The Big Ditch: The Wichita-Valley Center Flood Control Project

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The Wichita-Valley Center Flood Control Project, commonly referred to as the "Big Ditch," protects Wichita from flooding by the Arkansas River, the Little Arkansas River, and Chisholm Creek. The name "Big Ditch" was originally derisive and started with farmers opposed to the project. The farmers, some of whom were losing their land to the federal project, saw the floodway as an example of federal Big Brother-style interference with local affairs. Years passed and the opposition faded, but the name outlived the controversy. The Big Ditch is eighteen miles long and has fifty miles of connecting channels, one hundred miles of levees, and one hundred fifty control structures, making it one of the largest water diversion projects in the United States. The Army Corps of Engineers constructed the floodway between 1950 and 1959 at a cost of $20 million. By 1975, the total amount of flood damage prevented by the project was estimated at over $33 million. While the Wichita-Valley Center Flood Control Project originally faced opposition, the results have proven that the money spent on the project was justified.[1]

Before looking at the construction of the Big Ditch, it is necessary to examine the reasons for its construction. Because Wichita is situated at the confluence of the Arkansas River and the Little Arkansas River, there has always been a problem with flooding. In 1877, the rivers flooded the downtown area, with water "flowing southeast across Main and Second, to the corner of Douglas and Topeka, to Kellogg and St. Francis then southwest to the Big River south of town but north of the present site of the John Mack Bridge." The city's response to the flood was to institute a city

[1]"'Big Ditch' Mitch," *Wichita Eagle*, May 12, 1993; Leonard J. Hollie, "The Big Ditch Has Done Job For 26 Years," *Wichita Eagle*, June 18, 1985; Kansas Water Resource Board, *State Water Plan Studies: Little Arkansas River Basin* (Topeka: Kansas State Resource Board, 1975), 79.

tax to finance street bonds to grade the streets in an attempt to prevent another flood. The next great flood took place in 1904. This flood, while not as bad as the one of 1877, still inundated the downtown area. Chisholm Creek also overflowed, causing the worst of the flooding to occur in the area of Douglas and Hydraulic Streets. With the river already above high water mark, another four inches of rain fell on the city in one night, causing over $200,000 in damage. This led the city to consider taking some measure to prevent future flooding, but no major project came of the debate. On June 8, 1923, over seven inches of rain fell on the city in twenty-five hours. This caused another major flood, the worst of which took place in southeast Wichita west of Chisholm Creek. Again there was much talk of the need for some kind of flood control, but once the weather cleared and the water receded, the city leaders ignored the problem.[2]

Another twenty years passed, and then Wichita was hit by two floods in rapid succession. In 1944, almost all of Wichita north of Twenty-First Street was inundated, along with Riverside east of Payne, and vast areas between Central and Twenty-first Street east of the river. The very next year the Little Arkansas River overflowed its banks again. The Arkansas River was so full it backed up into the Little Arkansas and started it flowing in the opposite direction. Over two hundred families were evacuated and eight schools closed by the flood, including North High School. Woodland, North Riverside and the district between North High and the city limits as far east as Broadway received most of the flood. Downtown had standing water south of Broadway and Third Street, east to Emporia and Topeka Avenues.[3]

After the 1904 flood Wichitans tried to develop a plan to prevent future flooding. One proposal was to divert the river into the Big Slough, a depression that ran around the west side of the city and already collected water in times of heavy rainfall; this plan was eventually adopted with the building of the Big Ditch. But in 1904, the solution was to clean out Chisholm Creek. Prior to 1912, the city replaced the northern part of the creek with a drainage canal which originally ran only from the river to Park Street. In 1912 the canal was extended to Twenty-first Street. After the flood of 1923 the *Eagle* ran an editorial urging city leaders to take action on

[2]Victor Murdock, "Three Floods in Wichita Which Occupy a Place in the Town's History," *Wichita Evening Eagle*, May 31, 1935; H. Craig Miner, *Wichita: The Magic City* (Wichita: Wichita-Sedgwick County Historical Museum Association, 1988),138.

[3]"Little River Goes Down Slowly," *Wichita Eagle*, April 17, 1945.

flood control while the memory of the latest flood was still fresh. One concern for the editors was Ackerman Island. They questioned the impact on the most recent flood of the island and the improvements to it made by the Wichita Park Board. A plan was implemented in 1926 that included construction of an extension of the drainage ditch to a point two miles north of the city, straightening and deepening Chisholm Creek, clearing the channel, and constructing dikes along the banks of the Little Arkansas River. This plan was completed in 1928 at a final cost of $1,250,000. When the Army engineers examined these improvements in 1935, they found several problems with the project. The levees between Douglas and Central Avenues had been removed, "destroying the value of the levees as a means of preventing overflow." Another problem was the height of the bridges: the lack of clearance by the bridges caused them to act as dams during periods of high water.[4]

When the Army Corps of Engineers surveyed the Arkansas River, it determined that the flooding problem in Wichita was caused by the "frequent and at times rather destructive overflows from Chisholm Creek and its branches, frequently augmented by simultaneous overflows from the Little Arkansas River." The Army Corps divided the problem into three areas: the Little Arkansas River, Chisholm Creek, and the Arkansas River.[5]

One method for controlling the overflow of the Little Arkansas River was to build levees along its bank, but the Corps rejected this method as too expensive because of the meandering character of the river and the cost of buying the necessary rights of way through the middle of the city. The Corps subsequently devised two plans to prevent future flooding. Plan A was to construct a floodway beginning above Sedgwick, Kansas, southward for about eight and one-half miles to a point on the Arkansas River approximately ten miles above Wichita, where a control structure placed at the end of the diversion would allow for the flow of water down the Little Arkansas River for "park purposes." Plan B called for a shorter diversion from just northwest of Valley Center flowing south to about the same point on the Arkansas River as Plan A. Plan A would have protected the city of

[4]Miner, *Wichita*, 138; House, *Arkansas River and Tributaries*, 74th Cong., first ses., 1935, H. Doc. 308, 1661; Editorial, *Wichita Eagle*, June 12, 1923; "Ready to Begin Drainage Work," *Wichita Eagle*, December 13, 1926; "Finish $1,250,000 Flood Prevention Project in Month," *Wichita Eagle*, February 10, 1928; House, *Arkansas River*, 1661-62.

[5]House, *Arkansas River*, 1672-75.

Sedgwick, but at the cost of an additional half million dollars. The Corps estimated the average yearly flood loss to the city of Sedgwick to be $136.[6]

Any attempt to control flooding in Wichita had to consider Chisholm Creek. Army engineers estimated that the river would cause major flooding every ten years, moderate flooding about every three years, and some flooding every year. The area affected by the flooding included residential and industrial properties. The plan recommended by the engineers diverted the west and middle branches of the creek through a low depression in a southwesterly direction into the Little Arkansas River, a little over two miles above Wichita. The remaining fork of the Chisholm would be diverted into the drainage canal. The engineers rejected as too expensive another plan that would have channeled all the water from Chisholm Creek into the drainage canal. This alternate plan involved building a levee between Valley Center and Wichita and enlarging the drainage canal to handle the increased water flow. The effectiveness of the recommended plan depended upon the diversion of the Little Arkansas River to allow for the increased flow caused by shifting Chisholm Creek into the river.[7]

For the Arkansas River, the Army Corps of Engineers proposed diverting overflow into the Big Slough. Merely increasing the height of the levees along the banks of the river would have presented several problems. One was that increasing the flow line of the flood waters increased the amount of flood damage if the levees were breached. A more expensive challenge was that increasing the flow line necessitated elevating and enlarging all the bridges across the river. Other difficulties included the need to increase the size of the levees along the Little Arkansas River and the drainage canal, overhauling the storm sewer system in Wichita, and purchasing valuable land for the right of way. The Corps also examined the possibility of dredging a deeper channel in the river. The problem with this approach was that resilting of the channel would decrease the plan's efficacy in a flood. The Big Slough Plan called for the diversion of most of the excess flow through a floodway starting near Maize and following the Big Slough valley for approximately 19.6 miles to a point ten miles south of Wichita. According to the engineers' report, this diversion promised "complete protection to that portion of the city of Wichita within the present flood plain." The report

[6]Ibid., 1672-75.

[7]Ibid., 1672-75.

continued that "the construction of Big Slough floodway is practically a necessity for the ultimate protection of Wichita."[8]

The Army's final report concluded that flood control was not economically feasible in the Wichita area. Some of their reasons for this conclusion were: controlling this section of the Arkansas River would have little effect on any future floods on the Mississippi River; neither navigation nor water power were justified upon the river; there was no need for irrigation from the river; and the Arkansas River caused serious erosion problems. These factors resulted in the Division Engineer determining that there was no federal interest in the river. The recommendation in 1935 was that there be no participation by the United States in the control of floods in this part of the Arkansas River Basin.[9]

The Corps of Engineers' mission, however, changed with the Flood Control Act of 1936. This legislation made flood control a federal responsibility, gave the Corps implementation authority, and authorized over $2 million for levee work and channel clearing in the Wichita area. By 1936, though, enough time had passed since the last major flood (in 1923) that when hearings were held in Wichita on December 9, "local interests stated that there was no interest in the construction of the authorized project and that the assurances of local cooperation could not be furnished." Because of the lack of local support, the Army Engineers declared in 1944 that federal flood control in the Wichita area should be given no further consideration.[10]

The project finally got the local support it needed to go forward after the flood of 1944. The Chamber of Commerce formed a committee to promote the construction of the Big Slough Floodway that had been recommended in the earlier report by the Army Corps of Engineers. The committee filed for federal emergency aid to help repair dikes damaged by the flood. They also requested that the Army consider implementing the plan recommended for the flood diversion channel. The city council endorsed this plan as the best way to protect the city from future floods, but the county commission opposed taking so much farm land for flood control purposes. It recommended instead the adoption of a plan that would have followed the

[8]Ibid., 1677-79.

[9]Ibid., 1610-11.

[10]House, *Arkansas River, Kansas, Oklahoma, and Arkansas*, 78th Cong., second ses., 1944, H. Doc. 447, 112-13.

present channel of the Arkansas River. This proposal cost almost half a million dollars more than the Big Slough project and nearly doubled the cost to local governments, which were responsible for buying all rights of way and building necessary bridges. The increased width of the river channel would take all of McLean Boulevard and much of the Midland Valley Railroad's right of way. The Army rejected this plan as not feasible, since there was not normally enough water in the river to keep the channel clear.[11] Another plan promoted but quickly dropped was the construction of storage dams for the excess water. The Corps rejected this because suitable sites were lacking for such dams and rapid silting would soon occur. All the controversy hurt the plan when it was brought before Congress. The proposal was thus dropped from the 1945 flood control bill passed by the House of Representatives. Through heavy lobbying, the Chamber of Commerce induced the Senate to reinstate the plan, and it was subsequently authorized along with the rest of the flood control projects. Although Congress allocated only $1,000,000 of the $6,650,000 required from the federal government, Hobert Brady, president of the Wichita Chamber of Commerce, was pleased, saying,

> a substantial part of the work can be undertaken by the Army Engineers within the coming year, and later appropriations would be forthcoming to finish the project, because Congress has established the policy of providing necessary funds to finish any flood control project handled by the Army Engineers, once an appropriation has been made and work begun.

In 1947, the county finally agreed to back the plan for using the Big Slough's path. One of the factors catalyzing the agreement between the city and the county was the threat of Congress withdrawing its approval. The project would have to go through the entire authorization process again if agreement were not reached.[12]

Even though the two governmental bodies agreed on the plan, there was still some local opposition. Failing to prevent the plan in the County Council, opponents petitioned their local governments to hold a referendum on the

[11]"Give Plan For Big Arkansas," *Wichita Evening Eagle*, May 25, 1945; "Army Flood Plan Seen as Only Solution," *Wichita Beacon*, May 2, 1945.

[12]Minutes of the Wichita Chamber of Commerce Board of Directors, April 16, 1946; "County Board Indorses Army Flood Plan," *Wichita Magazine*, May 8, 1947, 1.

matter before proceeding with the project. These opponents included not only farmers, but also people opposed to spending city and county tax dollars to benefit only a portion of the residents of the area, those who lived and worked in the flood plain. Opponents to the project inflated the total local cost from just over $2 million to $8 million and argued against the enormity of the project. As the ditch stretched nineteen miles long and nine hundred feet wide and occupied nearly sixty-six hundred acres of prime farmland, opponents objected to taking so much land "out of production every day of the year to protect against a few days flood." The plan was unnecessary, they believed, because the cleaning and widening of the canal and the rivers was thought to be sufficient to save the city from future flooding. When the case reached the Kansas Supreme Court, the court ruled that the enabling ordinance, which provided for the selling of bonds to pay for the improvements, was administrative instead of legislative and so was not subject to a referendum.[13]

The first contract was finally let in January, 1950, with work beginning in May. Implementation of the project commenced on the East Branch of Chisholm Creek. Work on this part of the plan followed the drainage canal south to where it emptied into the river near the city's sewage disposal plant. This work involved cleaning out the channel and correcting any problems with the existing canal or low levees. The channel of the east branch was intercepted about a mile north of the city and routed one and a half miles to the head of the drainage canal. The maximum width of this channel was 30 feet, with an average depth of 19.4 feet. The canal itself was 6.2 miles long with an average width of 50 feet.[14]

Work on the Big Slough, the main channel for the floodway, started at the southern end. The first section stretched from where the ditch intersected the Arkansas River just north of Derby, five miles south of Wichita, to Oatville, near MacArthur and West Street. The engineers began working at the southern end of the project to prevent the river from prematurely entering the floodway. The floodway ranged in width from 900 feet to 500 feet at the bridges, with a pilot channel from 60 to 100 feet wide running along its center at a depth of between 6 and 11 feet. At the bridges this pilot channel widened to 260 feet so that, although the overall width of the floodway narrowed, the carrying capacity remained the same. The width of

[13]"Ditch the Big Ditch," *Wichita Morning Eagle*, March 10, 1949; "Flood Election Not Necessary," *Wichita Eagle*, July 9, 1949.

[14]"Flood Control Construction May Start in September," *Wichita Eagle*, April 17, 1949.

the Big Ditch lessened the turbulence of the flood waters. The 34 miles of levees averaged 12 feet in height. The ditch was 18 miles long and capable of carrying twice as much water as the Arkansas River. In addition to acting as a relief valve for the Arkansas Rivers and Chisholm Creek, the ditch drained surrounding areas. This drainage entered the floodway through pipes in the levees, and pressure gates prevented the flood waters from from spilling through them into the surrounding neighborhoods. The gates were designed so that the weight of the flood waters would keep them shut during periods when water in the ditch was above the pipes.[15]

The Little Arkansas River was linked to the larger one at two places north of Wichita. The first was just west of Valley Center. Here the Little Arkansas Floodway was capable of handling 55,000 cubic feet of water--the rough equivalent of 400,000 gallons--per second. A control structure on the Little Arkansas permitted passage of 4,000 cubic feet of water per second, allowing the river to continue to be used for recreational purposes in the city. The second place the Little Arkansas was linked to the big river was through the Chisholm Creek Diversion.[16]

The Chisholm Creek Diversion was the last major part of the project constructed. The middle and the west branches of Chisholm Creek were connected to the Little Arkansas River through diversion canals near Thirty-seventh Street, then all three were connected to the Big River and the floodway near Twenty-first and West Streets. The Little Arkansas River and Chisholm Creek had caused most of the flooding in Wichita: the Little Arkansas flooded the Riverside and downtown areas; and Chisholm Creek often flooded the stockyards prior to the floodway's construction. Because of this, the Little Arkansas Floodway and the Chisholm Creek Diversion formed important links in the flood control project.[17]

The project required construction of two other earthen works. One was a system of levees along the Arkansas River from the John Mack Bridge on Broadway, just south of Pawnee, to the juncture of the river with the floodway near Derby. The second was a set of "training" levees along the

[15]Elwood Landis, "'Unplugging' of Diversion Channel Will Give Partial Protection to Big Region," *Wichita Morning Eagle*, November 28, 1954.

[16]Ibid.; United States Army Corps of Engineers, "Tulsa District Wichita and Valley Center Local Protection Project," [electronic document] available at http://www.swt.usace.army.mil/pertdata/wich_val.htm, Internet, accessed April 9, 1997.

[17]Landis, "'Unplugging' of Diversion Channel."

Arkansas River to keep it within its banks. These twenty-seven miles of levees were not begun until 1955.[18]

Originally it was estimated that the project would take two to three years to complete, but as of 1955 neither the levees nor the links between the Little Arkansas River and the bigger one had been started. Various factors contributed to this delay, including a work stoppage caused by the Korean War. The construction of bridges over the floodway took even longer. Foes of the project also delayed it on several occasions by forcing the city to defend its legality before the Kansas Supreme Court. Opponents claimed that the city did not have the authority to sell bonds to finance the project. When the court ruled in favor of the city, this group took the fight to Washington, where they convinced Senator Schoeppel to sponsor a bill compelling the city to hold a referendum prior to financing the floodway. The city persuaded the senator to weaken the amendment by changing the clause which required the city to hold an election prior to any work being started to one that required a referendum only if the project exceeded the enabling legislation passed by the Kansas legislature. The project was finally finished in March, 1959.[19]

The venture cost a total of $20 million. The federal government paid $13 million for the designs and the actual construction; it also paid to move the railroads. The city and the county each contributed $3 million to purchase the rights of way and to relocate utility lines. The state, additionally, gave $1 million to the project. It is estimated that the project has saved over $280 million in damages. However, the $6 million contribution by the city and county was not their only expense related to the floodway. They also were responsible for maintenance of the ditch. In 1994 it was discovered that the ditch needed nearly $6 million worth of work. The city and the county both pledged $1 million to fund the most pressing repairs.[20]

No study was considered of the effect the ditch would have on wildlife during and after its construction. However, when it came time to make the needed repairs, the Environmental Protection Agency, the Kansas Department of Fish and Wildlife, and state water resource officials needed to approve the plans. County commissioners voiced concerns about the

[18]Ibid.

[19]Ibid.; "Schoeppel Firm on Bond Issue," *Wichita Morning Eagle*, March 18, 1950.

[20]Bill Barbel, "Big Ditch Repairs Hit Regulatory Hurdle," *Wichita Eagle*, June 22, 1995.

possible delays caused by getting these authorizations. Commission Chairman Mark Schroeder stated that "there's nobody in this community that is going to stop us from making repairs, it's beyond me that some people would think a skunk or an owl is more important than people's lives." Commissioner Bill Hancock said, "it's a tool, it isn't a greenway, it isn't a wildlife refuge, it isn't a wetland. And if it is those things, it's because we made it that way."[21]

Since the inception of the project, additional uses for the land condemned for flood control have been suggested. In 1949 the beautification commission of the Chamber of Commerce recommended planting forests along the flood control project on areas that were bought as rights of way but would not be part of the floodway. Although proponents of the plan said it could be implemented without too much trouble, nothing was ever done.[22] In 1970 the Wichita-Sedgwick County Planning Department sought ways to beautify the city by identifying visual resources, developing plans for better utilization of these resources, and analyzing repercussions that might arise from such actions. Flood control projects figured prominently in this plan, which described the floodway as "a twenty mile long, open space corridor which gives physical definition to residential development in the west part of City. Water carrying capacity must be retained, but this should not preclude its being developed for recreational purposes if additional land rights can be acquired." The report stated further that the Wichita-Valley Center Floodway "has potential as a scenic and recreational area with water sports, hiking and bicycle trails, and other outdoor pleasures." The plan proposed that the floodway "become a linear unifying element providing scenic beauty and recreation for Sedgwick County residents as well as being an impressive feature for visitors to the City." Aspects of this plan included a dam and fishing pond at Twenty-first Street that would "not only provide convenient and safe recreation but would also add interest to the Interstate (I-235) view corridor," a semi-regional recreational area in the area of I-235 and K-42, a naturalistic regional park at the juncture of the river and the floodway that would be developed as a nature center, and several deflatable dams. The nature center was intended to have "educational, conservational, cultural as well as recreational and aesthetical value." The plants and animals of the region

[21]Ibid.

[22]"Public Forests Along Floodway Are Discussed," *Wichita Magazine*, January 22, 1948, 19.

could be preserved at the park to allow for formal and informal study of the ecology of the region. Other uses for the park could be hiking, fishing, bird watching, picnicking, camping, and boating, along with other nature-oriented activities. The dams would be placed at several places along the Big Arkansas River and the floodway to form a series of linear lakes of "immense esthetics and recreational value." Some of the recommended sites for the dams were along the floodway at Maple, Forty-seventh Street, and east of the Turnpike. Along the river the suggested placements were at Seneca, Lincoln, and Broadway Avenues just below the John Mack Bridge. Another use planned for these lakes was water-skiing. The deflatable dams would keep water at a level high enough for recreational uses but could be deflated during floods to prevent any blockage of the flood waters.[23]

Neither this plan nor another set out in 1976 has been adopted. The Park and Open Space Plan again recommended that "the utility of the Wichita-Valley Center Floodway be expanded to include recreation. Extensive development is not desired; rather, natural areas set aside for hiking, biking, and perhaps horseback riding are preferred." This plan also recommended "that reasonable amounts of land adjacent to the floodway be acquired in order to provide additional open space opportunities for the local cities and county." One problem anticipated by the plan was that because the original condemnation was done solely for flood control, any other use would require recondemnation of the land.[24]

Officially the floodway is to be used only for flood protection, but the land is currently being used for many unofficial purposes. Some of these are relatively harmless to the ditch--fishing and bird watching, for instance; however, due to the lack of regulation the Big Ditch has also been the scene of motorcycle riding and gun shooting. The Park Department has tried to expand the uses of the ditch to include recreational functions, but the Flood Control Department prefers to focus on its primary purpose.[25]

[23]Wichita-Sedgwick County Metropolitan Planning Department, *Toward a More Livable City: An Urban Beautification Plan for Wichita, Kansas* (Wichita: Wichita-Sedgwick County Metropolitan Planning Department, 1970).

[24]Wichita-Sedgwick County Metropolitan Planning Department, *Wichita-Sedgwick County Park and Open Space Plan* (Wichita: Wichita-Sedgwick County. Metropolitan Planning Department, 1976), V-18.

[25]Bob Stratton, "Opinions Differ on Possibly Developing the Big Ditch," *Wichita Eagle*, September 1, 1988.

localized rains that overtaxed the storm sewer system. The Big Ditch has become a haven for birds and other wild animals. Various proposals for other uses of the floodway have been made, but these have never been adopted, in part because of fear that they will interfere with the project's primary purpose. Today people are still interested in the ditch, and some advocate other uses for the greenbelt when it is not flooded. The debate has changed. No longer do people argue whether or not the floodway is needed or even whether or not it does the job it was designed to do; these are taken for granted. Now the argument is whether other uses can be found for the area in addition to its primary function of flood control. By saving the city from major floods since its completion in 1959, the Big Ditch, named in derision, has become an important part of Wichita.