

WATER RESOURCES PLANNING FOR DALTON, GEORGIA

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INTRODUCTION

The City of Dalton and the surrounding areas in Whitfield County are the home of the largest tufted carpet industry in the world. The carpet manufacturers and support industries provide more than 70% of the employment in northwest Georgia. The growth of this industry and the associated population increase over the last decade have significantly increased the demand for water. In 1975 the average daily usage of water was 37.5 million gallons. In 1990 the average daily usage was up to 49.1 million gallons. Current water consumption by user type is as follows:

Residential:	16.7%
Commercial/Governmental:	18.5%
Industrial:	64.8%

CONSERVATION MEASURES

Numerous conservation measures including restriction of outdoor watering and staggered production schedules of the carpet manufacturers have had to be implemented during dry periods. The carpet industry changed dying procedures in the early 1980's which also reduced their water requirements. However, in 1988, stain resistant type carpets and new colors prompted the return to old dying procedures which increased water needs by 6-10 million gallons per day. Since 1988, new technology has once again decreased the volume of water required for carpet manufacturing. Current water usage is down by 3-4 million gallons per day. However, some of this reduction may be attributable to a mild recession in the carpet industry. Dalton Utilities also has a unique pricing structure that requires the high demand user to pay the highest rates. This pricing structure is a very effective conservation measure.

WATER SUPPLY ALTERNATIVES

Several alternatives, including the development of groundwater wells and active springs as well as the recycling of industrial wastewater, were studied to determine a method of providing a more stable or reliable water supply. These studies, carried out by Golder Associates, indicate that groundwater wells or springs within the geological strata in northwest Georgia do not yield water in sufficiently large quantities to effectively supplement the required demand. While realizing that conservation techniques should continue to be used and other technologies developed, the main conclusion of the studies was that more effective use should be made of the area's primary water source: surface water.

EXISTING FACILITIES

Water needs for Dalton and the surrounding Whitfield County are provided by Dalton Utilities. Dalton Utilities' water system currently consists of three surface water pumping stations, one spring and two treatment facilities. If available, the current system has the capability of supplying 54 million gallons of water per day on a continuous basis. With only minor modifications, the existing treatment facilities are adequate to accommodate an expansion of 10-12 million gallons per day. Although the carpet industry is reducing its water demand by the use of new technologies, productivity increases by the year 2,000 will require this additional 10-12 million gallons per day.

Even though the treatment capacity could be expanded, the problem confronting Dalton Utilities is that the primary source of water, the Conasauga River and its tributaries, is unreliable during the season of peak water demand. Surface water flow, even in years of normal rainfall, oftentimes is not adequate to meet system needs. However,

sustained high flows are normal during the winter months. In fact, studies conducted by Golder Associates indicate that even during the driest years, there would have been sufficient water flow to provide the system's needs if adequate storage were available.

OFF-LINE STORAGE

The concept of "off-line" water storage was considered to be the most environmentally acceptable and cost efficient method to employ. "off-line" storage simply implies the construction of reservoirs away from the main course of the river at sites which have very small or non-existent watersheds. During seasonal high flows of the primary water source, water would be pumped into these reservoirs. During seasonal low flows, water from these reservoirs would be released back into the river to augment flow or pumped directly to the treatment facility to provide a reliable source of water.

Dalton Utilities decided to construct a series of "off-line" storage reservoirs. The first of these reservoirs, named the Conasauga Reservoir, was sited near one of the existing pumping stations and water treatment facilities along the Conasauga River. The siting of the reservoir was based on location, environmental considerations, sociological considerations, and engineering characteristics. The site of the Conasauga Reservoir had very low impacts on all siting criteria with the exception of engineering characteristics. This problem required careful and detailed engineering to account for saturated soils, the potential for excessive leakage and high hydrostatic pressures within the dam foundations.

The site of the approximately 500 million gallon Conasauga Reservoir was especially desirable due to its location. The site is approximately one-half mile upstream of Dalton Utilities' existing Conasauga River pumping station and raw water treatment facility. The proximity of the site allows the use of the existing pumping station to fill the reservoir, benefiting the economics of the project.

Environmental considerations are significant for any development project. In the case of the development of a water storage reservoir, the environmental considerations have become one of the most significant factors. Typically, sites under

consideration for development as a water storage facility are in areas where wetlands are common. Recent wetlands regulations have made acceptable "on-line" storage sites so difficult to permit that "off-line" sites may be the only acceptable means of finding adequate storage locations. Although the site of the Conasauga Reservoir lies within the flood plain of the river, there were no wetlands in the immediate vicinity of the reservoir that presented a problem. Site selection based on the absence of significant wetlands is especially applicable to the "off-line" storage concept.

FUTURE FACILITIES

Construction of the Conasauga Reservoir was completed in 1990. The reservoir is now full and an integral part of Dalton Utilities' water system. Although the Conasauga Reservoir increases the reliability of the system, additional storage capability is still required. Other "off-line" and conventional reservoir storage facilities are currently being planned and are anticipated to be on line between 1992 and 1995.