



WATERSMART GRANT APPLICATION

Buford Trenton Irrigation District

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Technical Proposal and Evaluation Criteria

Executive Summary

Date: April 2017

Applicant: Buford Trenton Irrigation District (BTID)

DUNS # 084114750 - CAGE code 4L4C7 – Tax ID# 45-0213744

Location: Trenton, Williams County, North Dakota

This project will install Plastic Irrigation Pipe (PIP) to supply water to fields currently under irrigation. The new water supply pipe will eliminate the need for existing open supply ditches that will be closed as part of this project. The project will also install drain pipes to remove water that naturally falls on the field that would have previously entered the ditch. The BTID is an eligible applicant as an organized irrigation district that has water delivery authority and is located in North Dakota. The applicant will use this grant to fund the project along with district funds in the form of In-Kind Contributions.

This project will install It is planned that all work to install pipe as well as earthwork will be completed by the maintenance staff of the Buford Trenton Irrigation District using BTID owned equipment. The project is planned to be completed in the 2017 construction season while accommodating the crop growing season. All work will be complete before the 2018 growing season.

All work will occur within the Buford Trenton Irrigation District boundary.

Background Data

The Buford-Trenton Project lands lie along the north bank of the Missouri River adjoining the towns of Buford and Trenton, North Dakota. Water is supplied to 10,671 acres of irrigable land by pumping directly from the Missouri River into a main canal and laterals.

The Bureau of Reclamation constructed the irrigation and drainage system in 1940-1943. The Department of Agriculture supervised the land preparation, settlement, and agricultural planning. Labor was supplied by the Works Projects Administration, the Civilian Conservation Corps, and the Civilian Public Service. Principal crops produced are sugar beets, alfalfa, wheat, barley, oats, and pasture.

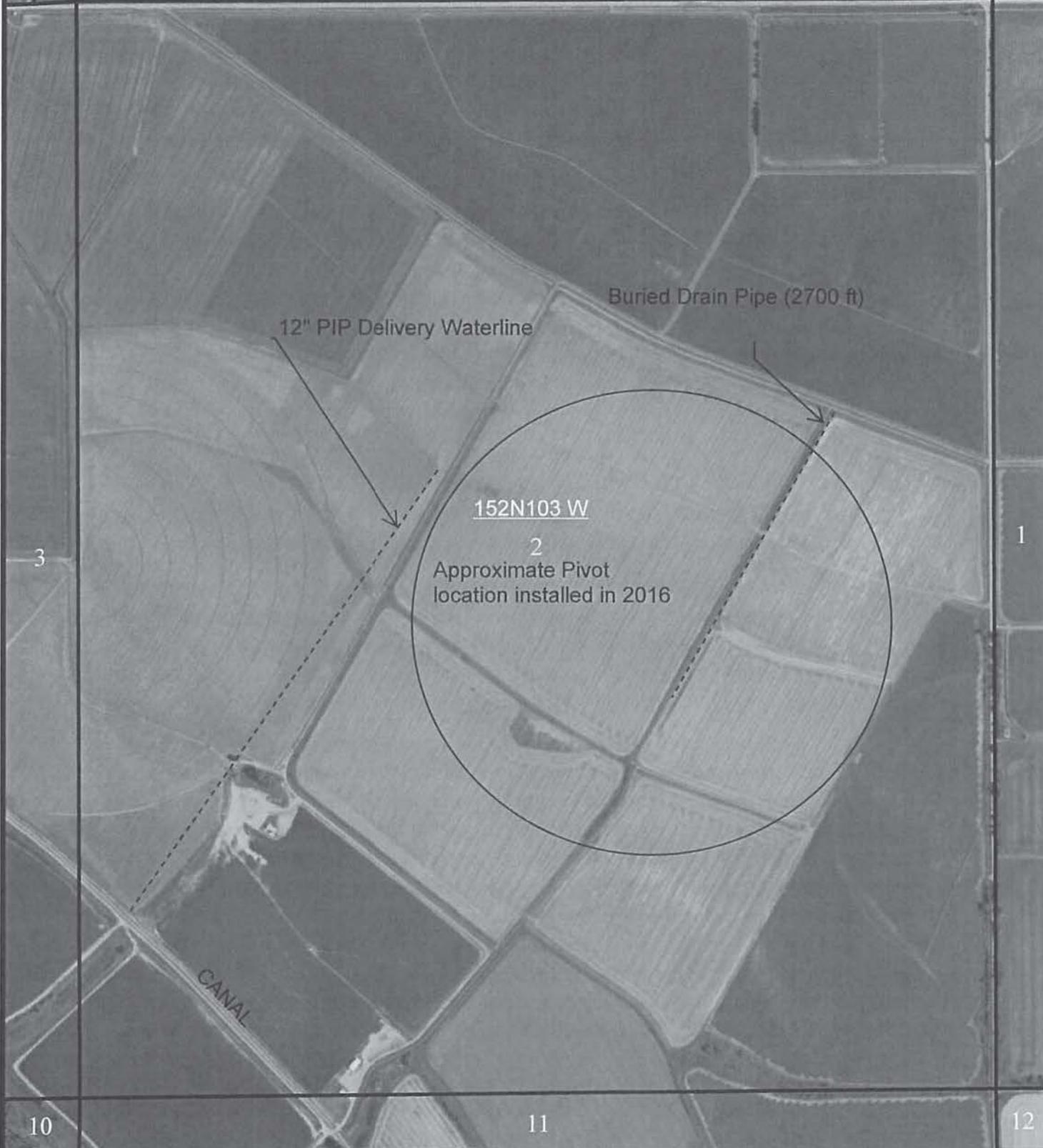
Water for the project is pumped from the Missouri River at a point about 1.5 miles above its confluence with the Yellowstone River. The plant has three pumps, each having a capacity of 80 cubic feet per second and an average lift of 29 feet. The pumps discharge into the main canal, which is 11.5 miles long and has an initial capacity of 250 cubic feet per second. The canal is unlined except for a 2-mile section of clay lining around Trenton Lake. The distribution and drainage systems include 34 miles of laterals and 31.6 miles of drains.

Exhibit A

31

32

33



12" PIP Delivery Waterline

Buried Drain Pipe (2700 ft)

152N103 W

2

Approximate Pivot location installed in 2016

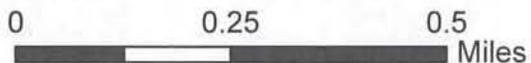
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State: North Dakota
County: Williams
Township: 152N 103W
Section: 2



Nearest Town: Williston
Direction to Town: NorthEast
Distance to Town: 9 mile

Project Description

In the construction season of 2016, a BTID irrigator installed a center pivot sprinkler irrigation system to supply water to an existing irrigated crop field in the BTID. The field had previously been irrigated with siphon tubes and furrow irrigation methods. A delivery pipeline of Plastic Irrigation Pipe (PIP) along with a centrifugal pump was also installed to bring water from the BTID canal to the pivot point. The new pivot is located on field in Section 2 of Township 152 North and Range 103 West. There remain fields around the pivot in that same section of land that are still irrigated with furrow irrigation. These remaining furrow irrigated fields require significant less water in the supply ditch than before the pivot was installed. It is planned that this water would now be supplied by installing PIP delivery pipe to field itself and associated field delivery ditches. Removing the supply ditch will significantly reduce water losses to deep percolation and evaporation as well as reducing ditch maintenance expenses.

The installation of the sprinkler irrigation changes the course of water flow across the fields. It is necessary to leave drain ditches to accommodate the furrow irrigated fields while not impeding the sprinkler application. Buried piping to pass the drain water from the furrow fields is also planned. The installation of drain tile will be installed to remove the surface water that accumulates in the sprinkler applied field resulting from natural precipitation.

Also included in this project is the installation of a new field approach that is necessary as a result of removing the supply ditch along with the effort to close the supply ditch.

Evaluation Criteria

Evaluation Criterion A – Planning Efforts Supporting the Project

The project will help the District achieve its goal of water conservation by reducing water lost in the system to deep percolation and evaporation. This project will also assist the district in their goal of reduced ditch maintenance by removing ditches from the system. An important goal of the district is to reduce the amount of tailwater that the system has to handle. Installing sprinkler irrigation for field application greatly reduces the amount of tailwater leaving a field. The completion of the conversion through of this field to sprinkler irrigation contributes to that goal while ensuring that all fields remain irrigated.

Evaluation Criterion B – Project Benefits

The water was supplied to the field prior to the installation of the sprinkler irrigation pivot in 2016 though canals and ditches. The canal is approximately 5284 feet long and is comprised of compacted clay and silt soils and unlined. The canal supplied 4-5 heads of water to multiple fields that were conventionally irrigated with furrows. The seepage rate in the canal was estimated at 2.5 gal/ft²/day. The average end area of the canal is 40.3 ft² for an estimated seepage of 100.8 gallons per day which is about 0.34 ft per day. The installation of the pivot

and supply water pipeline reduces these losses to almost nothing but does not allow for irrigation of the fields adjacent to the pivot. Completion of this project accomplishes the total water savings identified while allowing the total irrigated acres to remain the same.

Evaluation Criterion C – Project Implementation

The project consists of four tasks; install supply water pipeline to the field adjacent to the pivot, install drain pipe to remove any surface water under the pivot, install a new field approach and finally close the ditch that will no longer flow supply water to the fields.

The installation of the supply water pipeline will be the first priority. The pipeline will be designed to flow 1.5 heads of water. The pipeline route will be surveyed and grade controlled within the design. Provisions will be included in the design to prevent freezing of the water within the pipe and other appropriate maintenance needs. Procurement of the pipe will begin as soon as the design verifies the correct size and class of pipe. Construction of the pipeline will accommodate the impacts to growing crops within the affected fields and will be completed prior to winter 2017-18 freeze-up.

This will be followed by the installation of the drain tile within the previously constructed pivot irrigation field. The drain would be sized to accommodate the surface water that cannot naturally leave the field with the removal of the field drains. This process would also begin with an investigation and design prior to the procurement of the pipe. Once again construction of the pipeline will need to accommodate the impacts to growing crops within the field and will be completed prior to winter 2017-18 freeze-up.

The final projects consisting of the installation of the field approach and ditch closure are not time sensitive and will be completed on an intermittent basis depending on staff workload and weather conditions.

Evaluation Criterion D – Nexus to Reclamation

The proposed activities are on irrigated land served with water from the Buford Trenton Irrigation District which is an authorized Reclamation Project. It is located on Reclamation project lands and utilizes the Reclamation facilities that pump the water from the river into the delivery system. The project will change the existing delivery system of the District supplied water to make it more efficient and will reduce water losses at this localized site. It will not add or remove water from the existing system and does not impact any Tribe.

Environmental and Cultural Resources Compliance

The project will have a temporary negative effect on the environment during construction but will have a long term positive effect in the area. The installation of buried pipelines will result in short term dust addition to the air caused by the process of trenching. An effort will be made to

minimize trenching on windy days. Water quality and quantity are negatively impacted by the transport of water through existing unlined ditches within the project. This project will reduce the water traveling through unlined ditches therefore having a positive impact on both water quality and quantity. All construction will take place on cultivated or previously disturbed land. No significant long terms impacts to animal habitat will result from this project since the impact is localized to fields where habitat is impacted yearly by cultivation.

There are threatened or endangered species in the Missouri River ecosystem that supplies water to the project. The activities of this project will have no negligible impact on those species.

There are no wetlands or surface waters that potentially fall under CWA jurisdiction as "Waters of the United States" directly impacted by this project.

The water delivery system within BTID was constructed under authorization by the Department of Interior in 1939. No impact to significant structures will result from this project.

BTID does operate buildings and structures that may be eligible for listing on the National Register of Historic places. This project will not impact any of those items. There are no known archeological sites within the project area by the operator BTID.

This project will not have a disproportionately high and adverse effect on low income or minority populations due to impacts being localized to the project site. It will not impact known tribal lands or Indian sacred sites.

The project will not contribute to the introduction, continued existence, or spread of noxious weeds or other non-native species in the area. It will reduce the likelihood of those concerns because the project will reduce flow through ditches where plant management is difficult to control.

Required Permits or Approvals

The applicant (BTID) is not aware of any required permits or approvals needed for the project under consideration for this grant. The project is located within in the boundary or the district and will not require the acquisition of any easements, temporary or permanent.

Official Resolutions

April 5, 2017

SUBJECT: WaterSMART Grant

TO: Bureau of Reclamation

FROM: Board of Directors, Buford-Trenton Irrigation District

To Whom It May Concern:

The Board of Directors of the Buford-Trenton Irrigation District understands that we are making a commitment of cost share on a project to close a supply ditch and install drainage pipe and water supply pipe. We understand that if the Bureau approves matching funds for this project we have the financial responsibility for our share of the project which might also include in-kind donation of labor and machinery.

Please accept this letter as our approval and understanding for this project. We understand that the work will need to be completed within the timeframe established with this grant. It is an important step for water savings in our district.

Sincerely,



BUFORD TRENTON IRRIGATION DISTRICT
Robert Gannaway
Board Chairman