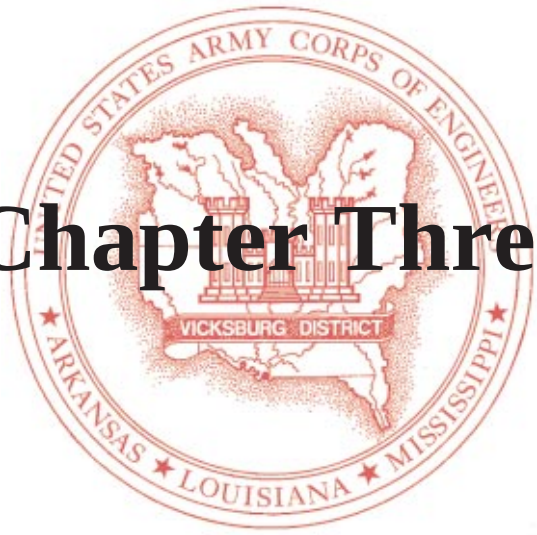
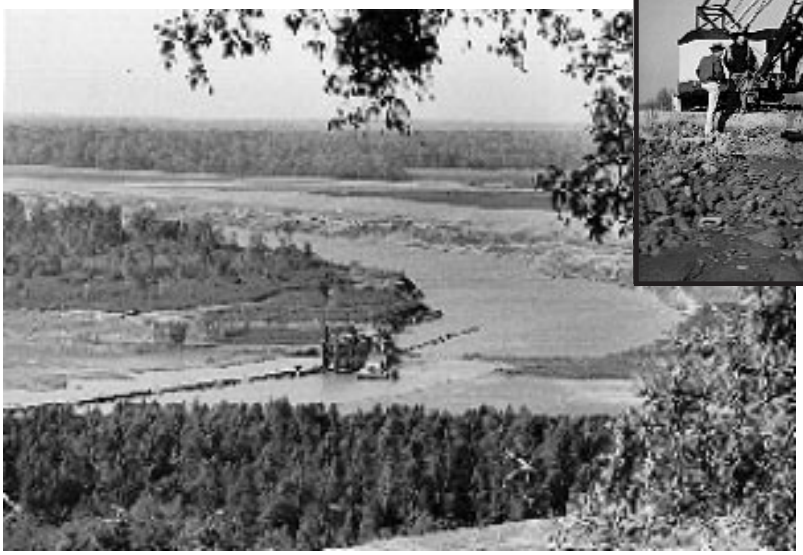


Chapter Three

Protecting Against Floods

Flood control, like navigation, is a traditional Corps of Engineers responsibility that takes on special significance in the Lower Mississippi valley. As long as humans have dwelt in the area, they have been inundated from time to time and, for at least 300 years, people have been trying to do something about it. Since 1928, the four districts of the Lower Mississippi Valley Division had built a series of defenses against the Project Design Flood, and the resulting combination of reservoirs, channelizations, floodways, levees, and cutoffs had been effective although not foolproof. A major flood in 1973 did much less damage than it would have without the system; yet it caused enough damage to make clear that nature was not yet controlled.

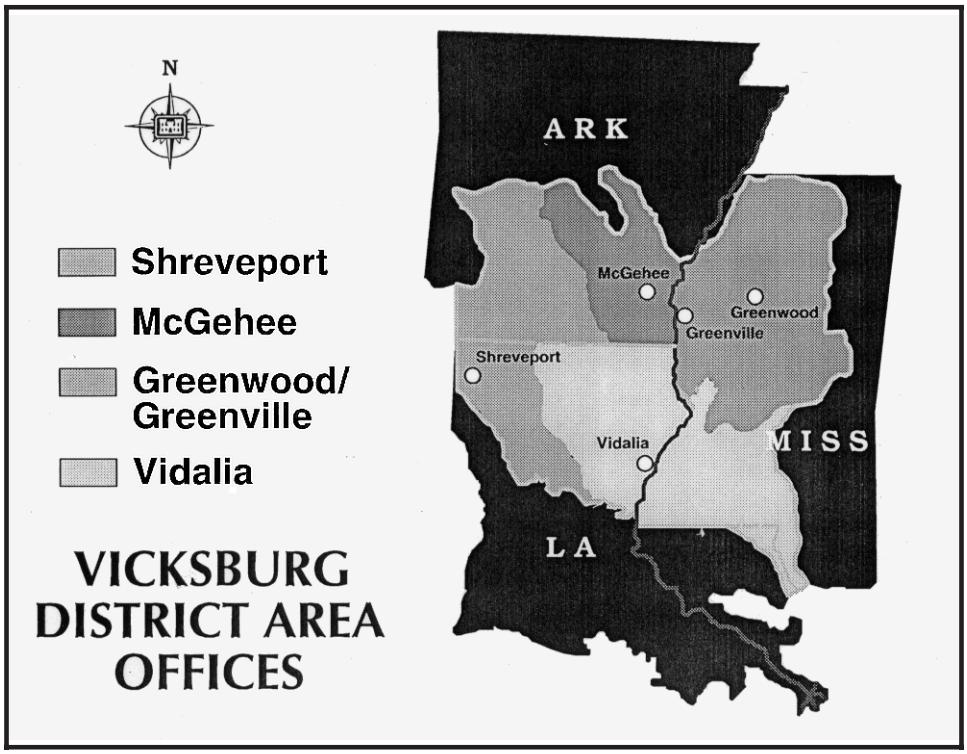
Since 1976, the Vicksburg District had been working to raise the height of its Mississippi levees, to complete an extensive flood-control project in the Yazoo headwater area, and to push forward with backwater pumping plants. In the middle of that activity, high water in 1979, 1980, and 1982-83 not only illustrated the need for flood-control works but also kept the Vicksburg engineers busy fighting floods. The district also began working on a comprehensive flood-control plan for the Pearl River Basin, which was transferred to the Vicksburg District in 1981.



Area Offices on Guard

While the Jadwin Plan had led to a comprehensive approach to fighting floods on the Mississippi and its tributaries, levees remained the first line of defense. The Vicksburg District built or enlarged mainline Mississippi levees after 1928, and it continued to build hundreds of miles of levees on the Red, the Ouachita, the Yazoo, and the Arkansas Rivers. All of this work was done in close cooperation with local levee and drainage boards that were responsible for providing rights-of-way and doing routine maintenance. Maintenance provided by the boards included mowing the levees, maintaining access roads, preventing harmful driving on their slopes, keeping drainage ditches clear, and maintaining drainage structures. Being agencies of local government, levee boards taxed the residents of their district in order to pay for this work.

In this work, close cooperation was necessary between the boards and the Corps of Engineers, and it usually took place at the area offices of the Vicksburg District located at McGehee, Vidalia, Shreveport, and Greenwood. The Vidalia Office was responsible for 479 miles of levees on the Mississippi, the Ouachita, and in the Red River backwater area; the McGehee Area Office had 221 miles of levees on the Mississippi and the



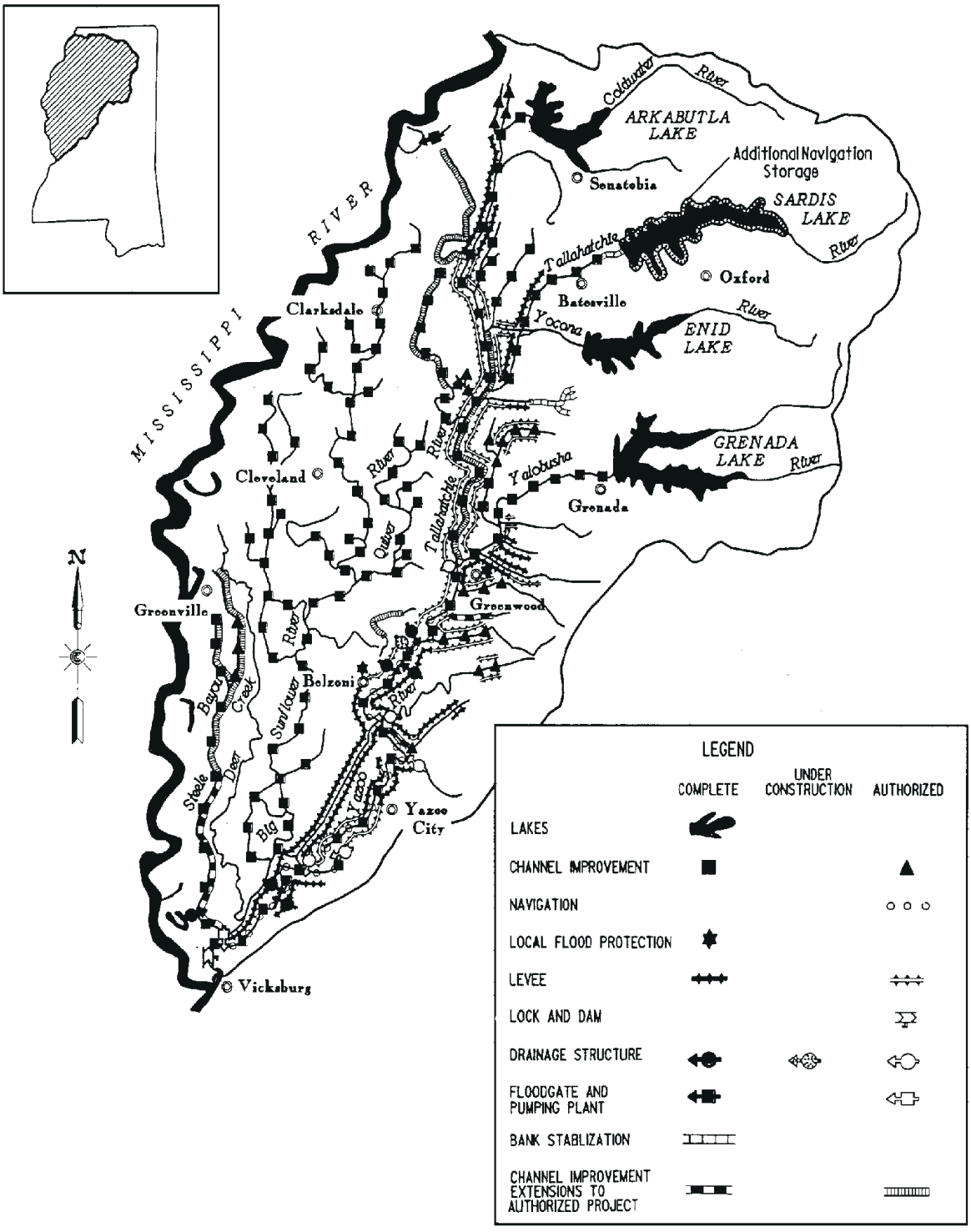
Arkansas; the Shreveport Area Office was responsible for 520 miles along the Red; and east of the Mississippi, the Greenwood Area Office monitored 539 miles of levees on the Mississippi and the Yazoo. The inspection process throughout the district was constant, and it usually included at least one complete riding tour each year made by an area engineer in company with local board members and state officials. When serious problems arose, beyond the capabilities of the local sponsor, it was the Corps of Engineers that dealt with them. Every ten years, a thorough survey of the levee system was made, updating the measurements of size and profile that were part of a permanent file.[1]

The Flood of 1973 indicated a need for more work on the Mississippi River levees. The high water allowed engineers to calculate, for the first time in decades, the precise nature of the Mississippi flowline, which determines the characteristics of the "Project Flood." Revetment and channelization allowed the river to flow more efficiently overall, but it was rising higher at certain points than the old flowline indicated. The apparent cause was sedimentation at certain points that had raised the river bottom. A new flowline was computed to be from one to six feet higher than the one used in the existing protection plan. Since 1976, the Vicksburg District had been moving toward upgrading the Mississippi River levees to conform with this information, but the project was hampered by a lack of state and local monies for rights-of-way. In all, 299 of the 461 miles of mainline levees were scheduled for enlargement and, at the end of 1985, less than one-third were completed.[2]

Yazoo Flood Control Frenzy

While the Ouachita and the Red Rivers have been the centers of navigation work in the Vicksburg District, the Yazoo Basin saw the most intense flood-control activity. That basin lies along the east bank of the Mississippi stretching from Vicksburg nearly to Memphis, Tennessee, about 200 miles, and extending eastward from the river for about 100 miles at its widest point. The Yazoo River runs from north to south through the center of the drainage basin; to the east lies the hill country with its four reservoir lakes; on the west is the delta, part of the Mississippi alluvial

Yazoo River Basin



plain, bisected by the Big Sunflower River. The basin as a whole encompasses 13,400 square miles.

Flood-control projects in the Yazoo Basin include the mainline Mississippi levee on the west and extensive flood works in the Yazoo headwater area, the Sunflower Basin, and the Yazoo backwater area. The four reservoirs — Sardis, Arkabutla, Enid, and Grenada — were basic features of the Yazoo headwater, holding local rainwaters that would otherwise flood areas further south. A second aspect of the headwater was channel work, levees on the mainstem of the Yazoo, and the Will M. Whittington auxiliary channel, measures taken to move water more rapidly south. The Sunflower Basin work was mainly drainage improvements made on nearly 600 miles of that river and its tributaries, again to reduce flooding by speeding the flow of water across the very flat delta land.

Since 1976, the Vicksburg District had been working on the Upper Yazoo Projects, a flood-control program for the area north of Yazoo City. Control of headwater flooding in the Yazoo Basin was authorized in the Flood Control Act of 1936 and, in 1949, the Vicksburg District recommended the construction of an upper auxiliary channel for that purpose, similar to the lower or Whittington auxiliary channel. The upper channel proved too costly, however, owing to opposition among land-owners, rising land values, and engineering problems. The Upper Yazoo Projects represented an alternative to the upper auxiliary channel. It included 179 miles of channel enlargement on the Yazoo, Tallahatchie, and Coldwater Rivers, 210 miles of levees, and 108 drainage structures. These improvements were designed to reduce flooding from headwaters by moving flows more rapidly into the lower portion of the basin. In 1982, the cost was estimated at $308.7 million and the completion was scheduled for the year 2000. At the end of 1986, the district had completed 55 miles of channel

enlargement, about 20 percent of the project. A revised completion date was the year 2013.[3]

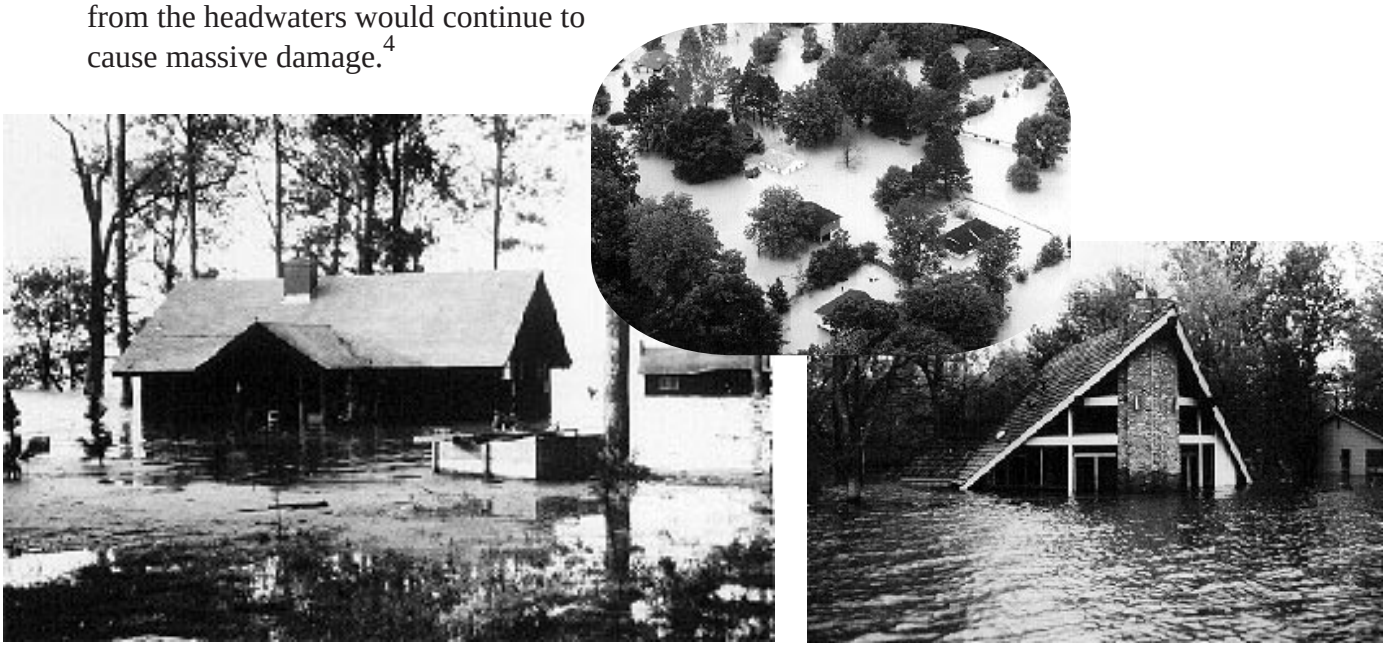
In the southern portion of the Yazoo Basin is the Yazoo backwater area, so named because it is subject to flooding when high water on the Mississippi River backs up the Yazoo River into the nearby lowlands. Backwater flooding on the Yazoo is increased by the mainline levees on the Mississippi, which raised the river's crest by denying it access to the upriver flood plain. To deal with the problem, Congress, in the Flood Control Act of 1941, authorized levees and pumping plants to protect against backwater flooding. Between 1959 and 1977, the Vicksburg District built a 27.7-mile backwater levee that linked the levee on the east bank of the Mississippi River with that on the west bank of the Will M. Whittington Auxiliary Channel, thus making a loop levee around the lower delta that extended north to 15 miles above Belzoni, Mississippi. An additional feature of backwater flood control was two drainage structures built into the levee at Little Sunflower River and Steele Bayou. Linked by a channel, these structures allowed rainwater to run out of the delta into the Yazoo so long as it was at low stages. When the Yazoo was high, the drainage structures were closed to prevent backwater flooding. Interior water then ponded, creating a different sort of flood problem.

The Backwater Pumps

The Yazoo area pump project was designed to evacuate ponded water from the backwater area, about 1,400 square miles lying between the Mississippi River and the Whittington Channel that receive the drainage from about 4,000 square miles. The project itself encompassed 842 square miles in the south of the backwater area, most of them in Issaquena and Sharkey counties. In 1978, this area had a population of about 52,500. An agricultural area, it was three-quarters cleared land used for row crops such as soybeans and cotton and for raising livestock. The uncultivated land was largely woodlands, including large amounts of wooded swamps and wooded wetlands. Streams, lakes, wetlands, and woodlands provided

habitats for a variety of wildlife and were frequented by sportsmen. The Delta National Forest was one of several publicly owned areas within the Yazoo area.

The 842-square-mile project area was that portion of the Yazoo Basin that would be completely inundated by a hundred-year frequency flood under existing conditions. It was subject to chronic flooding that became particularly severe in the 1970s. In 1973, backwater flooding from the Mississippi, complicated by severe local rainstorms, caused the greatest property damage on record, forced extensive evacuations, and kept water on the ground long enough to interrupt spring planting. Similar weather conditions occurred in 1974 and 1975, causing more inconvenience and economic loss. By the next event, in 1979, the backwater levee was in place and the drainage structures had to be closed. Water continued to rise on both sides of the backwater levee, eventually reaching a riverside peak of 97.6 feet National Geodetic Vertical Datum (NGVD) and a landside peak of 96.6 feet referenced to the NGVD. The flood lasted 104 days and covered 350,000 acres with interior ponding, 50,000 less than would have been the case without the levees and drainage structures. The Yazoo area was protected from backwater flooding, but interior drainage from the headwaters would continue to cause massive damage.[4]

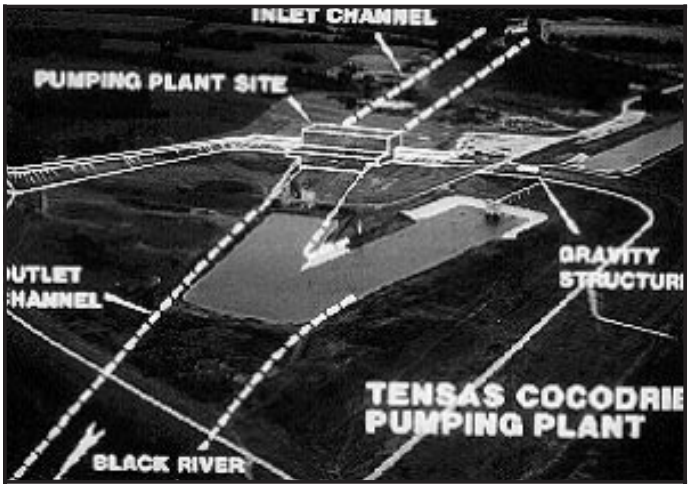


Stimulated by the flooding of the 1970s, the Vicksburg District began earnest planning for a backwater pumping station. At a public meeting in April 1982, District Engineer Col. Samuel Collins explained the tentatively selected plan. It involved one pumping plant facility with a capacity of 17,500 cubic feet per second (cfs) located near the Steele Bayou drainage structure and connected to the Yazoo River and Steele

Bayou by about 1,000 feet of channel. The plant would begin to operate when the water surface reached 80 feet NGVD, except between December 1 and March 1 when the critical level would be 85 feet in order to protect waterfowl habitat.

Of the 539,000 acres in the project area, 7,000 would be flooded at 80 feet and thus unaffected by the pumping plant and 41,000 would be underwater at the 85-foot level. At higher water levels, however, the plant would have a significant impact. For example, it would have reduced the 1979 flood stage by 4.6 feet, keeping water off 62 percent of the 222,000 agricultural acres that were flooded that year. In other floods, such as that in 1975, when the water rose slowly enough to be pumped as it drained, the benefits would be still greater. The total cost of the facility was about $150 million and, since it was authorized under the Mississippi River and Tributaries Projects, under existing policy in 1982, it would be paid fully by the federal government.[5]

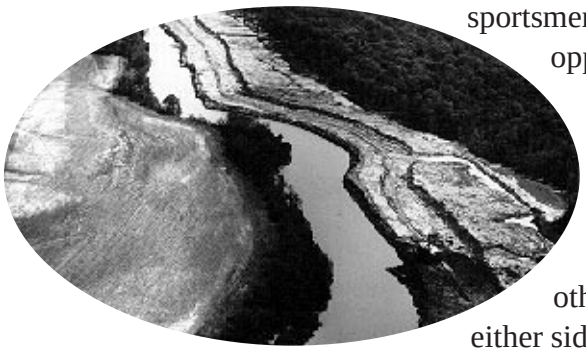
Residents of the Yazoo area were pleased with the prospects of a pumping facility, but the Vicksburg District plan came under criticism from the Jackson Area Office of the U.S. Fish and Wildlife Service (FWS). In its "Coordination Act Report" that accompanied the General Design Memorandum, the FWS argued that the flood-control strategy of the Corps of Engineers in the Yazoo Basin had been to solve one problem by creating another. The mainline Mississippi levees pushed water into the backwater areas, the backwater levees protected against backwater flooding but also trapped interior drainage, and now the pump would evacuate the ponded water and send it someplace else. The FWS called for a larger perspective, specifically one that would recognize that the lower portion of the Yazoo area was a natural sump that should be used for the storage of floodwaters, and had been understood by Congress in that light since 1941. It recommended that the federal government acquire the necessary interest in all land in the Yazoo area below 90 feet NGVD and allow it to be used only in ways that were compatible with periodic flooding. A pumping plant, either at 15,000 cfs or 15,500 cfs, should also be built to protect the land that was above 90 feet. Responding to this position, the Vicksburg District pointed out that there had been a great increase in agricultural activity in areas below 90 feet and that substantial economic interests and population were now located there.[6]



In order to mitigate the adverse aspects of building the pump, Vicksburg planners proposed to purchase and set aside 11,300 acres of woodlands, a plan with which the FWS concurred. However, in hearings before the Subcommittee on Water Resources of the House Committee on Public Works and Transportation, environmental forces attacked both the mitigation and the project itself. The National Wildlife Federation pointed out that constructing the pumping plant would destroy what it called "the last remaining bottomland habitat in the Yazoo Basin Area." The Federation felt it was better to allow the area to remain a sump, rather than encourage agriculture in a place where massive flood-control measures would be required for its survival. The Mississippi Wildlife Federation (MWF) claimed that previous aspects of Yazoo Basin flood control had not been properly mitigated, and that the organization was "without any real faith in the Corps to properly plan or install the mitigation features proposed in this plan." He also asserted that the project would do serious damage to fish and wildlife, its economic rationale was biased in favor of approval, and the pump would use $3 million worth of electricity each year.[7]

Despite criticism, the Yazoo Pump Project moved forward. In July 1984, the MRC gave approval to proceed with the design of a 17,500-cfs plant, and the Vicksburg District began an expedited scheduling program that would speed the process. The General Design Memorandum for the project was approved in August 1985, but almost immediately was modified by the Office of Management and Budget to reduce the size of the pump from 17,500 cfs to 10,000 cfs. The difference involved finances rather than engineering, reducing the cost to about $100 million, a figure the budget makers found palatable. Lower agricultural prices in the mid-1980s had reduced the value of the soybeans that were being protected, making it more difficult to justify the project on an economic basis. At the same time, the Reagan Administration was erecting an elaborate system of beneficiary cost sharing for federal water projects that called upon the Mississippi Board of Levee Commissioners to pay at least $25 million of the cost of the pump. At the end of 1986, the future of the project was in doubt, although the district had purchased real estate, contracted for channel work, and was redesigning the pumping facility.[8]

"Wazoo in the Yazoo"

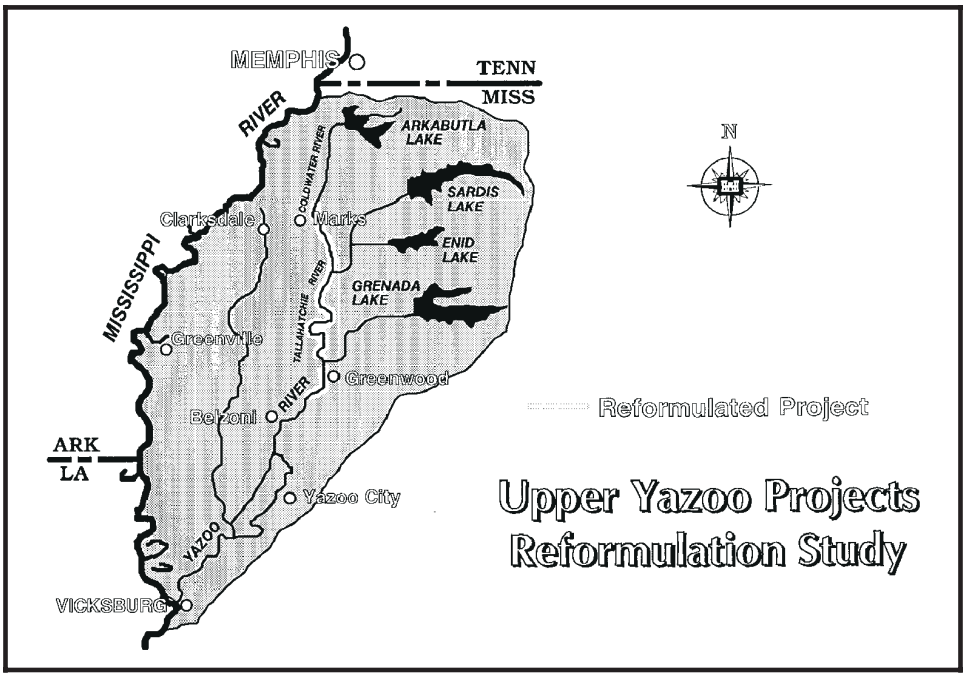


While the Yazoo Pump Project waited for approval, the Upper Yazoo Projects came under a fierce attack from a few landowners and a host of sportsmen and environmentalists. The initial focus of opposition was the channelization of Steele Bayou and Black Bayou, both of which are part of the Big Sunflower River area of the Yazoo Basin. The channel improvements were flood-control projects designed to speed floodwaters out of the area, but they would involve the removal of hardwoods and other vegetation from an area about 500 yards wide on either side of the waterways. One landowner affected by the project was a Chicago resident who was head of the North American Wildlife Foundation. With two partners, he had purchased land on Steele Bayou near Hollandale, Mississippi, in hopes of creating a wildlife preserve. Now some of his acreage would be cleared and used as a dumping ground for material dredged from the waterway. The landowner vowed to "fight like hell" to stop the project, and he gained support from other landowners along Steele Bayou and also from a number of environmental organizations.[9]

The scope of opposition to Corps of Engineers flood-control projects in the Yazoo Basin became apparent in April of 1988 when the MWF published a lengthy statement against further construction of the Black Bayou-Steel Bayou Project, the Upper Yazoo Projects, and the Yazoo Backwater Project. The Federation claimed that the Upper Yazoo Projects would result in the clearing of more than 31,500 acres of bottomland containing hardwoods. It would also reduce natural flooding on 82,000 acres of wetland, reducing the waterfowl habitat by 50 percent. Finally, it would have an adverse impact on fishery resources.

The Federation argued that the original purpose of the projects was to protect farmland from flooding, which was much less important at present when agricultural surplus was a greater problem than scarcity. More specifically, the MWF argued that the flood-control measures were in contradiction to federal programs aimed at reducing acreage, would encourage farmers to convert wetlands into farmland, represented a federal subsidy encouraging agriculture at the expense of wooded and cleared wetlands, and would destroy some 15,000 acres of existing agricultural lands. The organization also claimed that these projects

violated the National Environmental Protection Act because they were being planned without a specific environmental impact statement.[10]



Unhappy landowners and the Mississippi Wildlife Federation asked Vicksburg District Engineer Col. Frank Skidmore to halt the Upper Yazoo Projects for 120 days so that the issues could be studied by the citizens of the area. Skidmore agreed to hold public meetings but refused to halt the project unless opponents could present new information. Meanwhile, other national environmental groups joined with the National Wildlife Federation in opposition to the Yazoo projects: among them were American Rivers, the Environmental Defense Fund, the Environmental Policy Institute, Friends of the Earth, the National Audubon Society, the Sierra Club, and the Wilderness Society. Even Ducks Unlimited, usually a non-political organization, publicly associated itself with the principles of the national environmental coalition. On the local level, bumper stickers appeared in Mississippi saying SAVE THE YAZOO. Still there were two sides. Many delta farmers and officials supported the projects and the activities of the Vicksburg District. Perhaps the most important pro-flood- control organization was the Delta Council, an economic development organization.[11]

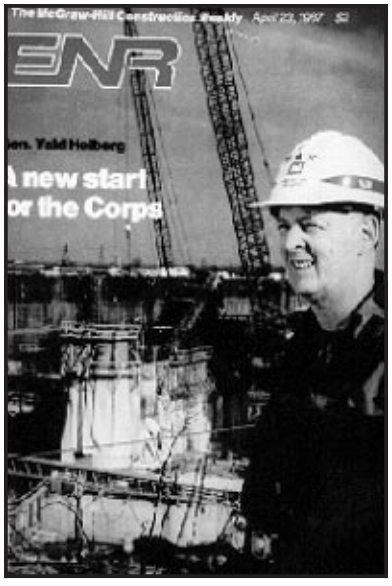
As the issue became larger and more heated, state political officials became involved. On August 19, 1988, a federal district judge ordered a temporary halt to the channel maintenance of 11.4 miles along the

Yalobusha River in Leflore County, a $2-million project begun by the Vicksburg District in the previous May. The order was in response to a suit brought by the attorney general's office of the State of Mississippi, which argued that the work was in violation of the National Environmental Protection Act.[12]

A few weeks after the court's ruling, Governor Ray Mabus of Mississippi appointed a committee to examine the Yazoo Basin project and report back to him by the end of the year. After holding hearings in November, the Governor's Advisory Committee on the Yazoo Projects issued a report in January 1989 calling for a halt to the projects until more study could be done with respect to their impact on both the economy and the environment. The eleven-person committee split six to five over the report, however, with the five members living in the Delta in the minority. State legislators from the Delta urged the governor to ignore the report. In May Governor Mabus issued his own report arguing that the Yazoo Basin project seemed to place too much emphasis on agriculture at the expense of urban areas, would do damage to the sensitive wetlands environment and its waterfowl inhabitants, and would add sediment to the Yazoo River. He called for a restudy of the projects that would take these concerns into account.[13]

A Page in History

Meanwhile, the Corps of Engineers was moving in a similar direction. In December 1988, Robert W. Page, Assistant Secretary of the Army for Civil Works, had ordered a two-year study of the Yazoo Basin projects that would focus on economic and environmental issues. On August 30, Page made a forceful public statement about the situation while in Vicksburg for a change-of-command ceremony at the Lower Mississippi Valley Division headquarters. "The Corps," he said, "had a reputation as an environmental rapist," and must learn to operate with a new sensitivity to environmental issues. Moreover, the Corps had to stop hoarding projects just because they were fully funded rather than subject to cost sharing: "Every Corps project should have a proponent, but that proponent should not be the Corps . . . ." Page said that the decision whether to dredge wetlands or maintain them as they were was a very difficult one, and he also expressed doubt that the Yazoo Backwater Pumping Plant would ever be built. Finally, he endorsed the position taken by Governor Mabus. In March of 1990, the two-year study was expanded to a three-year study and, a month later, the Bush



Administration budget for fiscal 1991 provided $5.9 million for a "reformulation" study of Yazoo Basin flood-control projects. The new plan was to provide alternatives that would give more "flood protection to urban areas," reduce "levels of agricultural intensification," and lessen "adverse impacts on the environment."[14]

The Yazoo flood-control projects did have a proponent. While there was strong opposition to flood control among the sportsmen and environmentalists of the Jackson area, there was much solid support in the Delta, and particularly during times of high water. When rising water threatened the basin in March of 1989, the Greenwood Commonwealth pointed out that "were it not for the levees and drainage projects completed by the Corps, many Deltans would now be fleeing floods, heading for the high ground." Congressman Mike Espy, who represented the area in Washington, stated that "we need to keep the projects going . . . the main thing is homes, the disruption of lives and families, and the destruction of property." The *Clarksdale Press Register*, referred to "hunting enthusiasts in other parts of the state," and said it did not want to see flood-control projects "wrecked by people who are themselves unaffected by the dangers and risks of flooding."[15]

Two years later, April of 1991 was the wettest month in Mississippi's history, and the resulting high water caused $275 million dollars in damage to the cotton, rice, soybeans, wheat, and catfish crops of the state. Governor Ray Mabus found himself under intense political pressure as a result of his role in slowing flood control in the Yazoo Basin. Congressman Espy called for restarting the projects, and Senator Trent Lott stated that "reformulation was a mistake." However, Col. Stephenson Page, the new commander of the Vicksburg District, stated that the Army was committed to the process of reformulating flood-control plans.[16] The long struggle over flood control in the Yazoo Basin was over, at least for a time, and both sides appeared to have learned important lessons. The Corps of Engineers had gained an appreciation for how much its customers valued the environment and had committed itself to changing its own values, and the opponents of the Corps of Engineers had new experience that flood works were important to have when the water was rising. A workable solution to the problems of the Yazoo Basin did not seem impossible at the end of 1991.

A Deer Stand Solution

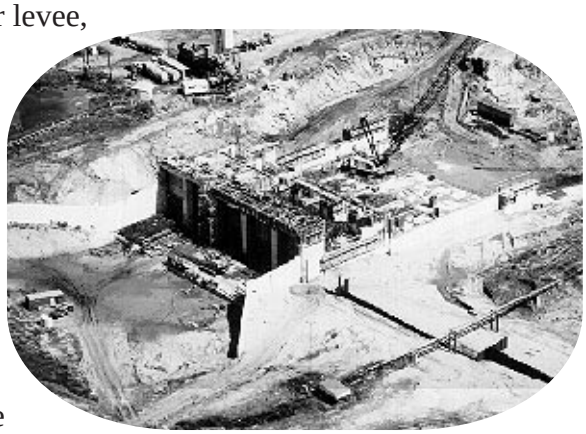
While it waited for funding to build the Yazoo pump, the Vicksburg District constructed a similar facility for the Tensas Basin, which runs along the west side of the Mississippi River from the Arkansas River to the Red River. At the southern end of the Basin is Concordia Parish, Louisiana, bordered on the east by the Mississippi, on the north by the Tensas River, on the west by the Black River, and on the south by the Red River. A low-lying area, Concordia Parish experienced almost annual flooding until the Mississippi levee was built to protect the eastern portion ofthe parish and then, in the 1950s, the Vicksburg District constructed a ring levee around the parish. Leo Young, a resident of Concordia and a former president of the Fifth Louisiana Levee Board, described the problem that existed in 1975, which was similar to that of the Yazoo backwater: "While we have been protected from outside floodwaters by a marvelous levee system, this same system that protects us from without has by impounding rain and seepage water flooded many of our citizens from within." Mr. Young made his remarks at a public meeting where he endorsed the district's plan to build a 4,000-cfs pumping plant on Wild Cow Bayou where it would evacuate ponded water into the Black River.[17]

The Wild Cow Bayou plan was the second proposal of the Vicksburg District. The initial concept, approved by Congress in 1965, was to build the plant at the southern end of Bayou Cocodrie, where the water would be pumped into the Red River. This would have required 22 miles of channel enlargement on Bayou Cocodrie, at the southern end of the parish where it flows through the Dismal Swamp, which contains a large tract of scarce bottomland hardwood. The plant itself would have been built in the Red River Wildlife Management Area. Environmental opposition to the project was so intense that the Vicksburg District was considering scrapping it in 1976.

At that point, a district hydraulic engineer, Larry Banks, had an idea while sitting on a deer stand one day. Since the area in need of protection was in the northern part of the parish, why not build the plant somewhere above the environmentally sensitive area in the south? Banks then developed a plan to divert floodwater from Bayou Cocodrie down Wild Cow Bayou where it could be pumped into the Black River on the west side of the parish. The southernmost

portion of the parish, including the 22 miles of the Bayou Cocodrie, would remain untouched. Banks' plan, which was accepted both by the Corps of Engineers and the State of Louisiana, provided the necessary flood protection, minimized environmental damage, and saved the taxpayers money by requiring less channelization.[18]

The Tensas-Cocodrie Pumping Plant project included the pumping facility, which would be built into the Black River levee, a gravity drainage structure located next to it, a weir built in front of the drainage structure, channel enlargement work on Wild Cow Bayou, and a cutoff channel connecting Wild Cow Bayou and Bayou Cocodrie. Along with some smaller mitigation features, the estimated cost of the project was $55 million. It was supervised by the Vidalia Area Office under Area Engineer Gerald R. McDonald. The channel work was completed in 1978, and the following year the pumps were ordered and a contract was awarded on the drainage structure and the weir. The pumping plant itself, a $17.5-million contract, was delayed until March 1983 when the Emergency Jobs Bill freed the necessary funds.



Armed with dollars aimed at stimulating employment, the Vicksburg District awarded a contract to Rosiek Construction Company of Arlington, Texas, and construction began in August. In the spring of 1986, the structure was complete and the five 800-cfs pumps were being installed. By the end of that year, the final phase of flood protection in Concordia Parish was ready to serve when needed. In the Flood of 1973, some 110,000 acres of cleared land in the parish went under water. Were the same circumstances to occur again, Vicksburg District officials calculate that more than 90 percent of the flooding would be prevented.[19]

Floods of the Century

The Corps of Engineers plans and builds in order to reduce flooding, but it can never totally prevent them. Funds are too limited and nature is much too powerful. The Corps is also charged with assisting local agencies in fighting floods when they do occur. Among other things, the Vicksburg District provides information on water stages, the expertise and

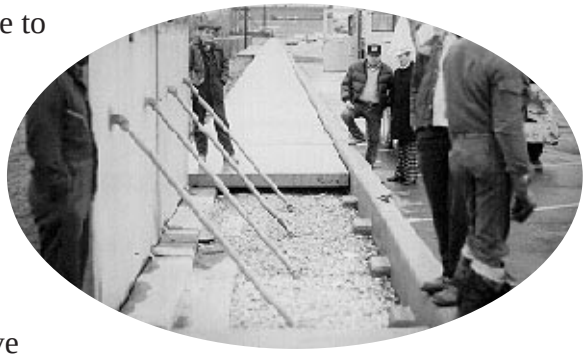
energy of trained floodfighting personnel, and sandbags, pumps, and other equipment.

The first important high water in the 1977-91 period came in 1979 when heavy spring rains caused flooding beginning on Easter weekend. Six thousand people were evacuated from their homes in Mississippi and Alabama on the Saturday before Easter. Flooding in the Vicksburg District occurred somewhat later. The Emergency Operations Center at Vicksburg was activated on a Phase I, daylight hours only, basis on April 16, and went into a Phase II, twenty-four-hour, full mobilization, basis on April 23. Flooding occurred in the latter half of the month throughout the district. Perhaps most significant, however, from the standpoint of the district's future was the intense flooding that occurred on the Pearl River to the east.[20]

On Easter Sunday, April 16, 1979, the Pearl River pushed its way into Jackson and forced the evacuation of 15,000 people in and around the city. The Eastover subdivision, an extremely wealthy area, was one of the hardest hit sections. There was no looting in Jackson and only one flood-related death. Later, however, the flood damage was estimated at $233 million, and there was a great deal of hostility among the residents. The first target of local anger was Charles Moak, director of the Pearl River Valley Water Supply District, which had constructed and was operating the Ross Barnett Reservoir to the north and upstream of the city. At the height of the flooding, the reservoir was releasing water into the Pearl, thus adding to the flood. Critics claimed that it had been kept nearly filled in order to benefit fishermen and water-sports enthusiasts. In addition to blaming the operation of the reservoir, the people of Jackson also felt they had been badly served by the Corps of Engineers and by other federal agencies.[21]

In September of 1981, at about the same time that the Red River Basin was transferred from New Orleans, the Vicksburg District also received the Pearl Basin from the Mobile District, the latter action at the direction of Lt. Gen. Joseph Bratton, Chief of Engineers. A common reason for such realignments is to adjust the workload among the districts. In the case of the Pearl Basin, it may also have been to place the capital city of Mississippi, Jackson, under the care of a Corps district that was in the same state. Regardless of why it was done, the result was to significantly enlarge the flood-control responsibilities of the Vicksburg District.[22]

Flood control in general and the Pearl River Basin in particular became extremely important concerns at Vicksburg during seven months of flooding in the Lower Mississippi valley between December 1982 and June 1983. The first event occurred in early December when the St. Louis District experienced severe flooding as a result of heavy rains. The next phase began the day before Christmas when intense rain fell in parts of Mississippi and Louisiana, landing on ground that was already soaked. Local rainfall of up to 17 inches caused flash flooding, and backwater flooding took place when smaller streams were unable to empty into swollen rivers. The central portion of the Vicksburg District, the area between Monroe, Louisiana, and Vicksburg, was particularly hard-hit. Damage in the Yazoo Basin was minimized by the four reservoirs, which closed their gates and trapped runoff water that would have done an estimated $161 million in damages. Despite this protection, the Yazoo Basin experienced extensive flooding and property damage.



After the Lower Mississippi valley dried out somewhat during the first three months of 1983, a new storm dropped as much as 16 inches of rain on southern Mississippi between April 5 and 8. The Pearl River carried some of that water into the Louisiana communities of Bogalusa and Slidell, which were now part of the Vicksburg District. At Slidell, the water crested at more than nine feet over flood stage and swept into expensive, residential sections of the city. In late April, the fourth and final phase of the

1982-83 flood involved a rising of the Mississippi River, which reached a maximum discharge in cubic feet per second at Vicksburg that was 91 percent of that in 1973 and 78 percent of that in 1927. Despite this pressure, the mainline levees held, and emergency operations centered around the once again beleaguered tributaries. Jackson, Mississippi, suffered another severe flood with 5,000 of her citizens forced from their homes on May 25.[23]

At Vicksburg, the Emergency Operations Center opened on the 26th of December and remained opened until March 4. During that period, 881,085 sandbags and 22 portable pumps were loaned to local agencies, and 185 district personnel were involved in the floodfighting effort. Half of the sandbags and 14 of the pumps went to the Ouachita Basin where Monroe, Louisiana, had 2,654 homes and 76 businesses flooded. President Reagan visited on January 2. Flood damages were estimated at $24 million. In the Tensas Basin, flooding was widespread. Only 5,500 sandbags and three pumps were loaned, but more than a million acres were inundated, and property damage was estimated at $43 million.

In the Yazoo Basin, Greenwood, Mississippi, was the scene of intense activity when a local levee on Pelucia Creek threatened to give way, and district personnel assisted in making repairs. Sandbags and mudboxes were used to give additional protection to parts of the city. At Coffeeville, near Grenada Lake, a drainage structure being built in the levee threatened to allow in the floodwaters. The Vicksburg District modified the construction contract and raised the cofferdam around the drainage structure to the height of the levee. Flood damages in the Yazoo Basin were estimated at $32 million, based on the inundation of 1.3 million acres. In the district as a whole, 4.3 million acres were flooded in this period, causing an estimated $119 million in damages. The Vicksburg District estimated that Corps of Engineers flood-control projects prevented an additional $265 million in damages.[24]

After being closed for a month, the Emergency Operations Center at Vicksburg opened again on April 6th to deal with the crisis on the Pearl

River. Severe flooding on that day affected Columbia, Foxworth, and Monticello, Mississippi, in addition to the more than $5 million in damage that occurred at Slidell and Bogalusa, Louisiana, where 700 or more homes were flooded. Over the next two weeks, the district loaned 600,000 sandbags and 2 pumps and made 45 personnel available. Jackson, Mississippi, sustained $2 million in damage from flooding on April 8, but the water did not enter any homes.

Also on that day, the Corps provided technical assistance to local interests at Bush, Louisiana, breaching an earthen bank on the east side of the Pearl to relieve pressure on the west side. A flood briefing in Jackson on April 10 was attended by Lt. Gen. Bratton, Chief of Engineers, Maj. Gen. William Read, Division Engineer, LMVD, and Col. Dennis York, District Engineer, Vicksburg, along with the director of the Federal Emergency Management Agency, Governor William Winter of Mississippi, and Congresswoman Lindy Boggs of Louisiana. After the briefing, the group made an aerial inspection of the lower Pearl Basin. The Vicksburg District Emergency Operations Center closed on April 22.[25]

Less than two weeks later, on May 3, the center opened for a third time to deal with dangerously high stages on the Mississippi. The McGehee Area Office patrolled levees on the south bank of the Arkansas and the west bank of the Mississippi while the Greenwood-Greenville Area Office did the same thing on the other side of the Mississippi. During the month, 35 slides occurred on the Mississippi levees and a number of "sandboil" seepage leaks developed. The sandboils were sandbagged, and six barges of stone were kept ready for other emergencies, but the levees remained strong. Heavy rain beginning on May 15 brought more flooding to Jackson, worse than anything since 1979. This time, however, the district worked closely with the Pearl River Water Supply District, operator of the Ross Barnett Reservoir, and other agencies to minimize damages. In particular, Vicksburg engineers assisted the Pearl River Flood and Drainage Control District to effect a temporary closure of levee gaps at I-55 and Fortification Street. Nonetheless, flood damage in the area was estimated at $31.6 million.

In the Yazoo headwaters, the district helped to repair levees on Abiaca Creek near Cruger, above Grenada Lake near Coffeeville, and at Pelucia Creek near Greenwood. Both Enid Lake and Sardis Lake rose enough to

send water through their emergency spillways. At Enid, the force of the flow damaged the bank where the spillway channel entered the main channel, necessitating emergency repairs using stone; similarly, at Sardis a scour hole downstream of the outlet works was repaired by pumping in 240 cubic yards of cement grout. When the Emergency Operations Center closed again on June 24, the district had loaned 265,000 sandbags, 17 portable pumps, and 130 personnel. Estimated flood damage in the district was $226 million. Some 3.7 million acres of land were inundated.[26]

Speaking to the Mississippi legislature on June 14, 1983, Col. Dennis York, Vicksburg District Engineer, stated that the high water of December 1982 through June 1983 "ranks as one of the major floods of this century." He estimated that property loss in the Yazoo Basin would reach $140 million, most of it in agricultural crops that could not be planted. Corps flood-control projects, according to York, prevented more than $4 billion in damages. The four Mississippi reservoir lakes, for example, had stored, or released under controlled conditions, enough water to cover all of the state to a depth of four inches. Turning to the Pearl Basin, York praised the operation of the Ross Barnett Reservoir in 1983 but also made clear that it was primarily a recreation and water supply facility without the storage capacity for much flood-control service. After describing the flood and the floodfight, the district engineer advocated that the state work more closely with federal agencies to plan for flood control. He also suggested that Mississippi exercise greater control over the economic development of areas subject to chronic flooding.[27]

While the seven months of flooding was still a fresh memory, another storm struck the Yazoo headwaters. On the third and fourth of December 1983, 11 inches of rain fell in the vicinity of Greenwood, Mississippi. Once again the Greenwood Area Office, under the control of Area Engineer Jimmy Childers, went into action. The most serious problem was a break in the levee along Pelucia Creek, which allowed 154 homes in several subdivisions to be flooded. The area office loaned 4 pumps that helped to control the situation and then devoted 8 days to repairing the levee on an emergency basis. Additional levee breaks took place in Greenwood and in nearby

areas, and more than 150 homes were also flooded in Grenada, Mississippi. Fortunately for residents of the upper Yazoo area, the Vicksburg District had been able to reduce the water level of the reservoir lakes almost to their optimum flood-control depth between June and November of 1983. With its gates closed during the December storm, Grenada Lake rose 14.6 feet, holding enough water to lower the flood-crest stage at Grenada by 5 feet and that at Greenwood by 4 feet.[28]

In the spring of 1990, the upper portion of the Red River experienced major flooding as a result of heavy rainfall in western Arkansas and eastern Oklahoma. Between Texarkana, Arkansas, and Shreveport, Louisiana, the flood stages exceeded those that should occur no more than once in every 100 years.[29] A major problem for the Vicksburg District was the north bank of the Red River from Little River to the west, where the levees are under its jurisdiction but the land behind them is in the Little Rock District. Extensive flooding occurred owing to the failure of a levee that was part of an inactive levee district and had fallen into disrepair. In the rest of the Vicksburg District, levee districts and other local agencies engaged in vigorous flood fighting with the assistance of the Vicksburg District, and prevented other failures. The completed portion of the Red River Waterway helped to move water away from the flooded areas, keeping river stages several feet lower than they otherwise would have been. While 700,000 acres were flooded, the levees and upstream reservoirs on the Red River prevented the flooding of another 1.3 million acres.[30]

The following year, in April, May, and June of 1991, the Vicksburg District experienced its worst flood since 1973. The district's Emergency Operations Center opened on April 16 and continued in operation until June 20. Rainfall over the whole district in that period ranged from two to four times normal. All four of the reservoir lakes in the Yazoo Basin rose above their overflow spillways for the first time since 1973. More than 4 million acres were flooded within the district, and damages reached $351 million. Flood-control projects of the Corps of Engineers prevented an estimated $1.12 billion in damages.

In the Ouachita Basin, 26 new maximum river stages were set, 5 in Arkansas and 21 in Louisiana, and the resulting flood was prolonged in duration. At Monroe, Louisiana, for example, the Ouachita River rose slightly above the previous high recorded in 1945 and than remained at or above floodstage for 58 days. Homes and businesses were flooded in the Chauvin Bayou area of the city, where existing local levees proved to be poorly designed and poorly constructed. Further south on the Ouachita, Columbia Lock and Dam experienced a record crest and the river was outside its banks for 109 days. Backwater from the Ouachita and Tensas rivers flooded the Sicily Island area, damaging homes, businesses, and farm operations. Floodwaters overtopped the Connerly Dam spillway at Lake Chicot in southeast Arkansas, raising the stages of the lake, muddying its water, and damaging a number of docks. The Lake Chicot Pumping Plant performed as it was intended, but its capacity was exceeded by the meteorological conditions.

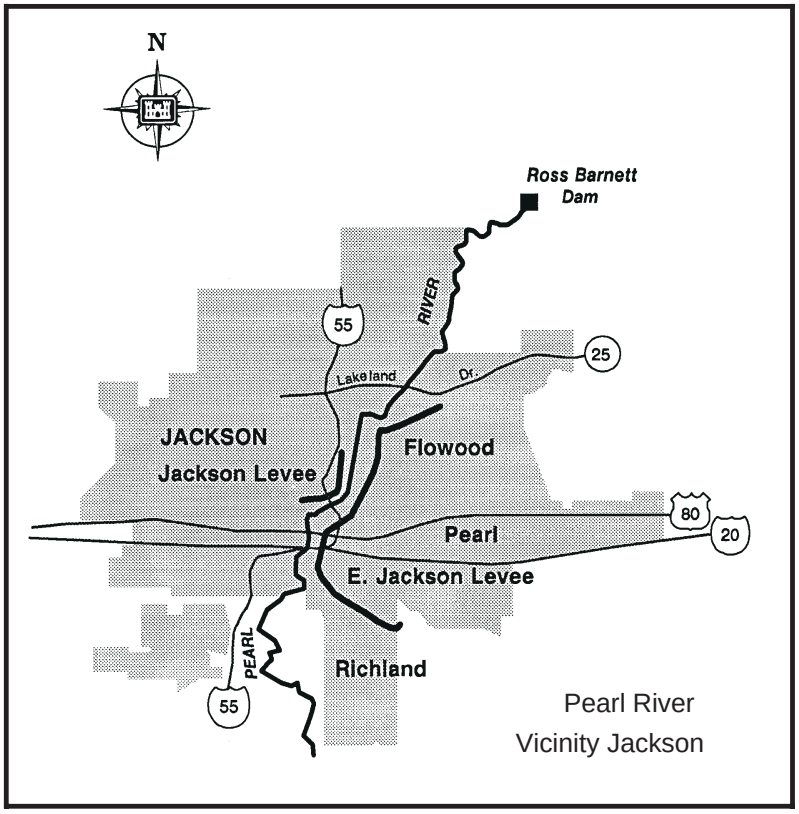
Rainfall in the Yazoo Basin produced 18 "record" stages, and flooding continued into June. A major floodfight occurred at Marks, a community of 1,756 in Quitman County, where hundreds of state inmates and National Guardsmen joined Vicksburg District officials and local citizens in attempting to hold back the rising waters of Coldwater River and Cassidy Bayou. An estimated 300 families in Quitman County left their homes as a result of the flood. Only sandbags and hastily constructed dirt levees prevented Marks from being inundated by two to four feet of water.

A major success story of the 1991 flood in the Yazoo Basin was the Fort Pemberton Control Structure, which had just been constructed to channel floodwaters through the Fort Pemberton Cutoff around Greenwood, Mississippi, thereby protecting the city. Operated for the first time on April 15, the structure worked admirably, lowering stages on the Tallahatchie River by about a foot as the stream swept by Greenwood. The overflowing of spillways that occurred at each of the four reservoir lakes continued for more than ten weeks, and it created some degree of outlet-channel erosion at each lake.[31]

The Storm's Silver Lining

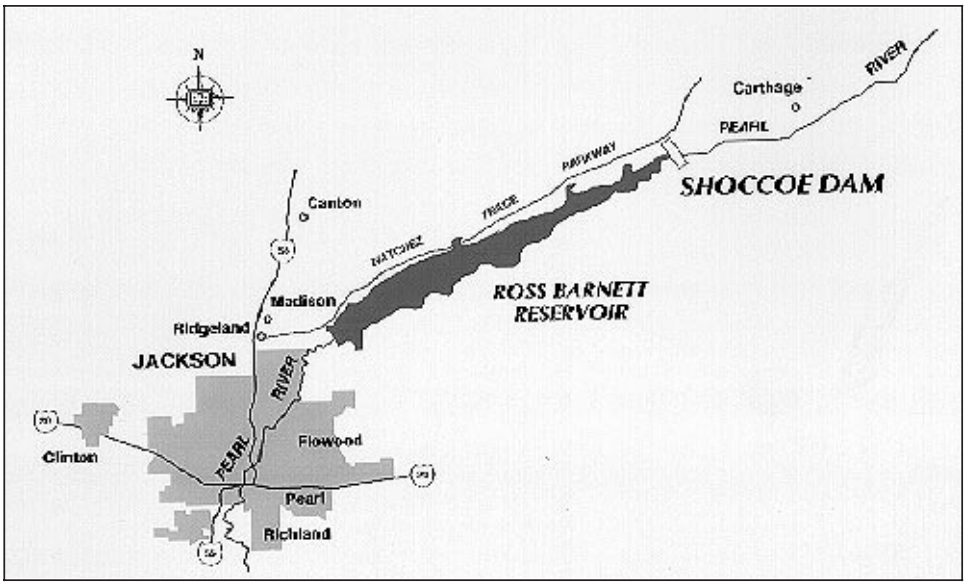
In the aftermath of the floods came a new appreciation for flood control. In the spring of 1984, the Yazoo-Mississippi Delta Levee Board commended Colonel York for the way in which the district had operated the north Mississippi reservoirs during the high water. Under the interim operating plan adopted in 1981, the rule curve was modified to allow for the release of as much water as possible in the winter months when it would not flood farmland already in crops. The wet conditions, however, had made it necessary to inundate some land in order to prepare for the possibility of more rain. Still, as board president Mark Simmons, a Belzoni farmer, put it, the flood control and economic benefits provided by the Vicksburg District "warrant the highest praise of this board and the citizens of the Mississippi Delta."[32]

In the Pearl Basin, flood control was a major concern. The Mobile District had begun planning for overall flood control at Jackson and continued its work when Vicksburg took over the basin. The Vicksburg District, however, used part of its Jobs Bill funds to raise permanently the height of the levee system at Fortification Street and I-20, where the ramp had been overtopped by flood waters in 1979 and required the protection of temporary dikes in 1983. It also carried out a floodway clearing project on 3.3 miles of the Pearl River at Jackson, a project that was part of a Four-Point Plan originally developed by the Mobile District. As part of its normal responsibility, the Vicksburg District also monitored the 13 miles of levees and two pumping stations that were part of the city's flood defenses. In May of 1985, Col. York issued a certificate of merit to the Rankin-Hinds Pearl River Flood and Drainage Control District for the way in which it maintained these works.[33]



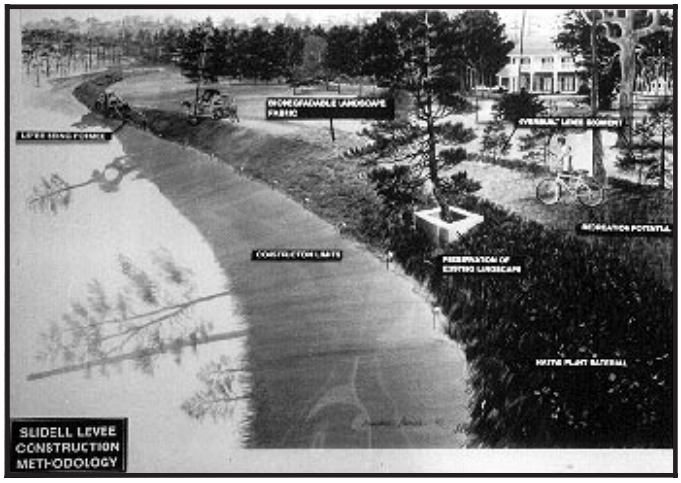
A major project arising out of flood-control activities in the Jackson area was the Shoccoe Dry Dam, which was proposed by the Mobile District and authorized in the Water Resources Act of 1986. It was to be designed and built by the Vicksburg District at a site on the Pearl River about 40 miles upstream of Jackson, near Shoccoe, Mississippi. The earthfill structure was to be 45 feet high and 2.8 miles long. At normal stages, the Pearl River will flow unimpeded through an ungated 120-foot spillway; at flood stages, a normally dry reservoir of about 39,000 acres would come under water. The holding capacity of the Shoccoe Dry Dam would lessen flood stages in Jackson by five to seven feet in conditions such as occurred in 1979 and eliminate about 80 percent of annual flood damages in that city.

The local sponsor for the Shoccoe Dry Dam was the Pearl River Basin Development District (PRBDD), an organization chartered by the State of Mississippi and representative of 15 Mississippi counties. Under the Water Resources Development Act, the PRBDD was to provide land, easements, rights-of-way, and relocations necessary for the project as well as five percent of the construction costs. This non-federal cost amounted to about $31 million of the total cost estimated in 1986 as about $81 million. In January of 1986, the PRBDD indicated that it would provide the non-federal share, but four counties stated their opposition to the project, and the development district was unable to win approval from the Mississippi legislature to issue bonds for the necessary monies. As a result, the Vicksburg District gave up the Shoccoe Dam in 1987 and, at the request of the



PRBDD, it began planning a series of levees that would protect Jackson from the Pearl River. At the end of 1991, feasibility studies were continuing.[34]

Prompted by the severe flooding that had occurred at Slidell, Louisiana, at the lower end of the Pearl, the district undertook a study of how best to provide protection. "Fast-tracked" so that it was completed in two-and-a-half years instead of four, the report recommended a $24-million project consisting of 15 miles of levees to give protection against the 200-year flood. On June 30, 1986, in a ceremony at New Orleans, Assistant Secretary of the Army, Civil Works, Robert Dawson signed the Vicksburg District's first cost-sharing agreement with the St. Tammany Levee District, the local sponsor. At the end of 1991, however, local funding still had not been found, and the preparation of a General Design Memorandum for the project was on hold.[35]



In the fifteen years after 1976, the Vicksburg District continued in the flood-control tradition that had been established after the 1927 flood. It participated in the maintenance of existing flood-control works, and it built new ones. Personnel from Vicksburg and from the area offices cooperated on a regular basis with local interests. When the floods came, the flood works, the expertise of the district, and its fine relationship with the people of Arkansas, Louisiana, and Mississippi all worked effectively to minimize the damage that nature was able to cause.

Chapter Three Notes

[1]Interview with Charles "Flash" Gordon, Project Engineer with the Greenwood-Greenville Area Office, July 28, 1986; Interview with Gerald R. McDonald, Area Engineer, Vidalia Area Office, Oct. 31, 1986.

[2]Clay, *Navigation on the Lower Mississippi*, pp.46-47; Speech by Collins to Hinson, Aug. 23, 1979; "Standard Briefing," 1980; Col. Pat M. Stevens IV, Low Water Inspection Trip, Sept. 1985.

[3]"Upper Yazoo Projects," June 30, 1982, Project Management Branch; Interview with Sam Trisler, Project Engineer, Project Management Branch, Nov. 19, 1987.

[4]The Yazoo Area Pump Project: Phase 1, General Design Memorandum- Environmental Impact Statement (Vicksburg: U.S. Army Engineer District, 1982), pp. 1-26.

[5]Speech by Colonel Samuel P. Collins, Jr., at Yazoo Area Pump Project Public Meeting, April 6, 1982.

[6]Yazoo Area Pump Project, Appendix J, Part 1, pp. 1-26, 83-84, Part 2.

[7]U.S. Congress, House Committee on Public Works and Transportation, Proposed Water Resources Development Projects of the U.S. Army Corps of Engineers, 98th Cong., 1st Sess., 1983, pp. 98-103, 378-382.

[8]Communication from Col. Pat M. Stevens IV, May 1987.

[9]Jackson, *Clarion-Ledger*, Jackson, Oct. 26, 1987; ibid. Dec. 13, 1987; Greenwood *Commonwealth*, Jan. 3, 1988; ibid., Mar. 21, 1988.

[10]*Mississippi Out-Of-Doors*, April 1988.

[11]*Clarksdale Press Register*, Apr. 6, 1988; ibid., Apr. 7; ibid., Apr. 15; *Greenwood Commonwealth*, Apr. 18, 1988; ibid., Apr. 20; ibid., July 10; Jackson, *Clarion-Ledger*, June 25, 1988.

[12]Jackson, *Clarion-Ledger*, June 11, 1988; ibid., Aug. 20. For later aspects of this case, see ibid., Mar. 16 and Mar. 30, 1988.

[13]Jackson, *Clarion-Ledger*, Aug. 29, 1988; Yazoo City, *Yazoo Herald*, Nov. 19, 1988; Memphis, *Commercial Appeal*, Jan 12, 1989; Jackson, *Clarion-Ledger*, Jan. 17, 1989; Greenville, *Delta Democrat Times*, Feb. 5, 1989; *Greenwood Commonwealth*, May 11, 1989.

[14]Greenville, *Delta Democrat Times*, Feb. 5, 1989; Jackson, *Clarion-Ledger*, Aug. 31, 1989; ibid., April 1, 1990; *Vicksburg Evening Post*, Mar. 2, 1990; "Upper Yazoo Projects Reformulation Study," Reformulation Report, Volume I (Draft, February 1993), p. 1.

[15]*Greenwood Commonwealth*, Mar. 3, 1989; Tupelo, *Daily Journal*, Mar. 4, 1989; *Clarksdale Press Register*, Mar. 10, 1989.

[16]*Clarksdale Press Register*, May 28, 1991; Greenville, *Delta Democrat Times*, June 5, 1991; Memphis, *Commercial Appeal*, June 8, 1991; *McComb Enterprise Journal*, May 24, 1991; Jackson, *Clarion Ledger*, June 11, 1991.

[17]"Public Hearing on Tensas-Cocodrie Pumping Plant . . . Monterey, Louisiana, 24 August 1976," Tensas-Cocodrie Pump Working Files, Project Management Branch, p. 15.

[18]"Fact Sheet Tensas-Cocodrie Pumping Plant, March 1986," Tensas-Cocodrie Pumping Plant Working Files, Project Management Branch; Leon Pantenburg, "Hunting Trip Bags Strange Trophy," *Mainstem* (Spring 1986), pp. 7-9.

[19]"Fact Sheet Tensas-Cocodrie Pumping Plant, March 1986"; Interview with Gerald R. McDonald, Area Engineer, Vidalia Area Office, Oct. 31, 1986.

[20]*New York Times*, April 15, 1979, p. 1; Col. John H. Moellering, "High Water Presentation," May 2, 1979.

[21]*New York Times*, Apr. 16, 1979, p. 1; ibid., Apr. 27, 1979, p. 14.

[22]Col. Samuel P. Collins, Jr., "Realignment Activities," Sept. 18, 1981; Interview with Col. Dennis York, Dec. 16, 1986.

[23]William E. Read and Michael Robinson, "Lower Mississippi Valley Floods," *Journal of Water Resources Planning and Management* (Oct. 1985), 111: 434-453.

[24]*Post-Flood Report: Flood of Dec 82-Jan 83* (Vicksburg, U.S. Army Engineer District, n.p., n.d.), ii, I, pp. 1-7.

[25]*Post-Flood Report: Flood of April 1983, Pearl River Basin* (Vicksburg, U.S. Army Engineer District, n.p., n.d.), I, 1-3.

[26]*Post-Flood Report, May-June 83* (Vicksburg, U.S. Army Engineer District, n.d., n.p.), ii, I, 1-5.

[27]"Colonel York's Presentation: Mississippi House and Senate Committees," June 14, 1983.

[28]*Post Flood Report: Flood of December 1983, Yazoo River Basin, Mississippi* (Vicksburg, U.S. Army Engineer District, n.p., n.d.), I, 1-2, incl. 1.

[29]*The Floods of 1990*, U.S. Army Corps of Engineers, Little Rock District.

[30]*After Action Flood Report, May 1990 Flood Event: Red River Basin, Louisiana*, U.S. Army Corps of Engineers, Vicksburg District, pp. 1-4.

[31]*After Action Report, Flood of April/June 1991: Ouachita/Black Rivers, Red River and Yazoo River Basins*, U.S. Army Engineer District, Vicksburg District, October 1991, pp. 1-6, 18-19; *Post Flood Report, Flood of April/June 1991: Ouachita/Black Rivers,* Red River and Yazoo River Basins, Department of the Army, Vicksburg District, pp. 34-42.

[32]"Levee Board Commends Vicksburg District," PAO News Release, March 1, 1984.

[33]Col. Dennis York, Speech to Special Senate Committee, Sept. 10, 1984; "Factsheet, Pearl River Basin, Fortification Street, Jackson, Mississippi," Jan. 1, 1985, Project Management Branch; "Fact Sheet, Pearl River Basin . . . Vicinity of Jackson," July 18, 1985, rev. Sept. 20, 1985, ibid.; "Jackson Floodworks in Good Shape," PAO News Release, May 1, 1985.

[34]"Fact Sheet, Shoccoe Dry Dam," Sept. 1987, Project Management Branch; Interview with Sam Trisler, Project Manager, Project Management Branch, June 23, 1987; Jackson, *Clarion-Ledger*, Jan.24, 1989; ibid., Apr. 9, 1989; Annual Report, Fiscal Year 1991, vol. 2, sect 12, p. 6. See also U.S. Congress, House, Committee on Public Works and Transportation, Flood Problems in the Pearl River Basin, Hearing before the Subcommittee on Water Resources of the Committee on Public Works and Transportation, House of Representatives, 97 Cong., 2nd Sess., 1982.

[35] *Pearl River Basin: Slidell, Louisiana, and Pearlington, Mississippi, Interim Report on Flood Control* (Vicksburg: U.S. Army Engineer District, 1986), p. 59; "Slidell Levee Project," PAO News Release, June 30, 1986; *Annual Report, Fiscal Year 1991*, vol 2, sect. 12, p.6.