



**Castle Mountain Creeks Drinking Water Project**  
**SRF Loan #DW 1303 (pop. 400)**  
**\$361,000**

**Final Green Project Reserve Justification**

**Categorical GPR**

1. **INSTALLS PRESSURE REDUCING VALVES (Water Efficiency).** Categorical GPR per 2.2-12: *Installing water efficient devices...Pressure Reducing Valves (PRVs).* (\$43,590).

**Categorical & Business Case GPR Documentation**

2. **BOOSTER PUMPING SYSTEM WITH INTEGRAL VFDs (Energy Efficiency).** Booster pumps with integral VFDs will be installed. GPR Business Case per Section 3.2-2: *Use of ...VFD pumps in a new project.* (\$60,402).

# 1. PRESSURE REDUCING VALVES (PRVs)

## Summary

- The Castle Mountain Creeks Owners Association is making improvements to the Association's water system; these improvements will be funded with a FY13 SRF Drinking Water Loan.
- Loan amount = \$361,000
- GPR-eligible = CLA-VAL PRVs (4)
- Green portion of loan = 12% (\$43,590)



Existing PRV

## Background

- The Castle Mountain Creeks development is located in Garden Valley, Idaho. Castle Mountain Creeks is one of the oldest and largest developments in the Garden Valley area. Land use within the 246 lot development is predominately residential with a few lots reserved for CMC controlled common areas and facilities.
- The Owners Association is proposing improvements to the Association's public water system, including upgrades to the (i) Surface Water Intake, (ii) the Water Treatment plant, and (iii) the Water Distribution System<sup>1</sup>.
- The distribution system improvements include installing four pressure reducing valves (PRVs).

## Results

### **PRVs: Four (4) Pressure Reducing Valves<sup>2</sup>:**

- Manufacturer: CLA-VAL
- Quantity (2): 2-inch, CLA-VAL Pressure Reducing Valve equipped to close on drop in downstream pressure. (Model 90G-24BCSVYKC)
- Quantity (2): 3-inch, CLA-VAL Pressure Reducing Valve equipped to close on drop in downstream pressure. (Model 90G-24BCSVYKC)



Total cost for all four valves is \$43,590.

## Conclusion

- The Pressure Reducing Valves are categorically GPR-eligible as they are water efficient devices.
- **GRP Costs Identified** :  
4 PRVs = **Total = \$43,590** (Final)
- **GPR Justification:** The PRVs are Categorically GPR eligible (Water Efficiency) per Section 2.2-12<sup>3</sup>: *Installing water efficient devices...Pressure Reducing Valves (PRVs).*

<sup>1</sup> Castle Mountain Creeks Facility Plan, SPF Engineering, January 2013

<sup>2</sup> Preliminary Engineering Report, Facility Plan Update, SPF Engineering, June 2013

<sup>3</sup> Attachment 2. April 21, 2011 EPA Guidance for Determining Project Eligibility

## 2. NEW BOOSTER PUMP STATIONS WITH VFDs

### Summary

The Castle Mountain Creeks Owners Association is proposing improvements to the Association's public water system, including installing booster pumps with VFDs in 4 separate pressure zones of the Water Distribution System<sup>4</sup>.

- Loan amount = \$361,000
- GPR-eligible = Grundfos Pump System with integrated VFDs
- Green portion of loan = 17% (\$60,402)



### Description

The distribution system improvements include installing three (3) booster pumps with integral VFDs<sup>5</sup>.

- Pressure Zone 1B: Grundfos Multi-E pressure booster system equipped with two (2), single phase 230V, Grundfos CRE 5-5 vertical multi-stage pumps.75kW. These pumps have an integral VFD on the 1.0Hp motor.
- Pressure Zone 2B: Grundfos CRE Plus, single phase 230V pressure booster systems equipped with a CRE 5-4 vertical multi-stage pump. 0.55kW. The pump has an integrated VFD.
- Pressure Zone 7B: Grundfos CRE Plus, single phase 230V pressure booster systems equipped with a CRE 5-5 vertical multi-stage pump, 0.55kW. The pump has an integrated VFD.
- The pump VFDs are AllenBradley Power Flex 400, model 22C D022N 103.



### GPR Justification

#### *Booster Pump System:*

- The Baseline Standard Practice for comparison is a standard booster system not controlled by a VFD<sup>6</sup>.
- Booster Pump pay-back calculations were calculated using the WEG Energy Savings Estimator<sup>7</sup>.
- Combined annual energy savings for the Grundfos CRE 5-5 vertical multi-stage two pump system = a total of 13,227kWh/year @ a cost savings = \$1,323/year over the BSP (power cost = \$.10/kWh); at an estimated incremental cost increase of \$6,400 the simple payback is 5.22 years for the system.
- Combined annual energy savings for the Grundfos CRE 5-4 vertical multi-stage single pump system = 5,291kWh/year @ a cost savings = \$520/year over the BSP; at an estimated incremental cost increase of \$3,200 the simple payback is 4.84 years for the system.

### Conclusion

The booster pumps are categorically GPR-eligible as they are cost effective i.e. 4.84 year payback period.

- **GRP Costs Identified**  
Booster Pumps with Integral VFDs:
  - Pressure Zone 1B + Zone 2B + Zone 7B = \$17,436 + \$20,328+ \$22,638 = **Total = \$60,402**
- **GPR Justification:** The Pump/VFD systems are Categorically GPR eligible (Energy Efficiency) per Section 3.2-2<sup>8</sup>: *Use of ... VFD pumps in a new project where they are cost effective.*

<sup>4</sup> Preliminary Engineering Report, Facility Plan Update, SPF Engineering, June 2013

<sup>5</sup> Correspondence with Brian Wilkinson, PE, SPF Engineering, February 19, 2014

<sup>6</sup> NYS Energy Research and Development Authority, Energy Evaluation Memorandum, Village of Greenport WWTP Upgrade 8-2009

<sup>7</sup> <http://www.WEG.net/us>

<sup>8</sup> Attachment 2. April 21, 2011 EPA Guidance for Determining Project Eligibility