

NEBRASKA NATURAL RESOURCES COMMISSION

Water Sustainability Fund

Application for Funding

Section A.

ADMINISTRATIVE

PROJECT NAME: Producer Connect Nitrogen & Water Management Tool

SPONSOR'S PRIMARY CONTACT INFORMATION (Not Consultant's)

Sponsor Business Name: **Nebraska Association of Resources Districts**

Sponsor Contact's Name: **Dean Edson**

Sponsor Contact's Address: **8100 So. 15th St., Suite B**

Sponsor Contact's Phone: **402-471-7674**

Sponsor Contact's Email: **dedson@nrdnet.org**

1. **Funding** amount requested from the Water Sustainability Fund:

Grant amount requested. \$ **240,000**

- If requesting less than 60% cost share, what %? **N/A**

If a loan is requested amount requested. \$ **N/A**

- How many years repayment period? **N/A**
- Supply a complete year-by-year repayment schedule. **N/A**

2. **Neb. Rev. Stat. § 2-1507 (2)**

Are you applying for a **combined sewer overflow project**? **YES** **NO**

If yes:

- Do you have a Long Term Control Plan that is currently approved by the Nebraska Department of Environmental Quality? **YES** **NO**
- Attach a copy to your application. **N/A**
- What is the population served by your project? **N/A**
- Provide a demonstration of need. **N/A**
- **Do not complete the remainder of the application.**

3. **Permits Required/Obtained** Attach a copy of each that has been obtained. For those needed, but not yet obtained (box “**NO**” checked), 1.) State when you will apply for the permit, 2.) When you anticipate receiving the permit, and 3.) Your estimated cost to obtain the permit.

(N/A = Not applicable/not asking for cost share to obtain)
 (Yes = See attached)
 (No = Might need, don't have & are asking for 60% cost share to obtain)

G&P - T&E consultation (required)	N/A <input checked="" type="checkbox"/> Obtained: YES <input type="checkbox"/> NO <input type="checkbox"/>
DNR Surface Water Right	N/A <input checked="" type="checkbox"/> Obtained: YES <input type="checkbox"/> NO <input type="checkbox"/>
USACE (e.g., 404/other Permit)	N/A <input checked="" type="checkbox"/> Obtained: YES <input type="checkbox"/> NO <input type="checkbox"/>
FEMA (CLOMR)	N/A <input checked="" type="checkbox"/> Obtained: YES <input type="checkbox"/> NO <input type="checkbox"/>
Local Zoning/Construction	N/A <input checked="" type="checkbox"/> Obtained: YES <input type="checkbox"/> NO <input type="checkbox"/>
Cultural Resources Evaluation	N/A <input checked="" type="checkbox"/> Obtained: YES <input type="checkbox"/> NO <input type="checkbox"/>
Other (provide explanation below)	N/A <input checked="" type="checkbox"/> Obtained: YES <input type="checkbox"/> NO <input type="checkbox"/>

[Click here to enter text.](#)

4. **Partnerships**

List each Partner / Co-sponsor, attach documentation of agreement:

The Nebraska Corn Board, The Nebraska Association of Resources District, Nebraska's Natural Resources Districts (NRDs).

Identify the roles and responsibilities of each Partner / Co-sponsor involved in the proposed project regardless of whether each is an additional funding source.

The Nebraska Association of Resources District will coordinate and facilitate meetings with the contractor, provide funding for the project, and be the financial advisor for the project.

The Nebraska Corn Board will provide financial assistance and participate in the development meetings with the NRDs and the contractor.

The NRDs will provide financial assistance, provide all required data, and participate in the development meetings with the contractor.

5. **Other Sources of Funding**

Identify the costs of the entire project, what costs each other source of funding will be applied to, and whether each of these other sources of funding is confirmed. If not, please identify those entities and list the date when confirmation is expected. Explain how you will implement the project if these sources are not obtained.

The cost of the entire project is \$400,000. Sixty percent of the project funds are being requested through the Water Sustainability Fund. The remainder of the funds will be split between the Nebraska Association of Resources Districts, the Nebraska Corn Board, and the NRDs.

6. **Overview**

In 1,000 words or less, provide a brief description of your project including the nature/purpose of the project and its objectives. Do not exceed one page!

Project Goal: Develop the Producer Connect web and mobile device applications for agricultural producers across the state to help improve water and nitrogen use efficiency in their farming operation and track nitrogen and water use progress to help improve groundwater quality and quantity.

One of the principal purposes of this tool is to help address the critical concern of increasing nitrates in our groundwater which is the source of drinking water for approximately 88% of Nebraskans. The Producer Connect application will include a “nitrogen dashboard” to help address this issue through interactive information and education.

The Natural Resources Districts (NRDs) have been managing groundwater for over 50 years. In their efforts to manage and protect groundwater, each

district has a groundwater management plan and rules and regulations. Districts work with producers to implement best management practices and develop regulations as needed to reach safe nitrogen levels or sustainable water usage of groundwater. Additionally, annual crop reporting and water quality sampling in high nitrates areas are required across much of the state.

The concept of creating a “nitrogen dashboard” utilizing data currently being collected has been discussed for quite some time. The goal of developing a “nitrogen dashboard” is twofold; 1) help the NRDs track nitrogen management progress in their districts and use the information to educate the public and 2) assist producers in making efficient nitrogen and water management decisions in their operation based on data from their farm.

Most NRDs with Phase II and III water quality areas collect annual reports from producers, which include data such as previous crops grown, actual yield, fertilizer applied, water usage, crops to be grown, expected yield, irrigation info, soil/water test results and legume or manure credits. While many NRDs are collecting this information, a need remains to compile and analyze this data and create educational portals and tools for producers to interact with to help determine the best management for their farm or ranch.

The NRDs, in partnership with the Nebraska Corn Board, are collaborating to develop the “nitrogen dashboard,” a key educational tool for producers to help improve their nitrogen use efficiency to help protect groundwater quality. The “nitrogen dashboard” will be part of the larger Producer Connect application suite allowing farmers to interact and view this vital information on the web or through their Android and Apple mobile devices. Beyond nitrates, this tool will also display important producer information to help manage their farm or ranch. The applications will provide information on irrigated and non-irrigated tracts, wells, flowmeters, soil samples, chemigation, and water use. The Producer Connect can also allow the producers to add data, including water use, soil samples, cropping, and water samples.

The Producer Connect will be a spatial tool that maps producer information with the latest ariel photographs and other information. The tool will utilize the producer’s current information to provide the information on maps, tables, and graphs and generate a nitrogen recommendation. The nitrate efficiency of bushels per pound of applied fertilizer will be displayed. It can be compared to the average of producers within their whole NRD, subarea, or another area the NRD specifies.

Additionally, an economic analysis will be created within the tool to show information like money saved using the calculated nitrogen application versus a typical fertilizer application. This tool will allow producers to look at their operations over multiple years and track their nitrogen and water use over time.

7. **Project Tasks and Timeline**

Identify what activities will be conducted to complete the project, and the anticipated completion date.

For multiyear projects please list (using the following example):

<u>Tasks</u>	<u>Year 1\$</u>	<u>Year 2\$</u>	<u>Year 3\$</u>	<u>Remaining</u>	<u>Total \$ Amt.</u>
Permits	\$18,000				\$18,000
Engineering		\$96,000			\$96,000
Construction		\$87,000	\$96,000		\$183,000
Close-out				\$8,000	\$8,000
				TOTAL	\$305,000

- What activities (Tasks) are to be completed.
- An estimate of each Tasks expenditures/cost per year.
- Activities in years 4 through project completion under a single column.

Tasks	Year 1	Year 2	Year 3	Total
Development of the Producer Connect Application Suite	\$153,000			\$153,000
Feature Support		\$123,500	\$123,500	\$247,000
Total	\$153,000	\$123,500	\$123,500	\$400,000

8. **IMP**

Do you have an **Integrated Management Plan** in place, or have you initiated one? YES NO Sponsor is not an NRD

Section B.

DNR DIRECTOR'S FINDINGS

Prove Engineering & Technical Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 004)

1. Does your project include physical construction (defined as moving dirt, directing water, physically constructing something, or installing equipment)?

YES NO

If you answered "YES" you must answer all questions in section 1.A.
If you answer "NO" you must answer all questions in section 1.B.

If "YES", it is considered mostly structural, so answer the following:

- 1.A.1 Insert a feasibility report to comply with Title 261, Chapter 2, including engineering and technical data; **N/A**
- 1.A.2 Describe the plan of development (004.01 A); **N/A**
- 1.A.3 Include a description of all field investigations made to substantiate the feasibility report (004.01 B); **N/A**
- 1.A.4 Provide maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C); **N/A**
- 1.A.5 Describe any necessary water and/or land rights including pertinent water supply and water quality information (004.01 D); **N/A**
- 1.A.6 Discuss each component of the final plan (004.01 E); **N/A**
- 1.A.7 When applicable include the geologic investigation required for the project (004.01 E 1); **N/A**
- 1.A.8 When applicable include the hydrologic data investigation required for the project (004.01 E 2); **N/A**
- 1.A.9 When applicable include the criteria for final design including, but not limited to, soil mechanics, hydraulic, hydrologic, structural, embankments and foundation criteria (004.01 E 3). **N/A**

If "NO", it is considered mostly non-structural, so answer the following:

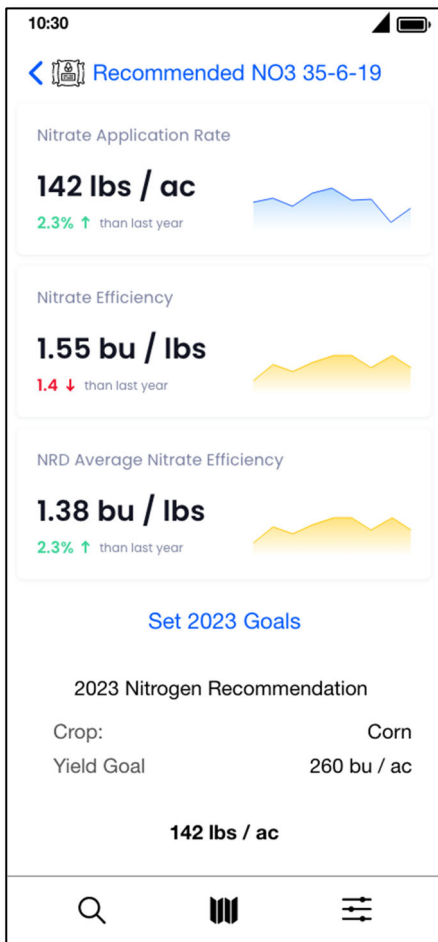
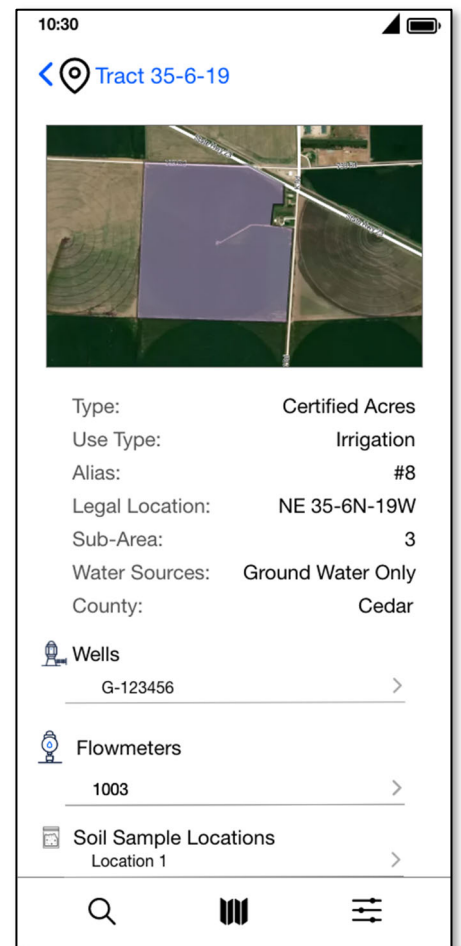
- 1.B.1 Insert data necessary to establish technical feasibility (004.02);

The data necessary to complete this project is already being collected by the NRDs in Phase II and III areas across the state and other data collection efforts. Data includes, but is not limited to, previous crops grown, actual yield, fertilizer applied, water usage, crops to be grown, expected yield, flow meter readings, tillage practices, soil tests, water tests, and legume and manure credits.

1.B.2 Discuss the plan of development (004.02 A); [Click here to enter text.](#)

Producer Connect by NRDapp

This project includes the development of web and mobile applications called Producer Connect. The Producer Connect concept is a web and mobile application suite allowing producers within a participating Natural Resources District (NRD) to access information specific to that producer.



The data the producers will be able to view include their certified tracts, wells, flowmeters, chemigation, documents, notifications, and a nitrate dashboard. Along with viewing the information, certain data can be entered by the user, which includes flowmeter readings, crops planted, tillage practices, soil tests, water tests, crop yield goals, and pictures, among others. Producer Connect can be accessed through a computer web browser or Android and Apple mobile devices. The app will be spatially enabled, allowing the producer to see their relevant information mapped with the latest aerial photographs and other selected features as the background.

NITRATE DASHBOARD

Producer Connect will also include a Nitrate Dashboard allowing the producer to input their yield goals to determine

the amount of nitrate the producer should apply. This calculation will be based on the University of Nebraska nitrate calculation. The nitrate efficiency of bushels per pound of applied fertilizer will be displayed and compared to the average of producers within the whole NRD, subarea, or another area the NRD specifies. Other information can be displayed, such as money saved using the calculated application compared to a typical fertilizer application.

DATA ACCESS AND SECURITY

The Producer Connect data will not be shared with outside third parties unless the NRDs release it. The producer will sign in with their email address and password and *cannot* access any data outside their own information. Producer Connect will encrypt the user information and data during transfers using industry-standard practices.

FEATURES LIST

Access will be granted to each producer by the NRD staff through the NRDapp using the producer's email address. The NRDapp will serve as the administrative control by the NRDs for the Producer Connect components.

Web Access will be supported through modern web browsers such as Chrome, Brave, Edge, Firefox, and Safari.

Producer Access Items:

1. View Tract Information (cropping, tillage, nitrate applications)
2. View Well Information
3. View Flowmeter Information
4. View Chemigation Information
5. View Soils Samples
6. View Nitrates
7. View Documents
8. View Settings
9. View Notifications

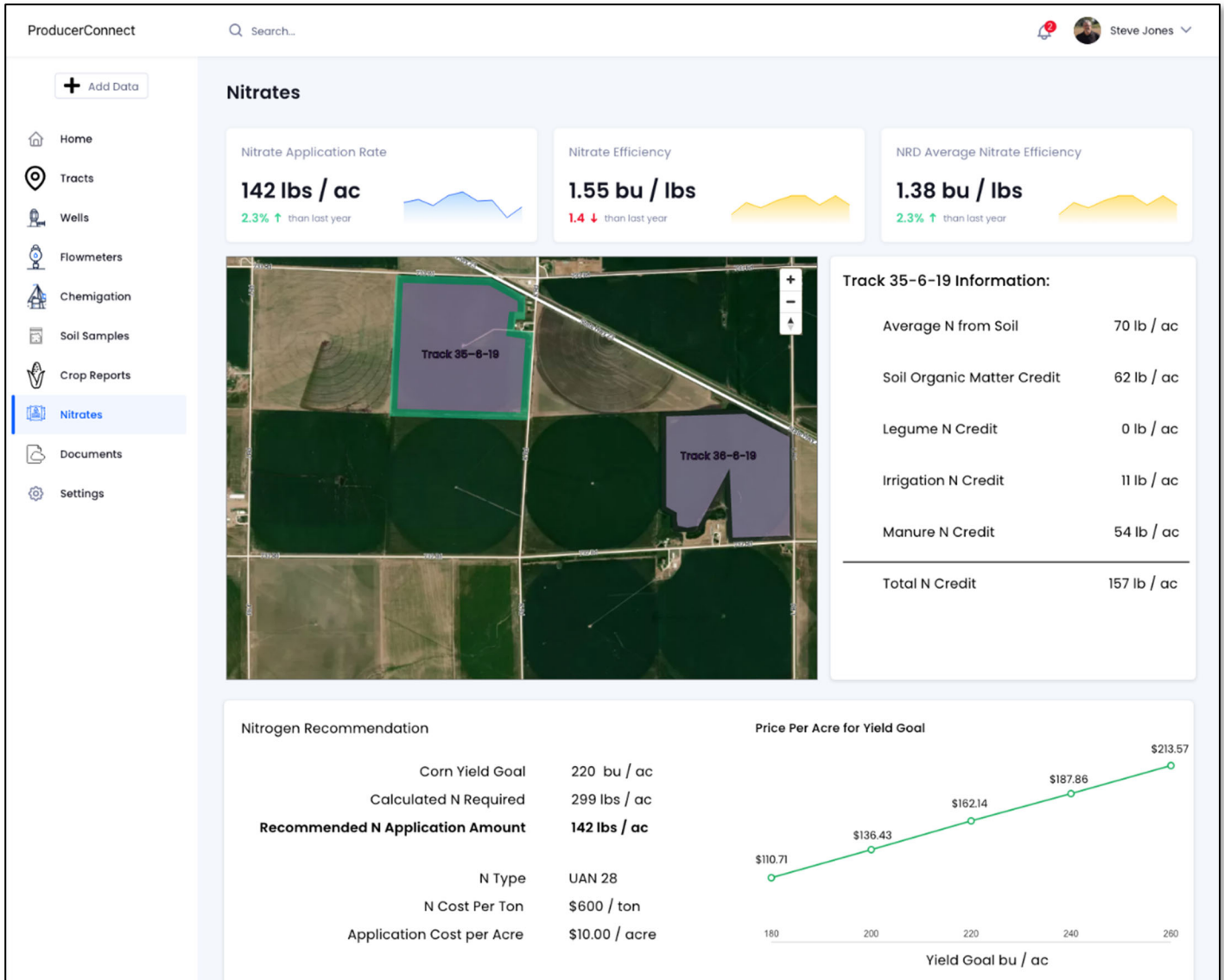
Producer Add Data:

1. Add a Flowmeter Reading (upload a picture)
2. Add a Soil Sample Result (upload a document)
3. Add a Tract / Crop Report

Producer Edit Data:

1. Change Email, Phone, or Address
2. Acknowledge Notifications
3. Change Password / Forgot Password

Screenshot of Nitrogen Dashboard within the Producer Connect



Mobile Apps will be available through the Apple App Store and Google Play Store, with no fee to download applications. A producer whose NRD is not part of the NRDapp may download the application and enter their data for a tract, soils, water, and crops to get a Nitrate recommendation but cannot save the data.

Producer Mobile Access Items:

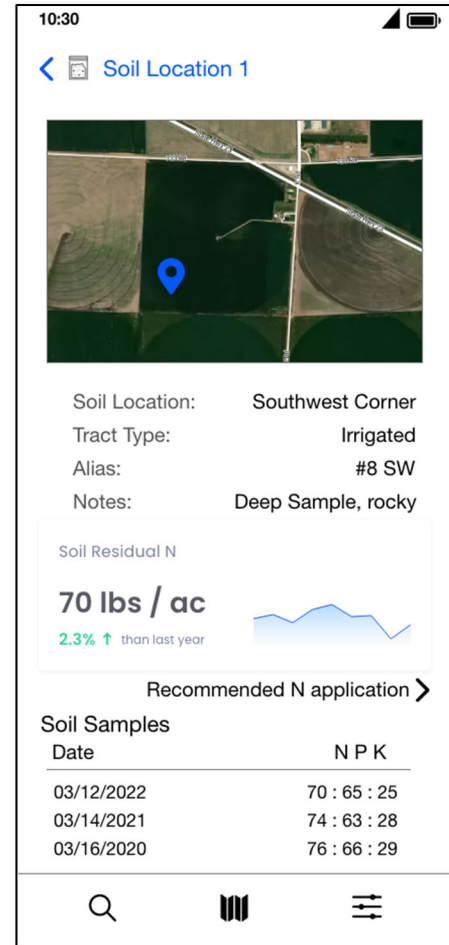
1. View Tract Information (cropping, tillage, nitrate applications)
2. View Well Information
3. View Flowmeter Information
4. View Chemigation Information
5. View Soils Samples
6. View Nitrates
7. View Documents (limited to device capabilities)
8. View Settings
9. View Notifications (in-app and on lock screen ribbon)

Producer Mobile Add Data:

4. Add a Flowmeter Reading (take a picture with the device and upload)
5. Add a Soil Sample Result (take a picture of the sample document and upload)
6. Add a Tract / Crop Report

Producer Mobile Edit Data:

4. Change Email, Phone, or Address
5. Acknowledge notifications
6. Change Password / Forgot Password



The project also includes Feature Support for all 23 NRDs for fiscal years 2024-2025 and 2025-2026 after the development of the application suite is completed in June 2024.

1.B.3 Describe field or research investigations utilized to substantiate the project conception (004.02 B); [Click here to enter text.](#)

NRDs have been monitoring static water levels and nitrate in groundwater for decades. They use this data to make management recommendations, develop programs to address local issues, make changes to their rules and regulations and to develop special studies. NRDs have also been collecting crop reporting data in Phase II and Phase III areas across the state and want to start using that data to help producers make management decisions. Decades of data collection and evaluation of trends have led to the development of this project.

1.B.4 Describe any necessary water and/or land rights (004.02 C);

There are no land or water rights required for this project.

- 1.B.5 Discuss the anticipated effects, if any, of the project upon the development and/or operation of existing or envisioned structural measures including a brief description of any such measure (004.02 D).

There are currently no known structural measures that may be affected by the project. However, the Producer Connect will provide agricultural producers and NRDs the ability to analyze water and nitrogen use. This will help make positive changes to farming operations to help increase water and nitrogen use efficiencies throughout the state.

Prove Economic Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 005)

2. Provide evidence that there are no known means of accomplishing the same purpose or purposes more economically, by describing the next best alternative.

The alternative to this project is each NRD would invest in their own dashboard. That would mean each NRD would have to pay the development cost of \$400,000 x 23 NRDs for a total of \$9,200,000 and there would still be the ongoing maintenance cost for each NRD. By all 23 NRDs partnering together the \$400,000 development cost is paid once and each NRD is responsible for the ongoing software maintenance costs.

3. Document all sources and report all **costs** and **benefit data** using current data, (commodity prices, recreation benefit prices, and wildlife prices as prescribed by the Director) using both dollar values and other units of measurement when appropriate (environmental, social, cultural, data improvement, etc.). The period of analysis for economic feasibility studies is the project life. (Title 261, CH 2 - 005). [Click here to enter text.](#)

- 3.A Describe any relevant cost information including, but not limited to the engineering and inspection costs, capital construction costs, annual operation and maintenance costs, and replacement costs. Cost information shall also include the estimated construction period as well as the estimated project life (005.01). [Click here to enter text.](#)

The total cost of this project is \$400,000, which covers the payment to a contractor to develop the web portal and mobile application suite, beta testing of the tool, evaluation and refinements, and feature support. The project is scheduled to be completed by 2026 and the NRDs will pay for the operation and software maintenance after development. There is no expiration of the tool after it is developed.

- 3.B Only primary tangible benefits may be counted in providing the monetary benefit information and shall be displayed by year for the project life. In a multi-purpose project, estimate benefits for each purpose, by year, for the life of the project. Describe intangible or secondary benefits (if any) separately. In a case where there is no generally accepted method for calculation of primary tangible benefits describe how the project will increase water sustainability, in a way that justifies economic feasibility of the project such that the finding can be approved by the Director and the Commission (005.02). [Click here to enter text.](#)

Tangible benefits include easier and more efficient crop reporting for the producer; time savings and elimination of errors from manually entering crop reporting data for the NRD (this step will be eliminated with this tool); and being able to compile and analyze the data and report it back to producers and use it for public education. It's hard to put a monetary value on these benefits because of the variation of: salaries across NRDs and the time spent by producers on their crop reporting.

Secondary benefits include improved water-use efficiency and reduced nitrogen fertilizer application in high-nitrate areas. Again, monetary benefits are hard to calculate with variations in costs associated with running various irrigation engines and fluctuations in fertilizer prices and application techniques. Additionally, a reduction in fertilizer application rates will eventually lead to a reduction of nitrate in groundwater and decrease the amount of money domestic well owners and public water systems are spending to treat their drinking water.

- 3.C Present all cost and benefit data in a table to indicate the annual cash flow for the life of the project (005.03). [Click here to enter text.](#)

See attached Table (Attachment A).

- 3.D In the case of projects for which there is no generally accepted method for calculation of primary tangible benefits and if the project will increase water sustainability, demonstrate the economic feasibility of such proposal by such method as the Director and the Commission deem appropriate (005.04). (For example, show costs of and describe the next best alternative.)

This project will increase water quantity sustainability by providing data and recommendations to producers to make data-driven water application decisions and track water usage. The project will also increase water quality sustainability by protecting drinking water from nitrate contamination by providing producers with a recommended nitrogen application rate. Without the Producer Connect application suite, there are no other cost-effective means to realize these same goals and objectives.

Prove Financial Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 006)

4. Provide evidence that sufficient funds are available to complete the proposal.

The Nebraska Association of Resources Districts board, which represents the 23 NRDs, voted to approve \$5,000 funding for this project. With the support of the NARD board, individual NRDs have this on upcoming district board meeting agendas. Below is a list of NRDs who support the project.

Central Platte	North Platte
Lewis and Clark	Papio-Missouri
Little Blue	South Platte
Lower Big Blue	Tri Basin
Lower Elkhorn	Twin Platte
Lower Loup	Upper Big Blue
Lower Niobrara	Upper Elkhorn
Lower Republican	Upper Loup
Middle Niobrara	Upper Niobrara White
Middle Republican	Upper Republican
Nemaha	

Additionally, the Nebraska Corn Board is in support of the project and is contributing up to \$100,000 towards its development.

5. Provide evidence that sufficient annual revenue is available to repay the reimbursable costs and to cover OM&R (operate, maintain, and replace).

There is no operation and maintenance associated with this project. The operation and maintenance will start after the project is complete and each NRD has budgeted the amount to cover the annual fee.

6. If a loan is involved, provide sufficient documentation to prove that the loan can be repaid during the repayment life of the proposal. **NA**
7. Describe how the plan of development minimizes impacts on the natural environment (i.e. timing vs nesting/migration, etc.).

This project will not have any impact to the environment as this is a digital platform used to compile data and make management decisions.

8. Explain how you are qualified, responsible and legally capable of carrying out the project for which you are seeking funds.

Nebraska's NRDs have 12 areas of responsibility and Nebraska Revised Statute § 46-701 through 46-756 identifies the NRDs responsibility and authority over groundwater management and protection.

9. Explain how your project considers plans and programs of the state and resources development plans of the political subdivisions of the state.

This project is being implemented to assist NRDs with the requirements of the Groundwater Management Plan (GWMP), Integrated Management Plan (IMP), and any approved 9-element 319 Water Quality Management Plan (WQMP).

NRD GWMPs are developed to protect and manage groundwater quality and quantity from over use and pollution, IMPs are developed to sustain a balance between water use and water supply, and WQMP are developed to address nonpoint source pollution related to agriculture.

10. Are land rights necessary to complete your project? YES NO

If yes:

- 10.A Provide a complete listing of all lands involved in the project. [Click here to enter text.](#)
- 10.B Attach proof of ownership for each easements, rights-of-way and fee title currently held. [Click here to enter text.](#)
- 10.C Provide assurance that you can hold or can acquire title to all lands not currently held. [Click here to enter text.](#)
11. Identify how you possess all necessary authority to undertake or participate in the project.

Nebraska's NRDs have 12 areas of responsibility and Nebraska Revised Statute § 46-701 through 46-756 identifies the NRDs responsibility and authority over groundwater management and protection.

12. Identify the probable consequences (environmental and ecological) that may result if the project is or is not completed.

Without the completion of this project, potential consequences include: overuse of our water resources, private wells going dry, over-application of nitrogen fertilizer, increased concentrations of nitrate in groundwater, negative impacts to public health due to elevated nitrate in groundwater, and negative impacts to public water systems with increased costs to treat water or drill new wells. This project provides NRDs with another tool to

manage groundwater quality and quantity and help educate the public on the impacts on their water resources.

Section C.

NRC SCORING

In the NRC's scoring process, points will be given to each project in ranking the projects, with the total number of points determining the final project ranking list.

The following 15 criteria constitute the items for which points will be assigned. Point assignments will be 0, 2, 4, or 6 for items 1 through 8; and 0, 1, 2, or 3 for items 9 through 15. Two additional points will be awarded to projects which address issues determined by the NRC to be the result of a federal mandate.

Notes:

- The responses to one criterion *will not* be considered in the scoring of other criteria. Repeat references as needed to support documentation in each criterion as appropriate. The 15 categories are specified by statute and will be used to create scoring matrixes which will ultimately determine which projects receive funding.
- There is a total of 69 possible points, plus two bonus points. The potential number of points awarded for each criteria are noted above. Once points are assigned, they will be added to determine a final score. The scores will determine ranking.
- The Commission recommends providing the requested information and the requests are not intended to limit the information an applicant may provide. An applicant should include additional information that is believed will assist the Commission in understanding a proposal so that it can be awarded the points to which it is entitled.

Complete any of the following (15) criteria which apply to your project. Your response will be reviewed and scored by the NRC. Place an N/A (not applicable) in any that do not apply, an N/A will automatically be placed in any response fields left blank.

1. Remediates or mitigates threats to drinking water;
 - Describe the specific threats to drinking water the project will address.
 - Identify whose drinking water, how many people are affected, how will project remediate or mitigate.
 - Provide a history of issues and tried solutions.
 - Provide detail regarding long-range impacts if issues are not resolved.

The Producer Connect app is a tool that both the producer and NRD will use to address over application of nitrogen fertilizer, improve nitrogen-use efficiency, improve water-use efficiency, and increase farmer profitability.

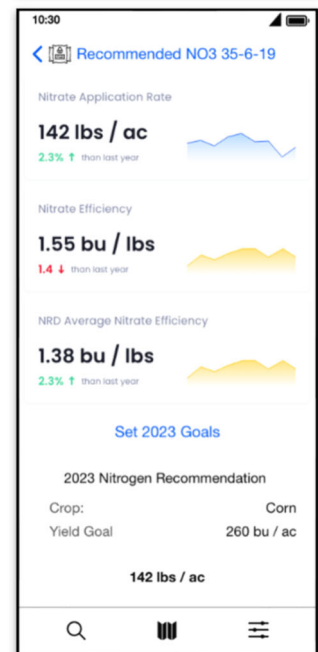
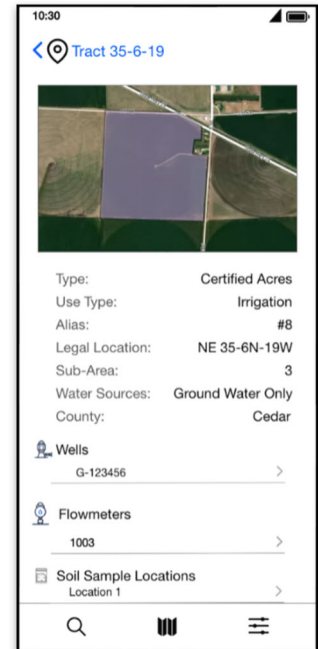
The goal of the Producer Connect App will be to: 1) streamline crop reporting in Phase II and III areas across the NRDs and 2) assist the NRDs in tracking nitrogen management progress and use the information to educate the public and 3) assist producers in making efficient nitrogen and water management decisions in their operation based on data from their farm.

The concept of the Producer Connect App will be a spatial tool that maps producer information with the latest aerial photographs and other features as the background. The tool will utilize the producers' crop reporting data and generate a nitrogen recommendation. The nitrogen efficiency of bushels per pound of applied fertilizer will be displayed and compared to the average of producers within their whole NRD, subarea, or another area the NRD specifies. An economic analysis will show cost savings using the calculated nitrogen application versus a typical fertilizer application. Additionally, this tool will develop graphs that provide producers with a visualization of their operation over multiple years to see progress on their nitrogen and water use efficiencies over time.

According to the 2020 U.S., Census Nebraska has a population of 1,961,504 and approximately 88% of Nebraskans rely on groundwater for drinking water, and nearly 100% of rural residents utilize private drinking water wells.

All public water systems monitor for nitrate, but private wells are unregulated and do not require monitoring. Historical and current water quality monitoring shows that nitrate is present in groundwater throughout much of Nebraska. When nitrate in drinking water exceeds 10 mg/L maximum contaminant level (MCL), hazardous health effects become a concern for humans. According to the 2020 Nebraska Groundwater Quality Monitoring Report, 130,713 samples were collected and analyzed for nitrate-N and 120,127 of those samples exceeded the reporting limit.

Nitrate reaches the groundwater in several ways, but in Nebraska, the primary source has been overapplication of nitrogen fertilizer on irrigated corn and soybean fields. Nebraska farmers rely heavily on irrigation and fertilizer to grow millions of acres of corn and



soybeans used in the global food supply chain each year, which powers the state's multibillion-dollar ag economy. Nitrogen is an essential nutrient for crops for productivity, but when more nitrogen than the crop needs is applied the excess is highly soluble and readily moves with water through the soil profile and into the groundwater.

NRDs have been working to protect groundwater quality for more than 50 years. Since 1986, each of the 23 districts have developed a groundwater management plan and rules and regulations to address groundwater quality and quantity concerns. Additionally, NRDs have been collecting groundwater monitoring data since 1975, which is reviewed annually to make management recommendations. In their rules and regulations, NRDs will restrict specific ag practices that have been shown to negatively impact groundwater quality. For example, no fall application of nitrogen fertilizer, require the use of a nitrogen inhibitor, and annual deep soil sampling for residual nitrogen. In addition, districts with Phase II and III water quality areas collect annual crop reports from producers, which includes data such as previous crops grown, actual yield, fertilizer applied, water usage, crops to be grown, expected yield, irrigation information, soil/water test results, and legume or manure credits.

Besides restrictions in their rules and regulations, NRDs also have cost-share programs that address soil and water conservation. Examples of some cost-share programs include cover crops, soil sampling, crop tissue analysis, irrigation water nitrate sampling, soil moisture sensors, flow meters, and no till/reduced tillage.

While there have been improvements in groundwater nitrates in some areas of the state, the overall trend of nitrate in groundwater continues to increase. For example, Central Platte NRD's Groundwater Quality Management Program has reduced nitrates in some areas from 19 ppm to 13.3 ppm. Also, Lower Niobrara has seen a reduction in overapplication of fertilizer in their district from 91% down to 61%.

If the over application of nitrogen fertilizer isn't resolved, the residents of Nebraska will continue to see increased costs associated with treating their drinking water supply. Public water systems and private well owners will have to install reverse osmosis systems to ensure safe drinking water. Not only is there the cost of installing the system, but also the ongoing operation and maintenance of the system. However, this is not addressing the overapplication of fertilizer, which is the cause of high nitrate in groundwater. It's offering a short-term solution to provide safe drinking water to the residents of Nebraska.

This project will develop a new tool that can be used statewide by NRDs and producers to assist in mitigating and resolving impacts to drinking water.

2. Meets the goals and objectives of an approved integrated management plan or ground water management plan;
 - Identify the specific plan that is being referenced including date, who issued it and whether it is an IMP or GW management plan.
 - Provide the history of work completed to achieve the goals of this plan.
 - List which goals and objectives of the management plan the project provides benefits for and how the project provides those benefits.

All 23 NRDs have active Groundwater Management Plans (GWMP). Each NRD also has or is in the process of finalizing an Integrated Management Plan (IMP). While this project is a statewide effort, each district can use this tool to help achieve the goals and objectives within their GWMP and IMP.

Each district's GWMP shall identify, to the extent possible, the levels and sources of ground water contamination within the district, groundwater quality goals, and long-term solutions necessary to prevent the levels of groundwater contaminants from becoming too high. The GWMPs must also reduce high contamination levels sufficiently to eliminate health hazards and recommend practices to stabilize, reduce, and prevent the occurrence, increase, or spread of groundwater contamination.

The purpose of the NRDs GWMPs and rules and regulations are: (1) to protect groundwater quantity; and (2) protect groundwater quality. IMPs include clear goals and objectives with a purpose of sustaining a balance between water uses and water supplies so that the economic viability, social and environmental health, safety, and welfare of the river basin, subbasin or reach can be achieved and maintained for both the near term and long term.

This project addresses the goals of both GWMPs and IMPs by providing an educational tool that protects groundwater quality and quantity.

This tool protects groundwater quality by recommending nitrogen fertilizer application rates based on individual producers' crop reporting data. By applying fertilizer at an agronomic rate, the potential for leaching nitrate to groundwater is greatly reduced.

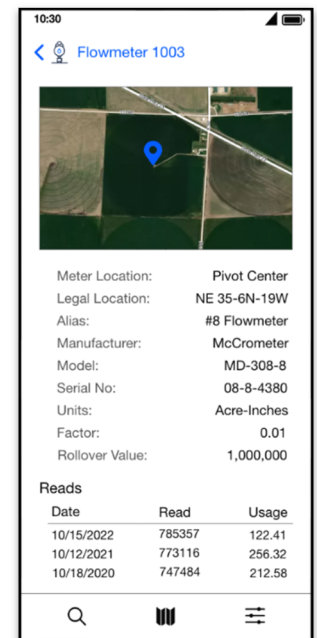
This tool protects groundwater quantity by monitoring flow meter readings, so a producer knows exactly how much water they have applied to their crops.

- Contributes to water sustainability goals by increasing aquifer recharge, reducing aquifer depletion, or increasing streamflow;

List the following information that is applicable:

- The location, area and amount of recharge;
- The location, area and amount that aquifer depletion will be reduced;
- The reach, amount and timing of increased streamflow. Describe how the project will meet these objectives and what the source of the water is;
- Provide a detailed listing of cross basin benefits, if any.

The Producer Connect App will contribute to water sustainability by providing the necessary tools for producers to make water application decisions and reduce aquifer depletions. In hydrologically connected areas of the state, increased stream flows could be observed. The Producer Connect App will track producers' water use through flow meter readings and help them make irrigation management decisions based on current pumping information. Since this is a statewide project, it's hard to calculate or estimate the reduction in aquifer depletion. The NRDs are committed to finding innovative solutions that ensure ag producers can continue to irrigate in a sustainable way to support the state economy while protecting Nebraska's drinking water resource and this tool will assist in mitigating unnecessary aquifer depletions.



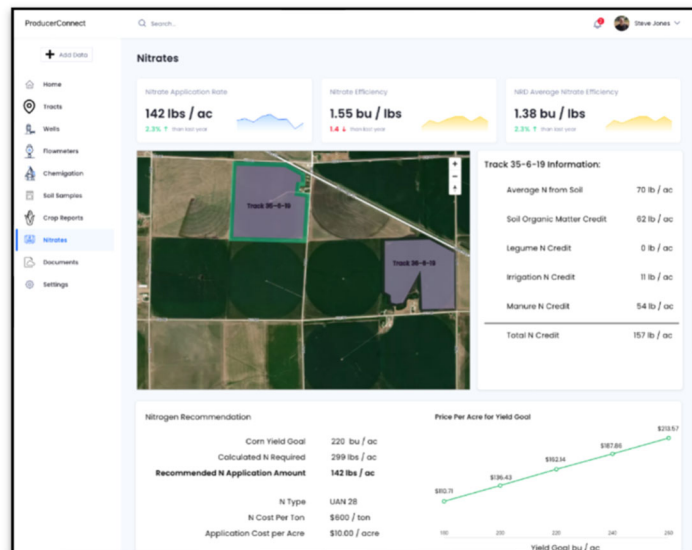
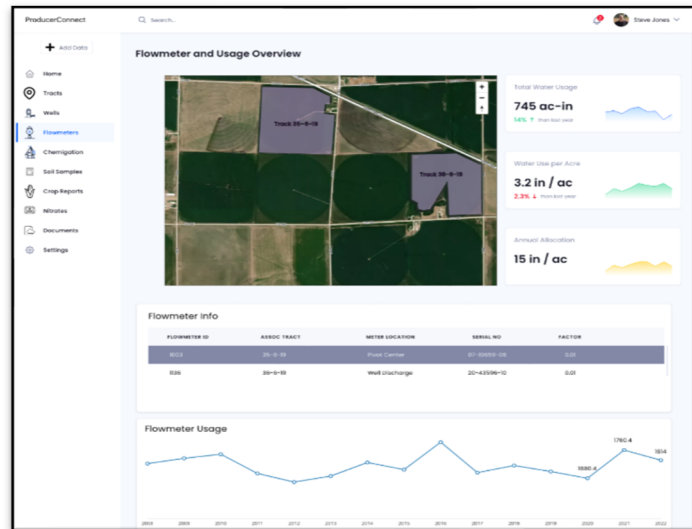
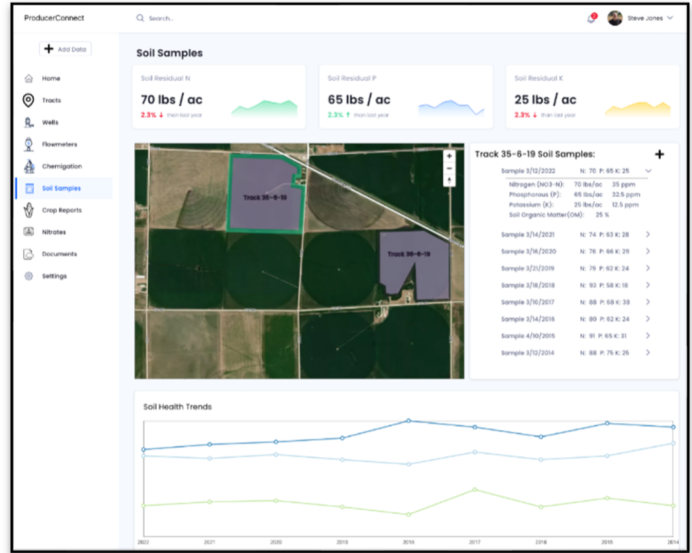
- Contributes to multiple water supply goals, including, but not limited to, flood control, agricultural use, municipal and industrial uses, recreational benefits, wildlife habitat, conservation of water resources, and preservation of water resources;

- List the goals the project provides benefits.
- Describe how the project will provide these benefits
- Provide a long range forecast of the expected benefits this project could have versus continuing on current path.

This project contributes to the following water supply goals: agriculture use; conservation of water resources and preservation of water resources by tracking water use; fertilizer use; and making nitrogen recommendations based on yield goals.

The Producer Connect App will be a digital platform for agriculture use that will take the required crop reporting data already being submitted by producers: previous crop grown, actual yield, fertilizer applied, water usage, crops to be grown, expected yield, irrigation information, soil/water nitrate results, and legume or manure credits and provide recommended nitrogen application rates. The nitrogen efficiency of bushels per pound of applied fertilizer will be displayed and compared to the average of producers within the whole NRD, subarea, or another area the NRD specifies. Other information can also be displayed such as cost savings using the recommended nitrogen application rate versus a typical fertilizer application. The Producer Connect App will allow the producer to manage their water and nutrients together having a positive impact on preserving and conserving our water resources.

Long-range benefits include reduced water use, reduced fertilizer use and improved farm profitability.

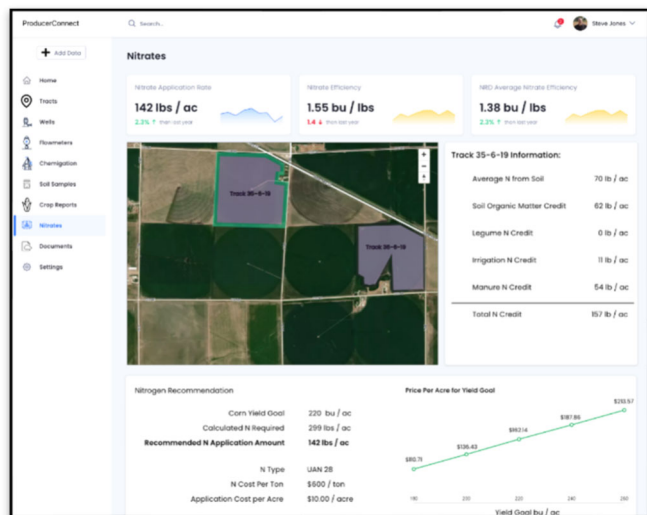


5. Maximizes the beneficial use of Nebraska's water resources for the benefit of the state's residents;

- Describe how the project will maximize the increased beneficial use of Nebraska's water resources.
- Describe the beneficial uses that will be reduced, if any.
- Describe how the project provides a beneficial impact to the state's residents.

The most beneficial use of Nebraska groundwater is for drinking water. With the increasing concern of nitrate in groundwater, this tool will help improve, protect, and sustain Nebraska's groundwater resource. The tool aims to help reduce or increase the efficiency of nitrogen and water application rates.

Currently, data in Phase II and higher areas show that most producers report an over-application of nitrogen fertilizer. This tool will recommend an agronomic rate to apply fertilizer and water based on the producers' historical crop data and current yield goals. Additionally, the tool will help track nitrogen application rates which, when over-applied, negatively impacts our groundwater. By tracking nitrogen application rates, the NRD will be able to document the progress being made to address nitrate in groundwater. While it may take years to see a reduction of nitrate in the groundwater, the NRDs can measure short-term success with a reduction in nitrogen application. The reduced inputs will decrease the nitrate in groundwater over time, protect our groundwater resource from high nitrate, and help reduce the high nitrate already in groundwater. This positively impacts all Nebraskans by ensuring safe drinking water for beneficial use across the state.



6. Is cost-effective;

- List the estimated construction costs, O/M costs, land and water acquisition costs, alternative options, value of benefits gained.
- Compare these costs to other methods of achieving the same benefits.
- List the costs of the project.
- Describe how it is a cost effective project or alternative.

The total cost of this project is \$400,000. While similar concepts are in place, recommendations from similar tools are based on empirical data collected from small-demonstration plots and large-scale regional models. What is unique about the Producer Connect App is that it uses real data already being collected from fields specific to that producer. So, recommendations are made based on the producer's actual field performance and local conditions.

The alternative method to this project is each individual NRD develops their own tool like this. The consequence is a disjointed effort to address a statewide concern and also, financially, it's not economical. Each NRD would have to pay for the upfront development cost. By partnering together and joining efforts, that upfront development cost is spread across 23 NRDs instead of each individual NRD paying that cost.

7. Helps the state meet its obligations under interstate compacts, decrees, or other state contracts or agreements or federal law;
 - Identify the interstate compact, decree, state contract or agreement or federal law.
 - Describe how the project will help the state meet its obligations under compacts, decrees, state contracts or agreements or federal law.
 - Describe current deficiencies and document how the project will reduce deficiencies.

The Producer Connect App will help meet obligations under the Safe Drinking Water Act, which is derived from the Federal Safe Drinking Water Act, which sets safety standards for contaminants in drinking water. NRDs have local leadership responsibilities for protecting groundwater from overuse and pollution. Each district also has a plan to protect groundwater. State law has given districts various regulatory tools to deal with contamination, shortages, or user conflicts. Nebraska's NRDs lead the nation in groundwater quality management by targeting areas with known nonpoint source contamination. Best Management Practices (BMPs) such as irrigation management and proper nitrogen/pesticide applications are needed to prevent contamination from entering Nebraska's drinking water.

8. Reduces threats to property damage or protects critical infrastructure that consists of the physical assets, systems, and networks vital to the state or the United States such that their incapacitation would have a debilitating effect on public security or public health and safety;
 - Identify the property that the project is intended to reduce threats to.
 - Describe and quantify reductions in threats to critical infrastructure provided by the project and how the infrastructure is vital to Nebraska or the United States.

- Identify the potential value of cost savings resulting from completion of the project.
- Describe the benefits for public security, public health and safety.

This project intends to reduce threats to Nebraska’s public water systems and private wells. Based on the 2023 Nebraska State Revolving Fund Intended Use Plan Report, a Drinking Water Needs survey of public water systems identified \$484.5M of eligible projects focused on addressing nitrate in drinking water. This does not include private well owners installing reverse osmosis systems for clean drinking water. Clean water is essential for public health and safety and this tool will help in protecting our drinking water resource.

9. Improves water quality;

- Describe what quality issue(s) is/are to be improved.
- Describe and quantify how the project improves water quality, what is the target area, what is the population or acreage receiving benefits, what is the usage of the water: residential, industrial, agriculture or recreational.
- Describe other possible solutions to remedy this issue.
- Describe the history of the water quality issue including previous attempts to remedy the problem and the results obtained.

This project works to address nitrate in groundwater, which is approximately 88% of Nebraska’s drinking water. Currently, there is a rising concern about nitrate in groundwater. Data from one NRD shows that approximately 60% of the producers in Phase II and Phase III areas are over-applying nitrogen based on their crop reporting forms. While this number is down from 91%, there is still room for improvement in fertilizer application rates.

The Producer Connect App is an educational tool that will guide producers to apply fertilizer at an appropriate rate based on their operation. The Producer Connect App will be available for producers to use across the state in Phase II and Phase III groundwater management areas, which have higher levels of nitrate in the groundwater. In reference to Phase II and III areas, NRDs utilize trigger points signifying specific nitrate levels in groundwater through well monitoring. These triggers are put in place to protect the drinking water supply and are relative to the safe drinking water standards mandated federally. The higher the Phase, the more implementation of management efforts for groundwater protection is required.

The NRDs have spent years promoting and cost-sharing on best management practices (BMPs). While these practices are beneficial to the environment, these practices don’t address the over application of

nitrogen. Over application of nitrogen fertilizer causes high levels of nitrate in groundwater. The Producer Connect App will help educate producers on the appropriate fertilizer application rate, reducing overapplication and addressing the cause of the problem. BMPs are still a valuable tool that need to be utilized to help reduce nitrate leaching into groundwater and utilize the nitrate currently in the groundwater.

10. Has utilized all available funding resources of the local jurisdiction to support the program, project, or activity;

- Identify the local jurisdiction that supports the project.
- List current property tax levy, valuations, or other sources of revenue for the sponsoring entity.
- List other funding sources for the project.

The local jurisdictions that support the Producer Connect App are the following NRDs- Central Platte, Lewis and Clark, Little Blue, Lower Big Blue, Lower Elkhorn, Lower Loup, Lower Niobrara, Lower Republican, Nemaha, North Platte, Papio-Missouri River, South Platte, Tri Basin, Twin Platte, Upper Big Blue, Upper Elkhorn, Upper Loup, Upper Niobrara White, and Upper Republican. These partners have utilized local revenue sources to collect and compile the data that will feed the Producer Connect App.

Additional project partners include the Nebraska Association of Resources Districts and the Nebraska Corn Board.

11. Has a local jurisdiction with plans in place that support sustainable water use;

- List the local jurisdiction and identify specific plans being referenced that are in place to support sustainable water use.
- Provide the history of work completed to achieve the goals of these plans.
- List which goals and objectives this project will provide benefits for and how this project supports or contributes to those plans.
- Describe and quantify how the project supports sustainable water use, what is the target area, what is the population or acreage receiving benefits, what is the usage of the water: residential, industrial, agriculture or recreational.
- List all stakeholders involved in project.
- Identify who benefits from this project.

Each NRD participating in this project has an approved IMP or Voluntary IMP. The purpose of the IMP is to maintain and/or attain a balance between water uses and water supplies of both surface water and groundwater. While all IMPs go through the same planning process, the goals, objectives and action items are determined locally and vary by district. Each district

will use the Producer Connect App to support the goals, objectives, and activities for their IMP.

This project will provide a tool for NRDs and producers to track water quantity and nitrogen application, along with a host of other data, and use the data to make recommendations for agronomic water and fertilizer applications.

The target area will be Phase II and Phase III areas across the state, known for elevated groundwater nitrate levels and are primarily associated with agriculture activities.

Stakeholders include the NRDs and the Nebraska Corn Board.

Beneficiaries of the project include: NRDs and ag producers in and out of Phase II and higher areas. Indirect beneficiaries include: private well owners and public water systems and all the citizens of the state that rely on them for clean drinking water.

12. Addresses a statewide problem or issue;

- [List the issues or problems addressed by the project and why they should be considered statewide.](#)
- [Describe how the project will address each issue and/or problem.](#)
- [Describe the total number of people and/or total number of acres that would receive benefits.](#)
- [Identify the benefit, to the state, this project would provide.](#)

The Producer Connect App helps address elevated levels of nitrate in groundwater. While there are higher levels of nitrate in the groundwater in some areas of the state, nitrate in groundwater is dispersed across the state. Over-application of fertilizer is the leading cause of nitrate leaching into groundwater making it unsafe to drink. With approximately 88% of Nebraska residents relying on groundwater as their drinking water source, protecting this resource is essential.

The Producer Connect App will use certain data entered by the producer, which includes flow meter readings, crops planted, tillage practices, soil tests, water tests, crop yield goals among other things to calculate an accurate fertilizer application rate. The web based and mobile application suite will store producers' data allowing them to track their nitrogen-use efficiency and their profitability to help them make better management decisions and reduce nitrate leaching.

When managing nitrogen, it's just as important to manage water quantity because nitrogen is water soluble and moves with water. If water is applied

at the crops desired rate, nitrate leaching into groundwater can be reduced. Additionally, the NRDs monitor groundwater levels and when a decline is observed this can trigger an allocation being put in place. The Producer Connect App can track a producer's water usage, help conserve groundwater, and potentially avoid allocations being triggered.

There are over 4 million acres in a Phase II or higher management areas that would receive benefits from this project. Not only will there be benefits to the land but also benefits the producer by making the required crop reporting easier and more efficient to submit annually. The Producer Connect App will allow producers a way to submit their crop reporting form online, which is not currently available in all NRDs. This also benefits the NRDs by eliminating potential errors while transcribing data and eliminates the time it takes to enter the reports manually.

13. Contributes to the state's ability to leverage state dollars with local or federal government partners or other partners to maximize the use of its resources;

- List other funding sources or other partners, and the amount each will contribute, in a funding matrix.
- Describe how each source of funding is made available if the project is funded.
- Provide a copy or evidence of each commitment, for each separate source, of match dollars and funding partners.
- Describe how you will proceed if other funding sources do not come through.

A majority of the NRDs, the Nebraska Association of Resources Districts (NARD), and the Nebraska Corn Board will pay for 40% of the project cost, contributing \$160,000. The funding is available through NRD budgets, the NARD Foundation, and the Nebraska Corn Board.

Additionally, other grants may be pursued to support this project.

14. Contributes to watershed health and function;

- Describe how the project will contribute to watershed health and function in detail and list all of the watersheds affected.

What happens above the ground impacts what happens below the ground and in the groundwater. Many areas of the state have elevated nitrate levels in the groundwater. By properly managing water and nitrogen applications we can improve soil health, the crops growing in the soil, support the microorganisms in the soil, and improve the overall health of the watershed.

When fertilizer is used in excess, some effects include: a decrease in soil organic matter leading to soil acidification, depletion of essential nutrients in the soil, and release of greenhouse gas nitrous oxide into the air. By providing agronomic recommendations for fertilizer application harmful effects to watershed health and function can be reduced.

15. Uses objectives described in the annual report and plan of work for the state water planning and review process issued by the department.

- Identify the date of the Annual Report utilized.
- List any and all objectives of the Annual Report intended to be met by the project
- Explain how the project meets each objective.

In the 2020 Annual Report, page 6, the report highlights the collaboration between NeDNR and NRDs with the NeDNR/NARD Liaison. The liaison is responsible for assisting the Department and NRDs with identifying projects that promote conservation, efficient water use, and the stabilization or improvement of water supplies. This project supports the duties listed under the NeDNR/NARD liaison.

16. Federal Mandate Bonus. If you believe that your project is designed to meet the requirements of a federal mandate which furthers the goals of the WSF, then:

- Describe the federal mandate.
- Provide documentary evidence of the federal mandate.
- Describe how the project meets the requirements of the federal mandate.
- Describe the relationship between the federal mandate and how the project furthers the goals of water sustainability.

This project will help meet the requirements of the U.S. EPA safe drinking water standard (also known as the maximum contaminant level (MCL)) of 10 mg/L for nitrate. The project develops an educational tool for producers to use which recommends an agronomic fertilizer application rate to help address the over application of fertilizer. By reducing the over application of fertilizer, the amount of nitrate leaching to groundwater is reduced and long term helps reduce the levels of nitrate in the groundwater. This project provides a new tool to help protect water quality.