

Water Committee Meeting  
 Thursday, October 3, 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

An update on the technical meeting. Geological model for District would include AEM flights, test holes, registered well logs?

2.A.1. Variance Request in the Hydrologically Connected Area (Limited Development Area)

The District has 13 applications that meet the criteria for approval within the Hydrologically Connected Area (see attached list). The 13 applications total 111.498 acre feet of new depletions and 837 acres of land. The Board can approve up to 200 acre feet of depletion each year.

The Committee reviewed the variances and heard from Gary Meister on his variance, which ranked high enough on points but had sloping lands greater than the 20% allowable by Board policy. Staff will continue to work with Gary along with 2 other applicants (attached as other variances) for review with conditions at next Water Committee.

2.A.2. Lonnie Schaad Variance Extension

Variance LPN-V-012-0207 for Lonnie Schaad was approved conditionally on 11/13/2017 for Section 20-18-1E Platte County. The flood took out some bridges in the county so Lonnie was unable to get the pivot moved to complete development of the acres. Lonnie is asking for an extension until March 1, 2020.

2.A.3. Well Permit Program

2.A.3.a. Well Permits Approved

Wells Permits Approved: #

Landowner	Number of Wells	Number of New Irrigated Acres	Type of Well	County	Subarea

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The total number of approved permits for 2019 is #

Location of Approved Well Permits for 2019: Correct as of #####

County	Irrigation - New	Irrigation - Replacement	Stock	Commercial	Municipal	Other	Total
Butler							
Colfax							
Dodge							
Boone							
Madison							
Platte							
Saunders							
Total							

#### 2.A.4. Well Permit for Highway Construction

New bypass south of Fremont is cutting through an irrigation field. Attached on the map is the location for a new well. There will be no additional acres, so is the Committee/Board ok to approve a new well permit?

The Committee felt under the circumstance, that this well permit should be considered and will review when permit comes into the LPNNRD office.

#### 2.A.5. Nitrogen Phase Area Study

A contract is attached to have UNL assist the LPNNRD in some of the in-kind match for the NET Grant in the nitrogen phase areas. UNL is asking for a 25% deposit at signing for the

analysis that they plan on conducting for the NRD. An invoice for \$4,122.50 is attached.

A brief synopsis from the contract:

The University of Nebraska will work with the Lower Platte North and its contractor, EA Engineering, to identify and schedule core and water samples collection, and deliver samples to the Water Sciences Laboratory. Cores will be divided in to 5' intervals, described for texture and subsamples immediately collected for determination of gravimetric moisture content. The remaining core will be air dried and composited by grinding and mixing. Ground and dried subsamples of composites will be extracted for nitrate and ammonia using 1M KCl. Sediment pH will be measured using 0.01 M CaCl<sub>2</sub> slurry. Nitrate and ammonia will be extracted using 1M KCl and analyzed using a Lachat 8500 autoanalyzer by Cd reduction and salicylate colorimetric methods. If available, undisturbed samples will be collected for saturated hydraulic conductivity and water retention properties, which will be useful for estimating travel time analysis in the vadose zone. Detailed textural descriptions will be compared to measurements of nitrate-N, ammonia-N, pH, moisture and lithology. If requested as part of the project, stable isotope analysis of nitrate from either the vadose zone or wells in the area will be used to characterize the nitrate sources and transport. Determination of water retention properties and hydraulic conductivity of undisturbed cores will help estimating rate of travel of nitrate pulse to ground water. Repeated coring at specific locations will permit correlation of nitrate concentration profiles and potentially provide in situ estimates of transport and attenuation rates. Calibration of vadose zone transport calculations at these locations could permit more accurate estimates of transport rates at new sites. Finally, accurate assessment of the occurrence and potential leaching rates beneath specific land uses can help land and water resource managers identify areas where the most effort should be placed on managing fertilizer application and irrigation practices. A standardized protocol for collecting and analyzing vadose zone cores is currently being developed to collect vadose zone data used in estimating nitrate occurrence and transport potential. This project will help in development of this standardized protocol.

UNL will also be doing some age dating and isotope sampling analysis.

#### 2.A.6. Bellwood Phase 2 Area

2019 is the seventeenth year for this Phase 2 Area.

Year	Nitrate-nitrogen Range	Percent Nitrate-nitrogen 0 to 8.0 ppm	Percent Nitrate-nitrogen 8.01 to 10.00 ppm	Percent Nitrate-nitrogen greater than 10 ppm
2004	0 to 25 ppm	46.3% (44 of 95)	8.4% (8 of 95)	45.3% (43 of 95)
2005	0 to 25 ppm	47% (44 of 94)	15% (14 of 94)	38% (36 of 94)
2006	0 to 24 ppm	41% (29 of 71)	14% (10 of 71)	45% (32 of 71)
2007	0 to 31 ppm	48% (48 of 100)	9% (9 of 100)	43% (43 of 100)

2008	0 to 28 ppm	53.75% (43 of 80)	7.5% (6 of 80)	38.75% (31 of 80)
2009	0 to 22 ppm	45.5% (41 of 90)	15.5% (14 of 90)	39% (35 of 90)
2010	0 to 35.7 ppm	48.65% (54 of 111)	11.71% (13 of 111)	39.64% (44 of 111)
2011	0 to 26.6 ppm	51% (56 of 110)	6% (7 of 110)	43% (47 of 110)
2012	0 to 28.9 ppm	57% (61 of 107)	9% (10 of 107)	34% (36 of 107)
2013	0 to 25.8 ppm	50% (53 of 107)	9% (10 of 107)	41% (44 of 107)
2014	0 to 22.3 ppm	51% (55 of 108)	13% (14 of 108)	36% (39 of 108)
2015	0 to 32.3 ppm	43% (31 of 72)	8% (6 of 72)	49% (35 of 72)
2016	0 to 35.1 ppm	34% (25 of 74)	11% (8 of 74)	55% (41 of 74)
2017	0 to 23.5 ppm	36% (27 of 74)	15% (11 of 74)	49% (36 of 74)
2018	0 to 30.9 ppm	40% (25 of 63)	11% (7 of 63)	49% (31 of 63)
2019	0 to 24.5	48% (22 of 46)	9% (4 of 46)	43% (20 of 46)

#### 2.A.7. Richland - Schuyler Phase 2 Area

2019 is the fourth year of this Phase 2 Area.

Year	Nitrate-nitrogen Range	Percent Nitrate-nitrogen 0 to 8.0 ppm	Percent Nitrate-nitrogen 8.01 to 10.00 ppm	Percent Nitrate-nitrogen greater than 10 ppm
2016	1.47 to 41.8 ppm	29% (10 of 34)	9% (3 of 34)	62% (21 of 34)
2017	2.44 to 25.4 ppm	23% (8 of 35)	(0 of 35)	77% (27 of 35)
2018	1.75 to 29.3 ppm	25% (5 of 20)	10% (2 of 20)	65% (13 of 20)
2019	0.80 to 35.9	7% (2 of 30)	13% (4 of 30)	80% (24 of 30)

#### 2.A.8. Richland - Schuyler Phase 3 Area

2019 is the fourth year of this Phase 3 Area. 38% of the water samples are over 15 PPM. Attached is some more information from the 2019 nitrate results.

Year	Nitrate-nitrogen Range	Percent Nitrate-nitrogen 0 to 8.0 ppm	Percent Nitrate-nitrogen 8.01 to 10.00 ppm	Percent Nitrate-nitrogen greater than 10 ppm
2004	0 to 47 ppm	30% (42 of 139)	10% (14 of 139)	60% (83 of 139)
2005	0 to 120 ppm	31.3% (74 of 236)	10.2% (24 of 236)	58.5% (138 of 236)
2006	0 to 53 ppm	28% (50 of 181)	14% (26 of 181)	58% (105 of 181)
2007	0 to 99 ppm	32% (75 of 231)	10% (22 of 231)	58% (134 of 227)
2008	0 to 46 ppm	28% (53 of 190)	12% (23 of 190)	60% (114 of 190)

2009	0 to 57 ppm	33% (72 of 216)	6% (13 of 216)	61% (131 of 216)
2010	0 to 57.5 ppm	31% (70 of 229)	7% (15 of 229)	62% (142 of 229)
2011	0 to 65.8 ppm	28% (67 of 241)	9% (21 of 241)	63% (153 of 241)
2012	0 to 52.6 ppm	29% (70 of 241)	9% (21 of 241)	62% (150 of 241)
2013	0 to 94.0 ppm	25% (63 of 252)	9% (23 of 252)	66% (166 of 252)
2014	0 to 101.0 ppm	27% (68 of 251)	9% (22 of 251)	64% (161 of 251)
2015	0 to 53.3 ppm	23% (55 of 238)	12% (29 of 238)	65% (154 of 238)
2016	0 to 50.5 ppm	25% (58 of 228)	10% (22 of 228)	65% (148 of 228)
2017	0 to 53.4 ppm	25% (60 of 238)	6% (14 of 238)	69% (164 of 238)
2018	0 to 56.9 ppm	26.5% (50 of 189)	6.3% (12 of 189)	67.2% (127 of 189)
2019	0 to 39.4	26% (52 of 199)	11% (22 of 199)	63% (125 of 199)

## 2.B. CHEMIGATION

For 2019 we have 666 renewals and 51 new permit applications for a current total of 717 active permits. The 2019 NDEQ report is attached with the current totals including the number of inspections performed in 2019 and the total amount of chemical(s) applied and acres that were treated in 2018.

## 2.C. LIVESTOCK WASTE PERMITS

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

Name	Livestock	Type of Permit	Legal Description	County

Description of permit application

### 3. GROUND WATER PROGRAMS

#### 3.A. DECOMMISSIONED WELL PROGRAM

##### 3.A.1. Well Estimates

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

Well Owner	Type of Well	Cost Share Estimate	County
Mitchel Broekemeier	Hand-dug	\$1,500	Saunders
Dorothy A. Kavan	Domestic	\$273.54	Saunders

##### 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
Jeffrey S. Fadschild	Irrigation	\$1,000	Platte
David C. Mitchell	Domestic	\$285.49	Dodge
David C. Mitchell	Domestic	\$307.96	Dodge
David C. Mitchell	Domestic	\$364.05	Dodge

#### 3.B. LOWER PLATTE NORTH NRD GROUND WATER STUDIES

##### 3.B.1. Flow Meters

The discussion from last month's Committee Meeting recommended a tier cost-share with set amounts being 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 become mandatory. The purpose of installing flow meters for the LPNNRD 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.

Staff is in the process of obtaining information on how many meters are actually installed in the District.

More discussion questions:

- > Who is going to do the meter installation?
  - Staff
  - Private
  - Contract
- > Who is going to handle the meter maintenance?
- > If the NRD does the tier cost-share, go district wide, by counties or management areas?
- > What about check valves? State water standards states that if a hole is cut into the pipe to install a meter, a check valve needs to be in place. Also if a person is doing meter maintenance on a flow meter, once it is pulled out of the pipe the meter can't be re-installed without a check valve in place.

At the NARD conference a presentation was shown on another option not utilizing a water flow meter. The Twin Platte NRD is working with Ollson and NDNR on getting water consumption by collecting electrical usage from the power company. The electrical rate number collected is calculated with the pumping rate from the well to provide water usage from the well. The grower would input irrigation method, crops planted and field operation and then receive a water budget on the field. The NRD contracted out to the local well drillers to provide the pumping rate from the wells for the producers. The cost for this project was estimated at \$3,500,000.

Another option that was reviewed at the conference was attaching a sensor to the pivot. This sensor would relay the amount of water going through the pivot nozzles and then using a formula with the pumping rate, the water use could be calculated. The cost of the sensor was about \$400.

### 3.B.2. NARD Conference

Some of the sessions attended by Water Staff:

- > Nebraska Department of Environment and Energy Update - General updates were given and then NDEE explained the process of doing the permitting of 404 permits. This is not going to be a quick transition from the Corp. to the NDEE, which is also developing a new unit to handle the permits.
- > Understanding Soil Health - NRCS gave an excellent update on where the agency is now and where it was. Since 2012 no-till and cover crops have increased in Nebraska. Nebraska is the leader with 51 percent of its cropland being no-till or reduced till. Cover Crops acres have doubled to 3.1% or 700,000 acres in this same time period. Aaron Hird showed some soil samples from the Rogers Farm near Lincoln which showed after 40 years of no-till, a

hard pan is still present. He said the key to soil health is getting a root into the profile year around, that is why they feel cover crops can really benefit the soil.

### 3.B.3. Lower Platte River Consortium

The Drought Plan has been approved by Bureau of Reclamation and now NRD Boards in the next few month will review.

## 3.C. GROUND WATER QUALITY SAMPLING

## 4. SURFACE WATER PROGRAMS

### 4.A. STATE LAKES, FOR THE WEEK OF

Week of September 26th, 2019

This week's beach Bacteria and Harmful Algal Bloom results are now posted on the NDEE web page (<http://dee.ne.gov/>)

The trigger for HAB (Harmful Algae Bloom) is 20 ppb.

No lakes within LPN is on the list.

### 4.B. USGS STREAM FLOW GAUGING SITES

A meeting was held on the possibility of a streamgage around Fremont. There is expressed interest by multiple stakeholders to install a river gauge near Highway 77 South of Inglewood/Fremont. The partners discussed percentages and who all would be involved. The group would like the Dodge County Emergency Manager to seek grant funds to help in upfront costs, with a followup meeting later in the year. Some more information is shown below. At the basin meeting in Kearney, a suggestion was made about installing a camera at some locations.

#### **Summary of River Gauge Project Costs;**

The USGS charges a one-time cost for purchase of the equipment for the streamgage, USGS installs the equipment at no cost. USGS also maintains, repairs, and replaces that equipment for the life of the streamgage at no additional cost to the cooperator. That one-time equipment cost is \$18,200 (includes telemetry (transmits 15-minute values of data every hour), recorder, two independent water level sensors (radar sensor and pressure sensor) for stage verification, wire-weight gage for physical measurements to water surface (for verifying sensor information), enclosure, and misc (batteries, wiring, mast, solar panel, locks)).

Operation costs for the streamgage depend on what information is being collected at the gage.

1) Stage-only: streamgage only provides water level record (not discharge). This annual operation cost is \$6,460.

2) Stage and discharge: streamgage provides water level and discharge record. This annual operation

cost is \$15,125.

The USGS is currently able to offer a 25% match, thus:

1) For stage-only, costs would be \$6,460 (\$1,615 for the USGS, and \$4,845 for the cooperator).

2) For stage/discharge, costs would be \$15,125 (\$3,780 for the USGS, and \$11,345 for the cooperator).

The USGS also is able to monitor real-time water quality at streamgages, such as water temperature, conductivity, pH, dissolved oxygen, turbidity, nitrates, and other parameters. Of course those options come at extra cost.

## 5. OTHER

### Reminder on variance extension

#### 5.A. GMDA Winter Conference

The conference is scheduled for January 12 - 15 in Fort Lauderdale, FL. In the past 2 staff and 2 directors have attended. If a director is interested, please let us know soon.

#### 5.B. Voluntary Integrated Water Management Plan - LPNNRD

An update was given by Nebraska Department of Natural Resources (NDNR) on the V-IMP. As the NDNR and LPNNRD have developed a Voluntary Integrated Management Plan (V-IMP) they will not be annual fully appropriation evaluations. With V-IMP in place, the District should never be over-appropriated. After each 5-year water allotment, which was set up in the V-IMP, the time could come where no more water uses will be allowed. A chart was distributed showing the remaining depletion of 1,508 Acre Feet (should be corrected to 1505). This would leave the LPNNRD with 752.5 AF to be distributed over the next 3 years. Updated chart is attached.

NDNR mention the possibility of granting an extension on the current V-IMP, so they have a chance to incorporate the AEM data from all of the NRDs. This will be a discussion item at the Lower Platte Coalition technical meeting and annual meeting. NRD and UNL are conducting a study with the AEM information in the LPN SQS #2 management area at the present time. DNR also commented that more accurate water use information would be invaluable in making the model more accurate. As this model can be used as a baseline on future projects, to develop a regional model will be a lot easier in the future. A couple of areas of interest in the near future could be the nitrate management areas and the red area west of the Todd Valley aquifer.

NDNR would like to meet on a regular basis to help in communication. The plan is to meet early next year for followup discussion.

#### 5.C. COMMENTS FROM THE PUBLIC