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# *EXECUTIVE SUMMARY*

## GILLETTE REGIONAL MASTER PLAN

### LEVEL I STUDY



**OCTOBER 2009**

**PREPARED FOR**  
Wyoming Water Development Commission

**PREPARED BY**  
HDR Engineering, Inc.  
In association with Riverside Technologies Inc.  
and Stetson Engineering

**HDR**

## SECTION 1.0 EXECUTIVE SUMMARY

The Gillette Regional Master Plan Level I Study was initiated by the Wyoming Water Development Commission (WWDC) to investigate the feasibility of implementing a regional water system to serve the growing water supply needs for the City of Gillette and surrounding area. This study is a joint effort between the WWDC, City of Gillette (City) and Campbell County (County), with input solicited from outlying communities and rural water districts that were interested in participating.

A recently completed long-term water supply study for the City established a program of improvements needed to meet the City's long-term needs, but only investigated providing service to a limited number of nearby rural water districts in the Gillette region. That 2007 study recommended construction of a second Madison pipeline and served as the basis for the City's request for \$226 million in funding authorization from the Wyoming Legislature in 2009. Due to WWDC's concern with the long-term water supply needs of the rural water districts not addressed in the 2007 study, this study was undertaken to provide a regional solution that would meet the long-term water supply needs for the growth area surrounding Gillette.

During the initial stages of the project a Graphical Information System (GIS) database was developed to assist in defining the study area, evaluating the population data and growth trends, collecting information on the areas existing water systems, and delineating the areas physical features and topography. In addition, survey forms were sent to all potential regional water system participants identified in the area. The data collected was then used to assist in developing the potential service areas to be considered in the study. This resulted in the definition of two potential service areas; Probable Development Area for those areas more likely to experience development in the future and Possible Development Area for those areas that could possibly be developed but are not as likely as the probable area.

Population projections were then developed for the potential service area, identifying low, medium and high population projections for the year 2038 for the Probable Development Area. The population projections were developed for both Campbell County and Crook County areas

that fell within the probable area. At that time, WWDC requested that Crook County's potential service area be eliminated from the study, as they intended to address their water supply needs separately. As a result, the estimated year 2038 population that was established for sizing of the Gillette regional water system was 56,316, of which 49,203 resided in the Gillette proposed planning district boundary. This population represents the high population projection, as it was deemed appropriate to use this estimate to assure that the regional water system would serve the long-term needs of the Gillette area. Water demands for the Gillette regional water system were estimated based on the projected population for the Probable Development Area, using water demand factors characteristic of urban development in the Gillette area. The maximum daily water demand projected for the Gillette regional water system was 34.2 million gallons per day (MGD) during the evaluation (or 23,750 gallons per minute (GPM)) in the year 2038. The majority of this growth was anticipated to occur in the area southeast of the City's currently developed areas, with some additional growth both east and west of the City near transportation corridors.

The existing City water system is supplied groundwater from primarily two aquifer sources; in-town Fort Union wells and remote Madison wells. Although in-town Fox Hills/Lance wells are available to City, their poor water quality limits their active use. The in-town well water is delivered by a network of raw water piping to a central point for treatment prior to blending with the Madison well water. The Madison well water is delivered by a 42 mile pipeline from its remote wellfield to the blending point with the Fort Union water. Approximately 80% of the water used annually by the City is provided from the Madison well supply, with the Fort Union well water for blending to improve the overall water quality. Blending the "softer" Fort Union well water with the "harder" Madison well water has proven to be an effective means of controlling the quality of water delivered to its customers. However, due to limitations on the available supply of water from the Fort Union wells, it will be necessary to obtain additional water supplies from outside the Gillette area. Previous studies have recommended that the existing Madison wellfield and pipeline be paralleled with a similar system to increase the delivery capacity by approximately 13,000 GPM. During the evaluation of potential water supply alternatives conducted as part of the study, WWDC requested that the study focus on implementing the parallel Madison wellfield and pipeline and not investigate other alternatives further. As a result, this study focused on the requirements for connecting the potential regional water system participants and the governance required to implement the regional water system.

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During the course of investigating potential participants in the Gillette regional water system, a total of 42 potential participants were identified for consideration in being served by the regional water system. The potential participants were either located along the Madison pipeline route or near the City's existing water distribution system, allowing reasonable service extensions to connect to the participants existing water system. All of the potential participants have existing well supplies and water systems that serve their existing customers. Depending on their relative location to the city's existing facilities, these potential participants could receive either Madison well water directly from the Madison pipeline or blended water from the City's water distribution system. In addition, some of the potential participants that have excess well capacity could contribute water supply to the regional water system, making their wells an essential part of the regional water system's long-term plan. The type of service provided by the regional water system to the potential participants could range from simply providing an emergency interconnect to providing full water service including fire protection.

Routing options for connecting the Madison pipeline to the existing city water distribution system were evaluated to determine the most optimum solution for the regional water system. Previous studies had only investigated pipeline routes that utilized corridors within the existing City limits to connect to the existing city water system infrastructure. As part of this study, additional pipeline route alternatives were evaluated that utilized routes further to the south than previously considered for the last several miles of the pipeline. This allowed routing the pipe through undeveloped areas, minimizing the amount of urban construction, and positioning the pipe closer to several of the large rural water districts that could be served by the Gillette regional water system. Based this analysis, a pipeline route from south from Highway 51 to Union Chapel Road, connecting to an existing city water storage tank near Highway 59 and Southern Drive, was recommended. In addition, a pipeline along Southern Drive to Highway 50 and connecting back to the City's water distribution system near Interstate 90 was also recommended. These pipeline improvements would strengthen the City's existing water distribution system, providing the necessary hydraulic capacity to extend service to regional system participants outside the city current service area. In addition, this pipeline route would allow easy connection of several major rural water districts to the Madison pipeline, allowing short-term use of their excess well capacity to benefit the regional water system. The estimated project cost for the Madison pipeline facilities, based on WWDC's request to use the 2007 study cost estimate with updated quantities to reflect the recommended pipeline route and associated

facilities needed to serve the regional water system, is \$186,097,000. This cost does not include the service extensions needed for the potential regional system participants.

During the course of the study, significant time and effort was spent in communicating and coordinating with the stakeholders on the project regarding potential governance options for the Gillette regional water system. The purpose of these discussions was to create a regional institutional framework that would provide appropriate levels of service, meet the needs of a diverse group of wholesale and retail customers, ensure equitable service and representation, use a businesslike approach, is cost-based, and serves throughout the life of the project. With these objectives in mind, a consensus was reached among the City, County and WWDC to develop a Joint Powers Agreement (JPA) that maintains the City ownership and operation of the water system, but provides procedures that ensure equity and dispute resolution. It was decided that this process should occur in two steps, first creating a Memorandum of Understanding (MOU) that lays out the key principles of the relationship, followed by development of the JPA document that details the roles and responsibilities of the regional water system participants. It was also concluded that the formation of a Joint Powers Board (JPB) would not be in the best interests of the regional water system and should not be pursued further.

As noted earlier, the City submitted and obtained authorization for funding for the Madison pipeline project by the Wyoming Legislature, with a total \$226 million authorized to fund the project. The 2009 funding package includes a 2/3 grant and a 1/3 repayment obligation. The 2009 state legislature appropriated \$16.75 million to initiate design for the project, but has not established a funding schedule for the remainder of the project due to recently diminished State revenues and the need for a defined local cost sharing component.

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