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Transcription of folder 8, a 14-page handwritten letter dated August 2, 1901 signed by Edwin A. Sawyer of Sawyer and Garstin, Civil and Mining Engineers

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Dear Reader of the 21st Century:

I have been asked by the committee having in charge the collection of letters for the "Century Chest," to write for you on the subject, "The Present Water Supply of Colorado Springs".

In order to give you a clear understanding of the present conditions of our water system, it will be necessary for me to review briefly its growth, and to mention the sources from which we procure the water, the amount needed for domestic use and irrigation, the cost of our waterworks, and some of the plans now under discussion of the increase of our supply for the future.

The information contained in this letter is derived from various sources, but mainly from reports of the Water Committees of the City Council and the City Engineers, as contained in the files of the *Gazette* and the *Telegraph*, from data collected by the writer while City Engineer from April 1898 to April 1900, and from the writer's memory, having been a resident of the city and county since June, 1883.

Colorado Springs was laid out and settled in 1871. It is said that the first water was supplied by an open ditch. In 1871 and 1872 the Boulder Street Reservoir was constructed, for storing the surplus ditch water. This reservoir had a capacity of 10,000,000 gallons.

The methods of water supply seem to have been quite primitive until 1878, when, stimulated by the Leadville mining excitement, Colorado Springs being the principal supply point, the town grew to about 4000 in population. It then became necessary to take steps toward the construction of a water system.

Bonds to the amount of \$80,000 were issued and water was piped to the city from a wooden settler, located on Ruxton Creek where the Colorado Midland Railway now crosses that stream on a high trestle, just below the Iron Springs of Manitou. A twelve inch supply main was run from this point and tapered down to a six inch main. This line

was run thru Manitou, Colorado City, and West Colorado Springs to a point on the Mesa, where a storage reservoir of 1, 250,000 gallons capacity was constructed having an elevation at high water line of 6,226 feet above sea level, and 200 feet above the step of the old City Hall, our initial bench mark. (Note: The most recent levels of the U.S. Coast and Geodetic Survey show this datum to be 24 feet too high. It should be changed from 6026 to 6002 above sea level.)

From this reservoir, called Mesa Reservoir No.1, a twelve inch distributing main was laid into the city on Cache La Poudre Street, from which laterals were run to all parts of the town. During the winter of 1880, the supply main between Manitou and the Mesa Reservoir, being laid too near the surface, was frozen. An eight inch line was laid in place of the six inch, which later was taken up. This eight inch line is still in use. This expense was covered by a bond issue netting \$25,262.

In 1887, Mesa Reservoir No. 2 with a storage capacity of 15,136,000 gallons, was constructed near to No. 1, with which it was connected. A new pipe line was also extended into the city. These were paid for by a bond issue netting \$36,950.

In 1889, the old settler above Manitou was moved farther up Ruxton Creek to a point on the stream above the hotel and cottages, and a new settler was constructed about a mile above town. A sixteen inch main was then laid from this settler thru Manitou and Colorado City to the intersection of Huerfano and Tejon Streets. Larger submains and laterals being laid to connect with the new main greatly improved the service. This work was covered by a bond issue netting \$87, 637.

In the same year, there was another bond issue netting \$82,500, by which the system was extended to the Pikes Peak Region. Reservoir sites were purchased, McShane Ditch was constructed and work was begun on the enlargement of Lake Moraine, a natural reservoir southeast of Pikes Peak, called by the government surveyors, "Mystic Lake".

In 1890 and 1891, there was another bond issue netting \$197,650, with which the city purchased water rights and ranches on Beaver Creek, and began to arrange for the diversion of water from the Beaver Creek basin on the south side of Pikes Peak over the Seven Lakes Divide to the Ruxton Creek basin. The city acquired with the Beaver Ranches, rights to nearly eighteen cubic feet of water per second. However, by a readjudication of the Beaver District Water Rights by the Court at Cañon City, this was cut down to one-third that amount, or less than six cubic feet per second. The bond issue above mentioned was used to construct the Beaver Creek Pipe Lines, the Jones Park Pipe Lines, Prospect Lake Irrigation Reservoir, and the extension of the Ruxton Creek Pipe Line from the intake above Manitou about three miles up the cañon and beyond the Half Way House to a point within about one and a half miles of Lake Moraine. The Tenney and Holden Ditch was also extended to Prospect Lake, but was afterward abandoned, the city having no valid title.

In 1891, a pipe line was constructed from the main in Colorado City southward up Bear Creek Cañon, but on account of litigation was only used a short time. In 1900, however,

the city purchased water rights on Bear Creek from the Commissioners of El Paso County, and this line is now in use.

In 1894, by a bond issue netting \$135,897, the city bought additional water rights on the Fountain, as it had been shown by a friendly suit brought against the city by Mayor Strickler, that the city's water rights were subject to the prior rights of the ranchmen in the Fountain Valley. This money also built the Pike View Reservoirs No.1 and No. 2, which bring irrigating water from Monument Creek into the north end of the city, the Timber Line Flume, which carried water across the divide from West Beaver to Middle Beaver before Strickler Tunnel was completed, and Reservoir No. 2 in the Middle Beaver Valley.

In 1896, there was another bond issue of \$171,925, by which work was commenced on Strickler Tunnel, Reservoirs No.7 and No. 8 on the Beaver, Pike View Reservoir was enlarged, the Jones Park Ditch was piped and enlarged, lateral pipe lines were extended up branches of Ruxton Creek, and Lake Moraine and Prospect Lake Reservoirs were enlarged. The Mesa Reservoirs were rip-rapped again and land adjoining Lake Moraine was purchased to protect the Pikes Peak System from pollution.

In 1897, work on Strickler Tunnel was continued, Reservoirs No. 7 and No. 8 were completed, larger mains were laid to give the northern part of the city more water, and a large supply of cast iron pipe was purchased. These expenses were met by a bond issue netting \$76,675.

In 1898, there was bond issue netting \$52,200. Work was continued on Strickler Tunnel, and a twenty inch steel main was bought to parallel the Beaver Creek Pipe Line. This pipe was delivered on the ground but has not yet been laid.

Strickler Tunnel, which was commenced in 1897, after many vexatious delays and much litigation with the contractor and his assigns, was finally completed in 1900. It cost about \$120,000.

It is unfortunate, that owing to an imperfect system of accounting, the separate cost of the different reservoirs and pipe lines and the different parts of work on the same can not be obtained from the city records.

In 1890, the city acquired by act of Congress the title to 764 ½ acres around Lake Moraine for reservoir purposes.

In 1891, the city bought from private parties 320 acres of land between the end of the Ruxton Creek Pipe Line and Lake Moraine to protect the water flowing in open channel from contamination. During the summers of 1900 and 1901, much trouble has been experienced from a plague of caterpillars, that have infested the aspen groves near Lake Moraine, requiring the screening of all the water before its entrance into the pipe line. This will probably lead to the extension of the Ruxton Main to Lake Moraine Reservoir in the near future. In my judgment it will be better to construct filter beds above the

intake and keep the water flowing in open channel as long as it passes thru the old bogs and peat beds of Lake Moraine, for it surely needs aeration and oxidation.

In 1896, by act of Congress and the payment of \$3,785 to U.S. Government, the city acquired title to 3,100 acres on Pikes Peak. The same year, 152 acres south and east of Lake Moraine was purchased, so that the city now controls the entire water shed of the Pikes Peak System, covering 4,337 acres at the sources of that system.

The water used for irrigating our lawns and gardens has two sources: first, the city ditch and second, the distributing system.

The city ditch, known on the records as El Paso Canal, is taken out of the Fontaine-Qui Bouille at a point about a mile west of the center of Colorado City. It runs eastward on its grade, winding around the spurs of The Mesa, crosses Monument Creek in a flume supported by a trestle, and is brought into the northern part of the city. The water is carried thru the streets of the city in the ditch boxes, or the street gutter and is diverted to the lawns by tile pipe or wooden conduits laid under the sidewalks. This method of irrigating has the advantage of furnishing a large amount of water in a short time and thoroughly soaking the lawns. The main disadvantages are the spreading of noxious weeds upon the lawns, the deposit of mud held in suspension in the flowing water, and the unsightly and unsanitary ditch boxes in the streets, which also prevent the proper crowning and drainage of the streets.

While the watering of lawns with hose connected with the hydrants is more laborious, requiring in dry weather several hours of time and the services of several persons on large lawns and gardens, it seems better for the lawns from the standpoint of cleanliness. The problem in the future is likely to be the great waste of water from the water system for irrigation purposes. This may lead sometime to the division of the water supply into two systems: one to furnish a small amount of water of the highest purity; the other an abundant supply for irrigation and general uses not affected by impurities.

Our people are quite extravagant in the use of water, especially for sprinkling lawns, and it is found to be necessary to restrict them to certain hours, different districts having different hours, so that the system may not be too heavily drawn upon at any one time, and all may have the best water pressure possible. The hours at present where I live are from five to eight in the morning and from seven to eight in the evening.

As to the amount of water used by the city from the pipes, we have as yet no accurate way of measuring it. In conversation with Mr. E. W. Case, the present City Engineer, I learned that the city is using at present about 6,000,000 gallons per day from the water system. This on a basis of 30,000 people is 200 gallons per capita each day. I believe this is a fair summer average where the hours for sprinkling are restricted about as they are at present. The average minimum would probably be in moderate weather in the winter, when there is no irrigation and the weather is not sufficiently cold to tempt people to let their hydrants run in order to prevent freezing. This would probably be about 3,000,000 gallons per day, or 100 gallons per capita.

The greatest amount of water that I have ever known the city to use for ordinary purposes was in 1899, when the writer was City Engineer and had charge of the water supply from the mountain. This was in what is called the driest season the city has ever known in its history, or at least since the town has been of any considerable size. The people were allowed the free use of water for six hours daily for sprinkling purposes.

It then ran up to between fifteen and sixteen cubic feet per second, or about 10,000,000 gallons per day. On the basis of 25,000 people, this means about 400 gallons per capita. Such a tremendous draft on the storage reservoirs with a meager supply from the streams, threatened us with a water famine, and the Mayor and Council were finally induced to cut the hours for sprinkling from six hours down to two hours daily. A little more economy earlier in the season would have made such stringent measures unnecessary.

The capacity of the present city storage reservoirs in use for water supply, not including irrigation reservoirs is as follows:

Reservoir No.7— 75,000,000 gallons

No. 8— 475,000,000

No. 2— 97,000,000

Lake Moraine— 492,000,000

Two Mesa Reservoirs— 16,386,000

Total Reservoir Capacity— 1,152,386,000

Taking 6,000,000 gallons as a fair summer average with economy, the stored water when all reservoirs are full ought to last the city without replenishing about six months, allowing for loss by evaporation, seepage and waste in conveyance. Taking 3,000,000 gallons per day as the winter average, the stored water would last about twelve months. Generally speaking, it would seem that with full reservoirs, we have with economical use about nine month's supply from the streams.

If our city were not growing so fast we might feel quite comfortable on the water question. But the population has been doubling in eight to ten years. In 1880, 5,000 to 6,000—in 1890, about 12,000— in 1900, 23,000 to 25,000. Suppose this rate of increase continues, 1910 will give us about 50,000 and 1920—100,000. If in twenty years we are to have 100,000 people to supply with water, it behooves us to stir ourselves and see where this water is to come from. Our present system has neither the supply nor the storage capacity for such a population. And if 100,000, why not at some future time 200,000? What is to stop the growth of a city like this? Nothing, it seems to me but a lack of water. We are not dependent like many towns on either agriculture, or manufacturing, tho both of these are likely to be extensively fostered. A large part of our people have their incomes from sources outside of the city. It seems to me that nothing except a lack of water can stop the growth of a city so desirable for residence as this.

For water supply we have only Pikes Peak to depend on. We ought to have every foot of water obtainable and every good reservoir site on our side of Pike's Peak. Great quantities of water run to waste in the spring that might be stored. We need more large storage reservoirs to save this waste water for a time of need.

Our people are becoming aroused to the need of securing at once all available reservoir sites and water rights, and are discussing various schemes. One of these is the Seven Lakes proposition. It will cost about as follows:

Purchase Price \$100,000

Construction of open cuts, tunnel and dams for reservoir to hold about two billion gallons
\$334,000

\$434,000

Another estimate is as follows:

Purchase price \$100,000

Construction of open cuts, tunnel and dam for reservoir of about one billion gallons capacity 175,000

\$275,000

This proposition requires a tunnel over a half mile in length, thru the Seven Lakes Divide to carry the water into the Lake Moraine, or Ruxton Basin, a dam sixty-one feet high in the first case and forty-five feet high in the second. There are some engineering problems connected with this proposition that require a careful investigation. The dam proposed would be built on a morainal deposit, as I understand, whose depth to bedrock has not yet been ascertained. There is also a large spring below the dam site, which seems to be a drain from the bottom of one of the lakes that will form a part of the reservoir. Whether this flow can be found and cut off is another problem requiring attention.

Another proposition is called the Green Mountain Falls proposition. Catamount Creek is the main branch of the Fontaine-Qui-Bouille, or Fountain Creek, which enters the Ute Pass thru a precipitous cañon south of Green Mountain Falls. Recent measurements and surveys made by the writer, show that more than fifteen cubic feet per second was flowing in this stream, and that at least six fine reservoir sites could be selected on the main stream and its principal branch, besides others of less value. Preliminary surveys with small dams show a storage capacity in six reservoirs of about three-fourths of a billion gallons with the opportunity to double this capacity if necessary. The land is not settled except for a few ranches along the streams, the remainder being government land. Perpetual snow at the sources of the streams, well wooded hills on all sides, marshy valleys that hold the water like a sponge, easy prevention of contamination, economical reservoir sites and the largest and steadiest stream in the Pikes Peak region; all commend it as something that the city should acquire as soon as possible. The surprising thing is that it has not been discovered and secured by the city before.

It will require the laying of a pipe line from Green Mountain Falls to a connection at Manitou, or an independent line to Colorado Springs. This will be the most expensive part of the proposition at the first. The names most prominently connected with our water system in recent years, are Mr. H.I. Reid, who was City Engineer for about fifteen years during the time that the most of the construction was being carried on, Mr. Chas. St. John, who for several years has been chairman of the water committee of the City Council and Doctor Strickler, who gave a great deal of attention to the water rights and the securing of property at the time he was Mayor of the city.

Much of the information in this letter has been taken from the report of Mr. St. John for 1900 on the city's water system.

There are many other things that I would like to say on this subject, but time will not permit.

With best wishes for the prosperity of Colorado Springs, its people and its water system, in the 21st century as well as in the 20th. I am very sincerely yours,

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Colorado