For BOR-DO-21-F001: WaterSMART Grants: Water and Energy Efficiency Grants for fiscal year 2021

Project: Track Lateral D - open ditch to pipeline conversion

Areas Affected by project:

Tribal Reservation: Yakama Reservation; Cities: Toppenish; Counties: Yakima; State: Washington

Mandatory Federal Forms

(Completed via WEBFORM on grants.gov)

Application for Federal Financial Assistance

Budget Information

Assurances

Project Title:

Track Lateral D - open ditch to pipeline conversion

Application package for Bureau of Reclamation,
Funding Opportunity Announcement No. BOR-DO-21-F001

WaterSMART Grants:
Water and Energy Efficiency Grants for Fiscal Year 2021

Applicant:
Richard Dills, S.E.
Yakama Nation Department of Natural Resources: Engineering Program
401 Buster Rd.
P.O. Box 151
Toppenish, WA 98948-0151

Project Manager:
Richard Dills, S.E.
Yakama Nation Department of Natural Resources: Engineering Program
401 Buster Rd.
P.O. Box 151
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Table of contents

Table of Contents

Technical proposal and evaluation criteria

Executive summary

Date: 09/08/2020
Applicant name: Yakama Nation Engineering; Richard Dills
City: Topppenish; County: Yakima; State: Washington

The U.S. Bureau of Indian Affair's Wapato Irrigation Project (WIP), located in Central Washington on the Yakama Reservation, will construct conveyance improvements for the Track Lateral D irrigation canal. The lateral traverses ground that is very porous, and historically this area has been severely impacted by droughts. The District will replace the existing earthen canal with 15,254 feet of PVC pipeline to increase water use efficiency and reliability through optimal flow rates, reduced leakage, and reduced operational losses. The project is a top priority for the WIP and the Tribe and is expected to result in annual water savings of 1,504 acre-feet, which will remain in the system improving overall water supply.

Project location

Track Lateral D is located in Washington State, Yakima County, approximately 0.3 miles northeast of Toppenish. The project latitude is 46°23'1"N and longitude is 120°17'37"W.

Technical project description

The U.S. Bureau of Indian Affair's (USBIA) Wapato Irrigation Project (WIP), located in Central Washington on the Yakama Reservation, will construct conveyance improvements for the Track Lateral D irrigation canal. Yakama Nation Dept. of Natural Resources: Engineering (YNE) program provides engineering and surveying services to the WIP via a PL 93-638 contract between the USBIA and the Yakama Nation. YNE will be administering this project.

As a result of the efforts of developing a modernization and conservation plans, WIP has identified key earthen canals that have historically been problematic to operate due to conveyance losses. Track

lateral D is a canal that was identified to be modernized by converting the earthen canal to pressurized PVC pipe with datalogging flowmeters at farmer turnouts.
YNE will administer the project as follows:
Pre-Design: project initiation with a planning survey using YNE staff to establish project alignments and also initiate the permitting process.
Permitting: Obtain all necessary permits to proceed with construction.
Design: YNE engineer and EIT to design and draft plans for the modern pressurized PVC pipeline and turnouts to replace the existing earthen canal.
Material Procurement and Contracting: YNE engineer and EIT will prepare documents to solicit proposals for materials and construction. YNE staff to provide inspection on materials and construction.
Closeouts: YNE engineer and EIT will complete closeout documents and inspections.

Evaluation criteria

E.1.1. Evaluation Criterion A – Quantifiable Water Savings:
The following table addresses the criterion set forth in PKG00262246-instruction document for the BOR-DO-21-F001 WaterSMART Grant application.

Describe the amount of water savings	Based on calculations, we estimate that this earthen canal is losing approximately 1,500 acre feet per year.
Describe the current losses	Current losses in the canal occur through infiltration into the canal prism and operational spills at the tail of the ditch.
Describe the support/documentation of estimated water savings	$$AWS = (L \times P \times \bar{K}_{Sat} \times CF_1 + S) \times D \times CF_2$$ Where: $AWS = \ Annual\ Water\ Savings \left[\frac{acreft}{yr}\right]$ $L = length\ of\ earthen\ canal\ [ft]$ $P = Mean\ wetted\ perimeter\ for\ canal\ length\ [ft]$ $\bar{K}_{Sat} = Mean\ saturated\ hydraulic\ conductivity\ of\ soil\ types\ intersecting\ canal \left[\frac{inch}{hr}\right]$ $CF_1 = Conversion\ Factor \left[\frac{ft \cdot hr}{inch \cdot sec}\right]$ $S = Operation\ Spill \left[\frac{ft^3}{sec}\right]$ $D = \ Irrigation\ season \left[\frac{day}{year}\right]$ $CF_2 = Conversion\ Factor \left[\frac{acreft}{\frac{ft^3/_{sec}}{day}}\right]$ For Track Lateral D, $AWS = (15{,}254 \times 5 \times 1.7 \times 2.31E^{-5} + 1) \times 190 \times 1.98$ $AWS = \sim 1500 \left[\frac{acreft}{yr}\right]$

Type of Infrastructure Improvement:

1. Canal Lining/Piping	
a. Methodology of water savings estimate	Please see section E1.1.
b. Methodology of leakage losses	The leakage losses were calculated by determining NRCS soil types that intersect the project canal and averaging the published saturated hydraulic conductivities for the soil types dominate the canal area, and adding the operational spills reported from irrigation system operators.
c. expected post-project seepage losses determination methodology	Post project seepage losses are expected to less than 1% of total flow as the PVC pipeline will eliminate the bulk fluid contact with soil.

d. Annual transit loss reductions [acre-ft/mile] for each section and overall project	$Annual\ Transit\ Loss = \frac{1{,}500\ \frac{acre ft}{yr}}{\frac{15{,}254\ ft}{5{,}280\ \frac{ft}{mi}}} = 519\ \frac{acre ft/_{yr}}{mi}$
e. Methodology to verify actual canal loss reductions	Actual canal loss reductions will be determined by using the total flow diverted to the lateral minus the total flows at the delivery turnouts.
f. Description of materials being used	Mainline is gasketed PVC pipe with PVC glue joints. Control valves on the system are all gear operated steel butterfly valves, except 12" and smaller are travelling nut operated. Surge mitigation is via a Netafim QRF Valve. Measurement at diversion point is an insertion meter with datalogging capability (Seametrics EX250). Turnouts are measured with datalogging magnetic flowmeters (Seametrics AG300).
2. Municipal Metering	Not Applicable
3. Irrigation Flow Measurement	
a. How have average annual water savings estimates been determined?	Please see section E1.1.1
b. Have current operational losses been determined?	Please see section E1.1.1
c. Are flows currently measured at proposed sites and if so, what is the accuracy of existing devices?	Existing flow measurement at proposed sites is inconsistent. As a result, accuracy cannot be quantified.
d. Provide detailed descriptions of all proposed flow measurement devices,	Measurement at diversion point is an insertion meter with datalogging capability (Seametrics EX250). Manufacturer stated 1% of full scale accuracy. Turnouts are measured with datalogging magnetic flowmeters (Seametrics AG300). Manufacturer stated 1% of full scale accuracy.
e. Will annual farm delivery volumes be reduced by more efficient and timely deliveries?	Calculation not performed
f. How will actual water savings be verified upon completion of the project	Comparison of values produced at the diversion point to the individual turnouts and cumulative turnout flows.
4. Turf Removal	Not Applicable
5. Smart Irrigation Controllers and High-Efficiency Nozzles	Not Applicable

E.1.2. Evaluation Criterion B – Water Supply Reliability:

Does/will the project:

1. Address a water reliability concern?	

a. What is impacting water reliability?	The Wapato Irrigation Project has documented over 100 million dollars in deferred maintenance. Much of the water supply issues within the Wapato Irrigation Project can be addressed by the modernization and conservation projects similar to the Track Lateral D project.
b. How does the project address items impacting reliability?	The Track Lateral project is located in an area of highly permeable soils. Replacing the earthen canal with PVC pipe will reduce water loss due to infiltration and increase delivery efficiency.
c. What is the mechanism that will put the water to its intended use?	The mechanism that will put the water to it's intended use is conservation. Water conserved will be utilized to satisfy needs on other portions of WIP.
d. What quantity of conserved water will go to the intended purpose?	100 % of the conserved water will be utilized to meet delivery needs in other portions of the project.
2. Make water available for multiple user/benefits?	
a. Sectors/Users benefitted	Agriculture: Water saved by reducing seepage and spills will improve reliability of supply for proratable water users, especially in dry years. Flowmeters and valves at each turnout will make it possible to fairly distribute water. This portion of the WIP is severely impacted by droughts and it is difficult to deliver water to downstream irrigators. Additionally, the proposed pressurized systems would encourage irrigators to modernize on-farm irrigation. Modernized on-farm irrigation will lead to reduced nutrient loading and enhanced water availability. Additionally, on-farm electrical demand will be reduced since the each turnout will be pressurized. Environmental, Aquatic Habitat: the elimination of spills of warm irrigation water to the Yakima River will improve aquatic habitat for anadromous salmonids.
1. Specific Species	Steelhead (Oncorhynchus mykiss)
2. Larger initiative beneficiaries	
b. Benefit Indian Tribes?	Yes, the water will be used to benefit the Wapato Irrigation Project which is an Indian Irrigation Project located on the Yakama Reservation.
c. Benefit rural/economically disadvantaged communities?	Yes, the project will benefit farmers and workers within the boundaries of the Yakama Nation. This is a rural community with a documented economic disparities.
d. How will multiple benefits be achieved? Where will conserved water go?	The conserved water will be delivered to other portions of the Wapato Irrigation The water may also be utilized on adjacent Yakama Nation Wildlife properties to establish and promote riparian and wetland habitats for multiple species. The conserved water will also allow operational flexibility,

	which may include leaving some water in natural creeks and streams.
3. Promote/encourage collaboration to increase water supply reliability?	
a. Have widespread support?	Conservation of ~1,500 acre feet of water will be counted towards the goals of YRBWEP phase III. Legislation supporting this ongoing conservation was passed in 2019. This project has widespread support within the Yakama Nation, WIP, and within the Yakima Basin Integrated Plan (YBIP). The YBIP Water Use Subcommittee ranked this project highly and identified it as a project with multiple benefits.
b. What is the significance of the collaboration	The collaboration within YRBWEP and the Yakima Basin Integrated plan is unprecedented. For the first time in the history of the Yakima Basin, irrigators, agencies, natural resource specialists and the Yakama Nation are working together to improve the water supply for both fish and farms in the Yakima Basin.
c. Is future water conservation improvements by others enhanced?	Yes. Projects such as this promote on farm conservation and other water use. Irrigation system upgrades such the Track Lateral, have previously been demonstrated to spur additional on conservation on farms. Additionally, this project is one component of the WIP modernization and conservation plans.
d. Prevent/diminish water-related crisis/conflicts?	The Yakima Basin has a long history of conflict. In 1977, the Acquavella Water Right Adjudication was initiated and continues to this day. The partners within the Yakima Basin Integrated Plan have found that partnerships and collaboration can solve many of the issues within the Yakima Basin. Conservation projects such as the one proposed in this application are central to the framework for success that has been established by YBIP partners.
1. Is there history of frequent conflict/litigation in the basin?	Yes, the Acquavella adjudication was initiated in 1977. Though it was finalized in 2019, the appeals have continued. On farm conservation and continued improvements in water supply for fish and farms has led to diminished litigation and increased project implementation.
e. What are the roles of partners in collaboration?	The Yakima Basin Integrated Plan Partners work together to implement projects consistent with the goals of the Yakima Basin Integrated Plan and YRBWEP legislation.
4. Address water supply reliability in other ways?	

E.1.3. Evaluation Criterion C – Implementing Hydropower: Not Applicable

E.1.4. Evaluation Criterion D – Complementing On-Farm Irrigation Improvements: Not Applicable

E.1.5. Evaluation Criterion E – Department of the Interior and Bureau of Reclamation Priorities:

Department of Interior Priorities:

1. Creating a conservation stewardship legacy second only to Teddy Roosevelt	
a. Utilize science to identify best practices to manage land and water resources and adapt to changes in the environment	The WIP, in collaboration with the Yakama Nation and Yakima Basin Integrated Plan Partners have worked with the Cal Poly Irrigation Training and Research Center to establish a modernization and conservation plan. These plans include best practices in irrigation and conservation. The Track Lateral D pipeline conversion project has been identified as a high priority project in these studies.
b. Examine land use planning processes and land use designations that govern public use and access	As mentioned prior, the WIP Modernization and Conservation plans include considerations for land use planning.
c. Revise and streamline the environmental and regulatory review process while maintaining environmental standards	Yakama Nation Engineering has a proven track record of project implementation. The program actively works to minimize unnecessary regulatory process while satisfying appropriate federal and tribal regulations.
d. Review Department water storage, transportation, and distribution systems to identify opportunities to resolve conflicts and expand capacity	The WIP modernization and conservation plans include considerations of ongoing conflict. The proposed project works to reduce conflict by conserving water and reducing water shortages on WIP.
e. Foster relationships with conservation organizations advocating for balanced stewardship and use of public lands	The Yakama Nation has a proven track record of balancing the needs of fish, wildlife and farmers.
f. Identify and implement initiatives to expand access to Department lands for hunting and fishing	The Yakama Nation has an ongoing hunting and conservation program. The Track Lateral D Pipeline Conversion project is directly adjacent to lands managed by the Yakama Nation Wildlife program for waterfowl and upland game hunting.
g. Shift the balance towards providing greater public access to public lands over restrictions to access	Enclosure of the Track Lateral D canal may provide additional pedestrian access to Yakama Nation Wildlife “feel free to hunt” properties.

2. Utilizing our natural resources	
a. Ensure American Energy is available to meet our security and economic needs	Not Applicable
b. Ensure access to mineral resources, especially the critical and rare earth minerals needed for scientific, technological, or military applications	Not Applicable
c. Refocus timber programs to embrace the entire 'healthy forests' lifecycle	Not Applicable
d. Manage competition for grazing resources	Not Applicable
3. Restoring trust with local communities	
a. Be a better neighbor with those closest to our resources by improving dialogue and relationships with persons and entities bordering our lands;	Increasing water reliability, improves relationship with farmers and the community.
b. Expand the lines of communication with Governors, state natural resource offices, Fish and Wildlife offices, water authorities, county commissioners, Tribes, and local communities.	Continued investment in the WIP facilities, communication with the BIA and the Yakama Nation.
4. Striking a regulatory balance	
a. Reduce the administrative and regulatory burden imposed on U.S. industry and the public	Yakama Nation Engineering has assumed the responsibility of permitting, design, and construction of many of the WIP conservation projects. This has thus reduced the administrative and regulatory burden on the WIP and other federal entities.
b. Ensure that Endangered Species Act decisions are based on strong science and thorough analysis	Not applicable
5. Modernizing our infrastructure	
a. Support the White House Public/Private Partnership	Not applicable

Initiative to modernize U.S. infrastructure	
b. Remove impediments to infrastructure development and facilitate private sector efforts to construct infrastructure projects serving American needs	Not applicable
c. Prioritize Department infrastructure needs to highlight: Construction of infrastructure; Cyclical maintenance; Deferred maintenance	Not applicable

Bureau of Reclamation Priorities:

1. Increase Water Supplies, Storage, and Reliability under WIIN and other Authorities	Not Applicable
2. Streamline Regulatory Processes and Remove Unnecessary Burdens to Provide More Water and Power Supply Reliability	Not Applicable
3. Leverage Science and Technology to Improve Water Supply Reliability to Communities	Pipeline modernization will improve reliability of supply to both pro-ratable and non-proratable irrigation water users.
4. Address Ongoing Drought	Yes. Water saved by reducing seepage and spills will improve reliability of supply for proratable water users, especially in dry years. Flowmeters and valves at each turnout will make it possible to fairly distribute water. This portion of the WIP is severely impacted by droughts and it is difficult to deliver water to downstream irrigators.
5. Improve the Value of Hydropower to Reclamation Power Customers	Not Applicable
6. Improve Water Supplies for Tribal and Rural Communities	Yes, the water will be used to benefit the Wapato Irrigation Project which is an Indian Irrigation Project located on the Yakama Reservation. The project will benefit farmers and workers within the boundaries of the Yakama Nation. This is a rural community with a documented economic disparities.
7. Implementation of new Title Transfer authority pursuant to P.L. 116-9	Not Applicable

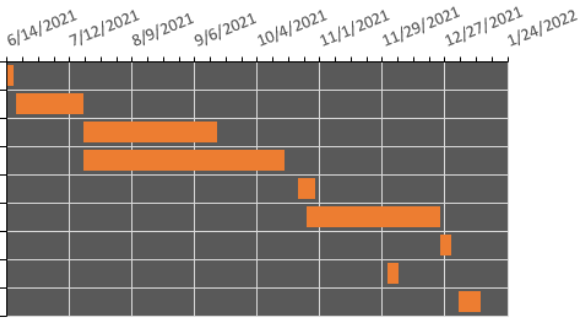
E.1.6. Evaluation Criterion F – Implementation and Results:

1. Project Planning – Does the applicant have a Water Conservation Plan and/or System Optimization Review (SOR) in place?	
a. Identify any district-wide, or system-wide, planning that provides support for the proposed project	Yes, the Wapato Irrigation Project has both a Modernization and Conservation Plan. They were finalized in 2018 and 2019, respectively. The priorities identified in this plan have been used to guide the selection of this project.
b. Describe how the project conforms to and meets the goals of any applicable planning efforts and identify any aspect of the project that implements a feature of an existing water plan	The Wapato Irrigation Project has identified the need for continued conservation to optimize operational efficiency, improve drought resiliency and water use. The project meets those goals through conserving 1,500 acre feet of water.
2. Performance Measures –Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project	An inflow/outflow analysis will be performed between the diversion measurement meter and the turnout flowmeters. Flow comparisons will be between the diversion point and individual turnout meters, and the cumulative flow all meters simultaneously.
3. Readiness to Proceed – Provide detailed project implementation plan (e.g., estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates)	Please see Chart E.1.6.3 – Estimated Project Schedule below

Chart E.1.6.3 – Estimated Project Schedule

Track Lateral D Pipeline Conversion

Task	Start Date	End Date	Duration [days]	Staff
Design Survey	6/13/2021	6/17/2021	4	BB, GS
Design	6/18/2021	7/18/2021	30	DL, GS
planning/permitting	7/18/2021	9/16/2021	60	DL, GS, RD
material procurement	7/18/2021	10/16/2021	90	DL, GS
Construction Staking	10/22/2021	10/30/2021	8	BB, GS, DL
Mainline install	10/26/2021	12/25/2021	60	GS, DL
Delivery Install	12/25/2021	12/30/2021	5	GS, DL
Drain install	12/1/2021	12/6/2021	5	GS, DL
Project Closeout	1/2/2022	1/12/2022	10	GS, DL, RD



E.1.7. Evaluation Criterion G – Nexus to Reclamation Project Activities:

1. Is the proposed project connected to Reclamation project activities? If so, how?	
a. Does the applicant receive Reclamation project water?	Yes, the Wapato Irrigation Project receives Reclamation project water.
b. Is the project on Reclamation project lands or involving Reclamation facilities?	Unlike other prorateable irrigation districts within the Yakima Basin, the Wapato Irrigation Project is owned and operated by the Bureau of Indian Affairs.
c. Is the project in the same basin as a Reclamation project or activity?	Yes, the Bureau of Reclamation Yakima Field Office is responsible for operations within the Yakima Basin.
d. Will the proposed work contribute water to a basin where a Reclamation project is located?	It is unlikely that the proposed project will contribute to Total Water Supply Available (TWSA). However, the proposed conservation will contribute to more effienct use of water within WIP
2. Will the project benefit any tribe(s)?	Yes, this project will benefit Yakama Nation's on reservation water resource.

E.1.8. Evaluation Criterion H – Additional Non-Federal Funding:

$$\frac{\$570{,}965.10}{\$1{,}141{,}930.21} = 50\% \text{ Non} - \text{Federal Funding}$$

Project Budget

Funding plan and letters of commitment

The non-federal share of project costs will be obtained through a negotiated funding agreement in the PL 93-638 contract agreement between the WIP and the Yakama Nation.

A letter of commitment from the WIP Administrator is not available at the time of submission. The letter will be sent no later than 30 days after the submission deadline.

Budget proposal

Total Project Cost Table:

Source	Amount
Costs to be reimbursed with the requested Federal funding	$570,965.10
Costs to be paid by the applicant	$570,965.10
Value of third-party contributions	$0
TOTAL PROJECT COST	$1,141,930.21

Budget Description	**Computation**			
Salaries and Wages	**$/unit**	**Quantity**	**Quantity Type**	**Total Cost**
Manager, PE/Project Manager	$ 55.05	160		$ 8,808.00
PE II	$ 46.14	960		$ 44,294.40
Land Surveyor	$ 43.00	240		$ 10,320.00
EIT	$ 24.94	960		$ 23,942.40
GIS Specialist	$ 23.97	240		$ 5,752.80
Tech	$ 18.79	320		$ 6,012.80
TOTAL SALARIES				**$ 99,130.40**
Fringe Benefits (31%)				$ 129,860.82
Overhead (21.99%)				$ 158,430.21
Travel				
	$ -			$ -
Equipment				
PVC Pipe, Fittings, Valves, Flow Meters, fasteners, etc.	$ 550,000.00	1		$ 550,000.00
Supplies and Materials				
	$ -			$ -
Contractual/Construction				
Construction Contract	$ 425,000.00	1		$ 425,000.00
Third-Party Contributions				
	$ -			$ -
Other				
Yakima Nation Cultural Resources Survey	$ 8,500.00	1		$ 8,500.00
	TOTAL ESTIMATED PROJECT COST			$ 1,141,930.21

Budget narrative
Task 1: Project – Track Lateral D Pipeline Conversion

Salaries and Wages:
Richard Dills (Program Manager, $55.05/hr., est. 160 hrs.) – Project Manager
(Engineer II, $46.14/hr., est. 960 hrs.)
(Land Surveyor, $43.00/hr., est. 240 hrs.)
(EIT, $24.94/hr., est. 960 hrs.)
(GIS Specialist, $23.97/hr., est. 240 hrs.)
(Tech, $18.79/hr., est. 320 hrs.)
The Program/project manager will supervise, coordinate and support staff throughout each phase of this task. The Land Surveyor is anticipated to spend 30% of their time in the pre-design phase preparing the planning survey and 60% of their time in the construction (staking) phase.
The Engineer II and EIT are anticipated to be splitting their time into 60% pre-construction activities (planning survey, design, permitting, material/contractual procurement), 30% construction activities (construction staking, inspection), and 10% project closeout (final reports/surveys). GIS Specialist will spend time updating/creating GIS databases and generating data/maps for reports/presentations. Tech will assist Engineer II, Land Surveyor, or EIT in the completion of each phase of the project.

Fringe Benefits:
Fringe benefits will be assessed at a rate of 31%

Travel:
There will be no travel costs under this contract.

Equipment:
Competitive bids will be solicited for the materials of the pipeline, i.e. PVC Pipe, fittings, valves, risers, spools, flowmeters/data accessories, turnout slabs, and hardware. Costs are estimated based on experience with similar projects in the local area.

Materials and Supplies:
There will be no materials or supplies costs under this contract.

Contractual:
Contractors will be hired to demolish/dispose of old infrastructure and install new pipeline materials. Costs are estimated based on experience with similar projects in the local area. Construction costs will be finalized through a competitive bidding process.

Third-Party In-kind Contributions:
There will be no Third-Party In-kind contributions under this contract.

Environmental and Regulatory Compliance Costs:
Environmental and Regulatory costs: Yakama Nation Cultural Resources Survey: $8500.00

Other Expenses:

Direct Costs:

FY 2022	$ 99,130.40
Total construction:	**$ 99,130.40**

Indirect Costs:

Fringe cost rate is 31 percent as approved by Yakama Nation Tribal Council.
Indirect (overhead) cost rate is 20.99 percent as approved by Yakama Nation Tribal Council.

This rate is applied as follows:

FY 2022	$ 59,299.81
Total indirect costs:	**$ 59,299.81**

Total expected costs:

FY 2022	$ 158,430.21
Total Expected Costs:	**$ 158,430.21**

Required permits or approvals

The following permits or approvals will be required prior to the beginning of project construction.

1. NEPA – Where applicable, Categorical Exclusion, Environmental Assessment/Finding of no significant impact, or environmental impact statement and record of decision.
2. NHPA/THPA review and Section 106 compliance statement.
3. Yakama Nation Cultural Resources Program Survey
4. Yakama Nation Water Code Hydraulic Permit
5. ESA – Section 7 compliance via USFWS or NOAA review

Letters of project support

Please refer to Appendix A.1.

Official Resolution

An official resolution was not available at the time of submission due to Tribal Government budget review. The official resolution will be mailed within 30 days of the original application deadline.

Appendix A.1 – Letter of Support

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
Wapato Irrigation Project
413 S Camas Avenue
Wapato, WA 98951

In Response Reply to
Wapato Irrigation Project

SEP 16 2020

Lorri Gray, Regional Director
Bureau of Reclamation Pacific Northwest Regional Office (PN-6400)
1150 North Curtis Road, Suite 100
Boise, ID 83706-1233

RE: YN Engineering application for funds under USBR funding opportunity No. BOR-DO-21-F001 WaterSMART: Water and Energy Efficiency Grants for Fiscal Year 2021

Dear Ms. Gray:

The USBIA Wapato Irrigation Project is pleased to support the WaterSMART proposal "Track Lateral D Pipeline Conversion" being submitted by Yakama Nation Engineering under the Fiscal Year 2021 WaterSMART: Water and Energy Efficiency grant application.
With an estimated water savings of 1,504 acre-ft per irrigation season, the elimination of tail-end spills, and providing transparency of operation through flow meter equipped turnouts this project proposal is perfectly aligned with the Wapato Irrigation Project's Modernization and Conservation Plan goals.

We encourage Reclamation's support and approval of this proposal. If you have any questions regarding this letter, please contact me at peter.plant@bia.gov.

Sincerely,

Peter L. Plant
Project Administrator
Wapato Irrigation Project
Bureau of Indian Affairs

ATTACHMENTS FORM

Instructions: On this form, you will attach the various files that make up your grant application. Please consult with the appropriate Agency Guidelines for more information about each needed file. Please remember that any files you attach must be in the document format and named as specified in the Guidelines.

Important: Please attach your files in the proper sequence. See the appropriate Agency Guidelines for details.

1) Please attach Attachment 1	1236-BOR_DO_21_F001_WaterSMAR			
2) Please attach Attachment 2				
3) Please attach Attachment 3				
4) Please attach Attachment 4				
5) Please attach Attachment 5				
6) Please attach Attachment 6				
7) Please attach Attachment 7				
8) Please attach Attachment 8				
9) Please attach Attachment 9				
10) Please attach Attachment 10				
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14) Please attach Attachment 14				
15) Please attach Attachment 15				

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lateral D is a canal that was identified to be modernized by converting the earthen canal to pressurized PVC pipe with datalogging flowmeters at farmer turnouts.
YNE will administer the project as follows:
Pre-Design: project initiation with a planning survey using YNE staff to establish project alignments and also initiate the permitting process.
Permitting: Obtain all necessary permits to proceed with construction.
Design: YNE engineer and EIT to design and draft plans for the modern pressurized PVC pipeline and turnouts to replace the existing earthen canal.
Material Procurement and Contracting: YNE engineer and EIT will prepare documents to solicit proposals for materials and construction. YNE staff to provide inspection on materials and construction.
Closeouts: YNE engineer and EIT will complete closeout documents and inspections.

Evaluation criteria

E.1.1. Evaluation Criterion A – Quantifiable Water Savings:
The following table addresses the criterion set forth in PKG00262246-instruction document for the BOR-DO-21-F001 WaterSMART Grant application.

Describe the amount of water savings	Based on calculations, we estimate that this earthen canal is losing approximately 1,500 acre feet per year.
Describe the current losses	Current losses in the canal occur through infiltration into the canal prism and operational spills at the tail of the ditch.
Describe the support/documentation of estimated water savings	$$AWS = (L \times P \times \bar{K}_{Sat} \times CF_1 + S) \times D \times CF_2$$ Where: $AWS = \ Annual\ Water\ Savings \left[\frac{acreft}{yr}\right]$ $L = length\ of\ earthen\ canal\ [ft]$ $P = Mean\ wetted\ perimeter\ for\ canal\ length\ [ft]$ $\bar{K}_{Sat} = Mean\ saturated\ hydraulic\ conductivity\ of\ soil\ types\ intersecting\ canal \left[\frac{inch}{hr}\right]$ $CF_1 = Conversion\ Factor \left[\frac{ft \cdot hr}{inch \cdot sec}\right]$ $S = Operation\ Spill \left[\frac{ft^3}{sec}\right]$ $D = \ Irrigation\ season \left[\frac{day}{year}\right]$ $CF_2 = Conversion\ Factor \left[\frac{acreft}{\frac{ft^3/_{sec}}{day}}\right]$ For Track Lateral D, $AWS = (15{,}254 \times 5 \times 1.7 \times 2.31E^{-5} + 1) \times 190 \times 1.98$ $AWS = \sim 1500 \left[\frac{acreft}{yr}\right]$

Type of Infrastructure Improvement:

1. Canal Lining/Piping	
a. Methodology of water savings estimate	Please see section E1.1.
b. Methodology of leakage losses	The leakage losses were calculated by determining NRCS soil types that intersect the project canal and averaging the published saturated hydraulic conductivities for the soil types dominate the canal area, and adding the operational spills reported from irrigation system operators.
c. expected post-project seepage losses determination methodology	Post project seepage losses are expected to less than 1% of total flow as the PVC pipeline will eliminate the bulk fluid contact with soil.

d. Annual transit loss reductions [acre-ft/mile] for each section and overall project	$Annual\ Transit\ Loss = \frac{1{,}500\ \frac{acre ft}{yr}}{\frac{15{,}254\ ft}{5{,}280\ \frac{ft}{mi}}} = 519\ \frac{acre ft/_{yr}}{mi}$
e. Methodology to verify actual canal loss reductions	Actual canal loss reductions will be determined by using the total flow diverted to the lateral minus the total flows at the delivery turnouts.
f. Description of materials being used	Mainline is gasketed PVC pipe with PVC glue joints. Control valves on the system are all gear operated steel butterfly valves, except 12" and smaller are travelling nut operated. Surge mitigation is via a Netafim QRF Valve. Measurement at diversion point is an insertion meter with datalogging capability (Seametrics EX250). Turnouts are measured with datalogging magnetic flowmeters (Seametrics AG300).
2. Municipal Metering	Not Applicable
3. Irrigation Flow Measurement	
a. How have average annual water savings estimates been determined?	Please see section E1.1.1
b. Have current operational losses been determined?	Please see section E1.1.1
c. Are flows currently measured at proposed sites and if so, what is the accuracy of existing devices?	Existing flow measurement at proposed sites is inconsistent. As a result, accuracy cannot be quantified.
d. Provide detailed descriptions of all proposed flow measurement devices,	Measurement at diversion point is an insertion meter with datalogging capability (Seametrics EX250). Manufacturer stated 1% of full scale accuracy. Turnouts are measured with datalogging magnetic flowmeters (Seametrics AG300). Manufacturer stated 1% of full scale accuracy.
e. Will annual farm delivery volumes be reduced by more efficient and timely deliveries?	Calculation not performed
f. How will actual water savings be verified upon completion of the project	Comparison of values produced at the diversion point to the individual turnouts and cumulative turnout flows.
4. Turf Removal	Not Applicable
5. Smart Irrigation Controllers and High-Efficiency Nozzles	Not Applicable

E.1.2. Evaluation Criterion B – Water Supply Reliability:

Does/will the project:

1. Address a water reliability concern?	

a. What is impacting water reliability?	The Wapato Irrigation Project has documented over 100 million dollars in deferred maintenance. Much of the water supply issues within the Wapato Irrigation Project can be addressed by the modernization and conservation projects similar to the Track Lateral D project.
b. How does the project address items impacting reliability?	The Track Lateral project is located in an area of highly permeable soils. Replacing the earthen canal with PVC pipe will reduce water loss due to infiltration and increase delivery efficiency.
c. What is the mechanism that will put the water to its intended use?	The mechanism that will put the water to it's intended use is conservation. Water conserved will be utilized to satisfy needs on other portions of WIP.
d. What quantity of conserved water will go to the intended purpose?	100 % of the conserved water will be utilized to meet delivery needs in other portions of the project.
2. Make water available for multiple user/benefits?	
a. Sectors/Users benefitted	Agriculture: Water saved by reducing seepage and spills will improve reliability of supply for proratable water users, especially in dry years. Flowmeters and valves at each turnout will make it possible to fairly distribute water. This portion of the WIP is severely impacted by droughts and it is difficult to deliver water to downstream irrigators. Additionally, the proposed pressurized systems would encourage irrigators to modernize on-farm irrigation. Modernized on-farm irrigation will lead to reduced nutrient loading and enhanced water availability. Additionally, on-farm electrical demand will be reduced since the each turnout will be pressurized. Environmental, Aquatic Habitat: the elimination of spills of warm irrigation water to the Yakima River will improve aquatic habitat for anadromous salmonids.
1. Specific Species	Steelhead (Oncorhynchus mykiss)
2. Larger initiative beneficiaries	
b. Benefit Indian Tribes?	Yes, the water will be used to benefit the Wapato Irrigation Project which is an Indian Irrigation Project located on the Yakama Reservation.
c. Benefit rural/economically disadvantaged communities?	Yes, the project will benefit farmers and workers within the boundaries of the Yakama Nation. This is a rural community with a documented economic disparities.
d. How will multiple benefits be achieved? Where will conserved water go?	The conserved water will be delivered to other portions of the Wapato Irrigation The water may also be utilized on adjacent Yakama Nation Wildlife properties to establish and promote riparian and wetland habitats for multiple species. The conserved water will also allow operational flexibility,

	which may include leaving some water in natural creeks and streams.
3. Promote/encourage collaboration to increase water supply reliability?	
a. Have widespread support?	Conservation of ~1,500 acre feet of water will be counted towards the goals of YRBWEP phase III. Legislation supporting this ongoing conservation was passed in 2019. This project has widespread support within the Yakama Nation, WIP, and within the Yakima Basin Integrated Plan (YBIP). The YBIP Water Use Subcommittee ranked this project highly and identified it as a project with multiple benefits.
b. What is the significance of the collaboration	The collaboration within YRBWEP and the Yakima Basin Integrated plan is unprecedented. For the first time in the history of the Yakima Basin, irrigators, agencies, natural resource specialists and the Yakama Nation are working together to improve the water supply for both fish and farms in the Yakima Basin.
c. Is future water conservation improvements by others enhanced?	Yes. Projects such as this promote on farm conservation and other water use. Irrigation system upgrades such the Track Lateral, have previously been demonstrated to spur additional on conservation on farms. Additionally, this project is one component of the WIP modernization and conservation plans.
d. Prevent/diminish water-related crisis/conflicts?	The Yakima Basin has a long history of conflict. In 1977, the Acquavella Water Right Adjudication was initiated and continues to this day. The partners within the Yakima Basin Integrated Plan have found that partnerships and collaboration can solve many of the issues within the Yakima Basin. Conservation projects such as the one proposed in this application are central to the framework for success that has been established by YBIP partners.
1. Is there history of frequent conflict/litigation in the basin?	Yes, the Acquavella adjudication was initiated in 1977. Though it was finalized in 2019, the appeals have continued. On farm conservation and continued improvements in water supply for fish and farms has led to diminished litigation and increased project implementation.
e. What are the roles of partners in collaboration?	The Yakima Basin Integrated Plan Partners work together to implement projects consistent with the goals of the Yakima Basin Integrated Plan and YRBWEP legislation.
4. Address water supply reliability in other ways?	

E.1.3. Evaluation Criterion C – Implementing Hydropower: Not Applicable

E.1.4. Evaluation Criterion D – Complementing On-Farm Irrigation Improvements: Not Applicable

E.1.5. Evaluation Criterion E – Department of the Interior and Bureau of Reclamation Priorities:

Department of Interior Priorities:

1. Creating a conservation stewardship legacy second only to Teddy Roosevelt	
a. Utilize science to identify best practices to manage land and water resources and adapt to changes in the environment	The WIP, in collaboration with the Yakama Nation and Yakima Basin Integrated Plan Partners have worked with the Cal Poly Irrigation Training and Research Center to establish a modernization and conservation plan. These plans include best practices in irrigation and conservation. The Track Lateral D pipeline conversion project has been identified as a high priority project in these studies.
b. Examine land use planning processes and land use designations that govern public use and access	As mentioned prior, the WIP Modernization and Conservation plans include considerations for land use planning.
c. Revise and streamline the environmental and regulatory review process while maintaining environmental standards	Yakama Nation Engineering has a proven track record of project implementation. The program actively works to minimize unnecessary regulatory process while satisfying appropriate federal and tribal regulations.
d. Review Department water storage, transportation, and distribution systems to identify opportunities to resolve conflicts and expand capacity	The WIP modernization and conservation plans include considerations of ongoing conflict. The proposed project works to reduce conflict by conserving water and reducing water shortages on WIP.
e. Foster relationships with conservation organizations advocating for balanced stewardship and use of public lands	The Yakama Nation has a proven track record of balancing the needs of fish, wildlife and farmers.
f. Identify and implement initiatives to expand access to Department lands for hunting and fishing	The Yakama Nation has an ongoing hunting and conservation program. The Track Lateral D Pipeline Conversion project is directly adjacent to lands managed by the Yakama Nation Wildlife program for waterfowl and upland game hunting.
g. Shift the balance towards providing greater public access to public lands over restrictions to access	Enclosure of the Track Lateral D canal may provide additional pedestrian access to Yakama Nation Wildlife “feel free to hunt” properties.

2. Utilizing our natural resources	
a. Ensure American Energy is available to meet our security and economic needs	Not Applicable
b. Ensure access to mineral resources, especially the critical and rare earth minerals needed for scientific, technological, or military applications	Not Applicable
c. Refocus timber programs to embrace the entire 'healthy forests' lifecycle	Not Applicable
d. Manage competition for grazing resources	Not Applicable
3. Restoring trust with local communities	
a. Be a better neighbor with those closest to our resources by improving dialogue and relationships with persons and entities bordering our lands;	Increasing water reliability, improves relationship with farmers and the community.
b. Expand the lines of communication with Governors, state natural resource offices, Fish and Wildlife offices, water authorities, county commissioners, Tribes, and local communities.	Continued investment in the WIP facilities, communication with the BIA and the Yakama Nation.
4. Striking a regulatory balance	
a. Reduce the administrative and regulatory burden imposed on U.S. industry and the public	Yakama Nation Engineering has assumed the responsibility of permitting, design, and construction of many of the WIP conservation projects. This has thus reduced the administrative and regulatory burden on the WIP and other federal entities.
b. Ensure that Endangered Species Act decisions are based on strong science and thorough analysis	Not applicable
5. Modernizing our infrastructure	
a. Support the White House Public/Private Partnership	Not applicable

Initiative to modernize U.S. infrastructure	
b. Remove impediments to infrastructure development and facilitate private sector efforts to construct infrastructure projects serving American needs	Not applicable
c. Prioritize Department infrastructure needs to highlight: Construction of infrastructure; Cyclical maintenance; Deferred maintenance	Not applicable

Bureau of Reclamation Priorities:

1. Increase Water Supplies, Storage, and Reliability under WIIN and other Authorities	Not Applicable
2. Streamline Regulatory Processes and Remove Unnecessary Burdens to Provide More Water and Power Supply Reliability	Not Applicable
3. Leverage Science and Technology to Improve Water Supply Reliability to Communities	Pipeline modernization will improve reliability of supply to both pro-ratable and non-proratable irrigation water users.
4. Address Ongoing Drought	Yes. Water saved by reducing seepage and spills will improve reliability of supply for proratable water users, especially in dry years. Flowmeters and valves at each turnout will make it possible to fairly distribute water. This portion of the WIP is severely impacted by droughts and it is difficult to deliver water to downstream irrigators.
5. Improve the Value of Hydropower to Reclamation Power Customers	Not Applicable
6. Improve Water Supplies for Tribal and Rural Communities	Yes, the water will be used to benefit the Wapato Irrigation Project which is an Indian Irrigation Project located on the Yakama Reservation. The project will benefit farmers and workers within the boundaries of the Yakama Nation. This is a rural community with a documented economic disparities.
7. Implementation of new Title Transfer authority pursuant to P.L. 116-9	Not Applicable

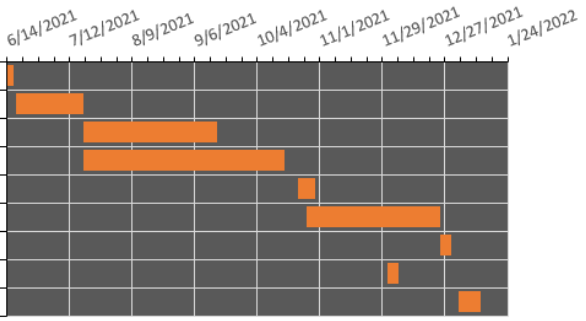
E.1.6. Evaluation Criterion F – Implementation and Results:

1. Project Planning – Does the applicant have a Water Conservation Plan and/or System Optimization Review (SOR) in place?	
a. Identify any district-wide, or system-wide, planning that provides support for the proposed project	Yes, the Wapato Irrigation Project has both a Modernization and Conservation Plan. They were finalized in 2018 and 2019, respectively. The priorities identified in this plan have been used to guide the selection of this project.
b. Describe how the project conforms to and meets the goals of any applicable planning efforts and identify any aspect of the project that implements a feature of an existing water plan	The Wapato Irrigation Project has identified the need for continued conservation to optimize operational efficiency, improve drought resiliency and water use. The project meets those goals through conserving 1,500 acre feet of water.
2. Performance Measures –Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project	An inflow/outflow analysis will be performed between the diversion measurement meter and the turnout flowmeters. Flow comparisons will be between the diversion point and individual turnout meters, and the cumulative flow all meters simultaneously.
3. Readiness to Proceed – Provide detailed project implementation plan (e.g., estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates)	Please see Chart E.1.6.3 – Estimated Project Schedule below

Chart E.1.6.3 – Estimated Project Schedule

Track Lateral D Pipeline Conversion

Task	Start Date	End Date	Duration [days]	Staff
Design Survey	6/13/2021	6/17/2021	4	BB, GS
Design	6/18/2021	7/18/2021	30	DL, GS
planning/permitting	7/18/2021	9/16/2021	60	DL, GS, RD
material procurement	7/18/2021	10/16/2021	90	DL, GS
Construction Staking	10/22/2021	10/30/2021	8	BB, GS, DL
Mainline install	10/26/2021	12/25/2021	60	GS, DL
Delivery Install	12/25/2021	12/30/2021	5	GS, DL
Drain install	12/1/2021	12/6/2021	5	GS, DL
Project Closeout	1/2/2022	1/12/2022	10	GS, DL, RD



E.1.7. Evaluation Criterion G – Nexus to Reclamation Project Activities:

1. Is the proposed project connected to Reclamation project activities? If so, how?	
a. Does the applicant receive Reclamation project water?	Yes, the Wapato Irrigation Project receives Reclamation project water.
b. Is the project on Reclamation project lands or involving Reclamation facilities?	Unlike other prorateable irrigation districts within the Yakima Basin, the Wapato Irrigation Project is owned and operated by the Bureau of Indian Affairs.
c. Is the project in the same basin as a Reclamation project or activity?	Yes, the Bureau of Reclamation Yakima Field Office is responsible for operations within the Yakima Basin.
d. Will the proposed work contribute water to a basin where a Reclamation project is located?	It is unlikely that the proposed project will contribute to Total Water Supply Available (TWSA). However, the proposed conservation will contribute to more effienct use of water within WIP
2. Will the project benefit any tribe(s)?	Yes, this project will benefit Yakama Nation's on reservation water resource.

E.1.8. Evaluation Criterion H – Additional Non-Federal Funding:

$$\frac{\$570{,}965.10}{\$1{,}141{,}930.21} = 50\% \text{ Non} - \text{Federal Funding}$$

Project Budget

Funding plan and letters of commitment

The non-federal share of project costs will be obtained through a negotiated funding agreement in the PL 93-638 contract agreement between the WIP and the Yakama Nation.

A letter of commitment from the WIP Administrator is not available at the time of submission. The letter will be sent no later than 30 days after the submission deadline.

Budget proposal

Total Project Cost Table:

Source	Amount
Costs to be reimbursed with the requested Federal funding	$570,965.10
Costs to be paid by the applicant	$570,965.10
Value of third-party contributions	$0
TOTAL PROJECT COST	$1,141,930.21

Budget Description	**Computation**			
Salaries and Wages	**$/unit**	**Quantity**	**Quantity Type**	**Total Cost**
Manager, PE/Project Manager	$ 55.05	160		$ 8,808.00
PE II	$ 46.14	960		$ 44,294.40
Land Surveyor	$ 43.00	240		$ 10,320.00
EIT	$ 24.94	960		$ 23,942.40
GIS Specialist	$ 23.97	240		$ 5,752.80
Tech	$ 18.79	320		$ 6,012.80
TOTAL SALARIES				**$ 99,130.40**
Fringe Benefits (31%)				$ 129,860.82
Overhead (21.99%)				$ 158,430.21
Travel				
	$ -			$ -
Equipment				
PVC Pipe, Fittings, Valves, Flow Meters, fasteners, etc.	$ 550,000.00	1		$ 550,000.00
Supplies and Materials				
	$ -			$ -
Contractual/Construction				
Construction Contract	$ 425,000.00	1		$ 425,000.00
Third-Party Contributions				
	$ -			$ -
Other				
Yakima Nation Cultural Resources Survey	$ 8,500.00	1		$ 8,500.00
	TOTAL ESTIMATED PROJECT COST			$ 1,141,930.21

Budget narrative
Task 1: Project – Track Lateral D Pipeline Conversion

Salaries and Wages:
Richard Dills (Program Manager, $55.05/hr., est. 160 hrs.) – Project Manager
(Engineer II, $46.14/hr., est. 960 hrs.)
(Land Surveyor, $43.00/hr., est. 240 hrs.)
(EIT, $24.94/hr., est. 960 hrs.)
(GIS Specialist, $23.97/hr., est. 240 hrs.)
(Tech, $18.79/hr., est. 320 hrs.)
The Program/project manager will supervise, coordinate and support staff throughout each phase of this task. The Land Surveyor is anticipated to spend 30% of their time in the pre-design phase preparing the planning survey and 60% of their time in the construction (staking) phase.
The Engineer II and EIT are anticipated to be splitting their time into 60% pre-construction activities (planning survey, design, permitting, material/contractual procurement), 30% construction activities (construction staking, inspection), and 10% project closeout (final reports/surveys). GIS Specialist will spend time updating/creating GIS databases and generating data/maps for reports/presentations. Tech will assist Engineer II, Land Surveyor, or EIT in the completion of each phase of the project.

Fringe Benefits:
Fringe benefits will be assessed at a rate of 31%

Travel:
There will be no travel costs under this contract.

Equipment:
Competitive bids will be solicited for the materials of the pipeline, i.e. PVC Pipe, fittings, valves, risers, spools, flowmeters/data accessories, turnout slabs, and hardware. Costs are estimated based on experience with similar projects in the local area.

Materials and Supplies:
There will be no materials or supplies costs under this contract.

Contractual:
Contractors will be hired to demolish/dispose of old infrastructure and install new pipeline materials. Costs are estimated based on experience with similar projects in the local area. Construction costs will be finalized through a competitive bidding process.

Third-Party In-kind Contributions:
There will be no Third-Party In-kind contributions under this contract.

Environmental and Regulatory Compliance Costs:
Environmental and Regulatory costs: Yakama Nation Cultural Resources Survey: $8500.00

Other Expenses:

Direct Costs:

FY 2022	$ 99,130.40
Total construction:	**$ 99,130.40**

Indirect Costs:

Fringe cost rate is 31 percent as approved by Yakama Nation Tribal Council.
Indirect (overhead) cost rate is 20.99 percent as approved by Yakama Nation Tribal Council.

This rate is applied as follows:

FY 2022	$ 59,299.81
Total indirect costs:	**$ 59,299.81**

Total expected costs:

FY 2022	$ 158,430.21
Total Expected Costs:	**$ 158,430.21**

Required permits or approvals

The following permits or approvals will be required prior to the beginning of project construction.

1. NEPA – Where applicable, Categorical Exclusion, Environmental Assessment/Finding of no significant impact, or environmental impact statement and record of decision.
2. NHPA/THPA review and Section 106 compliance statement.
3. Yakama Nation Cultural Resources Program Survey
4. Yakama Nation Water Code Hydraulic Permit
5. ESA – Section 7 compliance via USFWS or NOAA review

Letters of project support

Please refer to Appendix A.1.

Official Resolution

An official resolution was not available at the time of submission due to Tribal Government budget review. The official resolution will be mailed within 30 days of the original application deadline.

Appendix A.1 – Letter of Support

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
Wapato Irrigation Project
413 S Camas Avenue
Wapato, WA 98951

In Response Reply to
Wapato Irrigation Project

SEP 16 2020

Lorri Gray, Regional Director
Bureau of Reclamation Pacific Northwest Regional Office (PN-6400)
1150 North Curtis Road, Suite 100
Boise, ID 83706-1233

RE: YN Engineering application for funds under USBR funding opportunity No. BOR-DO-21-F001 WaterSMART: Water and Energy Efficiency Grants for Fiscal Year 2021

Dear Ms. Gray:

The USBIA Wapato Irrigation Project is pleased to support the WaterSMART proposal "Track Lateral D Pipeline Conversion" being submitted by Yakama Nation Engineering under the Fiscal Year 2021 WaterSMART: Water and Energy Efficiency grant application.
With an estimated water savings of 1,504 acre-ft per irrigation season, the elimination of tail-end spills, and providing transparency of operation through flow meter equipped turnouts this project proposal is perfectly aligned with the Wapato Irrigation Project's Modernization and Conservation Plan goals.

We encourage Reclamation's support and approval of this proposal. If you have any questions regarding this letter, please contact me at peter.plant@bia.gov.

Sincerely,

Peter L. Plant
Project Administrator
Wapato Irrigation Project
Bureau of Indian Affairs