

WATER RIGHTS ENGINEERING

Supply and Demand Analyses

Red Hill - Water Supply Investigation

The Red Hill development in Park County had been relying on ground water wells contaminated with radon for its domestic supply. The high cost of treatment and disposal of the radioactive waste forced the development to look elsewhere for water.

Martin and Wood personnel conducted a demand analysis of the future buildout of the development and then researched possible nearby water supply alternatives, including both ground water from other aquifers and surface water rights that might be available for purchase. An additional component of these investigations involved an analysis of the local geologic structure and

identification of potential well sites at the most cost-effective locations.



Strike and Dip Measurement

City of Englewood - Water Supply and Demand Study

In 1995 Martin and Wood concluded an analysis of the ability of Englewood's numerous water rights to provide for both the City's current and future water requirements. The analysis included determinations of the individual monthly water supplies from the City's several direct flow rights over an historical study period from 1952 to 1980. In addition, the analysis of the City's water supply included quantifications of water availability from agreements with Denver Water and the Cities of Thornton and Westminster and the water available to Englewood from the City's water storage rights.

On the water demand side, the analysis provided for variable irrigation requirements

arising from variable climatic conditions. The analysis included lower estimates of the City's irrigation requirement for months and years with cooler and wetter periods, and higher estimates of the irrigation requirement based on hotter and drier months and years. The analyses of water supply and demand also considered the effect of the City's successful water meter program in reducing water demand.

The Martin and Wood study concluded that Englewood's senior direct flow rights, together with minimal and infrequent withdrawals of water from the City's McLellan Reservoir, would provide an adequate supply of water for the City's current and ultimate populations.

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City of Florence - Water Master Plan

In 1995 Martin and Wood subcontracted to The Engineering Company in Fort Collins to conduct a water supply and demand analysis for a water master plan for the Florence Regional Water System. The Regional System supplies water to the City of Florence and to the Towns of Coal Creek, Williamsburg, and Rockvale. While The Engineering Company addressed the Regional System's infrastructure needs for water treatment, finished water storage, and distribution lines, Martin and Wood answered the question of "Is there enough water for the System's current and future needs?"

Under the Regional System agreement among its four members, each member is to provide for its own water. The City of Florence's two water treatment plants then treat all members' water supplies for distribution to each member.

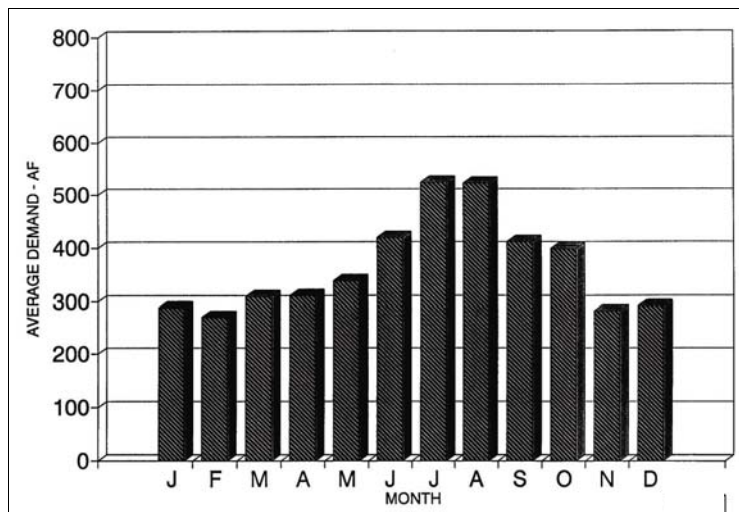
Using a study period of 1971 through the dry year of 1994, Martin and Wood calculated the daily yields from all of the members' individual direct flow water rights, totaling eight in number.

Using projections of future water requirements provided by The Engineering Company, Martin and Wood then assessed the adequacy of each member's current water rights to satisfy each member's current and future water requirements. In addition, Martin and Wood extended these analyses by coupling the aggregate yields from all members' water rights with storage in the conditionally decreed Oak Creek Reservoir to determine if the members' aggregate

water supply would provide for the total water requirements from the Regional System.

Martin and Wood concluded that in the aggregate, the members' raw water supplies would provide a dependable water supply for the Regional System until the year 2020, after which the System would need additional raw water supplies and/or storage in the Oak Creek Reservoir.

Later, in year 2001, Martin and Wood again subcontracted to The Engineering Company to update the year 1996 Regional System Water Master Plan. Martin and Wood's revisions included variations in the municipal irrigation water requirement due to temperature and precipitation, inclusion of a system loss component, and the members' various acquisitions of water rights following the original (1996) water master plan. Martin and Wood quantified the shortfalls of each member's current water supply through the year 2040 and also identified how many shares in either of two ditches that each member would need to acquire for its future growth.



Florence regional water system future demand

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