

Green Business Case

City of Cut Bank, Montana – Phase 4 Schedule 2 Water System Improvements Project

Green Reserve Project Description

The project being approved can be generally described as the installation of approximately 2,300 lineal feet of 10-inch PVC water main, 2,700 lineal feet of 8-inch PVC water main, 1,200 lineal feet of 6-inch PVC water main, 11 fire hydrants, and all associated valves, fittings, service lines, service connections and asphalt replacement. This project will replace aging and undersized water mains along the alley west of 5th Avenue SW, 2nd Street SW, 3rd Avenue SE, and 2nd Street NE.

Documents submitted and reviewed by the State:

The city's 2006 Preliminary Engineering Report (PER) and 2008 PER Addendum, both prepared by Great West Engineering, recommended the replacement of 27,000 lineal feet of water distribution main to reduce the overall system leakage, improve fire flows, and reduce the number of system repairs. In order to properly fund the main replacements, the work has been broken into several phase. The portion of the work being funded, in part, with 2010 DWSRF funds is called Phase 4 Schedule 2. The primary purpose of this schedule is to reduce leaks and improve fire flows. This portion of the work is further described in the project plans and specifications and in a project design report, both prepared by Great West Engineering.

List of eligible Green Project Reserve components:

1. Identify the component(s) - See project description
2. Total project cost = \$1,554,431 (see project budget July 2010)
3. Total 2010 DWSRF Loan/Grant Request = \$140,000
4. Total project cost eligible for Green Project Reserve = \$1,243,545 (80%)

Green Reserve Project – Categorical Project:

This project is not considered categorically green as defined by the USEPA guidance documents.

Green Reserve Project – Business Case Evaluation:

“As stated in the USEPA March 2, 2009 Memorandum, for traditional projects that are not categorically green, for the project, or components of the project, to be counted towards the 20% requirement, the State project files must contain documentation that a clear business case for the project (or portion) investment includes achievement of identifiable and substantial benefits that qualify as Green Project benefits. The documentation should reference to a preliminary engineering or other planning document that makes clear that the basis upon which the project (or portion) was undertaken included identifiable and substantial benefits qualifying for the Green Project Reserve. The March 12, 2009 USEPA webcast slides 20 and 21 state that two components, the technical component and financial component, must be provided in the Business Case.”

Green Project Reserve Type:

This project fits in the water efficiency and energy efficiency type.

Technical Component Evaluation:

Much of the City of Cut Bank's water distribution system was constructed in 1914 and is in poor condition. Significant water leakage exists, as documented by the extensive number of leak repairs (46 repairs in 2000-2005 as documented in PER Appendix J) and the high per capita water use during the winter months. The best documentation of excessive distribution leakage is the 96 million gallon difference between finished water pumped at the water treatment plant and metered water at the service connections (water treatment plant pumping records and distribution metered flows are presented in PER Appendix R, S and J). In general, this rate of water loss represents 25 to 30% of the overall raw water demand. The distribution network also includes 47,661 of 4 inch diameter and smaller pipe, most of which is corroded and does not have the ability to provide fire flows and still maintain minimum service pressures in the system.

In 2002 the Cut Bank operators repaired 14 leaks for a leak rate of 0.61 leaks per mile. This rate is 6 times the average leak rate reported by Helena (0.11 leaks per mile) and Billings (0.12 leaks per mile). The large quantity of corroded water mains within the system also increase the public health risk due to the potential for infiltration and poor disinfection caused by the presence of bio-films and poor chlorine dispersion.

Financial Component Evaluation:

The City of Cut Bank relies on Cut Bank Creek to provide water to the city. Creek flows during the late summer dry season and during the winter months get very low and sometimes do not yield sufficient water to satisfy community needs. During these times, the city is forced to place restrictions on water use. At times flows become low enough to present a serious risk of not being able to deliver water to the water treatment plant. Decreasing the "lost water" documented in the PER will reduce the risk of running out of water and help conserve the very limited Cut Bank water supply. Reducing the leakage rate will also reduce the required raw water pumping time and its associated electrical costs.

The current operation and maintenance costs for the Cut Bank water system are approximately \$241,500. Due to small scale of the Phase 4, Schedule 2 project the overall operation and maintenance cost will not be significantly impacted. However, the improvements should result in less pipeline repairs and a minor reduction in O&M costs.

Green Reserve Project – Evaluation Conclusion:

The need to replace aging and leaking water mains was the main driver behind this project. Reducing the overall system leakage will also reduce the energy required to pump and treat water for the Cut Bank system. However, system hydraulics, fire flows and public health were also considered during the selection process. Based on these additional pipe replacement selection criteria, the DWSRF program will consider only 80% of the total project eligible for the "green" component. However, as can be seen from the figures above, the 2010 DWSRF funds used for this project account for only 9% of the total project budget.