

Bureau of Reclamation
WaterSMART Grants:
Small-Scale Water Efficiency Projects
Category A:
Kennewick Irrigation District
Cherry Creek Pump Station to Pressurized Service
Area 126 and 37 Intertie, Washington

Applicant:

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March 18, 2021

Kennewick Irrigation District

Kennewick, Washington

Benton County

Project Title: 2021 WaterSMART Small-Scale Water Efficiency Project

TECHNICAL PROPOSAL

Executive Summary

The Kennewick Irrigation District (KID or District) submits this application for Funding Opportunity No. RSIAS00300 under **Category A** through the WaterSMART Grants: Small-Scale Water Efficiency Projects from the Bureau of Reclamation (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 Kennewick Southeast Regional West Intertie project, located within the City of Kennewick, Washington, will install approximately 1,800 linear feet of Polyvinyl Chloride (PVC) pipe in order to consolidate two existing pressurized service areas (PSAs) into the Kennewick Southeast Regional System. This project promotes water and energy efficiency improvements through consolidating the two existing pump stations to a larger, higher elevation pump station. The Kennewick Southeast Regional pump station and reservoir operate more efficiently and are better able to manage the water through shared usage and utilizing the approximately 10 Acre-Foot Reservoir. This project meets the goals of the District's Kennewick South Regional Consolidation Plan from 2013.

The project is located within an easement that is in process of being title transferred to KID from Reclamation in 2021. Construction will occur between January of 2022 and March of 2022.

Background Data

The Kennewick Division 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 river mile 317.5.

Water rights for the KID can be traced to an August 6, 1891 water right claim filed by the Yakima Irrigation and Improvement Company and a conditional final order issued through the State of Washington Department of Ecology v. Acquavella adjudication which confirm a pro-ratable May 10, 1905 water right held by USBR for the benefit of the KID water users. KID's water rights provide a maximum annual diversion of 102,674 acre feet and a maximum instantaneous Yakima River diversion of 351 cubic feet per second (cfs). The diversion at Prosser Dam is the last USBR diversion on the Yakima River. From this diversion, water travels in the Chandler diversion canal to the Chandler Power and Pumping Plant.

KID delivers irrigation water to its customers via 74 miles of canal and over 300 miles of distribution water mains. The Main Canal was constructed in four divisions. The first three divisions are approximately 24 miles in length in total. At the Main Canal mile 14.5, the Badger Siphon diverts water to the Badger East and Badger West Lateral Canals, which are 17 miles and 3 miles in length, respectively. Division III of the Main Canal ends at the Amon Siphon and the Main Canal spillway. The Amon Siphon supplies water to Division IV of the Main Canal, the Highland Feeder Canal and the Amon Pump Laterals in Kennewick. Division IV of the Main Canal is approximately 18 miles in length.

KID is a heavily urbanized district with over 60,000 customers. KID provides water to over 10,000 acres of agricultural customers who grow alfalfa and grass hay, corn, wheat, pumpkins, asparagus, apples, cherries, peaches, pears, grapes and plums. In the urbanized areas of the District, irrigation water is used predominately for landscaping, parks, schools, and garden areas.

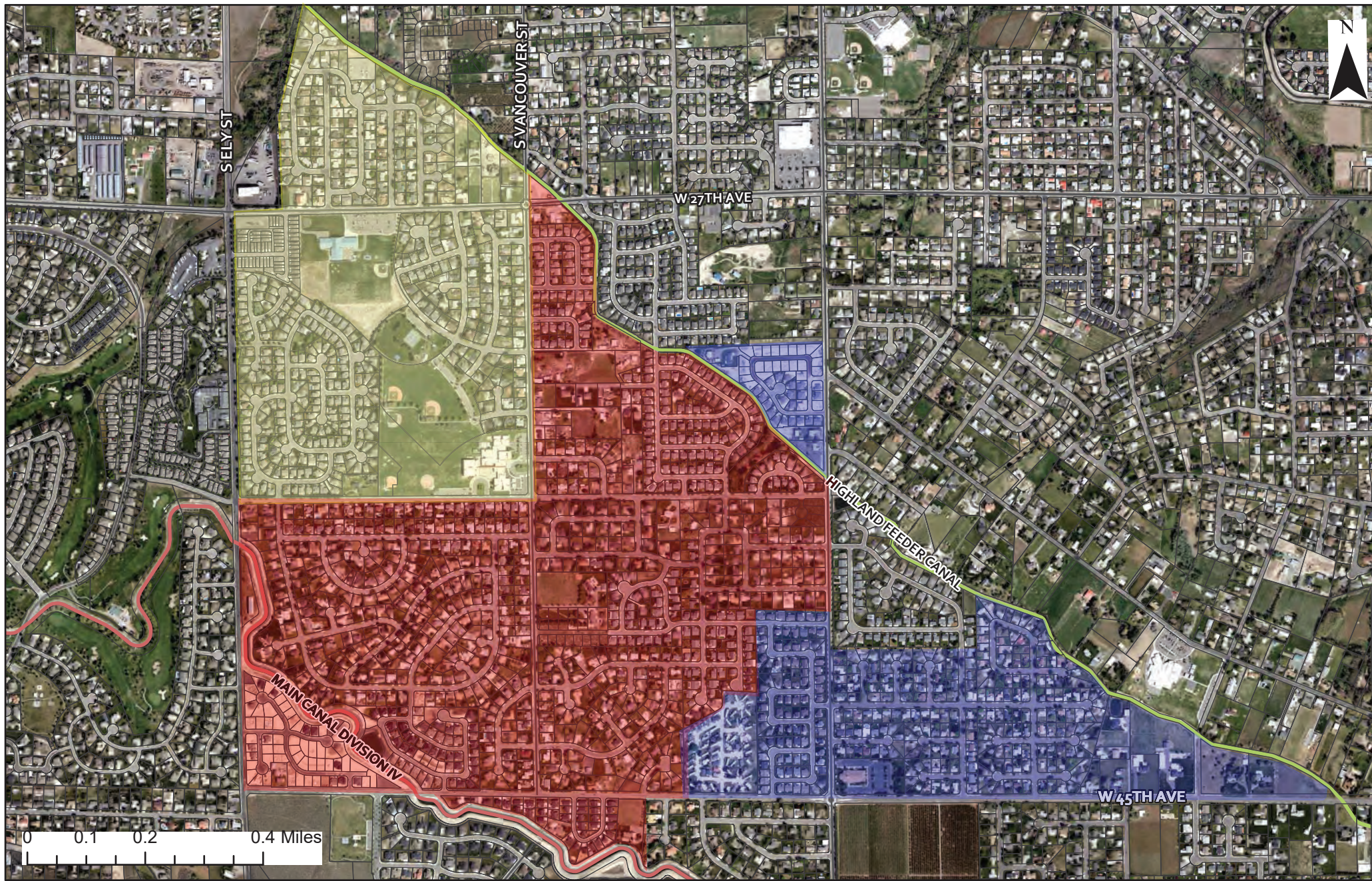
The District has a rolling 5 year capital plan that includes; lining and piping canals, conducting water management planning, installing water measurement devices, automation and telemetry and initiating programs and policies that improve water quality and more efficient water use.

This project is an integral part of KID's capital plan. In 2013, the District received approval from the KID Board of Directors to begin the Kennewick South Regional Consolidation: System Improvement Project (SIP) & Infrastructure Upsizing in Coordination with Cherry Creek Estates Development. The Kennewick Southeast West Extension Intertie is the last phase, Phase 4, of the Kennewick South Regional Consolidation plan and will finalize the consolidation of seven existing Pressurized System Areas (PSA): 37, 44, 45, 49, 91, 126, and 162. The project was expanded and upon completion of this project consolidation of ten systems will be completed.

The improvements eliminate ten smaller existing pump stations and allow the system to operate via one larger regional pump facility, Kennewick Southeast Regional System. As a result, the proposed project will improve operational efficiencies and will result in better water management. A map showing the Kennewick Southeast Regional System has been included on the following page.

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

- 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.



- Expanded Areas
- Consolidated Areas
- Proposed (2) PSAs

Kennewick Southeast Regional Facility Service Area

The Kennewick Irrigation District does not warrant, guarantee, or accept any liability for the accuracy, precision, or completeness of any information shown or described herein or for any inferences made therefrom. Any use of this information is solely at the risk of the user. WSR Grant Application 3 of 44



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 Location

The vicinity map on the following page depicts the project location in southeastern Washington State. The proposed project is located in the City of Kennewick and Benton County. The project latitude 46°10'30" N is and longitude is 119°9'30" W.

Project Description

The Kennewick Southeast Regional West Intertie project proposes installation of approximately 1,800 linear feet of 16-inch Polyvinyl Chloride (PVC) pipe with the appropriate fittings and restraints, as well as, a pressure reducing valve station. The project will consolidate two existing KID pump stations (PSA 126 and PSA 37) with the Kennewick Southeast Regional System. The project will connect to an existing 16-inch Ductile Iron (DI) pipeline in the northwestern corner of the Cherry Creek Estates subdivision. The proposed 16-inch pipeline will travel north to tie into existing 10-inch and 8-inch pipelines at the PSA 126 pump station. Pipe will be installed using open trenching methods with a 160G JD size excavator. The KID Main Canal Division IV canal will be crossed, as well as, one City of Kennewick Street. The street crossing will require traffic control and asphalt patching. Once connected, the PSA 126 and 37 pump stations will be decommissioned.

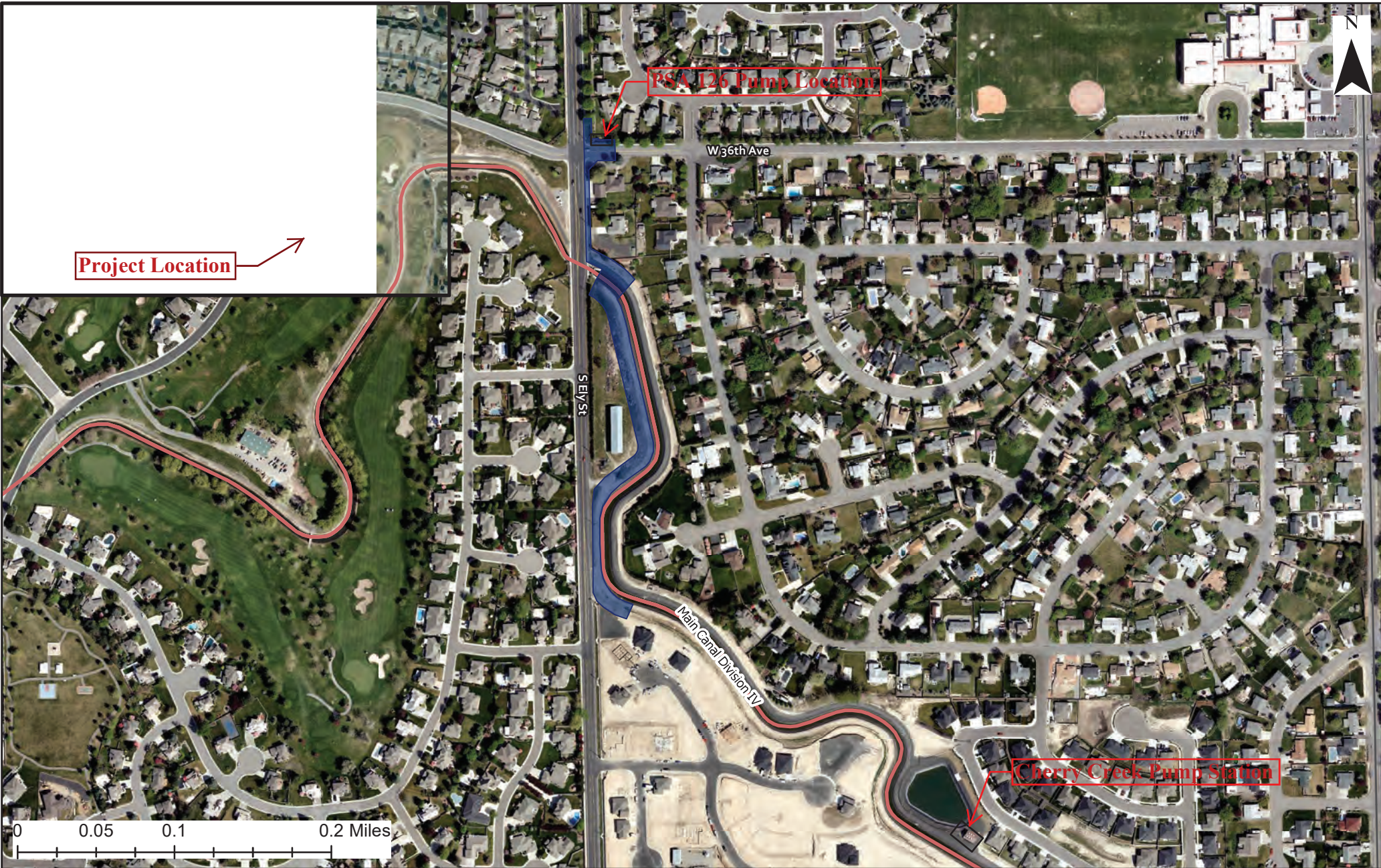
Evaluation Criteria

A. Project Benefits (35 points)

The Kennewick Southeast Regional West Intertie project modernizes existing infrastructure in order to address water reliability concerns. The project better manages water by consolidating two existing smaller pump stations with the existing larger Kennewick Southeast Regional reservoir and pump station. In addition, the project will eliminate risk, improve electrical efficiency, and decrease operational person-hours and maintenance costs.

The project better manages water by the consolidation of pump facilities. The existing pump facilities to be consolidated (Known as PSA 126 and PSA 37) are termed as "flow-through" pump stations by KID. This means that water is delivered to the pump stations at the peak demand flowrate as modified by KID operators throughout the day. This project will eliminate the PSA 126 and PSA 37 pump stations and consolidate the service area with the existing Cherry Creek pond and pump station facility. The pond will buffer the peak fluctuation in demand flowrates.

The Intertie project will eliminate risk. Both PSAs 126 and 37 receive their water through a pipeline lateral that has antiquated concrete division and weir boxes. Since these concrete division and weir boxes are open to the atmosphere, they must have screens. The screens are cleaned to prevent them from plugging. In the event the



Project Location

PSA 125 Pump Location

W 36th Ave

S Ely St

Main Canal Division IV

Cherry Creek Pump Station

0 0.05 0.1 0.2 Miles

Legend

 Project Site

KID WaterSMART21 Project Location Map

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screens do plug, water will overflow at the concrete division or weir box. These concrete boxes are located in close proximity to residential homes/neighborhoods. Any overflow or overtopping of the concrete boxes would most likely cause property damage to the surrounding residences.

Electrical efficiency will improve as a result of the intertie project. Smaller pumps and motors often are less efficient than larger pumps and motors. This project will remove two small pumps from service, consolidating the service areas with the larger Kennewick Southeast Regional Pump Station. The Kennewick Southeast Regional Pump Station is located at a higher elevation than both the PSA 126 and PSA 37 pumps thus requiring a lower operating pressure. Lowering the operating pressure will contribute towards power consumption decreases, while improving service. Furthermore, the Kennewick Southeast Regional Pump Station uses Variable Frequency Drives in operation of the pumps further gaining electrical efficiency. The consolidation will reduce the amount of power necessary to provide pressurized water to existing pressurized area. This will reduce yearly power costs and power consumption. In addition, the intertie will allow for the elimination of an existing spray bar pump for a drum screen and electrical meter services.

Operational person-hours and maintenance costs will decrease with the intertie. Consolidating the pump stations will reduce the amount of time that a Pump Technician will need to spend on the system. Assuming a Pump Technician spends an estimated 15 minutes per pump station per day, the two consolidated pumps would total 30 minutes a day. Assuming a 200-day irrigation season, the Pump Technician would now have an additional 100 hours a season for other maintenance and operational activities. The operational person-hours are further reduced because the Kennewick Southeast Regional facility is equipped with SCADA controls allowing an operator only visit the site when necessary upon notification of a malfunction or alarm. In addition, maintenance costs will decrease with the intertie as the system will have less components to replace. Maintenance costs include the replacement of motors, filters, electrical controls building and other accessories and components.

B. Planning Efforts Supporting the Project (35 points)

The project is located within the Kennewick Southeast Regional Consolidation area. This consolidation was intended to merge seven existing pumping plants into one new regional pump station. After the original inception of the Consolidation Area the plan has expanded to include additional pump stations. The first expenditures for the Consolidation Area were approved in February of 2013. Since that date, the Kennewick Southeast Regional Pump Station has been constructed, and five of the seven original pumping plants, and an additional three pumping plants have been decommissioned. The Kennewick Southeast Regional West Intertie project will complete the consolidation, by intertying and decommissioning the two remaining pump stations as outlined by the original plan. The original Board Memo, summary and map of the Consolidation area are included in Appendix A.

In addition, since the approval of the planned regional area KID was able to extend service from the Kennewick Southeast Regional Pump Station to three new residential developments, mitigating the need for three new KID pumping facilities. KID standards requires each new development within the City to install a reservoir and pump station in order to provide pressurized water to the new properties. The Regional Consolidation Area allowed KID to mitigate the requirement of a separate pond and pump station for each development. This regional consolidation area has helped us to modernize our operations within this area.

The project has been prioritized by KID above other projects due to the following project benefits:

- Modernizes existing infrastructure
 - Eliminate risk – The project eliminates open air division and weir boxes near residential properties.
 - Improve electrical efficiency – The regional Cherry Creek Station operates with more efficient pumps and drives.
 - Decrease operational person-hours – Consolidation of pump facilities reduces daily inspections.
 - Reduce maintenance costs – Removes the need for unique replacement parts at the consolidated pump stations.
- Better managed water
 - Eliminate “flow-through” pump stations
 - More efficient canal operations – The regional reservoir allows KID to better control fluctuating canal levels.
 - Strengthens KID’s drought resiliency – KID is pro-ratable and projects that better manage water are a priority for the District.
 - Level of service improvements – The Kennewick Southeast Regional facility provides increased filtration and reliability with pump redundancy.

This is the final pipeline section that is required to complete the Kennewick Southeast Regional Consolidation Area.

C. Project Implementation (10 points)

The project is scheduled to occur between January and March of 2022. The project will cross the Division IV canal and a City of Kennewick street. This work must be completed in the irrigation offseason and when temperatures allow for the production and installation of asphalt.

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.

The project will not require any permits from the City of Kennewick as it will occur in an easement that pre-dates the City's street crossing. Environmental and Cultural compliance will be required and is discussed in the section below. A SEPA checklist has been prepared and is planned to be submitted in 2021. KID recently coordinated a Memorandum of Agreement (MOA) with Reclamation and the Washington State Historic Preservation Office. 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.

A NEPA checklist will be required. This project will be discussed with the local Reclamation office upon award.

D. Nexus to Reclamation Project (10 points)

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.

PROJECT BUDGET

Funding Plan and Letters of Commitment

KID is requesting the maximum funding of \$75,000. The total cost for this project is estimated at \$160,751.23. 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 of Directors authorized the submittal of this grant application for 2021 WaterSMART Small-Scale Water Efficiency Project funding by resolution during a board meeting on March 16, 2021.

Table 1: Summary of Non-Federal and Federal Funding Sources	
Funding Sources	Funding Amount
Non Federal Entities:	
1) KID In-Kind Contribution	*\$55,606.49
2) KID Cash Contribution	\$30,144.74
Non Federal Subtotal:	\$85,751.23
Other Federal Entities	
1) None	\$0.00
Other Federal Subtotal:	\$0.00
Requested Reclamation Funding:	\$75,000
Total Project Funding:	\$160,751.23

(* denotes in-kind contribution)

Some costs have been or will be incurred prior to award of the 2021 WaterSMART Small-Scale Water Efficiency Project grant. These costs are associated with engineering design of the project, exploratory digging, as well as, purchases of materials. These costs are listed in table 2 below. The benefits and expenditures below allowed for KID to begin design and procurement of the material.

Table 2: Funds expended prior to January 1, 2022			
Item Description	Budget Item	Cost Incurred	Dates
Engineering Design			
Staff Engineer & Surveyor	2, 4, 13 & 15	\$11,419.35	October 2020 – January 2021
Exploratory Digging			
Maintenance/Canal	7 & 18	\$1,421.74	February 2021
Material			
16" C900 PVC - Purple	47	\$51,582.80	November 2020
4" FL CLA-VAL PRV	103	\$2,410.92	July 2020
Remaining parts & Fittings	44-46 & 48-102	\$12,068.10	Future purchase in 2021

Salaries and Wages

Budget Item Description		Rate	Unit	Quantity	Total
1	Program Manager	\$ 78.22	/Hr	4	\$ 312.88
2	Staff Engineer	\$ 31.61	/Hr	250	\$ 7,902.50
3	Inspector/Field Technician	\$ 31.41	/Hr	12	\$ 376.92
4	Surveyor	\$ 45.22	/Hr	60	\$ 2,713.20
5	Foreman	\$ 42.03	/Hr	5	\$ 210.15
6	Field Operations Lead	\$ 30.47	/Hr	70	\$ 2,132.90
7	Maintenance/Canal	\$ 27.46	/Hr	245	\$ 6,727.70
8	Part-Time Labor/Seasonal	\$ 14.48	/Hr	185	\$ 2,678.80
9	Comptroller	\$ 71.23	/Hr	4	\$ 284.92
10	Senior Accountant	\$ 41.51	/Hr	4	\$ 166.04
11	Accounting Tech/Clerk	\$ 33.96	/Hr	4	\$ 135.84
Subtotal					\$ 23,641.85

Fringe

Budget Item Description		Rate	Unit	Quantity	Total
12	Program Manager	\$ 28.85	/Hr	4	\$ 115.40
13	Staff Engineer	\$ 17.89	/Hr	250	\$ 4,472.88
14	Inspector/Field Technician	\$ 10.46	/Hr	12	\$ 125.52
15	Surveyor	\$ 21.09	/Hr	60	\$ 1,265.40
16	Foreman	\$ 10.46	/Hr	5	\$ 52.30
17	Field Operations Lead	\$ 17.68	/Hr	70	\$ 1,237.27
18	Maintenance/Canal	\$ 17.61	/Hr	245	\$ 4,314.45
19	Part-Time Labor/Seasonal	\$ 6.55	/Hr	185	\$ 1,211.33
20	Comptroller	\$ 27.21	/Hr	4	\$ 108.82
21	Senior Accountant	\$ 22.32	/Hr	4	\$ 89.29
22	Accounting Tech/Clerk	\$ 18.26	/Hr	4	\$ 73.04
Subtotal					\$ 13,065.69

KID Owned Equipment

Budget Item Description		Rate	Unit	Quantity	Total
23	CAT 312C Excavator	\$ 44.73	/Hr	70	\$ 3,131.10
24	Mack GUB13 Dump Truck (1)	\$ 49.60	/Hr	5	\$ 248.00
25	Mack GUB13 Dump Truck (2)	\$ 49.60	/Hr	5	\$ 248.00
26	CAT 563C Roller	\$ 48.30	/Hr	5	\$ 241.50
27	Ford L8000 Water Truck	\$ 49.60	/Hr	70	\$ 3,472.00
28	JD 160G Excavator	\$ 45.83	/Hr	80	\$ 3,666.40
29	Genie Forklift	\$ 23.30	/Hr	70	\$ 1,631.00
30	Bobcat T770 (Skid Steer)	\$ 19.98	/Hr	70	\$ 1,398.60
31	JD 544J Loader	\$ 65.69	/Hr	70	\$ 4,598.30
32	Lee Boy 8500D Paver	\$ 52.81	/Hr	5	\$ 264.05
Subtotal					\$ 18,898.95

Supplies/Materials

Budget Item Description		Rate	Unit	Quantity	Total
33	"BURIED PIPE" TAPE - IRRIGATION	\$ 19.91	ROLLS	2	\$ 39.82
34	10" ACCESSORY PACK LESS GLAND	\$ 18.61	EA	7	\$ 130.24
35	10" C900 PVC - PURPLE	\$ 16.90	LF	40	\$ 676.10
36	10" MJ 45° BEND	\$ 16.90	EA	2	\$ 33.81
37	10" MJ SOLID SLEEVE	\$ 148.78	EA	1	\$ 148.78
38	10" PVC MEG-A-LUG	\$ 59.27	EA	7	\$ 414.91
39	10"X4" MJ REDUCER	\$ 59.02	EA	1	\$ 59.02
40	12 GAUGE TRACER WIRE - PURPLE	\$ 63.26	ROLLS	4	\$ 253.04
41	12" BLIND FLANGE	\$ 175.55	EA	1	\$ 175.55
42	12" BOLT KIT	\$ 22.23	EA	1	\$ 22.23
43	12" FULL FACED RED RUBBER GASKET	\$ 7.28	EA	1	\$ 7.28
44	16" ACCESSORY PACK LESS GLAND	\$ 31.97	EA	45	\$ 1,438.43
45	16" BELL RESTRAINT	\$ 300.58	EA	7	\$ 2,104.05
46	16" BOLT KIT	\$ 44.45	EA	4	\$ 177.79

47	**16" C900 PVC - PURPLE	\$ 29.99	LF	1720	\$ 51,582.80
48	16" FULL FACED RED RUBBER GASKET	\$ 10.85	EA	4	\$ 43.41
49	16" MJ SOLID SLEEVE	\$ 296.09	EA	1	\$ 296.09
50	16" MJXFL ADAPTOR	\$ 310.99	EA	1	\$ 310.99
51	16" PVC MEG-A-LUG	\$ 128.07	EA	45	\$ 5,762.94
52	16" PVC MJ 11.25° BEND	\$ 388.65	EA	4	\$ 1,554.61
53	16" PVC MJ 22.5° BEND	\$ 392.55	EA	10	\$ 3,925.53
54	16" PVC MJ 45° BEND	\$ 337.48	EA	6	\$ 2,024.88
55	16"X12" MJXFL TEE	\$ 686.84	EA	1	\$ 686.84
56	16"X8" FL REDUCER	\$ 388.62	EA	1	\$ 388.62
57	16"X8" FL TEE	\$ 385.95	EA	1	\$ 385.95
58	3/4" DRAIN ASSEMBLY	\$ 50.00	EA	1	\$ 50.00
59	3M DBY SPLICE KIT (GEL PACKS)	\$ 2.76	EA	12	\$ 33.14
60	4" BOLT KIT	\$ 6.12	EA	5	\$ 30.60
61	4" DI DR 50	\$ 22.67	LF	18.5	\$ 419.41
62	4" FLXMJ ADAPTOR	\$ 39.90	EA	2	\$ 79.79
63	4" FLXMJ GATE VALVE	\$ 452.67	EA	1	\$ 452.67
64	4" FULL FACED RED RUBBER GASKET	\$ 3.22	EA	5	\$ 16.08
65	4" MEG-A-LUG (DI)	\$ 20.27	EA	4	\$ 81.10
66	4" ACCESSORY PACK LESS GLAND	\$ 13.14	EA	4	\$ 52.54
67	8" ACCESSORY PACK LESS GLAND	\$ 16.12	EA	7	\$ 112.82
68	8" BOLT KIT	\$ 9.09	EA	4	\$ 36.36
69	8" C900 PVC - PURPLE	\$ 9.10	LF	60	\$ 546.04
70	8" FULL FACED RED RUBBER GASKET	\$ 3.47	EA	4	\$ 13.89
71	8" MJ 45° BEND	\$ 87.82	EA	2	\$ 175.63
72	8" MJ SOLID SLEEVE	\$ 107.78	EA	1	\$ 107.78
73	8" MJXFL GATE VALVE	\$ 915.99	EA	1	\$ 915.99
74	8" PVC MEG-A-LUG	\$ 60.22	EA	7	\$ 421.57
75	8"X4" FL REDUCER	\$ 267.12	EA	1	\$ 267.12
76	H-35 TRAFFIC RATED PRE-CAST 554R VAULT W/36"X36" HATCH	\$ 1,955.00	EA	1	\$ 1,955.00
77	ASHCROFT 160 PSI LIQUID FILLED PRESSURE GAUGE (SEE ATTACHED)	\$ 57.41	EA	1	\$ 57.41
78	1/2" APCO AIR RELEASE	\$ 150.40	EA	1	\$ 150.40
79	VALVE CAN ASSEMBLY (WITH "IRR" LID)	\$ 69.92	EA	1	\$ 69.92
80	ROMAC 202S - 16" PVC x 1.25" IPT, WITH STRAP AND NUTS	\$ 147.87	EA	2	\$ 295.73
81	FORD C84-55 COUPLING	\$ 35.88	EA	2	\$ 71.76
82	1730-18XL MID STATES VALVE BOX	\$ 139.25	EA	2	\$ 278.49
83	HD 1730 – OLDCASTLE LID – PURPLE – STAMPED "K.I.D DO NOT DRINK"	\$ 124.07	EA	2	\$ 248.14
84	1-1/4" STIFFENER INSERT	\$ 3.19	EA	4	\$ 12.75
85	C901-96 PE 3408 (CTS) 1-1/4" 200 PSI - POLYETHYLENE TUBE PURPLE	\$ 0.62	LF	100	\$ 62.38
86	C-14-45 FORD COUPLING	\$ 34.66	EA	2	\$ 69.32
87	BE 13-444WR – FORD 1-1/4" ANGLE BALL SERVICE VALVE	\$ 106.45	EA	2	\$ 212.89
88	1-1/4" x 1" SCH. 80 PVC THD. BUSHING	\$ 4.12	EA	2	\$ 8.24
89	1" BRASS NIPPLE 6" LONG	\$ 8.07	EA	2	\$ 16.13
90	1" x 36" SCH. 80 PVC NIPPLE	\$ 6.72	EA	2	\$ 13.45
91	1" SCH. 80 PVC THD. CAP	\$ 3.49	EA	2	\$ 6.99
92	STAINLESS TYE WRAPS (TYP)	\$ 1.28	EA	4	\$ 5.14
93	1" METER GASKET	\$ 0.22	EA	2	\$ 0.45
94	4-5' HEAVY DUTY U-POST (KID STANDARD)	\$ 10.27	EA	2	\$ 20.54
95	6" MEG-A-LUG (PVC)	\$ 42.16	EA	6	\$ 252.95
96	6" MJXFL ADAPTOR	\$ 55.94	EA	1	\$ 55.94
97	6" BOLT KIT	\$ 9.35	EA	1	\$ 9.35
98	6" ASSESSORY PACK LESS GLAND	\$ 13.87	EA	6	\$ 83.25
99	6" FULL FACED RUBBER GASKET	\$ 3.40	EA	1	\$ 3.40
100	6" MJ 11.25° BEND	\$ 50.62	EA	2	\$ 101.25
101	FLUSH HYDRANT (SEE ATTACHMENT)	\$ 2,630.39	EA	1	\$ 2,630.39
102	6" C900 PVC - PURPLE	\$ 5.25	LF	40	\$ 209.87
103	**4" FL CLA-VAL PRV	\$ 2,410.92	EA	1	\$ 2,410.92

**Items have been purchased. The vendor with the lowest quoted price was awarded bid.

Subtotal	\$ 85,768.63
Sales Tax (8.6%)	\$ 7,376.10
Grand Total	\$ 93,144.73

Environmental Compliance

Budget Item Description	Rate	Unit	Quantity	Total
103 Environ., Cult., and Hist. Review	\$2,000-\$12,000	LS	1	\$2,000-\$12,000

Total Project Costs \$ 160,751.23

Budget Narrative

Salaries & Wages; Fringe: 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 32 of the Budget Proposal in section K. 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, November 2018, excerpts of applicable sections of the pamphlet are attached. (See Appendix B, pages 22-41). The KID Foreman on the job will track hourly equipment use and report it daily to an assigned accounting technician.

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 and are shown as items 33 to 103 of the Budget Proposal. (See Appendix C, pages 42-44)

Environmental Compliance: Between \$2,000 to \$12,000 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 pipeline installation.

This project will install a new pipeline at a minimum depth of 30-inches. 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 best management practices will be used. 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. This pipeline will be located under a canal maintenance road, landscaping and a City street.

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. The KID Main Canal Division IV is eligible for listing.

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.

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.

OFFICIAL RESOLUTION

Resolution 2021-12 meeting the requirements of this application is shown on the following page. The KID Board of Directors met on Tuesday, March 16, 2021 at which time the resolution was adopted. The signed Resolution will be sent to Reclamation as an additional attachment.

Please return to:

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

KENNEWICK IRRIGATION DISTRICT RESOLUTION 2021-12

Official Resolution for FY 2021 WaterSMART Grants: Small-Scale Water Efficiency Projects Application

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 FY 2021 WaterSMART Grants: Small-Scale Water Efficiency Projects, financial assistance if awarded.

WHEREAS, the Board of Directors of KID (the Board) met in regular session on March 16, 2021 with a quorum present; and

WHEREAS, KID is submitting an application for FY 2021 WaterSMART Grants: Small-Scale Water Efficiency Projects, in the amount of \$75 Thousand dollars to complete a pipeline project with matching funds. The application is due March 18, 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 FY 2021 WaterSMART Grants: Small-Scale Water Efficiency Projects 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 FY 2021 WaterSMART Grants: Small-Scale Water Efficiency Projects financial assistance.

RESOLUTION 2021-12 IS HEREBY ADOPTED by the Board of Directors of Kennewick Irrigation District, Benton County, Washington, at a regular open public meeting thereof this 16th day of March 2021. This resolution supersedes all previous resolutions relating to the FY 2021 WaterSMART Grants: Small-Scale Water Efficiency Projects Application.

Gene Huffman, President

Kirk Rathbun, Vice President

David McKenzie, Director

Arland Ward, Director

Dean Dennis, Director

APPENDIX

Appendix A



To: KID Board of Directors

Meeting Date: February 5, 2013

RE: Kennewick South Regional Consolidation

From: Ben Woodard, Staff Engineer

Through: Charles Freeman, District Manager *CF*
Jason McShane, P.E., Engineering/Operations Manager *JM*

Committee Review: Finance (January 21, 2013)
Operations and Engineering (January 29, 2013)

Attachments:

Project Report for Kennewick South Regional Consolidation

Background/Summary/Discussion:

The proposed project provides much needed water storage in the South Kennewick Area specifically serving the general area between S. Ely St. and S. Olympia St. and S. 27th St. and the Division IV Canal. In addition to water storage, this project reduces risk, mitigates drought impacts, improves flows on the Division IV Canal, improves delivery to KID customers, reduces costs, and offsets future replacement costs of gravity drains and aging lateral pipelines.

This project is possible now due to the development of the Cherry Creek Subdivision, and if approved, provides an approximately 3 million gallon storage pond and eliminates 7 existing pump stations. Phase 1 of this project ensures that those components of the system that are upsized in coordination with the Cherry Creek Subdivision are funded.

Budget Impact:

The budget impacts are discussed in detail in the attached Project Report. Funding for Phase 1 of this project is proposed to come from savings from the 2012 Capital Improvement Plan, specifically from the SIP Projects and Contingency. Depending upon whether or not grant funding is acquired from the WaterSMART program, additional phases might be requested for approval later this year.

Staffing Impact:

This project will reduce Maintenance and Operations staff hours by at least 350 hours per irrigation season upon completion.

Recommended Motion:

I move to approve the Kennewick South Regional Consolidation and initial funding of Phase 1 \$400,000 in 2013 and \$420,000 shown in the Phasing Plan included in the Project Report. The funding for this project to come from the Capital Upgrade and Improvement Fund.

Kennewick South Regional Consolidation

System Improvement Project (SIP) & Infrastructure Upsizing
In Coordination with Cherry Creek Estates Development

Executive Summary

Project Info:

Provide storage and consolidation of existing pump stations in Southeast Kennewick

Project Costs:

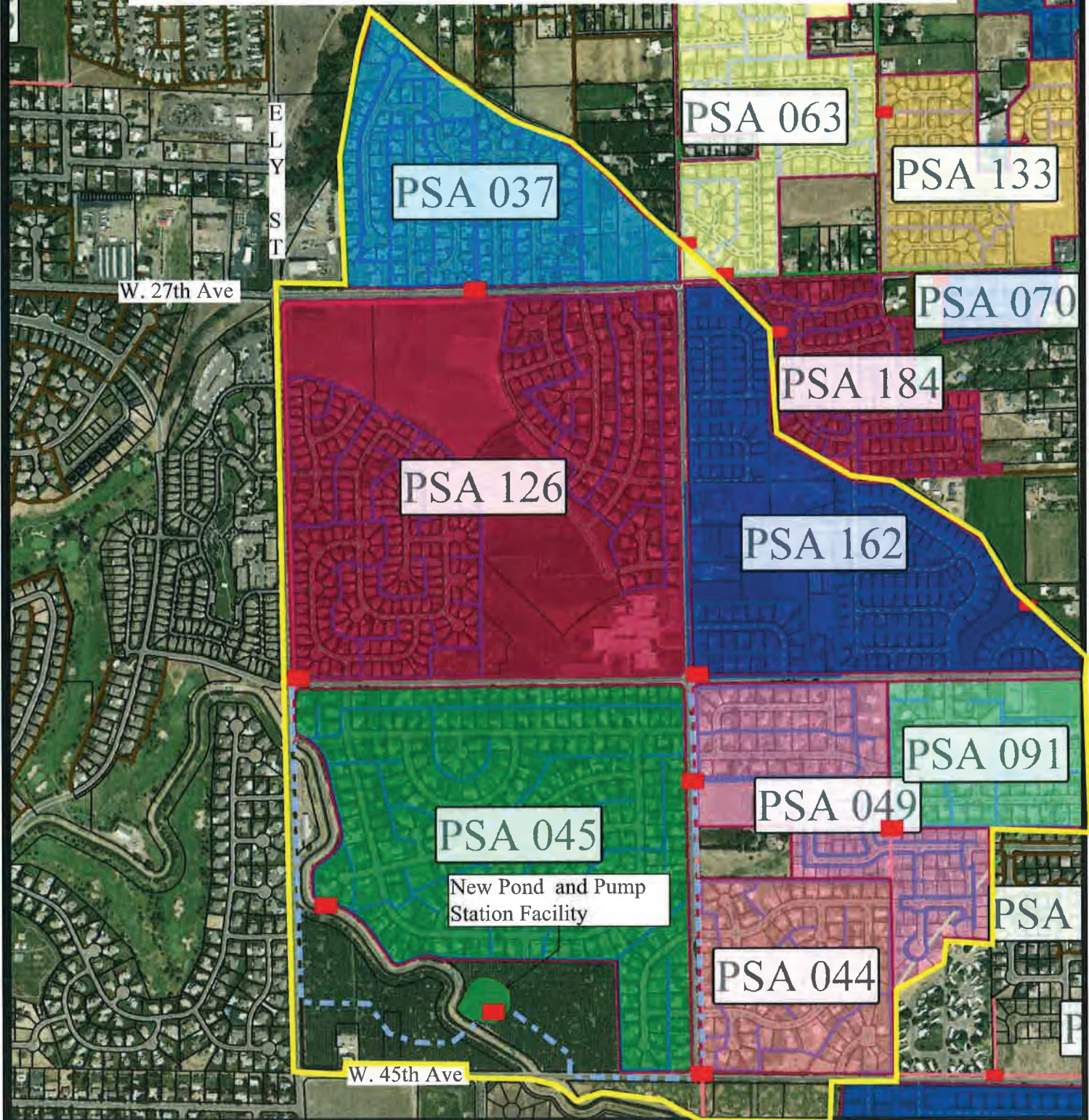
\$820,084.78 Total Capital Costs




- Phase 1: \$376,117.82 (2013-2014 irrigation offseason expenses)
- Phase 2: \$69,522.56 (2013-2014, based on WaterSmart Grant)
- Phase 3: \$153,703.58 (2014-2015, based on WaterSmart Grant)
- Phase 4: \$220,740.82 (2016-2017, based on Cherry Creek development)

In addition to pump consolidation, this project specifically address operational challenges, risk and liability issue, and provides cost savings. Some key benefits of the project are as follows:

- Improves deliver to KID Customers
- 292 acre-feet of water better managed annually
- Reduces risk and liability
- Reduces drought impacts
- Increases pond storage and pumping capacity
- Saves approximately \$122,860 in lateral pipeline replacement
- Saves approximately \$221,248 in overflow piping replacement
- Saves approximately \$81,892 (over projected 50 years) in meter base charges alone
- Saves approximately \$800,000 (over projected 50 years) in labor and benefits
- Saves approximately \$125,000 (over projected 50 years) in maintenance/repairs.
- Improves operational efficiencies
- Improves electrical efficiencies

System Improvement Project (SIP) & Infrastructure Upsizing In Coordination with the Cherry Creek Subdivision



-  Proposed Piping
-  Existing Pump Station
-  Proposed Service Area



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Appendix B

<p style="text-align: center;">KID Owned Equipment Rates based on Construction Equipment Ownership and Operation Schedule, Region VIII US Army Corps of Engineers, Volume 8, November 2018</p>								
Budget Item (from Table K)	KID Owned Equipment	Year	Hour Rate	DEPR	FCCM	Equipment Age Adj.	Adj. Hourly	40 Hour Adj. Monthly Rate
21	CAT 312C Excavator	2006	\$ 44.73	\$ 16.96	\$ 2.51	0.97	\$ 44.15	\$ 7,063.34
22	Mack GUB13 Dump Truck (1)	2008	\$ 49.60	\$ 6.27	\$ 1.24	0.83	\$ 48.32	\$ 7,731.73
	Truck Option - Dump Body		\$ 2.17	\$ 1.12	\$ 0.12	0.97	\$ 2.13	\$ 341.25
	Subtotal		\$ 51.77				\$ 50.46	\$ 8,072.98
23	Mack GUB13 Dump Truck (2)	2008	\$ 49.60	\$ 6.27	\$ 1.24	0.83	\$ 48.32	\$ 7,731.73
	Truck Option - Dump Body		\$ 2.17	\$ 1.12	\$ 0.12	0.97	\$ 2.13	\$ 341.25
	Subtotal		\$ 51.77				\$ 50.46	\$ 8,072.98
24	CAT 563C Roller	2000	\$ 48.30	\$ 12.72	\$ 1.89	0.93	\$ 47.28	\$ 7,564.37
25	Ford L8000 Water Truck	1987	\$ 49.60	\$ 6.27	\$ 1.24	0.83	\$ 48.32	\$ 7,731.73
	Truck Option - Water Tank		\$ 9.52	\$ 4.78	\$ 0.67	0.96	\$ 9.30	\$ 1,488.32
	Subtotal		\$ 59.12					\$ 9,220.05
26	JD 160G Excavator	2014	\$ 45.83	\$ 15.07	\$ 3.06	0.98	\$ 45.47	\$ 7,274.78
27	Genie Forklift	2012	\$ 23.30	\$ 4.65	\$ 7.02	0.94	\$ 22.60	\$ 3,615.97
28	Bobcat T770 (Skid Steer)	2016	\$ 19.98	\$ 5.22	\$ 0.69	1.01	\$ 20.04	\$ 3,206.26
29	JD 544J Loader	2005	\$ 65.69	\$ 20.61	\$ 3.39	0.94	\$ 64.25	\$ 10,280.00
30	LeeBoy 8500D Paver	2016	\$ 52.81	\$ 16.36	\$ 2.12	1.03	\$ 53.36	\$ 8,538.30

Table 2-1
Hourly Equipment Ownership and Operating Expense

CAT	REGION 8			ENGINE HORSEPOWER AND FUEL TYPE		VALUE (TEV)	TOTAL HOURLY RATES (\$/HR)		ADJUSTABLE ELEMENTS			CWT
	ID.NO.	MODEL	EQUIPMENT DESCRIPTION	MAIN	CARRIER	2015 (\$)	AVERAGE	STANDBY	DEPR	FCCM	FUEL	
A10 AGGREGATE / CHIP SPREADERS												
	SUBCATEGORY 0.10		SELF PROPELLED									
	ROSCO, A LeeBoy COMPANY											
	A10RS003	CSM	CHIP SPREADER, SELF PROPELLED, 10' WIDE, 1.70 CY, 2WD	160 HP	D-off	\$160,903	51.64	9.96	15.82	2.05	15.12	149
	A10RS004	CSM	CHIP SPREADER, SELF PROPELLED, 11' WIDE, 1.80 CY, 2WD	160 HP	D-off	\$163,643	52.23	10.14	16.09	2.09	15.12	153
	A10RS005	CSM	CHIP SPREADER, SELF PROPELLED, 12' WIDE, 2.03 CY, 2WD	160 HP	D-off	\$164,199	52.35	10.17	16.15	2.09	15.12	159
	A10RS006	CSM	CHIP SPREADER, SELF PROPELLED, 13' WIDE, 2.28 CY, 2WD	160 HP	D-off	\$164,508	52.42	10.19	16.18	2.10	15.12	153
	A10RS007	CSM	CHIP SPREADER, SELF PROPELLED, 15' WIDE, 2.53 CY, 2WD	160 HP	D-off	\$166,385	52.81	10.30	16.36	2.12	15.12	159
	SUBCATEGORY 0.20		TOWED & TAILGATE									
	PAVEMENT TECHNOLOGIES ININTERNATIONAL											
	A10PV001	GS 84	CHIP SPREADER, TAILGATE, 8' WIDE (ADD DUMP TRUCK)			\$4,711	1.21	0.38	0.63	0.06	0.00	7
	SEALMASTER, INC.											
	A10SE003	R-1 TAILGATE	CHIP SPREADER, TAILGATE, 10' WIDE, 1.41 CY (ADD DUMP TRUCK)			\$22,170	5.70	1.77	2.96	0.29	0.00	30
	A10SE004	R-1 TOWED	CHIP SPREADER, TOWED, 10' WIDE, 1.41 CY (ADD DUMP TRUCK)			\$24,723	6.37	1.98	3.30	0.33	0.00	30

Item 30: LeeBoy 8500D Paver

Table 2-1
Hourly Equipment Ownership and Operating Expense

CAT	REGION 8			ENGINE HORSEPOWER AND FUEL TYPE		VALUE (TEV)	TOTAL HOURLY RATES (\$/HR)		ADJUSTABLE ELEMENTS			CWT
	ID.NO.	MODEL	EQUIPMENT DESCRIPTION	MAIN	CARRIER	2015 (\$)	AVERAGE	STANDBY	DEPR	FCCM	FUEL	
F10	CASE CORPORATION (continued)											
	F10CS037	586H	FORK LIFT, ROUGH TERRAIN, 3,000 LB CAPACITY, 22' HIGH STRAIGHT MAST, 4X4	68 HP	D-off	\$109,800	25.73	5.57	8.40	1.37	5.86	146
	JCB INC.											
	F10JC001	930	FORK LIFT, ROUGH TERRAIN, 6,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4	74 HP	D-off	\$91,050	23.30	4.65	7.02	1.14	6.38	148
	F10JC002	940	FORK LIFT, ROUGH TERRAIN, 8,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4	74 HP	D-off	\$99,500	24.75	5.09	7.70	1.24	6.38	168
G10 GENERATOR SETS												
	SUBCATEGORY 0.10 PORTABLE											
	WACKER CORPORATION											
	G10WC001	GP 3800A	GENERATOR SET, PORTABLE, 3.7 KW, 120/240V, 60 HZ	8 HP	G	\$1,825	2.01	0.13	0.21	0.02	1.47	2
	G10WC002	GP 5600A	GENERATOR SET, PORTABLE, 5.6 KW, 120/240V, 60 HZ	11 HP	G	\$2,694	2.79	0.18	0.30	0.03	2.02	2
	G10WC004	GPS 9700V	GENERATOR SET, PORTABLE, 9.7 KW, 120/240V, 60 HZ, WITH ELECTRIC START	18 HP	G	\$3,827	4.44	0.27	0.43	0.05	3.30	2
	NO SPECIFIC MANUFACTURER											
	G10XX001	1.6KW	GENERATOR SET, PORTABLE, 1.6 KW	6 HP	G	\$1,095	1.44	0.07	0.12	0.01	1.10	1
	G10XX004	5KW	GENERATOR SET, PORTABLE, 5 KW	10 HP	G	\$3,679	2.78	0.25	0.41	0.04	1.83	3
	G10XX002	10KW	GENERATOR SET, PORTABLE, 10 KW	16 HP	G	\$1,632	3.58	0.11	0.18	0.02	2.94	3

Item 27: Genie Forklift

Table 2-1
Hourly Equipment Ownership and Operating Expense

CAT	REGION 8			ENGINE HORSEPOWER AND FUEL TYPE		VALUE (TEV)	TOTAL HOURLY RATES (\$/HR)		ADJUSTABLE ELEMENTS			CWT
	ID.NO.	MODEL	EQUIPMENT DESCRIPTION	MAIN	CARRIER	2015 (\$)	AVERAGE	STANDBY	DEPR	FCCM	FUEL	
H25	CATERPILLAR INC. (MACHINE DIVISION) (continued)											
	H25CA020	311F RR	HYDRAULIC EXCAVATOR, CRAWLER, 30,600 LBS, 0.69 CY BUCKET, 18.4' MAX DIGGING DEPTH	70 HP	D-off	\$193,614	42.89	11.07	17.08	2.53	6.03	273
	H25CA021	312E	HYDRAULIC EXCAVATOR, CRAWLER, 33,080 LBS, 1.0 CY BUCKET, 18.2' MAX DIGGING DEPTH	91 HP	D-off	\$192,245	44.73	10.99	16.96	2.51	7.84	331
	CASE CORPORATION											
	H25CS021	CX80C	HYDRAULIC EXCAVATOR, CRAWLER, 18,900 LBS, 0.59 CY BUCKET, 15.33' MAX DIGGING DEPTH	54 HP	D-off	\$151,171	33.42	8.64	13.34	1.97	4.65	190
	H25CS022	CX130D	HYDRAULIC EXCAVATOR, CRAWLER, 30,400 LBS, 0.97 CY BUCKET, 19.83' MAX DIGGING DEPTH	102 HP	D-off	\$212,552	49.59	12.15	18.75	2.77	8.79	304
	H25CS023	CX160D	HYDRAULIC EXCAVATOR, CRAWLER, 38,400 LBS, 0.97 CY BUCKET, 21.33' MAX DIGGING DEPTH	112 HP	D-off	\$266,865	60.67	15.26	23.55	3.48	9.65	384
	IRON DIRECT											
	H25ID001	CDM6150	HYDRAULIC EXCAVATOR, CRAWLER, 30,800 LBS, 0.7 CY BUCKET, 18.2' MAX DIGGING DEPTH	121 HP	D-off	\$104,479	31.41	5.97	9.22	1.36	10.40	308
	KOBELCO AMERICA INC.											
	H25KC027	SK140SR LC-3	HYDRAULIC EXCAVATOR, CRAWLER, 33,100 LBS, 0.90 CY BUCKET, 19' 7" MAX DIGGING DEPTH	93 HP	D-off	\$183,648	43.32	10.50	16.20	2.40	8.00	331

Item 21: CAT 312C Excavator

Table 2-1
Hourly Equipment Ownership and Operating Expense

CAT	REGION 8			ENGINE HORSEPOWER AND FUEL TYPE		VALUE (TEV)	TOTAL HOURLY RATES (\$/HR)		ADJUSTABLE ELEMENTS			CWT
	ID.NO.	MODEL	EQUIPMENT DESCRIPTION	MAIN	CARRIER	2015 (\$)	AVERAGE	STANDBY	DEPR	FCCM	FUEL	
H25			CATERPILLAR INC. (MACHINE DIVISION) (continued)									
	H25CA042	325F	HYDRAULIC EXCAVATOR, CRAWLER, 57,200 LBS, 1.31 CY BUCKET, 22' MAX DIGGING DEPTH	161 HP	D-off	\$242,849	50.85	10.67	15.18	3.08	13.87	572
	H25CA043	326F LONG REACH	HYDRAULIC EXCAVATOR, CRAWLER, 66,225 LBS, 1.31 CY BUCKET, 48' 4" MAX DIGGING DEPTH	203 HP	D-off	\$321,658	66.34	14.13	20.10	4.08	17.49	573
	H25CA044	329F	HYDRAULIC EXCAVATOR, CRAWLER, 68,209 LBS, 2.02 CY BUCKET, 23' 9" MAX DIGGING DEPTH	239 HP	D-off	\$338,174	72.30	14.86	21.14	4.29	20.60	630
	H25CA045	335 L CR	HYDRAULIC EXCAVATOR, CRAWLER, 83,703 LBS, 2.01 CY BUCKET, 22' 11" MAX DIGGING DEPTH	200 HP	D-off	\$393,624	76.37	17.30	24.60	5.00	17.24	766
	H25CA040	318E	HYDRAULIC EXCAVATOR, CRAWLER, 40,600 LBS, 1.00 CY BUCKET, 22.50' MAX DIGGING DEPTH	113 HP	D-off	\$241,122	45.83	10.60	15.07	3.06	9.74	410
	H25CA022	320F L	HYDRAULIC EXCAVATOR, CRAWLER, 47,400 LBS, 1.56 CY BUCKET, 25' MAX DIGGING DEPTH	161 HP	D-off	\$231,859	49.28	10.19	14.49	2.94	13.87	474
			CASE CORPORATION									
	H25CS024	CX210D LONG REACH	HYDRAULIC EXCAVATOR, CRAWLER, 52,650 LBS, 1.02 CY BUCKET, 39.33' MAX DIGGING DEPTH	160 HP	D-off	\$326,133	62.70	14.33	20.38	4.14	13.79	527
	H25CS025	CX250D LONG REACH	HYDRAULIC EXCAVATOR, CRAWLER, 63,500 LBS, 1.02 CY BUCKET, 47.75' MAX DIGGING DEPTH	177 HP	D-off	\$421,733	78.10	18.53	26.36	5.35	15.25	635
	H25CS026	CX300D	HYDRAULIC EXCAVATOR, CRAWLER, 67,300 LBS, 2.03 CY BUCKET, 24.83' MAX DIGGING DEPTH	207 HP	D-off	\$471,516	88.23	20.73	29.47	5.99	17.84	673

Item 26: JD 160G Excavator

Table 2-1
Hourly Equipment Ownership and Operating Expense

CAT	REGION 8			ENGINE HORSEPOWER AND FUEL TYPE		VALUE (TEV)	TOTAL HOURLY RATES (\$/HR)		ADJUSTABLE ELEMENTS			CWT
	ID.NO.	MODEL	EQUIPMENT DESCRIPTION	MAIN	CARRIER	2015 (\$)	AVERAGE	STANDBY	DEPR	FCCM	FUEL	
L40	CATERPILLAR INC. (MACHINE DIVISION) <i>(continued)</i>											
	L40CA019	914K	LOADER, FRONT END, WHEEL, 2.0 CY BUCKET, ARTICULATED, 4X4	97 HP	D-off	\$151,661	37.15	7.93	11.91	1.97	8.36	179
	L40CA040	930M	LOADER, FRONT END, WHEEL, 3.8 CY BUCKET, ARTICULATED, 4X4	164 HP	D-off	\$231,024	58.08	12.07	18.15	2.99	14.13	309
Item 29: JD 544J Loader	L40CA023	938M	LOADER, FRONT END, WHEEL, 3.80 CY BUCKET, ARTICULATED, 4X4	188 HP	D-off	\$261,345	65.69	13.70	20.61	3.39	16.20	362
	L40CA024	950M	LOADER, FRONT END, WHEEL, 4.25 CY BUCKET, ARTICULATED, 4X4	230 HP	D-off	\$328,218	84.92	16.76	25.01	4.25	19.82	428
	L40CA025	962M	LOADER, FRONT END, WHEEL, 4.50 CY BUCKET, ARTICULATED, 4X4	250 HP	D-off	\$382,040	96.25	19.64	29.38	4.95	21.55	446
	CASE CORPORATION											
	L40CS012	621G	LOADER, FRONT END, WHEEL, 3.0 CY BUCKET, ARTICULATED, 4X4	162 HP	D-off	\$271,148	65.33	14.15	21.28	3.51	13.96	285
	L40CS013	721G	LOADER, FRONT END, WHEEL, 3.5 CY BUCKET, ARTICULATED, 4X4	179 HP	D-off	\$295,658	71.25	15.47	23.27	3.83	15.43	325
	L40CS014	821G	LOADER, FRONT END, WHEEL, 4.5 CY BUCKET, ARTICULATED, 4X4	208 HP	D-off	\$371,531	90.36	19.07	28.52	4.81	17.93	389
	L40CS004	21F	LOADER, FRONT END, WHEEL, 1.05 CY BUCKET, ARTICULATED, 4X4	55 HP	D-off	\$94,083	22.06	4.90	7.36	1.22	4.74	109
	L40CS005	121F	LOADER, FRONT END, WHEEL, 1.18 CY BUCKET, ARTICULATED, 4X4	60 HP	D-off	\$93,157	22.39	4.86	7.29	1.21	5.17	114
	L40CS031	521G	LOADER, FRONT END, WHEEL, 2.1 CY BUCKET, ARTICULATED, 4X4	131 HP	D-off	\$222,907	54.32	11.52	17.26	2.89	11.29	241

Table 2-1
Hourly Equipment Ownership and Operating Expense

CAT	REGION 8			ENGINE HORSEPOWER AND FUEL TYPE		VALUE (TEV)	TOTAL HOURLY RATES (\$/HR)		ADJUSTABLE ELEMENTS			CWT
	ID.NO.	MODEL	EQUIPMENT DESCRIPTION	MAIN	CARRIER	2015 (\$)	AVERAGE	STANDBY	DEPR	FCCM	FUEL	
L40	MELROE BOBCAT (continued)											
	L40ME017	S550	LOADER, FRONT END, WHEEL, SKID-STEER, 10.5 CF, 62" BUCKET, 4X4	49 HP	D-off	\$41,368	14.62	2.51	3.96	0.53	4.63	65
	L40ME012	S450	LOADER, FRONT END, WHEEL, SKID-STEER, 10.5 CF, 62" BUCKET	49 HP	D-off	\$34,235	13.06	2.07	3.25	0.44	4.63	50
	L40ME021	S570	LOADER, FRONT END, WHEEL, SKID-STEER, 10.5 CF, 62" BUCKET, 4X4	49 HP	D-off	\$43,328	15.04	2.63	4.16	0.55	4.63	62
	L40ME022	S630	LOADER, FRONT END, WHEEL, SKID-STEER, 20.6 CF, 74" BUCKET, 4X4	74 HP	D-off	\$48,308	18.76	2.95	4.66	0.62	6.99	76
	L40ME023	S740	LOADER, FRONT END, WHEEL, SKID-STEER, 23.3 CF, 78" BUCKET, 4X4	74 HP	D-off	\$53,889	19.98	3.30	5.22	0.69	6.99	88
Item 28: Bobcat T770 (Skid Steer)												
	SUBCATEGORY 0.31	TOOL CARRIER & TELESCOPIC HANDLERS, 0 THRU 225 HP										
	CATERPILLAR INC. (MACHINE DIVISION)											
	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	74 HP	D-off	\$93,310	24.01	4.62	6.84	1.20	6.38	110
	L40CA038	TH514C	TELEHANDLER, 11,000 LB RATED LOAD CAPACITY, 45' MAX LIFT HEIGHT WITH 7,000 LB CAPACITY, 30.3' MAX FORWARD REACH WITH 3,000 LB CAPACITY, 4X4	101 HP	D-off	\$191,950	45.30	9.50	14.05	2.47	8.70	237
	L40CA039	TH406C	TELEHANDLER, 8100 LB RATED LOAD CAPACITY, 20' MAX LIFT HEIGHT WITH 4400 LB CAPACITY, 10.2' MAX FORWARD REACH WITH 3300 LB CAPACITY, 4X4	101 HP	D-off	\$98,360	28.70	4.78	7.02	1.27	8.70	159
	L40CA011	330D MH	MATERIAL HANDLER, TRACKED, 1.25 CY GRAPPLE OR 66" MAGNET, 52' MAX HEIGHT, 48' MAX REACH	268 HP	D-off	\$589,580	130.85	29.71	44.22	7.60	23.10	984

Table 2-1
Hourly Equipment Ownership and Operating Expense

CAT	REGION 8			ENGINE HORSEPOWER AND FUEL TYPE		VALUE (TEV)	TOTAL HOURLY RATES (\$/HR)		ADJUSTABLE ELEMENTS			CWT
	ID.NO.	MODEL	EQUIPMENT DESCRIPTION	MAIN	CARRIER	2015 (\$)	AVERAGE	STANDBY	DEPR	FCCM	FUEL	
R50			CATERPILLAR INC. (MACHINE DIVISION) (continued)									
	R50CA009	CP68B	ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, PAD FOOT, 16.2 TON, 84" WIDE, 3X2, SOIL COMPACTOR	157 HP	D-off	\$246,017	75.86	14.48	22.49	3.23	13.53	322
	R50CA010	CP74B	ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, PAD FOOT, 18 TON, 84" WIDE, 3X2, SOIL COMPACTOR	174 HP	D-off	\$272,219	83.92	16.04	24.94	3.57	14.97	355
	R50CA012	CS34	ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 5 TON, 50" WIDE, 3X2, SOIL COMPACTOR	74 HP	D-off	\$104,784	33.29	6.20	9.64	1.38	6.38	96
	R50CA017	CS54B	ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 12 TON, 84" WIDE, 3X2, SOIL COMPACTOR	131 HP	D-off	\$180,862	57.33	10.60	16.46	2.37	11.29	239
	R50CA018	CS78B	ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 20.6 TON, 84" WIDE, 3X2, SOIL COMPACTOR	174 HP	D-off	\$276,548	84.98	16.35	25.43	3.63	14.97	412
	R50CA019	CP54B	ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, PAD FOOT, 12.0 TON, 84" WIDE, 3X2, SOIL COMPACTOR	131 HP	D-off	\$187,078	58.86	10.98	17.04	2.46	11.29	241
	R50CA011	CS68B	ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 16.5 TON, 84" WIDE, 3X2, SOIL COMPACTOR	157 HP	D-off	\$245,373	75.69	14.47	22.50	3.22	13.53	324
	R50CA007	CS64B	ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 15.7 TON, 84" WIDE, 3X2, SOIL COMPACTOR	131 HP	D-off	\$143,752	48.30	8.25	12.72	1.89	11.29	254
Item 24: CAT 563C Roller	R50CA008	CS74B	ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 17.6 TON, 84" WIDE, 3X2, SOIL COMPACTOR	174 HP	D-off	\$263,426	81.86	15.43	23.94	3.46	15.00	319

Table 2-1
Hourly Equipment Ownership and Operating Expense

CAT	REGION 8			ENGINE HORSEPOWER AND FUEL TYPE		VALUE (TEV)	TOTAL HOURLY RATES (\$/HR)		ADJUSTABLE ELEMENTS			CWT
	ID.NO.	MODEL	EQUIPMENT DESCRIPTION	MAIN	CARRIER	2015 (\$)	AVERAGE	STANDBY	DEPR	FCCM	FUEL	
	SUBCATEGORY 0.20		DUMP BODY, REAR									
		OX BODIES										
	T40OX001	MAVERICK	TRUCK OPTIONS, DUMP BODY, REAR, 10.0 CY, AIR GATE (W/HOIST) (ADD 35,000 GVW TRUCK)			\$9,942	2.17	0.68	1.12	0.12	0.00	33
	T40OX002	MAVERICK	TRUCK OPTIONS, DUMP BODY, REAR, 8 CY, AIR GATE (W/HOIST) (ADD 30,000 GVW TRUCK)			\$9,648	2.11	0.67	1.09	0.12	0.00	21
	T40OX003	STAMPEDE	TRUCK OPTIONS, DUMP BODY, REAR, 16 CY, AIR GATE (W/HOIST) (ADD 50,000 GVW TRUCK)			\$18,018	3.93	1.24	2.03	0.22	0.00	35
	T40OX006	STAMPEDE	TRUCK OPTIONS, DUMP BODY, REAR, 20.0 CY, AIR GATE (W/HOIST) (ADD 50,000 GVW TRUCK)			\$20,684	4.51	1.42	2.33	0.25	0.00	40
		SUBCATEGORY 0.30	FLATBEDS, WITH SIDES									
		KNAPHEIDE MANUFACTURING CO.										
	T40KF011	PVMXT-83C	TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 8'			\$5,888	1.14	0.38	0.59	0.08	0.00	11
	T40KF013	PVMXT-103C	TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 10'			\$6,271	1.21	0.40	0.63	0.08	0.00	14
	T40KF014	PVMXT-123C	TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 12'			\$7,075	1.37	0.45	0.71	0.09	0.00	16
	T40KF016	PVMXT-163C	TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'			\$8,811	1.69	0.55	0.88	0.11	0.00	16
	T40KF018	PVMXT-203C	TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 20'			\$10,626	2.05	0.67	1.06	0.14	0.00	18

Items 22+23: Mack GUB13 Dump Truck (1) and (2)

Table 2-1
Hourly Equipment Ownership and Operating Expense

CAT	REGION 8			ENGINE HORSEPOWER AND FUEL TYPE		VALUE (TEV)	TOTAL HOURLY RATES (\$/HR)		ADJUSTABLE ELEMENTS			CWT
	ID.NO.	MODEL	EQUIPMENT DESCRIPTION	MAIN	CARRIER	2015 (\$)	AVERAGE	STANDBY	DEPR	FCCM	FUEL	
	SUBCATEGORY 0.60 WATER TANKS											
	ROSCO, A LeeBoy COMPANY											
	T40RS001	DS 2000	TRUCK OPTIONS, WATER TANK, 2,000 GAL (ADD 28,000 GVW TRUCK)			\$40,885	7.64	2.46	3.83	0.54	0.00	38
	T40RS002	DS 3000	TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)			\$42,992	8.02	2.58	4.03	0.56	0.00	45
	T40RS003	DS 4000	TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)			\$50,976	9.52	3.06	4.78	0.67	0.00	55
	SUBCATEGORY 0.70 ALL OTHER OPTIONS											
	ARROW-MASTER, INC.											
	T40AG001	1350T	TRUCK OPTIONS, GUILLOTINE CONCRETE BREAKER, W/8" DIA BREAKING TOOL AND CAB	74 HP	D-off	\$105,652	28.84	6.58	10.45	1.35	6.38	96
T45 TRUCK TRAILERS												
	SUBCATEGORY 0.10 BOTTOM DUMP											
	TRAIL KING INDUSTRIES, INC.											
	T45TT001	TK BD22-362	TRUCK TRAILER, BOTTOM DUMP, 22 CY, 36' - 3 AXLE, W/ TARP, CLAMSHELL (ADD TOWING TRUCK)			\$45,237	8.68	2.35	3.63	0.53	0.00	122
	T45TT002	TK BD22-402	TRUCK TRAILER, BOTTOM DUMP, 22 CY, 40' - 2 AXLE, W/ TARP, CLAMSHELL (ADD TOWING TRUCK)			\$41,820	8.09	2.16	3.33	0.49	0.00	126
	T45TT003	TK BD22-403	TRUCK TRAILER, BOTTOM DUMP, 22 CY, 40' - 2 AXLE, W/ TARP, CLAMSHELL (ADD TOWING TRUCK)			\$46,341	8.88	2.41	3.73	0.54	0.00	146

Items 25: Ford L8000 Water Truck

Table 2-1
Hourly Equipment Ownership and Operating Expense

CAT	REGION 8			ENGINE HORSEPOWER AND FUEL TYPE		VALUE (TEV)	TOTAL HOURLY RATES (\$/HR)		ADJUSTABLE ELEMENTS			CWT
	ID.NO.	MODEL	EQUIPMENT DESCRIPTION	MAIN	CARRIER	2015 (\$)	AVERAGE	STANDBY	DEPR	FCCM	FUEL	
	SUBCATEGORY 0.03 OVER 30,000 GVW (Chassis only - Add options)											
	NO SPECIFIC MANUFACTURER											
	T50XX027	4X2 37KGWV DSL	TRUCK, HIGHWAY, 37,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	270 HP	D-on	\$64,930	33.86	2.83	4.05	0.80	21.71	126
Items 22, 23, and 25	T50XX028	6X4 45KGWV DSL	TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	385 HP	D-on	\$100,891	49.60	4.38	6.27	1.24	30.95	135
	T50XX029	6X4 52KGWV DSL	TRUCK, HIGHWAY, 52,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	450 HP	D-on	\$94,054	54.53	4.06	5.81	1.15	36.18	144
	T50XX030	6X6 70KGWV DSL	TRUCK, HIGHWAY, 70,000 LBS GVW, 3 AXLE, 6X6 (CHASSIS ONLY-ADD OPTIONS)	550 HP	D-on	\$122,938	67.53	5.38	7.74	1.51	44.22	180
	T50XX031	6X4 75KGWV DSL	TRUCK, HIGHWAY, 75,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	605 HP	D-on	\$140,659	74.92	6.19	8.92	1.73	48.64	197
	T50XX033	6X4 80KGWV DSL	DUMP TRUCK, HIGHWAY, 80,000 LBS GVW, 3 AXLE, 6X4 WITH REAR 16 - 20 CY DUMP BODY, 3 LIFT AXLES	470 HP	D-on	\$190,449	70.06	8.28	11.87	2.34	37.79	280
T55 TRUCKS, OFF-HIGHWAY												
	SUBCATEGORY 0.10 RIGID FRAME											
	CATERPILLAR INC. (MACHINE DIVISION)											
	T55CA007	770G	TRUCK, OFF-HIGHWAY, RIGID FRAME, 31.7 CY, 42 TON, 4X4, REAR DUMP	477 HP	D-off	\$716,617	115.26	22.29	28.13	8.22	22.54	733
	T55CA002	773G	TRUCK, OFF-HIGHWAY, RIGID FRAME, 46.9 CY, 61 TON, 4X4, REAR DUMP	717 HP	D-off	\$1,072,658	168.34	33.68	42.75	12.30	33.89	1,013
	T55CA003	777G	TRUCK, OFF-HIGHWAY, RIGID FRAME, 78.6 CY, 100 TON, 4X4, REAR DUMP	938 HP	D-off	\$1,398,616	227.23	43.33	54.60	16.03	44.33	1,419

Table 3-1
Equipment Age Adjustment Factors for Ownership Cost

CATEGORY SUB	REGION 8 TYPE OF EQUIPMENT	Life in Years = Year Purchased New =	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
			2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
A10	0.00	AGGREGATE / CH P SPREADERS																		
A10	0.10	SELF PROPELLED	1.07	1.05	1.03	1.00	1.00	0.97												
Item 30: LeeBoy 8500D Paver																				
A10	0.20	TOWED & TAILGATE	1.07	1.05	1.03	1.00	1.00													
A15	0.00	A R COMPRESSORS																		
A15	0.10	ROTARY SCREW	1.05	1.02	1.00	1.00	0.98	0.95	0.91											
A15	0.20	SHOP TYPE	1.04	1.02	1.00	1.00	0.98	0.96	0.91	0.88	0.81									
A20	0.00	A R HOSE, TOOLS & EQUIPMENT																		
A20	0.10	A R DRILL HOSE	1.04	1.01	1.00	1.00														
A20	0.20	SANDBLAST HOSE	1.04	1.01	1.00	1.00														
A20	0.30	SANDBLASTERS, BREAKERS, & MISC. A R TOOLS	1.04	1.02	1.00	1.00	0.98													
A25	0.00	ASPHALT PAVING DISTRIBUTORS	1.06	1.04	1.03	1.00	1.00													
A30	0.00	ASPHALT PAVERS & MISCELLANEOUS ROAD EQUIPMENT																		
A30	0.10	SELF PROPELLED	1.06	1.05	1.03	1.00	1.00	0.97												
A30	0.20	TOWED	1.07	1.05	1.03	1.00	1.00	0.97	0.95											
A30	0.30	SLURRY SEAL PAVERS (Cold mix)	1.06	1.05	1.03	1.00	1.00	0.97	0.95	0.92	0.89									

Table 3-1
Equipment Age Adjustment Factors for Ownership Cost

CATEGORY SUB	REGION 8 TYPE OF EQUIPMENT	Life in Years = Year Purchased New =	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
			2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	
D35	0.22	ELECTRIC, OVER 9.875" DIAMETER (Add cost for drill steel and bit wear)	1.04	1.02	1.01	1.00	0.98	0.96	0.95	0.91	0.88	0.87	0.84	0.78	0.72						
F10	0.00	FORK LIFTS	1.02	1.02	1.01	1.00	0.99	0.97	0.94	Item 27: Genie Forklift											
G10	0.00	GENERATOR SETS																			
G10	0.10	PORTABLE	1.03	1.00	1.00	1.00	1.00	0.98													
G10	0.20	SKID MOUNTED	1.03	1.00	1.00	1.00	1.00	0.98	0.97												
G15	0.00	GRADERS, MOTOR	1.00	1.02	1.02	1.00	0.98	0.96	0.92	0.82	0.79	0.77									
H10	0.00	HAMMERS, HYDRAULIC (Demolition tool) (Add cost for point wear)	1.02	1.02	1.01	1.00	0.98														
H13	0.00	HAZARDOUS/TOXIC WASTE EQUIPMENT																			
H13	0.11	COMPACTORS (Compression force) 0 THRU 50 TONS	1.02	1.02	1.01	1.00	0.99	0.97	0.94												
H13	0.12	COMPACTORS (Compression force) OVER 50 TONS	1.02	1.02	1.01	1.00	0.99	0.97	0.94	0.89	0.86										
H13	0.21	FILTER PRESSES, STATIONARY	1.02	1.02	1.01	1.00	0.99	0.97	0.94												
H13	0.22	FILTER PRESSES, MOBILE	1.02	1.02	1.01	1.00	0.99	0.97	0.94												
H13	0.30	CENTRIFUGES	1.02	1.02	1.01	1.00															
H13	0.40	SHREDDERS	1.02	1.02	1.01	1.00	0.99	0.97	0.94												
H13	0.51	SOIL TREATMENT PLANT, MOBILE	1.02	1.02	1.01	1.00	0.99	0.97	0.94												

Table 3-1
Equipment Age Adjustment Factors for Ownership Cost

CATEGORY SUB	REGION 8 TYPE OF EQUIPMENT	Life in Years = Year Purchased New =	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
			2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
H13	0.61	SLUDGE PROCESS NG EQU P, SLUDGE DISPENSERS	1.02	1.02	1.01	1.00	0.99	0.97	0.94											
H13	0.71	WASTE HANDLING EQUIPMENT, DRUM HANDL NG	1.02	1.02	1.01	1.00														
H15	0.00	HEATERS, SPACE																		
H20	0.00	HOISTS & A R WINCHES	1.02	1.02	1.01	1.00	0.98	0.96	0.93											
H25	0.00	HYDRAULIC EXCAVATORS, CRAWLER MOUNTED																		
H25	0.10	0 LBS THRU 12,500 LBS	1.00	1.02	1.00	1.00	0.98	0.97												
H25	0.11	OVER 12,500 LBS THRU 40,000 LBS	1.00	1.02	1.00	1.00	0.98	0.97												
											Items 21+26: CAT 312C Excavator + JD 160G Excavator									
H25	0.12	OVER 40,000 LBS THRU 100,000 LBS	1.00	1.02	1.00	1.00	0.98	0.97	0.94	0.93	0.89									
H25	0.13	OVER 100,000 LBS THRU 160,000 LBS	1.00	1.02	1.00	1.00	0.98	0.97	0.94	0.93	0.89	0.90	0.87							
H25	0.14	OVER 160,000 LBS	1.00	1.02	1.00	1.00	0.98	0.97	0.94	0.93	0.89	0.90	0.87	0.86	0.85					
H25	0.21	EXCAVATOR ATTACHMENTS, MOBILE SHEARS	1.02	1.02	1.01	1.00	0.99													
H25	0.22	EXCAVATOR ATTACHMENTS, MATERIAL HANDL NG	1.02	1.02	1.01	1.00	0.98													
H25	0.23	EXCAVATOR ATTACHMENTS, CONCRETE PULVERIZERS	1.02	1.02	1.01	1.00	0.99													
H25	0.24	EXCAVATOR ATTACHMENTS, COMPACTORS	1.02	1.02	1.01	1.00	0.99													
H30	0.00	HYDRAULIC EXCAVATORS, WHEEL MOUNTED																		

Table 3-1
Equipment Age Adjustment Factors for Ownership Cost

CATEGORY SUB	REGION 8 TYPE OF EQUIPMENT	Life in Years = Year Purchased New =	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
			2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
H30	0.01	0 THRU 1.0 CY	1.00	1.02	1.00	1.00	0.98	0.97												
H30	0.02	OVER 1.0 CY	1.00	1.02	1.00	1.00	0.98	0.97	0.94											
H35	0.00	HYDRAULIC SHOVELS, CRAWLER MOUNTED																		
H35	0.11	D ESEL, 0 CY THRU 5.0 CY	1.00	1.02	1.00	1.00	0.98	0.97	0.94	0.93	0.90	0.90								
H35	0.12	D ESEL, OVER 5.0 CY	1.00	1.02	1.00	1.00	0.98	0.97	0.94	0.93	0.90	0.90	0.88							
H35	0.21	ELECTRIC, OVER 2.5 CY	1.00	1.02	1.00	1.00	0.98	0.97	0.95	0.93	0.90	0.90	0.88	0.87	0.85					
L10	0.00	LAND CLEARING EQUIPMENT	1.01	1.02	1.01	1.00	1.00	0.98	0.94											
L15	0.00	LANDSCAPING EQUIPMENT	1.02	1.02	1.01	1.00														
L20	0.00	LIGHTING SETS, TRAILER MOUNTED																		
L20	0.10	LIGHTING SETS, TRAILER MOUNTED - METALLIC VAPOR	1.02	1.02	1.01	1.00	0.98	0.96												
L25	0.00	LINE STRIPPING EQUIPMENT	1.02	1.02	1.01	1.00	0.98	0.96												
L30	0.00	LOADERS, BELT (Conveyor belts) & ACCESSORIES	1.02	1.02	1.01	1.00	0.99	0.97	0.94											
L35	0.00	LOADERS, FRONT END, CRAWLER TYPE	1.01	1.02	1.01	1.00	1.00	0.98	0.94											
L40	0.00	LOADERS, FRONT END, WHEEL TYPE																		
L40	0.11	ARTICULATED, 0 THRU 225 HP	1.02	1.02	1.01	1.00	0.99	0.98	0.94	Item 29: JD 544J Loader										

Table 3-1
Equipment Age Adjustment Factors for Ownership Cost

CATEGORY SUB	REGION 8 TYPE OF EQUIPMENT	Life in Years = Year Purchased New =	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
			2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
L40	0.12	ARTICULATED, OVER 225 HP	1.01	1.02	1.01	1.00	1.00	0.98	0.94	0.89	0.85	0.86								
L40	0.20	SKID STEER	1.01	1.02	1.01	1.00	1.00	0.98												
			Item 28: Bobcat T770 (Skid Steer)																	
L40	0.21	SKID STEER ATTACHMENTS	1.01	1.02	1.01	1.00														
L40	0.31	TOOL CARRIER & TELESCOPIC HANDLERS, 0 THRU 225 HP	1.02	1.02	1.01	1.00	0.99	0.98	0.94											
L40	0.32	TOOL CARRIER & TELESCOPIC HANDLERS, OVER 225 HP	1.01	1.02	1.01	1.00	1.00	0.98	0.95	0.90	0.86									
L45	0.00	LOADERS / BACKHOE, CRAWLER TYPE	1.01	1.02	1.01	1.00	0.99	0.98												
L50	0.00	LOADERS / BACKHOE, WHEEL TYPE	1.02	1.02	1.01	1.00	0.99	0.98	0.94											
L55	0.00	LOADER / BACKHOE, ATTACHMENTS	1.02	1.02	1.01	1.00	0.98													
L60	0.00	LOG SKIDDERS	1.06	1.03	1.02	1.00	0.98	0.94	0.92											
M10	0.00	MARINE EQUIPMENT (NON DREDGING)																		
M10	0.11	AQUATIC MAINTENANCE	1.04	1.02	1.01	1.00	0.98	0.96	0.95											
M10	0.12	AQUATIC MAINTENANCE ATTACHMENTS	1.04	1.02	1.01	1.00	0.98													
M10	0.21	HYDRAULIC CUTTERHEAD DREDGE, 8" OR LESS, TRANSPORTABLE	1.04	1.02	1.01	1.00	0.98	0.97	0.95	0.94	0.92	0.90	0.86							
M10	0.22	HYDRAULIC CUTTERHEAD DREDGE, 8" - 12", TRANSPORTABLE	1.04	1.02	1.01	1.00	0.98	0.97	0.95	0.94	0.92	0.90	0.86							
M10	0.23	HYDRAULIC AUGERHEAD DREDGE, 12" OR LESS, TRANSPORTABLE	1.04	1.02	1.01	1.00	0.98	0.97	0.95	0.94	0.92	0.90	0.86							

Table 3-1
Equipment Age Adjustment Factors for Ownership Cost

CATEGORY SUB	REGION 8 TYPE OF EQUIPMENT	Life in Years = Year Purchased New =	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
			2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
P65	0.22	WHEEL MOUNTED, ELECTRIC DRIVE	1.02	1.02	1.01	1.00	0.99	0.97												
P70	0.00	PUMPS, WATER (For core drills)																		
P70	0.01	PUMPS, WATER (For core drills) - ENGINE DRIVE	1.02	1.02	1.01	1.00	0.98	0.96												
P70	0.02	PUMPS, WATER (For core drills) - ELECTRIC DRIVE	1.02	1.02	1.01	1.00	0.98	0.96												
R10	0.00	R P PERS & HYDRAULIC BANK SLOPERS (Add cost for point wear)	1.01	1.02	1.01	1.00	0.99	0.98												
R15	0.00	ROLLERS, STATIC, TOWED, PNEUMATIC	1.06	1.03	1.02	1.00	0.98	0.94	0.92											
R20	0.00	ROLLERS, STATIC, TOWED, STEEL DRUM	1.06	1.03	1.02	1.00	0.98	0.94	0.92											
R30	0.00	ROLLERS, STATIC, SELF-PROPELLED																		
R30	0.01	PNEUMATIC	1.06	1.03	1.02	1.00	0.98	0.94												
R30	0.02	SMOOTH DRUM	1.06	1.03	1.02	1.00	0.98	0.94	0.92											
R30	0.03	TAMP NG FOOT, LANDFILL & SOIL COMPACTORS	1.06	1.03	1.02	1.00	0.98	0.94	0.92	0.89	0.86									
R40	0.00	ROLLERS, VIBRATORY, TOWED	1.06	1.03	1.02	1.00	0.98	0.94												
R45	0.00	ROLLERS, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM	1.06	1.03	1.02	1.00	0.98	0.94												
R50	0.00	ROLLERS, VIBRATORY, SELF-PROPELLED, S NGL E DRUM	1.07	1.03	1.02	1.00	0.97	0.93												
R55	0.00	ROOFING EQUIPMENT	1.02	1.02	1.01	1.00	0.99													

Item 24: CAT 563C Roller

Table 3-1
Equipment Age Adjustment Factors for Ownership Cost

CATEGORY SUB	REGION 8 TYPE OF EQUIPMENT	Life in Years = Year Purchased New =	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
			2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
T10	0.00	TRACTOR BLADES & ATTACHMENTS (including agricultural)	1.01	1.02	1.01	1.00	1.00	0.98	0.94											
T15	0.00	TRACTORS, CRAWLER (DOZER) (includes blade)																		
T15	0.01	0 THRU 225 HP	1.02	1.02	1.01	1.00	0.99	0.98	0.94											
T15	0.02	226 HP THRU 425 HP	1.02	1.02	1.01	1.00	0.99	0.98	0.94	0.89	0.84									
T15	0.03	OVER 425 HP	1.01	1.02	1.01	1.00	1.00	0.98	0.94	0.89	0.85	0.86	0.83							
T20	0.00	TRACTORS, WHEEL TYPE (DOZER)	1.06	1.03	1.02	1.00	0.98	0.94	0.92	0.89	0.86	0.86								
T25	0.00	TRACTORS, AGRICULTURAL																		
T25	0.10	CRAWLER	1.06	1.03	1.02	1.00	0.98	0.94	0.92											
T25	0.20	WHEEL	1.06	1.03	1.02	1.00	0.98	0.94												
T30	0.00	TRENCHERS, CHAIN TYPE CUTTER	1.06	1.03	1.02	1.00	0.98	0.94												
T35	0.00	TRENCHERS, WHEEL TYPE CUTTER	1.06	1.03	1.02	1.00	0.98	0.94												
T40	0.00	TRUCK OPTIONS																		
T40	0.10	CRANES / HOISTS, PERSONNEL & MATERIAL HANDLING	1.02	1.02	1.01	1.00	0.98	0.96												
T40	0.20	DUMP BODY, REAR	1.02	1.02	1.01	1.00	0.99	0.97												
T40	0.30	FLATBEDS, WITH SIDES	1.02	1.02	1.01	1.00	0.98	0.96												

Items 22+23: Mack GUB13 Dump Truck (1) and (2)

Table 3-1
Equipment Age Adjustment Factors for Ownership Cost

CATEGORY SUB	REGION 8 TYPE OF EQUIPMENT	Life in Years = Year Purchased New =	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
			2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
T40	0.41	HOIST, ELECTRIC DRIVE	1.02	1.02	1.01	1.00	0.98	0.96												
T40	0.50	TRANSIT MIXERS	1.02	1.02	1.01	1.00	0.99	0.97												
T40	0.60	WATER TANKS	1.02	1.02	1.01	1.00	0.98	0.96												
T40	0.70	ALL OTHER OPTIONS	1.02	1.02	1.01	1.00	0.98	0.96												
T45	0.00	TRUCK TRAILERS																		
T45	0.10	BOTTOM DUMP	1.02	1.02	1.01	1.00	0.99	0.97	0.94											
T45	0.20	END / SIDE DUMP	1.02	1.02	1.01	1.00	0.99	0.97	0.94											
T45	0.30	PUP TRAILER	1.02	1.02	1.01	1.00	0.99	0.97												
T45	0.41	LOWBOY, RIGID NECK, DROP DECK	1.02	1.02	1.01	1.00	0.99	0.97	0.94											
T45	0.50	FLATBED TRAILER	1.02	1.02	1.01	1.00	0.99	0.97	0.94											
T45	0.60	MISCELLANEOUS / UTILITY	1.02	1.02	1.01	1.00	0.99	0.97	0.94											
T45	0.70	WATER TANKER TRAILER	1.02	1.02	1.01	1.00	0.98	0.96	0.93											
T45	0.80	DECONTAMINATION FACILITY	1.02	1.02	1.01	1.00	0.98	0.96												
T45	0.90	TANK TRAILERS	1.02	1.02	1.01	1.00	0.98	0.96	0.93											
T50	0.00	TRUCKS, HIGHWAY (Add attachments as required)																		

Item 25: Ford L8000 Water Truck

Table 3-1
Equipment Age Adjustment Factors for Ownership Cost

CATEGORY SUB	REGION 8 TYPE OF EQUIPMENT	Life in Years = Year Purchased New =	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
			2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
T50	0.01	0 THRU 10,000 GVW	1.01	1.04	1.02	1.00	0.98	0.96												
T50	0.02	OVER 10,000 THRU 30,000 GVW (Chassis only - Add options)	1.01	1.04	1.02	1.00	0.98	0.96	0.93											
T50	0.03	OVER 30,000 GVW (Chassis only - Add options)	1.01	1.03	1.02	1.00	0.98	0.96	0.93	0.86	0.83									
T55	0.00	TRUCKS, OFF-HIGHWAY																		
T55	0.10	RIG D FRAME	1.04	1.02	1.01	1.00	0.98	0.96	0.95	0.93	0.91	0.91	0.89	0.86	0.83	0.79				
T55	0.20	ARTICULATED FRAME	1.05	1.02	1.01	1.00	0.98	0.96	0.95	0.93	0.91									
T56	0.00	TRUCKS, OFF-HIGHWAY/PRIME MOVER TRACTORS & WAGONS																		
T56	0.10	PRIME MOVER TRACTORS	1.04	1.02	1.01	1.00	0.98	0.96	0.95	0.93	0.91	0.91	0.89	0.86	0.83	0.79				
T56	0.20	WAGONS, BOTTOM DUMP	1.05	1.02	1.01	1.00	0.98	0.96	0.95	0.92	0.91	0.90	0.88							
T56	0.30	WAGONS, REAR DUMP	1.05	1.02	1.01	1.00	0.98	0.96	0.95	0.92	0.91									
T57	0.00	TRUCKS, VACUUM	1.02	1.02	1.01	1.00	0.99	0.97	0.94											
T60	0.00	TRUCKS, WATER, OFF-HIGHWAY	1.05	1.02	1.01	1.00	0.98	0.96	0.95	0.92	0.91									
T65	0.00	TUNNELING EQUIPMENT																		
T65	0.10	DRIFTING & TUNNELING DRILLS	1.04	1.02	1.01	1.00	0.98	0.96	0.95	0.92	0.88	0.87								
T65	0.20	TUNNEL BORING MACHINES	1.02	1.02	1.01	1.00	0.99	0.97	0.94	0.90	0.87	0.87	0.84	0.81	0.78					

Item 22, 23, 25: Mack GUB13
Dump Truck (1) and (2), Ford
L8000 Water Truck

Appendix C

Budget K Estimated Expenses Supplies Material Back-Up

Budget Item	Description	Unit	Vendor 1	Vendor 2	Vendor 3	Vendor 4	Average
33	"BURIED PIPE" TAPE - IRRIGATION	ROLLS	\$ 19.75	\$ 17.33	\$ 14.88	\$ 27.67	\$ 19.91
34	10" ACCESSORY PACK LESS GLAND	EA	\$ 15.34	\$ 18.54	\$ 17.47	\$ 23.07	\$ 18.61
35	10" C900 PVC - PURPLE	LF	\$ 17.02	\$ 16.87	\$ 16.52	\$ 17.20	\$ 16.90
36	10" MJ 45° BEND	EA	\$ 17.02	\$ 16.87	\$ 16.52	\$ 17.20	\$ 16.90
37	10" MJ SOLID SLEEVE	EA	\$ 116.48	\$ 133.86	\$ 203.93	\$ 140.86	\$ 148.78
38	10" PVC MEG-A-LUG	EA	\$ 51.02	\$ 47.56	\$ 62.03	\$ 76.48	\$ 59.27
39	10"X4" MJ REDUCER	EA	\$ 57.25	\$ 59.02	\$ 59.42	\$ 60.40	\$ 59.02
40	12 GAUGE TRACER WIRE - PURPLE	ROLLS	\$ 59.12	\$ 58.59	\$ 55.70	\$ 79.63	\$ 63.26
41	12" BLIND FLANGE	EA	\$ 147.95	\$ 207.52	\$ 162.75	\$ 183.98	\$ 175.55
42	12" BOLT KIT	EA	\$ 22.00	\$ 26.55	\$ 17.13	\$ 23.25	\$ 22.23
43	12" FULL FACED RED RUBBER GASKET	EA	\$ 9.48	\$ 7.07	\$ 6.47	\$ 6.08	\$ 7.28
44	16" ACCESSORY PACK LESS GLAND	EA	\$ 25.57	\$ 41.57	\$ 21.38	\$ 39.34	\$ 31.97
45	16" BELL RESTRAINT	EA	\$ 285.48	\$ 295.56	\$ 320.70		\$ 300.58
46	16" BOLT KIT	EA	\$ 67.76	\$ 53.18	\$ 33.53	\$ 23.32	\$ 44.45
47	**16" C900 PVC - PURPLE	LF	\$ 30.05	\$ 29.99	\$ 33.65		\$ 31.23
48	16" FULL FACED RED RUBBER GASKET	EA	\$ 9.91	\$ 10.61	\$ 13.10	\$ 9.79	\$ 10.85
49	16" MJ SOLID SLEEVE	EA	\$ 249.55	\$ 350.01	\$ 274.50	\$ 310.30	\$ 296.09
50	16" MJXFL ADAPTOR	EA	\$ 314.30	\$ 307.68			\$ 310.99
51	16" PVC MEG-A-LUG	EA	\$ 104.68	\$ 153.85	\$ 134.67	\$ 119.06	\$ 128.07
52	16" PVC MJ 11.25° BEND	EA	\$ 440.40	\$ 361.76	\$ 363.80		\$ 388.65
53	16" PVC MJ 22.5° BEND	EA	\$ 435.40	\$ 356.76	\$ 358.80	\$ 419.25	\$ 392.55
54	16" PVC MJ 45° BEND	EA	\$ 332.59	\$ 367.79	\$ 312.06		\$ 337.48
55	16"X12" MJXFL TEE	EA	\$ 578.86	\$ 811.92	\$ 636.75	\$ 719.81	\$ 686.84
56	16"X8" FL REDUCER	EA	\$ 225.90	\$ 261.00	\$ 214.65	\$ 852.92	\$ 388.62
57	16"X8" FL TEE	EA	\$ 526.83	\$ 289.71	\$ 341.32		\$ 385.95
58	3/4" DRAIN ASSEMBLY	EA					\$ 50.00
59	3M DBY SPLICE KIT (GEL PACKS)	EA	\$ 1.99	\$ 1.68	\$ 2.56	\$ 4.82	\$ 2.76
60	4" BOLT KIT	EA	\$ 6.22	\$ 6.71	\$ 5.00	\$ 6.55	\$ 6.12
61	4" DI DR 50	LF	\$ 21.21	\$ 22.89	\$ 22.65	\$ 23.93	\$ 22.67
62	4" FLXMJ ADAPTOR	EA	\$ 36.61	\$ 39.48	\$ 34.83	\$ 48.66	\$ 39.90
63	4" FLXMJ GATE VALVE	EA	\$ 484.42	\$ 424.47	\$ 435.64	\$ 466.14	\$ 452.67
64	4" FULL FACED RED RUBBER GASKET	EA	\$ 7.27	\$ 1.73	\$ 1.94	\$ 1.92	\$ 3.22
65	4" MEG-A-LUG (DI)	EA	\$ 14.48	\$ 26.65	\$ 23.33	\$ 16.64	\$ 20.27
66	4" ACCESSORY PACK LESS GLAND	EA	\$ 9.61	\$ 15.34	\$ 17.19	\$ 10.40	\$ 13.14
67	8" ACCESSORY PACK LESS GLAND	EA	\$ 13.21	\$ 21.38	\$ 17.39	\$ 12.49	\$ 16.12
68	8" BOLT KIT	EA	\$ 10.67	\$ 10.86	\$ 7.57	\$ 7.26	\$ 9.09
69	8" C900 PVC - PURPLE	LF	\$ 11.71	\$ 7.95	\$ 7.64		\$ 9.10
70	8" FULL FACED RED RUBBER GASKET	EA	\$ 3.05	\$ 3.66	\$ 3.90	\$ 3.28	\$ 3.47
71	8" MJ 45° BEND	EA	\$ 82.56	\$ 98.98	\$ 96.75	\$ 72.97	\$ 87.82
72	8" MJ SOLID SLEEVE	EA	\$ 103.02	\$ 112.53			\$ 107.78
73	8" MJXFL GATE VALVE	EA	\$ 1,011.78	\$ 886.71	\$ 910.04	\$ 855.44	\$ 915.99
74	8" PVC MEG-A-LUG	EA	\$ 54.97	\$ 117.69	\$ 36.60	\$ 31.64	\$ 60.22
75	8"X4" FL REDUCER	EA	\$ 186.27	\$ 286.56	\$ 328.52		\$ 267.12
76	H-35 TRAFFIC RATED PRE-CAST 554R VAULT W/36"X36" HATCH	EA					\$ 1,955.00
77	ASHCROFT 160 PSI LIQUID FILLED PRESSURE GAUGE (SEE ATTACHED)	EA	\$ 30.90	\$ 60.00	\$ 76.79	\$ 61.96	\$ 57.41
78	1/2" APCO AIR RELEASE	EA	\$ 137.78	\$ 176.12	\$ 190.00	\$ 97.68	\$ 150.40
79	VALVE CAN ASSEMBLY (WITH "IRR" LID)	EA	\$ 65.48	\$ 74.35			\$ 69.92
80	ROMAC 2025 - 16" PVC x 1.25" IPT, WITH STRAP AND NUTS	EA	\$ 169.09	\$ 137.94	\$ 142.42	\$ 142.02	\$ 147.87

81	FORD C84-55 COUPLING	EA	\$ 36.20	\$ 33.73	\$ 31.93	\$ 41.66	\$ 35.88
82	1730-18XL MID STATES VALVE BOX	EA	\$ 192.71	\$ 118.33	\$ 104.90	\$ 141.05	\$ 139.25
83	HD 1730 – OLDCASTLE LID – PURPLE – STAMPED “K.I.D DO NOT DRINK”	EA	\$ 170.36	\$ 111.07	\$ 94.65	\$ 120.21	\$ 124.07
84	1-1/4" STIFFENER INSERT	EA	\$ 5.93	\$ 2.87	\$ 1.67	\$ 2.28	\$ 3.19
85	C901-96 PE 3408 (CTS) 1-1/4" 200 PSI - POLYETHYLENE TUBE PURPLE	LF	\$ 0.61	\$ 0.84	\$ 0.48	\$ 0.56	\$ 0.62
86	C-14-45 FORD COUPLING	EA	\$ 41.61	\$ 30.30	\$ 29.29	\$ 37.43	\$ 34.66
87	BE 13-444WR – FORD 1-1/4" ANGLE BALL SERVICE VALVE	EA	\$ 112.43	\$ 91.16	\$ 93.23	\$ 128.97	\$ 106.45
88	1-1/4" x 1" SCH. 80 PVC THD. BUSHING	EA	\$ 8.03	\$ 3.36	\$ 2.29	\$ 2.80	\$ 4.12
89	1" BRASS NIPPLE 6" LONG	EA	\$ 8.54	\$ 7.22	\$ 5.96	\$ 10.55	\$ 8.07
90	1" x 36" SCH. 80 PVC NIPPLE	EA	\$ 6.48	\$ 7.94	\$ 3.49	\$ 8.98	\$ 6.72
91	1" SCH. 80 PVC THD. CAP	EA	\$ 6.77	\$ 2.64	\$ 2.21	\$ 2.36	\$ 3.49
92	STAINLESS TYE WRAPS (TYP)	EA	\$ 2.10	\$ 1.00	\$ 0.38	\$ 1.66	\$ 1.28
93	1" METER GASKET	EA	\$ 0.46	\$ 0.19	\$ 0.09	\$ 0.15	\$ 0.22
94	4-5' HEAVY DUTY U-POST (KID STANDARD)	EA	\$ 20.46	\$ 7.49	\$ 3.66	\$ 9.46	\$ 10.27
95	6" MEG-A-LUG (PVC)	EA	\$ 39.57	\$ 64.85	\$ 22.06		\$ 42.16
96	6" MJXFL ADAPTOR	EA	\$ 58.84	\$ 61.43	\$ 47.54		\$ 55.94
97	6" BOLT KIT	EA	\$ 9.04	\$ 10.41	\$ 7.43	\$ 10.53	\$ 9.35
98	6" ASSESSORY PACK LESS GLAND	EA	\$ 11.65	\$ 16.86	\$ 15.96	\$ 11.03	\$ 13.87
99	6" FULL FACED RUBBER GASKET	EA	\$ 3.00	\$ 5.29	\$ 2.31	\$ 3.00	\$ 3.40
100	6" MJ 11.25° BEND	EA	\$ 56.67	\$ 50.40	\$ 44.80		\$ 50.62
101	FLUSH HYDRANT (SEE ATTACHMENT)	EA	\$ 2,515.63	\$ 2,837.84	\$ 3,423.91	\$ 1,744.19	\$ 2,630.39
102	6" C900 PVC - PURPLE	LF	\$ 4.58	\$ 4.69	\$ 7.20	\$ 4.52	\$ 5.25

KID Supplies/Materials

The KID supplies and materials that will be used on the project are shown in the K Budget Estimated Expenses as items 33 through 102. The rates for these items have been determined using vendor quotes provided for prior pipe repair and installation projects performed by KID.