

Hidden Valley Pipeline Level II Feasibility Study

Client/ Mr. Ron Vore
Reference: Wyoming Water Development Commission
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On June 1, 2002, Anderson Consulting Engineers, Inc. (ACE) entered a contract with the Wyoming Water Development Commission (WWDC) to provide professional services to the Hidden Valley Pipeline Level II Feasibility Study. The purpose of this study was to: (a) evaluate replacement of the existing open ditch system with a pressurized pipe system; and (b) evaluate the potential of constructing a re-regulation reservoir to better manage deliveries and operational waste. The Hidden Valley service area is located within the Midvale Irrigation District, near Riverton, Wyoming.

Components of the project include a detailed field inventory was conducted to evaluate the existing irrigation structures. A seepage study was completed to identify the magnitude of potential water losses in the irrigation conveyance facilities associated with the Hidden Valley Lateral. The results of the seepage study revealed an annual loss of approximately 2,460 acre-feet.

An analysis was completed to determine the potential benefits associated with various on-farm improvements. By improving irrigation application efficiency thereby reducing the water required on the farm, water savings associated with a reduction in ditch diversions can be realized and corresponding costs of operation, maintenance, and improvements can potentially be reduced. Three potential on-farm improvement scenarios were developed to quantify potential conservation savings and evaluate corresponding costs associated with implementation of these improvements. Each scenario assumes that the existing laterals are replaced with a pipeline. Peak daily diversion estimates were generated assuming all landowners were irrigating simultaneously. Factors considered during the evaluation of the pipeline alternatives included potential water savings, cost of the improvements, cost/acre-foot of water savings, and potential for implementation. Based on this information and the potential to promote the conversion to more efficient on-farm irrigation methods, conceptual designs and cost estimates were prepared.

Two re-regulation storage sites were investigated to determine the potential benefits associated with construction of dams and reservoirs to reduce operational waste. The two reservoir sites included the Hidden Valley Re-Regulation Reservoir and the Sand Gulch Re-Regulation Reservoir and dam. Similar to the pipeline alternative evaluation, several factors were considered during the evaluation of the re-regulation reservoir alternatives. These factors included potential water savings, cost of the improvements, cost/acre-foot of water savings, potential beneficiaries, and operational considerations.

Total project cost for the preferred pipeline alternative was \$3.4M. This alternative involved construction of a pressurized pipeline designed to convey 65 cfs. On-farm improvements were assumed to result in an irrigation mix of 45% sprinkler and 55% gated pipe. The Sand Gulch Re-Regulating Reservoir and dam with a storage capacity of 1,160 AF was recommended. Costs associated with construction of the reservoir were estimated to be \$2.2M.

