# NEBRASKA NATURAL RESOURCES COMMISSION

## Water Sustainability Fund

Application for Funding

Section A.

## ADMINISTRATIVE

**PROJECT NAME:** Otoe County Rural Water District #3 Well Field

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

Sponsor Business Name: Otoe County Rural Water District #3

Sponsor Contact's Name: Scott Bruns

Sponsor Contact's Address: 516 S. 3rd St., Syracuse, NE 68446

Sponsor Contact's Phone: 402-269-2785

Sponsor Contact's Email: ruralwater@futuretk.com

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

   **Grant** amount requested. $ 147,255

   - If requesting less than 60% cost share, what %? NA

   **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.
- What is the population served by your project?
- Provide a demonstration of need.
- **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☒ | Obtained: YES☐ | NO☐ |
| DNR Surface Water Right | N/A☒ | Obtained: YES☐ | NO☐ |
| USACE (e.g., 404/other Permit) | N/A☒ | Obtained: YES☐ | NO☐ |
| FEMA (CLOMR) | N/A☒ | Obtained: YES☐ | NO☐ |
| Local Zoning/Construction | N/A☐ | Obtained: YES☐ | NO☒ |
| Cultural Resources Evaluation | N/A☒ | Obtained: YES☐ | NO☐ |
| Other (provide explanation below) | N/A☒ | Obtained: YES☐ | NO☐ |

No permits have been obtained by Otoe County RWD #3 thus far.

- A USACE 404 Permit will likely not be required based upon initial field evaluations. If a 404 Permit is needed, it would be a Nationwide Permit requiring minimal effort and would not delay the project. It is anticipated that the water main will be directionally drilled to avoid wetland impacts.
- Well construction permits will be required by the Nemaha NRD. They are in favor of this development for Otoe County RWD #3.
- NDEE will be required to review and approve the proposed well sites and will provide a Title 179 construction permit as needed for the project.
- Permits are estimated 2-3 months
- Estimated cost for all permits would be $500.

4. **Partnerships**

List each Partner / Co-sponsor, attach documentation of agreement:
Village of Burr, Village of Talmage, Nemaha NRD

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

Partner / Co-sponsor information listed below:

**Village of Burr – Co-Sponsor**

The Village of Burr has been battling Nitrate issues in their public supply wells for many years. They have been doing their due diligence and wish to connect to the Otoe County RWD #3 for the needs of the community's water supply. Due to the cost, this has not come to fruition. The Village of Burr would still operate their water system but would be considered a consecutive water system under NDEE regulations. Their new source of water would be part of the new wellfield being developed. See Attachment A.

**Village of Talmage – Co-Sponsor**

The Village of Talmage has poor water quality, and due to recent proposed changes in the national drinking water standards for Manganese and the condition of their treatment plant and wells, they have wanted to connect to the Otoe County RWD #3 for over 15 years. The NDEE has applied for a grant through the EPA called the Emerging Contaminants for Small Disadvantages Communities (EC-SDC) to construct a transmission main from the Otoe County RWD #3 to the Village of Talmage. The Village of Talmage would still operate their water system but would be considered a consecutive water system under the NDEE and their new source of water would be part of the new wellfield being developed. See Attachment A.

**Nemaha NRD – Co-Sponsor**

The Nemaha NRD has been supportive of the Otoe County RWD #3 and has assisted in evaluating potential land for a secondary supply of water for the Rural Water System. The Nemaha NRD will continue to support efforts to develop the wellfield for Otoe County RWD #3, to better serve the 2,750 residents dependent upon the district. See Attachment A.

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

**Village of Burr – Co-Sponsor**

The Village of Burr has a vested interest in the project as this would address their public drinking water issue. Their role and responsibility is primarily supportive and would agree to the conditions outlined by the Otoe County RWD #3 commitment to providing potable water to the community.

**Village of Talmage – Co-Sponsor**
Agreements are already in place to connect the Village of Talmage to Otoe County RWD #3. Their role again is supportive as the Village is in need of clean drinking water for their community.

**Nemaha NRD – Co-Sponsor**
With the charge from the Nebraska Legislature in 1972 issuing a broad range of conservation-based responsibilities, the Nemaha NRD has a role in the project as it directly affects the lives and property within their district. Their responsibility in the project has initially been with evaluating the potential impacts, and as the project has moved forward, their role and responsibility are in the further development of the project.

5. **Other Sources of Funding**

Identify the costs of the entire project, what costs each other's 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.

Otoe County RWD #3 purchased 380 acres on March 12, 2025, at $7,300 per acre, totaling approximately $2.774 million, utilizing a significant portion of the district's resources. To determine the optimal location for the wells and facilitate the sale of any unused land, a comprehensive site investigation is necessary. This step is designated as Phase 1 of the project. The Otoe County RWD #3 plans to apply for WSF, USDA-RD, and/or DWSRF funding to cover the construction costs for the well house, piping, and related infrastructure in Phase 2. The well site must first be identified to return the excess land to productive use. Once determined, the necessary portion will be retained, and the remaining land will be sold.

Should this grant not be successful, Otoe County RWD #3 will have to wait for additional funding and will complete the analysis and construction at a later time. This will keep the Otoe County RWD #3's reserve funding tied up until the land can be sold. The funding sources are described in Table 1 – Project Cost Split by Major Category:

**Table 1 – Project Cost Split by Major Category**

| | Opinion of Probable Construction Cost | Local Match Share (40%) | WSF Request (60%) |
|---|---|---|---|
| **Survey, Design, Construction Administration** | $ 13,300 | $ 5,320 | $ 7,980 |
| **Construction** | $ 221,025 | $ 88,210 | $ 132,315 |
| **Permitting** | $ 500 | $ 200 | $ 300 |

| | | | |
|---|---|---|---|
| **Construction Contingencies** | $ 10,600 | $ 4,440 | $ 6,660 |
| **TOTAL** | **$ 245,425** | **$ 98,170** | **$ 147,255** |

## 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!

Otoe County RWD #3 supplies water to approximately 1,613 service connections, serving seven small villages and 2,500 residents across Otoe, Cass, and Johnson Counties. Its water mains span roughly 700 miles. The district regularly receives requests for new connections from individuals and communities.

Due to poor water quality, the Village of Talmage (population 198) requested to join the system. Otoe County RWD #3 agreed to provide water, requiring the Village to install water meters to manage consumption. The Village of Burr is facing Nitrate contamination, with current reports showing Nitrate-Nitrite levels at 11.7 MG/L—exceeding the EPA's Maximum Contaminant Level (MCL) of 10 MG/L. The Village, which has 33 connections, completed a Preliminary Engineering Report (PER) and identified a connection to Otoe County RWD #3 as the most feasible solution.

Otoe County RWD #3 operates four active water supply wells, all located within 600 feet of each other (approximately ¼ mile total). During the irrigation season, they cannot all be pumped simultaneously due to the proximity between each other. The well construction details are summarized in Table 2 – Well Id. and Capacities:

**Table 2 – Well Id. and Capacities**

| Well # | State Id. # | Depth | Current Settings | Capacity | Pumping Water Level (PWL) |
|---|---|---|---|---|---|
| #4 | G-074800R | 212 ft. | 580 gpm | 1,050 gpm | 112 ft. |
| #3 | G-071888 | 182 ft. | 250 gpm | 350 gpm | 82 ft. |
| #2 | G-071889 | 198 ft. | 480 gpm | 1,000 gpm | 100 ft. |
| #5 | G-182457 | 226 ft. | 600 gpm | 958 gpm | 121 ft. |

During the summer months, Otoe County RWD #3's pumping wells operate an average of 20 hours per day to meet the peak demand of 1,200,000 gallons per day. At times, they have drawn air, requiring a reduction in pumping capacity to mitigate the issue. In response to increasing demand and system connections, Otoe County RWD #3 has been actively seeking a second wellfield site.

On March 12, 2025, the district successfully acquired land at an auction for this purpose. Working with the Nemaha NRD, they confirmed, based on desktop research, the site has a more favorable geological formation than the existing wellfield. Additionally, its location allows for a water line to be routed near the Village of Burr, potentially benefiting the community.

Airborne Electromagnetic (AEM) maps from the Nemaha Natural Resources District (NNRD) indicate that the newly acquired land contains a strong aquifer source. Phase 1 will involve drilling test holes and wells to assess water volume and quality. If results confirm suitability, a 16” casing will be installed for an initial production well. Phase 2 will include extending power to the site, constructing a well house, installing a transmission main, and making system connections to ensure an adequate water supply for customers. Securing a reliable water source is a critical step in providing long-term benefits to the region and ensuring the sustainability of Otoe County RWD #3.

## 7. Project Tasks and Timeline

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

The Otoe County RWD #3 is requesting funds to implement a test hole/test well drilling program and install a production well casing for a new long-term water supply for their rural system to serve its patrons. During the application and review process test hole sites and NDEE permitting will begin so if the project is funded, it will be ready to proceed immediately. Portions of this expansion have been in the works for over 18 years starting with the connection to Talmage and more recently the need for a connection for Burr. If funded, it is anticipated that the new water source investigation improvements can be completed by March 2026. Figure 1 – Project Schedule below describes the schedule of completion of the investigation.

**Figure 1 – Project Schedule**

| | 2025 | | | | | | | | | | | | 2026 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M |
| **NEW SOURCE INVESTIGATION** | | | | | | | | | | | | | | | |
| Apply for WSF Grant Funding | | | ■ | | | | | | | | | | | | |
| Receive WSF Grant Funding | | | | | | | ■ | | | | | | | | |
| Identify Potential Well Sites on Property | | | | ■ | ■ | | | | | | | | | | |
| Request NDEE Site Inspection of Selected Well Sites | | | | | | ■ | ■ | | | | | | | | |
| Draft Proposals for Test Hole/Test Well Drilling of Selected Sites | | | | | | | | ■ | | | | | | | |
| Perform Test Hole Drilling on Selected Sites | | | | | | | | | ■ | ■ | | | | | |
| Test pump and Collect Water Quality to Confirm Well Sites for PWS | | | | | | | | | | | ■ | ■ | ■ | | |
| Install 16" Casing for New PWS Well | | | | | | | | | | | | | | ■ | |
| ***End of WSF Grant Phase 1*** | | | | | | | | | | | | | | | ■ |

Table 3 – Estimated Project Cost by Year, which displays the estimated cost to complete Phase 1.  The land is secured and will be ready to proceed upon the grant award.

**Table 3 – Estimated Project Cost by Year**

| | Opinion of Probable Construction Cost | 2025-2026 |
|---|---|---|
| **Survey, Design, Construction Administration** | $13,300 | $13,300 |
| **Construction** | $220,525 | $220,525 |
| **Permitting** | $500 | $500 |
| **Land Easements** | $50,000 | $50,000 |
| **Construction Contingencies**[1] | $11,100 | $11,100 |
| **TOTAL** | **$245,425** | **$245,425** |

8. **IMP**

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

The Otoe County RWD #3 is part of the Nemaha NRD and complies with the NRD's IMP.

[1] Contingency is added to the estimate to ensure resources are available to cover unexpected events, elevated material cost, unforeseen field conditions, and other uncertainties potentially encountered through design and construction.

## 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.

The scope of Phase 1 of this project involves test holes and test well drilling of land purchased on March 12, 2025. A "feasibility report" was not completed for this scope of the project. The Otoe County RWD #3 believes to provide services in the future, a new source of water is needed for the rural water system. The feasibility and cost analysis with engineering technical data are provided in the responses listed below, addressing Title 261, Chapter 2.

Although more directed to Phase 2, the Village of Burr has completed a feasibility analysis to demonstrate the most cost-effective solution is connecting to the Otoe County RWD #3. An excerpt table from the Village of Burr's PER is provided below in Table 4 – Village of Burr Life Cycle Cost Effective Analysis.

**Table 4 – Village of Burr Life Cycle Cost Effective Analysis**

| *ALTERNATIVE* | *CONNECT WITH RWD #3* | *POU DEVICES* | *NEW WELL – 3 MILES* | *RO BOTH WELLS* |
|---|---|---|---|---|
| **Total Capital Cost** | $1,640,000 | $1,243,800 | $3,174,900 | $3,749,300 |
| **Increased Annual O&M Cost & Water Cost** | $7,300 | $21,300 | $22,100 | $92,180 |
| **Present Worth (O&M)** | $140,000 | $408,600 | $424,000 | $1,768,400 |
| **Salvage Value** | $529,147 | $323,406 | $1,035,516 | $719,223 |
| **Present Worth (Salvage Value)** | $488,500 | $298,600 | $956,100 | $664,000 |
| **Life Cycle Cost* (Net Present Value)** | **$1,291,500** | **$1,353,800** | **$2,642,800** | **$4,853,700** |

Talmage completed a similar evaluation in 2011. The cost for new wells was similar to the cost of the rural water connection as shown in the excerpt table, Table 5 – Village of Talmage 2011 Life Cycle Cost Effective Analysis, below. However, with the EC-SDC grant providing a water main to the Village, the reduction of debt service for capital improvements makes the Otoe County RWD #3 connection the most cost-effective solution.

**Table 5 – Village of Talmage 2011 Life Cycle Cost Effective Analysis**

| Description | Capital Costs | Estimated Debt Service[1] | Projected O&M Expense | Projected Commodity Cost | Projected Total Yearly Expense | Total Cost per User[2] | Average Bill per User[2] (Cost + 10%) |
|---|---|---|---|---|---|---|---|
| | | $ / Year | | | | $ / Month | |
| *Existing System (Less Existing Plant/Wells)* | | *$0* | *$15,500* | *$0* | *$15,500* | *$10.33* | *$11.37* |
| | | | | | | | |
| **Improvement Combination** | | | | | | | |
| New Wells, T-Main Route 1, New Tower, Water Meters | $2,855,300 | $210,098 | $44,990 | $0 | $255,088 | $170.06 | $187.06 |
| New Wells, T-Main Route 2, New Tower, Water Meters | $3,172,400 | $233,431 | $44,990 | $0 | $278,421 | $185.61 | $204.18 |
| New Treatment Plant, New Tower, Water Meters | $2,992,800 | $220,215 | $80,960 | $0 | $301,175 | $200.78 | $220.86 |
| Connection to Rural Water, New Tower, Water Meters | $2,271,700 | $167,156 | $33,350 | $70,200 | $270,706 | $180.47 | $198.52 |

1: Estimated at 4% over 20 years.
2: Assumes 125 connections.
3: The commodity cost of water adds a total of **$46.80** to the average user cost per month.

1.A.2 Describe the plan of development (004.01 A).

The Otoe County RWD #3 has a two phased approach. Otoe County RWD #3 has been actively seeking a new source of water to provide long-term stability for the rural water district. An auction was held on March 12, 2025, and the Board discussed the rarity of land availability with the opportunity for a water supply. The Board reached out to the Nemaha NRD before the auction, requesting preliminary research on the geologic data for this tract of land. Using local knowledge of the Board, the Airborne Electromagnetic (AEM) data that had been collected surrounding the site, and looking at the registered wells in the area, the Otoe County RWD #3 decided to attend the auction and bid on the land. The Otoe County RWD #3 was successful in purchasing the land.

Phase 1, after the land purchase, is to confirm the regional geologic data by drilling test holes and if promising, drill a production well on the site. The plan for Phase 1 is to install four (4) test holes at the corners of the property to verify regional data such as saturated thickness, yield, and formation materials. See Attachment B. Based on the four test holes, the intent is to install two 6” cased test wells for pumping and aquifer testing. These 6” cased wells could have up to 2-2” minoring wells to record pumping impacts during a 24-hour test pump of each of the two sites. Following the 24-hour test pumping of the 6” wells, water quality for new public water supply wells would be collected as required by NDEE. Based on the two 6” test wells, the best site for quantity and quality will be selected, and one 16” cased production well will be installed. The plan is to place the public water supply well screen as deep as possible in the aquifer with a minimal amount of screen needed for production. The well will have a bentonite seal from the gravel pack above the screen to the surface seal.

Phase 2 of the development plan is to secure funding for the construction of the well house, power supply, transmission main, and connection to the existing Otoe County RWD #3. Phase 2 funding could be a combination of USDA-RD/ DWSRF and potentially WSF funding in 2026. Funding through other governmental agencies takes time, and the Otoe County RWD #3 needs to have a solid plan of well locations before initiating Phase 2. The Otoe County RWD #3 purchased the land intending to perform the Phase 1 investigation, and once potential well sites are determined, to re-sell or lease the remaining ground while retaining ownership of the wellfield as needed for wells, piping, and power.

1.A.3 Include a description of all field investigations made to substantiate the feasibility report (004.01 B).

Prior to the determination to purchase the ground, local irrigators were consulted, and well registrations for wells G-186988, G-046541, and G-189190 were reviewed – Attachment C. It appeared that the formation to support the well development was present. The Nemaha NRD was then consulted and using excerpts of the Airborne Electromagnetic (AEM) data – Attachment D, there were flight paths that were north and west of the site that indicated the area would have good aquifer formations and could support a wellfield for the Otoe County RWD #3. AEM data was valuable in deciding to proceed with the land purchase. The only well on the site was a livestock well G-139421 that was screened to 79 feet, and the well log only went to 170 feet and did not indicate that the bottom of the aquifer was reached. Adjacent wells show the formation was thicker than the well on site. Groundwater flow direction is primarily NW to SE on the purchased land. Up-gradient areas have minimal wells along the potential flow path, with no observed feedlots or contamination sources.

1.A.4 Provide maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C).

There were several figures and data used for the purchase of the well site land. Attachment C shows the registered well logs for wells G-186988, G-46541, G-189190, and G-139421. These logs were used to look at specific well logs and verify formation and registered pumping rates in the area. Since the purchase of the property, two wells have been registered adjacent to the property. These wells are G-202368 (domestic well) and G-202369 (livestock well). These wells do not provide geologic log data since they were registered on 3/18/2025 but have been in place as unregistered wells for years. Attachment D is excerpts of the Airborne Electromagnetic (AEM) data. Three figures in this attachment show the flight paths through the property and the two corresponding geological profiles through the purchased land. The entire report is available through https://enwra.org. Attachment E is a map of the purchased property and the surrounding wells with the Nemaha NRD required offsets for new well siting.

1.A.5 Describe any necessary water and/or land rights including pertinent water supply and water quality information (004.01 D).

The Otoe County RWD #3 has purchased the land for the proposed well site and has been working with the Nemaha NRD on the permitting of new wells on this site. New well permits will be required for the public water supply wells, and as indicated in the letter of support, the Nemaha NRD is not opposed to this development. The NDEE is the regulatory agency protecting the health of the rural water system users, and they will be required to perform a well site inspection of the proposed test holes to verify they will meet setback requirements separate from the NRD's well permitting. A construction permit for the 16" casing will be required from the NDEE. The water quality has to meet the Safe Drinking Water Act (SDWA), and testing is governed by the NDEE for the test wells and final well water quality. There are over 280 parameters that are required to be tested in the test wells and final well samples.

1.A.6 Discuss each component of the final plan (004.01 E).

The final plan for Phase 1 includes three main steps.

1) Perform test hole drilling to confirm specific geologic formations – Attachment B.
2) Based on the test holes, select two of the most advantageous sites to install 2-6" test wells and observation wells to perform aquifer testing and water quality testing.
3) Based on the test pumping and water quality sampling, installation of one new 16" casing that will be used for connection to the Otoe County RWD #3.

The completion of Phase 1 will initiate the re-selling of unnecessary land and begin Phase 2 of constructing the necessary improvements needed to make connections to the rural water system.

1.A.7 When applicable include the geologic investigation required for the project (004.01 E 1).

Attachment E contains the well logs in and around the property that were used for the initial geologic investigation. Also included is a detailed analysis of the site-specific geologic formation – Attachment D.

1.A.8 When applicable include the hydrologic data investigation required for the project (004.01 E 2).

Attachment D is an excerpt of the Airborne Electromagnetic (AEM) flight paths and profiles identifying the saturated thickness and water yielding potential by color as it cut through the property. The funding request is to provide a detailed analysis for the site specific hydrogeologic formation and test pumping to confirm the water quality and quantity.

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).

The final well screen location and opening size will be determined based on the formation samples collected from the test wells. The formation samples will be sieved, and the appropriate design for screen size, gravel pack material will be selected. The initial saturated thickness based on the Airborne Electromagnetic (AEM) data is 120-140 feet of material. The newer irrigation wells indicate a screen slot size of around 50-thousand or 50 slot screens. Using a 16" screen and 50 slot opening, the NDEE-approved capacity is approximately 23 gallons per vertical foot of screen. To keep the velocity down and potentially slow down nitrate vertical migration, it is assumed the well will produce 600 gpm, which would correspond to approximately 30 feet of screen in the bottom of the well. The casing will be SDR 17 PVC or 0.375" thick steel casing. The well annulus will be sealed with bentonite to form the top of the screen gravel pack for the surface seal.

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

1.B.1 Insert data necessary to establish technical feasibility (004.02); Click here to enter text.

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

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

1.B.4 Describe any necessary water and/or land rights (004.02 C); Click here to enter text.

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). Click here to enter text.

## **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 Otoe County RWD #3 was formed due to the lack of available subsurface water and the need for water distribution. The current wellfield is located in an area where the saturated thickness is less than the proposed site, and during irrigation season, the wells have to be turned down to keep from pumping air. This is the indication that a new and better long-term solution was needed for keeping the rural water system viable. The areas of water supply, as identified in the AEM data, are limited, and due to the location of the existing infrastructure, points of connection are also key to the system operations. Water quality can be treated, if necessary, but it is typically the most expensive option. Water quantity has to be achieved through the places or formations where it exists in nature. The location of the purchased land is such that it can provide water for a community in need, and it can be connected to the current water supply lines. In the future, if treatment is needed, it can have a central treatment plant that can process all of Otoe County RWD #3's southern wells at one location. The next best alternative would be to install a radial collector well at the current site to overcome the increased drawdown or to attempt drilling several smaller wells in the same area with lower capacity to spread out the drawdown. If more wells or a collector well is drilled in the current wellfield, a new line would have to be installed to serve the Village of Burr and not take advantage of the location requiring the new line to pass by the Village of Burr for connection to the system. The second most beneficial aspect of the purchased wellfield site is the redundancy of not having all of the water supply in the same area. With a second site, the option of blending the two sources into one if contamination occurs, such as high nitrate levels are detected to prolong the cost of a treatment plant.

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).

**Table 4 – Village of Burr Life Cycle Cost Effective Analysis**

| ***ALTERNATIVE*** | ***CONNECT WITH RWD #3*** | ***POU DEVICES*** | ***NEW WELL – 3 MILES*** | ***RO BOTH WELLS*** |
|---|---|---|---|---|
| **Total Capital Cost** | $1,640,000 | $1,243,800 | $3,174,900 | $3,749,300 |
| **Increased Annual O&M Cost & Water Cost** | $7,300 | $21,300 | $22,100 | $92,180 |
| **Present Worth (O&M)** | $140,000 | $408,600 | $424,000 | $1,768,400 |
| **Salvage Value** | $529,147 | $323,406 | $1,035,516 | $719,223 |
| **Present Worth (Salvage Value)** | $488,500 | $298,600 | $956,100 | $664,000 |
| **Life Cycle Cost* (Net Present Value)** | **$1,291,500** | **$1,353,800** | **$2,642,800** | **$4,853,700** |

**Table 5 – Village of Talmage 2011 Life Cycle Cost Effective Analysis**

| Description | Capital Costs | Estimated Debt Service[1] | Projected O&M Expense | Projected Commodity Cost | Projected Total Yearly Expense | Total Cost per User[2] | Average Bill per User[2] (Cost + 10%) |
|---|---|---|---|---|---|---|---|
| | | $ / Year | | | | $ / Month | |
| *Existing System (Less Existing Plant/Wells)* | | $0 | *$15,500* | $0 | *$15,500* | *$10.33* | *$11.37* |
| | | | | | | | |
| **Improvement Combination** | | | | | | | |
| New Wells, T-Main Route 1, New Tower, Water Meters | $2,855,300 | $210,098 | $44,990 | $0 | $255,088 | $170.06 | $187.06 |
| New Wells, T-Main Route 2, New Tower, Water Meters | $3,172,400 | $233,431 | $44,990 | $0 | $278,421 | $185.61 | $204.18 |
| New Treatment Plant, New Tower, Water Meters | $2,992,800 | $220,215 | $80,960 | $0 | $301,175 | $200.78 | $220.86 |
| Connection to Rural Water, New Tower, Water Meters | $2,271,700 | $167,156 | $33,350 | $70,200 | $270,706 | $180.47 | $198.52 |

1: Estimated at 4% over 20 years.
2: Assumes 125 connections.
3: The commodity cost of water adds a total of **$46.80** to the average user cost per month.

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).

The estimated cost for the Phase 1 test hole/test well drilling is presented below in Table 6 – Opinion of Probable Costs, Phase 1. The annual operation and maintenance costs were not estimated as the Otoe County RWD #3 would alternate pumping from the current wells to these wells. The current and future wells would have high-efficiency motors and insulated well houses, and the annual cost to pump from either site would be similar.

**Table 6 – Opinion of Probable Cost, Phase 1**

| No. | Description | Quantity | Unit | Unit Price | Total Price |
|---|---|---|---|---|---|
| 1 | Mobilization | 1 | L.S. | $25,000 | $25,000 |
| 2 | Test Holes and Reporting | 1000 | V.F. | $20 | $20,000 |
| 3 | 6" Test Well Construction and Registration | 400 | V.F. | $40 | $16,000 |
| 4 | 2" Observation Well Construction and Registration | 800 | V.F. | $25 | $20,000 |
| 5 | Formation Sampling and Sieve Analysis for Screen Design | 25 | Each | $25 | $625 |
| 6 | Water Quality Analysis | | | | |
| 7 | a. Screening WQ | 2 | Each | $2,000 | $4,000 |
| 8 | b. Public Water Supply New Well Scan Kit | 2 | Each | $7,000 | $14,000 |
| 9 | Test Pumping and Recovery | 48 | Hours | $250 | $12,000 |
| 10 | Furnish & Install Well Protectors | 2 | L.S. | $1,000 | $2,000 |
| 11 | Abandon 2" Observation Wells | 4 | Each | $600 | $2,400 |
| 12 | Install 16" Casing for New Well | 1 | Each | $5,000 | $105,000 |
| 13 | Contingencies/Permitting | 5.00% | % | | $11,100 |
| 14 | Engineering and Site Observation | 6.00% | % | | $13,300 |
| | | | | **TOTAL** | **$245,425** |

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).

The primary tangible benefit for Phase 1 is to confirm that a long-term water supply is viable on the purchased land. If confirmed, the site would provide a safe and affordable water supply for not only the current district customers but also the Villages of Burr and Talmage. This new source may also allow the Otoe County RWD #3 to provide water for customers that currently do not have good, potable water. This alternative source site would also provide a secondary benefit such that the water source would be separated by over 4 miles, which could provide blending should water quality issues arise in the future. The current wellfield has all the wells in a close proximity and could impact all the wells if water quality issues developed.

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).

The proposed project (if funded) will rely on the Otoe County RWD #3 water rate to repay the debt on the system for the investigation. The award of $147,255 from the WSF grant will reduce the impact on the users by approximately $14.75 per year or $1.23/user/month for Phase 1. The Cost and Benefit data for the proposed project is included in Table 7 – Cost and Benefit.

**Table 7 – Cost and Benefit**

| | **District Funds Only** | **WSF Grant Funding** |
|---|---:|---:|
| Project Cost (Conventional Loan) | $245,425 | $98,170 |
| Interest Rate | 6% | 6% |
| Term | 15 Years | 15 Years |
| Principal and Interest Payment | $25,269.64 | $10,107.85 |
| User Rate Increase per month (1028 Services) | $2.05 | $0.82 |

However, looking at the big picture, the Phase 2 budget for the infrastructure is estimated to be approximately $4.2 million, depending on the final well site selection. Completing this initial step will be very important in the final implementation.

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.)

For Phase 1, there are no primary tangible benefits for the investigation. If Phase 1 is successful, the Otoe County RWD #3 will be able to move forward with the construction, which will allow the Villages of Burr and Talmage to gain a new water source that meets drinking water standards while also being the most cost-effective option annually. Additionally, Otoe County RWD #3 will secure a secondary water supply to ensure continued service to its customers.

## 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 Otoe County RWD #3 is using its reserve funds to provide the match for Phase 1. Completing the land sale will replace a majority of their reserve funds spent to purchase the land. After the new source is confirmed, the Otoe County RWD #3 will seek additional funding for the final design and construction of the improvements in Phase 2.

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

The Otoe County RWD #3 has the responsibility of providing safe drinking water to the people in this rural water system. This obligation can be met with an adjustment in user rates to cover the cost of the development and investigation of the newly purchased land for a wellfield.

6. If a loan is involved, provide sufficient documentation to prove that the loan can be repaid during the repayment life of the proposal.

A loan is not anticipated for the 40% match for Phase 1. The remaining reserves are intended to be used to fund Phase 1 until the unnecessary land can be sold. The sale of the land will pay for the investigation and replenishment of the Otoe County RWD #3 reserves and be used for funding Phase 2.

7. Describe how the plan of development minimizes impacts on the natural environment (i.e. timing vs nesting/migration, etc.).

The construction of test holes and test wells on the purchased land should have minimal impacts on the natural environment. The test hole locations are selected to minimize farming practices and provide easy access. The final well will not be constructed in any wetlands, and sufficient distance maintained from adjacent water well users based on the Nemaha NRD and NDEE offset distances.

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

The Otoe County Rural Water District #3 is a public water supplier with the authority to charge its customers for providing a safe and long-term water supply. The Otoe County RWD #3 has the responsibility under the Nebraska State Statutes to meet safe drinking water standards, which include quantity and quality. Otoe County RWD #3 operates under the NDEE public water supply license NE3113103. The Otoe County RWD #3 has contracted with Miller & Associates, Consulting Engineers, P.C. (M&A), which will provide technical assistance, bidding, and design services for the project. M&A will submit the required permits and documents to the Nemaha NRD and the NDEE for Phase 1 of the project.

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

The Nemaha NRD has four planning documents they use to manage water in their district. These documents include:

- Nemaha NRD Long Range Plan – 2023
- Nemaha NRD 10-year master plan 2021-2030
- Voluntary Integrated Management Plan February 2022
- Groundwater Quantity Management Plan Rules and Regulations

The Nemaha NRD has set goals to protect and manage groundwater resources through monitoring the water quantity and quality of the groundwater. One specific objective of these master plans is to encourage groundwater users to manage and conserve groundwater. Currently the Villages of Talmage and Burr do not have metered water systems. The Village of Talmage has a water treatment plant with a portion of the water pumped being discharged as waste due to the treatment process. By serving these communities with water and requiring water meters, the Villages of Burr and Talmage usage will decrease, thus meeting one of the objectives of the Nemaha NRD.

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

The land has been purchased at auction by the Otoe County RWD #3. Future easements and permits will be required during the construction of the infrastructure (Phase 2).

**<u>If yes:</u>**

10.A Provide a complete listing of all lands involved in the project. NA

10.B Attach proof of ownership for each easement, rights-of-way and fee title currently held. NA

10.C Provide assurance that you can hold or can acquire title to all lands not currently held. NA

11. Identify how you possess all necessary authority to undertake or participate in the project.

Nebraska State Statutes and the NDEE's permitting for a Public Water Supply grants the Otoe County RWD #3 the authority to participate in the project.

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

The Otoe County RWD #3 has experienced periods of pumping air in the current wellfield during the irrigation season. The response or reaction was to install variable frequency drives to reduce the pumping rate to minimize drawing air during irrigation seasons. This is acceptable with the current demand, but the Otoe County RWD #3 is concerned this is not a long-term solution. A secondary water supply is needed to provide an adequate quantity of water to the system. The other concern is that the south wellfield is the primary supply for the entire system, and the wells are currently in a limited area. Should a contamination (natural or manmade) be detected in the wells, it will be a short time before all of the wells would be impacted. The logical and practical choice is to develop a secondary source that can provide both quality and quantity for the Otoe County RWD #3.

## 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 to 6 for items (1) - (9); and 0 to 3 for items (10) - (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 72 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 Otoe County RWD #3 has been in operation since 1973. The Otoe County RWD #3 has 1613 hookups serving approximately 2,500 people. They currently have four active wells that provide water for the rural water system, which they manage. These four wells are located within 1/4 mile of each other and historically have had issues during heavy irrigation seasons with pumping air. To manage the air pumping, the Otoe County RWD #3 has installed variable frequency drives on the wells and turned down their capacity. In turning down the capacity, they have limited the amount of water they can provide and currently do not allow additional connections based on their ability to provide water.

The Village of Talmage, with a population of 198, has been working on a new supply source since 2007. They completed the Preliminary Engineering Report in 2007 and the Supplemental Report in 2011. Currently, they are pursuing a connection to Otoe County RWD #3. This connection would provide them with a better water supply and has been submitted to the Nebraska Department of Energy and Environment (NDEE). The Village of Talmage has Manganese concentrations that exceed health advisory concerns. The Village provides treatment that has associated waste and is expensive to operate and maintain. During periods when the treatment plant is not fully operational or when they have to bypass for maintenance, Manganese levels of 0.433 milligrams per liter have been recorded from the supply wells. Currently, Manganese contaminant levels are not regulated, but the Safe Drinking Water Act has labeled it as an emerging contaminant, and it will soon be regulated. Long-term exposure to high levels of Manganese can cause neurological problems such as tremors, cognitive impairment, and Parkinson's-like symptoms. Manganese has secondary concerns, such as discoloring the water, causing black stains on plumbing fixtures that require additional cleaning agent use, and building up on watermains, releasing greater concentrations during high water use events. In rare cases, high levels of Manganese can cause liver and kidney damage. The World Health Organization (WHO) recommends that the level of Manganese in drinking water should not exceed 0.4 mg/L. The US Environmental Protection Agency (EPA) has set a health advisory level of 0.3 mg/L for Manganese, and Talmage is at 0.433 mg/L. Due to the Village of Talmage's elevated Manganese levels and poor water quality of the Village's Public Water System wells and the continued cost of treatment through a treatment plan and maintaining their low-capacity wells, the NDEE has submitted a grant to the EPA. The cost of maintaining an operator and treating the water supply is an overwhelming burden to the community.

The Village of Burr with a population of 52 has been battling elevated nitrate levels exceeding the maximum contaminant level for drinking water for the past four years. The Village of Burr has exceeded the drinking water standard for Nitrates exceeding 10 milligrams per liter. Nitrates are a known cause of health risks, particularly for infants and pregnant women. For example, in Methemoglobinemia (Blue Baby Syndrome), some studies have suggested a potential link between high nitrate intake and an increased risk of certain cancers, such as bladder and colon cancer. However, more research is needed to confirm this association. Long-term exposure to high nitrate levels may also be associated with other health problems, such as thyroid disease and reproductive issues. The Village of Burr currently has an Administrative Order dated April 28, 2021, to address their nitrate exceedances. The Village of Burr completed a Preliminary Engineering

Report in 2023 and submitted this report to the Water Wastewater Advisory Committee (WWAC) for potential funding for a connection to Otoe County RWD #3. With only 33 services in the Village, the cost to pay for the infrastructure and purchase the water would cause excessive water rates that the Village did not feel they could tax their citizens with.

Otoe County RWD #3 requires a new or a secondary water source to continue providing service to the rural water system. With this long-term need in mind, the Otoe County RWD #3 purchased $2.774 million of land south of Burr for a well field development. To connect the new wellfield to the existing water system the transmission main route would pass by the Village of Burr. This would greatly reduce the cost for the Village of Burr and provide them with a safe drinking water source.

If Otoe County RWD #3 does not develop a new source, this will jeopardize their water supply for their existing customers and restrict their ability to provide water for future customers. Since the current water supply wells are very close in proximity to each other, this complicates risks if, for some reason, Nitrates or other known contaminants now or in the future were identified, all four wells could be impacted at once. With a new source located miles away, there would be the potential if one or the other well field was impacted by a contaminant then the sources could be blended either indefinitely or for an extended period of time to meet the drinking water standards and avoid costly treatment.

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.

The Nemaha NRD has four planning documents they use to manage water in their district. These documents include:

- Nemaha NRD Long Range Plan – 2023
- Nemaha NRD 10-year master plan 2021-2030
- Voluntary Integrated Management Plan February 2022
- Groundwater Quantity Management Plan Rules and Regulations

The Nemaha NRD has set goals to protect and manage groundwater resources through monitoring the water quantity and quality of the groundwater. One specific objective of these master plans is to encourage groundwater users to manage and conserve groundwater. Currently the Villages of Talmage and Burr do not have metered water systems. The Village of Talmage has a water treatment plant with a portion of the water pumped discharged as waste due to the treatment process. By serving these communities with water and requiring water meters, the Village usage will decrease, thus meeting one of the objectives of the Nemaha NRD.

Additionally, the Nemaha NRD has the goal of helping to ensure that domestic water supplies are safe and adequate to meet the public needs in the Nemaha Basin. By assisting with the development of an additional wellfield for Otoe County RWD #3, the Nemaha NRD would be able to strengthen its position in meeting this goal.

Based on the Integrated Management Plan developed by the Nebraska Department of Natural Resources (NDNR) and the Nemaha NRD seeks to identify and understand the complex groundwater resources available in eastern Nebraska, this project will further support those goals. As the aquifer in the Nemaha NRD contains alluvial deposits and bedrock valleys buried under glacial till deposits filled with sand, gravel, and finer-grained alluvial sediments, the thickness is typically less than 50 feet thick as opposed to the aquifer in western Nebraska that can exceed 1,000 feet. This project will help identify and potentially develop a network of accessing two different areas for maintaining a reliable groundwater supply.

3. 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 current Otoe County RWD #3 water supply is located in an area that is experiencing groundwater declines, and they are experiencing air in the discharge from their existing wells. The Otoe County RWD #3 has reduced its pumping rate to minimize the amount of air that they are seeing from their water supply wells. Due to the depletion of the current aquifer, establishing an additional water supply from a secondary source would reduce strain on the existing aquifer, support recharge efforts, and enhance the long-term sustainability of this rural water system. The land that was purchased by the Otoe County RWD #3 is in an area that has better aquifer qualities, based on regional modeling and Airborne Electromagnetic (AEM) data, and is less developed. The Otoe County RWD #3 intends to use both wellfields and can alternate pumping from these sites, thereby reducing aquifer depletion in its current location. Providing water to the Villages of Burr and Talmage would decrease pumping in areas with poor aquifer characteristics, allowing nearby wells to recharge and helping to reduce aquifer depletion.

The 2023/2024 Water planning wrap-up report lists its vision to sustain and protect Nebraska's water supplies and uses for both the short and long term. The development of a second water supply for Otoe County RWD #3 falls within that vision to provide water to over 2,750 people and remove the Village of Burr from a Nitrate Administrative Order and the Village of Talmage from the Manganese emerging contamination issue. The May 2022 Integrated Management Plan (IMP) lists 12 areas of responsibility for Nemaha NRD and the Nebraska Department of Natural Resources (NDNR). Those responsibilities include the development, management, use, and conservation of groundwater and surface water and water supply for any beneficial uses. Both phases of this project meet the needs or goals of the IMP based on the statutory definition of beneficial uses and assisting in providing water supply in areas where the quantity and quality are limited.

4. 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.

The development of a secondary wellfield for the Otoe County RWD #3 will maintain the long-term goal of providing clean drinking water for the following communities that are currently being served: Avoca, Manley, Douglas, Palmyra, Unadilla, Dunbar, Otoe. The expansion of the water supply will facilitate adding the Villages of Burr and Talmage, along with additional rural residences. In addition to the goal of maintaining and providing clean drinking water, the secondary wellfield will benefit water conservation by enforcing the new communities of Burr and Talmage to install water meters and thereby control water usage through reduced demand. The secondary wellfield will reduce strain on the current wellfield aquifer, allowing it to recharge and help preserve greater water resources.

The connection to Burr would remove the NDEE Administrative Order for Nitrate violations and provide Talmage with a water source that is below the health advisory limit for Manganese.

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 development of Otoe County RWD #3 meets multiple water supply goals. It currently provides water for over 2,500 people but is otherwise in an area where the aquifer does not yield a sufficient amount of water or quality of water as needed. Otoe County RWD #3 provides this service and is expanding it to include the Villages of Burr and Talmage due to water quality concerns related to the Safe Drinking Water Act.

The Village of Burr currently has an Administrative Order due to Nitrates exceeding 10 milligrams per liter above the drinking water standard. Nitrates are a known cause of health risks, particularly for infants and pregnant women. For example, in Methemoglobinemia (Blue Baby Syndrome), some studies have suggested a potential link between high nitrate intake and an increased risk of certain cancers, such as bladder and colon cancer. However, more research is needed to confirm this association. Long-term exposure to high nitrate levels may also be associated with other health problems, such as thyroid disease and reproductive issues.

The Village of Talmage has concerns with Manganese in their drinking water. Currently, the Village provides treatment that has associated waste and is expensive to operate and maintain. During periods when the treatment plant is not fully operational or when they have to bypass for maintenance, Manganese levels of 0.433 milligrams per liter have been recorded from the supply wells. Currently, Manganese contaminant levels are not regulated, but the Safe Drinking Water Act has labeled it as an emerging contaminant, and it will soon be regulated. Long-term exposure to high levels of Manganese can cause neurological problems such as tremors, cognitive impairment, and Parkinson's-like symptoms. Manganese has secondary concerns, such as discoloring the water, causing black stains on plumbing fixtures that require additional cleaning agent use, and building up on watermains, releasing greater concentrations during high water use events. In rare cases, high levels of Manganese can cause liver and kidney damage. The World Health Organization (WHO) recommends that the level of Manganese in drinking water should not exceed 0.4 mg/L. The US Environmental Protection Agency (EPA) has set a health advisory level of 0.3 mg/L for Manganese, and Talmage is at 0.433 mg/L. By expanding the Otoe County RWD #3 water supply and providing water service to these communities, they will both receive the benefits of clean and healthy drinking water for their customers.

> The State of Nebraska has established a preference for use, as referenced in Nebraska Revised Statute 46-613. Ground water; declaration of policy; preference in use.
>
> *"Preference in the use of groundwater shall be given to those using the water for domestic purposes. They shall have preference over those claiming it for any other purpose. Those using the water for agricultural purposes shall have the preference over those using the same for manufacturing or industrial purposes.*
>
> *As used in this section, (1) domestic use of groundwater shall mean all uses of groundwater required for human needs as it relates to health, fire control, and sanitation and shall include the use of ground water for domestic livestock as related to normal farm and ranch operations and (2) agricultural purposes shall include, but not be limited to, aquaculture as defined in section 2-3804.01."*

Using Nebraska's water resources to benefit domestic users is the highest priority according to the Nebraska constitution and state statutes, followed by agricultural and then industrial processes. The quality of life for residents in Otoe County RWD #3, the Village of Burr, and the Village of Talmage will increase because the new source will provide better health benefits due to the increased water quality. No beneficial uses will be reduced by the development of the well field.

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 project cost for Phase 1 of the wellfield investigation is $245,425, as indicated in Table 8 – Opinion of Probable Construction Cost. This amount does not include the $2.774 million spent on the purchase of the land. The Otoe County RWD #3 hopes to resell the land and recover most of the reserves spent on its acquisition. This phase of the project does not have O&M costs associated with it as the O&M costs will be associated with Phase 2, development and construction of the infrastructure.

**Table 8 – Opinion of Probable Construction Cost**

| No. | Description | Quantity | Unit | Unit Price | Total Price |
|---|---|---|---|---|---|
| 1 | Mobilization | 1 | L.S. | $25,000 | $25,000 |
| 2 | Test Holes and Reporting | 1000 | V.F. | $20 | $20,000 |
| 3 | 6” Test Well Construction and Registration | 400 | V.F. | $40 | $16,000 |
| 4 | 2” Observation Well Construction and Registration | 800 | V.F. | $25 | $20,000 |
| 5 | Formation Sampling and Sieve Analysis for Screen Design | 25 | Each | $25 | $625 |
| 6 | Water Quality Analysis | | | | |
| | a. Screening WQ | 2 | Each | $2,000 | $4,000 |
| | b. Public Water Supply New Well Scan Kit | 2 | Each | $7,000 | $14,000 |
| 7 | Test Pumping and Recovery | 48 | Hours | $250 | $12,000 |
| 8 | Furnish & Install Well Protectors | 2 | L.S. | $1,000 | $2,000 |
| 9 | Abandon 2" Observation Wells | 4 | Each | $600 | $2,400 |
| 10 | Install 16" Casing for New Well | 1 | Each | $105,000 | $105,000 |

| | | | | | |
|---|---|---|---|---|---|
| 11 | Contingencies/Permitting | 5.0% | % | | $11,100 |
| 12 | Engineering and Site Observation | 6.0% | % | | $13,300 |
| **TOTAL** | | | | | **$245,425** |

The development cost for Phase 1 saves the user rates about $14.76/year, which by itself is not a large increase in user rates. However, looking at the big picture, the Phase 2 budget for the infrastructure is estimated to be approximately $4.2 million, depending on the final well site selection. Completing this initial step will be very important in the final implementation and will help offset initial costs while other funding can be attained for Phase 2.

**Table 9 – Cost and Benefit**

| | **District Funds Only** | **WSF Grant Funding** |
|---|---|---|
| Project Cost (Conventional Loan) | $245,425 | $98,170 |
| Interest Rate | 6% | 6% |
| Term | 15 Years | 15 Years |
| Principal and Interest Payment | $25,269.64 | $10,107.85 |
| User Rate Increase per month (1028 Services) | $2.05 | $0.82 |

Although more directly related to Phase 2, the Village of Burr has completed a feasibility analysis to compare 4 alternatives for a new source to demonstrate the most cost-effective solution. As you can see in the following table, the most feasible option was connecting to the Otoe County RWD #3. An excerpt table from the Village of Burr's PER is provided in Table 9 – Village of Burr Life Cycle Cost Effective Analysis for reference.

**Table 10 – Village of Burr Life Cycle Cost Effective Analysis**

| ***ALTERNATIVE*** | ***CONNECT WITH RWD #3*** | ***POU DEVICES*** | ***NEW WELL – 3 MILES*** | ***RO BOTH WELLS*** |
|---|---|---|---|---|
| **Total Capital Cost** | $1,640,000 | $1,243,800 | $3,174,900 | $3,749,300 |
| **Increased Annual O&M Cost & Water Cost** | $7,300 | $21,300 | $22,100 | $92,180 |
| **Present Worth (O&M)** | $140,000 | $408,600 | $424,000 | $1,768,400 |
| **Salvage Value** | $529,147 | $323,406 | $1,035,516 | $719,223 |
| **Present Worth (Salvage Value)** | $488,500 | $298,600 | $956,100 | $664,000 |
| **Life Cycle Cost* (Net Present Value)** | **$1,291,500** | **$1,353,800** | **$2,642,800** | **$4,853,700** |

Talmage completed a similar evaluation in 2011 looking at 4 potential solutions. The cost for new wells was similar to the cost of the rural water connection, as shown in the excerpt table below, Table 11 – Village of Talmage 2011 Life Cycle Cost Effective Analysis. However, with the potential EC-SDC grant providing a water main from the Rural Water system to the Village, the reduction of debt service for capital improvements makes the Otoe County RWD #3 connection the most cost-effective solution. In order to avoid additional burdens on the water supply an additional water source is needed to address new demands.

**Table 11 – Village of Talmage 2011 Life Cycle Cost Effective Analysis**

| Description | Capital Costs | Estimated Debt Service[1] | Projected O&M Expense | Projected Commodity Cost | Projected Total Yearly Expense | Total Cost per User[2] | Average Bill per User[2] (Cost + 10%) |
|---|---|---|---|---|---|---|---|
| | | $ / Year | | | | $ / Month | |
| *Existing System (Less Existing Plant/Wells)* | | $0 | $15,500 | $0 | $15,500 | $10.33 | $11.37 |


| Description | Capital Costs | Estimated Debt Service[1] | Projected O&M Expense | Projected Commodity Cost | Projected Total Yearly Expense | Total Cost per User[2] | Average Bill per User[2] (Cost + 10%) |
|---|---|---|---|---|---|---|---|
| | | $ / Year | | | | $ / Month | |
| *Existing System (Less Existing Plant/Wells)* | | $0 | $15,500 | $0 | $15,500 | $10.33 | $11.37 |


The comparisons for the Villages of Burr and Talmage provide cost-effective solutions for the connection to the Otoe County RWD #3. However, the added benefit not directly calculated is the additional water supply for the rural water system that can be used to not only provide water to Burr and Talmage but for existing and future customers.

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 Otoe County RWD #3 has maintained a consistent message for the rural water system - to provide a permanent solution and provide a sustainable and safe water supply to the users for domestic, agricultural, commercial, and industrial uses. With this goal in mind, the Otoe County RWD #3 has spent $2.774 million to secure land to meet this goal. This phase of the project is ready to proceed in order for the staff and Board of Directors to evaluate a new independent water source for the Otoe County RWD #3. At the time of the application, this project is not contingent on any plan approvals, and the investigation is ready to proceed immediately.

The current wells have a limited quantity of water, so the new source will provide safe, potable water for existing and new customers.

As previously stated, the Otoe County RWD #3 was formed to mitigate the region's poor quantity and quality of water. Because rural water became available to areas with limited supply, it provided opportunities for modern rural farmsteads, better livestock production, and even business growth and expansion. All these factors demonstrate the tremendous value that groundwater provides in a thriving local economy. As competing water interests continue to grow, the proper management and development of our water resources is critical to supply water uses and meet the various groundwater demands.

The new source of water would potentially eliminate the exceedance of Nitrates in their drinking water and bring them into compliance with the NDEE administrative order. The emerging contaminants and potential federal mandate for Manganese in drinking water places Talmage on the list for future violations. The current treatment plant is antiquated, and the cost for renovations exceeds the cost to purchase water from Otoe County RWD #3. A secondary source with low Manganese would eliminate this future potential drinking water violation.

Adding connections to Burr and Talmage will require the Villages to install water meters. Nebraska Rural Water has performed several studies in Nebraska and found that the installation of water meters has reduced water use by 30% to over 50%. This reduction in water use would also benefit the area by reducing pumping and conforming to NRD rules and regulations for improved stewardship of Nebraska’s groundwater.

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.

The completion of the proposed well field will provide benefits to public health. There are millions of dollars invested in the infrastructure of the current rural water system that, without a long-term water supply solution, would be unusable. From the public health standpoint, the reduction of Nitrates to the Village of Burr and the reduced accumulation of Manganese in the Village of Talmage’s current distribution system with associated public health concerns results in the reduction of threats caused by this critical infrastructure.

With the concerns discussed for the Village of Burr and infants under six months of age, Nitrates can be converted to nitrites, which can interfere with the blood's ability to carry oxygen, causing a bluish discoloration of the skin and lips. The limit of 10 mg/L is one of the few regulations that have been tested on human consumption and is well-documented that levels over this can cause issues. At the time of the application, the Village of Burr exceeds the current regulations with 11 mg/L.

For Talmage, the concern is with Manganese in their drinking water. Currently, they provide treatment through their facility, which generates drinking water waste and is expensive to operate and maintain. During periods when the treatment plant is not fully operational or when they have to bypass for maintenance, Manganese levels of 0.433 milligrams per liter are discharged directly to the distribution system. Manganese is currently not regulated contaminant level, but the Safe Drinking Water Act has labeled it as an emerging contaminant and will soon be regulated. Long-term exposure to high levels of Manganese can cause neurological problems such as tremors, cognitive impairment, and Parkinson's-like symptoms. Manganese has secondary concerns, such as discolored water causing black stains on plumbing fixtures and build-up on watermain, which releases greater concentrations during high water use events. In rare cases, high levels of Manganese can cause liver and kidney damage.

For Otoe County Rural Water District #3, a secondary source of water will provide a long-term stable water source for the existing 2500 people currently being served by the system. Land in this area is difficult to acquire, particularly land with an aquifer that can support a new wellfield and is easily adaptable to the existing system. This also takes into consideration the new pipeline construction bypassing the Village of Burr in Phase 2 and in essence helping the Village avoid the costly 1.5 miles of pipeline construction for connecting with the existing Otoe County RWD #3 water main. Estimating the cost for the 1.5 miles of pipeline at $400,000 on a 40 year note at 5% interest for 33 customers translates into saving each customer in the Village of Burr over $58/user/month or $706/customer per year. Assuming Burr will remain at 33 services for 40 years, the cost for connection would be dispersed among all Otoe County RWD #3 customers.

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.

The development of Otoe County RWD #3 meets multiple water quality supply goals. It currently provides water for over 2,500 people but is otherwise in an area where the aquifer does not yield a sufficient amount of water quantity or quality of water as needed. The development of a new water source for Otoe County RWD #3 will ensure a clean and reliable water supply not only for their rural water system but also for the Village of Burr, which is struggling with high nitrate levels, and the Village of Talmage, which faces elevated Manganese concentrations. The Village of Talmage lacks the resources to continue treating its water for Manganese removal and maintaining its deteriorating wells. Otoe County RWD #3 has also encountered air in its wells due to aquifer drawdown, which poses potential biological risks for the 2,500 residents it serves. Additionally, the drawdown may be pulling contaminants into the water source.

By Otoe County RWD #3 expanding its service area to include the Villages of Burr and Talmage addresses water quality concerns related to the Safe Drinking Water Act. The Village of Burr currently has an Administrative Order due to Nitrates exceeding 10 milligrams per liter above the drinking water standard. Nitrates are a known cause of health risks, particularly for infants and pregnant women. For example, in Methemoglobinemia (Blue Baby Syndrome), some studies have suggested a potential link between high nitrate intake and an increased risk of certain cancers, such as bladder and colon cancer. However, more research is needed to confirm this association. Long-term exposure to high nitrate levels may also be associated with other health problems, such as thyroid disease and reproductive issues.

The Village of Talmage has concerns with Manganese in their drinking water. Currently, the Village provides treatment that has associated waste and is expensive to operate and maintain. During periods when the treatment plant is not fully operational or when they have to bypass for maintenance, Manganese levels of 0.433 milligrams per liter have been recorded from the supply wells. Currently, Manganese contaminant levels are not regulated, but the Safe Drinking Water Act has labeled it as an emerging contaminant, and it will soon be regulated. Long-term exposure to high levels of Manganese can cause neurological problems such as tremors, cognitive impairment, and Parkinson's-like symptoms. Manganese has secondary concerns, such as discoloring the water, causing black stains on plumbing fixtures that require additional cleaning agent use, and building up on watermains, releasing greater concentrations during high water use events. In rare cases, high levels of Manganese can cause liver and kidney damage. The World Health Organization (WHO) recommends that the level of Manganese in drinking water should not exceed 0.4 mg/L. The US Environmental Protection Agency (EPA) has set a health advisory level of 0.3 mg/L for Manganese, and Talmage is at 0.433 mg/L.

Expanding the Otoe County RWD #3 water supply and establishing a secondary water source will enhance operational flexibility, enabling water to be drawn from either source or blended as needed to meet drinking water standards. This will ensure a reliable supply for all current customers and seven existing communities. Additionally, expanding the water service to Burr and Talmage will provide both communities with access to clean, safe drinking water for their residents.

To temporarily address excessive pumping in the current wellfield, Otoe County RWD #3 has installed variable frequency drives to lower well pumping rates, effectively preventing air from entering the wells. However, this reduction raises concerns about the district's ability to meet both current and future customer demand. While alternative wellfield locations are available, they are farther away and would incur higher costs. To mitigate this, Otoe County RWD #3 has purchased land that provides the added benefit of serving the Village of Burr, as the transmission main runs nearby.

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.

Currently, Otoe County RWD #3 has used its reserve funds from water proceeds to purchase $2.774 million of land for the development of a new well field. Due to this significant expenditure, the Otoe County RWD #3 is requesting WSF funds to help with Phase 1, which includes identifying the locations of potential well sites on the property they have purchased. The Otoe County RWD #3 will use its remaining reserve funds and revenue funds for the 40% match for the new source investigation.

For the second phase of this project, which involves construction and infrastructure improvements, the RWD will be seeking other funding sources, such as the Drinking Water State Revolving Fund (DWSRF) program and/or USDA Rural Development. With concerns of user rates for the potential Phase 2 cost anticipated to be over $4.2 million for the remaining development, the Otoe County RWD #3 may request WSF funds in the future. The Project Cost Split for the project funding is shown in Table 11 – Project Cost Split by Major Category for Phase 1.

**Table 12 – Project Cost Split by Major Category**

| | Opinion of Probable Construction Cost | Local Match Share (40%) | WSF Request (60%) |
|---|---|---|---|
| **Survey, Design, Construction Administration** | $ 13,300 | $ 5,320 | $ 7,980 |
| **Construction** | $ 221,025 | $ 88,210 | $ 132,315 |
| **Permitting** | $ 500 | $ 200 | $ 300 |
| **Construction Contingencies** | $ 10,600 | $ 4,440 | $ 6,660 |
| **TOTAL** | **$ 245,425** | **$ 98,170** | **$ 147,255** |

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.

The Nemaha NRD has a statutory responsibility to support water supply for any beneficial uses along with developing, managing, and conserving groundwater. The Nemaha NRD provides programs to continually investigate and further delineate areas that need to be managed for water quantity and quality issues. For this reason, the NRD has been proactive in providing aquifer mapping, such as the Airborne Electromagnetic (AEM) data that was used to provide preliminary data leading to the purchase of this land for the rural water system. The research provided indicates this is a location that can sustain the water supply for the rural water system. By using this data, the Nemaha NRD can make informed decisions that the withdrawal from this area will not contradict the goals and objectives to provide beneficial water to approximately 2,750 people in their district. The development of the secondary wellfield will allow the Otoe County RWD #3 operational flexibility to allow varying pumping from different areas during times of high demand. This will help manage aquifer depletions. The largest number of water users are domestic uses for the Villages of Burr and Talmage. The 250 people from these villages require a better water supply, meeting current and proposed drinking water standards. The entities that will benefit from this development include the NDEE public water supply division, Otoe County RWD #3 for additional source water, the Villages of Burr and Talmage for addressing issues they are facing included an NDEE Administrative Order (AO) and finally the Nemaha NRD to help control the withdrawal of ground 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.

Nitrate contamination is one of the state's most pressing drinking water issues. The NDEE, NRDs, University of Nebraska Medical Center, agricultural producers, and other related groups have collaborated for years to investigate the potential link between nitrate contamination in drinking water and various forms of cancer. Since nitrate is a non-point source pollutant, it affects the entire state – a concern recently highlighted by a series of articles from the Flatwater Free Press. This project aims to switch the Village of Burr's water supply from a source well with rising nitrate levels exceeding the federal limit of 10 ppm to a well that meets the standard, provided that the investigation confirms the regional water quality data. The project is designed so that public water supply wells will pump from the lowest part of the aquifer and at a lower capacity than nearby irrigation wells. The wells will be constructed to minimize the risk of drawing in water from the upper aquifer, which may have higher nitrate levels, preventing contamination from spreading deeper during pumping.

A secondary water source for the rural water system will benefit not only the 2,500 people currently served but also an additional 250 residents with the inclusion of the Villages of Burr and Talmage. This new source will help the NDEE by allowing the Village of Burr to be removed from its Administrative Order for Nitrates, reducing regulatory pressure from the EPA. Additionally, the new water supply for the Village of Talmage will address the NDEE's concerns about emerging Manganese contaminants and their potential negative health effects.

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.

Phase 1 of the Otoe County RWD #3 investigation of the wellfield land purchased will provide time to precisely locate where wells can be installed and utilized to minimize impact to surrounding water users. The RWD has leveraged its money to purchase the land and to delay raising water rates and is immediately asking WSF to contribute funds for the investigation.

During Phase 2 of this project, an estimated $4.2 million will be needed for the construction and implementation of this new well field. This construction will help serve the Villages of Burr and Talmage and will also provide long-term stability for the current users of the water system. At this time, for Phase 1, only WSF funding and Otoe County RWD #3 funding will be used for the investigation. For Phase 2, the Otoe County RWD #3 will pursue available options to minimize the impact on the user rates for its customers.

If WSF funding is not approved, the RWD will need to delay the project by at least one year to identify and secure alternate funding sources, including an application to WSF in the following year. However, this delay restricts a large tract of land that the district needs to evaluate for well placement. Identifying the well locations will allow the district to sell the unused portions, helping to replenish reserve funds without increasing water rates to cover investigation costs.

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.

The land purchased for the new wellfield is in the Upper South Fork Little Nemaha Watershed 102400060102, as outlined in Attachment F, with a watershed health score of 69. If a wellfield is developed at this site, Otoe County RWD #3 will work with the NDEE Wellhead Protection (WHP) Program to establish a WHP area. The WHP area will delineate the surface area above the source water aquifer and will be the basis for a WHP Plan for the District's public water supply. The Otoe County RWD #3 has an interest in establishing a wellhead protection program once the wells are operating. This program will work with agricultural producers to reduce the infiltration of Nitrates past the root zone and into the aquifer. The goal will be to ensure crops are fully utilizing any fertilizer that is applied to maximize the yield of the crop while protecting the groundwater simultaneously. Potential conservation practices could include crop-to-grass conversion, increasing residue and organic matter, cover crops, grass buffers, and similar types. These practices will also reduce nutrients and sediments that would otherwise flow to Saunders Creek, passing near the wellfield.

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.

The 2023/2024 Water planning wrap-up report lists its vision to sustain and protect Nebraska's water supplies and uses for both the short and long term. The development of a second water supply for Otoe County RWD #3 falls in that vision to provide water to over 2,750 people and remove the Village of Burr from a Nitrate Administrative Order and the Village of Talmage from Manganese emerging contamination issue. The May 2022 Integrated Management Plan (IMP) lists 12 areas of responsibility for Nemaha NRD and the Nebraska Department of Natural Resources (NDNR). Those responsibilities include the development, management, use, and conservation of groundwater and surface water and water supply for any beneficial uses. Both phases of this project meet the needs or goals of the IMP based on the statutory definition of beneficial uses and assisting in providing water supply in areas where the quantity and quality are limited.

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.

As a Public Water System, Otoe County RWD #3 must comply with the Safe Drinking Water Act (SDWA) passed by Congress in 1974 and future regulations that are amended to the SDWA. Currently, the Otoe County RWD #3 water supply meets the SDWA standards, however, they are trying to solve two community violations of the SDWA by providing water to communities that are in need.

The Village of Burr currently exceeds the maximum contaminant level for Nitrates and has an Administrative Order. A copy of this order is provided as Attachment G. The development of this wellfield south of the Village of Burr would provide a pipeline that could be used for a new source for the Village. The Village of Talmage has high levels of Manganese, which is considered an emerging contaminant by the EPA. The Village of Talmage currently has a treatment plant that is in dire need of repairs. Due to the emerging contaminant rule, they need to upgrade their treatment or provide an alternate source. The Village has conducted multiple engineering studies from 2007 to the present, demonstrating that the long-term annual equivalent cost favors connecting to the Otoe County RWD #3 water supply. By verifying that the aquifer beneath the purchased land is suitable for development, a new clean water source can be secured for the Villages of Burr and Talmage, as well as the current Otoe County RWD #3 customers.