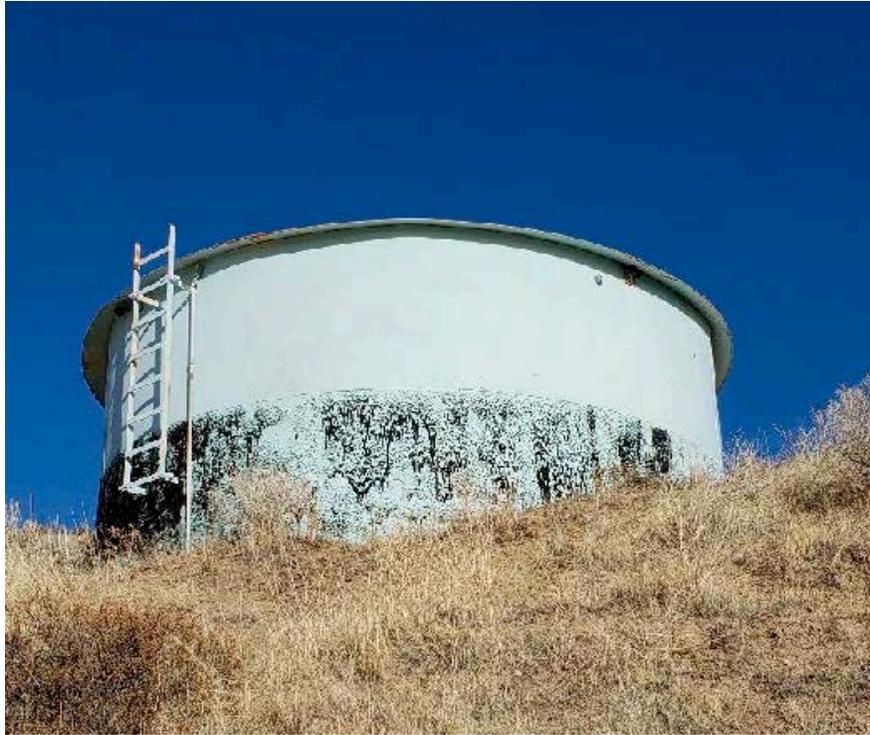


Drinking Water State Revolving Fund Green Project Reserve
- Preliminary -



Wilderness Ranch HOA Drinking Water Project
SRF Loan #DW 2003 (pop. 525)
\$1,560,000

Preliminary Green Project Reserve Justification¹

Business Case GPR Documentation

1. INSTALLS PREMIUM ENERGY-EFFICIENT PUMPS/VFD CONTROLLERS FOR BOOSTER PUMP STATIONS (Energy Efficiency). Business Case GPR per 3.5-1: *Energy-efficient ...new pumping systems...including VFDs (\$xxxxx).*
2. REPLACES xxxxx LINEAL FEET OF MAIN LINE & DISTRIBUTION PIPING WITH NEW PIPE (Water Efficiency). Categorical GPR per 2.4-1: *Projects that result from a water efficiency-related assessment;* Business Case 2.4-4: *Proper water infrastructure management should address where water losses could be occurring...fix them...replacing aging infrastructure. (\$XXXXX)*

¹ The loan recipient will update all information, including data in red font, in the GPR Technical Memorandum submission
State of Idaho SRF

1. ENERGY-EFFICIENT PUMPS/ VFDs

Summary

- The HOA will purchase and install premium energy-efficient pumps with VFDs (VFDs) in the booster stations.
- Loan amount = \$1,560,000
- Estimated energy efficiency (green) portion of loan = x% (\$xxxx) (conceptual estimate)



Background

- Provision of VFDs on the booster pumps will provide a much tighter range for pressure fluctuation. The VFD will save energy by assisting in maintaining constant system pressure; it will also reduce electrical consumption at times of pump start-up.

GPR Justification

Motors/VFDs:

The Baseline Standard Practice for comparison is a standard Epack motor that is not controlled by a VFD². Published operating curves by the pump manufacturer provided VFD efficiency data:

- **Proposed Pump - no VFD, standard Epack efficiency motor**
Type: Vertical Turbine Hollow Shaft
Motor rating = 125 hp; Motor type = standard efficiency (93.0% assumed at 75% of full load³); % Annual Usage = 50% (average daily operation throughout the year)
Energy usage = xxxxxx kW-hr
- **Proposed Pump - no VFD, with premium efficiency motor**
(95.4% assumed at 75% of full load);
% Annual Usage = 50% (average daily operation throughout the year)
Energy usage = xxxxx kW-hr
- **Proposed Pumps - VFD operation with premium efficiency motor**
Motor rating = 125 hp; Motor type = standard efficiency (95.4% assumed at 75% of full load); % Annual Usage = 50% (average daily operation throughout the year)
Energy usage = xxxxxx kW-hr



Conclusion

- By installing premium pumps/VFDs in the booster pump stations, the HOA can save up to \$xxxx/yr. in energy costs
- The VFDs are cost-effective as the payback period is less than the life of the equipment.
- **GPR Costs:** VFD = \$xxxxx
- **GPR Justification:** The VFD systems are Business Case GPR-eligible, qualifying per Sect. 3.5-1 (Energy Efficiency)⁴: “Energy-efficient... new pumping systems... (including variable frequency drives (VFDs))” which are cost-effective.

² NYS Energy Research and Development Authority, Energy Evaluation Memorandum, Village of Greenport WWTP Upgrade 8-2009.

³ http://www.copper.org/environment/sustainable-energy/electric-motors/education/motor_text.html

⁴ 2012 EPA Guidelines for Determining Project GPR-Eligibility. Attachment 2

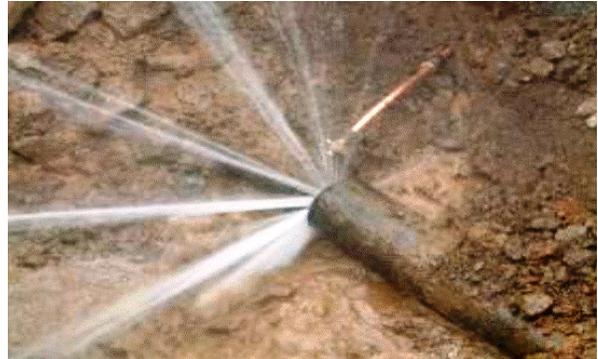
2. DISTRIBUTION LINE REPLACEMENT

Summary

- The HOA identified the priority replacement of xxx linear feet of leaking waterline.
- Loan amount = \$1,560,000
- Pipe Replacement portion of loan = xx% (\$xxxx)

Background

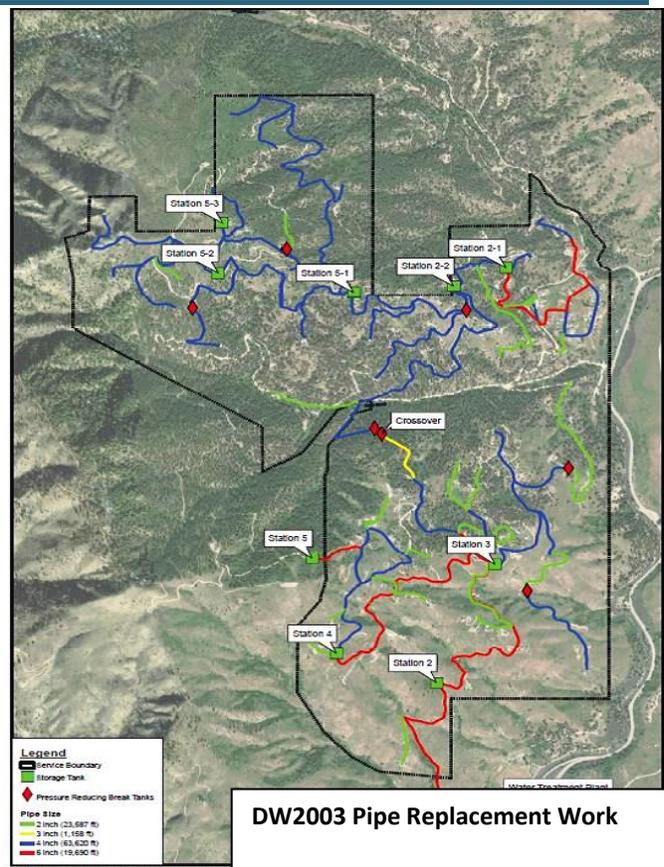
- The soft lead joints in the 6-inch and 8-inch distribution pipe in the HOA's water system fail on a regular basis. The HOA must constantly repair these leaks.
- The HOA's Master Water Plan was updated in 2018 to recommend the priority replacement of 7,870 linear feet of old and leaking 6" and 8" diameter lead-jointed steel distribution pipe. 4,500 LF will be replaced with DW1803 loan funds.
- The new pipe will eliminate water leaks in the distribution system, prevent entry of contaminated water, provide a more secure water supply, and reduce operation and maintenance costs.



Results

The project will replace existing waterline with xxxx pipe at these locations:

- 2nd Street (College Ave to Jefferson Ave): Replace 375 linear of 8-inch steel waterline;
- 6th Street (College Ave to Jefferson Ave): Replace 375 linear feet of 8-inch steel waterline;
- 10th Street (Railroad to College Ave): Replace 1,300 feet of 8-inch steel waterline;
- Center Avenue (13th St to 20th St): Replace 2,000 feet of 8-inch steel waterline;
- College Avenue (1st St to 2nd St): Replace 300 feet of 6 and 8-inch steel waterline.



(CON'T) DISTRIBUTION LINE REPLACEMENT

Conclusion

- By replacing the leaking distribution pipe the HOA anticipates conserving water and providing a more secure water supply.
- Other benefits include reductions in unnecessary O&M expenditures and eliminating potential health hazards associated with waterborne pathogens entering the water system.
- **GPR Costs:**
Replacing **xxxx** feet of main and distribution piping = **\$yyyyyyy**
- **GPR Justification:**
The project is Categorically GPR-eligible (Water Efficiency) per Section 2.4-1: *Projects that result from a water efficiency-related assessment*; also (Water Efficiency) per a Business Case by 2.4-4: *Proper water infrastructure management should address where water losses could be occurring...fix them...replacing aging infrastructure*⁵.

⁵ Attachment 2. EPA Guidelines for Determining FY11 Project GPR-Eligibility.
State of Idaho SRF