

# NEBRASKA NATURAL RESOURCES COMMISSION

Water Sustainability Fund

Application for Funding

Section A.

## ADMINISTRATIVE

PROJECT NAME: [Project Improvement 8.3](#)

### *PRIMARY CONTACT INFORMATION*

Entity Name: [Farwell Irrigation District](#)

Contact Name: [Matt Lukasiewicz](#)

Address: [PO Box 137, Farwell, NE 68838](#)

Phone: [308-336-3341](#)

Email: [mluk@qwestoffice.net](mailto:mluk@qwestoffice.net)

Partners / Co-sponsors, if any: [Click here to enter text.](#)

1. Dollar amounts requested: ([Grant](#), Loan, or Combination)

Grant amount requested. \$ [474,000](#)

Loan amount requested. \$ [Click here to enter text.](#)

If Loan, how many years repayment period? [Click here to enter text.](#)

If Loan, supply a complete year-by-year repayment schedule.  
[Click here to enter text.](#)

Are you requesting less than 60% cost share from the fund?

[No](#)

If so what % ? [Click here to enter text.](#)

2. Permits Needed - Attach copy for each obtained (N/A = not applicable)

Nebraska Game & Parks Commission (G&P) consultation on Threatened and Endangered Species and their Habitat	N/A <input type="checkbox"/>	Obtained: YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Surface Water Right	N/A <input type="checkbox"/>	Obtained: YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
USACE (e.g., 404 Permit)	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) <a href="#">Click here to enter text.</a>	N/A <input type="checkbox"/>	Obtained: YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>

3. Are you applying for funding for a combined sewer over-flow 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

If yes attach a copy to your application. [Click here to enter text.](#)

If yes what is the population served by your project? [Click here to enter text.](#)

If yes provide a demonstration of need. [Click here to enter text.](#)

If yes and you were approved for funding in the most recent funding cycle, then resubmit the above information updated annually but you need not complete the remainder of the application.

4. If you are or are representing an NRD, do you have an Integrated Management Plan in place, or have you initiated one?

N/A  YES  NO

5. Has this application previously been submitted for funding assistance from the Water Sustainability Fund and not been funded?

YES  NO

If yes, have any changes been made to the application in comparison to the previously submitted application? [Click here to enter text.](#)

If yes, describe the changes that have been made since the last application. [Click here to enter text.](#)

No, I certify the application is a true and exact copy of the previously submitted and scored application. (Signature required) [Click here to enter text.](#)

## Section B.

### DNR DIRECTOR'S FINDINGS

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

YES  NO

1(a). If yes (structural), submit a feasibility report (to comply with Title 261, CH 2) including engineering and technical data and the following information:

A discussion of the plan of development (004.01 A);  
Constructing a buried PVC pipeline for irrigation from an open water ditch system, referred to as the 8.3 lateral. Engineers took original ditch designs and worked with staff to determine the size of pipe and head pressure needed to serve those farms supplied with irrigation from that lateral. Within the 8.3 lateral, there are 1,593.4 certified irrigated acres supplied from this ditch. The current ditch is 4.1 miles in length, of which 3.78 mile will be replaced with a pipeline. The top 0.32 of a mile will remain open water but will have regulated flow going into the pipeline by a Rubicon gate system with automation to maintain a consistent water supply.

A description of all field investigations made to substantiate the feasibility report (004.01 B); Miller and Associates were hired to engineer and investigate this project. They have; 1) surveyed the existing lateral and roadway to design alignment of the pipeline. 2) Designed the headworks structure to direct water flow to axillary laterals. 3) Designed the primary pipeline along the existing lateral/roadway, including sizing of pipeline based on design flow and grades. 4) Designed alternate routes for the pipeline to reduce the total length of pipe needed. 5) Designed the turnout facilities to distribute flow to individual irrigation customers. 6) Prepared plan/profile drawings to illustrate the alignment, pipe grades/slopes, fittings, valves and connections. 7) Tied the proposed pipeline alignment to the existing Irrigation District survey control and section corners in the vicinity if they are available. 8) provided plan details of irrigation works and turnouts with the assistance of the District based on previous construction and record drawings.

Maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C); Refer to attachment titled "Location Map"

A description of any necessary water and land rights and pertinent water supply and water quality information, if appropriate (004.01 D);

The water supply is through a water right granted to Loup Basin Reclamation District and managed by Farwell Irrigation District, through the State of Nebraska from the year 1954. All land used for this project is currently owned by the District and easements are in place in other areas that are not owned.

A discussion of each component of the final plan including, when applicable (004.01 E); The plan is to begin building risers and turnouts in early spring and throughout the 2019 year. In the fall of 2019, begin burying the system. The spring of 2020, finish any necessary work and have the pipeline ready for the 2020 irrigation season.

Required geologic investigation (004.01 E 1); None were needed.

Required hydrologic data (004.01 E 2); Original designs with elevations and flow were provided to Miller and Associates to assist in their evaluation and design of the project.

Design criteria for final design including, but not limited to, soil mechanics, hydraulic, hydrologic, structural, embankments and foundation criteria (004.01 E 3). All pipe will be buried within the existing open ditch and will not require significant digging. An average depth from the ground surface to the pipe is 5-6 feet. The farm turnouts will stub off of the pipeline where the original service was provided.

- 1(b). If no (non-structural), submit data necessary to establish technical feasibility including, but not limited to the following (004.02):

A discussion of the plan of development (004.02 A);  
Click here to enter text.

A description of field or research investigations utilized to substantiate the project conception (004.02 B); Click here to enter text.

A description of the necessary water and/or land rights, if applicable (004.02 C); Click here to enter text.

A discussion of the anticipated effects, if any, of the project upon the development and/or operation of existing or envisioned structural measures including a brief description of any such measure (004.02 D).  
Click here to enter text.

2. Provide evidence that there are no known means of accomplishing the same purpose or purposes more economically, by describing the next best alternative. In an effort to conserve and manage irrigation water, there is no known alternatives that will accomplish that goal. A pipeline eliminates

all losses due to evaporation, seepage, and spill needed to maintain flow at the end of the lateral. There are other improvements that can be done such as gate controls and lining of open ditches, but these options don't conserve as much water and don't last as long as a pipeline. Considering the unlimited life time of a pipeline, the economical saving far exceeds any other project.

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 shall be fifty (50) years or with prior approval of the Director, up to one hundred (100) years [T261 CH 2 (005)].

- Describe any relevant cost information including, but not limited to the engineering and inspection costs, capital construction costs, annual operation and maintenance costs, and replacement costs. Cost information shall also include the estimated construction period as well as the estimated project life (005.01). The engineering and inspection have already been complete. Additionally, cost associated with other materials, labor, and equipment use were compared to past project of similar size. The total cost for this project is estimated at \$790,000. All of the selected pipe is priced on current rates provided from Diamond Plastics. The engineering performed by Miller and Associates analyzed the sizing of the pipe to be installed, based on required flow capacities in each section and head pressure to supply water to all farms equally. Once the project is operational, annual operational cost are \$0. Any repairs that may occur will be done in-house by the Irrigation District and will be minimal. The projected construction period is estimated to be 1 year. The durable PVC of the pipe will last far into the undetermined future and steel riser pipe will be galvanized to also extend longevity. An estimated project life could be 75-100 year's.
- 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 any intangible or secondary benefits 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, such that the economic feasibility of the project can be approved by the Director and the Commission (005.02). The primary tangible benefit of this project will be the prevention of water lost due to evaporation, seepage, and spill at the end of the lateral. Based on 2017 data, the amount of water diverted, minus water delivered for irrigation was a difference of 454.41

Acre Feet. Which is the amount of water that could have been saved in 2017, and that amount could be more in the future, depending on the weather. Every year following the completion of this project, for the next 75-100 years, would amount in a significant water savings, providing the opportunity to make this water available for beneficial use for downstream users. Because there will be less of a demand every year, the water should not need to be diverted out of the Middle Loup River, and will benefit a range of downstream interests. The benefits of this recovered water will accrue over the full economic life of the project – which again is expected to be 75-100 years. The total project capital cost is \$790,000. Given a 75 year asset life, the capital cost of water recovered will be \$23.18 per acre-foot per year, based on 2017 data – which makes the economics of the project very attractive. By increasing the stream flow in the Middle Loup River, the project will also contribute to domestic uses downstream as far as the Missouri River, recreational opportunity, more habitat for endangered species, all during the summer months when the demand is at its peak. Furthermore, irrigation pumps along the River, with a higher stream depletion factor, will capitalize on the additional water.

- All benefit and cost data shall be presented in a table form to indicate the annual cash flow for the life of the proposal, not to exceed 100 years (005.03). This project will not generate revenue. The Farwell Irrigation District is a non-profit organization, looking for ways to improve water conservation and general operation efficiencies. This approach maximizes the benefit-to-cost ratio that can be achieved to ensure that maximum water savings are realized early in the Project Improvement program. An attachment titled “Project Cost” will break down total expenses associated with this project.
- 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, the economic feasibility of such proposal shall be demonstrated by such method as the Director and the Commission deem appropriate (005.04). By burying this lateral, it will conserve water that is lost to evaporation, seepage, and excess spill at the end of the lateral and will keep that water in the Middle Loup River which can then be used for other purposes downstream such as Endangered Species (River Otter, Whooping Crane, and Pallid Sturgeon), domestic uses, other irrigation, recreation, and hydropower. Additional benefits include the savings on chemicals used for treating aquatic vegetation, which also reduces environmental impacts, and allows for more habitat where the lateral once was and has the potential for other endangered species in the area to flourish (Small White Lady Slippers and Western Prairie Fringed Orchids).

4. Provide evidence that sufficient funds are available to complete the proposal. The Farwell Irrigation District is considered local Government with taxing authority, on a per acre basis, and have the ability to increase those rates annually for budget purposes. Also, in regards to larger project, the District has Bonding authority. Furthermore, you may refer to the District financial statements, provided as an attachment titled "2018 Budget." In the event that additional grants are not awarded and bonding is necessary, in the annual budget are items designated for Project Improvement and Project Improvement Reserve, which can be used as payment towards those projects and bonds. Additionally, the Project Improvement Reserve is in its third year and has accrued \$150,000 for 3 years, with a total of \$450,000 and is available immediately for this project.
  
5. Provide evidence that sufficient annual revenue is available to repay the reimbursable costs and to cover OM&R (operate, maintain, and replace). As previously stated the 2018 Budget for the District is attached. Also included is the current Financial Statement showing additional funds. However, those funds are not expected to be utilized for this project.
  
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 involved
  
7. Describe how the plan of development minimizes impacts on the natural environment.  
By utilizing the existing infrastructure, there will be no new development that will affect the natural environment. The pipeline will be put in place of the existing open ditch. This project provides wildlife benefits by increasing instream flows for other species, domestic uses, other irrigation, recreation, and hydropower. Additional benefits include the savings on chemicals used for treating aquatic vegetation, which also reduces environmental impacts, and allows for more habitat where the lateral once was and has the potential for other species in the area to flourish.
  
8. Explain how you are qualified, responsible and legally capable of carrying out the project for which you are seeking funds.  
By having an existing water right, existing facilities to work with, and annual budgets that has taxing authority and bonding authority, makes this project capable for implementation. Under our water right, the Nebraska Department of Natural Resources follows our operations to ensure we are within our legal right. Additionally, we operate locally since the 2002 title transfer, and no longer need to go through the Federal Government.
  
9. Explain how your project considers plans and programs of the state and resources development plans of the political subdivisions of the state.



The beneficiaries of the additional stream flow are each and every person and political subdivision who depends on that supply for their needs, geographically from the Middle Loup River in Custer County to where the Platte River meets the Missouri River.

10. Are land rights necessary to complete your project?

YES  NO

If yes, provide a complete listing of all lands involved in the project.  
[Click here to enter text.](#)

If yes, attach proof of ownership for each easements, rights-of-way and fee title currently held.  
[Click here to enter text.](#)

If yes, 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. [The Farwell Irrigation District is recognized as a Local Government, that is governed by a Board of Directors that oversee the best interests of the District and their water users. Also, the Statutes within the State of Nebraska give the authority to the District to make these types of decisions](#)
12. Identify the probable environmental and ecological consequences that may result as the result of the project. [There are no consequences identified as a result of this project. Only positive environmental benefits will be yielded through improved water quantity, while providing those benefits for Nebraska's ecosystem.](#)

## 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 in parenthesis. 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.

Water quality and river health improvements are achieved by eliminating the spill and exposer of canal water back into the river and into our groundwater. As diverted water makes its way through the canal system, it has increased exposure to

contamination by animal contact, aquatic vegetation control chemicals, on-farm practices and many others. The Irrigation District every year has to treat their open canal system to maintain general operation. This project will eliminate the use of those chemicals, such as, Diuron, 24-D, Round-up, Crop Oil, Nautique, and Copper Sulphate. Furthermore, the increased stream flow from un-diverted water for the Irrigation District, contributes to more uncontaminated water in the Middle Loup River that helps dilute the stream. The improved quality and quantity of the Middle Loup River will be shared by any municipality, domestic, or agricultural user from the upper stretches of the River to the Nebraska and Iowa boarder. Two major appropriators along the River is the City of Lincoln and the City of Omaha, who rely on that supply for their citizens. On any given year, Nebraska could experience a drought similar to what occurred in 2012. Looking back on a dry 2012 year, that water could have been very useful for a major part of the State, if this project was already in place. If quality and quantity issues can't be improved now, thing may only be worse the next time

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 Lower Loup NRD has an adopted "Voluntary IMP" that includes goals and objectives to address water quality and quantity issues by utilizing existing authorities. The IMP looks to implement an efficient and economical balance between current and future water supplies and demands. Burying open laterals have been implemented in Irrigation Districts across the 17 western States for decades and has seen the benefits of water conservation and economics of eliminating maintenance, which provides an opportunity for annual water savings to the Middle Loup River. The expected water savings will depend on the weather from year to year, but looking back on last year, 2017, lost water due to spill, evaporation, and seepage on this canal was 454.41 Acre Feet. The life expectancy of this project can be 75-100 years, improving the cost to benefit ratio every year of the projects existence. This type of project could be incorporated into the IMP during future annual reviews as an effort to avoid being Fully Appropriated. Prior to this proposal, the Farwell Irrigation District has been contributing to conservation by burying as much as 220 miles of open laterals in our canal system, identifying areas of the canal to be lined where major losses occur, and implementing automation. These practices have been on-going for more than 50 years and have proven to reduce the amount of water needed by 30% for the Irrigation District, based on our daily recorded data. The Irrigation District has record keeping dating back to the early 1960's and has implemented irrigation restriction throughout its existence. While the District continues to find ways to conserve water, other factors work against us such as unrestricted ground water pumping throughout the NRD, and along the Middle Loup River in areas that have a high stream depletion factor.

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.

Managing river basin sustainability requires intervening in those factors which can be controlled to ensure that water availability exceeds water consumption. Because there will be less of a demand every year, the water should not need to be diverted out of the Middle Loup River, and will benefit a range of downstream interests. By increasing the stream flow in the Middle Loup River, additional water will complement additional recharge as far down as the Missouri River and everywhere in between. The Irrigation District is strictly surface water and does not contribute to aquifer depletion, it only gives back due to seepage. The expected water savings will depend on the weather from year to year, but looking back on last year, 2017, lost water due to spill, evaporation, and seepage on this canal was 454.41 Acre Feet. These water savings can be expected for the life of this project which could be 75-100 years. That equates to more water every year in the Middle Loup River, a tributary of the Platte River reaching the Missouri River. Benefits along these basins will be but not limited to municipalities, specifically the City of Lincoln and the City of Omaha, domestic uses, agricultural uses, recreational uses, hydropower, and aquatic habitat.

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 project will contribute to multiple water supply goals including agricultural use, municipal and industrial uses, recreational benefits, wildlife habitat, conservation of water resources, and preservation of water resources. This project enhances water sustainability in river basins by providing these benefits. Agricultural Use – For farmers who use a mix of surface water and ground water, additional surface water will reduce pumping of groundwater and slow aquifer overdraft and greenhouse gas emissions. Note that for those farmers who presently pump from surface water supplies, required lift is significantly less than the lift from deep aquifers and so the energy input

requirements of pumping surface water are much lower than pumping ground water – with subsequent decrease of load on the supply grid and carbon emissions. In dry years, the additional water made available with this solution can mean the difference between a successful crop and a failed crop. Municipal and Industrial Uses - Increased surface water availability reduces the need for river diversions – thereby increasing instream flows and increasing aquifer recharge. The ability to contribute additional water to the Middle Loup River allows this water to be passed downstream when instream flows are lower. Water quality and river health improvements are achieved by eliminating the spill of irrigation water back into the river. Recreational Benefits - retaining more water in the River will promote recreational benefits for all users along the reach of the system. Recreational benefits are provided by the ability to contribute more available flows so that more water can be utilized for fishing, camping, boating and many other aquatic sports. Wildlife Habitat - reducing water demand reduces the need for river diversions. Wildlife habitat will benefit from the available flows to buffer low flow situations that can occur late in the year. This will assist migratory bird species and other wildlife that relies on abundant water availability, including endangered species such as the River Otter, Whooping Crane, and Pallid Sturgeon. Also, since the canal will no longer be an open water ditch, that area has the potential for other endangered species in the area to flourish, such as Small White Lady Slippers and Western Prairie Fringed Orchids. Water quality and river health improvements are achieved by eliminating the spill of irrigation water that is exposed to on-farm practices and aquatic chemicals back into the river. Conservation and Preservation of Water Resources – Making more water available to the river system is beneficial, especially in times of water scarcity, by conserving water resources being diverted. The ability to enhance stream flows will enhance recharge along the river systems which will also conserve aquifer volume and groundwater availability in the State. These benefits of enhanced groundwater recharge, increase instream flows and improved water quality to all users in the river basins.

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 project will increase the beneficial use of Nebraska’s water resources by making more surface water available, by enhancing aquifer recharge, and by increases instream flows. The project will not result in any decrease or reduction in beneficial uses. The project provides a beneficial impact to the state’s residents by sustaining agricultural yields by use of irrigation, increasing instream flows to downstream users, ensuring cleaner water flows to downstream users, and for farmers who use a mix of surface water and ground water, additional surface water will reduce pumping of groundwater and slow aquifer overdraft and greenhouse gas emissions. Required lift from surface water is significantly less than the lift from deep aquifers and so the energy

input requirements of pumping surface water are much lower than pumping ground water – with subsequent decrease of load on the supply grid and carbon emissions.

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 estimated project cost is \$790,000. The cost of the project is broke down on the attachment titled “Project Costs.” Cost associated with other materials, labor, and equipment use were compared to past project of similar size. The pipeline will save on O/M cost by eliminating any O/M in the future. The engineering performed by Miller and Associates analyzed the sizing of the pipe to be installed, based on required flow capacities in each section and head pressure to supply water to all farms equally. The pipeline is designed to follow the same path as the current open ditch, thus not needing to acquire land and there will be no changes to our current water right. Looking back on last year, 2017, lost water due to spill, evaporation, and seepage on this canal was 454.41 Acre Feet. These water savings can be expected for the life of this project which could be 75-100 years, improving the cost to benefit ratio every year of the projects existence. Using a 75-year asset life, the capital cost of water recovered will be \$23.18 per acre-foot per year, based on 2017 data – which makes the economics of the project very attractive. In an effort to conserve and manage irrigation water, there is no known alternatives that will accomplish that goal. A pipeline eliminates all losses from evaporation, seepage, and spill, which is necessary to maintain flow at the end of the canal. There are other improvements that can be done such as gate controls and lining of open ditches, but don’t conserve as much water and doesn’t have the life expectancy of a pipeline. Considering these options, the economical saving of a buried pipeline far exceeds any other potential project

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 Middle Loup River is a constant source of water to the Platte River as a main tributary. Federal laws such as the Endangered Species Act help to protect the Pallid Sturgeon, River Otter, and Whooping Crane in the Lower Platte. The Clean Water Act and the Safe Drinking Water Act will potentially benefit as well from additional water

flows to the Lower Platte. The Middle Loup, Loup, and Platte Rivers have a tremendous number of users in and along their system. These users have appropriations with priority dates attached, subordination agreements, and in-stream flow permits, that on any given year can be affected due to drought-like conditions. In drought years, calls can be made on appropriators, payments made mandatory through agreements, and harm can be expected to federally-protected endangered species if stream flows are depleted. As long as river flows can be maintained or increase by projects like this one, future compacts and decrees can be avoided.

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 current ditch is 4.1 miles in length, of which 3.78 mile will be replaced with a pipeline. The top 0.32 of a mile will remain open water but will have regulated flow going into the pipeline by a Rubicon gate system with automation to maintain a consistent water supply. The 4.1-mile canal has 1,593.4 certified irrigated acres supplied from this ditch. During a significant rain event, erosion and washing out of critical infrastructure can cause additional harm to lands that experience resulting flooding, by wiping out crops and will interrupt irrigation supply for those acres downstream of the washout until repairs can be made. Lightening can have the same affect if a large number of pivot systems along the same canal experience a power outage and all that water can back up in the canal rather than flowing through the pivot. Serious economic consequence such as crop loss or absence of supplied irrigation water can be expected in an already struggling agricultural economy. These types of events will be avoided by a project like this, while eliminating any public threat of accidents that occur around open water, such as drowning.

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.

Water quality and river health improvements are achieved by eliminating the exposure to contamination by animal contact, aquatic vegetation control chemicals, on-farm practices and many other sources. Eliminating an open ditch prevents these contaminants from being introduced to the canal and eventually returning to the river from excess spill and field runoff. The increased instream flows that result from eliminating spills, evaporation, and seepage allows for decreased demand for diversions. This will enhance groundwater recharge due to the additional water in the river, which contributes to more fresh water in the Middle Loup River that helps dilute the stream of existing pollution. The project will improve the water quality for downstream users and provide accompanying improvements in river health. This project is capable of impacting water quality of a large portion of the State and its water supply far into the future. This project will benefit all users who depend on this water across an area of the State, starting in northeast Custer County, all the way through Lincoln and Omaha to the Missouri River. This impacts heavily populated communities along the Middle Loup River, the Loup River, and part of the Platte River, which cuts through a large portion of Nebraska

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 Farwell Irrigation District is recognized as a Local Government, that is governed by a Board of Directors that oversee the best interests of the District and their water users. Also, the Statutes within the State of Nebraska give the authority to the District to make these types of decisions. The Farwell Irrigation District has taxing authority, on a per acre basis, and have the ability to increase those rates annually for budget purposes. Also, in regards to larger project, the District has Bonding authority. Furthermore, you may refer to the District budget statements, provided as an attachment titled "2018 Budget." In the event that additional grants are not awarded and bonding is necessary, in the annual budget are line items designated for Project Improvement and Project Improvement Reserve, can be used as payment towards those projects and bonds. Additionally, the Project Improvement Reserve is in its third year and has accrued \$150,000 for 3 years, with a total of \$450,000 and is available immediately for this project. Also included is the current Financial Statement showing additional funds. However, those funds are not expected to be utilized for this project. Currently the District is seeking other grants and have received funding from those environmental sources for this same kind of project in past years.

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 Farwell Irrigation District has invested millions of dollars in infrastructure to conserve as much of their water supply as possible. Prior to this proposal, the Irrigation District has been contributing to conservation by burying as much as 220 miles of open laterals in their canal system, identifying areas of the canal to be lined where major seepage occurs, and implementing automation. These practices have been on-going for more than 35 years and have proven to reduce the amount of water needed by 30% on average for the Irrigation District. While the District continues to find ways to conserve water, other factors work against them such as unrestricted ground water pumping along the Middle Loup River in areas that have a high stream depletion factor. This is one of many reasons why the District must continue identifying ways to stretch our water supply. Basin sustainability is improved by maximizing the availability of water in the river. By increasing efficiencies within our Irrigation Districts, we can provide more water availability in the river at times of shortage late in the season and increase a sustainable water supply into the future. This increased water supply will be utilized by any ground water or surface water user around and along the Middle Loup, Loup, and Lower Platte Rivers, crossing largely populated communities and multiple recreation and agricultural beneficiaries.

## 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.

Any time there is a drought in our State, it is a major issue that can be detrimental to all. On any given year, Nebraska could experience a drought similar to what occurred in 2012. Looking back on a dry 2012 year, the water saving that are being proposed in this application, could have been very useful for a major part of Nebraska, had this project already in place. If quality and quantity issues can't be improved now, thing may only be worse the next time. Because the Middle Loup, Loup, and Lower Platte Rivers impact such a large part of the State, this project could be extremely beneficial for thousands, if not millions of domestic and agricultural users in

Nebraska. The intent of the Water Sustainability Grant is to implement ways to improve and sustain our States water supplies. This project has been proven to do just that with the miles of pipeline already buried and will continue to eliminate those issues far into the future by increasing the amount of water available to supplement River flows.

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.

Other funding sources will be tapped as this project progresses. At this point the Water Sustainability fund is the first attempt to obtain funding due to its timing for applications. Other opportunities that will be sought after are NRD's, Nebraska Environmental Trust, and Water Smart. If multiple funding is provided for this project, the governing Board of the Farwell Irrigation District will decide which funds to utilize and how they will be utilized. Additionally, the Farwell Irrigation District has already committed to this project using their District funds, even if other opportunities fail.

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 water sheds to be affected is the majority of the Middle Loup River, all of the Loup River and the Lower Platte River where the Loup River flow into. By eliminating these loss components from spill, evaporation, and seepage, effectively increases the water in the river because demand for water will decrease. More water in the river means increased habitat for aquatic species, additional groundwater recharge, and cleaner water by eliminating the exposure to contamination of animal contact, aquatic vegetation control chemicals, on-farm practices and many other sources.

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 Farwell Irrigation District monitors on a daily basis the river diversions from the Middle Loup River, the canal and lateral diversions, monitors through meters the farm turnout diversions, and any excess spills out the end of the canals and laterals. The Department of Natural Resources has measuring devices that are read by State officials as well. The Department provides a monthly report based upon those readings. All of the information is used as a part of the annual report done by the Department of Natural Resources and eventually can be used in regards to State Water Planning activities

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.

The Endangered Species Act is a Federal Mandate to protect species like the Pallid Sturgeon, River Otter, and Whooping Crane in the Loup and Lower Platte basins. The Clean Water Act and the Safe Drinking Water Act will potentially benefit as well from additional water flows into the Loup and Lower Platte basins. The water saved by this project will only assist in the protection of that species and to sustain a reliable and clean water supply for our State.

## Section D.

### PROJECT DESCRIPTION

#### 1. Overview

In 1,000 characters *or less*, provide a brief description of your project including the nature and purpose of the project and objectives of the project.

This project is proposing to bury 3.78 miles of open lateral, known as lateral 8.3, within our irrigation works, into PVC pipe. Since the early 1970's the Farwell Irrigation District has been burying laterals in our project and have seen a water savings of 30 to 35 percent since that time. It's been a goal of the District to continue burying laterals until the final section is done. The 8.3 lateral is 4.1 miles long, and 3.78 miles of that will be buried. The top 0.32 of a mile will be left open because of elevation and pipe size reasons. Instead, an automated Rubicon gate will be used at the top of the lateral to regulate the amount of water that is diverted into this section. This same design was used on our last project because of similar reasons and has been successful. By burying this lateral, it will conserve water that is described as "losses" due to spill, evaporation, and seepage and will keep that water in the Middle Loup River which can then be used for other purposes downstream such as Endangered Species (River Otter, Whooping Crane, and Pallid Sturgeon), domestic uses, other irrigation, recreation, and hydropower. Additional benefits include the savings on chemicals used for treating aquatic vegetation, which also reduces environmental impacts, and allows for more habitat where the lateral once was and will create additional habitat for other endangered species in the area to flourish (Small White Lady Slippers and Western Prairie Fringed Orchids). These benefits reach far across the State starting at the upper reaches of the Middle Loup River, all of the Loup River, and continues through the Lower Platte River into the Missouri River.

#### 2. Project Tasks and Timeline

Identify what activities will be conducted by the project. For multiyear projects please list what activities are to be completed each year.

The plan is to begin building risers and turnouts in early spring and throughout the 2019 year. In the fall of 2019, begin burying the system into pipe. The spring of 2020, finish any necessary work and have the pipeline ready for the 2020 irrigation season.

#### 3. Partnerships

Identify the roles and responsibilities of agencies and groups involved in the proposed project regardless of whether each is an additional funding source. List

any other sources of funding that have been approached for project support and that have officially turned you down. Attach the rejection letter.

At this time the Farwell Irrigation District Board has approved this project and have committed to move forward with it regardless of other funding sources. The majority of the funding has been saved over previous years budgets and is ready to begin funding this project. The Irrigation District is doing all the civil work, by preparing, constructing and installing the pipeline system. Additional funding sources will be sought when those opportunities become available.

#### 4. 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 entire estimated cost of the project is expected to be \$790,000, comprising of materials, equipment use and labor. Of that total amount, we are requesting 60% or \$474,000. The overall materials expenses are estimated to be \$490,834, which exceed the 60% by itself, which we will be requesting reimbursement from the Water Sustainability Fund for. At this time the Farwell Irrigation District Board has approved this project and have committed to move forward with it regardless of other funding sources. The majority of the funding has been saved over previous years budgets and is ready to begin funding this project. The Irrigation District is doing all the civil work, by preparing, constructing and installing the pipeline system. Additional funding sources will be sought when those opportunities become available

#### 5. Support/Opposition

Discuss both support and opposition to the project, including the group or interest each represents.

The Farwell Irrigation District Board as adopted this project. They are an elected Board to represent the best interests of the entire District. No parties, groups or others have expressed opposition.

## Project Costs

### Pipe (Current Prices)

36"	1475'	\$53.61/ft	\$ 79,074.75
30"	1300'	\$37.19/ft	\$ 48,347.00
27"	4575'	\$36.15/ft	\$ 165,386.25
24"	1545'	\$20.80/ft	\$ 32,136.00
18"	32'	\$13.34/ft	\$ 426.88
15"	7743'	\$8.81/ft	\$ 68,215.83
12"	472'	\$5.61/ft	\$ 2,647.92
8"	2845'	\$2.20/ft	\$ 6,259.00
			\$ 402,493.63

### Parts/Fittings (from 2016 project)

\$ 57,780.00

### Rubicon Gate (from 2106 project)

\$ 33,434.00

### Labor (hours worked from 2016 project)

14 Employees      4442 hours/current wages      \$ 131,496.37

### Equipment (hours of use from 2016 project)

13 pieces of Equipment      at various rates      \$ 164,796.00

### Total Project Costs

\$                      790,000.00

**FARWELL IRRIGATION DISTRICT**

July 10, 2018

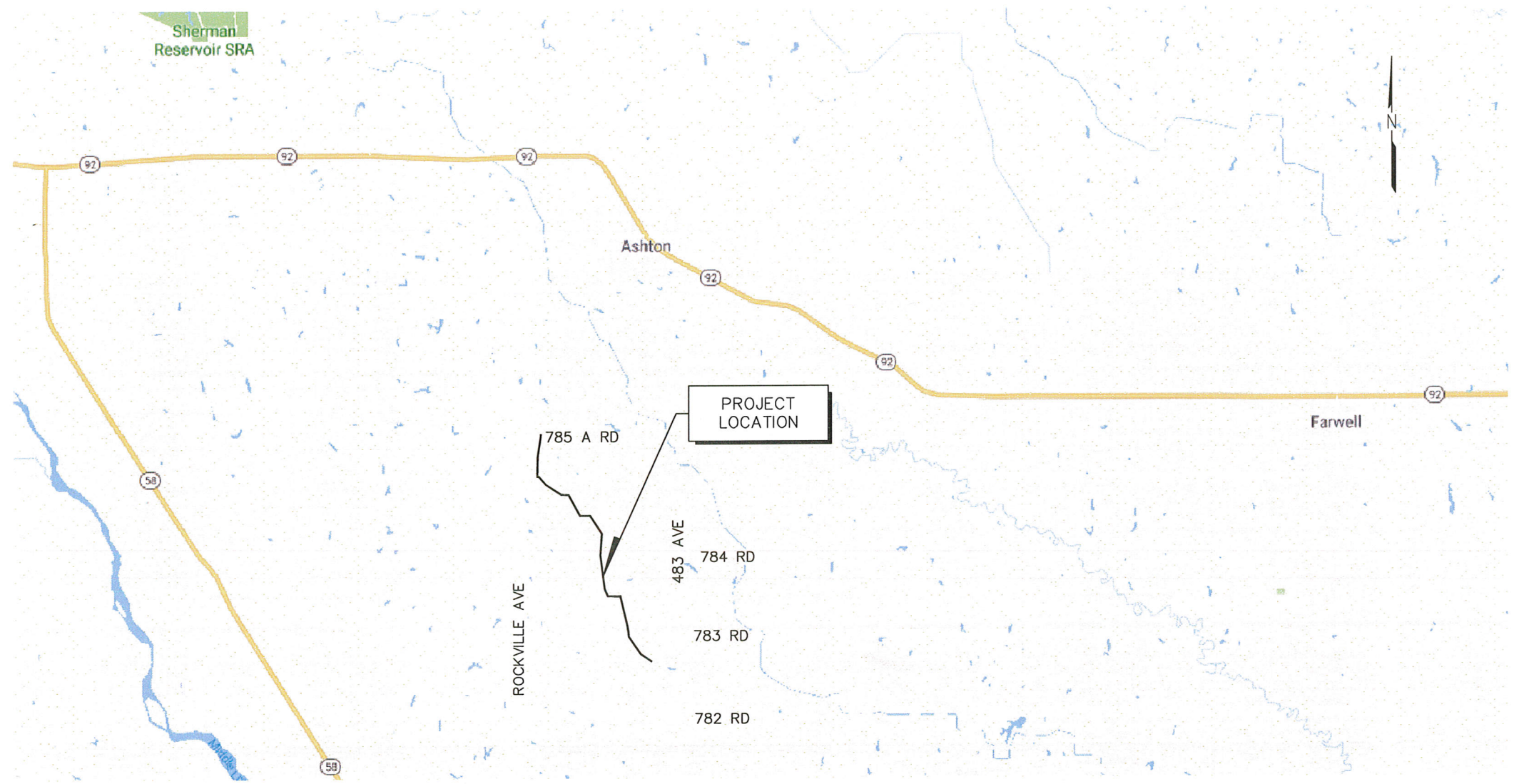
<i>Date</i>		<i>Maturity</i>			<i>Interest</i>		
<i>Purchase</i>	<i>CD #</i>	<i>Date</i>	<i>Purchased From</i>	<i>Amount</i>	<i>Rate</i>	<i>Amount + Int.</i>	<i>Notes</i>
07/13/17	3	7/13/18	Cornerstone Bank	100,000.00	0.80	102,096.35	
07/20/17	)	7/20/18	Pathway Bank	125,000.00	1.15	125,362.33	Aug. bills '18
09/08/17	i	9/8/18	Town & Country Bank	125,000.00	1.25	127,515.78	Sept. bills '18
09/09/17	i	9/9/18	Citizens Bank & Trust	125,000.00	0.95	127,592.83	
09/15/17	l	9/15/18	Pathway Bank	100,000.00	1.20	102,376.02	Oct. bills '18
06/21/17		9/21/18	Five Points Bank	100,000.00	1.00	100,501.99	
10/09/17		10/9/18	Pathway Bank	125,000.00	1.35	127,254.78	Nov. bills '18
10/10/17		10/10/18	Ericson State Bank	200,000.00	1.35	203,533.94	bond paym.
11/16/17		11/15/18	Citizens CDARS-Evergreen IL	45,000.00	1.15	57,499.65	Middle Loup
01/08/18		1/8/19	Pathway Bank	100,000.00	1.60	102,265.04	
01/09/18		1/9/19	Cornerstone Bank	100,000.00	1.05	101,270.11	Jan. bills '19
01/11/18		1/10/19	Citizens CDARS-Fairfax, VA	125,000.00	1.62	128,600.40	Middle Loup
01/11/18		1/10/19	Cit. CDARS-Tulsa, OK-Fairfax VA	100,000.00	1.62	105,965.01	Middle Loup
01/11/18		1/10/19	Citizens CDARS-Fairfax, VA	100,000.00	1.62	106,553.34	Middle Loup
08/04/17		2/4/19	Columbus United Credit	125,000.00	0.85	131,908.69	Feb. bills '19
06/15/18		2/15/19	Hendersen St. Bank-Greeley	100,000.00	1.00	102,191.75	Mar. bills '19
06/27/17		3/28/19	Hendersen St. Bank-Greeley	125,000.00	1.10	126,960.00	Apr. bills '19
05/26/18		4/26/19	Columbus United Credit	100,000.00	1.60	100,908.97	May bills '19
05/03/18		5/3/19	Cornerstone Bank	100,000.00	1.05	102,026.06	bond paym.
05/03/18		5/3/19	Cornerstone Bank	100,000.00	1.05	102,026.06	bond paym.
05/17/18		5/17/19	State Bank of Scotia	100,000.00	1.70	104,339.33	June bills '19
12/20/17		6/20/19	Boelus State Bank	125,000.00	1.65	130,845.67	
06/21/18		6/21/19	Homestead Bank	150,000.00	1.40	150,359.18	July bills '19
12/27/17		6/27/19	Boelus State Bank	100,000.00	1.65	104,676.54	
07/01/18		7/1/19	Ashton State Bank	200,000.00	1.80	206,706.32	
07/03/18		7/3/19	State Bank of Scotia	100,000.00	1.70	100,000.00	
07/10/18		7/10/19	Bank of Clarks	100,000.00	1.40	101,854.66	
07/12/18		7/12/19	Citizens CDARS	100,000.00	1.95	102,776.60	Mid. Loup
07/03/18		8/3/19	Cornerstone Bank	150,000.00	2.05	150,000.00	
05/06/18		8/6/19	Pathway Bank	100,000.00	1.95	103,056.85	Aug. bills '19
07/02/18		10/2/19	Pinnacle Bank	125,000.00	1.74	126,901.28	Oct. bills '19
07/02/18		10/2/19	Pinnacle Bank	100,000.00	1.74	100,000.00	fall maint.
07/10/18		12/10/19	Town & Country Bank	100,000.00	1.91	100,000.00	Dec. bills '19
05/14/18		5/14/20	Security St. Bank-Ansley	100,000.00	1.90	106,465.20	
06/25/18		6/25/20	Security St. Bank-Ansley	100,000.00	2.25	106,465.19	
<b>TOTAL</b>				<b>\$ 3,970,000.00</b>		<b>\$ 4,078,855.92</b>	

CDARS-notify by Tuesday of week before if cashing in-no grace period

<b>FARWELL IRRIGATION DISTRICT</b>		2018 <i>Budget</i>	
<b>ADMINISTRATION</b>	<i>APPROVED BUDGET</i> 2017	<i>Expenses 2017</i>	<i>Projected Budget</i> Expense 2018
Payroll-Pension-SS	900,000	873,870	900,000
Health	250,000	218,826	250,000
Unemployment Ins.	2,000	322	2,000
Office	5,000	3,930	5,000
Gen. Expense	20,000	19,354	20,000
Legal Fees	5,000	1,465	5,000
Travel	10,000	11,022	14,000
Director Salary	8,400	8,400	8,400
Prof. Services	15,000	4,300	15,000
Mid.Loup Contingency	28,800	28,800	28,800
Excess Water	5,000		5,000
<b>TOTAL</b>	<b>1,249,200</b>	<b>1,170,289</b>	<b>1,253,200</b>
<b>OPERATIONS</b>			
Proj. Maintenance	20,000	21,569	41,000
Utilities	25,000	15,375	25,000
Lia. Ins.	60,000	58,253	62,000
Electric Power	75,000	71,073	75,000
Equip Use & Shop	170,000	117,246	170,000
Building & Grounds	6,000	4,873	6,000
Chemicals	2,000	81,188	2,000
Tire Program	20,000	18,660	20,000
<b>TOTAL</b>	<b>378,000</b>	<b>388,238</b>	<b>401,000</b>
<b>FIXED</b>			
Bond Payment	354,836	354,836	360,107
Equipment	65,000	128,254	70,000
Project Improve Frahm	-		406,000
Proj.Improve-Autom.	200,000	145,372	200,000
Proj. Improve.Reserve	150,000	150,000	150,000
<b>TOTAL</b>	<b>769,836</b>	<b>778,462</b>	<b>1,186,107</b>
<b>TOTAL</b>	<b>2,397,036</b>	<b>2,336,989</b>	<b>2,840,307</b>
<b>INCOME</b>			
	<i>2017 BUDGET</i>	<i>INCOME 2017</i>	<i>PROJECTED BUDGET</i> <i>INCOME 2018</i>
Water Tolls	1,388,777	1,388,777	1,388,777
Assessment	908,046	908,047	908,046
Extra Water	2,000	4,224	2,000
Interest	7,500	16,875	7,500
Other	40,000	42,756	40,000
Reserves	50,713		493,984
<b>TOTAL</b>	<b>2,397,036</b>	<b>2,360,678</b>	<b>2,840,307</b>



INDEX OF DRAWINGS	
SHT. NO.	DESCRIPTION
G-1	TITLE SHEET & INDEX
G-2	LOCATION MAP & NOTES
3-16	PLAN & PROFILES
17	DETAILS



**LEGEND**

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	HEDGE ROW, TREELINE, WOODS		PROPERTY LINE
	HEDGES, BUSHES, SHRUBS OR WOODS		CENTERLINE
	DECIDUOUS TREE AND TRUNK SIZE		SECTION LINE
	CONIFEROUS TREE AND TRUNK SIZE		RIGHT-OF-WAY
	GAS METER OR REGULATOR		PERMANENT EASEMENT
	WATER METER		CONSTRUCTION EASEMENT
	PROPOSED WATER VALVE		12" WATER MAIN AND SIZE
	EXISTING WATER VALVE		36" STORM SEWER AND SIZE
	PROPOSED FIRE HYDRANT		12" SANITARY SEWER AND SIZE
	EXISTING FIRE HYDRANT		OVERHEAD ELECTRICAL LINE
	ELECTRICAL BOX		UNDERGROUND ELECTRICAL LINE
	POWER POLE		UNDERGROUND TELEPHONE LINE
	POWER POLE WITH LIGHT		UNDERGROUND GAS LINE
	GUY WIRE		UNDERGROUND CABLE TV LINE
	TRAFFIC LIGHT		UNDERGROUND FIBER OPTIC LINE
	TELEPHONE RISER		EXISTING GROUND CONTOUR
	STREET SIGN		NEW GROUND CONTOUR
	MAILBOX		DRAINAGE COURSE OR FLOW LINE
	SECTION CORNER		CURB INLET
	CONTROL POINT, TBM		GRATE INLET
	PROPERTY PIN		MANHOLE
	CULVERT		CLEANOUT
	RAILROAD TRACKS		MONITOR WELL LOCATION
	BASE LINE		
	FENCE		

FARWELL IRRIGATION DISTRICT-LATERAL 8.3 IMPROVEMENTS  
**LOCATION MAP & INDEX**  
 FARWELL, NEBRASKA

PRELIMINARY  
 FOR REVIEW

**VERIFY SCALES**

BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

SCALE:	AS SHOWN
PROJECT NO.:	416-P1-001
DATE:	MAY, 2018
FIELD BOOK:	M&A DWG NO.
DRAWN BY:	LMA
APRVD BY:	
SHEET	<b>2</b>