Bureau of Reclamation

WaterSMART Grants:

Water and Energy Efficiency Grants for Fiscal Year 2022

Category A:

Kennewick Irrigation District

2022 HDPE Canal Lining and Water Conservation Project

Applicant:

Kennewick Irrigation District
2015 South Ely Street
Kennewick, WA 99337

Project Manager:

Charles Freeman
District Manager
2015 South Ely Street
Kennewick, WA 99337
cfreeman@kid.org
Office (509) 586-6012 Fax (509) 586-7663

November 3, 2021

APPLICATION & ASSURANCES

SF-424 Application for Federal Assistance

SF-424A Budget Information

SF-242D Construction Programs

Certification Regarding Lobbying

OMB Number: 4040-0004
Expiration Date: 12/31/2022

Application for Federal Assistance SF-424

* 1. Type of Submission:
- [ ] Preapplication
- [x] Application
- [ ] Changed/Corrected Application

* 2. Type of Application:
- [x] New
- [ ] Continuation
- [ ] Revision

* If Revision, select appropriate letter(s):

* Other (Specify):

* 3. Date Received:
Completed by Grants.gov upon submission.

4. Applicant Identifier:
Kennewick Irrigation District

5a. Federal Entity Identifier:
052594827

5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name:

* b. Employer/Taxpayer Identification Number (EIN/TIN):

* c. Organizational DUNS:

d. Address:

* Street1:
Street2:
* City:
County/Parish:
* State:
Province:
* Country:
* Zip / Postal Code:

e. Organizational Unit:

Department Name:

Division Name:

f. Name and contact information of person to be contacted on matters involving this application:

Prefix: Mr.

* First Name:

Middle Name:

* Last Name:

Suffix:

Title: District Manager

Organizational Affiliation:

* Telephone Number:

Fax Number: (509) 586-7663

* Email:

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

D: Special District Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Bureau of Reclamation

11. Catalog of Federal Domestic Assistance Number:

15.507

CFDA Title:

WaterSMART (Sustain and Manage America's Resources for Tomorrow)

*** 12. Funding Opportunity Number:**

R22AS00023

* Title:

WaterSMART Grants: Water and Energy Efficiency Grants for Fiscal Year 2022

13. Competition Identification Number:

R22AS00023

Title:

WaterSMART Grants: Water and Energy Efficiency Grants for Fiscal Year 2022

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

2022 HDPE Canal Lining and Water Conservation Project

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant: WA-004 * b. Program/Project: WA-004

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 11/01/2022 * b. End Date: 05/01/2024

18. Estimated Funding ($):

* a. Federal	2,000,000.00
* b. Applicant	4,146,900.05
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	6,146,900.05

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: Mr. * First Name: Charles

Middle Name:

* Last Name: Freeman

Suffix:

* Title: District Manager

* Telephone Number: (509) 586-6012 Fax Number: (509) 586-7663

* Email: cfreeman@kid.org

* Signature of Authorized Representative: * Date Signed:

BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006
Expiration Date: 02/28/2022

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. RT Grants: d Energy Efficiency Grants for Fiscal Year 2022	15.507	$	$	$ 2,000,000.00	$ 4,146,900.05	$ 6,146,900.05
2.						
3.						
4.						
5. Totals		$	$	$ 2,000,000.00	$ 4,146,900.05	$ 6,146,900.05

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) WaterSMART Grants: Water and Energy Efficiency Grants for Fiscal Year 2022	(2)	(3)	(4)	(5)
a. Personnel	$ 1,165,255.01	$	$	$	$ 1,165,255.01
b. Fringe Benefits	600,632.74				600,632.74
c. Travel					
d. Equipment	2,125,413.81				2,125,413.81
e. Supplies	2,230,598.50				2,230,598.50
f. Contractual					
g. Construction					
h. Other	25,000.00				25,000.00
i. Total Direct Charges (sum of 6a-6h)	6,146,900.06				$ 6,146,900.06
j. Indirect Charges					$
k. TOTALS (sum of 6i and 6j)	$ 6,146,900.06	$	$	$	$ 6,146,900.06
7. Program Income	$ 0.00	$	$	$	$ 0.00

SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8. Grants: Water and Energy Efficiency Grants for Fiscal Year 2022	$	$	$	$
9.				
10.				
11.				
12. TOTAL (sum of lines 8-11)	$	$	$	$

SECTION D - FORECASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 2,230,598.50	$ 2,230,598.50	$	$	$
14. Non-Federal	$ 3,916,301.56		1,958,150.78		1,958,150.78
15. TOTAL (sum of lines 13 and 14)	$ 6,146,900.06	$ 2,230,598.50	$ 1,958,150.78	$	$ 1,958,150.78

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

(a) Grant Program	FUTURE FUNDING PERIODS (YEARS)			
	(b)First	(c) Second	(d) Third	(e) Fourth
16. Grants: Water and Energy Efficiency Grants for Fiscal Year 2022	$ 700,000.00	$ 650,000.00	$ 650,000.00	$
17.				
18.				
19.				
20. TOTAL (sum of lines 16 - 19)	$ 700,000.00	$ 650,000.00	$ 650,000.00	$

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges:

22. Indirect Charges:

23. Remarks:

ASSURANCES - CONSTRUCTION PROGRAMS

OMB Number: 4040-0009
Expiration Date: 02/28/2022

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the Awarding Agency. Further, certain Federal assistance awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant:, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance, and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, the right to examine all records, books, papers, or documents related to the assistance; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will not dispose of, modify the use of, or change the terms of the real property title or other interest in the site and facilities without permission and instructions from the awarding agency. Will record the Federal awarding agency directives and will include a covenant in the title of real property acquired in whole or in part with Federal assistance funds to assure non-discrimination during the useful life of the project.
4. Will comply with the requirements of the assistance awarding agency with regard to the drafting, review and approval of construction plans and specifications.
5. Will provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work conforms with the approved plans and specifications and will furnish progressive reports and such other information as may be required by the assistance awarding agency or State.
6. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
7. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
8. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards of merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
9. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
10. Will comply with all Federal statutes relating to non-discrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681 1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29) U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statue(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statue(s) which may apply to the application.

11. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal and federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

12. Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

13. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333) regarding labor standards for federally-assisted construction subagreements.

14. Will comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is $10,000 or more.

15. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).

16. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

17. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq).

18. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."

19. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

20. Will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. 7104) which prohibits grant award recipients or a sub-recipient from (1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect (2) Procuring a commercial sex act during the period of time that the award is in effect or (3) Using forced labor in the performance of the award or subawards under the award.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL	TITLE
Completed on submission to Grants.gov	District Manager
APPLICANT ORGANIZATION	DATE SUBMITTED
Kennewick Irrigation District	Completed on submission to Grants.gov

CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

If any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions. Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

* APPLICANT'S ORGANIZATION	Kennewick Irrigation District
* PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE	
Prefix:	Mr.
* First Name:	Charles
Middle Name:	
* Last Name:	Freeman
Suffix:	
* Title:	District Manager
* SIGNATURE:	Completed on submission to Grants.gov
* DATE:	Completed on submission to Grants.gov

TABLE OF CONTENTS

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November 3, 2021
Kennewick Irrigation District
Kennewick, Washington
Benton County

Project Title: 2022 HDPE Canal Lining and Water Conservation Project

TECHNICAL PROPOSAL AND EVALUATION CRITERIA

Executive Summary

The Kennewick Irrigation District (KID or District) submits this application for Funding Opportunity No. R22AS00023 under **Category A** and **Group II Funding** through the WaterSMART Grants: Water and Energy Efficiency Grants for fiscal year 2022 (USBR or Reclamation).

The Kennewick Irrigation District is a federal Bureau of Reclamation supplied irrigation district and is a current recipient of Reclamation project water. **The 2022 HDPE Canal Lining and Water Conservation Project** proposes to install approximately 3.6 mile of High-Density Polyethylene (HDPE) geomembrane canal liner in the following areas:

- Approximately 19,038 lineal feet of the KID Main Canal – Division II, Benton County, Washington State.

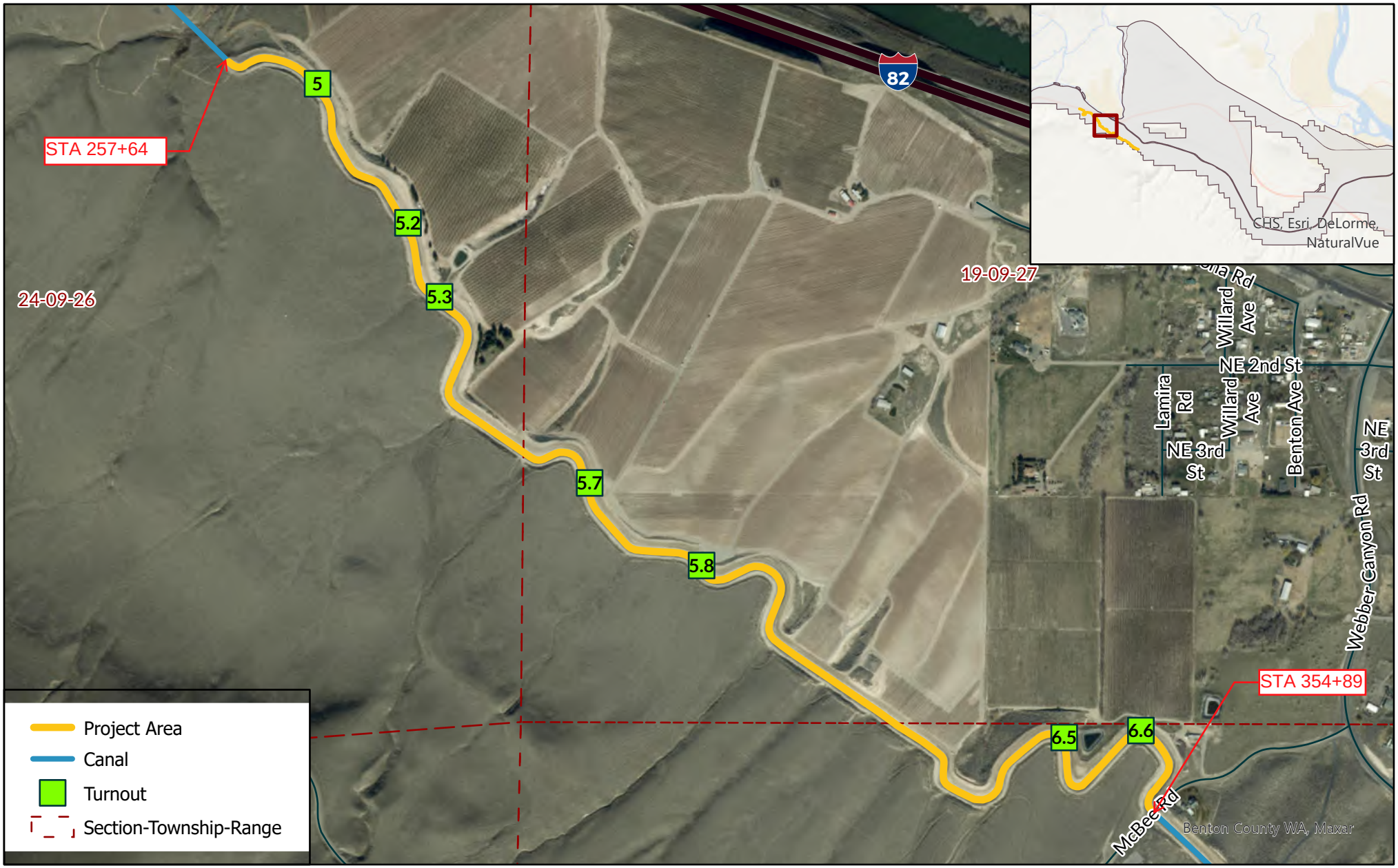
This project will result in quantifiable and sustained water savings of 1,178 acre feet annually. Total project costs are $6,146,900.05 with KID contributing $4,146,900.05 or 67.46%. The schedule for this project would begin in the fall of 2022 and would be completed in the spring of 2024.

Construction is estimated to start October of 2022. The project is located within a canal easement or right-of-way that is in process of being title transferred to KID from Reclamation.

Project Location

The vicinity map on the following page depicts the project location in southeastern Washington State. The proposed project is located west of the City of Kennewick and in Benton County. The project latitude 46°9’30” N is and longitude is 119°7’39” W.

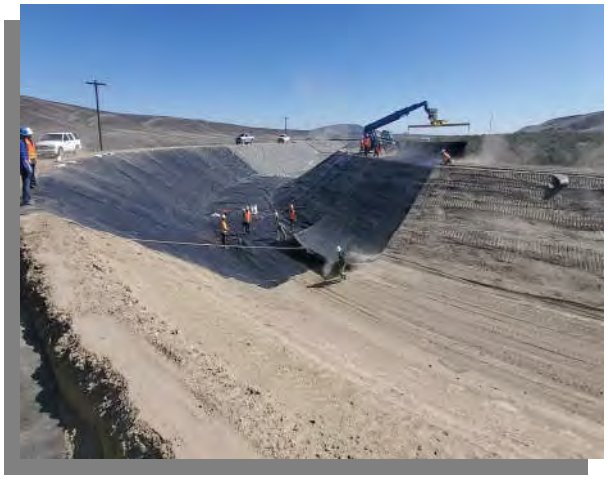
4.9 SIPHON TO MCBEE RD



MCBEE RD TO MC 8.7

Technical Project Description

For nearly a decade, KID has self-performed the design and construction management of its canal lining program. KID's canal lining is accomplished by the installation of a 60-mil HDPE geomembrane liner into a uniformly graded cross-section of earthen canal. The HDPE is fusion welded together using a wedge welder, which creates a dual weld and pocket which allows for the seams to be air tested for water tightness, continuity and strength. The HPDE is secured into a small trench on each side of the canal shoulders anchoring it into place.



Prior to construction, the canal reach to be lined is surveyed and key elevation data points and topography is collected. In addition, encroachments and other potential conflicts are identified during the survey process and communication regarding removal of the encroachment begins. The survey data is then uploaded into a Civil 3D computer program and KID Engineers create a surface of existing conditions. KID Engineers optimize design and create a design surface which is uploaded into KID GPS equipped heavy construction machinery.

KID's heavy construction machinery utilizes GPS abilities and machine control during the regrading and construction process. KID's machinery uses satellites and surface models to determine the machines current position on earth and compares it with the desired surface. This allows machine operators to check grades and positions through a display screen in the machines. This helps improve productivity and overall performance during the construction process. It saves operator time and fuel as efficiency improves.

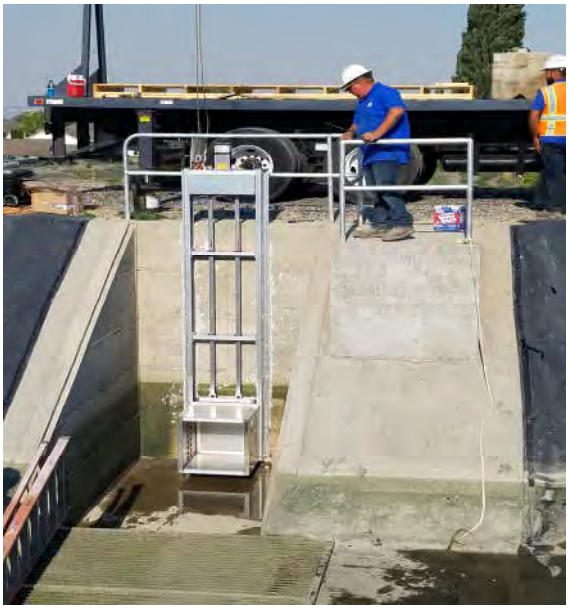
Once the earthen section of canal is regraded and reshaped to its new design cross-section the anchor trenches are dug and the canal lining process begins. A crew of about 10 to 15 laborers is required during the installation of the HDPE. The HDPE is unrolled into sections, cut and then welded together and tested. Special HDPE strips are placed into new concrete which allows for it to be welded and seamed to an adjoining concrete surface. Many of the concrete structures are modified during construction.

The project area selected in the grant application was based on water conservation and public safety due to the substantial elevation changes from the canal embankment to downhill properties and infrastructure immediately adjacent to the canal.

The project proposes to line approximately 19,038 lineal feet of existing earth lined canal. From Station 257+64 to Station 470+80 on KID's Main Canal Division II.

In addition to the canal lining activities, other canal structures such as turnouts, checks, and drains may be modified for the installation of the liner. There are 12 existing turnouts or take-outs within this reach of canal proposed to be lined with this project. Each turnout will need to be modified and adjusted to allow for the installation of the liner. As KID continues to modernize the canal system, it is proposed with this project that each turnout be equipped with an automatic metering device.

KID utilizes Rubicon Water's SlipMeter for our automation needs for larger turnouts. The Slipmeter is in all-in-one gate and meter for farm turnouts. The SlipMeters will provide precise flow control and can maintain accuracy at both high and low flow rates and fluctuating levels in the Canal System. The SlipMeters will be integrated into KID's SCADA system which will allow for real-time data communications with KID. KID can use this information to provide usage to the customers and help promote and educate wise and efficient watering practices



Overall, KID's canal lining program helps to conserve water and become more efficient, it

helps to modernize the earthen canals using modern technology and innovative products. There is one section or approximately 3,000 lineal feet of existing concrete liner that is cracked and deteriorated in places. As part of the project, KID plans to extend the existing concrete shoulders of the canal, raising the embankments a few extra feet to provide additional freeboard. KID then plans to install HDPE liner over the of the existing concrete section.

The original concrete was installed in 1955 and over the years, KID has sealed the cracks of the concrete with various products over the years. The maintenance costs for this reach of canal are very high and lining over the top of it with HDPE will help to reduce long-term maintenance costs as well as conserve water and seepage through the cracks of the concrete.

Evaluation Criteria

A. Quantifiable Water Savings (28 points)

KID's annual average water supply from the past 6 years is approximately 83,485 (Based on USBR Yakima Project Hydromat Data) which includes deliveries to customers, operational spills, seepage and evaporation. The total estimated amount of water conserved for the project 1,178 acre-feet annually, through reduced canal seepage.

The Seepage rate was determined by a study shown in the attached excerpt, which was completed by the United States Geological Survey* (USGS) published in 1997 entitled "Changes in Ground-Water Levels and Ground-Water Budgets, from Predevelopment to 1986, in Parts of the Pasco Basin, WA.". (See Appendix A, pages 25-26) In this study most of the reaches of the Main Canal which are proposed to be lined had a seepage rate established. Note: KID's water right is April 1 to October 31. Applying this formula results in the seepage amounts shown in the table below:

To calculate seepage losses the following formula is used:	
$S = \frac{(SR) * (WP) * (L) * (D)}{\text{Acre (43,560 sq. ft.)}}$	
S	Seepage in Acre-Feet/ Water Season, in ft./day
SR	Seepage rate (from USGS Study* see below)
WP	Wetted Perimeter of Canal Reach to be lined, in sq.ft.
L	Length of Canal Reach, in ft.
D	Days in Water Season

WaterSMART Seepage Analysis

Phase	***Location***	***Canal Section***	***Seepage Rates (ft/d)****	***Wetted Perimeter (ft)***	***Length (ft)***	***Days***	***Seepage (Ac-ft/Year)***
			SR	***WP***	***L***	***D***	***S***
1	MC 4.9 to 8.7	Main Canal Division 2	0.3	42.8	19,038	210	1,178

Upon completion of the project, the 60-Mil HDPE lining that is proposed effectively eliminates seepage loss. A detailed specification and description of the 60-Mil HDPE lining is included. (See Appendix B, page 27)

Verifying the actual canal seepage reduction will be completed by inflow/outflow tests within the canal reaches to be lined. KID began inflow/outflow baseline testing at the end of the water season 2012, and will be continued with inflow/outflow testing every year in the future. The baseline inflow/outflow testing is completed at the beginning and end of the water season, when no water deliveries are occurring, allowing for a more accurate calculation of the water loss in the canal reach. In addition to the beginning and end of season testing, KID has a SCADA system that provides data to calculate losses in the canal reaches. As the KID continues to implement its modernization program, additional metering devices in the canal will be installed to better manage the water flows and levels.

Water that seeps in the ground from KID canals eventually returns to the lower Yakima and Columbia Rivers. Conserved water is governed by the 2001 State v. Acquavella settlement agreement, and its 2011 amendment, both entered into by KID, USBR, the Washington State Department of Ecology and the Yakama Indian Nation.

That portion of the water conserved by the project, which is required to stay in the Yakima River (393 acre feet), will stay in stream. The 785 acre feet of conserved water which is not required to stay in the river, can be better managed by KID and beneficially used in drought years in a manner consistent with the State v. Acquavella settlement agreement. KID is allowed, but is not obligated to leave all conserved water in the Yakima River per the State v. Acquavella settlement agreement. The following table details where the conserved water will go.

Table of Water Conserved Resulting From Project			
Conserved Water	Drive Water at Chandler Pumps Not Diverted at Prosser for Conserved Water	**TOTAL**	
393 AF	491 AF	884 AF	**MINIMUM** addition to in stream flow
785 AF	982 AF	1,767 AF	**67%** of Conserved Water together with Associated Drive Water total
1,178 AF	**1,473 AF**	**2,651 AF**	

In addition to the water conserved as shown in the table above, canal flows will be improved and transit times reduced allowing for more efficient water delivery. Water management will also be improved due to the safety and security of KID's canal facilities as a result of this project, especially for areas adjacent to or below canal embankments.

1.41% of the total average water supply will be conserved as a direct result of this project.

$$\frac{1{,}178\ (Estimated\ Amoun\ \ of\ Water\ Conserved)}{83{,}485\ \ (Av\,r\ \ ge\ \ Annual\ Water\ Supply)} = 1.41\%$$

B. Renewable Energy (20 points)

Water Conservation and reduced diversion to KID may allow for a commensurate **increase in hydropower** production through the Chandler generation station by USBR, according to USBR's Columbia Cascades Area staff. The increase in hydropower is calculated through the following equations:

$$hp = \frac{ha * Q * SG}{3956}$$

Where:

hp = Horsepower

ha = elevation difference = 618.48 ft. – 507.00 ft. (Centerline of Chandler Hydraulic Turbine) = 111.48 ft.

Q = Flow = 1,178 ac-ft + 1,472.5 ac-ft (1,178 x 5/4 drive water ratio at Chandler) Acre-ft per 210-day water season = 2,856 gallons per min.

SG = Specific Gravity of Water = 1

$$hp = \frac{(111.48\ ft.) * (2{,}856\ gpm) * (1)}{3956} = 80.5\ hp$$

And using:

Total KWH = .7457 * hp * 24 hrs * 210 days

Where:

1 hp = .7457 KW

Total KWH = (.7457) * (80.5 hp) * (24 hrs.) * (210 days) = 302,545 KWH

Assuming a pump efficiency of 70%, the estimated commensurate increase in hydropower is 211,781 KWH per year of water conserved.

In addition, the proposed canal lining project **increases hydraulic energy efficiency and water management** by reducing the amount of energy necessary to deliver water in the KID system

The Bureau of Reclamation operates the Chandler Power and Pumping Plant which produces electricity for Reclamation and pumps water to the KID Main Canal utilizing two 167 cfs hydraulically powered pumps. These pumps lift the water delivered to KID from an elevation of 618.48 ft at the Chandler Canal to an elevation of 719.99 ft at the KID Main Canal, this lift that is provided equates to approximately 13,000 KWH per 100 Acre-Feet of water conserved. The total equivalent electrical energy reduced by not diverting the water conserved by the proposed lining project is calculated through the following equations:

$$hp = \frac{h_a * Q * SG}{3956}$$

Where:

hp = Horsepower

h_a = elevation difference = 719.99 ft. – 618.48 ft. = 101.51 ft.

Q = Flow = 1,178 Acre-ft per 210 day water season = 1,269 gallons per min.

SG = Specific Gravity of Water = 1

$$hp = \frac{(101.51 \text{ ft.}) * (1{,}269 \text{ gpm}) * (1)}{3956} = 32.5 \text{ hp}$$

And using:

Total KWH = .7457 * hp * 24 hrs * 210 days

Where:

1 hp = .7457 KW

Total KWH = (.7457) * (32.5 hp) * (24 hrs.) * (210 days) = 122,379 KWH

Assuming an electrical pump efficiency of 80%, the estimated equivalent energy savings for the conserved water is 152,974 KWH per year.

This equivalent energy savings is for the conserved canal seepage only, and does not include the drive water that is saved by not pumping water into the KID canal. This benefit to the project can be verified by measuring the amount of water diverted to the KID Main Canal. Reclamation currently measures the KID diversion on the Hydromet system. KID's water right is from April 1 to October 31.

The performance measure that will verify increased electricity production will be verified through the number of KWH produced by USBR at the Chandler Power and Pumping Plant, through the existing metering system at the site.

The performance measure that will verify the equivalent energy of 152,974 KWH per year is the reduced actual total diversion to KID from Reclamation as measured at the KID Main Canal. In this manner, the total number of acre feet reduced from the diversion will be able to be calculated to equivalent energy savings.

In addition, the project promotes a risk reduction from a potential canal breach by decreasing flowrates in the earthen and unlined sections of canal. In addition, the project will raise the earthen embankments to provide additional freeboard prior to the installation of the HPDE which provides more time for operators to react to an emergency.

The project also promotes community climate resiliency as many water users grow shade trees, grass and organic gardens thus reducing the urban heat island effect. KID lies within a desert climate. Without irrigation water from KID, these investments would not be viable, and customers would see increased power needs. The canal lining will improve KID's drought resiliency as the canal lining helps provide more flexibility to water managers.

C. Sustainability Benefits (20 points)

As KID continues to modernize its system through projects such as canal lining, KID is looking to hire the next generation of Americans to work conserving our public lands and water per Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad." KID workers are part of a well-paying union job and we provide work opportunities for women and people of color in occupations where they are underrepresented in our local community. If awarded this grant, the project will help meet the Secretary of the Interior's goal of conserving 30 percent of our land and water by 2030.

In addition, some areas of the City of Kennewick are areas considered to be of low and moderate income (LMI) of 51% or greater. The map, included as (Appendix C, page 28), is used to help the City of Kennewick identify where to apply HUD Community Development Block Grant Funds. A large portion of these areas are also KID customers and utilize KID irrigation water to grow shade trees, grass and organic gardens. Without irrigation water from KID, these investments would not be viable, and customers would see increased demands and costs to utilize potable water. The project helps KID better manage one of our community's greatest resources.

The water conserved and better managed by this project has the potential to be particularly beneficial to fish in drought and shortage years by increasing in-stream flows in a critical reach of river during critical low flow periods. Downstream benefits of additional flows continue through to the Pacific Ocean. As KID water use needs are met, it lowers KID instantaneous demand during periods that may be beneficial to fishery needs. These critical times are both during the spring smolt outmigration and during summer months when anadromous adults are migrating back upstream in preparation to spawn.

The Yakima Basin is an over allocated, water short basin and the climate in the Basin is changing. Significant droughts occurred in 1977, 1999, 1993, 1994, 2001, 2005 and 2015. Intensive planning efforts have been ongoing since the 1970's to cure the long-term water supply shortages. KID had participated in the formulation of the Yakima Basin Integrated Plan and has endorsed its implementation. There has been significant tension and litigation over water supply for several decades. The State v. Acquavella adjudication has been ongoing since 1977.

In drought years, KID's water supply is pro-rationed based on the projected total water supply available in the basin. KID is dependent on return flows from other upstream USBR Yakima Project diversions including but not limited to, the Sunnyside Valley, Roza, Wapato and Kittitas Irrigation Districts. During drought years, the reduced water supply diminishes crop production, increased KID operation costs and increases competition for a scarce resource. The canal lining project will incrementally reduce the negative effects of drought and improve KID's drought resiliency.

Upstream return flows are diminished when conservation projects are implemented upstream. Reducing KID's canal seepage improves long-term water supply sustainability in the Yakima Basin by reducing the District's water needs. Reduced water needs will reduce competition for scarce water from upstream sources in drought years and will incrementally reduce water related conflict.

This project implements prior collaboration with the Yakama Nation, Ecology, KID and USBR through the settlement agreement. The project may make additional water available to Indian Tribes through increased in stream flows provided to benefit ESA listed steelhead and fisheries important to the Yakama Nation.

Urbanization has stressed the KID system, which adds to the need to line canals to improve safety of downhill property owners and to improve the operational efficiency of the canal system. The project will also provide an increase in public safety levels by helping to prevent canal embankment failures which may result in property damage and/or loss of life.

The project will also benefit the City of Kennewick. During the drought of 2015, The City of Kennewick experience a high demand on their potable water system due to lack of available water from KID and customers utilizing their potable water source to keep shade trees and perennial plants alive. During the worst of these incidents, the City of Kennewick experienced 3 consecutive days where their water treatment plants were at peak production capacities and their water tanks/reservoirs were dropping in level. If the additional demand would have continued for 3 more days, fire flow protection from the City's water system would no longer have been viable leaving the City and its residents at risk for a major catastrophe. Improving KID's drought resiliency decreases the likelihood of a repeat of this situation.

D. Completing On-Farm Irrigation Improvements (10 points)

Canal lining allows for KID to better manage the delivery of our irrigation water. The lined canals improve efficiency and reliability in the delivery of irrigation water to our farmers and growers. With continued canal lining and future improvements in automation, KID plans to shorten the water order times required for farmers and growers. Shortened water order times allow for farmers and growers to optimize irrigation efficiency by timing water use with climate conditions. This also helps farmers and grower in the development of their decision-making models and in the development of their Irrigation Water Management Plans (IWMP).

In addition, KID has seen many of our farmers and growers install on-farm improvements such as lined storage reservoirs. This generally allows them to better manage their water though irrigation scheduling and limits operational spills and over-applied irrigation.

KID is proposing to install 12 Automatic Rubicon SlipMeter devices for the turnouts affected with this project. This equates to roughly 715 irrigable acres or nearly 4% of KID's total irrigable acreage being metered with a modernized control gate. The Slipmeter gates will be integrated into KID's SCADA system which will allow for remote water order request helping our growers be more efficient in their water practices. The Slipmeter can automatically adjust flows as canal water levels fluctuate or as the turnouts become partially plugged. This will save KID personnel hours from having to stop at each turnout and manually adjust the traditional weir box style turnouts with slide gates.

E. Planning and Implementation (8 points)

The Project implements KID's Water Conservation Plans prepared CH2M Hill Engineering in 2009, the Yakima River Basin Enhancement Project goals, and KID's Feasibility Study goals and objectives prepared by MacKay Sposito Engineering in December of 2010.

Additionally, the Project is also on KID's Board of Director's approved 5-year Capital Upgrade and Improvement Plan and the Project criteria and goals are consistent and meet KID's Drought Resiliency Policy 8.3 first established in 1994 and last updated January 15, 2019 by KID's Board of Directors.

The project would be scheduled to occur between September of 2022 and April of 2024. This majority of the work would need to be completed during the irrigation off-seasons between October and April. The Project would occur in easements owned by KID and USBR.

If awarded to KID and a financial agreement could be obtained, KID would immediately work on any environmental and cultural requirement necessary for the project. This will be achieved by securing the applicable permits, if any, prior to any ground-disturbing activities.

KID employs a licensed land surveyor and engineers that will perform design of the project and construction management. In addition, KID operational staff will perform the work. This will provide KID with maximum flexibility and management throughout the project. No new policies or administrative actions will be required to implement the project.

Environmental and Cultural compliance will be required and is discussed in the section below. A SEPA checklist has been drafted and is planned to be submitted if the project is awarded. KID also has past experience collaborating a Memorandum of Agreement (MOA) with Reclamation and the Washington State Historic Preservation Office if necessary. In addition, meetings were held with the above parties, the Confederated Tribe of the Umatilla Indian Reservation and Bands of the Yakama Nation. KID has developed relationships through the MOA process which may help future projects.

The milestone below:

- Financial Assistance Agreement: *Assumes a completion date of April 1, 2022*
- Environmental and cultural resource Compliance: *August 1, 2022*
- Design: *September 1, 2022*
- Permitting: *September 1, 2022*
- Construction work: *Irrigation Offseason of 2022-2023, and 2023-2024, 2024-2025*
- Construction Complete: *May 1, 2025*

F. Collaboration (6 points)

KID collaborates with local entities such as Benton County Water Conservation Board, the Benton County Conservation District, the Benton County Commissioners, City of Kennewick, City of Richland, and the City of West Richland.

In 2013, KID implemented a Planning Committee made up of community volunteer KID rate payers which lasted several years. The committee provided feedback and suggestions for KID's drought policy 8.3 which subsequently went through a 2-week environmental review process through SEPA. This allowed KID to not only collaborate with local community members, but it allowed for any interested party and stake holder to provide input and comments through the environmental review process.

KID also collaborates with other irrigation district, federal and state entities such as the Department of Ecology, Tribes, and other members and groups of the Yakima Basin Integrated Plan https://yakimabasinintegratedplan.org/about-us/.

G. Additional Non-Federal Funding (4 points)

$4,146,900.05 (Non-Federal Funding; KID's Share) = 67.46%
$6,146,900.05 (Total project Cost)

H. Nexus to Reclamation (4 points)

The KID is part of the Bureau of Reclamation's Yakima Project in Washington and diverts water from the Yakima River at Prosser Dam, river mile 47.1. Lands within the KID are located south of the Yakima River and Columbia River and extend to the foot of the Horse Heaven Hills. The KID's canal system ends and spills water back to the Columbia River near mile 317.7.

This project is connected to Reclamation project activities by meeting the goals of the District's Water Conservation Plan, and implementing Reclamation's Yakima Basin Integrated Water Management Plan (Integrated Plan).

The project is located within the Kennewick Division of Reclamation's Yakima Project, which is within the Yakima River Basin. The Kennewick Irrigation District is a federal Bureau of Reclamation supplied irrigation district and is a current recipient of Reclamation project water.

KID has a long and positive relationship with Reclamation that includes previous grant awards for the following projects:

- 2020 WaterSMART: Small-Scale Water and Energy Efficiently Grant;
- 2018 WaterSMART: Water and Energy Efficiency Grant;
- 2016 WaterSMART: Water and Energy Efficiency Grant;
- 2013 WaterSMART: Water and Energy Efficiency Grant;
- 2011 WaterSMART: Water and Energy Efficiency Grant;
- 2011 Field Services Grant for poly-urea membrane lining of concrete panels;
- 2009 Seepage Reduction project;
- 2007 Technology Grant for the installation of a SCADA system on critical portions of the KID canal system.

Additionally, KID meets regularly with the USBR's Yakima Field Office staff regarding regional water supply and quality as well as actively participating in regional water supply planning efforts under the authority of the Yakima River Basin Water Enhancement Project (YRBWEP) and the Yakima Basin Integrated Plan (YBIP).

PROJECT BUDGET

Funding Plan and Letters of Commitment
KID is requesting Group II funding of $2,000,000 or roughly 32.54% of the total project cost estimated at $6,146,900.05. KID's share would be $4,147,313.46 or roughly 67.43% of the total project cost. The KID Board of Directors approved submission of this grant application and matching funds from the KID capital improvement budget. A funding summary is provided in Table 1 below.

No **letters of commitment** from other organizations are applicable. The only funding partners are KID rate payers. The KID Board or Directors authorized the submittal of this grant application for 2022 WaterSMART Grants: Water and Energy Efficiency Grants for Fiscal Year 2022 by resolution during a board meeting on November 2, 2021.

Table 1: Summary of Non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non Federal Entities:	
1) KID In-Kind Contribution	$3,891,301.55
2) KID Cash Contribution	$255,598.50
Non Federal Subtotal:	$4,146,900.05
Other Federal Entities	
1) None	$0.00
Other Federal Subtotal:	$0.00
Requested Reclamation Funding:	$2,000,000
Total Project Funding:	$6,146,900.05

The Budget Proposal
See the following pages:

Budget Proposal
2022 WaterSMART Grant

Salaries and Wages

Budget Item Description		Rate	Unit	Quantity	Total
1	Program Manager	$ 84.14	/Hr	200	$ 16,827.47
2	Staff Engineer	$ 45.34	/Hr	500	$ 22,669.19
3	Inspector/Field Technician	$ 36.62	/Hr	300	$ 10,986.96
4	Surveyor	$ 45.22	/Hr	300	$ 13,566.00
5	Foreman	$ 44.84	/Hr	200	$ 8,968.01
6	Field Operations Lead	$ 39.56	/Hr	1200	$ 47,477.67
7	Maintenance/Canal	$ 32.02	/Hr	25600	$ 819,620.73
8	Part-Time Labor/Seasonal	$ 16.88	/Hr	12800	$ 216,107.29
9	Comptroller	$ 75.06	/Hr	60	$ 4,503.45
10	Senior Accountant	$ 41.51	/Hr	60	$ 2,490.57
11	Accounting Tech/Clerk	$ 33.96	/Hr	60	$ 2,037.67
				Subtotal	**$ 1,165,255.01**

Fringe

Budget Item Description		Rate	Unit	Quantity	Total
12	Program Manager	$ 38.77	/Hr	200	$ 7,754.67
13	Staff Engineer	$ 20.89	/Hr	500	$ 10,447.04
14	Inspector/Field Technician	$ 16.88	/Hr	300	$ 5,064.92
15	Surveyor	$ 21.09	/Hr	300	$ 6,327.00
16	Foreman	$ 26.46	/Hr	200	$ 5,292.99
17	Field Operations Lead	$ 23.35	/Hr	1200	$ 28,014.33
18	Maintenance/Canal	$ 18.89	/Hr	25600	$ 483,547.40
19	Part-Time Labor/Seasonal	$ 3.85	/Hr	12800	$ 49,327.88
20	Comptroller	$ 40.36	/Hr	60	$ 2,421.56
21	Senior Accountant	$ 22.32	/Hr	60	$ 1,339.37
22	Accounting Tech/Clerk	$ 18.26	/Hr	60	$ 1,095.56
				Subtotal	**$ 600,632.74**

KID Owned Equipment

Budget Item Description		Rate	Unit	Quantity	Total
23	CAT 312C Excavator	$ 44.07	/Hr	190	$ 8,372.84
24	JD 85D Excavator	$ 35.77	/Hr	60	$ 2,146.14
25	JD 160G Excavator	$ 55.62	/Hr	480	$ 26,697.41
26	JD 450G Crawler/Dozer	$ 29.02	/Hr	60	$ 1,741.46
27	JD 650J Crawler/Dozer	$ 41.29	/Hr	730	$ 30,143.16
28	CAT D6N Crawler/Dozer	$ 70.79	/Hr	730	$ 51,676.41
29	CAT D8T Crawler/Dozer	$ 195.15	/Hr	730	$ 142,461.47
30	JD 850K Dozer	$ 86.67	/Hr	850	$ 73,665.93
31	CAT D11T Crawler/Dozer	$ 421.67	/Hr	770	$ 324,683.51
32	JD 310SJ Loader/Backhoe	$ 30.52	/Hr	480	$ 14,650.66
33	JD 544J Loader	$ 57.75	/Hr	125	$ 7,218.86
34	CAT 563C Roller	$ 58.67	/Hr	375	$ 22,000.54
35	CAT 140M3 Grader	$ 81.01	/Hr	1200	$ 97,206.60
36	Bobcat T770 (Skid Steer)	$ 20.40	/Hr	120	$ 2,448.14
37	Telehandler Genie GTH - 1056	$ 36.58	/Hr	500	$ 18,291.15
38	Caterpillar 621-F Scraper	$ 144.07	/Hr	500	$ 72,034.00
39	Caterpillar 621-F Scraper	$ 144.07	/Hr	500	$ 72,034.00
40	Caterpillar 621-F Scraper	$ 144.07	/Hr	500	$ 72,034.00
41	Caterpillar 621-F Scraper	$ 144.07	/Hr	500	$ 72,034.00
42	Caterpillar 657G Scrapper	$ 313.59	/Hr	620	$ 194,423.07
43	Caterpillar 657G Scrapper	$ 308.16	/Hr	620	$ 191,061.68
44	Caterpillar 657G Scrapper	$ 308.16	/Hr	620	$ 191,061.68
45	Caterpillar 657E Scrapper	$ 296.42	/Hr	620	$ 183,778.66
46	Mack GUB13 Dump Truck (1)	$ 70.95	/Hr	150	$ 10,643.19
47	Mack GUB13 Dump Truck (2)	$ 70.95	/Hr	150	$ 10,643.19
48	Peterbilt 567 Dump Truck	$ 80.37	/Hr	150	$ 12,055.71
49	Peterbilt 567 Dump Truck	$ 80.37	/Hr	150	$ 12,055.71
50	Kenworth Truck T800W	$ 80.34	/Hr	500	$ 40,168.60
51	Ford L8000 Water Truck	$ 80.37	/Hr	500	$ 40,186.20

Budget Proposal
2022 WaterSMART Grant

52	Ford F-800 Palfinger	$ 38.94	/Hr	40	$ 1,557.53
53	International 7400 Water Truck	$ 84.18	/Hr	500	$ 42,087.95
54	Peterbilt 579 Water Truck	$ 84.12	/Hr	500	$ 42,062.40
55	Peterbilt 579 Water Truck	$ 84.18	/Hr	500	$ 42,087.95
				Subtotal	**$ 2,125,413.81**

KID Rental Equipment

Budget Item Description		Rate	Unit	Quantity	Total
56	TBD	$ -	LS	1	$ -
				Subtotal	**$ -**

Supplies/Materials

Budget Item Description		Rate	Unit	Quantity	Total
57	60-Mil HDPE	$ 0.60	SF	1655687	$ 993,412.20
36	Rubicon Control Gates (12 Turnouts)	$ 41,250.00	EA	12	$ 495,000.00
37	Weed Screens	$ 20,000.00	EA	2	$ 40,000.00
38	Inlets	$ 10,000.00	EA	10	$ 100,000.00
57	Gravel	$ 18.00	TN	7678	$ 138,204.00
58	Concrete	$ 135.00	CY	1200	$ 162,000.00
59	Rebar	$ 0.30	LF	49488	$ 14,846.40
60	Handrail	$ 3.50	LF	1161	$ 4,063.50
61	Weld Strips	$ 6.00	LF	1572	$ 9,432.00
62	Project Support	$ 1.00	LS	20,000	$ 20,000.00
63	SCADA Sites	$ 7,000.00	EA	11	$ 77,000.00
				Subtotal	$ 2,053,958.10
				Sales Tax (8.6%)	$ 176,640.40
				Grand Total	**$ 2,230,598.50**

Environmental Compliance

Budget Item Description		Rate	Unit	Quantity	Total
64	Environ., Cult., and Hist. Review	$25,000	LS	1	$25,000

Total Project Costs $ 6,146,900.05

Budget Narrative

Salaries & Wages; Fringe: is shown as items 1 to 22 of the Budget Proposal. The KID Engineering Manager (Project Manager), Staff Engineers, Inspectors, Foreman, Equipment Operators, Laborers-Full and Part-Time, Comptroller, and Accounting will provide the labor for all phases and for the engineering of the project. Their actual salary rates and individual fringe benefit and tax rates are included under "Fringe" in the calculation of hours in the Budget Proposal.

Equipment: **KID Owned Equipment** is shown as items 23 to 55 of the Budget Proposal. KID owned equipment rates are based on the "Construction Equipment Ownership and Operation Schedule, Region VIII" by U.S. Army Corps of Engineer's Volume 8, August 2021, excerpts of applicable sections of the pamphlet are attached. (See Appendix D, pages 29-52). The KID Foreman on the job will track hourly equipment use and report it daily to an assigned accounting technician.

Rental Equipment: Rental equipment is shown as item 56 and is to be determined and calculated as needed. At this time, KID does not anticipate any rental equipment for this project however, if needed, actual rental rates for the equipment specified will be used.

Supplies/Materials: KID will contract with the lowest responsible bidder for materials on this project. Materials will be purchased prior to breaking ground on the project phases. Prices used in the project estimate are based the average of bids received in since 2019, current Covid-19 Conditions, and engineer's estimates and are shown as items 57 to 63 of the Budget Proposal.

Environmental Compliance: Line item 64 is estimated at $25,000 and is projected for technical assistance from the Yakima office of the Bureau of Reclamation to complete all of the NEPA and cultural resource compliance requirements necessary for this project. This range is based on the potential for Section 106 consultation on adverse effect finding, but is not expected.

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

Environmental compliance will be achieved by securing the applicable permits, if any, prior to any ground-disturbing activity in preparation of the canal lining installation. KID prepared and submitted a programmatic cultural and environmental review, which included the project sites, to the USBR in 2012. A categorical exclusion checklist No. 2012-CCA-103C was issued on October 26, 2012. A copy of this checklist is included. (See Appendix E, pages 53-56)

This project will not create a measurable negative impact to surrounding soil and animal habitat areas, endangered or threatened species, critical habitat areas, wetlands or other surface waters inside the project boundaries. Dust impacts will be minimal during construction and improved after completion of the liner installation. Noise impacts during construction will not adversely impact ESA listed species.

Due to the District's ongoing vegetation management program, this project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species of plants in our area.

The construction of the KID delivery system in its current form was completed in 1957. None of the features of the irrigation system are listed on the National Register of Historic Places, and while constructed in 1957, they have no known historical significance. This project will not result in any modifications to the features of the KID irrigation system. There are no known archeological sites in the proposed project area nor will this project impact or cause adverse effects to tribal lands, low income or minority populations. In addition, KID is in the process of finalizing a district wide archeological survey which has been sent SHPO and local Tribes such as the Umatilla for review and comments.

REQUIRED PERMITS OR APPROVALS

Compliance with the National Environmental Policy Act (NEPA) and with the state environmental policy act (SEPA) is required for this project, and will be completed prior to construction of the project. The KID Board of Directors is required by District policy and state bidding laws to award the project materials contract(s) to the lowest responsible bidder during a public meeting. A KID/USBR grant contract is required. Applicable state and local permits, if any, will be obtained prior to construction.

LETTERS OF SUPPORT AND PARTNERSHIP

In Previous WaterSMART grant applications KID has solicited for and received letters of support from the Benton County Water Conservation Board, the Benton County Conservation District, and the Benton County Commissioners. In Addition, KID has received letters of support from the City of Kennewick. In order to respect other agency's time and effort, KID has not solicited for letter of support for this grant application. If letters of support are necessary for this application, KID will solicit for letters of support from the same organization and provide them as additional attachments as they arrive.

OFFICIAL RESOLUTION

Resolution 2021-46, "Official Resolution for FY 2022 WaterSMART Grants:
Drought Response Program No. R22AS00020: Drought Resiliency Projects Application" will be approved at KID's November 2, 2021 Board Meeting.

Please return to:

Executive Assistant
Kennewick Irrigation District
2015 South Ely Street
Kennewick, WA 99337

KENNEWICK IRRIGATION DISTRICT
RESOLUTION 2021-46

Official Resolution for WaterSMART Grants: Water and Energy Efficiency Grants for Fiscal Year 2022 and Funding Opportunity No. R22AS00023

A RESOLUTION of the Board of Directors of Kennewick Irrigation District (KID), Benton County, Washington, for the purpose of authorizing the District Secretary/Manager as official representative and signature authority for KID in matters relating to the financial and legal obligations associated with the receipt of WaterSMART Grants: Water and Energy Efficiency Grants for Fiscal Year 2022, financial assistance if awarded.

WHEREAS, the Board of Directors of KID (the Board) met in regular session on November 2, 2021 with a quorum present; and

WHEREAS, KID is submitting an application for WaterSMART Grants: Water and Energy Efficiency Grants for Fiscal Year 2022 and Funding Opportunity No. R22AS00023, in the amount of $2,000,000 to complete a water and energy efficiency project with matching funds. The application is due November 3, 2021; and

WHEREAS, the Board is required to appoint an official signature authority representing KID in matters relating to the financial and legal obligations associated with the receipt of the WaterSMART Grants: Water and Energy Efficiency Grants for Fiscal Year 2022 and Funding Opportunity No. R22AS00023 for financial assistance and names Charles Freeman, District Secretary Manager as that representative; and

WHEREAS, KID has budgeted appropriately to complete the project and to meet the requirements of the matching funds criteria and is prepared to work with Reclamation to meet established deadlines associated with the cooperative agreement of this grant award.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE KENNEWICK IRRIGATION DISTRICT, BENTON COUNTY, WASHINGTON, that Charles Freeman, District Secretary Manager is authorized as the official representative and signature authority for KID in matters relating to the financial and legal obligations and requirements

associated with the receipt of WaterSMART Grants: Water and Energy Efficiency Grants for Fiscal Year 2022 and Funding Opportunity No. R22AS00023 financial assistance.

RESOLUTION 2021-46 IS HEREBY ADOPTED by the Board of Directors of Kennewick Irrigation District, Benton County, Washington, at a regular open public meeting thereof this 2nd day of November 2021. This resolution supersedes all previous resolutions relating to the WaterSMART Grants: Water and Energy Efficiency Grants for Fiscal Year 2022 and Funding Opportunity No. R22AS00023 financial assistance.

Gene Huffman, President

Kirk Rathbun, Vice President

David McKenzie, Director

Arland Ward, Director

Dean Dennis, Director

APPENDIX

CHANGES IN GROUND-WATER LEVELS AND GROUND-WATER BUDGETS, FROM PREDEVELOPMENT TO 1986, IN PARTS OF THE PASCO BASIN, WASHINGTON

By B.W. Drost, S.E. Cox, and K.M. Schurr

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 96-4086

Prepared in cooperation with the

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Tacoma, Washington
1997

Table 8.--*Summary of U.S. Geological Survey canal-seepage tests by inflow-outflow method, October, 1987*

[ft^3/s; cubic foot per second; ft/d, cubic foot per day; E, compacted earth lining; C, concrete lining; P, PVC lining; U, unlined; DUNE, dune sand; TCHT, Touchet Beds; PSCO, Pasco gravels; UPRG, upper Ringold Formation; SDLM, Saddle Mountains Basalt]

Canal reach	Discharge (ft^3/s)[1]			Change in discharge[3] (ft^3/s)	Average wetted perimeter (feet)	Length of reach (feet)	Canal lining type	Underlying hydrologic unit	Seepage rate (ft/d)
	Upstream	Adjustment[2]	Downstream						
Columbia Irrigation District									
Canal No. 1 #1	6.36	-0.07	5.21	-1.08	11.0	12,950	U[4]	PSCO	0.7
Canal No. 2 #1	23.2	-.08	22.1	-1.02	15.8	23,925	U+C[5]	PSCO	.2
Kennewick Irrigation District									
Division 4 #1[6]	7.23	-.07	5.80	-1.36	18.7	26,300	U+C[7]	TCHT	.2
Division 4 #1[8]	7.14	-.07	5.95	-1.12	18.7	26,300	U+C[7]	TCHT	.2
Division 4 #2[6]	5.80	-.14	4.31	-1.35	18.8	25,650	U[9]	TCHT	.2
Division 4 #2[8]	5.95	-.14	4.29	-1.52	18.8	25,650	U[9]	TCHT	.3
Division 4 #3[6]	4.31	-.07	2.79	-1.45	13.4	24,050	U[10]	TCHT	.4
Division 4 #3[8]	4.29	-.07	2.78	-1.44	13.4	24,050	U[10]	TCHT	.4
East Badger #1	8.12	-.04	6.84	-1.24	11.0	24,800	U	TCHT	.4
East Badger #2	6.84	-.07	5.99	-.78	10.2	20,600	U[11]	TCHT	.3
East Badger #3	5.99	-.07	3.76	-2.16	8.8	25,600	U[12]	TCHT	.8
Main Canal #1+2[6]	113	-8.37	89.5	-15.13	33.	102,325	U+C[13]	TCHT+SDLM	.4
Main Canal #1[8]	112	-8.34	95.4	-8.26	33.	63,925	U+C	TCHT+SDLM	.3
Main Canal #2[8]	95.4	-.03	89.6	-5.77	32.	38,400	U+C	TCHT+SDLM	.4
South Columbia Basin Irrigation District-Block 1									
PPL	7.79	-.18	7.57	-.04	7.8	13,102	C	PSCO	.3
South Columbia Basin Irrigation District-Block 12									
PE35.8	7.70	-1.09	5.84	-.77	11.1	18,697	U[14]	SDLM	.3

High Density Polyethylene
MicroSpike® Liner

Product Data

Property	Test Method	Frequency	Minimum Average Values				
Thickness (nominal), mil (mm)	ASTM D5994	Per Roll	30 (0.75)	40 (1.0)	60 (1.5)	80 (2.0)	100 (2.5)
Thickness (min avg), mil (mm)			29 (0.71)	38 (0.95)	57 (1.43)	76 (1.9)	95 (2.38)
Thickness (min 8 of 10), mil (mm)			27 (0.68)	36 (0.90)	54 (1.35)	72 (1.8)	90 (2.25)
Thickness (lowest individual), mil (mm)			26 (0.64)	34 (0.85)	51 (1.28)	68 (1.7)	85 (2.13)
Asperity Height mils, (mm)	ASTM D7466	2nd Roll	20 (0.51)	20 (0.51)	20 (0.51)	18 (0.46)	18 (0.46)
Density, g/cc, minimum	ASTM D792, Method B	200,000 lb	0.94	0.94	0.94	0.94	0.94
Tensile Properties (both directions)	ASTM D6693, Type IV						
Strength @ Yield, lb/in width (N/mm)	2 in/minute	20,000 lb	66 (11.6)	88 (15.4)	132 (23.1)	176 (30.8)	220 (38.5)
Elongation @ Yield, % (GL=1.3in)			13	13	13	13	13
Strength @ Break, lb/in width (N/mm)			66 (11.6)	88 (15.4)	132 (23.1.)	176 (30.8)	220 (38.5)
Elongation @ Break, % (GL=2.0in)			350	350	350	350	350
Tear Resistance, lbs. (N)	ASTM D1004	45,000 lb	23 (102)	30 (133)	45 (200)	60 (267)	72 (320)
Puncture Resistance, lbs. (N)	ASTM D4833	45,000 lb	60 (267)	90 (400)	120 (534)	150 (667)	180 (801)
Carbon Black Content, % (range)	ASTM D4218	20,000 lb	2 - 3	2 - 3	2 - 3	2 - 3	2 - 3
Carbon Black Dispersion (Category)	ASTM D5596	45,000 lb	Only near spherical agglomerates: 10 views in Cat. 1 or 2				
Stress Crack Resistance (SP-NCTL), hrs.	ASTM D5397 Appendix	200,000 lb	500	500	500	500	500
Oxidative Induction Time, minutes	ASTM D3895, 200°C, 1 atm O_2	200,000 lb	≥140	≥140	≥140	≥140	≥140

Agru America's geomembranes are certified to pass Low Temp. Brittleness via ASTM D746 (-80°C), Dimensional Stability via ASTM D1204 (±2% @ 100°C). Oven Aging and UV Resistance are tested per GRI GM 13. These product specifications meet or exceed GRI's GM13.

Supply Information (Standard Roll Dimensions)

Thickness		Width			Length		Area (approx.)	
mil	mm	ft	m		ft	m	ft^2	m^2
30	.75	23	7	Double-Sided	930	283	21,390	1,987
				Single-Sided	980	298	22,540	2,094
40	1.0	23	7	Double-Sided	710	216	16,330	1,517
				Single-Sided	760	231	17,478	1,623
60	1.5	23	7	Double-Sided	505	154	11,615	1,079
				Single-Sided	530	161	12,190	1,132
80	2.0	23	7	Double-Sided	385	117	8,855	822
				Single-Sided	400	122	9,200	854
100	2.5	23	7	Double-Sided	310	94	7,130	662
				Single-Sided	325	99	7,475	694

Note:

Average roll weight is 3,900 lbs (1,770 kg). All rolls are supplied with two slings. Rolls are wound on a 6" core. Special length available upon request. Roll length and width have a tolerance of ±1%. The weight values may change due to project specifications (i.e. absolute minimum thickness or special length) or shipping requirments (i.e. international contanerized shipments).

500 Garrison Road, Georgetown, South Carolina 29440 843-546-0600 800-373-2478 Fax: 843-527-2738
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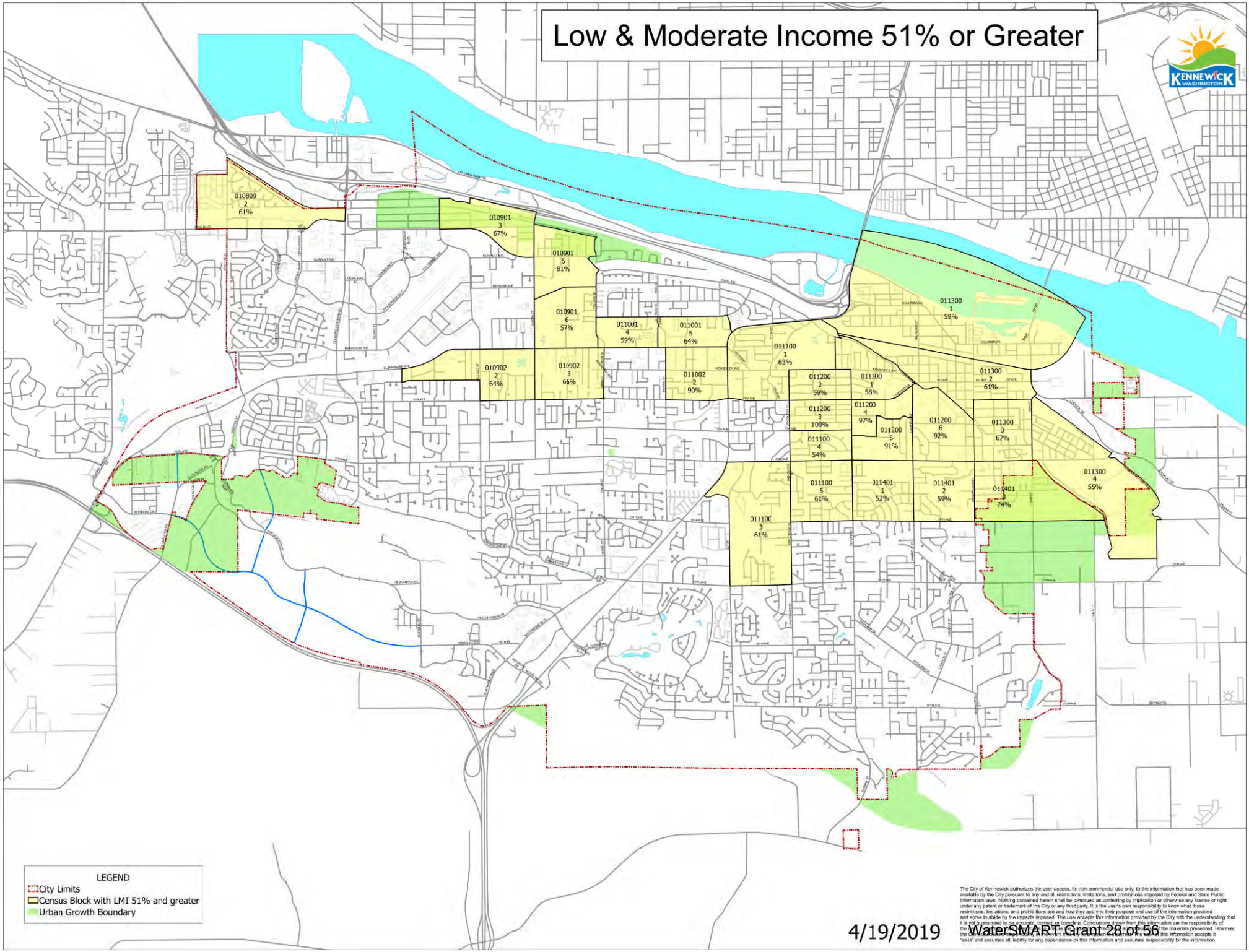

KID Owned Equipment Rates
based on
Construction Equipment Ownership and Operation Schedule, Region VIII
US Army Corps of Engineers, Volume 8, December 2020
EP 1110-1-8

Budget Item (from Table K)	KID Owned Equipment	Year	Hour Rate	DEPR	FCCM	Equipment Age Adj.	Adj. Hourly	40 Hour Adj. Monthly Rate
23	CAT 312C Excavator	2006	$ 44.43	$ 17.30	$ 0.82	0.98	$ 44.07	$ 7,050.82
24	JD 85D Excavator	2013	$ 36.07	$ 14.37	$ 0.68	0.98	$ 35.77	$ 5,723.04
25	JD 160G Excavator	2014	$ 56.53	$ 21.73	$ 1.03	0.96	$ 55.62	$ 8,899.14
26	JD 450G Crawler/Dozer	1999	$ 29.27	$ 7.72	$ 0.47	0.97	$ 29.02	$ 4,643.89
27	JD 650J Crawler/Dozer	2008	$ 41.64	$ 10.93	$ 0.67	0.97	$ 41.29	$ 6,606.72
28	CAT D6N Crawler/Dozer	2016	$ 70.99	$ 18.89	$ 1.15	0.99	$ 70.79	$ 11,326.34
29	CAT D8T Crawler/Dozer	2016	$ 195.74	$ 55.00	$ 3.73	0.99	$ 195.15	$ 31,224.43
30	JD 850K Dozer	2014	$ 87.17	$ 23.76	$ 1.45	0.98	$ 86.67	$ 13,866.53
31	CAT D11T Crawler/Dozer	2011	$ 440.24	$ 133.16	$ 9.71	0.87	$ 421.67	$ 67,466.70
32	JD 310SJ Loader/Backhoe	2009	$ 30.72	$ 9.36	$ 0.53	0.98	$ 30.52	$ 4,883.55
33	JD 544J Loader	2005	$ 58.35	$ 18.97	$ 1.00	0.97	$ 57.75	$ 9,240.14
34	CAT 563C Roller	2000	$ 59.23	$ 17.90	$ 0.83	0.97	$ 58.67	$ 9,386.90
35	CAT 140M3 Grader	2019	$ 79.63	$ 25.47	$ 2.04	1.05	$ 81.01	$ 12,960.88
36	Bobcat T770 (Skid Steer)	2016	$ 20.46	$ 5.64	$ 0.24	0.99	$ 20.40	$ 3,264.19
37	Telehandler Genie GTH - 1056	2012	$ 36.93	$ 10.95	$ 0.64	0.97	$ 36.58	$ 5,853.17
38	Caterpillar 621-F Scraper	1999	$ 155.20	$ 44.94	$ 3.46	0.77	$ 144.07	$ 23,050.88
39	Caterpillar 621-F Scraper	1999	$ 155.20	$ 44.94	$ 3.46	0.77	$ 144.07	$ 23,050.88
40	Caterpillar 621-F Scraper	2000	$ 155.20	$ 44.94	$ 3.46	0.77	$ 144.07	$ 23,050.88
41	Caterpillar 621-F Scraper	2000	$ 155.20	$ 44.94	$ 3.46	0.77	$ 144.07	$ 23,050.88
42	Caterpillar 657G Scrapper	2014	$ 317.20	$ 83.94	$ 6.42	0.96	$ 313.59	$ 50,173.70
43	Caterpillar 657G Scrapper	2012	$ 317.20	$ 83.94	$ 6.42	0.90	$ 308.16	$ 49,306.24
44	Caterpillar 657G Scrapper	2012	$ 317.20	$ 83.94	$ 6.42	0.90	$ 308.16	$ 49,306.24
45	Caterpillar 657E Scrapper	1988	$ 317.20	$ 83.94	$ 6.42	0.77	$ 296.42	$ 47,426.75
46	Mack GUB13 Dump Truck (1)	2008	$ 71.15	$ 9.20	$ 0.57	0.98	$ 70.95	$ 11,352.74
	Truck Option - Dump Body		$ 2.20	$ 1.15	$ 0.04	0.98	$ 2.18	$ 348.19
	Subtotal		$ 73.35				$ 73.13	$ 11,700.93
47	Mack GUB13 Dump Truck (2)	2008	$ 71.15	$ 9.20	$ 0.57	0.98	$ 70.95	$ 11,352.74
	Truck Option - Dump Body		$ 2.20	$ 1.15	$ 0.04	0.98	$ 2.18	$ 348.19
	Subtotal		$ 73.35				$ 73.13	$ 11,700.93
48	Peterbilt 567 Dump Truck	2016	$ 71.15	$ 9.20	$ 0.57	0.83	$ 69.49	$ 11,118.26
	Truck Option - Dump Body		$ 2.20	$ 1.15	$ 0.04	0.97	$ 2.16	$ 346.29
	Truck Option - Pup Trailer		$ 8.80	$ 3.94	$ 0.16	0.98	$ 8.72	$ 1,394.88
	Subtotal		$ 82.15				$ 80.37	$ 11,464.54
49	Peterbilt 567 Dump Truck	2016	$ 71.15	$ 9.20	$ 0.57	0.83	$ 69.49	$ 11,118.26
	Truck Option - Dump Body		$ 2.20	$ 1.15	$ 0.04	0.97	$ 2.16	$ 346.29
	Truck Option - Pup Trailer		$ 8.80	$ 3.94	$ 0.16	0.98	$ 8.72	$ 1,394.88
	Subtotal		$ 82.15				$ 80.37	$ 11,464.54
50	Kenworth Truck T800W	2017	$ 71.15	$ 9.20	$ 0.57	0.83	$ 69.49	$ 11,118.26
	Truck Option - Dump Body		$ 2.20	$ 1.15	$ 0.04	0.97	$ 2.16	$ 346.29
	Truck Option - Side Dump		$ 8.76	$ 3.63	$ 0.18	0.98	$ 8.68	$ 1,389.41
	Subtotal		$ 82.11				$ 80.34	$ 11,464.54
51	Ford L8000 Water Truck	1987	$ 71.15	$ 9.20	$ 0.57	0.98	$ 70.95	$ 11,352.74
	Truck Option - Water Tank		$ 9.52	$ 4.89	$ 0.22	0.98	$ 9.42	$ 1,506.85
	Subtotal		$ 80.67				$ 80.37	$ 12,859.58
52	Ford F-800 Palfinger	1990	$ 24.13	$ 5.09	$ 0.26	0.98	$ 24.02	$ 3,843.68
	Truck Option - Dump Body		$ 2.14	$ 1.12	$ 0.04	0.98	$ 2.12	$ 338.69
	Truck Option - Pal-Finger		$ 12.92	$ 5.84	$ 0.24	0.98	$ 12.80	$ 2,047.74
	Subtotal		$ 39.19				$ 38.94	$ 6,230.11
53	International 7400 Water Truck	2007	$ 74.92	$ 8.92	$ 1.73	0.98	$ 74.71	$ 11,953.12
	Truck Option - Water Tank		$ 9.52	$ 4.89	$ 0.22	0.99	$ 9.47	$ 1,515.02
	Subtotal		$ 84.44				$ 84.18	$ 13,468.14
54	Peterbilt 579 Water Truck	2016	$ 74.92	$ 8.92	$ 1.73	0.98	$ 74.71	$ 11,953.12
	Truck Option - Water Tank		$ 9.52	$ 4.89	$ 0.22	0.98	$ 9.42	$ 1,506.85
	Subtotal		$ 84.44				$ 84.12	$ 13,459.97
55	Peterbilt 579 Water Truck	2016	$ 74.92	$ 8.92	$ 1.73	0.98	$ 74.71	$ 11,953.12
	Truck Option - Water Tank		$ 9.52	$ 4.89	$ 0.22	0.99	$ 9.47	$ 1,515.02
	Subtotal		$ 84.44				$ 84.18	$ 13,468.14

Hourly Equipment Ownership and Operating Expense

H25 HYDRAULIC EXCAVATORS, CRAWLER MOUNTED

H25 0.11 OVER 12,500 LBS THRU 40,000 LBS

CATERPILLAR INC. (MACHINE DIVISION)

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
H25CA020	311F RR	HYDRAULIC EXCAVATOR, CRAWLER, 29,000 LBS, 1.00 CY BUCKET, 18.3' MAX DIGGING DEPTH		D-Off 74 HP		D-Off	290

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$15.67	$0.75	**$16.42**	$5.96	$0.93	$0.00	$0.00	$16.16	**$23.05**	**$39.47**
Severe	$19.03	$0.76	**$19.79**	$7.89	$1.23	$0.00	$0.00	$23.83	**$32.95**	**$52.74**
Standby	$7.84	$0.75							**$8.59**	

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
H25CA021	312E	HYDRAULIC EXCAVATOR, CRAWLER, 33,080 LBS, 1.0 CY BUCKET, 18.2' MAX DIGGING DEPTH		D-Off 91 HP		D-Off	331

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$17.30	$0.82	**$18.12**	$7.33	$1.15	$0.00	$0.00	$17.83	**$26.31**	**$44.43**
Severe	$21.00	$0.84	**$21.84**	$9.70	$1.52	$0.00	$0.00	$26.29	**$37.51**	**$59.35**
Standby	$8.65	$0.82							**$9.47**	

CAT 312C Excavator

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

H25 HYDRAULIC EXCAVATORS, CRAWLER MOUNTED

H25 0.11 OVER 12,500 LBS THRU 40,000 LBS

CATERPILLAR INC. (MACHINE DIVISION)

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
H25CA038	308E2	HYDRAULIC EXCAVATOR, CRAWLER, 18,500 LBS, 0.48 CY BUCKET, 15.5' MAX DIGGING DEPTH		D-Off	66.6	HP	D-Off	185

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$14.37	$0.68	**$15.05**	$5.37	$0.84	$0.00	$0.00	$14.81	**$21.02**	**$36.07**
Severe	$17.45	$0.70	**$18.15**	$7.10	$1.11	$0.00	$0.00	$21.84	**$30.05**	**$48.20**
Standby	$7.19	$0.68							**$7.87**	

JD 85D Excavator

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
H25CA073	315F	HYDRAULIC EXCAVATOR, CRAWLER, 44,800 LBS, 1.31 CY BUCKET, 19.5' MAX DIGGING DEPTH		D-Off	100	HP	D-Off	333

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$20.29	$0.97	**$21.26**	$8.06	$1.26	$0.00	$0.00	$20.92	**$30.24**	**$51.50**
Severe	$24.64	$0.99	**$25.63**	$10.66	$1.67	$0.00	$0.00	$30.85	**$43.18**	**$68.81**
Standby	$10.15	$0.97							**$11.12**	

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

H25 HYDRAULIC EXCAVATORS, CRAWLER MOUNTED

H25 0.11 OVER 12,500 LBS THRU 40,000 LBS

CATERPILLAR INC. (MACHINE DIVISION)

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
H25CA013	314 E CR	HYDRAULIC EXCAVATOR, CRAWLER, 32,600 LBS, 1.0 CY BUCKET, 19' 6" MAX DIGGING DEPTH		D-Off	89	HP	D-Off	326

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$20.85	$0.99	**$21.84**	$7.17	$1.12	$0.00	$0.00	$21.49	**$29.78**	**$51.62**
Severe	$25.31	$1.01	**$26.32**	$9.49	$1.48	$0.00	$0.00	$31.69	**$42.67**	**$68.99**
Standby	$10.43	$0.99							**$11.42**	

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
H25CA014	316F L	HYDRAULIC EXCAVATOR, CRAWLER, 38,600 LBS, 1.19 CY BUCKET, 21' 7" MAX DIGGING DEPTH		D-Off	122	HP	D-Off	386

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$21.73	$1.03	**$22.76**	$9.83	$1.54	$0.00	$0.00	$22.40	**$33.77**	**$56.53**
Severe	$26.38	$1.05	**$27.43**	$13.01	$2.04	$0.00	$0.00	$33.03	**$48.07**	**$75.50**
Standby	$10.87	$1.03							**$11.90**	

JD 160G Excavator

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

T15 TRACTORS, CRAWLER (DOZER) (includes blade)

T15 0.01 0 THRU 225 HP

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
T15JD005	450J LT	TRACTOR, CRAWLER (DOZER), 70 HP, HYDROSTATIC, W/2.00 CY ANGLE BLADE (ADD ATTACHMENTS)		D-Off	70	HP	D-Off	155

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$7.72	$0.47	**$8.19**	$6.19	$0.99	$0.00	$0.00	$13.89	**$21.08**	**$29.27**
Severe	$9.64	$0.48	**$10.12**	$8.01	$1.29	$0.00	$0.00	$19.73	**$29.03**	**$39.15**
Standby	$3.86	$0.47							**$4.33**	

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
T15JD006	450J LGP	TRACTOR, CRAWLER (DOZER), 70 HP, HYDROSTATIC, LOW GROUND PRESSURE, W/2.15 CY ANGLE BLADE (ADD ATTACHMENTS)		D-Off	70	HP	D-Off	165

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$7.74	$0.47	**$8.21**	$6.19	$0.99	$0.00	$0.00	$13.93	**$21.11**	**$29.32**
Severe	$9.67	$0.48	**$10.15**	$8.01	$1.29	$0.00	$0.00	$19.78	**$29.08**	**$39.23**
Standby	$3.87	$0.47							**$4.34**	

JD 450G Crawler/Dozer

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

T15 TRACTORS, CRAWLER (DOZER) (includes blade)

T15 0.01 0 THRU 225 HP

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
T15JD007	650K	TRACTOR, CRAWLER (DOZER), 101 HP, HYDROSTATIC, W/2.60 CY POWER ANGLE TILT (PAT) BLADE (ADD ATTACHMENTS)		D-Off	101	HP	D-Off	185

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$10.93	$0.67	**$11.60**	$8.93	$1.43	$0.00	$0.00	$19.67	**$30.04**	**$41.64**
Severe	$13.66	$0.68	**$14.34**	$11.55	$1.86	$0.00	$0.00	$27.94	**$41.35**	**$55.69**
Standby	$5.47	$0.67							**$6.14**	

JD 650J Crawler/Dozer

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
T15JD008	750K XLT	TRACTOR, CRAWLER (DOZER), 155 HP, HYDROSTATIC, W/5.60 CY POWER ANGLE TILT (PAT) BLADE (ADD ATTACHMENTS)		D-Off	155	HP	D-Off	317

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$18.84	$1.15	**$19.99**	$13.70	$2.20	$0.00	$0.00	$33.91	**$49.81**	**$69.80**
Severe	$23.55	$1.17	**$24.72**	$17.73	$2.85	$0.00	$0.00	$48.17	**$68.75**	**$93.47**
Standby	$9.42	$1.15							**$10.57**	

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

T15 TRACTORS, CRAWLER (DOZER) (includes blade)

T15 0.01 0 THRU 225 HP

CATERPILLAR INC. (MACHINE DIVISION)

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
T15CA005	D4K2 LGP	TRACTOR, CRAWLER (DOZER), 92 HP, LOW GROUND PRESSURE, W/2.42 CY STRAIGHT BLADE (ADD ATTACHMENTS)		D-Off	92	HP	D-Off	187

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$12.93	$0.79	**$13.72**	$8.13	$1.31	$0.00	$0.00	$23.28	**$32.72**	**$46.44**
Severe	$16.17	$0.80	**$16.97**	$10.52	$1.69	$0.00	$0.00	$33.07	**$45.28**	**$62.25**
Standby	$6.47	$0.79							**$7.26**	

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
T15CA008	D6N XL	TRACTOR, CRAWLER (DOZER), 182 HP, W/4.30 CY SEMI-U BLADE (ADD ATTACHMENTS)		D-Off	182	HP	D-Off	361

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$23.78	$1.45	**$25.23**	$16.09	$2.58	$0.00	$0.00	$42.81	**$61.49**	**$86.72**
Severe	$29.73	$1.48	**$31.21**	$20.82	$3.34	$0.00	$0.00	$60.81	**$84.98**	**$116.19**
Standby	$11.89	$1.45							**$13.34**	

CAT D6N Crawler/Dozer

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

T15 TRACTORS, CRAWLER (DOZER) (includes blade)

T15 0.02 226 HP THRU 425 HP

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
T15CA014	D7E LGP	TRACTOR, CRAWLER (DOZER), 251 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE (ADD ATTACHMENTS)		D-Off 251 HP		D-Off	629

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$44.05	$2.99	**$47.04**	$22.19	$2.77	$0.00	$0.00	$80.74	**$105.70**	**$152.74**
Severe	$52.44	$3.03	**$55.47**	$28.71	$3.59	$0.00	$0.00	$100.12	**$132.42**	**$187.89**
Standby	$22.03	$2.99							**$25.02**	

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
T15CA016	D8T	TRACTOR, CRAWLER (DOZER), 364 HP, W/11.3 CY SEMI-U BLADE (ADD ATTACHMENTS)		D-Off 364 HP		D-Off	663

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$55.00	$3.73	**$58.73**	$32.18	$4.02	$0.00	$0.00	$100.81	**$137.01**	**$195.74**
Severe	$65.47	$3.78	**$69.25**	$41.64	$5.20	$0.00	$0.00	$125.01	**$171.86**	**$241.11**
Standby	$27.50	$3.73							**$31.23**	

CAT D8T Crawler/Dozer

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

T15 TRACTORS, CRAWLER (DOZER) (includes blade)

T15 0.01 0 THRU 225 HP

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
T15JD009	750K LGP	TRACTOR, CRAWLER (DOZER), 165 HP, HYDROSTATIC, LOW GROUND PRESSURE, W/4.84 CY POWER ANGLE TILT (PAT) BLADE (ADD ATTACHMENTS)		D-Off	165	HP	D-Off	365

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$18.89	$1.15	**$20.04**	$14.59	$2.34	$0.00	$0.00	$34.01	**$50.95**	**$70.99**
Severe	$23.62	$1.17	**$24.79**	$18.88	$3.03	$0.00	$0.00	$48.31	**$70.23**	**$95.02**
Standby	$9.45	$1.15							**$10.60**	

JD 850K Dozer

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
T15JD010	850K XLT	TRACTOR, CRAWLER (DOZER), 187 HP, HYDROSTATIC, W/7.44 CY SEMI-U POWER ANGLE TILT (PAT) BLADE (ADD ATTACHMENTS)		D-Off	187	HP	D-Off	404

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$23.76	$1.45	**$25.21**	$16.53	$2.66	$0.00	$0.00	$42.78	**$61.96**	**$87.17**
Severe	$29.70	$1.48	**$31.18**	$21.39	$3.44	$0.00	$0.00	$60.76	**$85.59**	**$116.77**
Standby	$11.88	$1.45							**$13.33**	

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

T15 TRACTORS, CRAWLER (DOZER) (includes blade)

T15 0.03 OVER 425 HP

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
T15CA019	D11T	TRACTOR, CRAWLER (DOZER), 850 HP, POWERSHIFT, W/35.7 CY SEMI-U BLADE (ADD ATTACHMENTS)		D-Off	850	HP	D-Off	827

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$133.16	$9.71	**$142.87**	$64.09	$4.44	$0.00	$0.00	$228.84	**$297.37**	**$440.24**
Severe	$159.80	$9.83	**$169.63**	$81.77	$5.67	$0.00	$0.00	$308.93	**$396.37**	**$566.00**
Standby	$66.58	$9.71							**$76.29**	

CAT D11T Crawler/Dozer

T20 0.00 TRACTORS, WHEEL TYPE (DOZER)

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
T20CA001	814K	TRACTOR, WHEEL (DOZER), 240 HP, ARTICULATING, 4X4, W/3.77 CY STRAIGHT BLADE		D-Off	232	HP	D-Off	479

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$36.13	$2.31	**$38.44**	$17.49	$2.19	$6.51	$1.03	$28.89	**$56.11**	**$94.55**
Severe	$38.91	$2.32	**$41.23**	$22.32	$2.79	$20.84	$3.28	$33.71	**$82.95**	**$124.18**
Standby	$18.07	$2.31							**$20.38**	

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

L50 LOADERS / BACKHOE, WHEEL TYPE

L50 0.00 LOADERS / BACKHOE, WHEEL TYPE

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
L50CS036	580N	LOADER/BACKHOE, WHEEL, 1.3 CY FRONT END BUCKET, 12.7 CF BACKHOE BUCKET, 18' 3" DIGGING DEPTH, 4X4		D-Off 83 HP		D-Off	178

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$10.84	$0.62	**$11.46**	$5.18	$2.40	$1.51	$0.24	$13.37	**$22.70**	**$34.16**
Severe	$18.07	$0.65	**$18.72**	$7.34	$3.40	$5.40	$0.85	$23.68	**$40.67**	**$59.39**
Standby	$5.42	$0.62							**$6.04**	

CATERPILLAR INC. (MACHINE DIVISION)

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
L50CA001	416F	LOADER / BACKHOE, WHEEL, 1.30 CY FRONT END BUCKET, 8.5 CF, 14.3' DIGGING DEPTH, 4X4		D-Off 95 HP		D-Off	152

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$9.36	$0.53	**$9.89**	$5.93	$2.75	$0.56	$0.09	$11.50	**$20.83**	**$30.72**
Severe	$15.59	$0.56	**$16.15**	$8.40	$3.89	$1.95	$0.31	$20.37	**$34.91**	**$51.06**
Standby	$4.68	$0.53							**$5.21**	

JD 310SJ Loader/Backhoe

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

L40 LOADERS, FRONT END, WHEEL TYPE

L40 0.11 ARTICULATED, 0 THRU 225 HP

CATERPILLAR INC. (MACHINE DIVISION)

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
L40CA034	908M	LOADER, FRONT END, WHEEL, 1.40 HEAPED CY BUCKET, ARTICULATED, 4X4		D-Off	74	HP	D-Off	141

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$10.24	$0.54	**$10.78**	$5.96	$0.69	$0.79	$0.12	$11.03	**$18.60**	**$29.38**
Severe	$10.82	$0.54	**$11.36**	$7.89	$0.92	$2.56	$0.40	$13.32	**$25.09**	**$36.45**
Standby	$5.12	$0.54							**$5.66**	

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
L40CA040	930M	LOADER, FRONT END, WHEEL, 3.2 HEAPED CY BUCKET, ARTICULATED, 4X4		D-Off	166	HP	D-Off	309

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$18.97	$1.00	**$19.97**	$13.38	$1.56	$2.60	$0.41	$20.44	**$38.38**	**$58.35**
Severe	$20.05	$1.01	**$21.06**	$17.70	$2.06	$8.37	$1.32	$24.69	**$54.14**	**$75.20**
Standby	$9.49	$1.00							**$10.49**	

JD 544J Loader

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

R50 ROLLERS, VIBRATORY, SELF-PROPELLED, SINGLE DRUM

R50 0.00 ROLLERS, VIBRATORY, SELF-PROPELLED

CATERPILLAR INC. (MACHINE DIVISION)

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
R50CA007	CS64B	ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 13.3 TON, 84" WIDE, 3X2, SOIL COMPACTOR		D-Off	131	HP	D-Off	254

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$17.90	$0.83	**$18.73**	$10.56	$1.51	$1.12	$0.18	$27.13	**$40.50**	**$59.23**
Standby	$8.95	$0.83							**$9.78**	

CAT 563C Roller

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
R50CA008	CS74B	ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 17.7 TON, 84" WIDE, 3X2, SOIL COMPACTOR		D-Off	174	HP	D-Off	301

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$24.55	$1.13	**$25.68**	$14.02	$2.00	$1.12	$0.18	$37.14	**$54.46**	**$80.14**
Standby	$12.28	$1.13							**$13.41**	

* - Adjustable Elements

Region: 8
Pamphlet Year: 2020

Hourly Equipment Ownership and Operating Expense

G15 GRADERS, MOTOR

G15 0.00 GRADERS, MOTOR

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
G15CA039	140M3 AWD	MOTOR GRADER, ARTICULATED, 6X6, 14' BLADE		D-Off 200 HP		D-Off	399

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$25.47	$2.04	**$27.51**	$15.08	$2.28	$5.40	$0.85	$28.51	**$52.12**	**$79.63**
Severe	$27.35	$2.05	**$29.40**	$19.24	$2.91	$15.90	$2.50	$34.70	**$75.26**	**$104.66**
Standby	$12.74	$2.04							**$14.78**	

CAT 140M3 Grader

JOHN DEERE

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
G15JD008	670G	GRADER, MOTOR, ARTICULATED, 6X4, AWD, 12' BLADE W/5 RIPPER/SCARIFIERS		D-Off 235 HP		D-Off	423

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$14.25	$1.17	**$15.42**	$17.72	$2.68	$5.17	$0.81	$16.06	**$42.44**	**$57.86**
Severe	$15.30	$1.18	**$16.48**	$22.61	$3.42	$14.72	$2.32	$19.54	**$62.61**	**$79.09**
Standby	$7.13	$1.17							**$8.30**	

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

L40 LOADERS, FRONT END, WHEEL TYPE

L40 0.20 SKID STEER

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
L40ME023	S740	LOADER, FRONT END, WHEEL, SKID-STEER, 23.3 HEAPED CF, 78" BUCKET, 4X4		D-Off	74	HP	D-Off	88

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$5.61	$0.24	**$5.85**	$6.54	$0.76	$0.72	$0.11	$6.47	**$14.61**	**$20.46**
Standby	$2.81	$0.24							**$3.05**	

Bobcat T770 (Skid Steer)

L40 0.31 TOOL CARRIER & TELESCOPIC HANDLE

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
L40CA015	TH255C	TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4		D-Off	74	HP	D-Off	110

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$6.77	$0.38	**$7.15**	$5.96	$0.69	$0.47	$0.07	$8.84	**$16.04**	**$23.19**
Severe	$7.32	$0.38	**$7.70**	$7.89	$0.92	$1.18	$0.19	$10.12	**$20.29**	**$27.99**
Standby	$3.39	$0.38							**$3.77**	

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

L40 LOADERS, FRONT END, WHEEL TYPE

L40 0.31 TOOL CARRIER & TELESCOPIC HANDLE

JCB INC.

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
L40JC019	510-55TC	TELEHANDLER, 10,000 LB MAX LOAD, 54.75' MAX LIFT HEIGHT WITH 5,000 LB LOAD, 41.5' MAX FORWARD REACH WITH 1,000 LB CAPACITY		D-Off 74 HP		D-Off	275

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$10.95	$0.64	**$11.59**	$5.96	$0.69	$3.66	$0.58	$14.45	**$25.34**	**$36.93**
Severe	$11.84	$0.65	**$12.49**	$7.89	$0.92	$9.16	$1.44	$16.54	**$35.94**	**$48.43**
Standby	$5.48	$0.64							**$6.12**	

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
L40JC020	512-26	TELEHANDLER, 12,000 LB MAX LOAD, 26.5' MAX LIFT HEIGHT WITH 6,600 LB LOAD, 14.7' MAX FORWARD REACH WITH 3,800 LB CAPACITY		D-Off 125 HP		D-Off	243

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$9.78	$0.57	**$10.35**	$10.08	$1.17	$1.89	$0.30	$12.90	**$26.35**	**$36.70**
Severe	$10.58	$0.58	**$11.16**	$13.33	$1.55	$4.74	$0.75	$14.77	**$35.13**	**$46.29**
Standby	$4.89	$0.57							**$5.46**	

Telehandler Genie GTH - 1056

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

S10 SCRAPERS, ELEVATING

S10 0.02 OVER 200 HP

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
S10CA003	623K	SCRAPER, ELEVATING LOADING, 23 HEAPED CY, 27.6 TON, 10.3' CUT WIDTH, 4X2 - SINGLE POWERED		D-Off	407	HP	D-Off	833

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$51.90	$3.86	**$55.76**	$32.80	$4.68	$18.32	$2.89	$74.10	**$132.79**	**$188.55**
Severe	$58.67	$3.89	**$62.56**	$43.39	$6.20	$57.38	$9.04	$88.18	**$204.18**	**$266.74**
Standby	$25.95	$3.86							**$29.81**	

S15 0.00 SCRAPERS, CONVENTIONAL

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main			Carrier	CWT
S15CA001	621K	SCRAPER, CONVENTIONAL, STANDARD LOADING, 24 HEAPED CY, 29 TON, 10.3' CUT WIDTH, 4X2 - SINGLE POWERED		D-Off	407	HP	D-Off	770

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$44.94	$3.46	**$48.40**	$30.69	$4.38	$18.32	$2.89	$50.52	**$106.80**	**$155.20**
Severe	$53.93	$3.50	**$57.43**	$39.15	$5.59	$57.38	$9.04	$64.41	**$175.57**	**$233.00**
Standby	$22.47	$3.46							**$25.93**	

Caterpillar 621-F Scraper

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

S20 SCRAPERS, TANDEM POWERED

S20 0.00 SCRAPERS, TANDEM POWERED

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main	Carrier	CWT
S20CA005	657-G	SCRAPER, TANDEM POWERED, STANDARD LOADING, 44 HEAPED CY, 52 TON, 12.6' CUT WIDTH, 4X4		D-Off 564 HP	D-Off 410 HP	1508

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$83.94	$6.42	**$90.36**	$75.97	$8.77	$36.27	$5.71	$100.11	**$226.84**	**$317.20**
Severe	$93.27	$6.47	**$99.74**	$98.76	$11.41	$118.49	$18.66	$117.78	**$365.10**	**$464.84**
Standby	$41.97	$6.42							**$48.39**	

Caterpillar 657G Scrapper

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main	Carrier	CWT
S20CA006	657-G PP	SCRAPER, TANDEM POWERED, STANDARD LOADING, 44 HEAPED CY, 52 TON, 12.6' CUT WIDTH, 4X4, PUSH-PULL		D-Off 564 HP	D-Off 410 HP	1605

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$91.53	$6.97	**$98.50**	$75.97	$8.77	$36.27	$5.71	$109.07	**$235.80**	**$334.30**
Severe	$101.70	$7.02	**$108.72**	$98.76	$11.41	$118.49	$18.66	$128.32	**$375.64**	**$484.36**
Standby	$45.77	$6.97							**$52.74**	

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

T50 TRUCKS, HIGHWAY (Add attachments as required)

T50 0.03 OVER 30,000 GVW (Chassis only - Add opt

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
T50XX031	6X4 75KGVW DSL	TRUCK, HIGHWAY, 75,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)		D-On 605 HP		D-Off	197

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$9.20	$0.57	**$9.77**	$45.45	$5.68	$1.69	$0.27	$8.29	**$61.38**	**$71.15**
Severe	$11.04	$0.58	**$11.62**	$58.70	$7.33	$4.86	$0.77	$11.48	**$83.15**	**$94.77**
Standby	$4.60	$0.57							**$5.17**	

Mack GUB13 Dump Truck (1)

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
T50XX033	6X4 58KGVW DSL	DUMP TRUCK, HIGHWAY, 58,000 LBS GVW, 6 AXLES (3 RETRACTABLE), WITH REAR 16 - 18 CY DUMP BODY		D-On 410 HP		D-Off	280

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$9.20	$0.59	**$9.79**	$30.80	$3.85	$2.53	$0.40	$8.35	**$45.92**	**$55.71**
Severe	$11.04	$0.60	**$11.64**	$39.78	$4.97	$7.05	$1.11	$11.56	**$64.47**	**$76.11**
Standby	$4.60	$0.59							**$5.19**	

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

T40 TRUCK OPTIONS

T40 0.20 DUMP BODY, REAR

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main	Carrier	CWT
T40OX001	MAVERICK	TRUCK OPTIONS, DUMP BODY, REAR, 10.0 CY, AIR GATE (W/HOIST) (ADD 35,000 GVW TRUCK)		D-Off	D-Off	33

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$1.15	$0.04	**$1.19**	$0.00	$0.00	$0.00	$0.00	$1.01	**$1.01**	**$2.20**
Severe	$1.42	$0.04	**$1.46**	$0.00	$0.00	$0.00	$0.00	$1.42	**$1.42**	**$2.88**
Standby	$0.58	$0.04							**$0.62**	

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main	Carrier	CWT
T40OX002	MAVERICK	TRUCK OPTIONS, DUMP BODY, REAR, 8 CY, AIR GATE (W/HOIST) (ADD 30,000 GVW TRUCK)		D-Off	D-Off	21

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$1.12	$0.04	**$1.16**	$0.00	$0.00	$0.00	$0.00	$0.98	**$0.98**	**$2.14**
Severe	$1.37	$0.04	**$1.41**	$0.00	$0.00	$0.00	$0.00	$1.38	**$1.38**	**$2.79**
Standby	$0.56	$0.04							**$0.60**	

Truck Option - Dump Body

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

T45 TRUCK TRAILERS

T45 0.30 PUP TRAILER

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main	Carrier	CWT
T45C6002	17' PUP	TRUCK TRAILER, PUP TRAILER, 15 CY, 17', TRIPLE AXLE (W/HOIST) (ADD TOWING TRUCK)		D-Off	D-Off	130

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$3.94	$0.16	**$4.10**	$0.00	$0.40	$1.56	$0.25	$3.02	**$5.22**	**$9.32**
Standby	$1.97	$0.16							**$2.13**	

NO SPECIFIC MANUFACTURER

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main	Carrier	CWT
T45XX009	10CY PUP	TRUCK TRAILER, PUP TRAILER, 10 CY, LONG TONGUE (ADD TOWING TRUCK)		D-Off	D-Off	86

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$3.94	$0.16	**$4.10**	$0.00	$0.40	$1.12	$0.18	$3.00	**$4.70**	**$8.80**
Standby	$1.97	$0.16							**$2.13**	

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main	Carrier	CWT
T45XX032	12CY PUP	TRUCK TRAILER, PUP TRAILER, 12 CY, 14.5 TON, 2 AXLE (ADD TOWING TRUCK)		D-Off	D-Off	130

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$5.03	$0.19	**$5.22**	$0.00	$0.50	$1.04	$0.16	$3.82	**$5.52**	**$10.74**
Standby	$2.52	$0.19							**$2.71**	

* - Adjustable Elements

Truck Option - Pup Trailer

Hourly Equipment Ownership and Operating Expense

T40 TRUCK OPTIONS

T40 0.60 WATER TANKS

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main	Carrier	CWT
T40RS001	DS 2000	TRUCK OPTIONS, WATER TANK, 2,000 GAL (ADD 28,000 GVW TRUCK)		D-Off	D-Off	38

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$3.92	$0.18	**$4.10**	$0.00	$0.00	$0.00	$0.00	$3.53	**$3.53**	**$7.63**
Standby	$1.96	$0.18							**$2.14**	

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main	Carrier	CWT
T40RS002	DS 3000	TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)		D-Off	D-Off	45

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$4.13	$0.19	**$4.32**	$0.00	$0.00	$0.00	$0.00	$3.72	**$3.72**	**$8.04**
Standby	$2.07	$0.19							**$2.26**	

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main	Carrier	CWT
T40RS003	DS 4000	TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)		D-Off	D-Off	55

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$4.89	$0.22	**$5.11**	$0.00	$0.00	$0.00	$0.00	$4.41	**$4.41**	**$9.52**
Standby	$2.45	$0.22							**$2.67**	

Truck Option - Water Tank

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

T50 TRUCKS, HIGHWAY (Add attachments as required)

T50 0.02 OVER 10,000 THRU 30,000 GVW (Chassis

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
T50XX024	4X2 26KGVW DSL	TRUCK, HIGHWAY, 26,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)		D-On 230 HP		D-Off	72

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$5.09	$0.26	**$5.35**	$12.24	$1.41	$0.48	$0.08	$4.57	**$18.78**	**$24.13**
Severe	$6.36	$0.27	**$6.63**	$15.84	$1.83	$1.36	$0.21	$6.15	**$25.39**	**$32.02**
Standby	$2.55	$0.26							**$2.81**	

Ford F-800 Palfinger

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main		Carrier	CWT
T50XX026	4X2 32KGVW DSL	TRUCK, HIGHWAY, 32,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)		D-On 220 HP		D-Off	105

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$4.80	$0.26	**$5.06**	$11.71	$1.35	$1.00	$0.16	$4.34	**$18.56**	**$23.62**
Severe	$5.99	$0.26	**$6.25**	$15.15	$1.75	$2.82	$0.44	$5.84	**$26.01**	**$32.26**
Standby	$2.40	$0.26							**$2.66**	

* - Adjustable Elements

Hourly Equipment Ownership and Operating Expense

T40 TRUCK OPTIONS

T40 0.10 CRANES / HOISTS, PERSONNEL & MATE

PALFINGER INC.

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main	Carrier	CWT
T40PA006	PK 65002-SH	TRUCK OPTIONS, CRANE, HYDRAULIC, 2-ARM ARTICULATING, 22 TON, 82' BOOM (ADD 62,000 GVW TRUCK & FLATBED)		D-Off	D-Off	126

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$13.01	$0.53	**$13.54**	$0.00	$0.27	$0.00	$0.00	$14.66	**$14.93**	**$28.47**
Standby	$6.51	$0.53							**$7.04**	

SourceTag	Model	Equipment Description	Value TEV 12/1/2017	Engine Horsepower and Fuel Type Main	Carrier	CWT
T40PA007	PK 22002-EH	TRUCK OPTIONS, CRANE, HYDRAULIC, 3-ARM ARTICULATING, 8.3 TON, 70' BOOM (ADD 30,000 GVW TRUCK & FLATBED)		D-Off	D-Off	53

Condition	Depreciation*	FCCM*	Total Ownership	Fuel*	FOG	Tire Wear	Tire Repair	Repair	Total Operating	Total Hourly Rate
Average	$5.84	$0.24	**$6.08**	$0.00	$0.26	$0.00	$0.00	$6.58	**$6.84**	**$12.92**
Standby	$2.92	$0.24							**$3.16**	

Truck Option - Pal-Finger

* - Adjustable Elements

Copies: 103C
PN-6515
CCA-1104
CCA-1604
YAK-5000
YAK-5100

CATEGORICAL EXCLUSION CHECKLIST

PROJECT: Kennewick Irrigation District: Installation of EPDM Geomembrane Canal Liner in Main Canal Divisions I, II, III, and IV; Badger East Lateral: and, Highland Feeder Canal, Yakima Field Office
DATE: October 24, 2012

EXCLUSION CATEGORY: 516 DM Chapter 14.5 D.1. Maintenance, rehabilitation, and replacement of existing facilities which may involve a minor change in size, location, and/or operation; AND Appendix 9.4.C.3 - Minor construction activities associated with authorized projects which correct unsatisfactory environmental conditions or which merely augment or supplement or are enclosed within existing facilities.

NATURE OF ACTION: The Bureau of Reclamation (Reclamation) proposes to allow Kennewick Irrigation District (KID) to install ethylene propylene diene monomer (EPDM) geomembrane canal liner in earthen canal sections of the Main Canal Division I, II, III, and IV; Badger East Lateral: and, Highland Feeder Canal.

EVALUATION OF EXTRAORDINARY CIRCUMSTANCES FOR CATEGORICAL EXCLUSION (516 DM 2 Appendix 2: 43 CFR 46.215)

Extraordinary Circumstances Exist For This Action Which May:		No	Uncertain	Yes
1.	Have significant impacts on public health or safety.	X		
2.	Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas.	X		
3.	Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources [NEPA Section 102(2)(E)].	X		
4.	Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks.	X		
5.	Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects.	X		
6.	Have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects.	X		
7.	Have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places as determined by either the bureau or office.	X		
8.	Have significant impacts on species listed, or proposed to be listed, on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species.	X		
9.	Violate a Federal law, or a State, local, or tribal law or requirement imposed for the protection of the environment.	X		
10.	Have a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898).	X		
11.	Limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007).	X		
12.	Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112).	X		

	Yes	Uncertain	No
This action will affect Indian Trust Assets (ITAs).	___	___	X
This action will adversely affect Essential Fish Habitat.	___	___	X

NEPA ACTION RECOMMENDED:

- ☒ Categorical Exclusion
- ☐ Environmental Assessment
- ☐ Environmental Impact Statement

ENVIRONMENTAL AND TRUST ASSET COMMITMENTS, EXPLANATION AND/OR COMMENTS:

KID is an irrigation district operating within Reclamation's Yakima Project boundary, diverting water from the Yakima River at river mile 47.1. KID proposes to use EPDM geomembrane canal liner to line approximately 42 miles of earthen canal sections within KID's Main Canal Divisions I, II, III, and IV; Badger East Lateral: and, Highland Feeder Canal. The projects are intended to reduce seepage through earthen-lined canals and increase irrigation system efficiency.

The general amounts of lining and legal locations of the EPDM lining projects are as follows:

Main Canal Division I:	Approximately 6.2 miles of lining within portions of Township 9 North, Range 26 East, Sections 13, 14, 15, and 24; and, portions of Township 9 North, Range 27 East, Sections 19, 19, and 30
Main Canal Division II:	5.0 miles of lining within portions of Township 8 North, Range 27 East, Section 1; and, portions of Township 9 North, Range 27 East, Sections 33, 34, 35, and 36
Main Canal Division III:	1.7 miles of lining within portions of Township 8 North, Range 28 East, Sections 7 and 12
Main Canal Division IV:	13.8 miles of lining within portions of Township 8 North, Range 29 East, Sections 7, 9, 14, 15, 16, 23, 24 and 25; portions of Township 8 North, Range 30 East, Sections 29, 30, 32, 33, and 34; portions of Township 7 North, Range 20 East, Sections 1, 2, 3, and 12; and, portions of Township 7 North, Range 31 East, Section 7
Highland Feeder:	2.9 miles of lining within portions of Township 8 North, Range 28 East, Section 12; and portions of Township 8 North, Range 29 East, Sections 7, 9, and 10
Badger East Lateral:	12.3 miles of lining within portions of Township 9 North, Range 27 East, Section 13; portions of Township 9 North, Range 28 East, Sections 18, 19, 20, 21, 27, 28 and 35; and, portions of Township 8 North, Range 28 East, Sections 6, 7, 8, 16, and 17

KID's proposed EPDM lining project would be completed and installed within the existing canal prism and KID's ROW in the fall/winter season when the canal is dry, typically October to March. KID proposes to install 13.38 miles of lining during the 2012-2014 construction seasons. The construction schedule for the remaining 28.53 miles of lining has not been determined. KID can average 3.5 miles of canal lining installation in one fall/winter season; at this rate, the canal lining installation for the 41.9 miles could extend into 2023.

KID proposes to shape and clean the canal; over excavate the bottom of canal 18 inches by 18 inches wide every 300 feet; place 45 mil EPDM liners; and, utilize concrete as ballast in the over-excavated, trenched areas. Optionally, KID would shape and clean the canal; over excavate the bottom of canal 1 foot; place the 45 mil EPDM liners; and, utilize the over-excavated material to form gravel ballast on top of the EPDM liner. The lining will be keyed into a trench at the top of the canal embankment with the 4-foot of overlap on each roll. The trench will be one foot away from the sloped side of the canal and will be dug 1-2 foot wide and 2 foot deep with the excavated material placed on top of the membrane to anchor the lining.

Most excavation will occur within the prism of the canal and in the previously disturbed areas along the top of the canal; however, additional excavation and clearing in undisturbed agricultural areas along the canal may occur, and be kept to a minimum, to accomplish liner installation. In some of the project areas, vegetation adjacent to the opposite bank may be cleared and/or temporarily impacted in order to key-in the liner. The *Kennewick Irrigation District Programmatic Review Report, 2012-2014 CIP Programmatic Project Level Review, Final Report, August 2012* by RH2 Engineering, Inc. and Cascadia Archaeology, LLC., indicates that approximately 75,000 sf (1.7 acres) of sagebrush habitat and 11,8000 sf (0.27 acres) of other tree and shrub vegetation will be removed. Removal of sagebrush along the canal to facilitate the lining project has the potential to at least temporarily impact the ecosystem and wildlife species that rely on it. Some big sagebrush (*Artemisia tridentata*) were observed in areas adjacent to the canal, primarily on the undeveloped side of the canal (opposite of the O&M road). Sagebrush habitat is an important resource in the area for wildlife, with several species of wildlife depending on this habitat. Areas of sagebrush habitat will still exist beyond KID's ROW, and its removal is solely intended to facilitate lining installation and will be kept to a minimum. The trees and shrubs requiring removal are located in the KID ROW, an area which is supposed to be kept free of vegetation to facilitate KID's operation.

The Department of Archaeology & Historic Preservation (DAHP) letter, received by Reclamation on October 24, 2012, agreed with the Area of Potential Effect (APE) for the approximately 42 miles of lining and concurred that the current project as proposed will have No Adverse Effect on National Register eligible or listed historic and cultural resources. The Yakama Nation may request monitoring of the construction of the proposed project.

Reclamation concludes that a Biological Evaluation, under Section 7 of the Endangered Species Act (ESA), is not required for this proposed action. Reclamation determines that this Federal Action will have no affect on Threatened or Endangered species.

Any identified cultural resources and Indian trust assets would not be impacted by this project. Should cultural resources be discovered during construction, all ground disturbing activities in the area of the archeological resource will stop and the Area Office Archeologist will be contacted at (509) 575-5848. Construction will not resume until all mitigative measures developed in consultation with the State Historic Preservation Officer have been completed.

In evaluating environmental justice, there would be no adverse or significant impacts to minority or low-income populations or communities.

This Federal action will not adversely impact access to or ceremonial use of any identified Indian sacred sites, and will not adversely affect the physical integrity of any such sacred sites.

Reclamation has notified KID that the Yakama Nation may request monitoring of construction. KID will be responsible for expenses associated with the monitoring. If additional staging areas are identified that were not included in Cascadia's Cultural Resource Report, those areas will need to be surveyed prior to being utilized for staging. Reclamation requests that minimal earth work (grading, excavation, road development) and vegetation removal take place on the opposite side of the canal from the O&M road in order to reduce impacts to sagebrush habitat. Through this Federal action, Reclamation approves of KID's installation of EPDM geomembrane liner in Main Canal Divisions I, II, III, and IV; Badger East Lateral: and, Highland Feeder Canal.

Preparer: Elizabeth L Heather — Date: October 25, 2012
Environmental Protection Specialist

Concurrence with Item 7: [signature] — Date: 10/25/12
Area Office Archeologist
No Adverse Effect per consultation w/ SHPO

Concurrence with ITA Determination: Elizabeth L Heather — Date: 10/25/12
ITA designee for C. Carmack

Concurrence: [signature] Acting — Date: 10/25/12
Field Office Manager

Concurrence: [signature] — Date: 10/25/12
Acting Environmental Programs Manager

Approved: [signature] — Date: 10/26/12
Deputy Area Office Manager

Categorical Exclusion No. 2012 - CCA - 103C — Date: 10/26/12

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STATE OF WASHINGTON

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION

1063 S. Capitol Way, Suite 106 • Olympia, Washington 98501
Mailing address: PO Box 48343 • Olympia, Washington 98504-8343
(360) 586-3065 • Fax Number (360) 586-3067 • Website: www.dahp.wa.gov

October 22, 2012

Ms. Candace McKinley
Environmental Program Manager
Bureau of Recreation
1917 Marsh Rd
Yakima, WA 98901-2058

In future correspondence please refer to:
Log: 102212-20-BOR
Property: Kennewick Irrigation District (Highland, Badger East laterals)
Re: NO Adverse Effect

Dear Ms. McKinley:

Thank you for contacting the Washington State Department of Archaeology and Historic Preservation (DAHP). The above referenced project has been reviewed on behalf of the State Historic Preservation Officer under provisions of Section 106 of the National Historic Preservation Act of 1966 (as amended) and 36 CFR Part 800. My review is based upon documentation contained in your communication.

First, I agree with the Area of Potential Effect (APE) as mapped in the consultant's report. I also concur that the current project as proposed will have "NO ADVERSE EFFECT" on National Register eligible or listed historic and cultural resources. If additional information on the project becomes available, or if any archaeological resources are uncovered during construction, please halt work in the area of discovery and contact the appropriate Native American Tribes and DAHP for further consultation.

Thank you for the opportunity to review and comment. If you have any questions, please contact me.

Sincerely,

Russell Holter
Project Compliance Reviewer
(360) 586-3533
russell.holter@dahp.wa.gov

ELECTRONICALLY
TRANSMITTED