The Historic City Ditch

By Larry Borger
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If one were to try to identify the oldest surviving relic of the Denver metropolitan area’s pioneer days, what would it be? If it were a physical object, where could it be found. If it could be shown to have had a significant role in stimulating the economy of the whole state and helping convert the nineteenth century “dry, treeless, grassless, bushless” (1) prairie village into the green, lush “Queen City of the Plains,” what could it be? The thesis of this essay is that a lowly irrigation ditch, the City Ditch, is all these things and more. The Ditch continues to run water to this day!

The first attempt at digging the Ditch was begun before Colorado was even a territory. The completed Ditch diverted water out of the South Platte River near its confluence with Plum Creek in Douglas County at what is now Chatfield Reservoir. It ran north, across the prairie for 26 miles, through what are now, Littleton, Englewood, Washington Park, the Denver Country Club and City Park. Its main target was “Brown’s Bluff,” today’s Capitol Hill, 118 feet above the dusty little collection of buildings at the confluence of the South Platte and Cherry Creek. The Ditch was 4 feet deep and 6 feet wide across the bottom and 26 miles long, an engineering feat in its day. It was dug between 1864 and 1867. (2)

The City Ditch was a significant feature of Denver and the Front Range Colorado’s earliest settlement. It is old. Louisa Ward Arps, historian and author of Denver in Slices, has said, “The City Ditch is the oldest working thing in Denver.” (3) The noted Colorado historian, author, and tour guide of historic cemeteries and taverns, Dr. Tom Noel, has agreed. “I cannot come up with an earlier relic of Denver’s past.” (4)

Before 1858 there were no “civilized” men permanently living or working in the South Platte River Valley. Denver pioneers said that in the next year, following rumors of gold strikes, as many as 150,000 people headed across the prairie in the “1859 Colorado Gold Rush.” (5) Not every 59’er became a prospector or struck it rich. Some were “go backs” who gave up and went “back east.” Some were farmers looking for free arable land to grow crops and orchards to feed the miners. Some were businesspeople and city boosters who saw the opportunity to create a town as a supply point for the territory.
One group of pioneers, including William Byers, founder, and pioneer editor of the *Rocky Mountain News*, saw the need for water in the arid climate and conceived of a ditch to bring water from the South Platte River to the new community. (6) A ditch could also furnish irrigation water to farmers along the route. In November of 1859, while the “Rush” was still going on, Byers’ group organized the Capitol Hydraulic Company. Company officers then had to return to Kansas to register the incorporation because Colorado would not become a Territory until two years later. The Kansas Territorial Legislature recognized the company’s incorporation on February 21, 1860. (7) Denver would not officially become a City until November 7, 1861.

The Company began digging the Ditch, in the spring of 1861, commencing at a diversion point which was 1/2 mile south of present-day Bowles Avenue in Littleton. The plan was to head north to Brown’s Bluff (today’s Capitol Hill) above the fledgling city of Denver. The little settlement was located downhill from Brown’s Bluff and irrigation water could flow to it by gravity.

Like a river, water in an irrigation ditch flows downhill. If the slope is too gradual, the ditch water won’t flow or if too steep, it will wash out its banks. To maintain the correct elevation drop, approximately four vertical feet per mile of ditch, the route had to be carefully surveyed, mile after mile, following the contour of the land, crossing gulches and side streams with flumes or water bridges where necessary. (8) Because the South Platte River in this area descends at a rate of eight or nine feet per mile, the irrigation ditch falling at half that rate would gradually move up hill and away from the River. The ditch’s success also depended on the elevation of its source or how far up the river its initial diversion point was located.

Work on the ditch stopped in the summer of 1861, in part because the outbreak of the Civil War in April of that year hampered Eastern financing. Only 3 miles of ditch construction had been completed. Apparently, this initial digging had been done by hand at considerable expense. Due to the incorrect grade of the ditch, it would have been impossible to deliver water all the way to Denver. The headgate of the Ditch needed to be moved further upriver for the Ditch to reach its target downstream. The original Capitol Hydraulic Ditch was abandoned. (9)

After Eastern financing became available again, the company reorganized in 1864. The company hired Richard Little, a New Hampshire surveyor who had given up surveying
railroad alignments in the East to try his luck out West. He was the same Richard Little who had staked a claim to the land where work on the original Ditch had been started.

As a surveyor, he had explained to the company that the diversion point needed to be moved further south and upstream to the junction of the South Platte and Plum Creek. He also agreed to provide a new route survey and be the general manager of the construction effort. The new diversion from the South Platte River was relocated 4 miles upstream to a point that is under what is now Chatfield Reservoir. Work commenced on the new ditch in the fall of 1864.

John Wesley Smith, a pioneer businessman who would go on to be an successful Denver miller, banker and railroad executive, contracted with the reorganized company to dig the ditch. (10) Smith’s contract, approved by the Board of Directors of the Capitol Hydraulic Company, on June 23, 1864, read in part,

“...said Smith to construct a canal or ditch commencing at or near the mouth of Plum Creek below the Platte Canyon ... on the East side of said Platte,..... said ditch to have a fall of at least four (4) feet to the mile,.... said ditch to be finished at least six (6) feet wide in the bottom and embankments sufficient to carry at least two (2) feet of water, to be constructed so as to receive water out of the Platte River at the point of commencement at or near the mouth of Plum Creek,... to convey the water of said ditch over Cherry Creek at a point to be selected by said Smith in a flume same width at least of the bottom as the canal or ditch.” (11)

Smith’s remuneration was to be half the shares of the Capitol Hydraulic Company stock and $10,000. Smith hired freight wagons to ship two huge, disassembled machines called “Rotary Canal Builder” or “Railroad Excavator” to do the heavy work. When reassembled on the prairie they must have been a sight no one could imagine.

Apparently no photograph of them has been found but the Rocky Mountain News of December 7, 1864 described one at the time as,

“A mammoth four wheeled outfit, partaking partly of the appearance of a fire engine, an artillery wagon, a mowing machine and a colossal steam plow... This machine has two mammoth hind wheels and two miniature front ones with a lot of frame and iron mechanism between... that ...When worked by eight or ten yoke of cattle, it will do the work of a hundred men per day.” (12)
Imagine how the open prairie landscape looked to those machine operators: no trees (just prairie grass), no railroads (those came six years later), no barbed wire fences (barbed wire came into widespread use ten years later), no improved roads (the first paved “intercity” road was not constructed in Colorado until the next century). For three years, the machines dug their way north across the prairie toward Denver.

Because J.W. Smith owned half the company and was in charge of the digging, as the work progressed, the ditch took on the name, “Smith’s Ditch.” Observing that it would pass near a natural depression, sometimes referred to as a ‘buffalo wallow’ southeast of Denver, Smith routed the ditch in such a way that the depression could be filled with water from the ditch. Smith, ever the astute businessman, saw the opportunity to create a water feature on the dusty plain three miles southeast of the little city. It became a park-like setting delighting Denverites who could visit for an “outing in the country.” The water body became Smith Lake and the park-like setting later became Washington Park.

(13) Water first flowed through Smith’s Ditch and filled Smith Lake in May, 1867. (14) If the City Ditch is the oldest pioneer relic in continuous use in the Front Range, that means Smith Lake is the oldest man-made recreational body of water still in continuous use today. Washington Park and the open section of City Ditch which can still be seen there today, were designated a Denver Landmark in 1977 and listed on the on the National Register of Historic Places in 1986.

The aforementioned William Byers, Rocky Mountain News founder and pioneering editor, had a suburban farm southeast of the city which was irrigated by City Ditch water. He was also a promoter of the Territory’s agricultural future. He experimented with and reported on various crops and fruit trees that might prove successful in the South Platte Valley. He was a great advocate for irrigated farming. An editorial he wrote November 3, 1866 has been credited with setting in motion the idea of raising sugar beets on the irrigated prairie. (15) The City Ditch in the South Platte River Valley above Denver was a model for future irrigation ditches below Denver all the way to the Nebraska Border. The City Ditch demonstrated that agricultural land, well away from the source river, on the high plains could be successfully irrigated. (16) The location of Byers’ farmhouse is now Byers Middle School at 150 S. Pearl Street. (17)

The City Ditch was also key to the creation of Denver’s other crown jewell community space, City Park, and its two water bodies, Ferril and Duck Lakes. In its application to designate City Park on the National Register of Historic Places, the Colorado Historical Society noted,
“... In 1880, the City of Denver took possession of much of the prairie land which was to become City Park. Formal arrangements for the acquisition were completed by 1882. The first design for the park was prepared by Henry F. Meryweather, a civil engineer on the city’s staff. His design, in the Olmstead tradition, provided for looping roadways, for several lakes and water courses, and for an unending variety of vistas. By 1884, Denver school children were planting trees in the west section of the park (to be watered by the City Ditch). By 1886, 80 acres of the park had been planted with plains cottonwood trees. By 1890, when Richard Sopris (who had been Mayor of Denver when the park was acquired) became the Park Commissioner, over 600 shade trees had been planted in the park.” (18)

The application also noted,

“As early as 1867, Denver citizens began planting street trees, imported from the East by wagon and irrigated with water from the then newly completed City Ditch. In 1869, the city itself first bought water for Denver street trees. By the late 1880’s, maps, photographs, and other depictions of Denver show street trees, well planted boulevards, and elaborately laid out parks.” (19)

By May 1867, the ditch was completed to the flume which crossed Cherry Creek at what is now University Blvd. and water delivery to Denver began. The city authorized construction of smaller lateral ditches from the main ditch to make the water available to residents and businesses. The city paid for the water, initially $7,000 per year, from general taxes. According to its Superintendent, A. L. Livingston writing in 1909, at their maximum by the early 1880’s, there were over 1,100 miles of small lateral ditches located down both sides of nearly every street in the city. (20) Their water made possible growing trees, grass lawns and vegetable gardens. Lyle Dorsett in his book, The Queen City, A History of Denver, observes, “The “city ditch” and the lawn and tree-planting spree it inspired seem insignificant by twentieth-century standards of city beautification, but for Denver in the 1860’s it was a remarkable achievement.” (21) In 1875, the city actually bought out what was then named the Platte Water Company and assumed ownership of what had become “Smith’s Ditch”. (22) Thereafter, it became known as the “City Ditch,” the name most recognized today.

It was not always a rosy relationship between the lateral ditches and the public they served. Animal manure washed off the streets into them. Children played in them to the consternation of their parents. There were concerns that the little ditches might
become vectors for typhoid. They came to be seen as nuisances and safety hazards. By the 1890’s critics’ calls to fill in the laterals and pipe the main City Ditch itself were becoming more numerous. (23) By 1898, nearly all of the laterals and the City Ditch within the Denver city limits had been placed in pipe or filled in, leaving only a few open sections of the City Ditch in City Park and Washington Park. But for the first 30 years of the City’s existence on the dry plains, it was the water from the City Ditch which had transformed Denver into an oasis of greenery. The Ditch had also provided the irrigation water necessary to create City Park and Washington Park, two of Denver’s crown jewels. The idea of irrigated farming in the South Platte River Valley led to a significant boom in Colorado’s agricultural economy.

Irrigation ditches are of such importance to Colorado’s economic and cultural well being that they are recognized in the Colorado State Constitution. Article XVI, Section 5 of the Constitution, adopted in 1876, reads,

“The water of every natural stream, not heretofore appropriated, within the state of Colorado, is hereby declared to be the property of the public. The right to divert the unappropriated waters of any natural stream to beneficial uses shall never be denied. Priority of appropriation shall give the better right as between those using water for the same purpose.” (24)

The first concept enumerated here is that if a farmer has a field adjacent to a river, he is not entitled to take water from it without a regulated process because it belongs to the public. The public process is to appropriate water diverted for a beneficial use, record the action with the state engineer, and establish a priority date for such legal action. Also called the “first in time, first in right” doctrine, it recognizes that there will be times when there is not enough water in the river to satisfy every user’s needs. The state engineer will then order the “junior” users to close their diversion gates and let the remaining water flow to “senior” water right holders. Such older water right holders may be upstream or downstream on the river. Clearly, older is better when claiming the right to divert water. (25)

By 1882 there were over 250 ditches diverting water from the South Platte River resulting in numerous disputes. In that year, the Legislature ordered a legal evaluation and tabulation of each ditch’s respective priority. The City Ditch with a proven historic diversion date of November 28, 1860 was determined to be the oldest ditch on the entire South Platte River, establishing it as priority #1. (26) That means that even during the driest years, the City Ditch may flow using rights to water it acquired in 1860.
The first effort by the Capitol Hydraulic Company had diverted water into a ditch which was actually located on land claimed by Richard Little. He was the surveyor who had successfully laid out the route of the revised ditch for the Company. Little had subsequently homesteaded his claim and owned a farm in the area. Remembering the first ditch effort had shown enough of a waterfall to run a waterwheel, Little organized a group of investors, improved that original ditch, and built a water powered grist mill. It was located at what is currently the intersection of Bowles Avenue and South Santa Fe Drive in Littleton. He called the new enterprise the “Rough and Ready Mill” and the ditch the “Rough and Ready Mill Ditch.” Beginning in 1867, the mill ground the grains produced by farmers in the upper South Platte Valley. It was an economic engine which encouraged agricultural growth in the area. (27) Little also realized that he could profitably sell his farmland in pieces. He recorded a plat of streets and lots with the Arapahoe County Clerk in 1870. (28) Lacking a better name, he called the community “Littleton,” and began selling building lots. In 1890. the platted farm was formally incorporated as a town. The Rough and Ready mill which was Littleton’s impetus for development, survived being burned and rebuilt twice, converting to electric power in the 1930’s. It burned again in 1955 and was not rebuilt. No trace of the mill or mill ditch exists today.

The City Ditch continues to function today in the same way it first did 154 years ago, but most of it is now buried in a pipe. The physical property of the Ditch through Littleton is now owned by the City of Englewood. (29) Platte River water is piped through the dam at Chatfield Reservoir into an open ditch south of Littleton. (30) It provides water to irrigate the greenery at the Hudson Gardens and Events Center, the Littleton Cementary and Geneva Park, all in the City of Littleton. The Ditch supplies water to a reservoir in southwest Englewood which is an integral component of that City’s municipal water system. Through Washington Park in Denver, the open and visible section of the Ditch is managed by Denver Water. Interestingly, the water in the Ditch and lakes in Washington Park and City Park does not come directly from the South Platte River but is recycled, non-potable wastewater from the Metro Waste Water Reclamation District. (31) That non-potable water, treated to a high-quality standard, is not only safe for irrigation of grass, trees and flowers in the parks but is a very wise conservation of the scarce water resources in our arid climate.

Of the original 26 miles dug between 1864 and 1867, only about 2 miles are easily accessible and visible today. With the exception of Denver’s Washington Park, all of these visible, flowing sections are in Littleton and Englewood. Littleton’s “Community
Trail" follows the Ditch right-of-way and has sections where water can be seen flowing during the irrigation season, April 1 to November 1 of each year. Water flows through the same channel that was dug across the prairie in 1864.

It is the opinion of the author that appropriate organizations in Littleton and Englewood should apply for inclusion on the National Register of Historic Places of the City Ditch in their jurisdictions.

Larry Borger
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End Notes

(1) Robert L. Perkin, The First Hundred Years, An Informal History of Denver and the Rocky

(2) Capitol Hydraulic Company, Corporate Minutes of June 23, 1864, on file in the Engineering

(3) Louisa Arps, author of Denver in Slices, Denver, Colorado, Sage
Books, 1959, per personal conversation with Dr. Tom Noel in 1977 as reported to the
author in May, 2021.

(4) Dr. Tom Noel, Colorado Historian, as related in personal conversation with the author in
May, 2021.

(5) Perkin, p. 95.

(6) Capitol Hydraulic Company

(7) PRIVATE LAWS OF THE TERRITORY OF KANSAS, Passed at the
Special Session of the Legislative Assembly of 1860, Begun at the
City of Lecompton and concluded at the City of Lawrence, Chapter

(8) Colorado Encyclopedia, Early Irrigation in Denver, August 11, 2016, p. 2.

(9) Robert J. McQuarie and C. W. Buchholtz, Littleton Colorado, Settlement to Centennial, Lit-

(10) Jerome C. Smiley, History of Denver, The Times-Sun Publishing Company, Denver, Col-
orado, 1901, p. 310.

(11) Capitol Hydraulic Company

(12) Rocky Mountain News, December 7, 1864.

(13) Sarah McCarthy, Denver’s Washington Park, Arcadia Publishing,

(14) Jay Adams, Denver Celebrates 150th Anniversary of City Ditch, Press Release by Denver

(15) Perkin, p. 162.

(16) Michael Holleran, Historic Context for Irrigation and Water Supply, Ditches and Canals in
(17) Perkin, p. 163


(19) Colorado Historical Society, Sponsor, p. 11.

(20) City and County of Denver, Denver Municipal Facts, Volume 1, Number 17, June 12, 1909

(21) Lyle Dorsett, Queen City, a history of Denver, Pruett Publishing Company, 1977, p.44.

(22) Rebecca Herbst, The History of the City Ditch, Colorado Department of Highways For the Federal Highway Administration, August 1983, p. 6.


(24) Colorado Constitution

(25) Colorado Encyclopedia, p. 3.


(28) Richard Little, Plat Map of Littleton, Colorado, Arapahoe County Clerk, recorded June 3, 1872, in Book of Plats, p. 35.

(29) Board of Water Commissioners and City of Englewood, City Ditch Agreement, Dated February 6, 1970, Archives of Denver Water, Denver, Colorado.

(30) Board of Water Commissioners and City of Englewood, p. 5.

(31) Jay Adams, p.3.
Author Biography

Larry Borger holds a Master of Public Administration degree from the University of Kansas. During his 20 year professional career he served as City Manager of Littleton, Colorado, Assistant Director of the Denver Regional Council of Governments (DRCOG), Denver, and as Administrative Assistant to Mayor Bill McNichols, Denver. His private sector career included service as vice president of a major Denver area homebuilder and real estate broker. He is retired and continues to be interested in all areas of history, particularly the American Southwest. He and Marilyn, his wife of 59 years, live in Littleton. They both actively work on projects and issues in the Littleton community.
Figure 1: The City Ditch diverted water from the South Platte River at that River's confluence with Plum Creek in Douglas County. The historical diversion point is now beneath Chatfield Reservoir. The Ditch flowed northeasterly 26 miles to what is now, City Park, in Denver. In 1867, the entire Ditch route crossed open, treeless prairie. On the way, it passed what is today downtown Littleton, downtown Englewood, Washington Park, Denver Country Club, and Capitol Hill.
Figure 2: At the time the City Ditch was dug, Denver was a fledgling frontier collection of mostly log cabins. From the time the Ditch first flowed with water, it would be 3 years before the arrival of the railroads in 1870, or 10 years before the advent of barbed wire in the 1880’s, or a half century before inter-city surfaced roads in the 20th Century. The “59’ers” were 600 miles from “the States” a journey of 10 days to 2 weeks by stagecoach.

Photo source unknown.
In 1860, the Rocky Mountain News briefly let honesty compromise its usual unrelenting boosterism by describing Denver’s landscape as “treeless, grassless, bushless.” As this photograph of the paper’s office in the early 1860s shows, the writer was not exaggerating.

Figure 3: Treeless, grassless, bushless Denver, 1860. The City boosters knew that for their little city to be attractive to folks, “from the States”, it needed greenery and greenery needed water.

Photocopied from, The First Hundred Years, Robert Perkin, Doubleday, page 218.
Figure 4: William Byers, 1831 - 1903, Pioneer Founder and Longtime Editor of the Rocky Mountain News. The first edition of the News was published in Denver April 22, 1859. Byers was a supporter of irrigated farming and knew that if his fledging city on the dusty prairie was to flourish, it needed trees and trees needed irrigation water to survive. He was a board member of the Capitol Hydraulic Company, which built the City Ditch.


Figure 5: Richard Little, 1829 - 1899, Surveyor and Construction Manager of the City Ditch, Creator and Owner of the Rough and Ready Flour Mill, and Founder of Littleton, Colorado

Sketch courtesy Littleton Museum
Figure 6: This Denver street scene taken by W. H. Jackson is likely from the mid 1870's to early 1880's, based on the estimated age of the young trees. A careful examination shows lateral irrigation ditches adjacent to the street with rows of young trees between the street and sidewalk. Note that individual homes have a bridge over the ditch to allow access to a carriage in the street. The ditch water would have stimulated the trees to grow in the arid climate.

Photo courtesy of History Colorado
Figure 7: Fourteenth Street Denver circa 1880’s. Note the small lateral ditch with water at lower right and the footbridges across it, including one with steps to make it easier to board a carriage. The mature trees show the positive effect the irrigation water had for their survival and growth.

Photo by William H. Jackson, courtesy Western History Collection of Denver Public Library
Figure 8: Water powered Rough and Ready Mill photographed in 1926. Located at what is today Bowles Avenue and South Santa Fe in Littleton. The mill, created by Richard Little, was an economic engine promoting farming in the South Platte River valley and the development of Littleton. Originally constructed in 1867, the mill burned and was rebuilt twice but after burning a third time in 1959, it was never rebuilt.

Photo from Engineering Archives of Denver Water
Figure 9: 1913 Boathouse at Smith Lake in Washington Park today. The Lake, originally filled with water from the City Ditch in 1867, is arguably the oldest man-made recreational body of water in the Denver area, still in active use. Photo by author.

Figure 10: The City Ditch in Washington Park today. South Downing Street on left. Washington Park and the City Ditch there were listed on the National Register of Historic Places in 1976. The flowing water is a recirculating system where the water is pumped from Smith Lake uphill to Louisiana Street, run into the Ditch which then flows back to Smith Lake. Photo by author.
Figure 11: City Ditch in Littleton south of Ridge Road today. The Littleton Community Trail is at the left. The Ditch is in its original alignment, with flowing water, as when originally dug more than 150 years ago. Photo by author.

Figure 12: City Ditch Flume over Slaughterhouse Gulch in Littleton today. This is in Slaughterhouse Gulch Park, north of the Depot Arts Center. In the 1860’s, before the arrival of the railroads in Denver, costs to ship structural iron from “the States” would have been prohibitive and the original structures of this type would have been made of wood. It has been speculated that this particular structure dates from the mid-1940’s. Photo by author.
Figure 13: The City Ditch in Littleton, north of Slaughterhouse Gulch, today. The flowing ditch is in the same alignment as Richard Little surveyed it and supervised its construction between 1864 and 1867. Photo by author.

Figure 14: Parshall Flume located in the ditch just above its crossing of Big Dry Creek. Patented by Dr. Ralph L Parshall, a CSU professor in 1922, the invention made possible very accurate measurements of flowing water. Flumes of this type ended years of controversy over how much water was actually being used by ditch irrigators compared to their entitlement. Photo by author.
Figure 15: City Ditch Flume over Big Dry Creek in Englewood today. The paved trail shown in the photograph along the Creek connects the Highline Canal Trail in Greenwood Village with the Mary Carter Greenway Trail along the South Platte River.

Original flumes of this type would very likely have been made of wood. The Ditch was completed and water in the Ditch first flowed all the way to Cherry Creek in 1867. This was 3 years before the railroads were completed to Denver. Before that it would have been prohibitively expensive to ship heavy sheet iron and steel in freight wagons across the prairie from the East.

This particular flume was constructed sometime Ca. 1941. With reference to a 1917 Denver Union Water Company map it is noted that at the time, north of Littleton the early City Ditch made a long loop to the southeast, crossing a line on the map which would later become Belleview Ave. What are today Belleview Park and Progress Park were enclosed in that long loop. Constructing the flume in its current location below Belleview Park would have shortened the Ditch. More than likely was it also cheaper to construct a water flume than constructing two highway bridges to cross the Ditch when Belleview Avenue was constructed. Photo by author.
Figure 16: The Littleton Community Trail follows the open and flowing historic City Ditch from Ridgewood Park to Prentice Ave. It is a popular partially paved, partially granite fines, year round hiking and biking trail. The exception to being adjacent to the water is the 1.8 mile segment of the Ditch past downtown Littleton, between Ridge Road and the Depot Art Center, where the water flows in an underground pipe. This segment was piped as part of the City’s Railroad Depression Project in the mid 1980’s. That project greatly relieved traffic congestion by depressing the railroad tracks, thus eliminating grade crossings of the BNSF railroad. Unfortunately, the Depression Project construction encroached into the right of way of the Ditch, altering its grade and historic flow alignment. The solution was to develop a new flow pattern, including a siphon, for the Ditch water. In this piped segment, the Community Trail is on top of the buried pipe.

Graphics by City of Littleton Engineering Department