## Application for

## WaterSMART:

# Small- Scale Water Efficiency Projects FY2017

BOR- DO-17-F011

## Whitestone Flats Piping Project

## **Applicant:**

Whitestone Reclamation District 901 Loomis Hwy. P.O. Box B Loomis, WA 98827 sandi@whitestonerd.com (253) 341-6961

## **Project Manager:**

Bob Rothrock, District Manager Whitestone Reclamation District 901 Loomis Hwy. P.O. Box B Loomis, WA 98827 (253) 341-6961

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Attachment A: Whitestone Flats Piping Project Site Map

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## D.2.2.4 Technical Proposal and Evaluation Criteria

## Executive Summary

Date: May 15, 2017

Applicant: Whitestone Reclamation District

City: Loomis County: Okanogan State: Washington

## **Project Summary**

This project will replace 1,580 feet of leaking irrigation canal and with pipeline. The project will reduce water loss, improve human safety, and is a necessary step towards pressurization of the system, as outlined in the Whitestone Water Conservation Plan (2005). The project location is near the town of Loomis, in north-central Washington. Whitestone Reclamation District will perform the work including acquiring necessary permits, placing bedding material within the existing canal structure, laying the pipe, covering it over and cleanup/site restoration. The Okanogan Conservation District will provide project implementation and grant management, environmental compliance review coordination and engineering services. This project is expected to save more than 110 acre-ft of water per year, contributing to Reclamation's goal of water conservation. See map in Attachment A for project location.

## Length of Time/Completion Date

The project is planned to take 1.5 years to accomplish and be completed by December 31, 2018.

## Federal Facility

The project is not located on a Federal facility; however, Reclamation does hold easements on the parcels affected.

## <u>Background Data</u>

Whitestone Reclamation District is in Okanogan County, Washington, near the towns of Loomis and Oroville. The region receives 8-11 inches of annual precipitation. WRD currently delivers an average of 12,000 total acre-ft of water per irrigation season, which is sufficient to grow the crops common to the area. This equates to 4 acre-ft per acre of irrigated land. See Attachment A for location reference.

The current project addresses leaks along the Whitestone Flats Canal, which was constructed in 1974. At that time, flap valves were installed along the canal and have never worked properly, but the District has generally tolerated the problem and compensated with other efficiencies. In recent years, the leakages have worsened and soil saturation has compromised the safety of the hillside in addition to causing more water loss. Cracks and leaks in the aging canal compound the problem, and maintenance is requiring significant financial and staff resources.

#### **Water Supply**

WRD has active water rights to divert from Toats Coulee Creek and for storage and diversion on Spectacle and Whitestone Lakes, primarily for agricultural applications. Water is stored in

Whitestone and Spectacle Lakes, which are also utilized for recreation. Water rights date from 1892 to 1986, and WRD is operating within its current permitted and certified rights. Reclamation approved WRD's water rights prior to the rehabilitation of district facilities in the early 1970s.

#### Water Usage and Users

WRD provides irrigation water from approximately April 15th through October 15th to 3,009 acres of tree fruit, hay and pasture land (see Table 1). The Whitestone Reclamation District (WRD) currently serves 113 water users.

**Table 1 – WRD-serviced croplands** 

Crop	Acres
Apples	875
Pears	510
Cherries	400
Hay	1000
Pasture	210
Grapes	2
Other	12

#### Current and Projected Water Demand, Potential Shortfalls

The current system provides adequate water to the irrigated land during most years, with some shortfall usually occurring in late summer. If current crops are transitioned into popular new crops, such as grapes, water demand on existing fields could increase in the future. Development is unlikely to cause future water demand to increase. However, the late summer shortfall and increased water needs due to emergencies (such as recent large wildfires), climate change, or drought make efficiency a high priority for WRD Board and staff.

## Whitestone Reclamation District – Water Delivery System Description

The Whitestone Reclamation District obtains water from Toats Coulee Creek at a point six miles west of Loomis. Toats Coulee Diversion Dam is a concrete structure with an ogee overflow section and headworks for the main supply canal. The supply canal across Sinlahekin Creek is a 6-mile-long buried concrete pipe, varying from 45" to 18" in diameter, and has a capacity of 70 cfs. At the terminal of the main supply canal, a wye structure containing a sleeve valve diverts water to an outlet structure and then into Spectacle Lake Reservoir and/or the 2.78-mile-long North Branch Canal. The active storage capacity at Spectacle Lake is 6,250 acre-feet by construction of a 24-foot-high homogeneous earth fill dike. A concrete gated outlet structure to divert water into the Spectacle Lake Canal.

A small two-unit pumping plant is located on Spectacle Lake Canal and delivers 3.6 cfs to a 20-foot-diameter regulating tank that serves about 160 acres of land. This pumping station is metered and billed by Okanogan PUD.

Two larger pumping plants are located on Spectacle Lake; the North Branch Pumping Plant and the Whitestone Flats 3 Pumping Plant. The North Branch Pumping Plant, a three unit installation with a dynamic head of 230 feet and total capacity of 13 cfs, delivers water through an 18-inch-

diameter pipeline into North Branch Canal. The Whitestone Flats Pumping Plant, three units with a dynamic head of 187 feet and total capacity of 17 cfs, conveys water through a 27-inch-diameter pipe into Whitestone Flats Canal, where the current project is planned. Electrical power for these two pumping plants is supplied directly from BPA and distributed through the Okanogan PUD. The system uses approximately 1,200,000 kwh of power annually.

Distribution is made through about 27 miles of lined laterals. Most lands are sprinkler irrigated, with each farm providing the pressure required. Fish screens are included at Spectacle Lake Outlet Works and at the pumping plants. Lands were also acquired around the lake for recreation use.

#### Whitestone Reclamation District/US Bureau of Reclamation relationship

In 1966, WRD signed a contract to have Reclamation rehabilitate the District facilities by improving irrigation water storage capacity and the efficiency of the distribution system. In 1977 an amendatory contract was signed, and in 1982 an amended repayment contract was signed. WRD continues to make payments on the contract, and works closely with Reclamation on management of Spectacle and Whitestone Lakes.

Reclamation and WRD have collaborated on the Whitestone Reclamation District Water Conservation Plan (2005), maintenance projects, and frequent reports. In 2011 a WaterSMART grant was used to convert a different part of the system from canal to pipeline.

The Reclamation District continuously works with Reclamation staff, other government agencies and local landowners to coordinate management of aquatic weeds, fish management and recreational aspects of the storage lakes. Reclamation has recently been providing water sampling and analysis to support this effort, and donated weed control herbicides as well.

## **Project Description**

This project will replace 1,580 feet of aging, leaky open canal in the Whitestone Flats area with 24' PIP piping. The project will extend a section of similar pipeline that was installed with financial assistance from a WaterSMART grant awarded in 2011. The project includes environmental compliance and engineering reviews of the proposed plans, bedding and laying the pipe into the existing canal structure, covering over the pipe and reseeding the surface soil with grasses to protect from erosion.

## Problems and Needs, Ways the Project will Address Needs, Expected Outcomes

The open-canal to pipeline conversion on this section will conserve water that is currently evaporating and leaking from the canal, improve human safety near the canal, and prevent water contamination which threatens high-value food crops. This project contributes to a long-term plan to convert the entire Whitestone Flats canal to pipe, which will reduce energy costs and maximize water efficiency.

This project addresses several issues identified by water users, the District Manager and the WRD Board and within the Districts Water Conservation Plan. Issues include safety of homes

and fields threatened by excessive seepage from the canal; rising energy costs and the increasing power needed to maintain water delivery throughout the aging system; and food safety concerns related to animal mortalities and erosion in the canal affecting the marketing of high value crops.

This project is a step towards improving water efficiency and pressurizing the entire system, which will lead to overall power savings. For small irrigation Districts, power and water efficiency is mandatory to maintain the long-term viability of agriculture in the area.

Below is a representative example of the existing canal, with significant cracks on the left side.



## **Evaluation Criteria**

## E.1.1 Evaluation Criterion A – Planning Efforts Supporting the Project

Describe how your project is supported by an existing planning effort.

• <u>Does the proposed project implement a goal or address a need or problem identified in the existing planning effort?</u>

Piping and/or relining of the open canals to improve efficiency and prevent seepage is the item of highest priority in several reports and planning documents, as the other operational and structural efficiencies of the District were already well-maintained and functional. Piping is favored over

relining and maintenance of the canals because of the extent of disrepair of the current canals, and the food safety concerns of high-value crop producers about the risk of contamination from their current system.

• Explain how the proposed project has been determined as a priority in the existing planning effort as opposed to other potential projects/measures."

The proposed project implements an efficiency problem documented in 1997 in a Reclamation report entitled "1997 USBR Review of Operation and Maintenance", a copy of which is housed at the WRD Office. Under the heading "Whitestone Flats Canal" (p. 8);

"The Whitestone Flats Canal continues to have seepage problems. The flap valves were installed when the system was constructed in 1974-75 and have never worked properly. A recommendation was issued in 1988 to study the problem and construct a drain to prevent sub-irrigation and erosion of private land along the canal..."

In the "2001 USBR Review of Operation and Maintenance", under "Water Conservation Review" (p. 8), objectives identified by Reclamation and WRD includes a goal to, "replace all of the cracked and broken concrete ditch lining with pipelines....The District continues to evaluate and address those areas that will provide the greatest benefits."

The Whitestone Reclamation District Water Conservation Plan (2005) p. 15 reads: "Additional piping of open canal sections would also be desirable (in addition to canal relining projects), however the costs would be excessive in comparison to the amount of water saved and the ability of water users to pay at this time...That option should be periodically reviewed to take advantage of future grant funding opportunities if they arise".

Considering rising power costs, food safety concerns, long-term drought resiliency, and viability of WRD's delivery system, piping is the preferred alternative.

#### E.1.2 Evaluation Criterion B – Project Benefits

"This criterion considers a variety of project benefits, including improving the management of water supplies, the significance of the anticipated water management benefits, the public benefits of the project, and any expected environmental benefits. Describe the expected benefits and outcomes of implementing the proposed project.

• What are the benefits to the applicant's water supply delivery system?

The total evaporative loss, seepage losses from cracks in the canal, and point sources of water loss from defective valves (as noted in several reports) is difficult to quantify into a total estimated savings. For this section of pipe, seepage loss estimates are 110 acre-ft/year (NRCS Seepage Loss Estimate). Once this project is completed, WRD can address inefficiencies further down, including multiple leaking valves. Measured losses from just one of several leaking valves was estimated and calculated as a 47 acre-ft/year water loss.

WRD has a long-term goal of converting the entire Whitestone Flats canal to pipeline. The conversion of this section of canal to pipeline will contribute to the larger goal of pressurizing the entire length of this canal, saving energy through the reduced need for pumps on individual

customer properties. Energy savings at this level are difficult to calculate, as it will take several years to convert the entire canal to pipeline, but when the pipeline is completed, more accurate water and energy monitoring will become possible.

*If other benefits are expected explain those as well. Consider the following:* 

- Extent to which the proposed project improves overall water supply reliability

  This project will reduce water caused by seepage, evaporation and leaks from the existing canal, which has been unreliable for years. Greater efficiency improves retention and use of stored water remaining in the system in case of drought years and climate change. This project is also necessary continue long-term work on improvements to the rest of the system, including pressurization.
  - The expected scope of positive impact from the proposed project (e.g., local, sub-basin, basin)

The expected scope is local, specifically the landowners supplied by the canal and WRD itself.

• Extent to which the proposed project will increase collaboration and information sharing among water managers in the region

Whitestone Reclamation District is one of many small irrigation districts in the region dealing with aging infrastructure, limited financial resources, and trying to prepare for climate change, drought, and more frequent wildfires. District Managers and Board members share information. This project supports on-going collaboration between Reclamation, WRD, and the Okanogan Conservation District.

• <u>Any anticipated positive impacts/benefits to local sectors and economies (e.g., agriculture, environment, recreation, tourism)</u>"

Agriculture is the dominant component of the economy in the project area and all of Okanogan County. Supporting projects that maintain agricultural viability is important to the region. Several economic considerations are important to this project. An emerging issue is the importance of good water quality of irrigation water. Agricultural producers, especially fruit orchardists, are under increasing pressure to abide by strict water quality standards (such as Global GAP and the Food Safety Modernization Act) in order to market their products, and are monitoring their water quality more stringently than ever. Heavy rainstorms often wash soil and debris into the canal, increasing the chance of contamination from agricultural chemicals, livestock manure, and other sources to enter the water. Animal mortalities also increase risk of contamination.

For relatively small irrigation Districts, power and water efficiency is essential to maintain long-term viability of agriculture.

#### E.1.3 Evaluation Criterion C – Project Implementation

• <u>Describe the implementation plan for the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.</u>

The project implementation includes bedding and laying the pipe into the existing canal structure, covering over the pipe and reseeding the surface soil with grasses to protect from erosion. Construction will begin in fall, once water delivery ends for the season. The 24" PIP pipe laid in the existing canal channel on a shallow layer of <sup>3</sup>/<sub>4</sub>" minus gravel. The pipe will be covered

with more <sup>3</sup>/<sub>4</sub>" gravel, then a layer of topsoil, and the area seeded with grass to protect the soil surface from erosion and reduce weed invasion. The pipe will generally follow the existing canal bed, with infrequent exceptions where the current canal bed bends around a corner; in those instances the bed will be straightened to accommodate the straight pipeline. See Attachment B for design drawings.

**Table 2 - Proposed Project Implementation Schedule** 

Date	Activity	Milestone
June 2017	Grant notification of award	
July-Aug 2017	Contract development and approvals	
	Cultural resources and environmental	Reviews completed by Oct
July-Oct 2017	compliance reviews	2017
Aug-Sept 2017	Purchase materials	
October 2017	Bedding delivered and laid in canal	
Oct-Nov 2017	Pipe installation	Pipe installed by 12/31/2017
Oct-Nov 2017	Install insulation on turnouts	
April-May	Cover pipeline w/soil, reseed disturbed	Project completed by
2018	areas, complete final reports.	12/31/2018

• <u>Describe any permits that will be required, along with the process for obtaining such permits.</u>

According to telephone conversations with the Okanogan County Planning Department, no local, State or Federal permitting will be required for this project, for the following reasons:

- The pipeline will be laid primarily within the existing canal bed, which was already disturbed when the canal was installed in the 1970's
- There are no natural wetlands, surface waters or other areas of special concern within the project location.
- All work will occur on property owned by Whitestone Reclamation District and does not impact any "waters of the state".

Cultural resources evaluations will occur after grant funding becomes available but before any ground-disturbing activities take place, and will be provided by Okanogan Conservation District archaeologist, Kim Lancaster, or an associate. Okanogan CD has a formal process in place in case of any unanticipated discoveries of cultural material or remains.

• <u>Identify and describe any engineering or design work performed specifically in support of the proposed project.</u>

Preliminary designs have been prepared for the project by Ryan Roberts, District Engineer for for North-central Washington Conservation Districts. Amendments and on-site adaptations will be approved and inspected by Mr. Roberts as the project progresses.

• <u>Describe any new policies or administrative actions required to implement the project."</u>
No new policies are required to complete the project. The WRD Board of Supervisors has voted to complete the work and partner with Okanogan Conservation District to apply for this funding

and administer the grant terms. The Okanogan CD Board of Supervisors has voted to support the WRD by providing financial management, technical assistance and grant management services.

#### E.1.4 – Evaluation Criterion D – Nexus to Reclamation

"Describe the nexus between the proposed project and a Reclamation project or activity, including:

- <u>How is the proposed project connected to a Reclamation project or activity?</u>

  Reclamation has partnered with WRD for many years on a variety of projects. Reclamation owns some of the land and right of ways WRD operates, and WRD still makes payments on some facility improvements to Reclamation. Regular reports are created by Reclamation on the WRD facilities.
- Will the project help Reclamation meet trust responsibilities to any tribe(s)? This project is not related to trust responsibilities to any tribes.
- <u>Does the applicant receive Reclamation project water?</u>
  No
- <u>Is the project on Reclamation project lands or involving Reclamation facilities?</u>
  Reclamation owns some of the land and right of ways WRD operates, and WRD still makes payments on some facility improvements to Reclamation.
- <u>Is the project in the same basin as a Reclamation project or activity?</u>
  Reclamation manages several mitigation and recreational properties in the region, and helps to manage Spectacle and Whitestone Lakes.
- <u>Will the proposed work contribute water to a basin where a Reclamation project is located?</u>" WRD continuously works with Reclamation staff, other government agencies and local landowners to manage and coordinate activities around water delivery, water quality, wildlife and fish management, aquatic weed control and other vital community functions.

## D.2.2.5 – Environmental and Cultural Resource Compliance

(NEPA, ESA and NHPA requirements)

Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)?

Little earth-disturbing work is planned, as the pipeline will be laid in the existing canal bed. Fill will be brought in from Pacific Calcium, Tonasket, WA, a commercial calcium carbonate operation. Topsoil from the worksite will be spread to cover the fill. The ground disturbance will be minimal. Some impact to vegetation currently taking advantage of the water leaking from the canal may occur; there are nearby locations where natural springs create the same type of wildlife habitat functions. There may be some dust during construction, but the location is well away from residential areas, and the orchard trees may capture a significant portion of the dust produced.

Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

Several Federally listed threatened or endangered species are known to occur in the project area, including the endangered Grey Wolf and several threatened species: Canada lynx, Bull trout, Yellow-billed Cuckoo. Bull trout are not present in Toats Coulee Creek or surrounding waters. Impacts to these species are expected to range from no impact to little impact, due to the project's limited ground disturbance and effect on vegetation. There are no critical habitat areas within the project area.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under Clean Water Act (CWA) jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.

No.

When was the water delivery system constructed? 1974-75

Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

The open canal will be converted to pipeline, with associated changes to turnout structures.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.

No structures, buildings or features are listed or eligible.

#### Are there any known archeological sites in the proposed project area?

No known or documented sites exist; however, there is a high probability for sites to occur in the area, and care will be taken in the cultural resources evaluation to locate and address any sites or material. No previous surveys were found within the project area.

Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?

No; in fact, the Loomis valley agricultural producers are the backbone of the local economy, and any effects are likely to be positive for low-income or minority populations.

Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

The project does not change access to any lands. There are no sacred sites on the State Historic Preservation Office register, but Indian tribal historical departments will be consulted during the cultural resources evaluation.

Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

No. Weed control herbicide spraying is regularly conducted by WRD staff, and the disturbed area will be reseeded to a grass cover immediately after construction is completed, which should minimize any weed invasion onsite.

## D.2.2.6 Required Permits or Approvals

According to telephone conversations with the Okanogan County Planning Department, no local, State or Federal permitting will be required for this project. Whitestone Reclamation District will continue to work closely with Reclamation and local agencies to ensure all work is completed with proper permitting and approvals.

Cultural resources evaluations will occur after grant funding becomes available but before any ground-disturbing activities take place, and will be provided by Okanogan Conservation District. Okanogan CD has a formal process in place in case of any unanticipated discoveries of cultural material or remains.

#### D.2.2.7 Official Resolution

See Attachment C for the Resolution passed by the Whitestone Reclamation District Board

## D.2.2.8 Project Budget

#### **Funding Plan**

WRD contribution towards this project will include purchased materials, staff wages, and in-kind contributions of labor and equipment hire during site preparation and installation. WRD does not expect to incur project costs before the project start date. Funds will be drawn from a WRD reserve account and are available immediately. There are no time constraints or other contingencies associated with these funds, and they are not Federal funds. See Detailed Budget, below, which identifies WRD contributions and Reclamation request.

Table 3 – Summary of Non-Federal and Federal Funding Sources

Funding Sources	Funding Amount		
Non-Federal entities			
Whitestone Reclamation District	\$51,747.01		
Requested Reclamation Funding	\$48,905.19		
Total Project Cost	\$100,652.20		

**Detailed Budget Proposal** 

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		COMPUTATION		Quantity		
BUDGET ITEM DESCRIPTION		\$/Unit	Quantity	Type	TOTAL COST	
Salaries and Wages						
WRD Contribution	Bob Rothrock	\$22.95	259	hrs	\$5,944.05	
	Tyler Lord	\$15.00	37	hrs	\$555.00	
	Temporary Labor	\$12.90	200	hrs	\$2,580.00	
Reclamation Request	Kim Simpson	\$27.00	50	hrs	\$1,350.00	
	Craig Nelson	\$34.00	20	hrs	\$680.00	

Copy costs of \$40 (400 copies at \$0.10 each), and mileage for Okanogan CD project management (400 miles at \$0.545/mi) were included.

#### • Indirect Costs

Indirect costs was calculated at 3% (\$2,807.19) of the modified total direct costs (excludes equipment). Indirect will be used by WRD for general operation costs, including salary & fringe for Sandi Velke, WRD Administrative Assistant, who will handle the primary administration of the grant activities.

#### • Total Costs

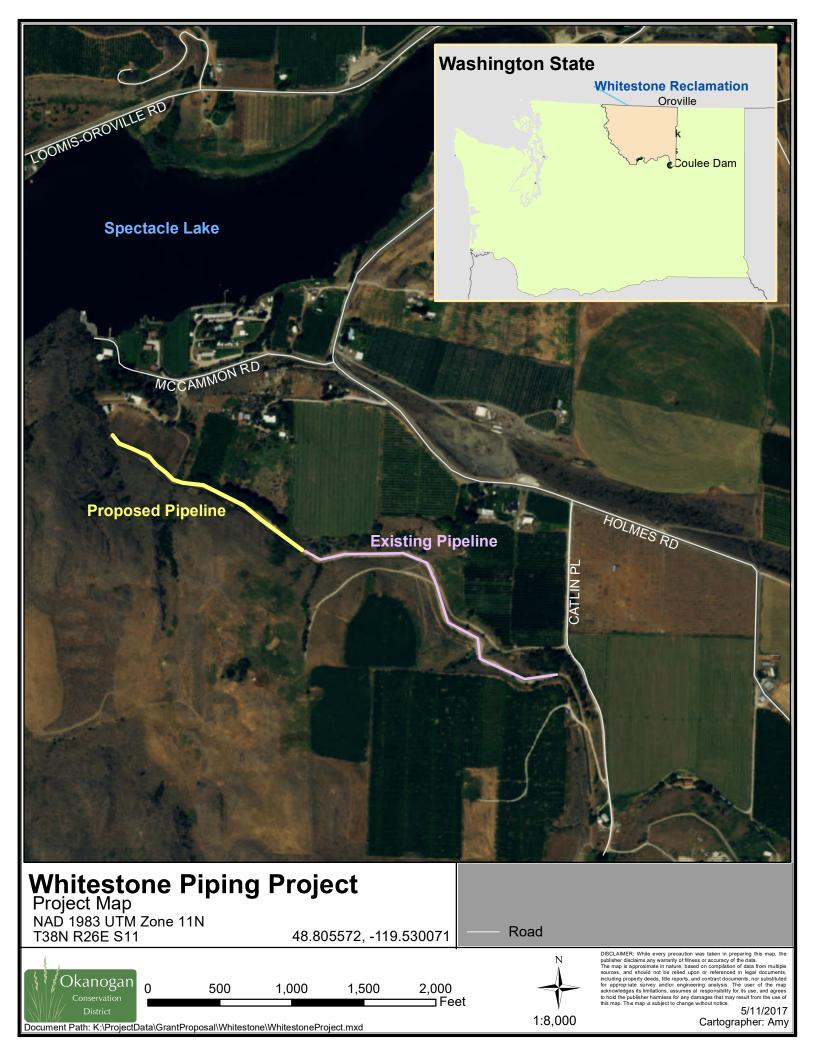
Total project costs are \$100,652.00 with \$51,747 (51%) of the expenses to be covered by WRD and \$48,905 (49%) of the expenses requested from Reclamation through the WaterSMART program.

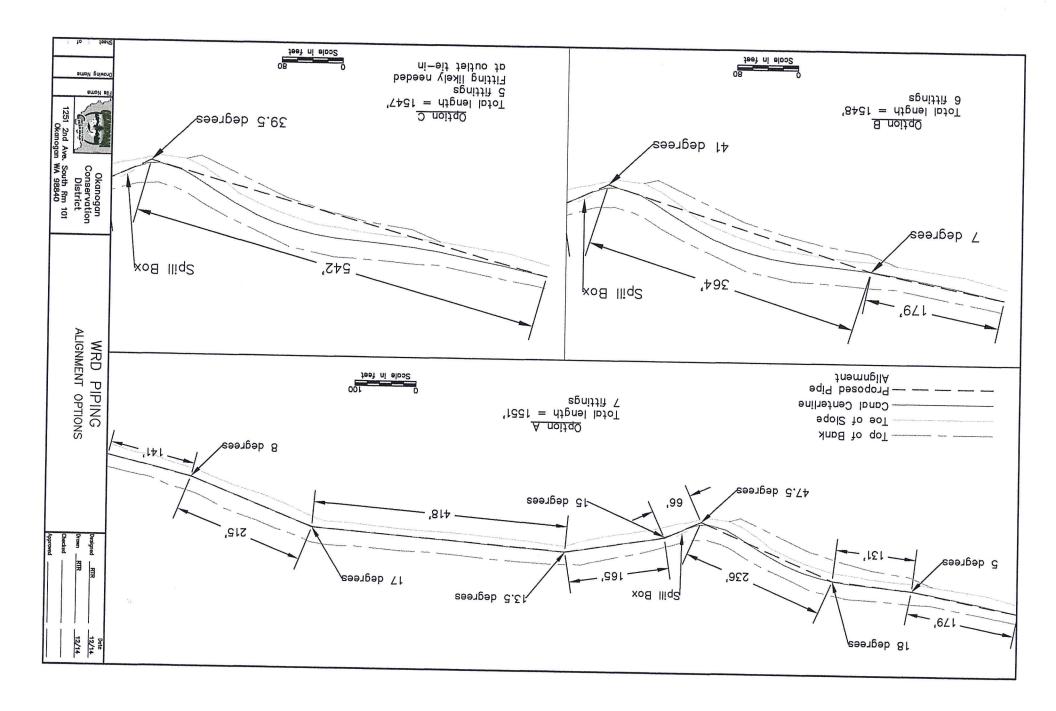
#### **Attachments**

Attachment A – Project Site Map

Attachment B – Pipeline Plan

**Attachment C – WRD Board Resolution of Commitment** 





April, 3 2017

Bureau of Reclamation
Darren Olson, Grant Specialist
MC-8427852
PO Box 25007
Denver, CO 80225

Re: Small Scale Water Efficiency Project Grant Application

Dear Mr. Olson:

We, the Board of Directors of the Whitestone Reclamation District, hereby make an official Resolution for the 2017 Small Scale Water Efficiency Project grant under the title "Whitestone Flats Piping Project". As the directors of Whitestone Reclamation District (WRD), we are fully committed to completing this project within the guidelines and deadlines provided in the application and within the parameters outlined in the project proposal. The Board of Directors has reviewed and supports the application submitted. At the April 3, 2017 Directors Meeting, the board gave signature authority for all items relating to this application (and potential subsequent contract) to Office Manager/Board Secretary, Sandi Velke. If the grant is received, WRD will use a reserve fund (current balance of \$200,000) to pay for project costs and facilitate cash flow.

Our irrigation district has open canals in poor overall condition. This canal/pipeline conversion is part of a larger pipeline conversion project that will facilitate future on-farm energy conservation projects and other water (and energy) savings upgrades. It's in our best interest to move forward with this portion of the pipeline for multiple reasons, as outlined in the grant application.

We appreciate the opportunity the Small Scale Water Efficiency Project grant provides to accomplish this project. Our small, rural Reclamation District would be hard-pressed to fund such costly improvements without such assistance. Thank you for your review of the application.

Sincerely,

Directors, Whitestone Reclamation District

Scott Smith, Chairman

Marvin Grillo, Director

Rob Inlow, Director

James Attwood, Vice Chairman

David Kiesecker, Director