

NEBRASKA NATURAL RESOURCES COMMISSION

Water Sustainability Fund

Application for Funding

Section A.

ADMINISTRATIVE

PROJECT NAME: Hooper Irrigation Pipeline Project

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

Sponsor Business Name: Hooper Irrigation District

Sponsor Contact's Name: Bruce Burdick

Sponsor Contact's Address: 5052 Road 197

Sponsor Contact's Phone: 308-778-6051

Sponsor Contact's Email: bruceburdick17@gmail.com

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

Grant amount requested. \$ 79,300

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

If a loan is requested amount requested. \$ 0

- How many years repayment period? NA
- Supply a complete year-by-year repayment schedule. NA

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 type="checkbox"/> Obtained: YES <input type="checkbox"/> NO <input checked="" 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 type="checkbox"/> Obtained: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
Cultural Resources Evaluation	N/A <input type="checkbox"/> Obtained: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
Other (provide explanation below)	N/A <input type="checkbox"/> Obtained: YES <input type="checkbox"/> NO <input type="checkbox"/>

Hooper Irrigation District does not have a G&P or T&E consultation and do not anticipate that one will be needed as the project is pipeline construction connecting to an existing pipeline and only crossing private land. A construction permit is required of the contractor when laying pipeline across county roads from Garden County. There is no fee. We have applied for a federal WaterSmart grant. If approved, the Bureau of Reclamation will conduct an Environmental and Cultural Resources Evaluation.

4. **Partnerships**

List each Partner / Co-sponsor, attach documentation of agreement:
Hooper Irrigation District – sole entity

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

Hooper Irrigation District – contract with firm for construction of pipeline and provide oversight

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.

WaterSmart Small-Scale Water Efficiency application submitted for \$75,000 with decision expected in September 2021. The Hooper Irrigation District will provide \$52,866 in local funds including \$10,000 of in-kind contribution for project management. The Hooper Irrigation Board has funds available to cover the cost of the project. The Hooper Irrigation District board voted to use existing funds for matching costs in a board meeting held 6/28/2021. The board also decided that the project is not feasible without both the successful approval of both the WaterSmart grant for \$75,000 and the Water Sustainability Fund for \$79,300. Hooper Irrigation District anticipates knowing if the WaterSmart grant is approved in September and will withdraw this application if the WaterSmart grant is not approved. If the grant is not approved, Hooper Irrigation District plans to submit both grants in the next funding cycle.

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!

Hooper Irrigation District is located north of Lewellen, Garden County, Nebraska, using water from Blue Creek, a tributary of the North Platte River in the Upper Platte Basin. The District proposes to convert 1.5 miles of open irrigation dirt canal located in sandy soil with 1.5 miles of buried PVC irrigation pipeline. The project includes nine metal risers and associated valve fixtures to connect to individual landowners for delivery. This pipeline will connect .3 miles of current pipeline that is the head of the access point of Hooper canal getting water from the Blue Creek Irrigation District canal and the existing cement lateral to the south of the district. The District has worked with the NRCS and the FSA to develop this proposed plan and will contract the work out. This pipeline is located entirely on private land and county right-of-way and will greatly

improve the reliability of the water, the amount and pressure of the water to all farmer/operators, and the cleanliness of the water as farmers move to pivot farming – all the while reducing the cost and labor of maintenance and daily supervision of water. While costs are reduced, the project will increase land values and output. The project also helps with the general plan of the Upper Platte Basin Integrated Management Plan.

7. **Project Tasks and Timeline**

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

The Hooper Irrigation Pipeline Project will be completed by contracting with a single contractor for 1.5 miles of pipeline extending between existing pipeline to the north and a cement lateral to the south. The contractor will provide all supplies, labor, permit and construction across county roads for risers. The Hooper Irrigation Board president will act as manager for the project for Hooper Irrigation District including obtaining bids from potential contractors, working with land owners and securing easements. The Irrigation District clerk will provide grant progress and financial reports. Hooper board intends to have selected a contractor so that construction can begin in the spring of 2022 and completion by October 31, 2022. Construction will be adjacent to existing ditches so will not impede use of the canals if not complete by summer.

<u>Tasks</u>	<u>Budget</u>	<u>Completion Date</u>
Project Management	\$ 10,000 (Inkind)	10/31/2022
Clerical 300 hr.	\$ 2,000	10/31/2022
Travel – Project Manager	\$ 112	
Construction	\$193,054	10/31/2022
Legal - easements	\$ 2,000	\$2,000 8/01/2021
TOTAL	\$207,166	

Estimated Project Start and Completion Dates: March 1, 2022 – Oct. 31, 2022

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;** See attached file.

- 1.A.2 **Describe the plan of development (004.01 A);** The Hooper Irrigation Pipeline project will be overseen by the board chairman, Bruce Burdick, with grant reporting and financial management from the Secretary/Treasurer Tara Canning. The entire project will be completed through a contract with a pipeline installation company. The contracting company is responsible for permits, final engineering and design, construction and sub-contracting risers, oversight and guarantee of work.

Project Schedule	March 1, 2022 – October 31, 2022
Easements completed with landowners	July 15, 2021
Formal bids from at least 2 contractors	February 28, 2022
Approve bid for construction	March 15, 2022
Construction of pipelines	September 31, 2022
Verification of system for irrigation/water flow	October 31, 2022

- 1.A.3 **Include a description of all field investigations made to substantiate the feasibility report (004.01 B);** The Hooper Irrigation District has worked with adjoining Irrigation districts to make improvements during the past 30 years. Hooper Irrigation District removed their head gate from Blue Creek and contracts with Blue Creek Irrigation District to transport water for the initial miles to reduce maintenance and management. An outlet with pipeline was built for Hooper Irrigation from the large Blue Creek canal. This pipeline outlet will be the north end of the proposed pipeline. A discussion of changing from an earthen canal to a pipeline started 20 years ago with proposed plans continually delayed due to funding issues. The attached map was provided by NRC civil engineer Chris Jensen. Hooper Irrigation members have consulted with NPNRD to confirm that we are meeting the Integrated Management Plan.

- 1.A.4 **Provide maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C);** Map of irrigation plan
- 1.A.5 **Describe any necessary water and/or land rights including pertinent water supply and water quality information (004.01 D);** All land included in the pipeline conversion project are within the Hooper Irrigation District. The project is entirely on private land with all land owners part of the irrigation district. The proposed 1.5 miles of pipeline will cross land with current open ditch including Larry Johansen, Bruce Burdick, Mary Gentry, Ruth Hamilton, Gene Tophoj, and the Spoeneman estate. The pipeline will be next to the ditch in the first two properties and changed to along the west side of county road 197 with access for landowners on the east side for the remainder of the pipeline. Easements are attached for landowners included in the 1.5 miles of construction. Hooper Irrigation District certifies that all easements required for this project have been obtained.
- 1.A.6 **Discuss each component of the final plan (004.01 E);** The entire project will be accomplished by letting bids and contracting for a construction company to build the pipeline and risers and manage land access and rights. It is anticipated that the pipeline company located in Julesburg, Colorado will provide the lowest bid as they are located 30 miles from the project and will not have excessive costs for transporting equipment and housing staff. Final bids will be requested following grant approval.
- 1.A.7 When applicable include the geologic investigation required for the project (004.01 E 1); NA
- 1.A.8 When applicable include the hydrologic data investigation required for the project (004.01 E 2); NA
- 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); [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).** The Hooper Irrigation Pipeline project is a next step for previous improvements. The Hooper head gate was removed and an outlet created with the Blue Creek Canal. The outlet provides screening water and a pipeline for .3 miles to the dirt canal which will be replaced with pipeline. No further screening will be required at the new junction.

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 only other possible alternative is to build a cement canal. This would reduce seepage but would not reduce debris or transpiration and would not create water pressure to operate pivot irrigation systems.
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, up to fifty (50) years; or, with prior approval of the Director up to one hundred (100) years, (Title 261, CH 2 - 005).** The Hooper Irrigation Pipeline is anticipated to save financially as well as conserve water. Current annual maintenance costs of \$2,500 - \$3,000 would be a savings, but the elimination of seepage loss of water resources is the primary motivation for completing the project. Calculation of that loss can be evaluated from North Platte Natural Resources District (NPNRD) and USGS studies and the value of that loss can be evaluated from existing NPNRD ground water programs. Within the NPNRD in Western Nebraska, irrigations canals provide a source of artificial recharge. Locations of highest and lowest recharge potential in canals were captured using capacitively coupled and direct current resistivity methods to profile lithology of two major canals in NPNRD. Estimates suggest canals leak between 40% to 50% of their water within this region. A USGS study of surface water from part of the interstate canal indicates seepage occurs during the transport of surface water from the diversion point to Lake Minatare east of the study area, with estimated loss during transit at about 25% of total flow. Soil types in this Hooper Irrigation District are sandy and sandy loam. The Hooper Irrigation District can divert 3,539 acre feet (AF) annually, with a seepage loss of 1052 AF using a conservative 30% loss. The NPNRD's equip/CREP Programs value of \$38/AF would estimate value our water loss at \$40,356 annually. The NPNRD's EPIC programs value of \$180/AF would value our loss at \$191,160

annually. Using the lowest loss, the cost of construction would be recouped in about five years. Using the highest value, cost would be recovered in slightly over one year.

- 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).** Total cost of construction and this project is \$207,166 with annual maintenance costs being reduced by \$2,500 to \$3,000 annually.
- 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).** Project Benefits: Water supply delivery system:• The replacement pipeline will connect to existing improvements in the delivery system by connect existing pipeline to a pipeline to the north and a cement lateral to the south. • The labor required for canal management will be greatly reduced ending the need for annual maintenance such as burning, spraying and cleaning ditch bottoms, as well as on-going operating maintenance of watching and correcting flooding from gopher runs and overuse of water, cleaning obstacles out of the ditch and controlling aquatic plant growth. Due to limited funds, the district voted to have farmers jointly provide maintenance on the ditch including burning weeds, dredging the ditch, spraying for weeds and in one section removing weeds with a pitchfork by hand as trees prevent burning. Due to problems with weeds and moss or erosion of ditch banks the farmer has to check the canal 2 to 3 times per day. Larger maintenance work is done by contract. • Reduction in liability and conflict from burning and spraying, flooding and land access. On one farm, for example, the owners are unhappy about the ditch running through the middle of their field resulting in burning and spraying issues with crops, weeds growing along the ditch, piles of dirt from dredging that harm their combine, and flooding of their yard and field. Other conflicts have arisen over the length of time it took to get water in the spring due to slow canal maintenance resulting in a lost crop and a law suit over damage with flooding in 1987. • Conflict over amount of water results from loss of water through seepage, which is estimated to be between 50 and 90% of inflows. Reliability is a critical component of keeping the irrigation surface water used in changing farming methods and enhancements made by landowners. Many landowners have converted to gated or pivot irrigation systems and several have added pipelines on their property to replace dirt or cement laterals. Irrigation water that flows through a dirt canal is often full

or plugged with weeds and moss and sediment and has no pressure. Pivots may generally take relatively clean water and 40 pounds of pressure. This is possible with irrigation provided through pipes. The specific benefits of a pipeline replacement for the 1.5 miles of dirt based ditch are: 1. Consistent pressure of water at about 20 psi. 2. Capacity to provide clean water for pivot irrigation, 3. The amount of water and pressure can be consistently delivered for the majority of operators regardless of the distance from the head gate, allowing more consistent flow downstream. This is especially a benefit for those using pivots or gated pipes. Acres south of Highway 26 are at a distinct disadvantage for getting adequate water delivered. 4. Reduction of water absorption/seepage in a canal with sandy soil allows more water to be delivered to the field. 5. Efficient use of water during periods of drought.

- 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).** See budget
- 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).** This project has been proposed for twenty years with no real alternative. Additionally this project benefits landowners through increased value of irrigated acres, capacity to update irrigation methods, higher lease rates, increase in yield, reduction of labor costs for irrigation and reduction of power costs for lifting water from the pipeline instead of a well.

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 Hooper Irrigation District board voted to use existing funds to provide match for this project. Should some additional funds be required if material prices increase, the Bank of Lewellen has agreed to provide short term funding to be repaid with irrigation district ditch taxes.
5. **Provide evidence that sufficient annual revenue is available to repay the reimbursable costs and to cover OM&R (operate, maintain, and replace).** The annual income from taxes on irrigated acres is \$10,196 for Hooper Irrigation District. Operating costs for the district will decrease with this project as will operating costs for individual farmers. The grant project is a construction project in its entirety.
6. If a **loan** is involved, provide sufficient documentation to prove that the loan can be repaid during the repayment life of the proposal. **NA**

7. **Describe how the plan of development minimizes impacts on the natural environment (i.e. timing vs nesting/migration, etc.).** The Hooper Irrigation Pipeline Project increases water efficiency and therefore benefits wildlife and downstream water flows. Currently, excess water flows enter into fields and adjacent land without a mechanism for returning to the North Platte River. By reducing required flows, more water will be available in the Blue Creek Canal which does directly return water to the North Platte River.
8. **Explain how you are qualified, responsible and legally capable of carrying out the project for which you are seeking funds.** The Hooper Irrigation District was formed by a decision of Garden County on June 7, 1926. The District operates through a board made up of landowners and works closely with the Blue Creek Irrigation District. Funds are available through taxation on landowners. The District has applied for federal funds and is registered with a DUNS and SAMS number.
9. **Explain how your project considers plans and programs of the state and resources development plans of the political subdivisions of the state.** The Hooper Irrigation Pipeline Project was created with the involvement of the NRD and NRCS with consideration of the NRD Integrated Management Plan. In the development of the final plan, Hooper Irrigation board members worked with Dave Cook, NRCS in Oshkosh; Chris Jensen, civil engineer for NRCS, and John Berge, NRD.
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.** The Hooper Irrigation Pipeline Project is 1.5 miles crossing the following landowners' property. Hooper Irrigation District board of directors certifies that all easements have been received. Janice Johansen, Bruce and Ellen Burdick, Stephen and Mary Randall, Ruth Hamilton, Gene and Brenda Tophoj, and Barbara Vercruysse, Randy Stromberg, Sandra and Ronald Cacek.
- 10.B **Attach** proof of ownership for each **easements**, rights-of-way and fee title currently held. Attached
- 10.C **Provide assurance that you can hold or can acquire title to all lands not currently held.** All easements received.
11. **Identify how you possess all necessary authority to undertake or participate in the project.** Hooper Irrigation District was formed in 1926 by Garden County under the laws of Nebraska. The Hooper Irrigation Pipeline Project is entirely within the Hooper geographic district and entirely on private

lands. Hooper Irrigation District board of directors has approved this grant application and expenditure of funds. See Hooper Irrigation District minutes.

12. **Identify the probable consequences (environmental and ecological) that may result if the project is or is not completed.** If the WaterSmart grant is approved the DNR will conduct an Environmental and Cultural Compliance review.

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;

NA

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.

In September 2004 the Upper Platte Basin watershed including the North Platte River and Blue Creek was determined to be over appropriated by the Nebraska Department of Natural Resources and a stakeholder driven basin-wide plan (state and local) was adopted in 2009. The basin includes a larger area of over appropriated surface water and the hydrologically connected groundwater area. The NPNRD Integrated Management Plan The first goal of the plan is to incrementally achieve and sustain a fully appropriated condition and the fourth goal is to work cooperatively to identify and investigate disputes between ground water users and surface water appropriators. Goal 1, Objective 1: Offset impacts of streamflow depletions to (A) surface water appropriations and (B) water wells constructed in aquifers dependent upon recharge from streamflow, to the extent those depletions are due to water use initiated after July 1, 1997. Measures that can potentially be used to overcome the adverse effects of increases in consumptive use on stream flows include both those that reduce intentional consumptive use and those that enhance existing water supplies in other ways, or that increase the ability to use existing supplies more effectively. The surface water rights in the area are much older than the groundwater well rights. A number of farmers in the area have added wells to their property so that they don't need to use surface water or have a back-up if surface water is not available. Installing a pipeline makes the available water more conducive to pivot irrigation and can help increase the amount of surface water being used as opposed to groundwater. The four irrigation districts using water from Blue Creek have coordinated with NRCS for many years including. Many land owners have property in two or three districts. Jointly, these districts accomplishments are:

- Combining Meeker Irrigation District into the Blue Creek Irrigation District, eliminating a head gate and using Union Pacific funding to install irrigation pipeline for a much shorter distance resulting in reduced cost and maintenance
- Combining Hooper and Blue Creek Head Gates and upper ditch
- Improvements to the Hooper outlet with .3 miles of pipe and flume
- Installation of pipelines on the Paisley and Union upper canals
- Engineering plans for pipelines for Hooper initiated in 2003
- Irrigation acres have been reconfigured for at least three pivots

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.

Hooper Irrigation District is located in Garden County in the Upper Platte Basin watershed including the North Platte River and Blue Creek. Water for the Hooper is from Blue Creek which is spring fed from the Ogallala Aquifer with the source in the sandhills. The canal is in sandy or sandy loam soil with an estimated 30 to 50% seepage loss. The Hooper Irrigation District can divert 3,539 acre feet (AF) annually, with a seepage loss of 1052 AF using a conservative 30% loss. The NPNRD's equip/CREP Programs value of \$38/AF would value our loss at \$40,356 annually. The NPNRD's EPIC programs value of \$180/AF would value our loss at \$191,160 annually. Reliability is a critical component of keeping the irrigation surface water used in changing farming methods and enhancements made by landowners. Many landowners have converted to gated or pivot irrigation systems and several have added pipelines on their property to replace dirt or cement laterals. Irrigation water that flows through a dirt canal is often full or plugged with weeds and moss and sediment and has no pressure. Pivots may generally take relatively clean water and 40 pounds of pressure. This is possible with irrigation provided through pipes. The specific benefits of a pipeline replacement for the 1.5 miles of dirt based ditch are: •Consistent pressure of water at about 20 psi. •Capacity to provide clean water for pivot irrigation •The amount of water and pressure can be consistently delivered for the majority of operators regardless of the distance from the head gate, allowing more consistent flow downstream. This is especially a benefit for those using pivots or gated pipes. Acres south of Highway 26 are at a distinct disadvantage for getting adequate water delivered •Reduction of water absorption/seepage in a canal with sandy soil allows more water to be delivered to the field. • Efficient use of water during periods of drought.

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 Hooper Irrigation Pipeline Project primarily benefits agricultural producers in Garden County by providing clean, reliable water at 20 psi to the district, thus allowing pivot irrigation and gated pipe systems. The labor required for canal management will be greatly reduced ending the need for annual maintenance such as burning, spraying and cleaning ditch bottoms, as well as on-going operating maintenance of watching and correcting flooding from gopher runs and overuse of water, cleaning obstacles out of the ditch and controlling aquatic plant growth. Due to limited funds, the district voted to have farmers jointly provide maintenance on the ditch including burning weeds, dredging the ditch, spraying for weeds and in one section removing weeds with a pitchfork by hand as trees

prevent burning. Due to problems with weeds and moss or erosion of ditch banks the farmer has to check the canal 2 to 3 times per day. Larger maintenance work is done by contract. Reduction in liability and conflict from burning and spraying, flooding and land access is a benefit. On one farm, for example, the owners are unhappy about the ditch running through the middle of their field resulting in burning and spraying issues with crops, weeds growing along the ditch, piles of dirt from dredging that harm their combine, and flooding of their yard and field. Other conflicts have arisen over the length of time it took to get water in the spring due to slow canal maintenance resulting in a lost crop and a law suit over damage with flooding in 1987. Conflict over amount of water results from loss of water through seepage, which is estimated to be between 50 and 90% of inflows. Reliability is a critical component of keeping the irrigation surface water used in changing farming methods and enhancements made by landowners. Many landowners have converted to gated or pivot irrigation systems and several have added pipelines on their property to replace dirt or cement laterals. Irrigation water that flows through a dirt canal is often full or plugged with weeds and moss and sediment and has no pressure. Pivots may generally take relatively clean water and 40 pounds of pressure. This is possible with irrigation provided through pipes. The specific benefits of a pipeline replacement for the 1.5 miles of dirt based ditch are: •Consistent pressure of water at about 20 psi. • Capacity to provide clean water for pivot irrigation •The amount of water and pressure can be consistently delivered for the majority of operators regardless of the distance from the head gate, allowing more consistent flow downstream. This is especially a benefit for those using pivots or gated pipes. Acres south of Highway 26 are at a distinct disadvantage for getting adequate water delivered. • Reduction of water absorption/seepage in a canal with sandy soil allows more water to be delivered to the field. • Efficient use of water during periods of drought.

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 Hooper Irrigation Pipeline Project is entirely for the benefit of local agricultural producers and farm landowners. The project also will have some benefit to other Nebraska residents as the project reduces waste of water resources freeing up water for recreational and environmental purposes.

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 Hooper Irrigation Project is almost entirely construction costs of \$193,054 with only \$14,112 in management costs. There are no land or water acquisition costs. The project is a straight forward conversion of open dirt canal to a pipeline.

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 Hooper Irrigation Pipeline Project benefits the Upper Platte Basin NPNRD Integrated Management Plan to incrementally achieve and sustain a fully appropriated condition and to work cooperatively to identify and investigate disputes between ground water users and surface water appropriators.

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 Hooper Irrigation Pipeline Project has minimal impact on public security and safety but does directly help small landowners and operators continue to farm small acreages of land.

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.

For agricultural users, the Hooper Irrigation Pipeline Project directly improves water quality. Irrigation water in open canals is often choked with water plants that grow along the bottom of the creek and canals and weeds that grow along the banks. Sections of the canal are also heavily lined with trees and collect branches and leaves. All of this debris makes it nearly impossible to use gated pipes or pivot irrigation systems. Besides water loss to seepage, this chronic issue of water quality makes a number of farmers choose ground water over surface water in spite of the additional cost. Currently the agreement to have water supplied through the Blue Creek Canal and filtered into a pipeline brings clean water to the head of the Hooper District. By joining the existing pipeline, no additional efforts are required to have clean water for pivot systems.

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

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

The Hooper Irrigation District has supported and approved expenditure of funds accumulated for this project from local irrigation district taxes. The district collects \$10,196 in taxes each year. Additional funds have been applied for through the federal WaterSmart grant.

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 Hooper Irrigation Pipeline Project is in the jurisdiction of the Hooper Irrigation District located in Garden County northwest of Lewellen. The project is the result of twenty years of planning by the district to use water more efficiently and provide water in a form that can be used by farmers with modern irrigation systems. The project will primarily benefit agricultural purposes with some side benefit for recreational and wildlife use. The irrigation district and its landowners are the stakeholders in the project and will be the beneficiaries of the project. The total district includes 850 irrigated acres. The plan directly helps with the NPNRD Integrated Management Plan Goal 1 to sustain a fully appropriated condition. The replacement of an open dirt canal with a closed pipeline will reduce the amount of seepage and transpiration of water, reduce the amount of debris in the water and provide water at a steady 20 psi of pressure through the district.

12. Addresses a statewide problem or issue;

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

The primary statewide issue addressed with the Hooper Irrigation Pipeline Project is to reduce waste of irrigation water and more efficient farming practices, keeping more acres available for agricultural production.

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.

Hooper Irrigation District applied for \$75,000 from the Department of Natural Resources WaterSmart grants. If awarded this will provide federal funds for the project. Local resources are not adequate to cover the total cost of the project but \$52,866 has been committed to this project with \$79,300 from the Water Sustainability Fund if approved.

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 Hooper Irrigation Pipeline Project affects the Blue Creek and North Platte River watersheds. Currently excess water does not have a return access to the North Platte River and is lost at the end of fields. With the pipeline, water not used will be returned to the river through the Blue Creek Irrigation Canal. The project fits into the NPNRD Integrated Management Plan.

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.

DNR 2020 Annual Report – Basin-wide Planning. Hooper Irrigation District is part of the Upper Platte Basin that is over appropriated. The pipeline project directly contributes to efficient use of water and helps in reducing over appropriation. The project also contributes to the Integrated Management Plan achieving a fully appropriated condition and the fourth goal to work cooperatively to identify and investigate disputes between ground water users and surface water users. The pipeline helps make the use of surface water more desirable as water becomes available at a clean, reliable 20 psi pressure for all irrigators using the ditch, reducing the advantage of ground water.

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.

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