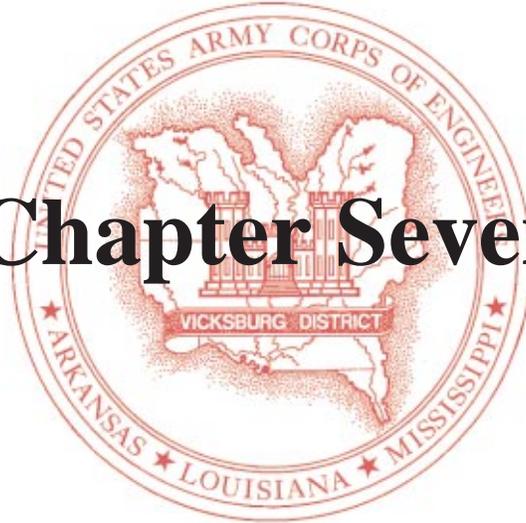


Chapter Seven



The New District and Its Challenges



While the Vicksburg District expanded geographically to include two new river basins and undertook significant new responsibilities with respect to the environment, it also changed as an organization in the fifteen years between 1976 and 1991. One change was an enhanced role for the

Public Affairs Office, which reflected the heightened visibility of the Corps of Engineers and its increased sensitivity to public opinion. Another major development occurred within the Office of Emergency Operations, as the Vicksburg District carried out a directive from the Office of the Chief of Engineers to strengthen the military aspects of preparedness.

While these and other changes were taking place within the district organization, changing federal policies were also having drastic effects on how Vicksburg engineers would do their job. The Commercial Activities Program, developed out of the Office of Management and Budget, required that federal agencies measure their efficiency against that of private industry and demonstrate the economic effectiveness of doing work using government equipment and government employees. Finally, and perhaps most importantly, the concept of cost sharing, which required local sponsors to pay some portion of water resource projects, became increasingly significant and was eventually spelled out in the Water Resources Development Act of 1986.

Meanwhile, the Vicksburg District began a new project in the mid-1980s that quickly grew to major proportions. In cooperation with the Soil Conservation Project, it undertook to slow the erosion that annually took away valuable soil from the Yazoo headwater area, leaving the land scarred and the streams clogged with sediment.



The changing nature of the district's relationships with its publics, some of which had become openly hostile, was mirrored in a changing, expanding public affairs program. The environmental movement, the war in Viet Nam, and Watergate created a public in the mid-1970s that wanted more information, more involvement, and more accountability.



The Public Affairs Office (PAO), created from the technical liaison structure in 1969, would be required to not only ensure the public's needs were met, but also counsel a highly technical, sometimes skeptical workforce on the importance of increasing public involvement and cooperation with the media. At the same time, the office would be challenged to enhance employee morale during some of the most challenging periods in the district's history.¹

The first institutional indication of this new emphasis came in 1982 when Col. Sam Collins separated the duties for executive assistant and public affairs officer, naming Billy C.



Bridges as the district's first full-time public affairs officer. His predecessor, John Davis, and Col. Dennis York further expanded PAO's capability and influence through advanced training for public affairs staff and additional resources. The information office of five years earlier was now involved in communications strategy on such issues as the Coffeerville Hotel and Sardis Earthquake berms.

The trend continued when Col. Pat Stevens IV became district engineer and Michael Logue the public affairs officer in 1985. By 1988, the office boasted an Army-trained staff, including three graduate degrees, and a list of achievements that included several awards of the Corps' Gold Quill for journalistic excellence and the coveted Keith L. Ware Award for Army Journalist of the Year. For his efforts, Logue was



named the LMVD nominee for Army Civilian of the Year.²

Under Logue, the PAO developed an aggressive, proactive approach to public issue resolution. Up to three dozen public relations issues per quarter were identified, monitored, and rated, based on the level of public interest or, in some cases, hostility. Public

affairs action plans were developed for the toughest issues, typical among them was the West Pearl River Navigation Project.³

The PAO Action Plan for the West Pearl included an aggressive strategy to build media and public credibility in a region where the Corps was not a favorite agency. The Vicksburg District, after receiving the basin in 1982, was an unknown entity in this pristine region where Mobile and New Orleans Districts had numerous controversial projects.

Using a carefully timed, two-day plan of letters to residents, sponsor briefings, meetings with opponents, media project tours, carefully selected interdisciplinary spokespersons and later innovative information stands for the public, the public affairs team was able to announce the possible resumption of maintenance dredging with minimal public confusion and concern. Referred to by Logue as “wetting the ground before the spark,” this plan allowed technical elements and the commander to work in an environment of factual information and media credibility.⁴

On the other hand, in the 1960s the Corps of Engineers went about its business in the United States with little sensitivity to public opinion and the result, as was shown in Chapter 5, was controversy and negative publicity. The new approach was a promising one that seemed to be working.

Another element of the Vicksburg District that has emerged and expanded in recent years is the Emergency Management Branch (EMB), which is located within the Operations Division.

Emergency situations were handled originally by one of the branch chiefs in the Operations Division. LTG Heiberg, Chief of Engineers, wanted to strengthen emergency planning, and the Vicksburg District first created a section for that purpose and then upgraded it to a branch in 1982. The function of EMB as it now exists is essentially twofold: it plans the strategies by which the district will respond to a variety of emergency situations, and during emergency situations it operates the Emergency Operations Center, a communications center and command post through which the district engineer controls his forces.



The emergencies for which EMB makes ready are both civil and military. Perhaps a quarter of its time and energy is devoted to dealing

with floods. Most emergencies are related to high water, but since the district has so much experience with those events, relatively little additional training or planning is required.



In other situations, often involving wind or snow and ice, the Corps of Engineers lacks statutory authority to intervene except where lives are threatened. One such event took place in April 1984, when a tornado hit Water Valley, Mississippi. After receiving a call for assistance from the Highway Patrol, the district sent 36 employees from Sardis and Enid Lakes to assist in rescuing survivors amid the debris at a shopping center.

Clyde Scott, Chief of the EMB, was quick to point out that emergency operations are not always centrally controlled. District personnel had the authority to respond on their own when necessary. That was the case in April 1986, when a privately owned barge exploded in Vicksburg harbor, and further damage was averted by streams of cooling water pumped over nearby oil drums by district vessels when the crews simply followed their fire prevention procedures.⁵

Military emergencies involve two types, “mobilization,” which involves support for a conventional war effort, and “continuity of government,” which is preparation for a nuclear attack. The Vicksburg District has no military mission of its own. Under the Mobilization Plan, it would support the military construction programs of the Mobile District and the Fort Worth District. Included in “Mob Plan” are agreements that have been worked out with each of those districts.⁶ The



Vicksburg District has also undertaken projects in both of those districts to gain experience in military construction. “Continuity of government” readiness is a more complex problem, and EMB is currently working on a five-year plan to bring that about. Meanwhile, the district undergoes one or two one-week simulation exercises each year, pretending to respond with its existing resources to the emergency created by either a mobilization or a continuity of government situation.⁷

Another change at Vicksburg is symbolized by the expansion of the Safety Office into the Safety and Occupational Health Office. For nearly half a century, the Corps of Engineers has emphasized accident prevention,

focusing first on physical injuries at construction sites. Today, the safety program deals with three areas: the prevention of injuries to the in-house work force, ensuring that contractors follow the procedures outlined in the “Safety and Health Requirements Manual,” and educating the public about safety, particularly with regard to recreation. Mac Wimbish, who is in charge of safety and occupational health, inaugurated a program of financial rewards for safe practices. Individuals on the Vicksburg river crew with a positive safety record over the previous year qualified for a drawing that provided cash prizes of \$300 to 29 winners.



In fact, the district had a fine safety record. In 1985, injury rates on its construction sites were much lower than the national average; the rate of workdays lost for the district as a whole was less than half the national average, and the rate of accidents involving district motor vehicles was about 11 percent of the national average.

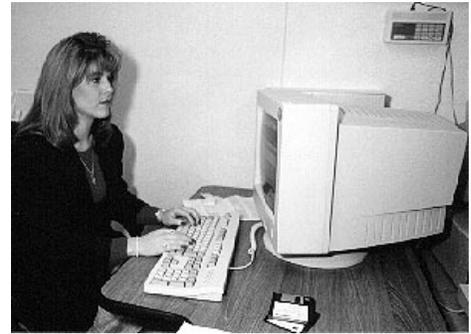
During the 1970s, the safety program began to be involved with occupational health; that is, with safety over the longer term. The job-hazard analysis done by the safety program now inspects facilities not only for accident potential but also for long-term hazards such as asbestos. Some transformers have been identified as containing polychlorinated biphenyls (PCBs), and these are being carefully monitored.



The Safety and Occupational Health Office at Vicksburg has also become the center for wellness activities at the district. Wellness, essentially the avoidance of sickness, involves activities such as stress management, smoking cessation, and physical fitness.⁸

The Information Management Office (IMO) is one of Vicksburg’s newest units. Created at the directive of the Office of the Chief of Engineers, it combined most of what was the Office of Administrative Services, which used to provide paper, forms, office equipment, and office support, with the automatic data processing center, the special reports section of engineering, and the electronics shop that was in Operations.

One reason for the new organization was the modern reliance on microcomputers, which lessened the role played by mainframe computers and by typewriters, and created massive amounts of information that never appeared on paper. Among IMO's responsibilities is coordination of hardware and software acquisition, systems programming, running the computer center, operating an internal mail service, installing and maintaining office equipment, and providing communication and audiovisual services.⁹



In the late 1980s, after several false starts, the Vicksburg District became computer literate as personal computers tied into a district-wide network showed up on the desks in Vicksburg and at the area offices. IMO played an important role in choosing hardware and software and in doing the immense job of training that was necessary as the district moved from typing to word processing, from written memo to E-mail, from filing hard copies to saving electronic ones, and from desk-top appointment calendars to ones that are on the screen.¹⁰

The Vicksburg District created a Project Management Division in 1988 as a result a directive from the Office of the Chief of Engineers. Chief of Engineers Lt. Gen. Henry J. Hatch was concerned that Corps of Engineers projects were taking too long and that cost overruns were too common and too large. He believed that part of the problem was that responsibility was often divided with no one looking at the total picture. The answer was life-cycle management in which a project manager would stay with a project from beginning to end, from "cradle to grave" as it is often called, to make sure that the project was on track and on budget.

At Vicksburg, the Project Management Division was created and staffed with many project managers who had been performing that function in the Engineering Division. Division status gave project management a new significance, however, and that



significance was reinforced by the fact that its current chief, Roy Smith, was also a deputy district engineer. As a result of this initiative and others, Corps of Engineers projects were taking much less time to complete, and the system was working very well in Vicksburg.¹¹

A temporary, but nonetheless important, program took place between 1977 and 1981 as the Vicksburg District carried out an inspection of high-hazard-potential, non-federal dams in Mississippi as part of a national program ordered by President Carter after a dam had given way at Toccoa Falls in Georgia.



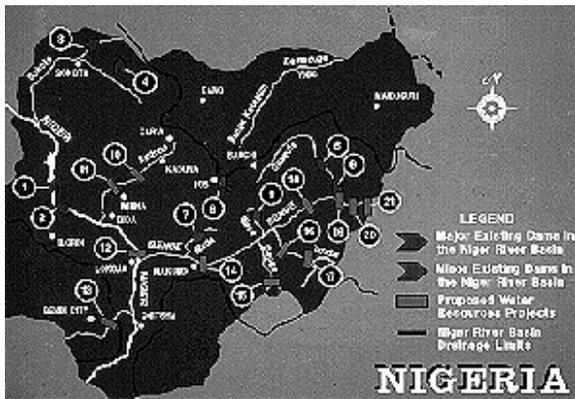
Working closely with state authorities, district personnel inspected 17 dams from December 1977 until June 1978, when the Vicksburg District executed a contract with the State of Mississippi under which a private firm carried out the inspection subject to certification by the Corps of Engineers. Of a total of 80 dams inspected, 36 were found unsafe.¹²

Perhaps the most exotic of new programs was the work done by the Vicksburg District in the Niger Basin of West Africa. The Niger River is more than 2,500 miles long and runs through an area three times the size of Texas that includes parts of Benin, Chad, the Cameroons, Guinea, the Ivory Coast, Mali, Niger, Nigeria, and Upper Volta. At the request of the State Department, the Corps of Engineers agreed to conduct a multiyear study to determine how the countries of West Africa could increase their benefits from the Niger. The project was handed to the Vicksburg District.

Phase one of the work involved the collection of data on the flow patterns of the river, and phase two was to be a physical examination of the river and its environment to determine its potential for navigation. The project began in 1984, but the State Department phased it out late in 1986 due to lack of funds. During that period a small number of Vicksburg personnel lived and worked in Niamey, Niger.



Maj. Terry Rice, his brother, Maj. John Rice, and Sam Christian carried out their assigned duties and also voluntarily designed and built an



American school, the first institution in the area where children could be taught in English. While the study was not fully completed, it did gather much useful information on the Niger River, which is now being published. It also provided Vicksburg engineers with valuable experience in managing projects in other parts of the world. According to District Engineer Col. Pat M.

Stevens IV, these engineers “left an indelible mark of professionalism and quality in the African Sahel.”¹³

Another major change for the Vicksburg District had to do with the housing of the district headquarters. After being in a variety of downtown Vicksburg buildings, in 1978 most district employees were located in

Walnut Towers, a six-story building on Walnut Street, while the district commander and his staff were in a suite of offices in the Post Office a few blocks away. This situation worked reasonably well until Walnut Towers began to deteriorate rapidly and seriously.



By the middle of the 1980s, the air conditioning was breaking down frequently, a problem made more serious by the fact that none of the windows in the building opened to allow outside air to enter.

A more serious problem became clear early in 1988 when a fire-safety analysis of Walnut Towers concluded that the building was unsafe and should be vacated. This was not new information to employees of the district, some of whom noted that firemen got into the building during fire drills long before employees could make their way out of circuitous corridors and narrow stairwells.



The Vicksburg District began a long negotiation with the General Services Administration (GSA), which leases space for the Corps of Engineers, to break the lease with the owners of Walnut Towers and to find a new home for the district headquarters. Meanwhile, a rash of false fire alarms seemed to indicate a growing employee frustration with the unsafe situation in the old building.¹⁴ A solution to the housing problem appeared in the

late summer of 1988 when GSA signed a lease with the owners of Battlefield Mall, a shopping center on Frontage Road off Interstate 20. The Vicksburg District would have about 110,000 square feet of space in the single story mall, sharing the structure with Sears and Walgreens stores.

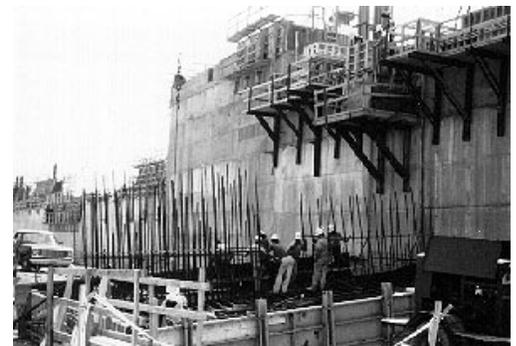
The move that took place between October 1988 and March 1989 was a major effort, even for engineers accustomed to supervising large construction projects. Employees from both Walnut Towers and the Post Office went to the new location, 850 people in all with office furniture and equipment. The job was done in five stages, with movers working 24 hours a day over each weekend so that district employees would not lose work time. A major problem occurred and was solved when the elevator in the Post Office went out during one move. An Otis Elevator repair man had been put on call earlier, and he arrived in thirty minutes and fixed the elevator in two hours.



Battlefield Mall became a happy home for the district. Employees liked being safe. They also like being together and being able to park near their offices. The atrium of the former shopping mall proved unexpectedly popular as a place for district meetings, job fairs, and lunchtime walks. Meanwhile, GSA was working on a new site and a new building that would belong to the district.¹⁵

Few pieces of legislation were as beneficial to the Vicksburg District construction program as Public Law 98-8, popularly known as the Jobs Bill of 1983. A response on the part of the Reagan Administration to the fact that 11 million Americans were out of work, the measure provided \$4.6 billion to create new jobs.

The U.S. Army Corps of Engineers received \$389 million from Jobs Bill funds, and the Vicksburg District got \$98 million, a quarter of the money available to the Corps. The funds were received in April and had to be obligated by September 30, the end of the fiscal year. Doing so efficiently and effectively was a challenge the district met successfully.



Contracts were let to speed up the construction of the Tensas-Cocodrie Pumping Plant and Overton Lock and Dam and to study the problem of flood control on the Pearl River. The monies generated jobs and made progress on important civil works projects.¹⁶

A longer term policy thrust of both the Carter and the Reagan years was the idea of making the federal government smaller and more efficient. While the Vicksburg District increased in geographic size and in budget, it has decreased in personnel. Between 1977 and 1981, when employees were counted in terms of “year-end strength,” they dropped from 2,253 to 2,088, a loss of 7.3 percent.



Using the “full-time equivalent” (FTE) concept currently in use, the number of FTEs fell from 1,805 to 1,700 between 1982 and 1986, a drop of 5.8 percent. This trend continued into the 1990s; in 1991, the district had 1,680 FTEs.¹⁷

The Engineering Division of the Vicksburg District in particular has felt the impact of an expanded mission coupled with a reduction in work force. The engineering workload expanded dramatically with the transfer of the Red River Waterway to the Vicksburg District, which brought the need to create designs, construction plans, and specifications for three locks and dams and numerous revetments and realignments along the river.

Also the Demonstration Erosion Control project on the Yazoo Basin called for a significant amount of design work that began in the mid-1980s and continued to expand each year through 1991. To meet these needs, the Vicksburg District used private architect-engineer contracts and allocated work to other districts with engineering capability. Locks and Dams 3 and 5 on the Red River were designed by the Vicksburg District, but Lock and Dam 4 was designed by the Sverdrup Corporation of St. Louis, Missouri.



Computer-aided design and drafting (CADD) has been important the effort to become more efficient at producing designs. This integrated computer system contains numerous workstations, plotters, scanners, and other related equipment that permit three-dimensional drawings to be developed, rotated for convenience, and easily modified.

CADD tripled the output of a design engineer and drastically reduced the need for draftsmen to make copies. Also the use of total station surveying techniques combined with CADD mapping equipment

revolutionized the survey and mapping program of the district. The “survey field book” is a thing of the past because data are collected electronically and fed directly into computerized mapping equipment.

Similarly, hydraulics data collection is now based on an electronic system fed to the district through satellites from the various gage locations. The Geotechnical Branch obtained a cone penetrometer system in the mid-1980s, and the Vicksburg District became a leader in use of this truck-mounted equipment that collects soils at about 20 percent of the cost of conventional soil borings and is also used in studying toxic or hazardous sites. The engineering Division has also been very active in supporting the environmental concerns of the district. Designers have developed innovative channel design techniques to reduce environmental impacts in sensitive areas, making use of geographical information systems and remote sensing technology to analyze the hydrographic, land use, and wild habitat of an area for use in Environmental Impact Statements and other district projects.¹⁸



The most important specific federal program related to the size and nature of the district work force is the “Commercial Activities Program,” known familiarly as “A-76” from the OMB circular in which it was originally contained. The basic idea of the program is to make federal agencies as efficient as possible by having them compete against the private sector. The process begins with a “performance work statement,” which describes the work done by a unit of a federal agency, the time that it takes to produce a product or service, the quality that is expected, the cost involved, and any other relevant information.

The analysis is not simple. It is normally done by an outside evaluation team, and the procedures to be followed comprise a thick manual. A great deal of emphasis is placed upon statements from the current employees of the unit. In addition to describing how things are done, the team also indicates if a different manner of organization or level of staffing would be more effective. When the performance work statement is complete, a contract is prepared for the work in question. Private bids are solicited, and a government bid is prepared. The lowest private bid is then increased by ten percent and by costs associated with making the change and then compared with the government bid. If the private bid is still lower, it is



accepted. The work then goes to the contractor, and the government payroll becomes smaller.¹⁹



The Commercial Activities Program is having a significant impact on the Vicksburg District.

During 1986, "A-76" studies were begun at all seven of the district's lakes. The question of whether the pumping plant at Lake Chicot could be operated more cheaply by the private sector was also under discussion. The motor pool was to be the object of study in the near future.

Col. Stevens had also made the decision to contract out the operation of Overton Lock and Dam when it was finished. The program promises to make the district more cost-effective and more efficient, yet it also has potential problems. If the crew at a lake no longer works for the Vicksburg District, for example, but rather for a private contractor, it cannot be counted on to react to emergencies such as the tornado at Water Valley. Still, as Col. Stevens commented relative to the motor pool, "unless we can be sufficiently efficient to compete with a contractor who is lean and mean and hungry, . . . we'll be driven around by contractors."²⁰

A somewhat different but related change occurred in 1982 when the finance and accounting functions of the Vicksburg District, the St. Louis District, and the Memphis District were consolidated at Memphis. A Finance and Accounting Branch still exists at Vicksburg, but major reports are prepared at Memphis and disbursement of funds takes place from there. Payments to district contractors are now prepared at Memphis and mailed to Vicksburg or directly to the contractors.²¹



One of the most significant issues for the Corps of Engineers generally, and for the Vicksburg District in particular, involved the degree to which civil works projects should be paid for by the local government agencies that benefit from them. The concept, known as "cost-sharing," emerged first in 1905 when a Rivers and Harbors Act required the city of Dallas, Texas, to pay \$66,000 in order to obtain \$161,300 in federal money for the improvement of the Trinity River. Twelve years later, the Flood Control Act of 1917 required that local interests pay half the cost of the levees that would be built and also

provide the necessary rights-of-way. The River and Harbor Appropriation Act of 1920 required that reports on prospective projects include a “statement of special or local benefit which will accrue to the localities affected . . . and a statement of general or National benefits.” Also called for was a recommendation of “what local cooperation should be required.”

The Flood Control Act of 1928, which created the Mississippi River and Tributaries project, required only that local agencies maintain some projects after completion, agree to the condemnation of some lands, and provide rights-of-way. Congress took the view that residents of the lower Mississippi had already provided local cooperation through the non-federal levees they had built.

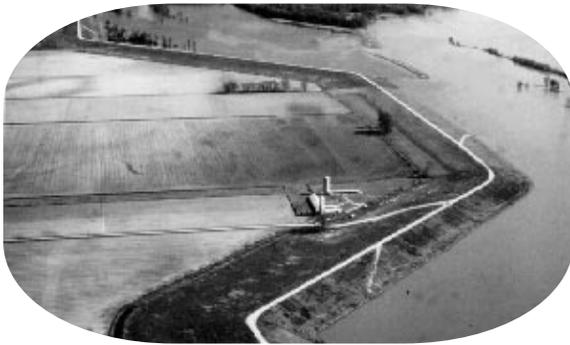


The Flood Control Act of 1936 provided some specifics with respect to the nature and amount of the “local cooperation” that normally would be required by defining what are now known as the “a-b-c” requirements. These called upon the local agency to: (a) provide the land, easements, and rights-of-way necessary for construction; (b) agree to indemnify the United States for any damages related to the project; and (c) operate and maintain the project according to government standards. The “a-b-c’s” were not always required, however, and in some cases a cash payment was necessary in addition to them.

In the absence of general legislation, a set of cost-sharing requirements became customary or traditional for water resource projects. These were based on the purpose of the project or the percentages assigned to each aspect of a multipurpose project.

At the top of the hierarchy of federal involvement were flood-control reservoirs, for which Washington paid all the construction costs, acquired the necessary land, and operated and maintained the facility. Somewhat less favored were navigation projects. Here, the federal involvement included construction and operation and maintenance, but non-federal interests provided the land, easements, and rights-of-way. Levees, which were seen as being more local in nature, were built by the federal government with local agencies responsible for the “a-b-c’s,” which meant that levee boards were required to do the maintenance. Local cooperation on recreational projects, or the recreation portion of navigational or flood-control projects, normally involved





50 percent of the construction costs. Hydroelectric projects were paid for by the federal government with the provision that their operations would pay off 100 percent of the costs.²²

Under these guidelines, the federal government paid for most of its civil works program into the 1980s. During the Reagan administration, however, cost-sharing acquired new teeth. William R. Gianelli, who was Assistant Secretary of the Army for Civil Works from 1981 to 1984, was a strong advocate of requiring local beneficiaries to pay a significant percentage of the construction costs for all water resource projects. For him, the emphasis on local cooperation was an efficient means of allocating federal dollars in a situation where all projects could not be funded. Aware that rich areas would be better able to compete for projects than poor areas, he pointed out that the benefit-cost justification that underlay all projects was designed to provide civil works where they would have the most economic impact. Cost-sharing simply would continue the process. According to Gianelli, “you have to have some screening device because you can’t take care of everybody’s problems all of the time. That is the dilemma that the federal government faces.”²³



This approach to local cooperation was written into the Water Resources Development Act of 1986, which authorized a large number of new civil works projects and also provided a complete legislative statement on cost-sharing. Under the new law, local agencies were required to pay from 25 to 50 percent of the costs of flood-control projects and from 20 to 60 percent of the costs of harbor projects. Some of the shared costs could be paid in the form of land, and some of the money could be paid over time. In general, however, communities were required to make substantial cash payments before their water resource projects would be built.²⁴



The new requirements presented a challenge to the civil works program of the Corps of Engineers and to the Vicksburg District. Under the old system, the focus of decisionmaking was in Congress. Local agencies could usually be counted on to accept a project that would be beneficial to them and relatively free of cost to them. Under the new system, Congress would still have to authorize and fund projects, but the non-federal interests

would also have to pay their share of the costs. Local people may have to pay higher taxes if they want a project. Thus, local cooperation would depend both on a willingness and an ability to pay.

The Vicksburg District faces circumstances that may make the situation particularly difficult. One is the fact that the special problems and needs associated with the Mississippi River have brought a tremendous amount of civil works to the district since 1928 in return for a relatively modest local financial effort. Because of this history, it may be especially hard to convince people to tax themselves for similar projects in the future. Then, the question of ability to pay is raised. Because they live in a relatively poor geographic area, the people of the Vicksburg District simply may be unable to afford the level of flood control to which they have become accustomed. For example, the Yazoo Backwater Pumping Station was ruled subject to cost-sharing, meaning that the Board of Mississippi Levee Commissioners in Greenville would be required to raise \$25 million from the landowners in its district, whose economic fortune is tied to the currently depressed agricultural economy.



Cost-sharing will have an important impact on the Vicksburg District. Among other things, it will require the district to emphasize the concept of customer care even more than now. Projects will have to be closely tied to the needs of local interests as they perceived them, and the budgets will have to be fitted to local pocketbooks. The district may also move into civil works that are outside the traditional areas of navigation and flood control. In sum, the challenge is a significant one.²⁵

Associated with the Upper Yazoo Projects was an experimental program called the Streambank Erosion Control Evaluation and Demonstration Program (SECED), funded at \$15 million as a result of legislation passed in 1974 and 1976. Its purpose was to design, construct, and evaluate a variety of techniques to control erosion caused by caving streambanks, which devoured land and degraded streambeds. Automobile tires and wooden cribs were tried on the banks of Yazoo Basin creeks, but rock, the most expensive substance, proved also the most effective. Throughout the program, the Vicksburg District worked closely with the Soil Conservation Service and with the Agricultural Research Service.



Cooperation between the Soil Conservation Service and the Corps of Engineers was strongly advocated by Mississippi Congressman Jamie Whitten, and it resulted in a very successful partnership in the state of Mississippi.²⁶

Lessons learned in the SECED program were put to use in the Demonstration Erosion Control (DEC) project, a large, cooperative effort between the Corps of Engineers and the Soil Conservation Service that was designed to control erosion, sedimentation, and flooding in the foothills of the Yazoo Basin.

The target area for the DEC project comprises about 17 percent of the Yazoo Basin and is contained in 15 watersheds. Each of these has a river, stream, or creek with an extremely unstable channel and manifests extensive channel degradation, bank erosion, gully erosion, overland flow erosion, or localized flooding. As a result of these conditions, many tons



of valuable soil is lost each year, much of it winding up as sediment clogging up the beds of downstream rivers. To assess the specific problems of each watershed and develop appropriate solutions, the Vicksburg District and the Soil Conservation Service developed a systems approach that was designed to stabilize the watershed as a whole.

Analysis began with the identification of problems, using both historical and current data supplemented by field investigation and geomorphic information about the watershed. Identification of the problems led to an assessment of the stability of the channels in each reach of the stream, and finally to a measure of system stability for the watershed that determined the amount of rehabilitation to be done. A variety of structures and features were utilized in planning how to control erosion. Headcutting erosion, which shows itself as a waterfall, would require control structures, high-drop grade-control structures in the few places where the drop off was more than six feet, low-drop control structures where it was less than six feet, and minor grade or riser pipes, which are used where drainage areas enter larger streams so that head cutting will not take place. Bank stabilization, using riprap for the most part, is another important tool. The Soil Conservation Service will also construct a number of floodwater retarding structures, debris basins, and intermediate dams, all designed to trap and hold water on a temporary basis.

The DEC project is a massive undertaking. Only 12 high-drop grade-control structures are to be constructed, but 238 low-drop grade-control structures are in the works; there will be 2,412 of the minor-grade pipe drops. Banks to be stabilized add up to 283 miles. The total cost of the DEC project was estimated to be \$862 million dollars. Funding was made available in 1985, and by the end of 1991, about \$114 million had been spent.

The Vicksburg District had spent about 59 percent of the total, the Soil Conservation Service had spent 32 percent, and other agencies had spent the remaining 9 percent.²⁷

The Water Resources Development Act of 1986 made clear that the U.S. Army Corps of Engineers was operating in a different legislative environment than had existed ten years earlier. Fortunately, the Vicksburg District had demonstrated during that decade an ability to adapt to new situations and take advantage of new opportunities.



Chapter Seven Notes

- ¹Michael Logue, "Inspectors and Construction Reps," *Mark Twain*, Nov. 1979; Busbice to Anderson, Oct. 30, 1979, PAO Files.
- ²Interview with Col. Dennis York, Dec. 16, 1986; Interview with Michael Logue, Public Affairs Officer, Nov. 17, 1986.
- ³"Early Warn," PAO Report, July 22, 1986.
- ⁴"Pearl River Action Plan," PAO, no date.
- ⁵George E. Halford, "Corps Ready to Respond," PAO News Release, Apr. 24, 1984; Leon Pantenburg, "Corps Personnel Avert Possible Harbor Disaster," *ibid.*, Apr. 25, 1986.
- ⁶Mobilization Plan (Vicksburg: U.S. Army Engineer District, 1985).
- ⁷Interview with Clyde Scott, Chief, Emergency Planning Branch, Aug. 13, 1986.
- ⁸Interview with Malcolm Wimbish, Director of Safety and Occupational Health, Nov. 13, 1986; *Ibid.*, June 1, 1987; George E. Halford, "Safety Program Rewards Workers," *Mainstem*, (Winter 1987), pp. 17-18; "Safety is no Accident," *ibid.*, (Spring 1987), pp. 6-7.
- ⁹Interview with Mary Ann Woods, Chief of the Office of Administration Services, August 14, 1986; George E. Halford, "New Office Coming to Vicksburg," *Mainstem* (Spring 1986), pp. 18-19.
- ¹⁰Oral history with Kenneth Brown, Oct. 6, 1990; interview with Jack Virden, Chief of Information Management Office, July 30, 1993.
- ¹¹Interview with Roy Smith, Chief, Project Management Division, Dec. 9, 1993.
- ¹²Statement of the President, Dec. 2, 1977, Non-Federal Dam Inspection File, Design Branch; "Information on National Dam Inspection Program," *ibid.*; "State of Mississippi Dams Inspected under P.L. 92-367," *ibid.*; Interview with Luther Newton, Inspection and Evaluation Section, Design Branch, Nov. 11, 1987.
- ¹³Interview with Frank Hudson, International Programs, June 1, 1987; George Halford, "Vicksburg Engineer Office Involved in African Work," PAO News Release, No. 84-16; Darralyn S. Williams, "District Personnel Make Mark on Africa," *Mainstem* (Spring 1987), 16-17; personal communication from Col. Pat M. Stevens IV, District Engineer, July 1987.
- ¹⁴Oral history with Kenneth Brown, Oct. 6, 1990; *Vicksburg Post*, Apr. 9, 1988; *ibid.*, June 17, 1988.
- ¹⁵Interview with Tom Leggett, Chief, Logistics Management Office, July 30, 1993.
- ¹⁶Congressional Quarterly Almanac 39 (1983): 447-457; Interview with Col. Dennis York, Dec. 16, 1986.
- ¹⁷Data provided by the Office of the Comptroller.
- ¹⁸Interview with Ray Lucius, Chief of the Project Management Branch, May 27, 1987; interview with Fred Caver, Engineering Division, Aug. 21, 1987; interview with David Haworth, Engineering Division, Nov. 30, 1993; communication from David Haworth, June 1994.
- ¹⁹"Efficiency is Aim of Corps Studies," PAO News Release, Jan. 16, 1986; *Supplement: OMB Circular A-76 (Revised), Performance of ommercial Activities* (Washington: Office of Management and Budget, 1983).
- ²⁰Interview with Col. Pat Stevens IV by Michael Robinson on May 14, 1986.
- ²¹Interview with Rosemary Spears, Finance and Accounting Officer, May 27, 1987.
- ²²Martin Reuss and Paul Walker, *Financing Water Resources Development: A Brief History* (Washington: Office of the Chief of Engineers, 1938), pp. 14, 28-30; *Planner*

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²³*Water Resources, People and Issues: An Interview with William R. Gianelli, Assistant Secretary of the Army (Civil Works)* (Washington: Office of the Chief of Engineers, 1985), pp. 16-21.

²⁴P. L. 99-662, 100 Stat. 4082 (1986).

²⁵Interview with Col. Pat Stevens by Michael Robinson, May 14, 1986; Interview with V. C. Ahlrich, Chief of the Planning Division, August 14, 1986; Telephone interview with Ray Lucius, Chief of the Project Management Branch, May 27, 1987.

²⁶Speech by Col. Samuel Collins, Jr., Aug. 21, 1979; Interview with David Haworth III, Assistant Chief, Engineering Division, Aug. 21, 1987; "Information Paper, Yazoo Basin, MS, Demonstration Erosion Project," Project Management Branch; U.S. Army Engineer Waterways Experiment Station, *Streambank Protection Guidelines: For Landowners and Local Governments* (Vicksburg: U.S. Army Engineer Waterways Experiment Station, 1983, 1984).

²⁷Yazoo Basin, Mississippi: Demonstration Erosion Control Project, General Design Memorandum No. 54 (Reduced Scope), 1-14; Frank Hudson, Demonstration Erosion Control, Total Expenditures, Nov. 1, 1991.