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CITY: Boise STATE: ID

FROM: Josephine P. Beeman

COMMENTS: See attached.

IF YOU HAVE ANY PROBLEMS, PLEASE CALL
(208) 345-2000 (EXT. 5464) IMMEDIATELY!

CHAPTER III

EVALUATION OF EXISTING WATER SYSTEM

I. WATER SUPPLY

A. SUPPLY LINE ABOVE STORAGE FACILITIES

The city's main water supply is Bergquist Spring which is located about 13 miles northeast of the city. The water from the spring is diverted into a control building and then is conveyed to the city's storage facilities by 11.8 miles of 12 inch steel pipe. This supply line was installed in 1937.

The total difference in elevation from the spring to the city storage facilities is about 920 feet. This pipeline is capable of transporting 4.3 cfs to 4.5 cfs of water from the spring to the city storage reservoirs. Flow from the spring ranges from 12 cfs in the winter to over 25 cfs during the spring runoff.

There is a lift pump on Worm Creek just below the Glendale Reservoir which pumps about 1 cfs of water into the city's distribution system. This is a seepage spring from the reservoir which only flows during the irrigation season and then dries up when the reservoir is emptied.

Presently, the city has 5.5 cfs of water available from these sources.

B. MAJOR DEFICIENCIES IN SUPPLY LINE

The 12 inch steel pipeline used to supply the city's water is in a dangerous condition. The line has deteriorated in some areas to the point of failure. Leaks are present in several areas of the pipe and since the pipe is exposed for long distances it is subject to freezing in the winter. Besides the poor condition of the pipe itself, the 12 inch line is too small to supply the city's water needs. The City of Preston relies on this supply line for their water needs and if this line should be disrupted, the city would be without water, fire protection, and sanitation facilities. Since the supply line will not supply enough water to meet the city's needs, further growth is stymied. New homes and sub-divisions cannot be constructed because there is not an adequate water supply.

C. WATER RIGHTS

The City of Preston presently uses water rights totaling 5.5 cfs. The city has and uses rights to 2.5 cfs from Bergquist Spring which is transported through the 12 inch line. The city has and uses rights to 1 cfs from Ranger Spring. This flow is traded for 1 cfs from Bergquist Spring and then also transported by the present 12 inch supply line. They also have

rights to all the waters of Birch Spring which ranges between one and nine cfs. Since this flow is also traded for flow from Bergquist Spring and transported by the 12 inch supply line and since the present supply line is only capable of carrying 4.5 cfs, only 1 cfs of the flow from Birch Spring can be utilized. The city also has arrangements with the Preston, Whitney Irrigation Company which allows the city to pump 1 cfs of water into the water system from a seepage spring below the Glendale Dam. This makes a total of 5.5 cfs presently being used by the city.

The city presently owns stock in the Foster Reservoir and the Preston, Riverdale & Mink Creek Canal Company. The Foster Reservoir stock is equivalent to 3.0 cfs during the irrigation season provided the water is available. One cfs of this is presently being used by the pump on the seepage spring. The Preston, Riverdale & Mink Creek stock provides 3 cfs of irrigation water for 80 hours or 3.33 days from 8 to 10 times during the irrigation season. Based on ten 3 cfs water turns annually, this would provide 33.3 days of continuous water flow. At a rate of 1 cfs, 99.9 days of continuous flow would be available.

The availability of this additional water is dependent on trading water with the Lewiston, Cub River Irrigation Company. The city could make arrangements to divert the desired amount of water from Foster Reservoir or the Preston, Riverdale & Mink Creek Canal into the Lewiston, Cub River Irrigation Company's facilities in exchange for that amount of water from Bergquist Springs. This diverted water could be measured into the Upper Canal, owned by the Lewiston, Cub River Irrigation Company, at a location just west of the old Whitney Sugar Factory. Alternate arrangements could be made. For the city to be able to transport additional water from Bergquist Spring, a larger supply line will be needed. Water rights are summarized below:

Water Rights presently used:

1. 1879 right to part of Ranger Spring	1 cfs (450 gpm)
2. 1882 right to all of Birch Spring (minimum flow)	1 cfs (450 gpm)
3. 1920 right to part of Bergquist Spring	2.5 cfs (1125 gpm)
4. 1960 right to $30,000 worth of stock in Foster Reservoir	1 cfs (450 gpm)
	5.5 cfs (2475 gpm)

Water Rights not presently used:

1. 1960 right to $30,000 worth of stock in Foster Reservoir.	2 cfs (900 gpm)
2. 1972 and 1973 right to 160 shares of stock in the Preston, Riverdale & Mink Creek Canal Company, 100 day continuous flow	1 cfs (450 gpm)
	3.0 cfs (1350 gpm)

II. WATER USAGE

The water usage rates for this report were determined by using the actual metering records compiled by the Preston Water Department. The average daily consumption per person was calculated by dividing the total water used for the year by the population of Preston. There are 16 years of metering records available and since Preston's population has been dropping during 12 of those years this gives an opportunity to study the water usage rates for populations which are larger than at the present time. The maximum daily consumption was determined by locating the day during the period of record which showed the maximum use. From these records it was noted that the peak day in Preston occurred during the week of July 28, 1967 and showed an average usage of 1362 gallons per person per day. The population at that time was the same as the population is at the present time, so this peak usage condition could be occurring now. Table 2 shows this peak and also projects these conditions into the future. Table 3 compares Preston's average usage with other similar communities.

During the summer, lawn sprinkling is restricted to two 4 hour periods a day. The appendix contains a copy of a metering record which depicts this condition.

Since the water demand for the city is not constant throughout a 24-hour period, the peak conditions must be known and the system designed to meet these conditions. If the system can handle the peak periods, it will be adequate for the remainder of the time.

III. WATER REQUIREMENTS

A water system must be designed to meet the unique conditions of the specific city or community being studied. These conditions are determined by considering the average daily consumption and the maximum daily consumption along with the fire requirement. The maximum daily consumption and the fire flow requirement in combination is the critical situation the system must be designed to handle. (Calculations appear in Appendix A.)

Fire flow requirements are determined by the National Board of Fire Underwriters and are based on the population of the community to be served. The current Preston fire flow requirement is 1860 gpm flowing constantly for 8 hours. The projected fire flow requirement for the year 2000 is 2185 gpm flowing for 9 hours.