CHAPTER V
1900 - 1909

HISTORY OF DENVER WATER SYSTEM
### INDEX

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The first decade of the twentieth century was in the main, a good one economically for the people of Colorado.

Cripple Creek gold began to take the place of the once active silver mines, with agriculture assuming an increasingly important role in the general economy of the State.

The sugar beet industry grew rapidly, proving to be a great boon to the farmer, the farm laborer and the investor in plants built to process that highly profitable irrigated root crop.

Federal legislature designed to encourage the conservation of, and the distribution of water to, the dry lands of the several western states had much to do with placing Colorado, beginning with the year 1899, first of all the States in the area of irrigated land receiving its entire water supply from streams.

The passage of the Carey Act in 1894 by the Congress, which encouraged the States to cause public lands to be irrigated, reclaimed and occupied was part of the motivation behind the "District Irrigation Law" passed by the Colorado General Assembly in 1901, and was likewise partly responsible for President Theodore Roosevelt's vigorous support.
of a national reclamation program that brought about the passage of
the "Reclamation Act" of 1902.

The Uncompahgre project located on the Gunnison River in western Colorado, was the first reclamation project authorized for construction under the above act in this state, and the third one in all of the west, with the original contract for the tunnel itself awarded on March 23, 1904 or only 7 months after contracts had been executed on the Truckee-Carson Project of Nevada, which was the first of all such projects authorized.

The Engineer primarily responsible for the Uncompahgre project was A. Lincoln Fellows, who, as a member of the Public Utilities Commission of the City and County of Denver created in 1910, later took a leading role in the early struggle for public ownership of the Denver Water System.

Two of the many noteworthy developments by private capital during this era, exclusive of projects constructed in connection with the present Denver Water System, of particular interest to the people of Denver were, one: the start in 1903 of construction on the "Moffat Road" and two: the hydro-electric system begun in 1907 by the Central Colorado Power Company for the purpose of generating electric power from the waters of the Colorado River at Shoshone near Glenwood Springs and of Middle Boulder Creek, west of Boulder, with high voltage transmission lines to carry large blocks of electrical energy from these power plants to Denver and other load centers about the State.

Although the proportionate increase in population for the decade 1879-1880 was greater, the net increase of over 259,000 people from 1900 to 1910, was with the exception of the population explosion in the 1950-1860 decade, the greatest in the history of the State.
For Denver, the figures were even more impressive, with its growth of 85,522 during this period, exceeding that of the 1950-1960 decade by over 8,000 people.

Prior to the beginning of the twentieth century, and occasionally thereafter, one of the principal reasons given for the slow industrial progress in Colorado was the lack of outside capital needed to properly finance the development of the state's rich endowment of mineral and other natural resources. There is reason to believe that the "free silver" issue of the nineties, with the support given by Colorado's leaders of the time to free coinage, had a strong adverse effect upon eastern financial interests which took many years to overcome.

In commenting on this situation, Hafen in Volume II of "Colorado and Its People", page 288 says:

"The failure of eastern capitalists who had invested heavily in Colorado silver mines and their representatives in Colorado to join the Populist and Democratic leaders and the people of Colorado in the agitation for the increased use of silver can be explained on either of two possibilities, neither of which have been sufficiently explored by the historian. The first is that the profits from the silver industry derived more largely from the organizational and promotional period, that is, from the sale and re-sale of stock in mining companies, than from the operational aspects of the industry. The second is that silver mining and smelting had not kept pace with other industries in technological developments, thus causing it to fall behind its competitors so far as profitable operation was concerned.
"It may well be that the silver mining industry of Colorado would have been eclipsed during the decade of the 1890's even if the white metal had been fully utilized in the monetary structure of the nation."

With eastern capital again becoming available about the beginning of this period, the industrial activity within the state was reflected in a marked increase in the wealth and industrial future of its capitol city, which ten years later had not only retained its position as the center of the mining industry, but had become the center of a rich irrigated area, surrounded by a vast amount of coal deposits and with what seemed to be at that time, later proven to be fallacious, a vast amount of hydro-electric power available for the development of unlimited commercial opportunities.

As a heavy investor in Denver Real Estate and with other substantial business interests within the state, Walter S. Cheesman, President of The Denver Union Water Company had an enduring faith in the future of Denver and Colorado, which never faltered, even during the dark days of the 1893 panic.

His successful effort to enlarge and improve the water system of Denver against formidable odds during those early days is ample proof of his steadfast convictions in this regard.

Beginning with the consolidation in 1894 and continuing until his death on May 31, 1907, his time and energy were largely devoted to this work, with the Cheesman Dam, completed on August 26, 1904, standing as a permanent monument to his memory as a man of ability, integrity, courage...
and determination, who, with a few close associates, saw to it that the water system remained in control of Denver people up to the time it was sold to the city in 1918.

CHEESMAN DAM AND RESERVOIR
(The South Platte Reservoir)

The first filing made for the "South Platte Reservoir" with the United States Land Office at Denver, for necessary rights-of-way, was dated October 8, 1894.

The area of the reservoir on this filing was given as 737 acres, with an estimated storage capacity of 69,005 acre feet.

Approval for a five year construction period was given by the Secretary of the Interior from the date of his signature on August 19, 1895.

Although, due diligence had been exercised, it became apparent early in 1900 that the dam would be at less than one half its design height at the time the permit was due to expire on August 19, 1900. Hence, on April 12, 1900 a duplicate filing of the original map was made with the land office, with a request for an extension of five years time within which to complete the project.

This request was approved by the Secretary of the Interior on July 3, 1900, with completion of the dam realized about 10 months before the end of the extended time limit then authorized.

Documents filed with the State Engineer relating to appropriations of water from the South Platte River in District No. 23 for this project include:

5. 576
No. 24: Citizens Water Company, David H. Moffat, President, dated December 27, 1889, covering a feeder pipe line, taking water from both the North and South Forks of the river and carrying it some 18 miles to a reservoir, to be located on portions of sections 16 and 21, Township 6 South, Range 69 West of the Sixth Principal Meridian (The Strong Reservoir site).

The claim made at the time was for a flow of 90 cubic feet of water a second into a 48 inch wooden pipe line, terminating in a reservoir having a storage capacity of 1,336,898,400 cubic feet to be filled and kept filled to that capacity, with work said to have commenced on both feeder line and reservoir on October 1, 1889.

No. 69: The South Platte Canal and Reservoir Company, W. S. Cheesman, President, dated January 17, 1894 for a Reservoir, Tunnel, Canal and pipe line extending from a reservoir (Lake Cheesman) the dam for which was to be located on the N W 1/4 of the S W 1/4 of section 6, Township 10 South, Range 70 West with water to be carried by pipe line terminating in Marston Lake.

The claim then was for a reservoir having a surface area of 757 acres and a capacity of 3,005,850,560 cubic feet - 69,005 acre feet - with work started on October 23, 1893.

Note: Water Department records contain tracings of the reservoir mentioned in this filing as having been filed in duplicate in the U. S. Land Office at Central City, Colorado on January 22, 1894. The State Engineer's office does not have the map called for under its filing number of 69, but does have the statement that accompanied it.
No. 1548: The South Platte Canal and Reservoir Company,

William P. Robinson, President, dated July 6, 1904, recorded in the
State Engineer's office on July 7, 1904, a map for an enlarged reservoir
at the same location as filed upon in number 69 above, having a surface
area, at spillway elevation 212 of 874.08 acres and a total capacity of
3,444,038,412 cubic feet - 79,064 acre feet - claiming a first priority date
of December 28, 1889, that shown as the filing date by the Citizens Water
Company for the Strong Reservoir and a second priority date of October 23,
1893 for The South Platte Reservoir (Cheesman).

Among other things, the statement on this map says that the capacity
claimed is for water stored between elevations 15, the inlet to the lowest
outlet tunnel and 212 the elevation of the spillway. Specifically the claim was
for the right to store in this reservoir all of the unappropriated and flood
waters, and waters flowing in the non-irrigation season from Goose Creek,
Turkey Creek and the South Fork of the South Platte River as of the above
date of October 23, 1893.

This key unit in the Denver Water System is located on the South
Fork of the South Platte River upstream from Deckers, approximately 48
miles southwest of Denver.

The reservoir site was purchased by The South Platte Canal and Res-
ervoir Company from the United States by Patent Number 17131 dated December
20, 1902, covering 7,636.10 acres of land at a cost of $1.25 an acre.

This purchase was authorized by an Act of Congress originally sponsored
by Senator Henry M. Teller, the bill for that purpose having been introduced
by him in the Senate on March 31, 1901.
Later, 800 acres of school land adjacent to the Federal tract on the north was purchased from the State of Colorado, making a total corrected fee simple ownership at this location of 8,435.96 acres.

Original company records also show that various placer claims located within the reservoir site were purchased from time to time in order to protect the company's interest, with some litigation necessary before this desired objective was fully accomplished. This land was priced at $200,000 in the Metcalf-Anderson inventory of October 31, 1913.

The dam site was discovered on September 23, 1893 by a fishing party headed by Charles P. Allen, Chief Engineer of the Company, who was also looking for a reservoir location for the Burlington Ditch.

The decree, Number 1636, awarded to Lake Cheesman, by the District Court of the Eleventh Judicial District of Colorado on May 22, 1913, as per the findings of the Referee was in two parts, namely:

First: Priority No. 3 in District No. 23, dated June 27, 1889 by original construction, for 1,336,898,400 cubic feet of water - 30,691 Acre Feet - related back to the commencement of construction on the "Strong" reservoir, heretofore mentioned, with construction prosecuted thereon with due diligence, until September 24, 1893 at a cost of about $70,000. On that date following the advice of James D. Schuyler, Consulting Engineer, work at the "Strong" site was stopped for safety and other reasons, and the claims transferred upstream to a better and safer reservoir site, which, as already stated, was discovered on September 23, 1893.
Two: Priority No. 7 in District No. 23, dated September 24, 1893, by first enlargement, for 2,107,140,012 cubic feet of water - 48,373 Acre Feet - related back to the abandonment of construction on the "Strong" reservoir, which date happened to be the day after the "Cheesman" site was discovered.

The total of the two parts of this decree, 79,064 acre feet, is the rated capacity at which the reservoir has been operated ever since its completion in the fall of 1904.

This decree, certified by the Clerk of the District Court of Park County on May 31, 1913, contains a valuable summary of the underlying history and the steps taken by the Citizens Water Company and the South Platte Canal and Reservoir Company and to obtain storage water for municipal uses in Denver from the South Platte River and its tributaries and seems to accept and confirm all of the statements of claim by those companies in the various filings earlier submitted in accordance with law, to the Secretary of the Interior and the State Engineer. (See file 147, Dw. 79, Mgrs. Vault).

The following data on the masonry dam as built, has been condensed from a paper presented at a meeting of the American Society of Civil Engineers, held on May 4, 1904 and published in "Transactions" of that society, Volume 53 at page 144, by Charles L. Harrison and Silas H. Woodard.

Additional information obtained from water department files, has been used to supplement that contained in the above paper, subsequent to its publication, some months before the job was completed.
Mr. Harrison was appointed Chief Engineer of the South Platte Canal and Reservoir Company and the Denver Union Water Company on June 1, 1900, with instructions to design and build a masonry dam at the site of the partially completed rock fill dam which had been washed out by the flood of May 3, 1900 as earlier noted. He was assisted in this assignment by L. E. Cooley, Consulting Engineer, for the Company during the previous year.

At the time of his appointment, Mr. Harrison found that the following conditions prevailed at the site:

1. The outlet tunnels at elevations 10, 60 and 110 had been driven.
2. The balance valve at the entrance of the lower tunnel, and the twin valves in the middle of it had been permanently set.
3. Two, 42 inch single valves for the upper tunnels had been purchased.
4. The Portland Cement masonry, together with the steel plate of the earlier rock fill design which had been built up to elevation 28, remained in perfect condition after the flood.

Since time was of the essence and in the interests of economy, it was decided to utilize, in the new design all of the work previously done as far as it was practicable to do so.

The dam finally determined upon was a "gravity arch" type structure curved in plan with the upstream face built on a radius of 400 feet.

The datum plane for elevations was taken as the low water mark of the South Platte River at the dam site before construction. This datum was stated in the decree of May 1913, to be 6,644 feet above sea level.
The dam was built of granite masonry laid in Portland cement mortar. The first contract for excavation and masonry work, with cement to be furnished by the owner, was let to The Geddis and Seege Stone Company on August 29, 1900 and work begun early in the following month at an estimated cost, including amounts already expended, of $1,000,000.

As originally designed, the spillway level was set at elevation 200, with a free board of ten feet, making the total height 210 feet. After the dam had been built to an elevation of 100, the desirability of raising its height and thereby increasing the storage capacity of the reservoir behind it, was considered. Alfred Noble, Past President of the American Society of Civil Engineers, was retained for consultation in the matter, with the result that the design was altered and the spillway raised 12 feet to elevation 212. The dam height was brought up to elevation 217, with a roadway 14 feet wide at that level flanked by parapet walls topped out at elevation 221.

The foundation of this dam is the solid granite rock at the bottom of the canyon across which it is built. The lengths of the dam at various elevations were: about 30 feet at the bottom, about 40 feet at elevation 30, at elevation 90 about 130 feet on the downstream face, and at elevation 217, about 710 feet.

The elevation of the bedrock along the axis of the stream was approximately minus 10 feet, but one pot hole extended down to minus 15 feet; in fact, the entire bottom was a series of pot holes eroded in the solid granite, varying in depth from 1 to 6 feet.
The lowest part of the foundation along the bed of the river from the heel to the toe of the dam averaged about minus 10 feet. The height of the dam from this plane to the roadway on top at elevation plus 21.7 is therefore 227 feet. But the extreme low point of the foundation at minus 15 feet with the top of the parapet walls at plus 221 gives a maximum height of 236 feet. The thickness of the base at elevation minus 10 is 176 feet. When full, with two feet of water passing over the spillway, the depth of water exerting pressure on the dam was 224 feet, or a depth materially exceeding that against any other dam built up to that time.

The stone used was a good gray granite. That placed in the upstream face was obtained from a quarry distant about 2,000 feet north and west from the dam, and which, after the river bed was filled with water, was floated down to the job on barges.

The stone for the downstream face and the interior of the dam was secured from a quarry situated just below the dam and transported to the job on small cars, from which it was hoisted by derricks to cars running on a construction trestle built along the face of the dam at about elevation 100.

The sand used for mortar was secured from a gulch located about 500 feet north and west of the dam. It was processed on a 3/8 inch mesh screen, washed, and delivered to the work by wagon and scow. Tests showed it to contain less than one tenth of one percent of volatile and organic matter with voids averaging about 31 percent.

About 6,000 barrels of the Portland cement used was of the "Wolverine" brand, with the balance of approximately 77,000 barrels obtained from Iola, Kansas.
It was delivered by the Water company free of cost to the Contractor, at a warehouse located about 4,000 feet north and west of the dam site.

All cement was tested in Denver, shipped by narrow gauge railroad to Buffalo, where it was transhipped to wagons and hauled about 23 miles over a mountain road to the job site.

It is of interest to know that Mr. D. D. Gross, who retired as Chief Engineer of the Denver Water Department on December 1, 1951 after 48 years of service with the department, was first employed in the fall of 1903 in Denver as a cement inspector, assigned to that particular work.

The mortar for laying the stone on the upstream face and at the bottom and ends of the dam, adjoining the rock abutments, was mixed in proportions of two parts of sand to one part of cement by volume, with 95 pounds of cement taken as one cubic foot, the mortar for the rest of the masonry was mixed in the proportion of 2 1/2 to 1.

The stone for the upstream face was rough pointed, and laid with horizontal beds and vertical joints, with the outside edges made to conform to the curvature of the dam. One inch joints were allowed in the belief that a thicker bed of mortar would be more nearly water tight than the three quarter inch joints originally specified.

Although the specifications allowed these stones to be laid in broken courses, the Contractor preferred to have them of a uniform thickness. Consequently, all the face stones were uniformly two feet thick. The specifications required that one fourth of the face area should be headers, from four to six feet long, not less than two feet wide and evenly distributed through the wall. The stric
the wall. The stanchions were required to be not less than three and not more than seven feet long with a width not less than one and one half times the thickness.

The stones for the downstream face were not dressed, but were large and well shaped, again with a thickness of approximately two feet. They were selected and laid in steps for appearance sake. The rubble for the interior of the dam was required to be of good size stones, well shaped and laid so as to break joints and bond in all directions. In order to assure a watertight dam, all stones were laid in a full soft bed of mortar, with spaces between them first filled with mortar after which the smaller stones were worked down into it.

The interior stone work was set to bond vertically as well as horizontally, with special care taken not to level up the work at any point throughout the thickness of the wall.

Skilled workmanship, combined with carefully prepared specifications, and rigid inspection as the work progressed, resulted in a "tight" structure with no trace of moisture visible on its downstream face after first being put into service.

The quarry procedure was to loosen up large masses of stone with powder and then reduce the blocks so obtained to the desired size by the use of plug and feather.

The Republican, in its issue of June 8, 1902, reported that an explosion had occurred at one of the quarries on June 6th, following the accidental drilling into a missed shot.
Although no fatalities resulted, the foreman, Peter Seerie and three other workmen were seriously injured at the time.

As a part of the plan for building the rock fill dam, it was proposed to draw the water from the reservoir by three upstream outlet tunnels driven in a vertical plane through the left abutment, all united at a point 165 feet upstream from the discharge portal of the tunnel driven from elevation plus 10.

The balance valve set at the entrance to the main outlet tunnel, elevation plus 10, was protected by a permanent steel grating raising the entrance elevation of reservoir water to plus 15. This valve was designed to be operated by a hydraulic cylinder, the water supply for which was to be carried in pipes laid along the bottom of the tunnel from its portal to the valve, with a waste pipe provided in the same manner.

The twin 42-inch gate valves, located about midway between the entrance and the portal of the lower outlet tunnel were to be operated by hydraulic cylinders supplied with water in a similar manner.

This tunnel was six feet wide by seven feet high for 290 feet of its upstream length, and seven feet wide by nine feet high for the lower 165 feet of its length so as to accommodate the increased water delivered to it when the valves in the middle and/or upper outlet tunnels were opened and water taken through an inclined slope to that point, with the combined discharge of all three outlets carried thence to the outlet portal.

Twin 42-inch gate valves were likewise set in the outlet tunnel driven from elevation plus 60, upstream from its junction with the slope leading
from the outlet at elevation plus 105 which in turn had a 42-inch gate valve set in it above that point.

The fact that no provision had originally been made to give access to the working parts of these valves when water was being drawn out through the several outlets seemed to be a serious objection. This problem was met by driving a separate man way tunnel leading from the top of the rock ridge, behind the dam, thus at all times, giving free access to the working parts of the valves and also providing a safe means of piping the water for operating them.

It was also thought advisable to provide means for creating a back pressure on the valves in the 60 foot and 110 foot tunnels so as to make them easily operated when the reservoir was full. For this purpose a "Tainter Gate" to be operated by hand, was designed and placed just below the junction of the two upper outlet tunnels.

An electric generator directly connected to a Pelton water wheel, located in one of the valve chambers, gave light throughout the tunnel and chambers, as well as arc and incandescent lights around the dam, lake front and the company buildings located at the north end of the lake, about 4,000 feet from the dam.

A second Pelton wheel directly connected to a triplex pump was located in the same valve chamber as the electric generator. It furnished hydraulic power through piping to the several valve chambers for the operation of the valves.

In addition to this power, hand power pumps were connected to the
hydraulic cylinder of each valve, by which the valves could be independently
operated if necessary.

The original spillway was about 300 feet long at elevation 212, with
its south end located above 200 feet north of the north end of the dam, in a
natural saddle of the rock ridge in that area.

The maximum flood recorded up to the time the dam was built
occurred in June 1900. At that time, 1,945 cubic feet of water a second was
recorded in the river. In addition to the discharge capacity of the spillway
which was much in excess of that figure, the outlet facilities described above
were estimated as having a capacity of more than 1,000 cubic feet a second
with any unused capacity of the reservoir that might be available at times of
excessive stream flow providing even more of a safety factor when used for
purposes of equalization.

The principal quantities of work involved in the project upon completion
were reported to be 978 acres of brush and timber cleared from the
reservoir site; 29,710 cubic yards of earth and rock excavation for foundation
of the dam; 102,897 cubic yards of granite masonry, with approximately
1,300 feet of water and manway tunnels driven in connection with the outlet
facilities.

Water was first released from Lake Cheesman for emergency use in
Denver in July 1902, after water from Lake George and Wellington Lake,
previously purchased, had been exhausted during the extremely dry summer
of that year.

The first filling of the reservoir was completed early in the morning
of May 8, 1905 with nearly 1,000 second feet noted as passing over the spill-
way on the next day.
Mr. Harrison resigned as Chief Engineer on May 24, 1902 to take an important position with the Pennsylvania Railroad on the New York City terminal work then under construction. He was succeeded as Chief Engineer by Mr. A. E. Kastl, an old friend and associate who came to Denver from work on the Wachusett reservoir of the Boston Water Works System. Mr. Kastl remained in that capacity until the dam was completed. He was then succeeded as Chief Engineer by Mr. George T. Prince, who was largely responsible for the additions and improvements carried forward by the South Platte Canal and Reservoir Company at the mouth of Platte Canyon, concurrently with this project.

As already noted, the South Platte Canal and Reservoir Company, subsidiary corporation of the Denver Union Water Company, was incorporated in 1894 for the purpose of building the Cheesman Dam, the Platte Canyon Reservoir, the Platte Canyon Filter Plant and appurtenant works in and about the mouth of the Canyon, so that both direct flow and storage water from the South Platte River could be processed and delivered for use in the Denver System.

The overall objective of the planning of these various projects was to develop a safe and dependable supply of municipal use water equal to the demands of a population of at least 500,000 people, regardless of drought or other unfavorable climatic conditions.

**Platte Canyon Reservoir**

This sedimentation reservoir is located in the NW1/4 of Section 35, Township 6 South, Range 69 West of the 6th Principal Meridian.
The map filed with the State Engineer, on December 28, 1904, gives its capacity as 39,398,003 cubic feet - 904.45 acre feet - at spillway elevation, 360 Denver datum, with a surface area when full of 58.26 acres.

The South Platte Canal and Reservoir Company then claimed the right to store in this reservoir all of the unappropriated and flood waters, and waters flowing in the non-irrigating season of the South Platte River and its tributaries above the intake of the canal and pipe lines feeding it as of September 5, 1902, the date upon which construction, by survey presumably, was started. Note: Old records show that actual construction work was begun by Contractor, Joe Osner on April 9, 1903.

The right to store water of Lake Cheesman was also claimed, all for the purpose of supplying domestic water to the City of Denver, and to customers living along the lines of the mains of the Denver Union Water Company, between the mouth of the canon and the city itself.

The length of the dam was given as 3436.8 feet, its height at the deepest point 40 feet, with a free board of 5.5 feet above the spillway. The spillway, when constructed, was 50 feet wide, and was located at the southwest end of the dam.

The inlets were two in number, first a 30 inch branch connection from Conduit No. 2, discharging into the Reservoir near the spillway at the southwest corner and second, through a headgate in the High Line Canal discharging directly into the extreme south east corner of the reservoir.

The outlet as originally built consisted of a 36-inch discharge pipe connected to the pipe lines and filter beds situated in the NE 1/4 of Section 34, Township 6 South, Range 69 West.
This reservoir is located on a mesa about 30 feet above and immediately adjacent to the south easterly bank of the South Platte River. The material in which it is located consists of a drift or deposit of earth gravel and cobble stones overlying a stratified limestone formation.

Immediately after its first filling in 1904 serious leaks appeared along the bluff or bank of the river adjacent thereto. As will be seen later, efforts to stop these leaks over the succeeding years met with but indifferent success. As late as 1925, the amount of this uncontrolled leakage was estimated by the State Engineer as being approximately 10 cubic feet of water per second of time.

The only record found of a court decree connected with this facility is that contained, among others, in the adjudication by the District Court of Douglas County, dated June 16, 1930. At that time the sources of supply were two in number; one, from the High Line Canal as provided for at the time of original construction, and two, by a 36-inch branch off of Conduit No. 8 which had replaced Conduit No. 2 in 1912.

The decree established a priority date of September 5, 1902 for domestic and municipal purposes, in the amount of 39,421,800 cubic feet of water - 905 acre feet - for one filling in each calendar year of water taken from the South Platte River.

Water was first turned into this reservoir by the 30-inch supply line, branch from Conduit No. 2 on December 3, 1903 and from the High Line Inlet on April 11, 1904.

Public announcement of the purchase of land upon which to build the Platte Canon reservoir was made on December 7, 1902 in the "Republican"
At that time, it was stated that the site chosen was on the banks of the Platte River, across from the new sand filtration beds then under construction near the mouth of the Canyon. Work was to begin at once on a reservoir to hold 300 million gallons, which when completed, would serve the dual purpose of providing a temporary reserve of water for use in times of emergency as well as to create a needed distribution facility at that location.

The inventory of 1913 shows that 112,968 acres of land were purchased for the purpose indicated.

At the annual meeting of the Directors of the Denver Union Water Company held on December 28, 1903, it was announced that the Platte Canyon Reservoir had been completed, and that it would be used for storage and settling purposes, with the first filling made possible by the use of water transferred downstream from Lake Cheesman.

Settled water was to be taken from this reservoir, when direct flow water in the river was muddy, to supply water for the slow sand filtration beds then under construction at the mouth of the canyon as well as to the Willard mechanical filter plant located some 3 miles north of that point on Conduit No. 2.

**Platte Canyon Filter Beds**

On February 4, 1901, Judge John A. Riner of the United States Circuit Court enjoined the city from completing its municipal water bond issue of $4,700,000 which had been authorized at a special election held on November 7, 1899.

With the threat of a competing municipaly owned plant, thus removed, President Cheesman of the Denver Union Water Company announced, on March 5, 1901, that the company had plans for substantial improvements to the system.
which he said when once started would take a period of three to five years to complete.

One of the more important projects then planned was the immediate construction of a slow sand plant at the mouth of Platte Canyon, for the purpose of increasing system filtering capacity.

Selection of this new type of plant, perfected in England and Germany, and successfully introduced in the United States at Albany, New York and Ashland, Wisconsin, followed extensive experiments and tests conducted by various skilled chemists and water experts over the years on Flatte River water at the Willard and Marston Lake mechanical plants, the first one of which was put in operation in 1893.

The site chosen for this new facility was adjacent to the river, directly over the southerly end of the underground collection system consisting of 30 inch wooden cribs constructed there in 1889-1890 to supply naturally filtered water to Conduit No. 1.

Active work on the project designed to feed filtered water into Conduit No. 3, then under construction, was begun on June 3, 1901, but so much work of a preliminary character was necessary in the way of erecting camp buildings and assembling materials and machinery that work on the construction of the filter beds proper was not well under way until July 15, 1901.

Following these delays the work was hampered by the failure to secure a man competent to direct it on the ground. This difficulty was later overcome by securing the services of Mr. F. C. Horn, a civil engineer of Chicago.

In reporting to the Chief Engineer for the fiscal year ending November 1, 1901, the river diversion Superintendent stated that on that date the work of
construction of embankments could be regarded as being about 60 percent complete.

Expenditures during that year included those on a diversion dam across the river, a flume to carry river water to the sedimentation basins, levees above the sedimentation basins, excavation and embankment for those basins, excavation and other work required for Filtration Basins No. 1, 2 and 3, and on miscellaneous items in and about the project.

As of November 1, 1901, it was stated that the concrete and piping in Basin No. 1 was 95 percent complete with coarse sand and cobble stones in that basin also 95 percent complete. The sand was only 40 percent complete due to the difficulty experienced in the beginning in securing machinery suited to the assorting of materials for the covering of the sewer pipes and the composition of the filtering media above. Steam plants had finally been erected for the crushing of materials for concrete and for the sizing and washing of the sand.

The Superintendent also reported that materials sufficient for the covering of the basin floors in accordance with the specifications had been located, with the exception of the upper three feet of sand of which about 50,000 cubic yards would be required, with not more than 14,000 cubic yards then in sight suitable for this purpose.

He stated that two methods of making up this deficiency might be utilized. First, the water of the river running through the basins would leave large quantities of sand which by properly dividing the basins into sub-basins might produce enough sand which, after sorting to the required sizes, should do the job. The length of time required to do this was in his opinion, the
The greatest drawback to its adoption.

The other method seemed to be simpler and much more ready of results. It would consist of opening up a large bed of suitable sand between Platte Canyon station and Wynetka and building a spur into it from the Colorado and Southern Railway for the purpose of conveyance. Although more expensive it was deemed to be much more efficacious. In conclusion, the Superintendent recommended that the cost of procuring the coarser grade of materials could be cut in half by the erection of a revolving screen for that purpose. He estimated that the cost of buying and putting in service such a screen would not exceed $500 and had prices from several sources which he was ready to submit on request.

Water for these original filter basins was taken from the river, using the company's Platte Canyon Ditch rights, by a wooden flume 6 feet wide and 3 feet deep, built on a fall of .09 of a foot per 100 feet. The flume was 1475 feet long, with its upper end about 1286 feet above the headgate of the Platte Canyon ditch proper, over which it was built to deliver water to the beds as needed. The water thus obtained was first delivered to 2 sedimentation basins located upstream from the filtration basins proper to which it was delivered after most of the sediment had been deposited therein. Basin No. 1 was placed in service in January 1902, with the Republican reporting on July 26, 1902 that due to litigation and the extreme drought conditions of that year, the company had turned the water off of its filter beds the day before at the mouth of the canyon in obedience to a District Court injunction prohibiting the city from taking more than 30 second feet for domestic use until a number
of ranchmen's claims had been satisfactorily settled. The first basins here covered an area of 2.5 acres. During the next three years the number of basins was increased to six, having a filtration area of 12.56 acres, which brought the nominal rated capacity of this facility by the end of 1905 to 30 million gallons daily.

On June 30, 1905, the Republican announced that in addition to the increase in filter beds then under way, plans were being drawn for a new power and pumping station at Platte Canyon. This plant would furnish electricity for various purposes, including plant lighting and employee cottages. A sand washer was also being built to handle filtration bed sand.

Contracts were let on September 21, 1905 for electrical and pump equipment with operation scheduled for February 1906.

Upon completion in 1907 the company reported equipment installed at this reserve pumping plant as follows:

1 - 75 horsepower DeLaval steam turbine, connected to 2-12 inch centrifugal pumps having a rated capacity of 10 million gallons a day.

1 - 55 horsepower DeLaval steam turbine connected to 1-12 inch centrifugal pump having a rated capacity of 5 million gallons a day.

1 - 30 horsepower DeLaval steam turbine connected to 1-16inch Centrifugal pump having a rated capacity of 3 million gallons a day.

1 - Platte Iron Works horizontal compound duplex pump, capacity 700 gallons a minute or 1,008,000 gallons a day.

1 - Water Turbine with pair of 15 inch cylinder gate wheels at 400 RPM with 20 foot head. Its rated capacity was 80 horsepower.
Power for the lighting system was furnished by 1-55 horsepower DeLaval steam turbine directly connected to a 35 KW direct current, 230 volt Sprague generator and 2-Babcock and Wilcox, coal fired, water tube boilers with Dutch Oven Furnaces.

Conduit No. 3

This clear water pipe line was built in sections during the period from 1899 to 1911.

As finally completed, it extended from the Platte Canyon filter beds to the Ashland Avenue reservoir, a distance of 22.22 miles.

From the intake at the slow sand filters to South Federal Boulevard and West Alameda Avenue, it was of wood stave construction, 40 inches in diameter for a length of 89,675 feet; from South Federal Boulevard and West Alameda Avenue to West 1st Avenue, wood stave pipe, 36 inches in diameter was laid for a distance of 2,625 feet. At this point, the diameter was reduced to 34 inches for a distance of 3,900 feet to Federal Boulevard and West 8th Avenue. The total length of the conduit thus built was 18.22 miles.

This work was done in two sections, the first section from Wynetka to West 8th - 47,785 feet in length - was started on June 15, 1899 and completed June 2, 1900, with the second section 48,415 feet in length, started April 5, 1901, with connection to the Platte Canyon filter beds completed on January 22, 1902.

In 1904 the conduit was extended from Federal Boulevard and West 8th Avenue to West 29th Street and Lowell where it was connected to Conduit No. 1.
from which point Conduit No. 1 was used for the balance of the distance to the Ashland Avenue Reservoirs. This extension was made up of 11,072 feet of 30-inch wood stave pipe and 2242 feet of 30-inch cast iron pipe; the overall length being 2.52 miles.

It was not until 1911 that a branch off of this Conduit was constructed from West 26th Avenue and Lowell Street to the Ashland Reservoirs. This branch was 9,035 feet in length, composed of 8,447 feet of 30-inch wood stave pipe and 638 feet of 30-inch cast iron pipe. After it was completed it was estimated that the discharge capacity to the Ashland Avenue reservoirs at high water elevation of 257 there, was approximately 10 million gallons a day.

**Miscellaneous Improvements and Additions to Plant**

**University Park Stand Pipe**

This stand pipe was erected in the summer of 1904 near the intersection of South Harrison Street and East Iliff Avenue for the purpose of improving pressure conditions during peak periods of consumer demand in the University Park area.

An original tracing, filed in Drawer 132, numbered 17, dated April 14, 1905, gives its inside diameter as 50 feet with a total height above foundation of 45 feet.

It was connected to Conduit No. 2 at University Boulevard by a 10-inch pipe line, running east on East Iliff Street, with a 12-inch branch to the bottom of the tank. This 10-inch line was plugged off a short distance east of the stand pipe.

By operating the two 12-inch valves in that feeder, water could be fed into the tank during periods of low demand, with the flow reversed therein and water drawn from the tank when peak demands caused pressures...
in the area to drop below a predetermined minimum figure.

The calculated capacity of the tank was approximately 660,000
gallons. The elevation of the bottom of the tank was 238 on the city datum.

A news item published in the Republican on July 26, 1904 gives the
following account of its installation: "People who live within sight of Myrtle
probably wonder what has become of the large stand pipe which with another
formerly crowned its summit." This reference is to the two tanks erected
in 1892 on East Alamed a Avenue at South High Street by the Citizens Water
Company, the second one of which was later dismantled. (See photo in
Engineering Library):

"Because it was practically useless, there and owing to the low pressure
at University Park, the stand pipe is being moved. The stand pipes were built
12 years ago, but were never connected with the pumping station - Capitol
Hill - and thus were of little service, the gravity pressure sometimes
leaving them with less than 5 feet of water.

"In this new location the tank will be connected by a 10-inch pipe line
with a pumping station at the rear of Capitol Hill, thus insuring an even
pressure while the water lasts. The tank is not one of unusual size, being but
50 feet in diameter and a trifle less in height.

"Its capacity was about 20,000 barrels. It had a foundation of 24 feet
above the ground level, where as at the new location, the foundation is but
three feet, this being accounted for by the extreme highness of the ground.
Also a pumping station will supply the water to it rather than gravity.

"The Contractor employed to dismantle and move it to the new location
took but 15 days with 6 men to do that part of the work. It was estimated that

28.
erection at the new site would take about 30 days, with the cost of moving and erecting about $3,500 whereas, a new stand pipe of the same size would cost $11,000."

The high water elevation at this new location was 283 or 26 feet higher than that at the original East Alameda Avenue site.

**Capitol Hill No. 2 Reservoir**

Early in the year 1906, water company officials announced that a second clear water basin was to be built adjacent to Basin No. 1 constructed on Capitol Hill in 1887.

This immediately brought forth opposition from neighboring property owners and others, which ended with a suit being filed in Denver District Court on March 22, 1906 by Theresa Bush and 15 others. It was charged in the complaint that one of the reasons why an injunction should be granted against the proposed improvement, was that the lease the water company held at the location named, dated February 25, 1887, was not properly obtained from the City Council and was therefore void. Attorney John A. Rush was quoted as being the authority for this claim. In addition it was claimed that the proposed reservoir, if constructed, would become a public nuisance and would decrease property values in the neighborhood by 50 percent.

The suit was tried before District Judge H. V. Johnson, previously Mayor of Denver, 1899-1901 - who on April 28, 1906, ruled in favor of the Denver Union Water Company. In this decision the Judge stated that, in his opinion, the additional facility to be built could not be construed as a neighborhood nuisance since it was to be seeded over. The question of whether the company held a valid lease from the city on the property in question was not

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ruled upon at that time.

The basin as thereupon constructed in 1906-1907 immediately east of Basin No. 1, was lined with concrete and covered by a wooden roof. Its capacity was 30 million gallons with a water depth of 22 feet.

A complete description, with plans and photographs is to be found in the Metcalf-Anderson inventory of October 31, 1913, to which the reader is referred for further information.

**Capitol Hill Pumping Plant**

In 1908 a new pump with boilers, brick stack and other appurtenances, including necessary buildings, was put in operation at this location.

The pumping equipment installed at that time consisted of a Worthington horizontal, direct acting pumping engine of 10 million gallons a day capacity. It had a 30-inch suction line from Basin No. 1 with a 24-inch discharge line running to the east along the south side of the plant, and a 16-inch reduced to 14-inch discharge line running west from the plant, both of which were connected to the city distribution system. This additional pump raised the total capacity at the plant to 20 million gallons daily. Before this installation was made the plant had one Holly horizontal pumping engine of 3 million gallon capacity installed in 1891, compounded in 1895; one Gaskill horizontal compound pumping engine of like capacity, also installed in 1895, and one Barr vertical compound pumping engine of 4 million gallon capacity put into operation in 1903.

The boilers for this new installation were housed in a frame structure located south of the main building with the pump being located in a similar
frame building built adjacent to the original brick boiler room at the north west corner where a dwelling had originally been built for company employees.

Plans and photographs are to be found in the files of the department and in the Metcalf-Anderson Inventory of October 31, 1913, from which much additional information on this facility can be obtained if desired.

Reconstruction of Conduit #5

This 30-inch wooden stave conduit built in 1887 was relocated and rebuilt in kind along public ways and streets with construction work started September 10, 1907 and completed on April 21, 1908. The new length from well house No. 6 at the north end of the company's Cherry Creek property, to the discharge weir basin No. 2 at Capitol Hill was 5.44 miles.

At this time, the underground collection galleries at Cherry Creek were shown on original maps as consisting of two "legs" branching south from Well No. 6. The shortest one of these was that originally built of wooden cribs with an overall length of 1007 feet with 3 wells located on it.

The second branch, 2240 feet long, had 5 manholes along its length. It was installed in 1889 using 30-inch concrete pipe laid in gravel with open joints.

Beginning at well number 6, which was located 24 feet north of the north property line of the Cherry Creek gallery property, the first section of the new pipe line was laid with 990 feet of 36-inch cast iron pipe, then for a distance of 2,248 feet from wellhouse No. 5 to well house No. 1, 36-inch concrete pipe was used, with the remainder of the 30-inch line to Capitol Hill constructed of wood staves.
The Metcalf-Anderson inventory for 1913 shows a gross fall in feet between the average elevation of the Cherry Creek clear water well and the weir elevation at Capitol Hill of 15.6 feet. The computed capacity of the line as reconstructed varied from 4.8 to 5.9 cubic feet of water a second - 3.1 to 3.8 million gallons a day, or less than half that reported for the original line when first put in service.

The mean daily average volume of water delivered by this conduit to Capitol Hill in 1909 was reported by Messrs. Metcalf and Anderson to have been 2.88 million gallons a day.

**Ashland Avenue Pump Station**

The first construction for a permanent station in the north-west portion of the city was completed in 1907. It was located on the southwest corner of the West 29th Avenue and Sheridan Boulevard intersection.

The two 1889 Deane pumping engines were moved to it when the temporary station there was dismantled and one new Worthington horizontal Duplex Triple Expansion pumping engine of 5 million gallons daily capacity installed, bringing the total station capacity at that time up to 7 million gallons daily. Two Kewanee coal fired horizontal tubular boilers with stack, a tank of 37,000 gallons capacity and appurtenances were also installed here at this time.

The general arrangement of this station in 1912, including location of pipe lines with connections to Conduit No. 1, is shown in Plate No. 174 of the Metcalf-Anderson Inventory. Photographs and some other data concerning the station at this period in its history are also to be found in Water Dept. Archives.
West Side Pumping Station

Improvements at this station in 1905 consisted mainly in the building of a new boiler house together with a new coal house and remodeling some of the buildings there. During the year, two Oil City Horizontal return tubular boilers having a rated horse power of 150 each, and two Kewanee boilers of the same general type, rated at 100 horsepower each were installed at this location.

Conduit No. 4 Relocation

Although the records are far from complete, it appears that the 48" Conduit, extending from the Mississippi Street galleries built in 1884-1885, was abandoned between Alameda Avenue and the West Side Reservoir in 1906, with a new 40 inch wood stave line, 1.74 miles in length replacing it on a location west of Lake Archer between those two points.

The Metcalf-Anderson Inventory of 1913 lists this conduit, after the replacement named as having a total length of 2.77 miles, the remaining 1.03 miles consisting of the original 48-inch wood conduit extending south from Alameda Avenue to the Mississippi Street galleries. The table on page 42 of that inventory gives the carrying capacity of the Conduit after this work was completed, under average conditions, as about 13.4 million gallons daily.

Marston Lake (Allen's Lake)

Construction work, with the exception of riprapping, the dyke at this reservoir was completed in 1900.

The source of water supply until May 1911 was from Bear Creek via pipe line, ditch and flume with the Intake located above Morrison. With
the completion of Conduit No. 7 in the spring of 1911, Platte River water became a second source of supply to it.

The dyke was riprapped by the end of 1902 with engineering details of this and other work done here described fully in the Metcalf-Anderson Inventory of 1913.

The News on October 12, 1900 stated, among other things, that "The Denver Union Water Company has placed an order at the Belmont Basalt quarry near Boulder for 45,000 tons of rock to be used in riprapping Allen's Lake, not far from Ft. Logan and the construction of a six mile driveway around it."...

"The water company's improvements will increase the value of the plant probably by $750,000 which would have to be tacked onto any price that the city might consider for the purchase of the entire plant."

Note: In the Inventory mentioned above, there is listed and priced 17,558 tons of riprap, with an additional item for laying 15,000 cubic yards at a total cost of $60,412. This material was used to pave the inner slopes of the north and south embankments with completion some time in 1902.

In the decree of June 16, 1930 heretofore quoted from at length on Denver's water rights, the following information is part of that given under the heading "Marston Reservoir, No. 22 1/2:

"Marston reservoir has a feeder from Bear Creek in water District No. 9 in the State of Colorado, but its priorities to be awarded in both water districts No. 8 and No. 9 shall not entitle it to be filled more than once in each year under its storage appropriations from all its sources, including the South Platte River and Bear Creek feeder."
"It is hereby Adjudged and Decreed that there be allowed to flow into Marston Reservoir 862,257, 600 cubic feet of water in any one calendar year, (19,795 acre feet), from the South Platte River through Conduit No. 8, the High Line Canal and Conduit No. 7, for domestic and municipal uses and purposes, including the sprinkling and watering of lawns and ornamental trees and shrubs in Denver and its suburbs under pipe line service, and for the use and benefit of whomever is lawfully entitled thereto; provided, that all of the Bear Creek water received in said Marston Reservoir in any calendar year shall be deducted from the said 862,257, 600 cubic feet to be received from the South Platte River and the said 862,257, 600 cubic feet reduced accordingly; and provided, further, that not more than 31,486 acre feet of water in any calendar year".

Note: Maps of the Denver Union Water Company dated 1913 show the maximum capacity of this reservoir to be 19,648 acre feet. However, as earlier stated, its operating capacity has been limited by the State Engineer to 16,640 acre feet.

Bear Creek and Turkey Creek Water Supply
For Marston Lake

Although originally intended for temporary use only, these two Creeks became, in the course of time, small but significant sources of supply in the overall development of a raw water supply for the Denver system.

The first agreement of record entered into with The Harriman Ditch Company by the Citizens Water Company for a supply of water to Marston Lake was dated September 21, 1892.
This document was a two year lease, beginning with January 1, 1893, giving the Citizens Water Company the use of The Harriman Ditch and the right and privilege to draw, conduct or carry through that ditch to Marston Reservoir all the waters of Bear and Turkey Creeks not necessary for the irrigation of the lands of its stock holders or the filling and keeping full of their reservoirs or for domestic purposes, which the capacity of said ditch, when enlarged for that purpose, would permit for the space of two years, and from said reservoir to take out and use such water for domestic purposes.

A provision in this lease gave the Citizens Water Company the option to terminate the contract upon sixty days notice before the first day of January 1894.

The Citizens Water Company, in consideration of the premises, covenanted and agreed that during all the time the lease remained in force, it would at its own expense put and keep the ditch in suitable order and repair to draw and carry such water, enlarging it where necessary, sufficiently to justify its appropriation.

At the termination of the lease, the Citizens Company agreed to yield its rights and to leave the ditch in good repair. It also agreed to never in any way interfere with the rights of any of the stockholders, and to immediately protect and save harmless the ditch company and its stockholders against all loss or damage which might occur by reason of the drawing and carrying of Marston Lake water during the time period of the lease.
Attached to the original of this agreement or lease is a letter
dated November 26, 1892, signed by the President and two Directors of
The Harriman Ditch Company, addressed to the Citizens Water Company
which states:

"We, the Directors of the Harriman Ditch Company, hereby express
our satisfaction with the work of enlargement and repair of the Harriman
Ditch, performed by Mr. George W. Harriman, Contractor for the Citizens
Water Company, and declare that the work done is in full compliance with
the agreement made between the Harriman Ditch Company and The Citizens
Water Company."

A new lease for three years after January 1, 1895 dated on that day
was executed with the Denver Union Water Company on the same general
terms as originally named, except the Harriman Ditch Company, reserved
the right to fill and keep full the reservoirs known as Soda Lakes, for which
the lease recites that the Ditch Company had appropriated other waters from
Bear and Turkey Creeks for that purpose.

The Harriman Ditch Company was organized in September 1891 with
a capital stock of $40,000 divided into 400 shares of $100 each. It acquired
by deed of conveyance the Arnett Ditch and all its property and rights of
way.

The decrees entered by the District Court of Arapahoe County on
February 4, 1884 for the Arnett Ditch, No. 14, were:

Priority No. 21, 10.75 cubic feet a second from Turkey Creek,
original construction as of April 15, 1868. Priority No. 23, 7.94 cubic
feet a second from Bear Creek, original construction as of March 16, 1869.
Priority No. 25, 25.54 cubic feet a second from Bear Creek, first enlargement
as of May 1, 1871. Priority No. 30, 12.87 cubic feet a second from Bear Creek, second enlargement, as of March 1, 1882. The total of the four decrees being 57.10 cubic feet of water per second of time.

At this same hearing, decrees awarded to the Harriman Reservoir were:

Priority No. 1, 1809 cubic feet a second, original construction as of May 1, 1873. Priority No. 3, 37.58 cubic feet a second, 1st enlargement as of April 1, 1875.

The total amount to which the reservoir was then entitled, being 55.67 cubic feet a second, one fifth of that amount supplied from Turkey Creek with the remaining four fifths being taken from Bear Creek. It was stated in the description of the reservoir given by the Court on February 4, 1884, that it then had one hundred acres of water surface.

A map in the Water Department files, consisting of 11 tracings, prepared by the Denver Union Water Company after extended surveys on the Harriman Ditch Irrigation System, dated December 1901, shows the area of Harriman Lake at High Water Contour, 453.90 above Denver City Datum, to be 59.67 acres, with a maximum capacity above its outlet, elevation 435.80 of 59,201,826 cubic feet - (1359 acre feet).

The two Soda Lakes Reservoirs were constructed by the Harriman Ditch Company with work thereon commenced on February 11, 1893.

The feeder carrying water to Soda Lake Reservoir No. 1, which in turn fed Reservoir No. 2 had its headgate on the Arnett or Harrimah Ditch approximately 3750 feet below the original Arnett Ditch headgate on Bear Creek at Morrison. It was about 1100 feet long and had a calculated carrying capacity of 225 cubic feet a second.
In the statement of claim filed with the Jefferson County Clerk on May 10, 1893, it was stated that the capacity of Reservoir No. 1, when filled to the high water mark, was 20,252,689 cubic feet - (465 acre feet). and that the capacity of Reservoir No. 2, when filled, was 100,000,000 cubic feet - (2296 acre feet).

The dam creating reservoir No. 1 was originally noted as being 938 feet long, with the dam for Reservoir No. 2 stated to be 2500 feet long.

The Soda Lakes Reservoir and Mineral Water Company was organized by the stockholders of the Harriman Ditch Company for the purpose of building the two reservoirs described above.

Each stockholder of the Harriman Ditch Company was given the right to take as much stock in the new company as he had in the old. Nearly all availed themselves of this privilege and took the stock. Some did not, and therefore the stockholders of the two companies were not identical.

This situation later caused a controversy between the two companies, as to just what water rights the Harriman Company had transferred to the Soda Lakes Company.

In a deed dated October 5, 1894, the Harriman Company conveyed, for a consideration of $20,000 and other valuable consideration, 120 acres of land consisting of the SE 1/4 and the NE 1/4 of the SW 1/4 and the SE 1/4 of the NW 1/4 section 1, township 5 South, Range 70 West to the Soda Lakes Company, together with all the water rights, appropriations, priorities and other rights appropriated, purchased or otherwise acquired by the Harriman Company for the purpose of filling, controlling or discharging water from the Soda Lakes reservoirs, so-called, situated upon the above described land,
but this conveyance did not pass any title or interest in or to any portion of the property, water rights, priorities or appropriations of the said party of the first part - Harriman Ditch Company - except those appropriated or acquired especially for use in connection with the said reservoirs as appears by the maps on file in the office of said Clerk and Recorder and in the office of the State Engineer.

It is to be noted that the land conveyed by the above deed did not comprise all of the land occupied by these two reservoirs.

Title to 880 acres of land, including the Harriman Reservoir, located thereon, together with all water and reservoir rights in any wise appertaining to that land, plus 90 shares of the capital stock of the Harriman Ditch Company, and 20 shares of the capital stock of the Bergen Ditch and Reservoir Company, passed to the Denver Union Water Company from James B. Grant by deed dated May 17, 1897. The consideration named in that deed was $34,808.50.

The land thus acquired included the S 1/2 of Section 4; the S 1/2 of the NE 1/4 of Section 4; the SE 1/4 of Section 5; the NE 1/4, the NE 1/4 of the NW 1/4, the E 1/2 of the SE 1/4 and the NW 1/4 of the SE 1/4 Section 9, all in Township 5 South, Range 69 West of the 6th Principal Meridian.

Governor Grant reserved the right in this conveyance, to the use of the ditch constructed and used across the land conveyed to run water down to the Rucker and Worlen ranches around the Harriman Reservoir.

Soon after this purchase had been consumated, 10 additional shares in the Harriman Ditch were purchased from W. C. Henry giving the Denver Union Water Company a total of 100 shares, or a one fourth interest in that ditch.
The Denver Union Water Company later secured 110 shares, out of a total of 400 shares in the Soda Lakes Reservoir and Mineral Water Company by purchasing 30 shares from J. B. Grant on July 6, 1903; 30 shares from S. B. Morgan on that same day, and 50 shares from Charles W. Bowles on July 7, 1910.

On August 21, 1912 an unsigned memorandum addressed to Mr. W. P. Robinson, President, The Denver Union Water Company, evidencing the water rights of the Denver Union Water Company, after giving the certificate numbers of the 100 shares of Harriman Ditch company stock owned, explains how the water company secured control of Harriman ditch company policies through the ownership of perpetual proxies authorizing it to vote 110 shares of stock at all meetings of that ditch company. This document also lists the water company's rights in the Soda Lakes reservoir, and its rights to 72 shares of stock held in the Bergen Ditch and Reservoir Company. (See file 142, document 70 in the Manager's vault).

A renewal of the Harriman ditch lease which expired on January 1, 1898, was made under an expanded agreement dated January 15, 1898 to run for a period of twenty years thereafter.

The agreement cleared up a number of questionable points that had arisen over the years in connection with the delivery of surplus water to Marston Lake and provided that, in addition to paying for the repair and maintenance of the ditch as had been past custom, the Denver Union Water Company would pay reasonable compensation to one man selected by the ditch company, who would have charge of the ditch and the distribution of water to the stockholders for irrigation and into the reservoirs according
to their respective interests, including Soda Lakes and Marston reservoir.

(See File No. 71, Document No. 8, in the Managers Vault).

On January 16, 1917, one year before the above agreement would expire, its period of operation was extended for a further period of twenty years, or until January 15, 1938.

It is worthy of note that this agreement was signed by John Evans, President of the Harriman Ditch Company and by E. S. Kassler, President of the Denver Union Water Company.

Finally on January 18, 1938, an agreement without time limit, under the same general terms and conditions as provided for in the one it replaced, was entered into between the Harriman Ditch Company and the City and County of Denver acting by and through its Board of Water Commissioners, with the Board retaining the right to terminate it in case the privileges granted to it thereunder should be lost by operation of law.

Water delivered by the Harriman Ditch to Marston Lake under the conditions outlined above, averaged 6,723 acre feet a year for the ten year period, 1901-1910 inclusive, with a minimum delivery of 164 acre feet recorded in 1902 and a maximum of 13,123 acre feet reported for the year 1905.

The increase of more than 85,000 people in the population of Denver during the decade, 1900-1910, was closely paralleled by a like expansion of its water utility, as shown by the following data released in 1913 by the Denver Union Water Company.

In that 10 year period of time, it was estimated that the population
served with water had grown from 140,000 to 210,000; an increase of 50 percent; annual water consumption in millions of gallons, grew by 35 percent; the number of active water taps was raised from 23,343 to 38,378; 22 percent; the maximum daily demand for water increased from 48.2 to over 60 million gallons; 35.8 percent; and the minimum daily demand, an even more significant figure, grew from 22.2 to 35.8 million gallons or 61 percent by the end of 1910.

Following approval by Denver voters, at a special election held on November 7, 1899; of a $4,700,000 bond issue to be used for the purpose of erecting or purchasing a municipal water plant, the Board of Public Works recommended to the democratic controlled city administration that immediate steps be taken to carry out the will of the people as then indicated.

This recommendation was approved, and on January 16, 1900, Mayor Johnson signed Bill No. 2 series of 1900, providing for the necessary bond ordinance but only after considerable heated discussions had taken place on it, prior to its passage by the City Council.

On January 1, 1901, the News quoted Joel W. Shackelford, President of the Board of Public Works on the municipal water plant situation as follows:

We can say with pride that this Board of Public Works has the distinction of having been the first to submit the question of municipal ownership of a water plant to the people. During October 1899 we passed the resolution and recommended the passage of an ordinance to the Honorable City Council submitting to a vote of the taxpayers at the November election, the question of issuing $4,700,000 in bonds for the purpose.
We made two public efforts to sell the bonds and would have succeeded but for the persistent interference and thwarting of large and influential financial concerns that were interested in the defeat of the movement. Finding that their emissaries were prepared to block any attempt at public sale, we called together a committee of prominent citizens, about 15 in number, and consulted with them as to selling the bonds at private sale, as public sale was impossible. We consulted them from time to time and finally on October 1, 1900, we succeeded in closing the sale of the bonds to Messrs. Dennison and Prior Company of Boston and Cleveland, to be delivered $100,000 on October 15 - $100,000 on December 1, 1900; $500,000 on January 2, 1901 - $2,000,000 on April and and $2,000,000 on May 1, 1901. The first $100,000 was duly paid on October 15 and we received the applause and congratulations of the citizens who have the good of the people at heart.

We proceeded to negotiate with the Denver Union Water Company for that portion of their plant which would be useful to the city. We inspected their property but before we could get further and before the second payment of $100,000 was due, we were enjoined by the Honorable Circuit Court of the United States for the District of Colorado from taking further steps in delivering bonds and receiving money therefor. This was done at the instance of one Mrs. Fannie Josephine Grant of Los Angeles, California, as a taxpayer in the city and probably in the interest of the Denver Union Water Company.

Until this injunction is disposed of we cannot proceed. If it is disposed of soon, we assure the people of this city that they will be well along on the road toward municipal ownership of a water plant before our term of office expires."
The court hearing on this matter was first set for December 7, 1900, but for various reasons was not begun until January 24, 1901.

In its answer to the complaint, the City stated that while Fanny Josephine Grant, the owner of the Kittredge Building was the nominal plaintiff, she was simply a figurehead for the water company in the case then before the court.

On February 4, 1901, Judge John A Riner decided in favor of the plaintiff and enjoined the city from completing its municipal water bond issue basing its findings on three different grounds: First, the question should have been submitted to the people at a regular municipal election in April as defined by the Charter; Second, Two distinct subjects were submitted as proposition one, namely, the question of purchasing the plant of the Denver Union Water Company and that of erecting a municipal plant instead of separately as should have been done; and Third, the court laid great stress upon the fact that the city had in 1890, entered into a 20 year contract with the water company declaring that while it would perhaps be permissible under the charter for the municipality to make a similar contract with another competing company, the city could not as a party to the contract itself enter into competition with the existing company to which it had given the right of its streets.

On February 11, 1901, following a conference held by various city officials, it was decided to appeal from Judge Riner's decision, the method of doing so being left to the discretion of the City Attorney.

Before this could be done however, the election of April 2, 1901 resulted in a switch to a Republican Mayor who with a Republican Board of Supervisors, controlled the city administration thereafter even though the
Board of Aldermen continued to be ruled by Democrats.

On May 12, 1901, it was reported that the appeal would probably be dropped, and over two years later on July 23, 1903 the Republican stated that: "Supervisor Hoover would introduce a resolution at the next meeting of the Supervisors authorizing the City Auditor to burn $4,700,000 worth of unissued bonds intended for the Municipal Water Plant which Denver once expected to build. The project was declared beyond the City's province by United States Judge Riner, February 4, 1901.

"Since then the City had failed to prosecute an appeal, and inasmuch as there is little probability of the bonds ever being used, the administration considers it useless to pay storage charges at the rate of $120 a year on them, to a Safety Deposit Vault Company, with charges already aggregating $240."

Incidentally, as the end result of Judge Riner's decision, the bond sale contract was cancelled by resolution of the City Council on May 16, 1901, with repayment authorized to the brokers of the sum paid by them upon the purchase of the bonds, $103,000, together with interest on the 100 bonds already delivered.

Thus, the first bona fide, albeit poorly conceived plan for public ownership of the Denver Water plant, met an untimely end.

The Republican on July 9, 1901 in commenting on the situation said: "Something over $40,000 is in the city treasury in the interest fund as a result of the recent attempt to sell water bonds to secure money to erect a municipal water plant. When the last administration tried to sell the bonds it made an appropriation to meet the interest on the bonds. A levy of 1.09 mills was made for this purpose. There is, therefore, about $40,000 in
the treasury for an emergency which does not exist. The water bond question having passed in history."

The Thirteenth Session of the Colorado General Assembly - 1901- accepted a proposal, introduced by Senator John A. Rush of Arapahoe County for a new Article to be added to the State Constitution, designated as "Article XX, City and County of Denver, which was approved by Governor Orman on March 18, 1901.

This amendment was ratified at the general election held on November 4, 1902 by a vote of 59,750 for and 25,767 against.

Governor Orman proclaimed it as part of the fundamental law of the State on December 1, 1902, on which date the City and County of Denver came into corporate being. (See Colorado Reports, Volume 33, Page 12).

In accordance with the provisions of the above amendment, delegates to a charter convention were elected by the Citizens of Denver on June 2, 1903. The first session was held on June 9, and the work completed August 1, 1903.

Since the charter then proposed made party spoils scarce, through its short ballot and made public regulation of utility corporations possible, it was violently opposed by both the party machines and the public utilities, then serving the city, and was defeated through their efforts. The charter was submitted to the electorate on September 22, 1903, the raw work of the anti-charter forces was the worst in the history of the city, with ballot boxes stuffed, lists padded and illegal votes cast with a reckless disregard for law."

Two months thereafter on December 8, 1903 a second charter convention was elected in pursuance of the provisions of Article XX.
Sessions of this second group, composed of an entirely different class of men began on December 15, 1903. Its chief care was to eliminate from the defeated charter all those provisions that interfered with party, party spoils and public service corporations.

The work of this convention was completed on February 6, 1904. This second proposed charter was put to a vote on March 29, 1904 and was adopted by a vote of 18,487 for and 8,348 against.

In commenting on this charter election, marked as usual by fraud, the Republican on March 30, 1904 said it was adopted by a vote of less than one fourth of those who, under ordinary conditions, would have recorded their will on such a momentous issue. It was concluded that endless litigation must follow, which later proved to be the case.

The first election under the new charter was held on May 17, 1904 and the officers then elected assumed office on June 1 of that year.

Robert W. Speer became Mayor for a four year term, with a City Council consisting of a 7-man Board of Supervisors and a 16-man Board of Aldermen, all being elected for a two year term.

Litigation immediately followed and continued in one form or another until October 23, 1911 when the Supreme Court of the United States dismissed a petition for writ of error on that date, the result being to sustain the consolidation of city and county as previously decided on May 1, 1911 by the State Supreme Court. (See page 26, Municipal Code 1927 on this matter. Also see Chapter VI "The History of the Government of Denver with special reference to its Relations with Public Service Corporations." by King).

The Eighth General Assembly passed an Act, approved by the Governor on April 6, 1891, establishing a court with appellate jurisdiction only to be
called "The Court of Appeals". This court was composed of three judges to be named by the Governor, by and with the advice of the Senate appointed for six year overlapping terms. The purpose was to assist the 3-judge Supreme Court, in its work by reviewing judgments of record in all civil cases and in all criminal cases, not capital, referred to it by that court under specified conditions.

As earlier noted, the water rate case instituted by the City on May 21, 1897 and decided against it by District Judge LeFevre in July 8, 1898, was appealed to the State Supreme Court and dismissed there for lack of jurisdiction on September 19, 1899.

The City subsequently took its case to the State Court of Appeals where it lay dormant until that court passed out of existence on April 4, 1905, by being merged with an expanded seven man Supreme Court which took over all appellate litigation beginning with April 5, 1905.

The Republican announced on April 29, 1905 that the Supreme Court would soon take up for final adjudication, the old suit of the City against the Denver Union Water Company over water rates. The news item as then published went on to say: "The city was defeated in the lower court and took the case to the Court of Appeals, but the Justices of that court never took the time to go into it. Now that the courts have been consolidated, it is to be taken up."

The Supreme Court handed down its opinion in this case on July 5, 1907, more than 10 years after it had first been filed. (See Vol. 41, Colorado Reports Page 77).

Briefly the findings of the Supreme Court on the points raised were:
(a) That the lower court had erred in its findings with respect to the flat, but not the meter rates, that had been fixed by it and put into effect on November 1, 1985. (b) That the lower court decision on the second and third causes of action raised by the City with respect to alleged impurity and unwholesomeness of the water supplied, and poor pressure conditions was affirmed, the evidence on both of these issues having clearly supported the position taken by the Denver Union Water Company at the time of the trial. The opinion also affirmed Judge LeFever's ruling that the Company's rules and regulations were not unreasonable.

The net result therefore, was a victory for the city concerning its claim that the flat rates charged at the time did not comply with the provisions of Section 5 of the 1890 franchise; and a victory for the water company with regard to the franchise provisions of section 6 and 8 governing quality of water supplied and pressures maintained for fire protection.

In commenting on the schedule of rates under review, Mr. Justice Maxwell, who delivered the opinion of the Court said: "From an exhaustive and laborious examination of the evidence in this case, we arrive at the conclusion that the schedule of rates, with the exception of "meter rates", promulgated by the court in its decree, is not sustained by the evidence in the record and that with reference to more than two thirds of the items in the schedule there is no competent evidence in the record even tending to support the schedule of rates decreed by the court, and that from the evidence in this case, it is absolutely impossible to determine a schedule of rates which shall be the average of rates promulgated in the cities of Chicago, St. Louis and Cincinnati for the same service, using the words "for the same service" as meaning the items of service provided for and set out in "Schedule A", which
is a part of the contract of 1890 existing between plaintiff and defendant in this case."

Chief Justice Steele concurred in this opinion except that he was of the opinion that the provisions of Section 5 - the rate section - of the Ordinance of 1890 were enforceable.

This decision, leaving the highly controversial rate question unsolved, coming as it did shortly after the death of President Cheesman on May 31, 1907, caused his successor, David H. Moffat and Associates much concern over the future of the privately owned and operated water utility.

Not only was a fair rate of return upon the invested capital threatened, but much of the investment itself seemed to be in jeopardy by reason of the growing movement for public ownership of the water system which unfortunately had long since become a political as well as an economic issue.

When interviewed by a Republican reporter on July 5, 1907, about the possibility of the city buying the water plant, Mr. Moffat was quoted as saying: "We are not making any advances in the matter, but if the people want to buy the plant at a fair valuation, I believe our people would be willing to accept."

"The contract which will expire in about 3 years provides that the people may vote on the question."

"We are perfectly willing to go on, but we are not inviting turmoil and dissension. We do not want to give the plant away, but our interest is to have the citizens of Denver satisfied. We mean to be honest and fair with them. If the city does not want to vote on the question, it has authority
to condemn the plant. Of course, that would also mean paying a reasonable price for it."

"The entire Board of Directors is in accord with my views. Mr. Cheesman was of the same mind as myself about the matter before he died."

Mayor Speer lost no time in sounding out the water company officials on the problems involved. He wrote President Moffat on July 9, 1907 outlining the situation as he saw it, stating that, before the matter could be put to a vote of the people, it would be necessary to know, (a) what the plant was worth and could be purchased for, (b) its physical condition, cost of operation and needed improvements and (c) at what rates the company was willing to make in consideration of a new franchise.

The Mayor wrote further saying that a detailed report made by competent and trustworthy appraisers would give the public the desired information.

Finally, he suggested that, if the company was willing to take the matter up along the lines suggested, he asked to be so advised, so that appraisers could be speedily appointed and the entire water question settled by the voters at the 1908 spring election.

President Moffat replied at great length to the Mayor's request of July 9, two weeks later on July 23, 1907, with the following statements abstracted therefrom: "The company not only recognizes the advantage to be obtained in determining in a business way a strictly business proposition by separating it from political controversy at as early a date as possible, but also believes that this can best be accomplished at a special election to be held for the purpose of considering only the matters embraced in your
proposal, which election should be free from all political interference,
and which special election in order to accomplish these desirable results
should be held as speedily as possible and before the city election of May
next."

In conclusion, Mr. Moffat wrote: "No doubt it will require con­
siderable study and investigation to determine upon the course necessary
to be adopted in submitting the matter to the people in accordance with the
law and the contract and in this behalf, I beg again to assure you that the
company stands ready to do whatever may be necessary on its part to secure
this object and that its officials will cooperate in ascertaining what must be
done and the method that must be employed in making the submission to the
people."

The negotiations started in July by this exchange of letters between
Mayor Speer and President Moffat resulted in the passage of two ordinances,
one, regarding appraisement of the water plant for possible sale to the city
and two, establishing a temporary schedule of rates to be used until the
appraisers had completed their work.

Ordinance No. 163, Series of 1907 approved by Mayor Speer on
October 2, 1907 provided for the appraisement of the water plant in advance
of the time named in the 1890 franchise; and Ordinance No. 164, series
of 1907 approved by the Mayor on the same day set up a schedule of flat
rates on a horizontal 10 percent reduction from the "Leaflet" rates then
in use. This reduced schedule was to take effect on November 1, 1907
and to continue until the appraisers appointed under the provisions of
Ordinance No. 163 had determined otherwise. The actual agreement
between the city and the Water Company providing for this work was dated October 10, 1907.

No time was lost by either party in selecting its appraisers with the Republican announcing on October 18, 1907 that the Denver Union Water Company had chosen Charles L. Harrison of New York and John R. Freeman of Providence, Rhode Island as its representatives on the Board. Eleven days later it was announced that the city had selected its appraisers, Frederick B. Stearns of Boston and Minard L. Holman of St. Louis, with the fifth and last member, Allen Hazen of New York, chosen by the other four engineers to complete the membership of the Board.

All of these men were leaders in their profession and approached the problem in a business-like manner after arriving in Denver on November 8, 1907 to begin their work.

Having viewed the premises and examined the property to be appraised, and heard evidence and made inquiries with reference thereto, and having heard such matters as were brought to its attention by the parties to the contract of October 10, 1907, and such other evidence as was determined should be considered affecting the value of the premises and the property belonging to or used by the Denver Union Water Company, the Board of Appraisers, released its findings in a report dated March 18, 1909.

The sum of $14,400,000 was therein determined and fixed as the fair cash value of the property, business etc. divided and distributed as follows: Physical plant, including land and structures, with interest during construction, engineering, contingencies and general expenses, after depreciation,
$10,354,075; water rights owned or used, $2,845,925; Business and going concern value, $1,200,000.

The appraisers also found that the fair cash value of the mains, pipes, pumps, hydrants and valves there used by the Denver Union Water Company, but owned by the city and County of Denver was $315,000.

In signing this report, Mr. Stearns, one of the representatives of the City and County of Denver on the Appraisal Board, stated that he assented to all parts of the report as made except the valuation given therein of the water rights owned or used by the Denver Water Company.

At this same time, representatives of the City and the Water Company were informed that no three members of the Board could agree on a schedule of rates to be effective for a period of 20 years, if the electors of Denver decided to grant the Water Company a new franchise at the expiration of the existing contract due to expire in April 1910.

However, with Messrs. Hazen and Stearns in the minority, the other three members of the Board resubmitted the schedule, known as the "Leaflet" rates to take effect on May 1, 1909 and to continue until the franchise expired in 1910.

This schedule was 10 percent higher for all but lawns, meter and irrigation rates which remained the same, than the temporary one that had been established at the time the agreement of October 10, 1907 was signed.

In writing to Mayor Speer about the rate question, Mr. M. L. Holman, one of the City's appraisers, later said: "The difficulty which we encountered was that a schedule of water rates which would give a fair return on the property
at the beginning of the 20 year period, would in all probability bring in a return that would be unfair in from 5 to 7 years, and would inside of 10 years, bring about a repetition of the strife and contention that has occurred in the past. As the Board had no control (and very properly so) over the terms of the franchise, they could not devise a flat rate schedule that would be fair for 20 years. In short, the ordinance imposed a duty on us which we could not perform and our only course was to decline an impossible task."

The overdue appraisal of March 18, 1909 received a uniformly poor reception from the officials and citizens of Denver when published.

President Cheesman of the water company was keenly disappointed because he thought the appraisal entirely too low; Mayor Speer felt that the total of $14,400,000 was about $2,000,000 too high, but was free to admit that if the City was going to own its water plant, it would not get it for any lower sum in years to come.

Advocates of municipal ownership, lead by Senator T. M. Patterson, owner of the News and Attorney, John A. Rush, of Home Rule fame, opposed it because they believed that an entirely new water plant constructed as a gravity system, capable of supplying a city of 500,000 people could be built for $8,262,000 as per the sworn statement of City Engineer John A Hunter, or for approximately 8 million dollars as sworn to before the Board of Appraisers by A. L. Fellows and Hinderlider.

On the other hand, a group of 45 representative business men of the city after studying all phases of the problem for 9 months, under the name of the Water Consumers Protective Association, released a report on February 11, 1910, sustaining the appraisers valuation of $14,400,000 with but one
dissenting vote.

With both President Cheesman and Mayor Speer being in full sympathy with the stated objective of the committee, namely: to seek a business solution of the water problem, all records and other pertinent information bearing on the subject had been made available to it.

The Republican on October 29, 1909 in reporting on the plans of the Municipal Ownership Party for the spring election, stated: "Water is the paramount issue, all else is to be made subservient to this one topic. Amendments to the charter are to be put forward and in them the water question is bound up. If anything should be undertaken between now and the May election respecting a settlement of the water question, the municipal ownership party and affiliated organizations will throw themselves in the path. Not until the Charter has been amended can the water question enter the arena."

"Other amendments to the charter are aimed at the city administration and provide for the recall and initiative referendum reforms which will give considerable aid to the water movement."

The possibility that any agreement entered into for the sale of the water plant to the city might be indefinitely held up was revealed in a news item published in the Republican on April 10, 1909.

The statement was then made that on the day before Chief Justice Steele of the Colorado supreme Court had ordered a writ of error issued to the United States Supreme Court in the case of C. H. Venner, et al., versus The Denver Union Water Company.

It seems that clerks had been busy for about two months transcribing the record in this case and that it would be sent to Washington by express in a
few days. The record was an immense one which had a valuation of $50,000 placed upon it.

It will be remembered that this suit had to do with irregularities claimed in the receivership proceedings held prior to the time the American Water Works Company property was combined with that of the Citizens Water Company to form the Denver Union Water Company.

Attorneys representing the municipal ownership party and affiliated groups began drafting several charter amendments late in 1909 for submission at the 1910 election. About this time also, the Denver Union Water Company reversed its long established policy of keeping its affairs to itself, and began a publicity campaign with free maps and literature telling about its plant and operations. This effort drew sarcastic comments from the News-Times on December 12th in which it was stated that the people would not be deceived as to the value of the dilapidated and antiquated plant it hoped to sell to the city at an inflated figure.

Domestic Water Supply

The excessive amount of 8.24 inches of precipitation recorded in the Denver area for April 1900 was responsible for the partial failure of the Castlewood Dam on Cherry Creek and the washing out of the first Cheesman Dam on the South Platte River.

A drouth period of many months followed with no reserve storage capacity to fall back upon, the supply of direct stream flow water available for both municipal and irrigation use, totally inadequate as it was, soon became the source of controversy and litigation between the many claimants to it.

By July 1901, the Denver Union Water Company was appealing to its
customers to stop wasting water and seeking the help of the Mayor in enforcing sprinkling regulations.

In discussing the situation on July 19, Chief Engineer Harrison was quoted in the Republican as saying: "No matter how high a pressure we put in the pipes, it would be impossible to maintain an average pressure with 20,000 hoses drawing water from the pipes constantly. The statement that there is a shortage of water is not correct for we have plenty, but there is too much being taken out all the time to maintain the proper pressure. We might put more pressure on the pipes but that would break the pipes and ruin the plumbing near the pumping stations.

"If the people will only observe the rules for the use of water, things will be allright. A shortage of water is of course, one to be avoided in view of the fact that there is little prospect of rain, but there is no danger of a water famine in this city."

On June 10, 1902, President Cheesman when asked if his company would sell water out of Lake Cheesman, then under construction, to the High Line Canal said:

"I should certainly be glad if we could turn some water down to the High Line Ditch and I am sorry that there is a prospect that the farmers under it will have to see their crops dry up. If the reservoir was completed, perhaps we would be able to let them have some water. But as it is, we must look out for our own supply this summer and have none to spare."

The situation rapidly became worse, until on July 18, it became necessary for the acting Mayor to issue a proclamation calling upon all good citizens and water consumers to take extraordinary precautions in the use of
water for domestic purposes as well as for irrigation.

Three days later, District Judge Johnson issued an injunction against the City of Denver, The Denver Union Water Company and others prohibiting any interference with farmers holding priority rights on the City Ditch.

On July 26, 1902, the Republican announced that Supervisor Haven had introduced a bill to prevent the waste of water by limiting sprinkling hours to 6 to 8 P.M. a day for the period of the emergency. It was also stated that the planned inspection trip of the City Council to examine the Cheesman supply and the flow in the South Platte River would start on that day.

The following day the Republican ran a front page illustrated article headed, "Alderman Kelly killed, and Supervisor Lindquist badly injured as a result of a runaway near Wellington Lake". A number of other members of the party were also injured with the water shortage inquiry brought to a halt as a result of that tragedy.

At this time it was announced that the daily domestic water supply for Denver came from the following sources: Combined three underground galleries, 19,158,189 gallons; Platte River surface water, 26,140,600 gallons, storage water 3,734,341 gallons, a grand total of 49,033,130 gallons.

On August 2, 1902, it was stated that the water company had secured a 50 day supply of water by purchase from the owners of Lake George, with a deal on for Nevada Ditch water as well. This was immediately followed by negotiations for Lake Wellington water which was purchased as a reserve supply.
On August 10th the Republican noted that 5 million gallons of water a day was being used out of Marston Lake.

The water situation continued to be critical for all concerned until a general storm relieved it on September 20, 1902. However, the extremely cold weather of December of that year caused the statement to be made that Denver was then in much greater danger of a water famine than at any time during the preceding summer.

The water company said it could get by with the help of the water held in distributing reservoirs, if the people would not throw away from 10 to 20 million gallons of water every night to prevent freeze up of services.

An editorial printed by the Republican on Christmas Day 1902 said that no better news could come to the farmers of Colorado than that heavy early snows were being packed in great masses in the mountains, thus insuring a plentiful supply of water for irrigation in the next season.

In an attempt to clarify the law with respect to water used for any beneficial purpose other than irrigation, the General Assembly of Colorado at its 14th Session passed an Act, concerning water rights which was approved on April 11, 1903.

This Act provided that decrees for water used for any beneficial purpose other than irrigation could be established by petitioning the District Court having jurisdiction, in the same manner and by complying with the procedure and the requirements of the law applicable to the adjudication of water rights for irrigation purposes.

The first action brought under this new water right law was started in the District Court of Chaffee County by the Iron Silver Mining Co. of Leadville.
In commenting on the result of that case, the Republican on July 29, 1904 said: "This means that municipalities providing their own water and water companies supplying cities and towns throughout the State have no valid title to the water used until they have had their priorities adjudicated under the new law. This affects The Denver Union Water Co."

A committee of ditch owners called upon the State Engineer on May 6, 1903 for a consultation regarding water priorities. This committee informed State Engineer Carpenter of their uneasiness and fear that their supply would be curtailed by the filling of Cheesman Lake. Water Company officials were called in and the ditch owners were told that no water was being taken from the river and had not been taken for some time. They were further told that the company intended to comply with the law and not take water from the stream during the irrigating season.

Again on May 27, 1903, water consumers representing various individuals and ditch organizations, called upon the Governor complaining of unfair treatment by the Denver Union Water Company with respect to storing water in Lake Cheesman. They claimed that affidavits had been obtained to show that between April 27 and May 17th, a rise of six feet was recorded in the lake. It was then stated that the Governor would be asked to remove the State Superintendent of Irrigation and the Water Commissioner of District No. 8 from office for their irregular conduct in the matter. On May 29th, the Republican reported that the controversy with the water company had been settled for the time being.

In December 1903, the water company, in conformity with its policy of acquiring irrigated ranches located on the South Platte River above Denver for the sake of their valuable water rights, purchased the DuBois...
ranch of 600 acres which had priority rights totaling 17 cubic feet of water a second. This was the old Frank Archer ranch and brought the total of ranch land owned in the area up to 2250 acres with attached water rights claimed amounting to 32 million gallons a day.

Among the numerous actions brought against the water company in 1904 for failure to deliver water as agreed was one brought by the Army charging that water owned by it was being diverted from Harriman Lake to Marston Lake instead of to Fort Logan. The injunction requested was denied by Federal Judge Riner on March 14, 1904. The suit resulting from this decision was never brought to trial and was dismissed in July 1906.

Again, a group of farmers brought suits in the District Court at Golden on March 18, 1904 to prevent the water company from storing water in Lake Cheesman. This case was decided in favor of the Water Company on April 5, 1904 by Judge LeFrance, the ruling being that the company had the right to store at Cheesman during the non-irrigating season, or between November 1st and April 1st each year, with the storage of "flood" water permitted at other times when available.

Elaborate new plans were filed in the State Engineer's office for the Cheesman Reservoir on July 7, 1904. This filing was made in order to bring the Company's claims respecting the water in this reservoir up to date with the State's latest laws and regulations.

At the annual meeting of The Denver Union Water Company, held on November 9, 1904, Federal Judge Moses Hallett resigned as a Director, the reason given being lack of time to give the position the attention it should have. Mr. William P. Robinson, Manager, was then elected to fill the
vacancy. Judge Hallett retired from the Federal Bench in April 1906, terminating a brilliant public career of 40 years.

The Denver Republican announced on December 5, 1904 that, at a conference held on December 3, 1904, the famous controversy and suits between the Colorado and Southern Railroad Company and the Denver Union Water Company arising out of the Cheesman Dam flood of 1900 and the counter suit instituted for alleged overcharge in freight transportation, had been settled out of court satisfactorily to each corporation, but the terms of the compromise were not made public at the time.

Precipitation for the year 1904 and for each year, except 1907 for the remainder of this decade, was above average. This favorable circumstance, combined with the completion of the Platte Canyon Reservoir, the availability of water from Lake Marston and the approaching completion of the Lake Cheesman project, brought an end to the threat of a water famine in Denver.

The taking of testimony before Referee C. P. Gehman, stenographer in District Judge Bailey's Court at Fairplay, Park County, with respect to proving up on the Denver Union Water Company's water rights at Cheesman Lake was begun in Denver on June 2, 1905. However, it was not until May 19, 1913, eight years later, that District Judge Charles Cavender, of the Fifth Judicial District, setting for and at the request of District Judge Wilkin of the Eleventh Judicial District, entered the decrees for Lake Cheesman with priorities dated June 27, 1889 and September 24, 1893 as already noted.
City Ditch

Most of the individual users of water for yard purposes in Denver proper, had by the beginning of this decade, turned to the pipe system for relief, leaving only the Country Club, the City Parks and a few isolated users dependent upon the ditch after that time. On the contrary, a considerable number of farmers whose property was contiguous to the ditch located south of the city limits, continued to take water from it under contract.

Legally, the City Ditch supply seemed to be a preferred one, over all other ditches on the South Platte river, by virtue of its priority No. 1 for 30 cubic feet of water a second as of November 30, 1860.

However, the State Engineer about this time, construed the law as giving water under that priority first to users producing crops, after which, if any remained, it might be used for lawn and tree irrigation within the city. This ruling resulted in the City Parks getting the worst of the deal in time of scarcity.

Beginning in 1901 and continuing on through 1903, the record shows almost constant friction between city officials and the State Engineer. This was brought about largely by a ruling of the State Engineer to the effect that the city was not entitled to water for storage purposes in the City Park lakes until after all needs for direct use by farmers had been met.

A news item in the Republican, dated April 25, 1903, told of a conference having been held between Mayor Wright and State Engineer Carpenter, at which time the matter was compromised with Mr. Carpenter agreeing that the Parks were entitled to their share of the senior priority amounting to 30 cubic feet a second. It was noted in this same release that
an ordinance had been introduced in the City Council to place the ditch
under control of the Park Commission.

Ordinance No. 54 Series of 1903 was thereafter passed and approved
by the Mayor on June 1, 1903. This ordinance gave the President of the
Park Commission authority to appoint a City Ditch Superintendent with
jurisdiction over the ditch between the City limits and the Headgate.

This action, transferring control of that portion of the city ditch
lying outside the city limits from the City Engineer to the Park Commission
was taken at the request of the City Engineer who had personally found it
impossible to deal fairly with the farmers in the Petersburg area. Within
two weeks, the lakes at city park were reported to be full, with that portion
of the ditch inside the city receiving its full share of water.

The temporary injunction entered by District Judge Frank T. Johnson
on July 22, 1902, restraining the city from taking an unreasonable amount
of water from the City Ditch to the alleged detriment of the farmers living
along it, was modified by him after a hearing held on August 12, 1903.

The order there issued gave the Park Commission jurisdiction over
the water in the ditch with control of the measuring boxes in it. This order
provided that the Commission should have entire charge of the City Ditch
with authority to regulate the distribution of water according to the amount
demanded and paid for under individual contracts. It further authorized the
City and County of Denver to receive payment for all water bought and used
by consumers along the ditch without a written contract between the parties.
The long standing controversy between the City and Farmers taking water from the ditch seems to have shifted in 1904 from water per se, to the rates charged for it by the Park Commission.

A suit was brought by Samuel W. Brown, et al, in Judge Johnson's court in the spring of 1905, protesting the rate of $2.00 an inch which had been raised from the former price of $1.25 an inch. The case was heard in June and decided against the Park Commission on July 24, 1905. At that time the Court declared that the $2.00 rate was exorbitant and without authority. It held that the rate of $1.25 an inch as established by the County Commissioners was a fair one and should be maintained.

The District Court decree directed that defendant should deliver water to plaintiff, during a specified season, at the rate of $1.25 per inch; it was stipulated by the parties that plaintiffs might deposit in court $2.00 for each inch desired during that season, that $1.25 should be withdrawn by the city, and the residue of the deposit remain to answer the final determination of the cause on appeal.

An appeal was duly taken to the Supreme Court by the City and County of Denver. In the spring of 1907 a writ of supersedeas was applied for, but denied on April 23rd. of that year.

About this time, a number of conferences were held by the Park Commission with a committee of farmers over the rate to be charged during the 1907 season. The result was a compromise offer of $2.00 an inch to be fixed for a 5 year period of time.

This offer was accepted by the farmers committee, but when asked to sign up on that basis they refused to do so. Angered at this evidence of bad
faith, the Park Commission thereupon fixed the rate at $3.00 an inch
and instructed its Superintendent to cut off the water supply to all consumers
in default of payment at that rate on and after July 10, 1907. It was stated
that it was necessary to have a $3.00 rate in order to cover the cost of
operation and maintenance and to give the City a fair return upon its $60,000
ditch investment.

In fixing the rate higher than that set by the County Commissioners,
as earlier noted, the Park Commission felt that it was in a strong legal
position as a result of the Supreme Court decision handed down earlier in
the year in the Montezuma County - Montezuma Water and Light Company case.

In that decision the court held that the County Commissioners, "under
the guise of regulation could not set a rate so inadequate as to practically
result in confiscation of property, or to take property without due process
of law". (See Colorado Reports, Vol. 39, Page 166.)

That the differences of opinion between the leaders of the 150 or
more farmers and gardeners using city ditch water on the one hand and the
Park Commission on the other remained unsolved, is indicated by the fact
that a referee was appointed by the District Court to determine which of the
claimants to water in this ditch had priority and which ones did not.

The Republican on March 7, 1908 reported that the referee, M. Ward
Beery had filed his report giving the amount of water to which the users were
entitled and the persons, that in his opinion, were not entitled to water
under priority rights. In brief, his findings were that the city as successor
to the Platte Water Company had the priority to the water it had been claiming
ever since the Samuel Brown litigation had been begun.
These findings were subject to court approval before coming effective. Although the court's subsequent action is not available, as well as the complete referee's report referred to, later developments indicate that the position of the referee in the matter was upheld.

It was reported on March 11, 1908, that an agreement had been reached between the Board of Public Works and the Park Board providing for the city ditch to be piped at Seventh Avenue at Downing Street with the expense to be equally divided between them.

"Municipal Facts" in its issue of June 12, 1909, ran a story on the history of the City Ditch which was prepared by A. L. Livingston, its Superintendent at the time.

Among other interesting statements in that story was the one that said the ditch was supplying water to something over 1,000 acres of farm and garden tracts; and from which the city received an income of about $2,600 a year.

The need for a supply of storage water, to supplement the intermittent stream flow available for diversion into this ditch under its priority No. 111 dated January 18, 1879, has been commented upon in the previous chapter.

Angry and disheartened by the prospect of again losing their crops, the farmers, depending on the High Line Canal for irrigation water, in July 1901, posted a notice on the headgate saying: "Any person attempting to close this gate will be filled full of lead." At that time, temporary relief was provided by the Denver Union Water Company voluntarily shutting the water off from its farms, thus making 75 second feet available to the ditch for a few days time.

Nevertheless, it was announced on July 23, 1901 that the State Engineer had ordered ditches in District No. 23 closed, the South Park Area, and that
no more water was available for the High Line Canal in District No. 8.

Again, with even less water available in 1902 than in 1901 by reason of the extremely severe drouth conditions of that year, the farmers dependent upon this canal for water faced disaster.

In commenting editorially on the High Line Ditch situation the Republican on November 26, 1902 said: "Last summer the farmers living under the High Line Ditch received practically no water for their crops, and what they did get was of no value to them."

"The construction of a great reservoir such as Lake Cheesman for city use has emphasized the importance of a similar one for the benefit of the farmer."

"Disastrous conditions of the last season may be repeated in the future unless, profiting by this lesson, the farmers depending upon this ditch, provide adequate storage for themselves."

Although run off conditions were somewhat improved in the spring of 1903, with ample water flowing in the ditch by June for the first time in two years, the Republican noted on June 20 that serious thought was being given by the farmers to the formation of an irrigation district to be created under the authority of Chapter 87, Session Laws of 1901.

The first abortive attempt to do this was soon begun and a notice given to the Board of County Commissioners of Arapahoe County stating that on July 25, 1903 a committee would present to it, for proper consideration and action, a petition for the organization of the High Line Irrigation District.
This petition was favorably acted upon and the Board of Directors of the Irrigation District proceeded to develop their plans for the construction of a reservoir on the South Platte River below Lake Cheesman.

Opposition to the proposed bond issue of $1,100,000 dollars to be used in financing the project, resulted in a suit being filed by Attorney McKinley, representing a Land Owners Association, in the District Court of Littleton.

On September 28, 1905 the Republican announced that the court had validated the bond issue, whereupon it was stated that the case would be appealed to the Supreme Court.

This was done, and Attorney A. B. McKinley argued his case before that court on January 10, 1906.

The case, Ahern et al vs. the Board of Directors of the High Line Irrigation District was decided on April 1, 1907 with Justice Campbell writing an opinion, reversing the judgment of the lower court; and remanding the cause with instructions to vacate the decree and enter a new decree in validating all proceedings of both the Board of County Commissioners for Arapahoe County and that of the Irrigation District.

This four years of litigation ended with all work suspended and little or no progress made during that time.

In commenting on his success in getting the proposed High Line Irrigation District voided by the Supreme Court, Mr. McKinley hastened to explain his position in the matter. He was quoted at length by the Republican of April 7, 1907 at which time he reviewed the problems in some detail. Among other things, he stated that the District proposal was to buy the High Line Canal for $375,000 from the English Company and to build a reservoir below the Cheesman Dam for $725,000.
After further comments on the general subject of irrigation and recent court decisions affecting it, Mr. McKinley casually said that he would be glad to hear from or meet anyone interested in a great big and practical High Line Irrigation District reservoir, which would not only enrich the agricultural area but would give beautiful suburbs to Denver, the coming great city of the west.

On May 10, 1907, the Republican announced that a meeting of persons owning land under the ditch would be held that day relative to water rights and related matters.

It was then proposed to reorganize into a mutual district with subscriptions being called for in the amount of $60,000 to purchase the Antero reservoir site which had been secured some years before by C. C. Richardson and B. H. DuBois.

This news item also noted that a meeting had been called for May 14th at which time English Company officials would discuss a sale of the Canal with a group of speculators who were also interested in the ditch.

At a meeting held in the Windsor Hotel, owned by the "English" Company, on May 29, 1907, it was decided to organize the High Line Reservoir Company for the purpose of acquiring the Lost Park and Antero reservoir sites. At that time 10,000 acres of land were subscribed out of the 25,000 acres necessary to make the purchase.

Among those who subscribed were S. J. Gilmore, President of the High Line Canal with 2500 acres; Brad DuBois, a heavy land holder under the ditch and Judge S. A. Osborn, representing Thomas F. Walsh.

Planning along the lines indicated progressed to the point where it was said that the necessary money had been raised by July 31, 1907.
It is to be noted that this scheme was promoted by men associated with the English Company, who expected to add 5,000 acres of idle land to the 20,000 acres already under the ditch with water rights. The news item of that date concluded with the statement that those concerned in the ditch company expected the plans then under way would do away with all friction and litigation on the High Line System.

On August 22, 1907 it was announced by the Republican that former Senator A. B. McKinley's proposition for a new High Line Irrigation District to irrigate 60,000 acres was the subject of much comment with David H. Moffat indicating a deep interest in it, conditionally leading the list of subscriptions with $2,000. It was believed by many prominent Denver citizens that his plan was the only practical and businesslike one that had so far been made to augment the water supply and bring the land under the ditch up to expectations.

The long cherished plans of some of the stockholders of the High Line Ditch Company to secure the Antero Reservoir Site were upset when it was announced on September 28, 1907 that a syndicate of Denver and Greeley men had purchased the Antero and Lost Park Sites for $55,000 from the High Line Reservoir Company, the original Richardson project of 1891-1892.

This surprise move resulted largely from the failure of some of the High Line Ditch Company stockholders to complete the negotiations begun earlier in the summer on the substitute McKinley plan.

It was claimed that the pool of Greeley and Denver men bought the property for purely speculative purposes.

Their scheme was to sell water to farmers under the High Line,
Burlington, Fulton and Bucker ditches. It was also claimed at this time that, as both reservoir sites were above Lake Cheesman, litigation was bound to result.

Mr. McKinley refused to give up on this ditch development, however, claiming that the above purchase did not necessarily hurt his proposed plan for an enlarged irrigation district.

At this time, the Republican stated that some confusion had arisen over the Antero transaction through the similarity of names between the Reservoir Company and the High Line Ditch Company. It was said that there was no connection between the two, although some of the stockholders of the Ditch company did own stock in the Reservoir company.

On October 1, 1907, Mr. McKinley wrote a long letter to Mayor Speer seeking a $10,000 contribution from the City, which, with $15,000 to be raised from private citizens was to be used to finance preliminary expenses for his project.

After considerable study, Mayor Speer, wrote the Treasurer of the High Line Improvement Fund† on October 14, advising him that he was much impressed by the importance of the proposed enterprise to the City and County of Denver and would therefore recommend an appropriation of $10,000 for the McKinley plan in his 1908 budget.

The Antero and Lost Park Company was incorporated on October 19, 1907 with a capitalization of $2,000,000. The group behind it consisted of 33 men, 19 of them from the Greeley area with the rest from Denver. It was announced in the Republican of October 20, 1907 that water for late irrigation would be provided for 75,000 acres of land by the construction of the Antero
reservoir, the site for which had been purchased some three weeks before.

The contract for building the Antero Dam was let to Camfield and Shields of Greeley on April 14, 1908 at an estimated cost of about $125,000.

The dam was completed on October 30, 1909 with the Republican in its issue the next day describing the project in part as follows:

"The dam is 4,200 feet long, 16 feet wide at the top, 180 feet wide at the base and 47.5 feet high. The reservoir created by it covers an area of 4,885 acres and has a storage capacity of approximately 85,000 acre feet."

The water is to be used to supplement the supply of the High Line Ditch and applied to land lying southeast, east and northeast of Denver. Sufficient water is already stored to furnish one acre foot for each acre of land contracted for under the High Line Canal.

This great project has been carried out entirely on local capital. The Antero and Lost Park Reservoir Company is a closed corporation composed of Denver and Greeley capitalists. No stock has been offered to the public and there has been no bond issue.

At this time, H. G. Clark was President and Arthur D. Wall, Secretary of the Company.

Earlier it has been stated that the dam would be an earth fill one with a concrete slab face.

The Antero Reservoir capacity is given as 85,837 acre feet on the map filed with the Register of the United States Land Office at Leadville on September 12, 1911. The high water line survey depicted on that map was stated to have been begun on August 1, 1910 and completed on October 15 of that year.
made the second beginning*. (Reservoir priority No. 4 of District No. 23 for 85,564 Acre Feet as of October 8, 1907). (See Colorado Reports, Vol. 65, page 161).

"In a series of decisions, beginning with Wheeler vs. Northern Company, Colorado Vol. 10, the Supreme Court of Colorado held that the High Line Canal was only a carrier ditch and that the water rights were owned by the farmers under it, the sole function of the Northern company being to operate the canal and, for a profit, to collect annual charges.

"By 1909, when the Antero Reservoir was ready to operate, The Platte Land Company, Limited, had contracted to furnish water to a considerable acreage of land under the High Line Canal. Nevertheless, the Platte Company itself owned a considerable acreage under the canal which it had for sale.

In 1909 The Antero and Lost Park Reservoir Company purchased this land owned by the Platte Company and put on a campaign to sell such lands to settlers. In making sales of such land the settlers were offered the land with High Line Canal rights, and were also offered, under separate contract, Antero water rights.

"Antero Reservoir had been built for an estimated capacity of 84,000 acre feet, but the concrete surfacing of the dam did not stand up and the State Engineer only permitted about 28,000 acre feet to be stored in the reservoir. In later years, the State Engineer has raised this amount to 33,000 acre feet as being the quantity of water which can be safely stored, and that is the present 1935 rated capacity of the reservoir.

"When the campaign of the Antero company to sell lands under the High Line Canal ceased, there were outstanding approximately 29,000 acres of High Line Canal contracts and approximately 11,000 acres of Antero Reservoir contracts.
The canal was built and has always been owned by the Northern Colorado Irrigation Company; but the Northern Company has, in turn, been owned by three entirely unrelated organizations: (a) First by the Platte Land Company, Limited, known as the English Company, (b) second, by the Antero and Lost Park Reservoir Company and (c) Third, by the City and County of Denver.

"Some years after the High Line Canal began to operate, experience demonstrated that its priorities of 1879 were so late as to furnish merely a "flood water" supply which, although a considerable annual yield, was intermittent from month to month and from year to year. Accordingly a Denver lawyer named Richardson, who had some land under the High Line Canal, started an enterprise to obtain a supplemental reservoir supply and actually began the construction of Antero Reservoir. Mr. Richardson, however, died about the time of the panic of 1893 and his efforts came to an end.

"In 1907, a number of irrigation developers from the northern part of the State headed by Horace C. Clark (father of Paul Clark) were looking for a chance to make an irrigation development and found the Antero Reservoir project and bought the rights of Mrs. Richardson, widow of the man who started the work.

Mr. Clark and his associates formed The Antero and Lost Park Reservoir, which built Antero Reservoir, beginning about 1907.

The work of the Clark interests in constructing Antero Reservoir was not primarily to help the High Line Canal, but was for the purpose of building a custom reservoir to sell water to such customers as might be available. The Supreme Court has held that the Antero Reservoir priority did not relate back to the Richardson beginning but only to 1907 when the Clark people
During the time the Antero dam was under construction, negotiations extending over nearly a year's time for the purchase of the High Line Canal by the Antero and Lost Park Reservoir Company for the sum of $600,000 were satisfactorily concluded and the fact announced by the Republican on February 7, 1909.

This sale, made public only a few days after Mr. McKinley's death on January 24, 1909, produced results just the reverse of what the Senator had worked so long and valiantly for, namely, to have the backers of the canal project buy up the Antero and Lost Park reservoir sites.

The papers completing the deal were signed on May 13, 1909. A new company known as the Antero Land and Irrigation Company took over the canal and the reservoir companies at this time at a combined cost to it of $1,500,000.

The owners of land along that canal immediately began to devise ways and means of securing additional water rights and soon organized an irrigation district of 60,000 acres to be known as the Denver Suburban Irrigation District, with the Antero Land and Irrigation Company organized for the purpose of issuing the necessary bonds to finance the proposed improvements, including the purchase of three additional reservoir sites along the line of the canal adding 15,000 acre feet of storage so that the total storage capacity of the combined project would be raised to over 95,000 acre feet. R. A. Morrison was the President of this new company, with A. D. Wall, Secretary-Treasurer.

In summing up the legal history before the consolidation of the High Line and Antero Companies, Malcolm Lindsey, Assistant City Attorney on February 9, 1935 wrote:

"Construction of the High Line Canal was begun January 18, 1879 and finished a few years later."
In other words, the Antero Company found that individual sales of its Antero Water contracts were going slowly and began to look for a wholesale customer. This led to the formation of an organization to extend the High Line Canal. The land under the Extension Canal was organized in 1909 into the East Denver Municipal Irrigation District. The district contracted with the Antero Company to purchase the Antero Reservoir (subject to the individual water contracts then outstanding).