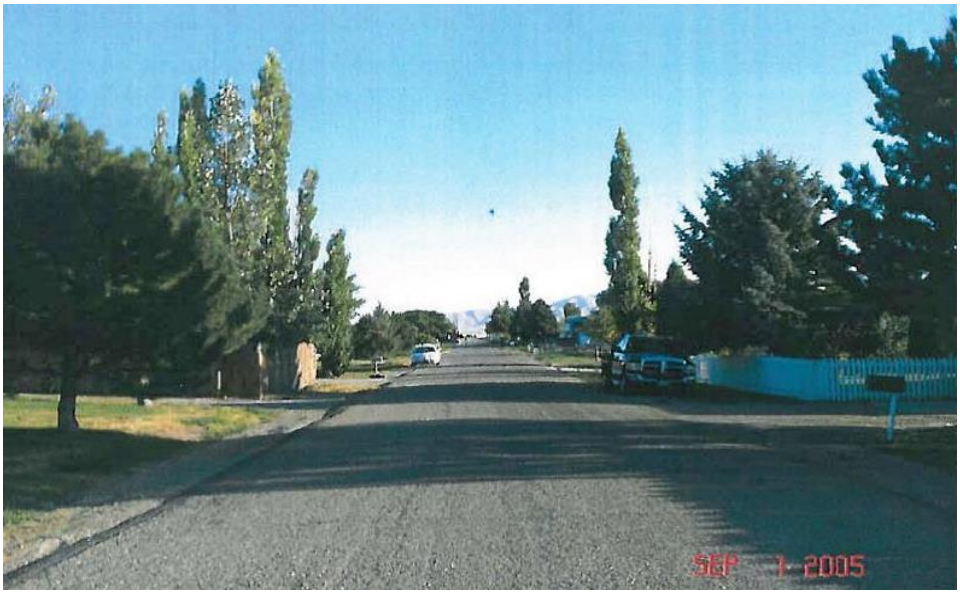
Drinking Water State Revolving Fund Green Project Reserve

- Interim -



Smith Road Water Users Assoc. Drinking Water Project

SRF Loan #DW1603 (pop. 57)

$840,090

Interim Green Project Reserve Justification

Categorical GPR Documentation

1. INSTALL 19 WATER METERS WITH AMR SYSTEMS (Water Efficiency). Categorical GPR per 2.2-2a*: Installing any type of water meter in previously unmetered areas if rate structures are based on metered use* ($37,000).

Business Case GPR Documentation

2. REPLACES LEAKING DISTRIBUTION PIPING (Water Efficiency). Categorical GPR per 2.4-1: *Projects that result from a water efficiency related assessment such as water audits;* also Business Case GPR per 2.4-1…*reducing water consumption*; per 2.4-4: *Proper water infrastructure management should address where water losses could be occurring…fix them…replacing aging infrastructure;* also per 2.5-2: *Distribution pipe replacement …to reduce water loss and prevent water main breaks* ($71,000).
3. INSTALLS NEW WELL WITH ENERGY-EFFICIENT PUMP AND VFD CONTROLLER; REPLACES EXISTING WELL PUMP WITH NEW ENERGY-EFFICIENT PUMP AND VFD CONTROLLER (Energy Efficiency). Business Case GPR per 3.5-1: *Energy efficient …new pumping systems…including VFDs* ($9,000).

Approved by the State of Idaho SRF Loan Program

July 2017

Categorical

1. New Water Meters[1]

Summary

- The Smith Road Water Users Association (SRWUA) will install 19 remote-read water meters.
- Loan amount = $840,090
- GPR portion of loan (AMR) = 4% ($37,000)

Background

- The SRWUA services approximately 19 single family residences.
- The population serviced by SRWUA is approximately 57 people via 19 connections.
- As an unmetered community, the consumptive values are very high in comparison with metered communities.

Results

The project consists of:

- Drilling an additional well and outfitting it with an energy-efficient pump and VFD;
- Refurbishing Well #1 and Well #2 with new energy-efficient pumps and VFDs;
- Installing new distribution piping of four inch C900 PVC pipe with flushing hydrants at each end of Smith Road to eliminate dead ends;
- Installing remote-read water meters.

Conclusion

- Metering of water consumption is an important conservation measure because providing water bills based on consumptive use sends a strong price signal to customers resulting in more efficient consumption.
- Implementation of a tiered rate structure, after meter installation, will further aid conservation efforts extending the life of the water supply system and delaying capital expansion projects.
- **GPR Costs**: Purchase and install meters = $37,000 (preliminary estimate)
  Total = $37,000
- **GPR Justification**: The project is Categorically GPR-eligible (Water Efficiency) per Section 2.2-2a*: Installing any type of water meter in previously unmetered areas if rate structures are based on metered use*[2].

[1] May 2015 Smith Road WUA Amendment to the FPS B Phinney, P.E., Keller Associates, Inc.
[2] 2012 EPA Guidelines for Determining Project GPR-Eligibility. Attachment 2.

2. Distribution System Pipe Replacement

Summary

- Replacement of leaking distribution piping with new 4-inch C-900 PVC pipe will eliminate the water loss estimated at approximately 10% of total water usage.
- Loan amount = $840,090
- GPR portion of loan = $71,000 (preliminary cost) = 8%

Background

- The water system faces difficulties with both water quantity and quality. A few issues with the system include Maximum Contaminant Level (MCL) exceedance, well failure, loss of pressure, dead ends in the distribution system, unmetered flows, and a badly corroded and leaking water storage tank.
- There are no water meters in the existing public water system. Estimated system water loss = 10%

Results

- Distribution pipe replacement is a component of this project due to the high calculated water loss that is occurring in the existing system. The cost for replacement of the distribution system with C-900 PVC pipe is $71,000

Conclusion

- By replacing the 1500 feet of old leaking distribution piping, it is estimated that the Association will conserve water by eliminating the estimated 10% water loss.
- The project also eliminates potential health hazards associated with waterborne pathogens entering the water distribution system by replacing leaky pipes with new corrosion resistant materials.
- **GPR Costs**: Replacing 1500 feet of distribution piping = $71,000
  Total GPR Costs = $71,000
- **GPR Justification**: The replacement of undersized water distribution piping as recommended in the Facility Planning Study is GPR-eligible by a Business Case GPR (Water Efficiency) per the criteria requirements of Section 2.4-1: …*reducing water consumption*; per 2.4-4: *Proper water infrastructure management should address where water losses could be occurring…fix them… replacing aging infrastructure;* also per 2.5-2: *Distribution pipe replacement …to reduce water loss and prevent water main breaks.*[3]

[3] 2012 EPA Guidelines for Determining Project GPR-Eligibility. Attachment 2.

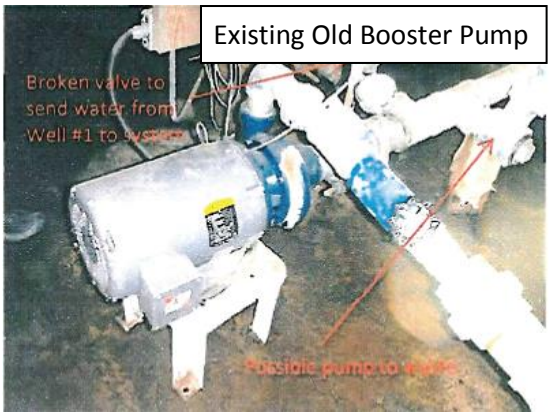
3. New Pump/VFD and Replacement Pump/VFDs

Summary

- A total of 3 new pumps will be installed and equipped with variable frequency drives (VFDs).
- Loan amount = $840,090
- Energy savings (green) portion of loan = 1.1% ($9,000)
- Simple pay-back period = 3.75 years (VFD)

Background

- The system is short on redundancy, overall well capacity, storage capacity and emergency power supply.
- The project is eliminating the need for a booster pump.
- A new well will be added to the system and the existing wells #1 and #2 is are being rehabbed.
- All of the wells are being fitted with new pumps and motors with premium efficiency motors and VFDs.



Calculated Cost Effectiveness of Improvements[4]

Motor Analysis: Booster Pump (eliminated)

- This 7.5 Hp pump, at least 35 years old, ran continuously when in use. It will be taken out of service.

VFD Analysis:

All three wells will be outfitted with new 5HP motors and VFDs.

- WITHOUT A VFD: New 5-HP pump without VFD; Annual MWH utilized for this new system = 5.4; energy cost approximately = $806.
- WITH A VFD: New 5-HP pump with a VFD; Annual MWH utilized for this new system is = 2.7; energy cost approximately = $268.
- Therefore, using VFDs for the new pumps provide a decrease in energy consumption of 2.7 MWH for a savings = $538 annually per pump. At a typical VFD cost of $3,000 the pay-back period = 3.75 years for each well.

Conclusion

- The estimated annual savings to the Subdivision resulting from using energy efficient motors and VFDs is $268 per pump/VFD.
- Using VFDs on pump motors is associated with extended life of the motors and should assist the Subdivision in conservation of the short-lived assets budget.
- **GRP Costs** Identified: VFDs (3 @ $3,000) = $9,000
- **GPR Justification:** The Pump/VFD system is Business Case GPR-eligible (Energy Efficiency) per Section 3.5-1: *Energy efficient retrofits, upgrades, or new pumping systems and treatment processes (including variable frequency drives (VFDs).*

[4] WEG Electric Motor Payback Tool, energy cost @ $0.10/kWh.