (minus 5 cancellations), which brings our total to 714 active permits. Inspections for 178 renewal permits and 50 new permits have been completed. We have 2 new permits and 1 re-inspection left to inspect. There were 2 new permit cancellations and 3 renewal cancellations (5 total). Thus far we have completed 24 re-inspections as well. This brings our current inspection total to 251 inspections for the year. If everything goes according to plan, we will have 254 total inspections for the year, which includes the 2 new permits and 1 re-inspection that is left to do. Below is a breakdown of this information.

New Permits by Counties: (54)-- (including the 2 cancellations and the 2 new permits that are left to inspect)
Boone- 7
Butler- 1
Colfax- 12
Dodge- 4
Madison- 0
Platte- 10
Saunders- 20

Renewal Permits by Counties: (665)--including the cancellations
Boone- 53
Butler- 106
Colfax- 56
Dodge- 111
Madison- 7
Platte- 105
Saunders- 227

Renewal Inspections by Counties: (178)
Boone- 15
Butler- 25
Colfax- 14
Dodge- 17
Madison- 1
Platte- 31
Saunders- 75

New Inspections by Counties: (50)
Boone- 6
Butler- 1
Colfax- 11
Dodge- 4
Madison- 0
Platte- 10

Saunders- 18

New Permit Cancellations by Counties: (2)
Colfax- 1
Dodge- 1

Renewal Permit Cancellations by Counties: (3)
Saunders- 3

2.C. LIVESTOCK WASTE PERMITS

The LPNNRD has received # 1 livestock permit applications from DEE since the last Water Committee meeting.

Name	Livestock	Type of Permit	Legal Description	County
Munsch Poultry Farm	Poultry	New	NE SE 28-18-1E	Platte

Description of permit application
Munsch Poultry Farm - 2 barns for a total of 95,000 broilers. This site is located next to other existing barns.

3. GROUND WATER PROGRAMS

3.A. DECOMMISSIONED WELL PROGRAM

3.A.1. Well Estimates

Staff explained to the Committee that in certain circumstances after taking the approved material list cost and then 75 percent of that cost, the final cost-share on a well can be around 60 percent. To encourage individuals to decommission their wells, it was recommended to keep the total cost-share to 75 percent of the total cost.

3 new wells has been reviewed and approved for decommissioning since the last Committee meeting.

Well Owner	Type of Well	Cost Share Estimate	County
David C. Mitchell	Domestic	$272.06	Dodge
David C. Mitchell	Domestic	$202.69	Dodge
David C. Mitchell	Domestic	$212.44	Dodge

3.A.2. Plugged Wells

wells have been plugged, reviewed, and ready for cost share payment approval this month.

Well Owner	Type of Well	Cost Share Estimate	County
Clay Jedlicka	Irrigation	$450.89	Colfax
Clay Jedlicka	Irrigation	$420.23	Colfax
Clay Jedlicka	Irrigation	$420.23	Colfax
Weston Loseke	Irrigation	$1,136.05 (applied before reasonable rate change)	Platte

3.B. LOWER PLATTE NORTH NRD GROUND WATER STUDIES

A technical meeting is scheduled for Monday, September 16 from 1 to 3 pm.

3.B.1. AEM (Airborne Electromagnetic) Information

The AEM report is attached for directors to review. The AEM information is now on the EMWRA website starting August 29th.. Shown below is the recommendations from the AGF company.

Staff reported to the Committee that it would recommend looking at Recommendation 3.1 for better utilization of the data.

RECOMMENDATIONS:
Recommendations provided to the LPNNRD in this section are based on the interpretation and understanding gained from the addition of the AEM data to existing information and from discussions with the LPNNRD about their management challenges.

- 3.1 **Integration of 2007-2018 AEM Hydrogeological Investigations** - The LPNNRD has acquired AEM data from 2007, 2014, 2015, 2016 and 2018 with several different AEM systems and contractors performing the work including USGS, XRI Geophysics and AGF with oversight from the ENWRA and the LPNNRD. With the completion of this current study there needs to be additional work done to bring all the work from previous years together in one seamless package using the same parameters such as the three different geographic projections NAD83 Zone 14N (meters), NAD83 Zone 14N (feet), and NAD83 Nebraska State Plane (feet), model layering structure, and hydrologic nomenclature. Recent communication with consultants and NE-DNR has also brought to light that additional effort is needed to quantify the NE-DNR boreholes relationship to the aquifer materials that the AEM has mapped. There apparently exists confusion on the use of "principal aquifer material" versus "aquifer material" versus "Principal Aquifer" as determined by NE-DNR. While these are apparently minor additions and changes, they can add to the overall usability and portability of the AEM analysis results within the LPNNRD.
- 3.2 **Additional AEM Mapping** - The AEM coverage of the district is nearly complete. At this time the only reason to gather additional AEM is to better understand the details of a specific area. Examples of those areas could be the Bellwood and Richland-Schuyler control areas.
- 3.3 **Update the Water Table map** - The groundwater data used in the analyses presented in this report utilized the 1995 CSD water table map which is now 24 years old. Additional water level measurement locations would improve the water table map where groundwater conditions are unconfined. The areas of glacial till and loess covering the parts of the district will need great care in developing a water level map of potentiometric heads due to the confined to semiconfined nature of the area. Use of the data collected in this survey and future surveys will provide the best possible water table and conditions map for the district.
- 3.4 **Siting new test holes and production wells** - The AEM hydrogeological framework profiles, maps, and surfaces provided in this report provide great insight in 3D on the relationship between current test holes and production groundwater wells. At the time of this report, the currently available lithology data for the

LPNNRD area was used in building the framework maps and profiles. Additional information from previous groundwater reports were helpful in this work. It is recommended that the results from this report be used to site new test holes and monitoring wells. Often test holes are sited based on previous work that is regional in nature. By utilizing the maps in this report new drilling locations can be sited in more optimal locations. The location of new water supply wells for communities can also use the results in this report to guide development of new water supply wells. Planners should locate wells in areas of greatest saturated thickness with the least potential for non-point source pollution. A good example of this would be confined aquifers with large volumes of coarse aquifer and aquifer material with minimal sedimentary boundary conditions. The previous AEM studies have already found use by CSD and local well drillers to locate test wells and production wells within the LPNNRD.

- 3.5 **Aquifer testing and borehole logging** - Aquifer tests are recommended to improve estimates of aquifer characteristics. Limited aquifer properties from previous reports were available outside the larger cities in the survey area. A robust aquifer characterization program is highly recommended at the state, regional (NRD's), and smaller municipal levels. Aquifer tests can be designed based on the results of AEM surveys and existing production wells could be used in conjunction with three or more installed water level observation wells. Additional test holes with detailed, functional, and well calibrated geophysical logging for aquifer characteristics are highly recommended. Examples of additional logging would be flow meter logs and geophysical logs including gamma, neutron, electrical, and induction logs. Detailing aquifer characteristics can be accomplished with nuclear magnetic resonance logging (NMR) at a reduced cost when compared to traditional aquifer tests. This is a quick and effective way to characterize porosity and water content, estimates of permeability, mobile/bound water fraction, and pore-size distributions with depth.
- 3.6 **Recharge Zones** - The LPNNRD hydrogeologic framework in this report provides areas of recharge from the ground surface to the groundwater aquifer. Reconnaissance level AEM investigations provide limited detailed information between the lines for understanding recharge throughout the survey area. It is recommended that future work integrate new soils and land use maps with the results of this study to provide details on soil permeability, slope, and water retention to provide a more complete understanding of the transport of water from the land surface to the groundwater aquifer. A potential solution to water quality, quantity, and stream depletions is adding additional fresh surface water as recharge to select areas of rangeland or other areas. Additional work can be done to identify where the best locations are for these type of management efforts. This information can and has been used in Nebraska to improve Well Head Protection Areas by refining the estimated travel time estimates and the boundary areas.
- 3.7 **Managed Aquifer Recharge** - The areas which may have potential for managed aquifer recharge (MAR) can be approximately located by the interpreted results from AEM reconnaissance line interpretations. Detailed analysis for this purpose would need to be done to determine where viable opportunities for the LPNNRD exist and what additional information would be required for final selections of MAR

sites. A detailed plan for locating and developing MAR sites would be beneficial to the LPNNRD for storage and release of water for stream flow and other uses.

- 3.8 **Updating previous groundwater reports and Groundwater Management Plans** - The groundwater reports and management plans should be updated with the AEM information. The addition of estimates of groundwater in storage, recharge areas, hydrologic connection to streams and consideration of managed aquifer recharge sites will greatly improve and groundwater management plan.
- 3.9 **Assist the LPNNRD staff with additional interpretation and data analysis for groundwater management needs -** The AEM reports provided to the district are complete, but there is always a need to extract and analyze the AEM data in conjunction with a particular management need or area. Examples include using the AEM data to define areas for management practices related to water quality problems, use the AEM data to site water well development, assist groundwater modelers with input data sets for groundwater modeling, and define hydrologic connections between groundwater and surface water to name a few.

3.C. GROUND WATER ENERGY LEVELS

WANN Basin day was held on August 27 with 4 agencies measuring 51 wells. These wells are measured spring, summer and fall for the purpose to assist in containing the NAD contamination. Graphs are attached for all 51 wells measured. Staff opinion, nothing really showed up on the graphs and the currents readings to cause concern.

3.D. GROUND WATER QUALITY SAMPLING

4. SURFACE WATER PROGRAMS

4.A. STATE LAKES, FOR THE WEEK OF

The Committee felt that Lake Wanahoo should be included in this sampling.

Week of August 19th, 2019

Beach Bacteria and Harmful Algal Bloom results are now posted on the NDEE web page (http://www.deq.state.ne.us/)

No lakes within Lower Platte North is on the list for this week.

5. OTHER

5.A. Modeling Example

Staff showed the Committee different scenarios utilizing the GET tool from Ollson's.

5.B. COMMENTS FROM THE PUBLIC