

NEBRASKA NATURAL RESOURCES COMMISSION

Water Sustainability Fund

Application for Funding

Section A.

ADMINISTRATIVE

PROJECT NAME: Groundwater Sustainability Study

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

Sponsor Business Name: Upper Big Blue Natural Resources District

Sponsor Contact's Name: Marie Krausnick

Sponsor Contact's Address: 319 East 25th Street, York, Nebraska, 68467

Sponsor Contact's Phone: (402) 362-6601

Sponsor Contact's Email: mebel@upperbigblue.org

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

Grant amount requested. \$57,780

- 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. [Click here to enter text.](#)
- What is the population served by your project? [Click here to enter text.](#)
- Provide a demonstration of need. [Click here to enter text.](#)
- **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"/>

None

4. **Partnerships**

List each Partner / Co-sponsor, attach documentation of agreement:
 The Upper Big Blue Natural Resources District, the City of Aurora, and Hamilton County have signed an Interlocal Agreement describing their commitment to partner in the proposed Groundwater Sustainability Study. The Interlocal Agreement is provided as 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.

Upper Big Blue Natural Resources District (UBBNRD):

The UBBNRD is the lead agency for this project and a co-sponsor. They will serve as the fiscal agent to the Nebraska Department of Natural Resources (NeDNR) and the Natural Resources Commission (NRC), communicate and guide the project along with the City of Aurora and Hamilton County, and manage the contractor responsible for the technical analyses. The UBBNRD will provide one third of the required local match in accordance with the attached Interlocal Agreement. They will provide data, technical support, and will review all work products.

City of Aurora:

The City of Aurora is a project co-sponsor and will provide one third of the required local match in accordance with the attached Interlocal Agreement. Their role will be to provide data and technical support, and they will review all work products.

Hamilton County:

Hamilton County is a project co-sponsor and will provide one third of the required local match in accordance with the attached Interlocal Agreement. Their role will be to provide data and technical support, and they will review all work products.

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 total cost of the entire project is estimated to be \$96,300. All sources of funding will be applied to contracted professional services responsible for conducting the data collection, technical analyses, modeling, and reporting associated with this project. All sources of funding have been confirmed over an anticipated one-year project schedule and are documented in the attached Interlocal Agreement. The anticipated cost-share for this project is shown below. The sum of the partners' contributions, or \$38,520, is 40 percent of the total contribution and meets the local match requirement for the Water Sustainability Fund.

Entity	Contribution	Percent
UBBNRD	\$12,840	13.4%
City of Aurora	\$12,840	13.3%
Hamilton County	\$12,840	13.3%
Water Sustainability Fund	\$57,780	60.0%
Total:	\$96,300	

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!

Groundwater is the primary source of water supply for agricultural, municipal, and industrial water users in central Nebraska. The sustainability of groundwater resources is critical to maintaining and enhancing the area’s economic, social, and environmental conditions. To that end, the City of Aurora, Nebraska; Hamilton County; and the UBBNRD are requesting Water Sustainability Funds (WSF) to conduct a Groundwater Sustainability Study in an area of the UBBNRD that is the focus of potential future groundwater development.

The importance of groundwater resources led the UBBNRD in 2023 to complete a numerical groundwater model of the Blue River Basin (BRB) in conjunction with Lower Big Blue Natural Resources District (NRD), Little Blue NRD, Tri-Basin NRD, and the Nebraska Department of Natural Resources (NeDNR). The model’s Area of Interest was defined as the areas of the Big Blue River and Little Blue River surface watershed basins within the boundaries of the four participating NRDs in Nebraska. The objectives of the groundwater flow modeling effort were to develop a tool for the following purposes:

- Identify hydrologically connected (10/50) areas of the Blue River Basin in Nebraska
- Simulate streamflow changes caused by regional water-level changes and determine spatial/temporal distribution of depletions caused by pumping
- Support NeDNR evaluation of Blue River Basin appropriation status and other management activities
- Provide a platform for evaluation of local-scale issues in separate future projects, such as large water users, new development, etc.

The BRB model was recently used to evaluate the potential impacts of a potential new large groundwater user in the vicinity of Aurora, Nebraska. The evaluation was conducted pursuant to the UBBNRD’s groundwater well permit application process for large water users. The evaluation suggested groundwater mining may be occurring

under existing conditions even without a new large groundwater user, but this observation was not fully supported by water level trends in local monitoring well records. This uncertainty in the current understanding of groundwater supply longevity prompted the consideration of this study. Accordingly, the City of Aurora, Hamilton County, and the UBBNRD agreed to study the degree to which existing groundwater uses in the area are sustainable and how much additional use could occur while maintaining the sustainability of groundwater resources. The three entities signed an Interlocal Agreement to formalize their pursuit of this study.

The Groundwater Sustainability Study that the City of Aurora, Hamilton County, and the UBBNRD are undertaking (and for which they are seeking WSF funding) has the following objectives:

- Identify locations in the study area where existing groundwater uses are nearing the limits of sustainability (if any).
- Quantify the amount of additional groundwater development that could sustainably occur in different parts of the study area.
- Evaluate potential strategies for mitigating unsustainable levels of groundwater use.
- Identify potential water quality risks associated with current and future groundwater development.

In addition to these primary objectives, the UBBNRD anticipates that this study will serve as a template to evaluate groundwater sustainability in other parts of the NRD, and potentially in other parts of Nebraska.

The existing BRB groundwater model will be the primary tool used to conduct the Groundwater Sustainability Study. The specific study area will be defined during the initial steps of Groundwater Sustainability Study and will generally include the central and western parts of Hamilton County. The BRB model will be used to evaluate the most vulnerable zones within the study area by evaluating subarea groundwater storage data predicted by the BRB model. Then a localized version of the BRB groundwater model will be created to refine and analyze conditions in the zones identified as most vulnerable to excess withdrawal and to evaluate the sustainability of the groundwater supply.

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.

Costs for conducting the Groundwater Sustainability Study are summarized in the table below. The applicants anticipate the project can be completed within 12 months of initiation, and the project will be initiated once WSF funds are made available. A quarterly timeline for each task is included in the table.

Tasks	Year 1\$	Timeline			
		Q1	Q2	Q3	Q4
1. Kickoff project and gather data	\$11,400				
2. Develop water budget for study area	\$16,100				
3. Create a local groundwater model from BRB	\$10,200				
4. Evaluate the sustainable yield of aquifer	\$18,000				
5. Develop draft and final report	\$23,900				
6. Present results to stakeholders	\$6,800				
7. Project meetings and management	\$9,900				
Total:		\$96,300			

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; [Click here to enter text.](#)
- 1.A.2 Describe the plan of development (004.01 A); [Click here to enter text.](#)
- 1.A.3 Include a description of all field investigations made to substantiate the feasibility report (004.01 B); [Click here to enter text.](#)
- 1.A.4 Provide maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C); [Click here to enter text.](#)
- 1.A.5 Describe any necessary water and/or land rights including pertinent water supply and water quality information (004.01 D); [Click here to enter text.](#)
- 1.A.6 Discuss each component of the final plan (004.01 E); [Click here to enter text.](#)
- 1.A.7 When applicable include the geologic investigation required for the project (004.01 E 1); [Click here to enter text.](#)
- 1.A.8 When applicable include the hydrologic data investigation required for the project (004.01 E 2); [Click here to enter text.](#)
- 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). [Click here to enter text.](#)

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 Groundwater Sustainability Study will be conducted using the existing Blue River Basin regional groundwater model developed conjunctively by the natural resources districts in the Blue River Basin (led by the UBBNRD) and the NeDNR. The groundwater model was developed in MODFLOW, which is the standard tool worldwide for groundwater modeling. One of the objectives for the development of the model was to “Provide a platform for evaluation of local-scale issues in separate future projects, such as large water users, new development, etc.” The Groundwater Sustainability Study described in this application is precisely the type of evaluation the model was developed to conduct.

The model uses data describing historical groundwater levels, streamflows, aquifer characteristics, crop water demands, etc. in its calibration and simulation. The calibration and input data for the model were either collected or generated using standard processes and tools used in Nebraska and elsewhere. Additional data collected during the groundwater sustainability evaluation (such as registered well information, aquifer level data, and groundwater quality sampling data) will be from publicly available sources typically used for groundwater analyses.

1.B.2 Discuss the plan of development (004.02 A);

The Groundwater Sustainability Study will be conducted through a series of steps that generally include initiation and data gathering, evaluating the water budget in the study area, analyzing the sustainable yield of the aquifer, and documenting/presenting results. Throughout the process, tasks will be conducted collaboratively among the City of Aurora, Hamilton County, and the UBBNRD. The tasks and specific steps for this 12-month study include the following (note that outside expertise will be procured to conduct this study and they may suggest alterations to this approach):

1. Kickoff project and gather data
 - a. Conduct a kickoff meeting with the project partners.
 - b. Define the specific study area.
 - c. Gather pertinent study area data and information such as registration data for study area wells, aquifer level records, groundwater quality sampling and mapping data, potential geographic areas for future groundwater development, etc.
2. Develop water budget for study area
 - a. Run the existing regional BRB groundwater model and evaluate the water budget in different parts of the study area.
 - b. Identify areas where the balance of groundwater inflows and outflows suggest sustainability risks could occur.
 - c. Evaluate the drivers of sustainability risk where they occur.

3. Create a local groundwater model from BRB model
 - a. Create a local groundwater model from the BRB model based on the study area and locations where groundwater sustainability may be at risk.
 - b. Refine the study area if necessary.
 - c. Refine the local groundwater model to more precisely characterize hydrogeologic and hydrologic conditions in areas of potential sustainability risk.
4. Evaluate the sustainable yield of the aquifer
 - a. Conduct a series of local groundwater model runs to quantify the level of sustainable, additional groundwater development.
 - b. Evaluate strategies to mitigate sustainability risks.
5. Develop draft and final report
 - a. Develop draft and final reports to document study approach, assumptions, and results.
6. Present results to stakeholders
 - a. Present the results of the study to stakeholders from the City of Aurora, Hamilton County, and UBBNRD.
7. Project meetings and management
 - a. Conduct collaborative meetings among the study partners throughout the project.
 - b. Monitor and manage grant/matching budgets and schedule.

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

No new or additional field or research investigations are proposed for this project, though partners' knowledge, field conditions, and potential future groundwater development, etc. will be leveraged during the study. The project will use an existing groundwater model that was developed and calibrated based on a wide variety of data collected in the field (aquifer water levels, streamflows, meteorological data, well logs, etc.) and research investigations (hydrogeologic, crop consumptive use, etc.).

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

No water and/or land rights are 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).

The Groundwater Sustainability Study will not impact the development and/or operation of any existing or currently-envisioned structural measures. The results of

the study will inform where and how much additional groundwater can be developed in the study area and could impact the development and operation of future structural measures in the context of groundwater sustainability.

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 Groundwater Sustainability Study will be conducted using the existing Blue River Basin regional groundwater model developed conjunctively by the Natural Resources Districts in the Blue River Basin (led by the UBBNRD) and the NeDNR. The groundwater model was developed in MODFLOW, which is the standard tool worldwide for groundwater modeling. One of the objectives for the development of the model was to “Provide a platform for evaluation of local-scale issues in separate future projects, such as large water users, new development, etc.” The Groundwater Sustainability Study described in this application is precisely the type of evaluation the model was developed to conduct.

Alternatives to using an existing model for the Groundwater Sustainability Study might be to rely strictly on a regional water balance to evaluate sustainability or create a new groundwater model focused specifically on this study area. Neither of these alternatives are feasible. A regional water balance would not provide an understanding of groundwater movement or aquifer level changes, which are important for meeting all the study objectives. Creating a new groundwater model for the study area would be substantially more expensive than the proposed budget and would fail to leverage the prior investment made by the participating NRDs and NeDNR in the existing groundwater model.

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).

The total cost of this project (\$96,300) was estimated by the engineering firm that was responsible for developing the existing Blue River Basin groundwater model and has experience conducting groundwater sustainability studies (Brown and Caldwell). The basis for the costs are generally associated with time and materials to complete similar

analyses and were developed by a water resources engineer and hydrogeologist. The breakdown of tasks and costs is provided below.

Tasks	Cost
1. Kickoff project and gather data	\$11,400
2. Develop water budget for study area	\$16,100
3. Create a local groundwater model from BRB model	\$10,200
4. Evaluate the sustainable yield of aquifer	\$18,000
5. Develop draft and final report	\$23,900
6. Present results to stakeholders	\$6,800
7. Project meetings and management	\$9,900
Total:	\$96,300

The primary benefit of this project will be a tool that will help guide the project participants in evaluating existing and proposed uses of groundwater and maintaining the long-term sustainable use of the aquifer, which is the primary or sole source of supply to the water users in the study area. No practical method of comprehensively calculating project benefits or direct monetary returns from this project exists. The benefits of the project include:

- Understanding where and how much groundwater could be developed in the study area in the future while maintaining a sustainable aquifer.
- Gaining a better understanding of groundwater movement and interactions with surface water in the study area.
- Understanding potential ways to mitigate sustainability risks.
- Avoidance of economic costs associated with unsustainable aquifer conditions including deepening wells, drilling new wells, reduced agricultural or industrial productivity, etc.
- Leveraging the substantial investment from the NRDs and NeDNR in the existing groundwater model. A substantial amount of money will be saved by utilizing the existing model.

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).

All costs for this project will be expended on contracted professional services responsible for conducting the data collection, technical analyses, modeling, and reporting associated with this project. The project will not include capital construction

costs, annual operation and maintenance costs, or replacement costs. A breakdown of costs by task for this 12-month project and a quarterly schedule are below:

Tasks	Year 1\$	Timeline			
		Q1	Q2	Q3	Q4
1. Kickoff project and gather data	\$11,400				
2. Develop water budget for study area	\$16,100				
3. Create a local groundwater model from BRB	\$10,200				
4. Evaluate the sustainable yield of aquifer	\$18,000				
5. Develop draft and final report	\$23,900				
6. Present results to stakeholders	\$6,800				
7. Project meetings and management	\$9,900				
Total:		\$96,300			

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).

No practical method of comprehensively calculating project benefits or direct monetary returns from this project exists.

The primary benefit of this project will be a tool that will help guide the project participants in evaluating existing and proposed uses of groundwater and maintaining the long-term sustainable use of the aquifer, which is the primary or sole source of supply to the water users in the study area. The benefits of the project include:

- Understanding where and how much groundwater could be developed in the study area in the future while maintaining a sustainable aquifer.
- Gaining a better understanding of groundwater movement and interactions with surface water in the study area.
- Understanding potential ways to mitigate sustainability risks.
- Avoidance of economic costs associated with unsustainable aquifer conditions including deepening wells, drilling new wells, reduced agricultural or industrial productivity, etc.
- Leveraging the substantial investment from the NRDs and NeDNR in the existing groundwater model. Using and tailoring the existing model is much less expensive than developing a new model for the study area.

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 total cost of the entire project is estimated to be \$96,300, split among the three project participants and the Water Sustainability Fund. The anticipated cost-share for this 12-month project (and therefore, the annual cash flow among each contributor) is shown below:

Entity	Contribution	Percent
UBBNRD	\$12,840	13.4%
City of Aurora	\$12,840	13.3%
Hamilton County	\$12,840	13.3%
Water Sustainability Fund	\$57,780	60.0%
Total:	\$96,300	

Benefits of this project will accrue to each participant, but they cannot be fully quantified in a similar manner as cost. The primary benefit of this project will be a tool that will help guide the project participants in evaluating existing and proposed uses of groundwater and maintaining the long-term sustainable use of the aquifer, which is the primary or sole source of supply to the water users in the study area. The benefits of the project include:

- Understanding where and how much groundwater could be developed in the study area in the future while maintaining a sustainable aquifer.
- Gaining a better understanding of groundwater movement and interactions with surface water in the study area.
- Understanding potential ways to mitigate sustainability risks.
- Avoidance of economic costs associated with unsustainable aquifer conditions including deepening wells, drilling new wells, reduced agricultural or industrial productivity, etc.
- Leveraging the substantial investment from the NRDs and NeDNR in the existing groundwater model. Using and tailoring the existing model is much less expensive than developing a new model for the study area.

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.)

Costs for the Groundwater Sustainability Study, which will use the existing Blue River Basin groundwater model, are \$96,300 as shown in 3.C above (and elsewhere in this application). Alternatives to using an existing model for the Groundwater Sustainability Study might be to rely strictly on a regional water balance to evaluate sustainability or create a new groundwater model focused specifically on this study area. Neither of these alternatives are feasible. A regional water balance would not provide an understanding of groundwater movement or aquifer level changes, which are important for meeting all the study objectives.

Creating a new groundwater model for the study area would be substantially more expensive than the proposed budget and would fail to leverage the prior investment made by the participating NRDs and NeDNR in the existing groundwater model. Costs associated with developing the existing Blue River Basin groundwater model exceeded \$600,000. Costs to develop a subregional model in the UBBNRD that was a predecessor to the Blue River Basin groundwater model were nearly \$300,000.

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 UBBNRD, City of Aurora, and Hamilton County entered into an Interlocal Agreement to pursue, commit funds, and complete the groundwater sustainability project described in this grant application. The Interlocal Agreement is attached to this application.

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

Upper Big Blue Natural Resources District (UBBNRD):

The UBBNRD is contributing \$12,840, or 13.4% of the project total. The UBBNRD has estimated the 2023-2024 property tax request at 0.022423 cents per \$100.00 of valuation resulting in \$3,486,326 from property taxes and a total operating budget of \$6,789,868.

City of Aurora:

The City of Aurora is contributing \$12,840, or 13.3% of the project total. The City of Aurora's FY 2023-2024 operating budget was \$22,208,790 with \$1,963,024 of that required from the City of Aurora local tax levy. The 2024-2025 budget is anticipated to be similar.

Hamilton County:

Hamilton County is contributing \$12,840, or 13.3% of the project total. Hamilton County's total 2023 valuation was \$3,262,651,100. Hamilton County's FY 2023-2024 operating budget was \$8,321,761 with \$5,286,917.50 of that required from the Hamilton County tax levy. The 2024-2025 budget is anticipated to be similar.

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

No Loan is being requested

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

No environmental impact will occur because of this project.

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

Nebraska State Statute Chapter 2, Article 32 and the Groundwater Management and Protection Act, Chapter 46 Article 7 assign the responsibility of protecting and maintaining the quality and quantity of groundwater for municipal, domestic and agricultural uses to Nebraska's Natural Resources Districts.

The City of Aurora has a Drinking Water Protection Management Plan that will serve as a guide to implement programs, practices, and activities that are protective of groundwater in and around the community.

The UBBNRD has set policies and procedures for selecting and retaining professional services and has the authority to enter into Interlocal Agreements with other governmental agencies.

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

The Groundwater Sustainability Study considers and supports a variety of state and local plans and programs, including the following:

Draft Voluntary Integrated Management Plan: The UBBNRD is developing a Voluntary Integrated Management Plan (V-IMP) in cooperation with the Nebraska Department of Natural Resources. It is currently in draft form. The draft V-IMP is focused on "sustaining a balance between uses and supplies to achieve and maintain economic viability, social and environmental health, and safety and welfare," and requires "a plan to gather and evaluate data, information, and methodologies to implement the

V-IMP, increase understanding of the surface water and hydrologically connected groundwater system, and test the validity of the information and conclusions upon which the V-IMP is based.”

Integrated Management Plan for the Fully Appropriated Area of the Upper Platte River Basin in the UBBNRD: The UBBNRD and the Nebraska Department of Natural Resources jointly developed an Integrated Management Plan (IMP) covering a portion of the UBBNRD that was designated as fully appropriated along with the Upper Platte Basin. The IMP became effective on October 18, 2010. The IMP includes goals to protect existing uses of groundwater and maintain the total water supply in the IMP area to achieve sustainability while allowing for growth and changes in use. The IMP will be considered if the study area for the Groundwater Sustainability Study extends into the fully appropriated portion of the UBBNRD.

Aurora Drinking Water Protection Management Plan: Groundwater is the only source of supply for the City of Aurora, and their Drinking Water Protection Management Plan (Aurora DWPMP) serves as a guide to implement programs, practices, and activities that are protective of groundwater in and around the community. The study described in this application will consider and support the objectives of this plan by evaluating the long-term sustainability of groundwater supplies and by providing observations and commentary on potential future risks to groundwater quality. The Aurora DWPMP identifies potential water quality impacts on its current wellhead protection area and considers expansion to a provisional wellhead protection area. Figure 1, below, is reproduced from the Aurora DWPMP Appendix A (‘Groundwater Modeling Technical Information’), and it illustrates the area within which groundwater quality concerns will be considered by the proposed Groundwater Sustainability Study.

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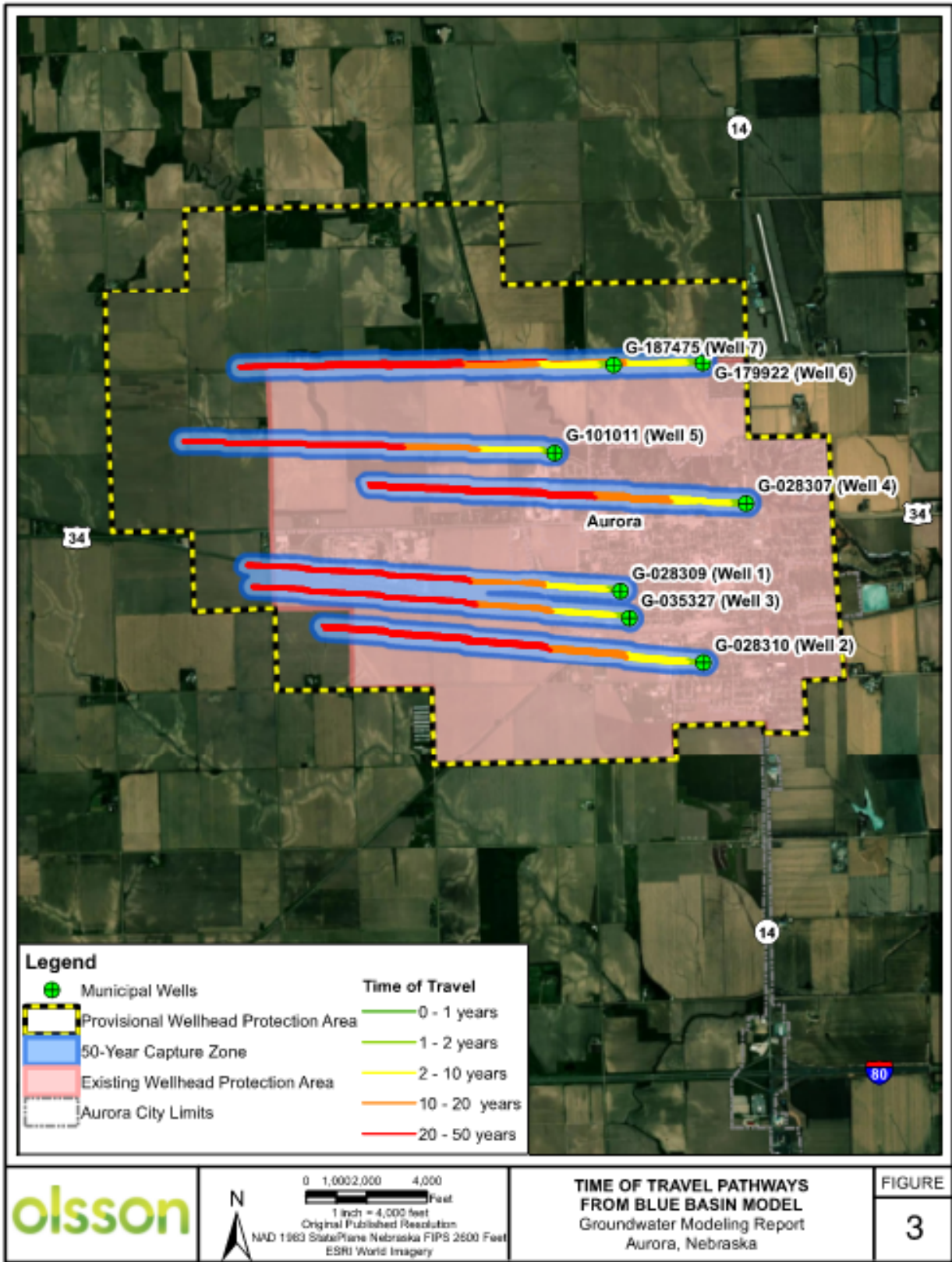


Figure 1: City of Aurora Existing and Provisional Wellhead Protection Areas

Village of Marquette Wellhead Protection Plan:

The Village of Marquette has developed a Wellhead Protection Plan (Marquette WPP). The goal of the Marquette WPP is to protect groundwater in the area, taking into account 20-year time-of-travel paths that reflect the direction and distance of subsurface flow to the village's wells. Figure 2, below, indicates the boundaries of Marquette's Wellhead Protection Area. The proposed Groundwater Sustainability Study, to the extent that the study area includes the Village of Marquette, would help to ensure that the goals described in the Marquette WPP are not impacted by future development.

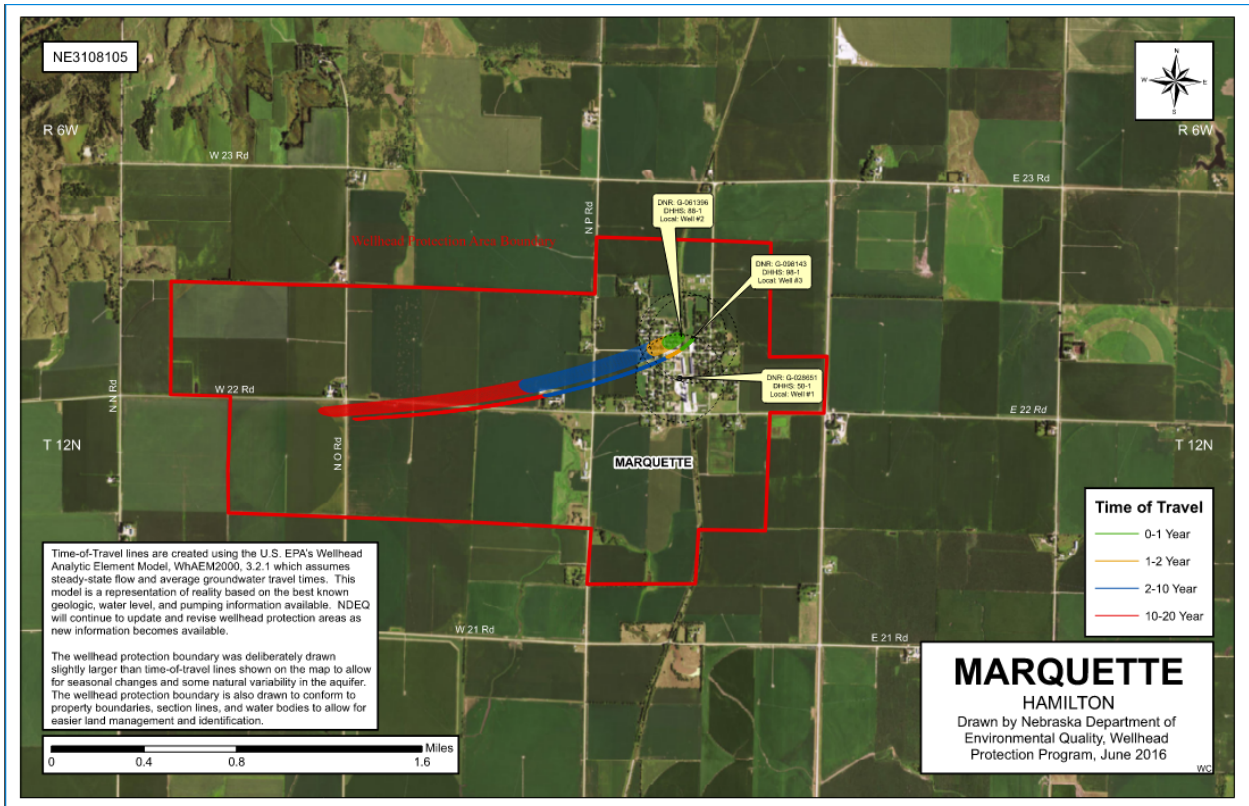


Figure 2: Village of Marquette Wellhead Protection Area

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 State Statute Chapter 2, Article 32 and the Groundwater Management and Protection Act, Chapter 46 Article 7 assigns the responsibility of protecting and maintaining the quality and quantity of groundwater for municipal, domestic, and agricultural uses to Nebraska's Natural Resources Districts.

The City of Aurora has a Drinking Water Protection Management Plan that will serve as a guide to implement programs, practices, and activities that are protective of groundwater in and around the community.

The UBBNRD has set policies and procedures for selecting and retaining professional services and has the authority to enter into Interlocal Agreements with other governmental agencies.

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

No environmental or ecological consequences will occur as a result of this project.

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.

Groundwater is the primary water source for drinking water in central Nebraska. The proposed Groundwater Sustainability Study will assess the potential impacts of future groundwater development on local and regional groundwater availability. Without an

assessment of the resilience and limitations of the existing groundwater supply, future developments may lower groundwater levels in areas where municipalities source their drinking water supply, or they may cause groundwater with high levels of nitrogen to move into municipalities' wellhead protection areas. A model has already been developed to assess water levels in the regional aquifer; the proposed groundwater sustainability study will use the existing model to assess sustainable levels of existing and potential future groundwater use, better understand of the potential impacts of future municipal and industrial uses, and develop guidance for protecting existing water supplies for municipal and industrial use (as well as agricultural use).

The proposed Groundwater Sustainability Study will focus on areas most likely to be impacted by future groundwater development in the region surrounding the City of Aurora in Hamilton County. The population of Aurora and surrounding communities is summarized below. Note that this does not include the population of rural areas surrounding these communities.

Community	Population from 2020 Census
Aurora	4,678
Hampton	432
Phillips	320
Giltner	406
Marquette	236
Total:	6,072

Indirectly, this will be analysis template that benefits all water users in the UBBNRD. In total, over 54,000 people in 41 communities across the UBBNRD may indirectly benefit from the development of this Groundwater Sustainability Study as a template for future assessments.

The City of Aurora relies on several groundwater wells to source its drinking water. The City of Aurora Drinking Water Protection Management Plan (Aurora DWMP) identifies two overarching concerns: ensuring an adequate water supply to meet future demand, and mitigating the threat of nitrate contamination in existing and new wells. As the study partners (UBBNRD, Hamilton County, and City of Aurora) plan for future growth and economic development, they need to make informed decisions about how to best use and protect their groundwater resources. In the absence of informed planning, residents in the study area may face impacts to the quality or availability of drinking water in their communities. The proposed Groundwater Sustainability Study will help assess the impacts of potential groundwater development in the area for commercial, industrial, agricultural, and municipal purposes, and determine the amount of

potential development that would not threaten the adequacy of the region’s drinking water and other supplies.

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 Upper Big Blue Natural Resources District is developing a Voluntary Integrated Management Plan (V-IMP) in cooperation with the Nebraska Department of Natural Resources. It is currently in draft form. The draft V-IMP is focused on “sustaining a balance between uses and supplies to achieve and maintain economic viability, social and environmental health, and safety and welfare,” and requires “a plan to gather and evaluate data, information, and methodologies to implement the V-IMP, increase understanding of the surface water and hydrologically connected groundwater system, and test the validity of the information and conclusions upon which the V-IMP is based.”

The proposed Groundwater Sustainability Study would provide information that is integral to the draft V-IMP’s goals. The draft V-IMP identifies three primary goals, each supported by several objectives. The table below identifies the specific objectives in the draft V-IMP that are most directly supported by the proposed Groundwater Sustainability Study. Additional detail on the draft V-IMP goals and objectives that this project supports are provided after the table.

Draft UBBNRD V-IMP Objectives	Description
Objective 1.1	Develop and maintain a comprehensive database of the sources and locations of the district’s water supplies, uses, and outflows.
Objective 1.2	Enhance and continue water monitoring to develop a more comprehensive understanding of supplies and uses.
Objective 1.3	Review data on an annual basis to ensure accuracy and maintain a sustainable balance of supply and demand.
Objective 1.4	Perform studies and work to utilize data to refine delineations of hydrologically connected surface and groundwater.
Objective 2.3	Partner with other organizations to leverage educational and technical assistance resources.
Objective 3.2	Develop and implement programs and projects that conserve water within the district.

Goal 1 states that “Integrated surface and groundwater resources will be proactively managed using the best available science and data.” The Groundwater Sustainability Study will use a groundwater model built specifically to assess the hydrogeology of the study area, and represents the best available science and data for groundwater in this region. The proposed study directly supports Objectives 1.1 through 1.4. The Groundwater Sustainability Study would identify sources, locations, and amounts of inflows and outflows, including potential future uses (Objective 1.1); it would use monitoring data to refine the existing groundwater model and build a comprehensive and holistic understanding of supplies and long-term water levels under different development scenarios (Objective 1.2); it would provide a key tool for the project partners to review data and ensure a sustainable balance of supply and demand (Objective 1.3); and the Groundwater Sustainability Study is a prime example of the partners studying the integrated groundwater and surface water hydrology in the study area and that could provide better data and information on which to evaluate hydrologic connections between surface and groundwater (Objective 1.4).

Goal 2, “The public will better understand and more fully support actions to restore and protect water supplies while developing broader understanding of resource management,” includes Objective 2.3, which identifies the value of partnership and shared technical resources. The technical resources built from the proposed Groundwater Sustainability Study—and the underlying partnerships supporting the study—are precisely the type of resources intended in that objective.

Goal 3, “Existing and future water uses and supplies will be protected through community-supported best management practices,” includes Objective 3.2, which would develop and implement conservation programs and projects. The proposed Groundwater Sustainability Study would identify areas where conservation would be most impactful for sustaining the groundwater supply, and would aid the study partners in developing appropriate conservation strategies to mitigate sustainability risk associated with existing and potential future municipal, industrial, or agricultural water uses.

The draft V-IMP also identifies an action plan, and the proposed Groundwater Sustainability Study supports the actions identified in the table below.

Draft UBBNRD V-IMP Actions	Description
M-7	Consider climate cycles/variability during review of long-term trends in data.
M-9	Continue to analyze data trends and correlate to the NRD appropriation status.
Pol-8	Management actions are sufficient to ensure that the State will remain in compliance with the Blue River Compact, and other applicable state and federal laws.
Pol-10	Protect the groundwater users whose water wells are dependent on recharge from the river and the surface water uses from stream flow depletion within state law.
P-1	Develop, improve, and maintain groundwater models to aid in water resources management. Purposes of the model may include, but not be limited to, delineations of the hydrologically connected ground and surface waters.
P-2	Identify potential partnerships, including existing resources and grant programs, where technical and/or financial resources could be leveraged.
P-3	Provide technical and financial assistance to participants in selecting, installing, and maintaining BMPs that lead to water use reductions or increases in efficiency.

Additionally, the proposed Groundwater Sustainability Study would address several of the goals and objectives identified in the Integrated Management Plan for the Fully Appropriated Area of the Upper Platte River Basin in the UBBNRD (UBBNRD IMP). The UBBNRD and the Nebraska Department of Natural Resources jointly developed the UBBNRD IMP to cover a portion of the UBBNRD that was designated as fully appropriated along with the Upper Platte Basin. The IMP became effective on October 18, 2010. The IMP includes goals to protect existing uses of groundwater and maintain the total water supply in the IMP area to achieve sustainability while allowing for growth and changes in use. These two goals acknowledge the tension between protecting existing uses while supporting future growth; accomplishing these two goals can only take place when policy makers and planners understand the potential yield and limitations of local hydrogeology. The proposed Groundwater Sustainability Study can help to provide decision-makers with this knowledge. The IMP will be considered if the study area for the Groundwater Sustainability Study extends into the fully appropriated portion of the UBBNRD.

The table below summarizes the objectives in the UBBNRD IMP that would be supported by the proposed Groundwater Sustainability Study.

UBBNRD IMP Objectives	Description
3.3	Explore new sources of water and currently used water for offsets, such as unappropriated river flows and transfers of existing water appropriations or certified groundwater uses.
3.4	Ensure that no act or omission of the District or the Department will cause the state to be in noncompliance with applicable state and federal laws and with any applicable interstate water compact or decree or other formal state contract or agreement pertaining to surface water or ground water use or supplies.
3.5	Gather and evaluate data to increase understanding of surface water and hydrologically connected ground water, and to test the validity of conclusions and information upon which this plan is based.

The proposed Groundwater Sustainability Study would also provide analyses that could help meet the goals identified in the City of Aurora’s Drinking Water Protection Management Plan (Aurora DWPMP) and the Village of Marquette’s Wellhead Protection Plan (Marquette WPP). The use of the Study to support Aurora DWPMP and Marquette WPP is described more fully in Criteria 11, below.

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 proposed Groundwater Sustainability Study lays the foundation for future efforts to evaluate and improve (if needed) water sustainability in the region. Projects aiming to increase aquifer recharge, reduce aquifer depletion, and increase streamflow will be most impactful when they are implemented in a precise, intentional, and informed manner. The Groundwater Sustainability Study will build on existing groundwater modeling to develop a sense of the amount and location of aquifer depletion and recharge. This will help the project partners (UBBNRD, Hamilton County, City of Aurora) focus their efforts in the areas with sustainability risk and where action will be most impactful.

The Blue River Basin groundwater model analyzes hydrologically connected areas of the Blue River Basin in Nebraska and simulates streamflow changes caused by regional water-level changes and depletions caused by pumping. The proposed Groundwater Sustainability Study will use the Blue River Basin groundwater model to develop an understanding of the sustainability of current groundwater withdrawals and to understand how much additional use can occur while maintaining the sustainability of groundwater resources. Having this understanding is foundational to long-term planning, maintaining a sustainable groundwater supply, and evaluating potential impacts on streamflows from pumping.

The proposed Groundwater Sustainability Study has additional cross-basin benefits in terms of providing a template for completing similar evaluations in other parts of the UBBNRD or in other NRDs. It also can help inform and support the City of Aurora's DWPMP and the Village of Marquette's Wellhead Protection Plan.

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 proposed Groundwater Sustainability Study will meet a wide range of goals that include:

- Protecting multiple, existing groundwater uses: The proposed Groundwater Sustainability Study would provide a foundational understanding of the limitations and resilience of groundwater in the study area. Such an understanding would benefit all groundwater uses in the study area, including municipal and industrial uses, agricultural use, and rural domestic use.
- Preservation of water resources while developing responsibly: Groundwater use is heavily integrated, with various uses impacting one another; these impacts can be immediate or, due to the nature of groundwater, long-term and far reaching. Because of this, planning is a fundamental part of responsible groundwater use and requires a detailed understanding of the characteristics unique to a given community and a given aquifer. The proposed Groundwater Sustainability Study will allow the project partners to understand what uses and future developments can be pursued without degrading the short- or long-term sustainability of groundwater in the study area. The study would lay the foundation for supporting the sustainable beneficial use of groundwater

supplies, now and in the future. The proposed Groundwater Sustainability Study will build on the existing Blue River Basin groundwater model to understand how current and proposed future uses will impact groundwater availability and help to preserve and protect existing groundwater uses. The type of informed decision making made possible by the proposed study is integral to long-term conservation and preservation of water resources.

- Protecting streamflows for aquatic and wildlife habitat: In some parts of the study area groundwater and surface water supplies are hydrologically connected. The proposed Groundwater Sustainability Study will help identify potential streamflow impacts from existing and potential future uses of groundwater in the study area. The study results could, potentially, identify and avoid future groundwater development scenarios that detrimentally impact streamflows and habitats critical to the survival and recovery of endangered species. Streamflows in the Platte River, which borders Hamilton County, support species listed under the Endangered Species Act, including the whooping crane, pallid sturgeon, piping plover (threatened), and least tern (which was federally delisted but remains protected).

Without a firm understanding of how to maintain a sustainable groundwater supply, the region faces two negative potential outcomes: overdevelopment of groundwater supplies, leading to unreliable supplies for drinking water, agriculture, and industry as well as the diminishment of habitat for several threatened, endangered, and protected species; or they may under-develop groundwater supplies, missing out on potential economic developments that may increase the prosperity of the region, out of an overly-cautious desire to protect groundwater supplies. A Groundwater Sustainability Study will allow stakeholders in the region to make informed decisions and build a stronger, sustainable future.

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.

Maximizing the beneficial use of Nebraska’s water resources can only be achieved when communities, water users, and water planning entities can make informed decisions about where and how to develop those water resources. A Groundwater Sustainability Study would enable planning entities, including the project partners, to understand the potential impacts of new municipal, commercial, industrial, or agricultural uses, and to identify the ideal amount and location of these uses to

minimize impacts on existing beneficial uses. Area residents will benefit from informed planning that will protect existing beneficial uses, including drinking water, agricultural water use, and industrial water use while identifying sustainable additional uses that can maximize beneficial use and increase the economic productivity of the area.

The proposed study has immediate use for the study partners in assessing potential industrial developments, but the study findings can be used to guide future decision-making on other proposed developments as well.

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 proposed Groundwater Sustainability Study is estimated to cost \$96,300, as summarized in the table below.

Tasks	Year 1\$	Timeline			
		Q1	Q2	Q3	Q4
1. Kickoff project and gather data	\$11,400				
2. Develop water budget for study area	\$16,100				
3. Create a local groundwater model from BRB model	\$10,200				
4. Evaluate the sustainable yield of aquifer	\$18,000				
5. Develop draft and final report	\$23,900				
6. Present results to stakeholders	\$6,800				
7. Project meetings and management	\$9,900				
Total:		\$96,300			

The proposed study is particularly cost effective because it uses a groundwater model that has already been developed, and because it leverages funds from three separate partners. By using a model that has already been developed for the Upper Big Blue region, the study can efficiently produce analyses tailored to this region’s groundwater. The cost of creating the existing Blue River Basin groundwater model was over \$638,000 By using the existing model, the project partners can leverage the existing model investment and apply it to their sustainability and planning efforts. Furthermore, the proposed study takes advantage of partnerships between UBBNRD, the City of Aurora, and Hamilton County. By working together, the project partners can share costs and create a single Groundwater Sustainability Study instead of each independently performing their own study to inform their planning. In addition to the cost savings associated with the partnership, the study will yield a stronger, more reliable analysis

as a result of incorporating the knowledge and interests of each of the partners. The proposed Groundwater Sustainability Study will help to address a broader range of scenarios and impacts than if it were performed for a single entity.

If each of these entities sought to build their own groundwater model and then perform their own Groundwater Sustainability Study, the associated cost could be three times the original investment of \$638,000, or over \$1,900,000. By using existing modeling tools and sharing modeling efforts, the study partners are saving a substantial amount of time and money.

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.

Big Blue River Basin Compact:

The Big Blue River Basin Compact is an agreement between the State of Nebraska and the State of Kansas which requires minimum mean daily flows on the Little Blue and Big Blue Rivers. The proposed Groundwater Sustainability Study will help the study partners protect groundwater levels and streamflows contributing to the Big Blue River system. The study will evaluate current groundwater use as well as future scenarios of additional groundwater development in the study area to determine impacts on groundwater and surface water flow. Model results will include simulated streamflow changes caused by regional groundwater level changes, which can inform analyses of current and future uses and Nebraska's evaluations of long-term compact compliance.

Fully Appropriated Area of the Upper Platte River Basin:

The UBBNRD and the Nebraska Department of Natural Resources jointly developed an Integrated Management Plan (IMP) covering a portion of the UBBNRD that was designated as fully appropriated along with the Upper Platte Basin. The IMP became effective on October 18, 2010. The IMP includes goals to protect existing uses of groundwater and maintain the total water supply in the IMP area to achieve sustainability while allowing for growth and changes in use. These two goals acknowledge the tension between protecting existing uses while supporting future growth; accomplishing these two goals can only take place when policy makers and planners understand the potential yield and limitations of local hydrogeology. The IMP

will be considered if the study area for the Groundwater Sustainability Study extends into the fully appropriated portion of the UBBNRD.

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.

Groundwater supplies are a vital and necessary resource, both for municipalities and for private well owners across central Nebraska. Groundwater modeling and water supply planning, using the best available science and tools, helps to ensure a reliable groundwater supply for municipalities, agriculture, and industry in UBBNRD and Hamilton County. Without reliable information to guide planning and administration, groundwater supplies may decline to levels that potentially lead to water administration actions limiting groundwater withdrawals for irrigation. Furthermore, groundwater sustainability connects directly to a reliable drinking water supply, which is foundational to public health.

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.

Nitrate concentrations in groundwater are a concern in the study area. As groundwater is the primary source of water for municipal, residential, and industrial use in the region, groundwater quality is of central importance. The population of communities in the potential study area for the Groundwater Sustainability Study is nearly 6,100 people. The proposed Groundwater Sustainability Study would lead to a greater

understanding of how groundwater moves in the study area and could identify groundwater quality risks associated with both ongoing current use and may identify if a proposed project could result in groundwater with higher nitrate concentrations moving into drinking water supply areas.

The study partners would like to use this joint effort to model regional groundwater behavior and to use its results to responsibly guide economic development in the study area. A regional modeling effort will help to encompass concerns from a broader base of stakeholders and can help to prevent future developments that would ultimately cause groundwater quality issues in vulnerable areas.

The City of Aurora has previously performed hydrogeologic modeling of its wellhead protection area, as documented in the 2023 City of Aurora DWPMP. This modeling identified the direction of groundwater flow and time of travel under current groundwater use conditions. The proposed groundwater model would expand on this knowledge base to identify potential impacts to the groundwater supply from a broader area under multiple water use scenarios.

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.

Hamilton County, City of Aurora, and UBBNRD are financially supporting this project. This project will be performed and completed over 12 months during calendar year 2025. An Interlocal Agreement documenting the partners' commitment to fund and complete the Groundwater Sustainability Study is attached to this application. Information on each of the study partners' budget and financial resources are described below:

Upper Big Blue Natural Resources District (UBBNRD):

The UBBNRD is contributing \$12,840, or 13.4% of the project total. The Upper Big Blue Natural Resources District has estimated the 2023-2024 property tax request at 0.022423 cents per \$100.00 of valuation resulting in \$3,486,326 from property taxes and a total operating budget of \$6,789,868.

City of Aurora:

The City of Aurora is contributing \$12,840, or 13.3% of the project total. The City of Aurora's FY 2023-2024 operating budget was \$22,208,790 with \$1,963,024 of that

required from the City of Aurora local tax levy. The 2024-2025 budget is anticipated to be similar.

Hamilton County:

Hamilton County is contributing \$12,840, or 13.3% of the project total. Hamilton County's total 2023 valuation was \$3,262,651,100. Hamilton County's FY 2023-2024 operating budget was \$8,321,761 with \$5,286,917.50 of that required from the Hamilton County tax levy. The 2024-2025 budget is anticipated to be similar.

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 UBBNRD has initiated a Voluntary Integrated Management Plan (V-IMP) and has an IMP for the portion of the UBBNRD that was designated as fully appropriated along with the Upper Platte Basin. The Groundwater Sustainability Study supports these plans as described in Criteria #2 above.

The City of Aurora published Drinking Water Protection Management Plan (Aurora DWPMP) in April 2023. This plan identifies two overarching concerns for Aurora's water supply: ensuring an adequate water supply to meet future municipal demands, and mitigating the threat of nitrate contamination in groundwater. As documented in the Aurora DWPMP, Aurora has studied nitrate levels in its current groundwater supply, and has listed Goals, Objectives, and Tasks (adapted from Nebraska's Nonpoint Source Management Plan) associated with nitrate contamination. The proposed Groundwater Sustainability Study may help to address several of the Objectives and Tasks listed in the Aurora DWPMP.

- Objective 1, Task 2: Evaluate threats and impairments through ongoing monitoring, data assessments, and special studies.

The proposed Groundwater Sustainability Study will evaluate impacts on groundwater levels but will also identify how potential new groundwater uses may alter the amount and direction of groundwater flows in the study area. This may help to identify and prevent potential threats to groundwater quality if a proposed

new groundwater use would cause high-nitrate groundwater to flow into areas Aurora relies on for municipal water supply.

- Objective 3, Task 2: Implement projects throughout the state that restore and protect water resources, reduce loading of pollutants, and lead to delisting of impaired waters or protection of high-quality waters.

The proposed study would work to protect existing water resources by identifying potential water quality impacts of proposed projects. At the same time, better knowledge of the aquifer and the interconnection between surface water and groundwater will help to identify locations and projects which would have the greatest benefit on groundwater and surface water resources.

Protecting Aurora's municipal water supply directly benefits the population of Aurora, an estimated 4,500 people, and ensures ongoing residential, industrial, and recreational water uses within the city. More broadly, the entire UBBNRD region benefits from having an urban center with a safe and reliable drinking water supply, as Aurora serves as an economic hub for the surrounding areas.

In addition to supporting the Aurora DWPMP, the proposed Groundwater Sustainability Study would help to meet the goals of the Village of Marquette's Wellhead Protection Plan (Marquette WPP) if the project study area includes its boundary. The Marquette WPP defines a wellhead protection area within Hamilton County which would help to protect its municipal water supply. The proposed Groundwater Sustainability Study would help to identify impacts to water quality and groundwater levels as the result of potential developments and would be able to determine the existence and scope of impacts within Marquette's wellhead protection area.

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.

Nebraska relies heavily on groundwater for its primary source of water for municipal, industrial, and agricultural purposes. Making informed planning choices for developing Nebraska's groundwater resources using the best available science helps to protect Nebraska's economic future while also ensuring that Nebraska can continue to meet federal and interstate requirements related to streamflow and endangered species habitats. The proposed Groundwater Sustainability Study addresses these statewide

issues in one location and would provide a template for similar planning efforts in other parts of Nebraska.

UBBNRD, Hamilton County, and the City of Aurora are all mutually interested in ensuring long-term economic prosperity and environmental quality in their region of Nebraska. The path to accomplishing this goal is through optimizing groundwater use to maximize long-term growth while preventing overuse. Overuse of groundwater may lead to local or regional impacts to groundwater and surface water, which can impact drinking water, agriculture, industry, and environmental quality. Responsible long-term growth involves supporting all of these beneficial uses for the inhabitants of the study area, which includes nearly 6,100 people, and is also beneficial to the UBBNRD as a whole, which encompasses 1,828,000 acres and is home to 54,000 people. New industrial uses hold the potential for economic prosperity but must be placed and scoped responsibly to protect the existing beneficial uses in the area. The proposed Groundwater Sustainability Study would allow the study partners to make these informed planning decisions.

Additionally, the State of Nebraska is a partner in several interstate compacts related to streams, including the Big Blue River Basin Compact. The proposed Groundwater Sustainability Study will help to ensure that groundwater development will not detrimentally impact Big Blue River streamflows, helping Nebraska continue to meet its compact obligations. A successful Groundwater Sustainability Study in a key watershed, which helps support long-term economic growth in the area and helps ensure that Nebraska can continue to meet its interstate compacts, can provide a path for others looking to sustainably maximize their groundwater development.

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.

The proposed Groundwater Sustainability Study is a partnership between UBBNRD, the City of Aurora, and Hamilton County. The table below identifies the amount of funding each partner is dedicating to the proposed study.

Entity	Contribution	Percent
UBBNRD	\$12,840	13.4%
City of Aurora	\$12,840	13.3%
Hamilton County	\$12,840	13.3%
Water Sustainability Fund	\$57,780	60.0%
Total:	\$96,300	

Aside from the Nebraska Water Sustainability Fund grant proposed in this application, all funding sources are already secured. Each of the study partners will be contributing money from their own funds through the completion of this study effort. The study partners have executed an Interlocal Agreement (attached to this grant application) which outlines the responsibilities of each party and their commitment to fund and complete this study.

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 UBBNRD has a Voluntary Integrated Management Plan (V-IMP) with goals to protect groundwater and surface water supplies in the portion of the Big Blue River watershed system covered by the NRD. It is currently in draft form. The proposed Groundwater Sustainability Study will help to address multiple goals identified in the draft V-IMP, as discussed above. Undertaking this modeling effort will help the study partners understand the hydrological connections between groundwater and surface water and help to identify impacts of potential new groundwater resource development on groundwater levels and surface water flows.

Protecting streamflows in the portion of the UBBNRD with groundwater that is hydrologically connected to the Platte River can help protect habitat for multiple species listed under the Endangered Species Act, including the whooping crane, pallid sturgeon, piping plover (threatened), and least tern (which was federally delisted but remains protected). It also contributes to the protection of environmental quality in the watershed, which ultimately protect the economic wellbeing of the communities in the UBBNRD footprint.

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 Nebraska Department of Natural Resources Annual Report (2023 Annual Report) outlines six goals, each with underlying objectives, focused on management of Nebraska’s natural resources. The proposed Groundwater Sustainability Study would help to meet several of the objectives identified in the 2023 Annual Report.

- **Objective 1B:** Work collaboratively with other partner agencies to develop and improve the “best available science” to support policy decisions.

The Groundwater Sustainability Study is a partnership between three local government agencies which will, with support from the Nebraska Water Sustainability Fund, use specialized groundwater modeling tools, which were developed in partnership with NeDNR, to identify risks and opportunities associated with groundwater use in the Big Blue River Basin. These modeling results will guide policymaking decisions by the study partners.

- **Objective 3A:** Conduct annual assessments of progress toward goals, objectives, and key actions identified by local stakeholders.

The Groundwater Sustainability Study will provide high-quality scientific data tailored to the Big Blue River Basin that will help to inform annual assessments and provide data and analyses for attainment of goals identified by local stakeholders.

- **Objective 3B:** Complete integrated management planning and basin-wide development for the entire state.

The Groundwater Sustainability Study contributes to meeting integrated management planning goals for the UBBNRD.

- **Objective 3C:** Support the continued compliance with all interstate water compacts, decrees, and agreements.

The Groundwater Sustainability Study will identify surface water impacts of potential groundwater development, which will help the study partners protect streamflows in the Upper Big Blue River Basin. This will help the State of Nebraska meet its obligations for the Big Blue River Basin Compact.

- **Objective 3D:** Work to provide increased preparedness for future droughts.

The Groundwater Sustainability Study will identify key sources of groundwater recharge and can be used to evaluate the limitations of groundwater in the UBBNRD area. This knowledge will help the study partners understand the sustainable use and development of groundwater resources so that they are available and sustainably used during future droughts.

- **Objective 5B:** Support the Natural Resources Commission in administering state-aid funds by identifying project opportunities for sustaining future water supplies

The Groundwater Sustainability Study will provide the study partners with tools to manage groundwater supplies sustainably so that they are available in the future. The study will also provide greater knowledge of the interconnection between groundwater and surface water, which can inform basinwide strategies for sustaining future water supplies for both human uses and habitat.

- **Objective 6B:** Continue to create more efficient processes for data exchange that enhance the understanding of water uses.

The Groundwater Sustainability Study is a partnership between several local government entities and lays the groundwork for data exchange and integrated planning between the UBBNRD, Hamilton County, and the City of Aurora. The shared understanding built through the proposed modeling process will enhance all parties' knowledge of potential water uses in the region.

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.

N/A