

**NEBRASKA WATER SUSTAINABILITY FUND
2023 ANNUAL REPORT
WSF APPLICATION NO. 10014
LOWER PLATTE NORTH NRD**

**Developing a Truly Sustainable Solution to Nitrate Contamination
in the Drinking Water Supply throughout Lower Platte North NRD**

Description of the Project / Annual Report 2023

The Water Sustainability Fund (WSF) grant for the Lower Platte North NRD (LPNNRD) was approved in December 2022 for \$388,500 with grant funding of \$233,100 as a cost share program along with a hydrogeologic assessment. LPNNRD has a range of management and education requirements for the nitrate phase area. Even with these requirements nitrate contamination continues to increase, threatening the drinking water supplies for both rural and urban residents. The solutions to these problems are input intensive and provide very little economic gain for producers. Without cost share opportunities to offset the cost of the best management practices nitrates in the groundwater will continue to increase. LPNNRD rules and regulations do not allow for the kinds of restrictions regulating fertilizer application and irrigation until a Phase IV area is declared, 50% of wells +15ppm. By this time the level of nitrates in the groundwater will be high enough to constitute an emergency. Decreasing the nitrates in the groundwater supply before they reach this level is a far less expensive option than continuing the current path which will require heavy handed restrictions and the development of treatment facilities to ensure a safe drinking water supply. Treating the root cause of the issue before it becomes an emergency leads to true sustainability of the water resource.

The hydrogeologic assessment will define the bedrock layer, which is the bottom layer of the model grid placed into MODFLOW. The top five layers are derived from AEM (completed in 2021), the sixth layer is derived from the hydrogeologic assessment. The hydrogeologic assessment will also aid the contractor in 'filling gaps' in the AEM flights.

The best management practices that will be offered are Iron Chlorosis – for the purpose of neutralizing the PH so crop rotations can be utilized, Cover Crops – to help in the uptake of residual nitrogen, Fertigation – to allow for split applications of nitrogen, Variable Rate Nitrogen – to allow for nitrogen application on right part of the field when the crop needs it, Gravity to Pivot/SDI conversion – over irrigation can contribute to nitrate leaching, Grid Soil Sampling – to assist in variable rate nitrogen management, Soil Moisture Sensors – to determine when irrigation is needed, and Water Flow Meters – manage the amount of water being pumped.

PROJECT PROGRESS DECEMBER 2022 TO APRIL 2023:

The LPNNRD approved the contract to start the Hydrogeological Assessment with a completion date of August 2023. Promotion of the cost-share practices has begun with an open house conducted in the area February 2023 with 50 producers in attendance. Staff has been receiving applications with the most popular practices for this area being flow meters and cover crops.

ANTICIPATED ACTIVITIES FROM NOW UNTIL NEXT ANNUAL REPORT DUE APRIL 1, 2024:

The Hydrogeological Assessment will be completed and utilized to evaluate contaminate vulnerability. The LPNNRD will continue accepting cost-share applications with field inspections on the practices that have been implemented. LPNNRD will coordinate with UNMC on educating the public on health issues on contaminated groundwater. NRD staff will also have other educational opportunities with producers by conducting demonstrations with UNL on irrigation and nitrogen management.

LIKELIHOOD THAT BENEFITS PROJECTED IN APPLICATION 10014 WILL BE REALIZED:

Based on preliminary results producers have shown interest on NRD cost-share practices along with NRCS increasing the discussion on the EQIP program. Best management practices will be conducted on producers' fields to approve nitrogen and irrigation management to assist in protecting the groundwater. The project is on target for achieving the benefits to the LPNNRD as described in the application.