The flood relief bill provided funds as follows:

$2.35 billion for disaster payments to farmers through the Commodity Credit Corporation. Also, the President instructed Secretary Espy to make payments for 1993 crop losses at the one hundred percent rate.

2.00 billion for FEMA operations in the Midwest and for other disasters

389 million for the SBA loans

275 million for rural development and housing loans, housing repair grants, and the Extension Service

235 million for the Corps' levee and flood control work

200 million for the EDA direct assistance grants

200 million for HUD for disaster recovery aid to state and local agencies

175 million for the Department of Transportation for road repair

75 million for Department of Health and Human Services Public Health and Social Service Emergency Fund to repair clinics

70 million to repair schools

60 million for USDA watershed and flood prevention operations. This money was to be spent on the Emergency Watershed Protection program to repair levees, clear waterways, and enroll cropland in the Wetlands Reserve Program.

54.6 million for Title III of the Job Training Partnership Act

50 million for HUD's HOME Investment Partnerships Program

42 million for ASCS, including $12 million for temporary employees to speed the application process

41.2 million to the Department of the Interior for the U. S. Geological Survey, Fish and Wildlife Service (FWS), the National Park Service (NPS), the Historical Preservation Fund, and the Bureau of Indian Affairs (BIA)

34 million for the Environmental Protection Agency (EPA)

30 million in supplemental Pell Grant awards

21 million for local rail repair

10 million for additional SBA staff

10 million for the Coast Guard

4 million for state youth and conservation corps programs

1 million to repair NOAA facilities

.3 million for the Legal Services Corporation to help flood victims with legal matters

The Soil Conservation Service's $60 million allocation represented only about one percent of the total.[70] This amount was divided into two parts. The first $35 million was available immediately; the remaining $25 million could be used if authorized by President Clinton. The relief bill stated that these funds could be used for both structural repair work and an emergency wetlands reserve program, but were to be spent by September 31, 1994.

The January 17, 1994, earthquake in southern California spurred more spending for flood recovery work in the Midwest. The California congressional delegation initiated the "Emergency Supplemental Appropriations Act of 1994." According to Senator Tom Harkin's statement in the *Congressional Record*, the White House proposed that additional funds for Midwest flood recovery be included in the bill on January 31.[71] The House report (103-415) on the relief bill which eventually became Public Law 103-211 stated that the August 1993 funds had been appropriated when "waters of the Mississippi and Missouri rivers and their tributary streams were still receding and final estimates of damages were still being developed." The new funding was designed to complete flood recovery work. In early February of 1994, Congress authorized an additional $340.5 million for SCS "to repair damage to the waterways and watersheds resulting from the Midwest floods and California fires of 1993 and other natural disasters..."[72] The $340.5 million figure was based on damage estimates collected from the nine flood states by staff in SCS's Watershed Projects Division, then provided to OMB and Congress. Of this amount, $50 million was to be made available to repair levees that the Army Corps of Engineers had ruled ineligible for their repair program and that SCS had not previously planned to repair.[73] As with the first supplemental authorization of funds in August of 1993, Congress gave SCS the option of spending this money to put inundated land into the Wetlands Reserve Program if the "cost of land and levee restoration exceeds the fair market value of an affected cropland..." One important difference between the 1993 and 1994 appropriations was that there was no time limit on spending the latter. At the same time, the White House rescinded $22 million of this amount, thus reducing the total available funds to about $318 million.[74]

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[70] Purely by coincidence, Congress allocated an additional $3.3 million to SCS's Emergency Watershed Protection Program before recessing for the July 4th holiday. This was not part of the Midwest flood assistance.

[71] February 10, 1994, *Congressional Record*, 103rd Cong., 2d sess., S-1379.

[72] Public Law 103-211, 108 Stat. 3. It is clear from speaking with SCS staff that they, and supporters of the EWP program in the White House, OMB, and on Capitol Hill, had anticipated this opportunity and were prepared with facts and figures to justify their request for supplemental funds.

[73] See the section of this report entitled "Levee Repair" for more information.

[74] It is important to bear in mind that not all of these funds were spent in the Midwest. Some went to California for earthquake and brushfire recovery, as well as smaller portions for projects in Alaska and Hawaii. The geographic distribution of SCS's disaster recovery efforts was a key factor in garnering Congressional support.

Even after the February 1994 appropriation, SCS's portion of the total federal disaster relief funds was minor. Nevertheless, the Service played a very visible role in flood recovery work, especially in the task of protecting homes, farms, and infrastructure such as bridges, roads, and water supply systems from future flooding.

Overall USDA Response

Secretary of Agriculture Michael Espy tours flooded area in Cache, Illinois. Photo by Meg Evans, USDA.

While the immediate disaster relief efforts of July and August were managed by FEMA, because of the amount of the flooded area in cropland and the importance of commercial agriculture to the economy of the Midwest, Secretary Espy became the logical focal point for many long-term flood recovery efforts. As early as June 23, Governors Walter Miller (South Dakota), Terry Branstad (Iowa), Arne Carlson (Minnesota), Jim Edgar (Illinois), and Tommy Thompson (Wisconsin) sent a letter to the Secretary requesting assistance and urging him to visit.[75] Shortly after that, the President asked Espy to survey the flooded region.[76] On June 30, he toured parts of Minnesota, Wisconsin, South Dakota, and Iowa. Over the next several months, the Secretary made over fifteen visits to the Midwest.

[75] "Midwest Governors Seek New Crop Aid for Flooded Waters," AP wire, June 23, 1993.
[76] "Statement by the President on the Flooding in the Midwest," The White House, Office of the Press Secretary, June 29, 1993.

An important department-wide effort was the toll-free number created to answer inquiries from the public and press.[77] The Secretary's office also organized a "Flood Information Center." Located at USDA's national headquarters in Washington, D.C., the Center was made up of representatives from the USDA agencies involved in flood recovery. They answered press inquiries and provided materials for local media throughout the Midwest. SCS focused on assisting the citizens and the media in Missouri. Mary Ann McQuinn was the Service's representative in the Center until early 1994. Bob Stobaugh, a detailee from Alabama, replaced her for a brief time before the Center was shut down in April.

Another aspect of USDA's flood response was the use of a dozen or so personal representatives of the Secretary of Agriculture known as flood coordinators or flood liaisons. They were detailed to the states hit hardest by the floods and were based in ASCS offices. Their job was to keep the Secretary's office informed of problems and progress in the relief and recovery efforts. One of their main functions was to provide information directly to the Secretary unfiltered by any particular government agency inside or outside USDA. They attended major SCS meetings in the nine flood states. In many ways, these men and women served as advocates for flood victims, urging agencies in the federal government to respond quickly and efficiently to those in need. For example, in early 1994 they pushed SCS and the Corps of Engineers to provide clear and complete lists to the public on the levees each would repair.[78]

Although SCS ranked among the most visible of all Department of Agriculture agencies involved in flood recovery efforts, it was certainly not alone. One of the other important organizations was ASCS. Its personnel moved to assist farmers through six programs. First, they modified haying and grazing restrictions on land in the Conservation Reserve Program (CRP), enabling farmers to use land taken out of commodity production for haying or grazing. The "penalty," the reduction in CRP payments for utilizing land in the program, was decreased from fifty percent to twenty-five percent.[79] This was one of the first official policy changes in response to the floods. Second were Crop Disaster Payments to farmers. Third, ASCS offered livestock feed assistance to farmers who had lost forty percent or more of their feed production. Fourth was the Tree Assistance Program (TAP). Orchard or forest tree seedling owners received cost-share payments to help them replant or rehabilitate trees. Fifth, ASCS relaxed rules for its Price Support Program for rotating reserve commodities. Finally was the Emergency Conservation

[77] The toll-free number was established in late October of 1993.

[78] The exact scope of their duties was, at times, a sensitive topic among some Department of Agriculture employees. Other personnel, from SCS and the Corps for example, worked hard to impress the liaisons and seek support for their agencies' positions on flood recovery issues.

[79] "Senator Grassley: USDA to Alter CRP Haying/Grazing Rules," *FWN*, August 4, 1993.

Program (ECP). The ECP provided cost-sharing to help individual farmers with tasks like removing debris from farmland, leveling damaged land, or repairing damaged conservation practices. Although the extent of involvement varied greatly from state to state, SCS played a role in this effort by supplying technical assistance.

The Farmers Home Administration (FmHA) provided a variety of loans to help those affected by the floods. FmHA's role was divided into two types: farmer assistance and housing assistance. For farmers, loans were available to pay for the replacement of buildings, equipment, livestock, and other capital not covered by insurance. FmHA provided emergency loans for production losses. Loan guarantees and some direct loans were made. Also, FmHA restructured some loans for up to five years. For homeowners, FmHA moved to defer payments, provide housing on a short-term basis, and set aside $38 million in loans and $8 million in grants to help elderly rural residents repair their homes.

The Rural Development Administration (RDA) expanded its Emergency Business and Industry Loans Program to include agricultural production and recreation. Funds also were available under the Emergency Community Water Assistance program. Also, nonprofit organizations were eligible for loans under the Intermediary Relending Program. The Food Safety and Inspection Service (FSIS) maintained an "800" number called "USDA's Meat and Poultry Hotline" to answer consumer questions concerning food contamination. The Food & Nutrition Service cooperated with FEMA to manage the Emergency Food Stamp program.[80] It also provided food directly through the Emergency Food Assistance Program. The Extension Service played an important role in coordinating flood recovery information, especially safety information. It also managed a computer bulletin board through Internet which contained state-by-state reports of the flood and USDA's response.

The above-mentioned agencies each specialized in one aspect of the Department of Agriculture's overall flood recovery effort, such as agricultural commodity production, rural development, housing, or food safety. The Soil Conservation Service focused on repairing damaged waterways and flood control structures in order to protect valuable property like bridges, roads, cropland, and homes. The Service also helped individual landowners with technical advice on restoring the productivity of their cropland. Finally, the agency played an important role in America's efforts to protect wetlands through its Emergency Wetlands Reserve Program.

[80] The food stamp program received some criticism for giving away too much aid to people who lived outside areas seriously impacted by the flood. For example, see Bill Norton, "After Flood Fraud, Report Suggests Changes in Aid," *Kansas City Star*, December 1, 1993.

SCS and the Emergency Watershed Protection Program

The Department of Agriculture took a lead role in flood recovery efforts, as ordered by President Clinton. The Soil Conservation Service became an important participant in this work through the implementation of the Emergency Watershed Protection (EWP) program.

The Service was created by the Soil Conservation Act of 1935 to attack America's soil and water conservation problems. Through the years, Congress has assigned the Service responsibility for providing technical assistance on land management activities like limiting erosion, drainage, irrigation, and flood control to farmers, local governments, and organizations with state charters such as soil conservation districts. The Emergency Watershed Protection program has grown out of a variety of SCS watershed and flood control efforts. Over the past fifty-eight years, SCS has developed technical expertise in engineering and related disciplines, as well as a national network of almost three thousand offices, which make it the logical organization to help with flood emergencies on small watersheds and in agricultural areas.

"The Flood Control Act of 1936, followed by the Flood Control Act of 1944 and the Watershed Protection and Flood Prevention Act of 1954, made the Department of Agriculture one of the federal participants in flood control work," wrote SCS national historian Douglas Helms.[81] The Service played a major role in these efforts.[82] Under the 1936 Act, SCS began studies of watersheds to prepare recommendations to Congress on conservation practices. The Service tailored its proposals to conditions in each watershed. Plans might include reforestation, conservation practices on farmland, or flood control structures. A few of these plans were approved for implementation in the Flood Control Act of 1944. SCS's role in water resources has expanded to include involvement in various facets of river basin studies as well as floodplain management and insurance studies. By the late 1980's, the Service had played a vital role in 260 Cooperative River Basin Studies and 442 Floodplain Management Studies. Each

[81] Helms, "Small Watersheds and the USDA," 96.

[82] For more information, see Douglas Helms, "Watershed Management in Historical Perspective: The Soil Conservation Service's Experience" in *Watershed '93: A National Conference on Watershed Management*, March 21-24, 1993,(Washington, DC: U. S. Government Printing Office, 1994), and John T. Phelan and Donald L. Basinger, *Engineering in the Soil Conservation Service*, Historical Notes Number 2, (Washington, DC: Soil Conservation Service, 1993).

floodplain study included flood hazard maps for rural communities.[83] Also, between 1969 and the late 1980's, SCS completed almost five hundred flood insurance studies for the Federal Insurance Administration.

The Small Watershed Program, authorized under the Watershed Protection and Flood Prevention Act of 1954 (P.L. 83-566), was the single most important activity which developed the Service's expertise in flood prevention, control, and recovery. Working with local sponsors, SCS provides technical assistance and cost-sharing for projects on watersheds of fewer than two hundred and fifty thousand acres. Today, flood prevention, water supply, recreation, wildlife habitat, and other uses are all possible targets of P.L. 566 work.[84] SCS utilizes a variety of structural and non-structural measures such as small dams and land treatment to achieve the project goals. Overall, SCS has provided technical or financial assistance on over twenty-five thousand dams. The vast majority of these structures are small (twenty-five to sixty feet high) and are owned by states, local conservation organizations, towns, or individuals.[85] Initially, Congress mandated that SCS build no structure with more than five thousand acre feet of storage capacity.[86] Foreshadowing future disputes over levee repair and the division of responsibilities after the 1993 flood, these size limitations were in part an attempt to create a clear division of labor between SCS work and the larger Corps projects. It is important to note that, although SCS built many dams and was involved in a great deal of land treatment work, it has built or designed relatively few levees. Most levees in the Midwest were and are constructed and maintained by local drainage districts. However, the Service, as a leader in flood prevention and control efforts in rural America, became involved in levee repair through its responsibilities under the Emergency Watershed Program.

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[83] "Chapter 6: The Knowledge and Information Base," in *Floodplain Management in the United States: An Assessment Report, Volume 2: Full Report* (Federal Interagency Floodplain Management Task Force, 1992), 13-20 to 6-20.

[84] The scope of small watershed work has increased gradually since the program's inception. In 1958, fish and wildlife development were added. The 1962 Food and Agriculture Act added recreation to the list of possible justifications of P.L. 566 projects. The 1972 Rural Development Act made conservation and land utilization part of the watershed planning work. As of March of 1993, SCS had authorized 1,538 small watershed projects, many designed to obtain more than one objective. Flood prevention was the most important, as it was named in 1,324 projects, drainage in 303, recreation in 274, watershed protection in 236, municipal and industrial water supply in 169, fish and wildlife in 96, irrigation in 89, and rural water supply in 5. Watershed protection work was divided further into erosion control (in 156 projects), water quality (61), and water conservation (9).

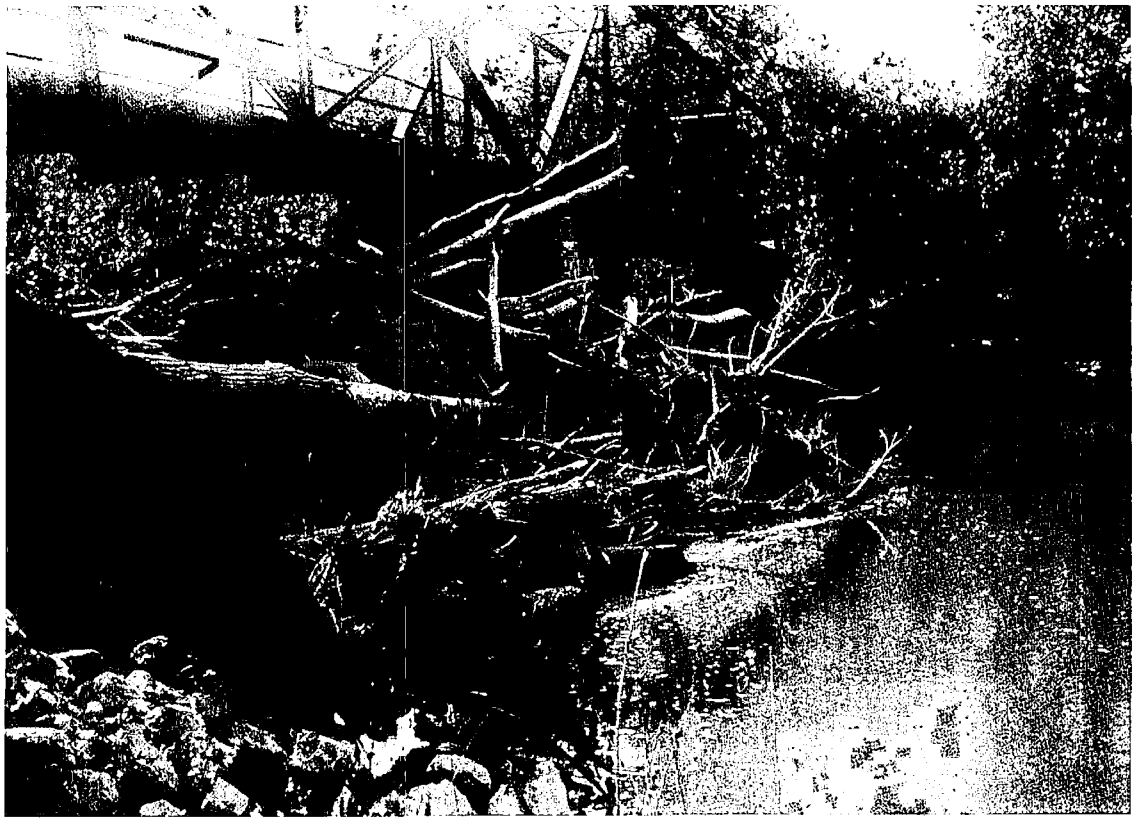
[85] "Chapter 12: Modifying Flooding," in *Floodplain Management in the United States*, 12-23.

[86] Just as the type of work eligible for the P.L. 566 program has steadily expanded, both the dollar threshold for requiring Congressional approval of structures and the maximum capacity of structures have increased.

Small watershed projects often include terraces, which are an effective way of reducing erosion. Also, by holding water on the land, they can help reduce local flood peaks. These grass-backed terraces are part of over ten thousand miles of terraces installed in the United States to protect cropland. Photo by Tim McCabe, SCS.

Traditionally, SCS has focused more upon flood prevention, that is, holding water on the land upstream from major rivers, while the Corps' work has centered more on flood control, limiting the damage and flow of water on larger rivers. The Corps has more strongly advocated the building of large structures for flood control while SCS has focused on smaller structures or land treatment measures to prevent or limit flooding on the tributaries.[87] A key part of the conflict between the Corps and SCS has been the usefulness of small watershed projects in flood control or prevention. The well-known work by Luna B. Leopold and Thomas Maddock, Jr., *The Flood Control Controversy,* provides an excellent overview of the different missions, methods, and constituencies of SCS and the Corps as they existed in the 1950's.

[87] Many authors have detailed these contentious debates, which took place before Congress, within the bureaucracy, and in the press. For example, see Hart, *The Dark Missouri.*



Debris blocks a bridge near Hannibal, Missouri. Under the Emergency Watershed Protection program, SCS contracted to remove this obstruction. Photo by author.

The area conservationists (AC), who usually oversee between ten and twenty counties, create the local EWP response teams. Teams usually consist of a district conservationist (DC), an engineer, and a technician. The DC is the team leader; the engineer and technician often come from the area office staff. The teams are the units which work most closely with local sponsors. They determine eligibility, inform the local press of EWP work, coordinate outside technical assistance if necessary, and monitor the progress of projects. The DC's, whose bailiwicks are often a single county, serve in perhaps the most important position. They are the initial contact points for the vast majority of those requiring EWP assistance. District conservationists are also the SCS employees most familiar with local conditions.

Within an area declared eligible for EWP program assistance, SCS works not with individual landowners, but rather with local sponsors. One key requirement for EWP eligibility is that the project has public benefits; that is, it must benefit more than one landowner. Sponsors are units of local government with state charters, such as towns, townships, soil conservation districts, levee districts, or drainage districts. They may

request SCS assistance for projects such as removing debris from streambeds, cleaning ditches, repairing levees, or stabilizing eroded streambanks. The sponsors' responsibilities include obtaining land rights for the work and making any necessary cost-share payments.

There are two kinds of threats requiring an EWP response: exigency and non-exigency. The *National Emergency Watershed Protection Handbook* states, "An exigency situation (immediate threat) exists when the near-term probability of damage to life or property is high enough to demand immediate federal action." Contracting regulations are streamlined greatly for exigency work. The district conservationist leads the local EWP response team to inspect the work site, prepares a Damage Survey Report (DSR) and decides whether the work is an exigency. With technical assistance from the area and state offices, the team quickly provides specifications to private contractors. Working with an SCS contracting officer, bids may be received and evaluated, and a contract awarded in as little as one day. These contracts require that work be completed within thirty days after the funds are obligated. Work of a non-exigency nature must follow a more involved contracting process which is similar to regular government practices.

EWP funds will provide seventy-five percent of the construction costs. Formerly, the Service had supplied one hundred percent of the funds for exigency work and eighty percent for non-exigency repairs. The new 75:25 ratio was published in the 1993 revision of the *National Emergency Watershed Protection Handbook*. Since Midwest EWP work was in progress even as these new guidelines were sent to the states, there was a variety of cost-sharing arrangements between SCS and the local sponsors. Staff in the state offices did not want to appear to be "changing the rules in the middle of the game" by modifying the cost-share ratio for the most urgent projects. By early 1994, however, most EWP work was of a less urgent nature (non-exigency) and the 75:25 arrangement became the norm.

Selected EWP Projects, 1973 to 1992

Top SCS staff almost unanimously emphasized that the EWP program has become one of the Service's most popular activities: it has broad public and congressional support. A short review of some typical projects over the past nineteen years brings to light two phenomena. First, the wide range of support stems from the many different types of EWP work performed throughout the country. Second, the scope of the disaster and demands upon SCS in the 1993 flood were far greater than in any earlier incident. Unless otherwise noted, the information that follows comes from *Soil and Water Conservation News.*

Northeast United States, Hurricane Agnes: June 1972
Hurricane Agnes ranks among the most devastating storms in United States history, killing 118 people and causing billions of dollars in damage. SCS was proud that not one the 161 dams previously constructed as part of the Small Watershed Program failed.

Missouri, Flood: April 1973-May 1974
Following a series of major storms, SCS obligated over $5 million for work under Section 216 of the Flood Control Act of 1950. This included reseeding, debris removal, stabilizing streambanks, and restoring dams, dikes, and levees. The SCS effort was part of a larger Federal Disaster Assistance Administration[93] (FDAA) project which spent over $38 million in 1973 and 1974. SCS also helped ASCS by determining eligibility for cost-sharing to repair flood damage and FmHA by preparing work plans for its Emergency Loan Program.

Teton Dam, Idaho, Dam Collapse: June 1976
After this dam collapsed, a wall of water up to sixty feet high roared through five counties. Eleven persons were killed, over three thousand homes were damaged or destroyed, and over one hundred and twenty-eight thousand acres flooded. Under the Federal Disaster Assistance Administration's leadership, the Corps of Engineers and Bureau of Reclamation rebuilt flood control structures and restored the supply of irrigation water. SCS concentrated on removing debris and gravel bars from streams, as well as debris removal from rural lands. FDAA allocated $6.7 million.

[93] This was the predecessor to the Federal Emergency Management Administration (FEMA).

Monterey, California, Forest Fires: August 1977

Approximately one hundred and seventy-eight thousand acres burned in the second largest forest fire in California history. SCS and local officials were concerned that the lack of ground cover could lead to floods and an additional $75 million in damages. SCS agreed to carry out watershed repair work costing $2 million in four watersheds: Big Sur, Little Sur, Carmel, and Arroyo Seco. SCS cleared 145 miles of channels, seeded one hundred and fifty-six thousand acres by air, and seeded 160 miles of fire suppression lanes by hand. Heavy rains in March of 1978 caused only minor damage and the aerial seeding was sixty-five percent successful.

Arvin, California, Wind Erosion: December 1977

An upper air disturbance led to winds reaching speeds of 150 miles per hour for four days. Wind stripped vegetation from hillsides and caused up to two feet of soil loss in some areas. The main irrigation canal was filled completely for five miles. After receiving supplemental funds under the 1950 Flood Control Act, SCS restored and vegetated major gullies and dropped one hundred and eighty thousand pounds of seeds. To date, this has been the only wind erosion project covered by the EWP.

Southern California, Flood: February 1978

A two-year drought ended with six weeks of storms which clogged waterways with silt, eroded streambanks, damaged flood control structures, and caused landslides. President Jimmy Carter declared a seven hundred thousand square mile disaster area. After a $52 million appropriation from Congress, SCS set about administering 350 projects with almost five hundred contractors from around the country. The work included restoring 420 miles of stream channels, revegetating eighteen thousand acres of land, cleaning fifty-seven debris basins, repairing twelve hundred miles of roads, and repairing twenty-one miles of levees and dikes. This was the largest emergency undertaking to date for SCS. Within three months of obtaining the funds, one-half of the projects were either completed or under construction.

Mount St. Helens, Washington: May 1980

After an eruption with the explosive force of fifty million tons of dynamite, SCS acted quickly to limit the damage caused by stream blockage and erosion. The Service used a supplemental appropriation of $20 million for the EWP program and $3 million of Conservation Operations funds. Ash caused increased run-off and erosion. SCS efforts focused on restoring stream channels and revegetation.

Brady's Bend, Pennsylvania, Flood: August 1980
Heavy rainfall over several weeks led to floods that killed seven people and caused the collapse of a railroad bridge. Over the next month, SCS awarded fifteen contracts worth $1 million to remove debris from streams, reseed over seventy acres, and stabilize streambanks with twenty thousand tons of riprap and gabions.

West Virginia, Flood: November 1985
After a major flood that killed forty-seven and flooded 3,711 homes, SCS began EWP work that would eventually cost $34.5 million. The first phase lasted six weeks. SCS acted to remove the worst stream blockages in nineteen counties, spending $2.34 million. Over the first five months of 1986, SCS contracted for $22 million worth of assistance in fifteen counties. This assistance included restoring channels, reseeding over five thousand acres, and removing debris. SCS oversaw a total of 133 contracts in the first two phases. In the final phase, SCS spent $5.7 million on repairs in thirteen counties to stabilize streambanks and remove major blockages. FEMA gave $1.3 million to repair watershed structures. Some landowners complained that not enough was done for farmland restoration; however, such work was beyond the scope of the 1978 Agricultural Credit Act.

Pine Ridge Forest, Nebraska, Forest Fire: July 1989
Following a five-day forest fire that destroyed nearly fifty thousand acres of ponderosa pine and rangeland in the White River Watershed of Nebraska, the SCS and a local sponsor, the upper Niobrara White Natural Resources District, carried out the EWP program. SCS used aerial grass seeding for two thousand acres and built five sediment control basins designed to hold about two acre-feet of excavated sediment. This project limited ash and sediment run-off into the White River.

South Carolina, Hurricane Hugo: September 1989
EWP program work began in October of 1989 and ended in May of 1991. The total cost was $27.5 million. Contract sponsors included three state agencies, twenty soil and water conservation districts, twenty county governments, and sixty-two municipalities. More than one hundred contracts were completed--2,343 miles of watercourses cleared at a cost of $23.1 million, fifty-four miles of dunes stabilized at a cost of $1.1 million, and 349 miles of rivers restored at a cost of $3.3 million. SCS work provided protection for 61,191 home and buildings, 6,252 roads and bridges, and 172,836 acres of agricultural land. Major contracts included one with the South Carolina Coastal Council to rebuild dunes. SCS worked with the South Carolina Water Resources Commission and the South Carolina Wildlife and Marine Resources Department to open river channels. The Service received the Governor's Award of Excellence for its EWP efforts.

On June 30, the Watershed Projects Division completed its first daily report on EWP work.[96] Over the next few months, the director or acting director of the division sent reports on a daily, then semi-weekly, and finally weekly basis to the office of the Secretary of Agriculture and other top USDA officials. Like all other initial estimates of damages and workload made by those inside and outside the government, these reports proved to be overly optimistic. The Service predicted that data on flood damage and repair estimates would be complete in several weeks, after the water level declined. Actually, flood waters remained too high in some areas to permit damage surveys until the spring of 1994.

At the national headquarters level, SCS sought to forge a uniform approach to EWP work. One way to do this was to deal with the nine flood-affected states as a whole through meetings or teleconferences. For example, the headquarters' Emergency Flood Response Team sponsored an EWP Workshop in Kansas City, Missouri, in late July. SCS personnel from headquarters, each of the nine flood states, and the Midwest National Technical Center (MNTC) attended, as did representatives of ASCS, EPA, FEMA, and the Corps of Engineers. The minutes of this workshop reveal much about the Service's plan of action. First, SCS made clear that FEMA was the lead agency at this early stage of flood recovery. Second, it was vital for the Service to learn from its previous disaster recovery experiences. National headquarters staff distributed samples of EWP documents, press releases, and construction specifications which had been used in Louisiana after Hurricane Andrew. Third, SCS personnel from other regions would be shifted to help keep up with the increasing EWP workload. Fourth, interagency cooperation was vital after so large a disaster.

ASCS personnel at the workshop explained the workings of the Emergency Conservation Program. SCS state offices estimated that they faced a total of $131.8 million in EWP requests (This figure includes the nine states mentioned earlier, Kentucky, and Indiana).

[96] These reports were made up of the highlights of reports sent in by fax from each of the flood states.

SCS and ASCS Damages Estimates--July, 1993

State	Main Type of Work	EWP Estimate	ECP Estimate
Iowa	debris removal, bank stabilization, levees, road, bridges	$41 million	$12 million
Missouri	debris removal, levees	36.9	10
Kansas	debris removal	19.8	9.1
Illinois	debris removal	10.8	9.1
North Dakota	debris removal	6.6	1
South Dakota	debris removal, levees	4.9	1
Minnesota	debris removal	4.9	6
Nebraska	debris removal	4.1	6
Wisconsin	debris removal, bank stabilization	1.8	10.9
Kentucky	debris removal, bank stabilization	.8	.5
Indiana	bank stabilization	.16	0
Total:		$131.8	65.6

The national headquarters staff also coordinated the flow of information between the field level and Congress. For example, Watershed Projects Division staff met with members of Congress, their staffs, and committee staffs to explain the EWP program as well as to detail progress in flood recovery work. In mid-November, Jeffrey Vonk, state conservationist from Iowa, testified before the Subcommittee on Environment, Credit and Rural Development, and the Subcommittee on General Farm Commodities (both part of the House Committee on Agriculture). He first provided rough damage estimates. In Iowa, severe erosion damaged 2.4 million acres of cropland; conservation practices suffered over $12 million in damages. He stated that ten percent of the terraces and eighty percent of the waterways installed in the last two years required repair. On a positive note, the 2.4 million acres damaged in 1993 marked a great improvement over the four million acres damaged by floods in 1984, when the state was hit by much less severe rain. He credited the application of conservation practices for this progress.

Vonk then explained the benefits of SCS's Emergency Watershed Protection program and detailed the distribution of the $35 million initial allocation among the states:

Illinois	$4.7 million
Iowa	9.2
Kansas	5.9
Minnesota	1.2
Missouri	7.5
Nebraska	.9
North Dakota	1.5
South Dakota	1.7
Wisconsin	1.0
Program Support[97]	1.4

Finally, Vonk pointed out two problems in flood recovery efforts. First, standing water was delaying damage evaluation and repair efforts. Second, simultaneously implementing EWP and enforcing the conservation compliance provisions of the 1985 Food Security Act (FSA) could strain SCS's resources. Under FSA, individuals farming highly erodible land must carry out an SCS-approved conservation plan to remain eligible for USDA benefits. The plans were to be in place by December 31, 1994, but Vonk estimated that three hundred and fifty thousand to four hundred thousand farmers would be required to modify them due to the floods.[98] Although state conservationists had the authority to grant variances to this deadline, SCS staff sought to make those on Capitol Hill aware of this issue in order to obtain acquiescence, if not support, should many variances prove necessary.

On November 17, 1993, SCS requested the balance of the $60 million authorized in the flood relief bill. Two days later the White House released the last $25 million. By December, as the needs of individual states became more clear, the national headquarters distributed not only the entire $60 million supplemental appropriation, but also over $10 million of its regular EWP allocation.[99] Decisions concerning funding for EWP repair projects and Emergency Wetlands Reserve Program (EWRP) easements were based

[97] This figure includes money for the national headquarters and MNTC.

[98] "Statement of Jeffrey Vonk, State Conservationist-Iowa, before the Subcommittee on Environment, Credit and Rural Development and the Subcommittee on General Farm Commodities, Committee on Agriculture, November 19, 1993." SCS received enthusiastic support before Congress from state officials. For example, see statements by John L. Saunders, Director, Missouri Department of Agriculture, and Dale M. Cochran, Secretary, Iowa Department of Agriculture and Land Stewardship at the same hearing.

[99] "Soil Conservation Service, Emergency Watershed Protection Program, Midwest Flood Recovery Work," December 6, 1993. This was a short report prepared by Karl Otte of the Watershed Projects Division.

upon this limited amount of money. In February of 1994, however, a supplemental appropriation provided over $300 million to expand SCS's short-term flood recovery and long-term flood prevention work. Generally, the additional funds did not lead to new requests for assistance from the public; rather, this money allowed the Service to complete more of the projects for which a need had already been established.

The next major development in the Watershed Projects Division's coordinating activities came in mid-March of 1994, when another flood recovery meeting was held in Kansas City, Missouri. SCS representatives from the national headquarters, the nine flood states, and the MNTC attended, as did personnel from the Corps, EPA, FEMA, and state departments of natural resources. The goals of this meeting were to plan for the 1994 construction season, distribute funds among the states from the supplemental appropriation, discuss problems and share ideas on improved disaster response, develop levee repair criteria with FEMA and the Corps, and refine the wetlands rules following an audit by the USDA's Office of the Inspector General (OIG).

At the meeting, Karl Otte, in consultation with fellow staff members in the Watershed Projects Division and the flood states, announced the initial distribution of the supplemental appropriation.[100] The funding levels were based on the number, type, and size of requests for EWP work in each state:

EWP Initial Allocations
(in thousands)

State	August 1993 Appropriation and Other SCS Funds (WF-16 and 34)	March 1994 Appropriation (WF-35)	Total
Illinois	$13, 040	$ 8,400	$21,440
Iowa	20,655	61,000	81,655
Kansas	9,830	11,100	20,920
Minnesota	1,800	2,300	4,100
Missouri	22,775	48,300	71,075
Nebraska	1,110	2,000	3,110
North Dakota	1,475	1,200	2,675
South Dakota	3,915	10,000	13,915
Wisconsin	1,220	700	1,920
Totals:	75,810	145,000	220,810

[100] These figures do not include $50 million from the March appropriation that was explicitly directed to rebuild levees which the Corps and SCS had previously rejected. Nor does it include funds for the Emergency Wetlands Reserve Program, which was a different account.

Although the conflicts between federal agencies became most visible to outside observers, there were different priorities within each organization as well. An important issue raised at many SCS meetings by staff members from the state offices was the need to focus more attention on state government policies, priorities, and problems. States play an important role in writing land use laws; they own a great deal of land; their departments of conservation and agriculture have close ties to many landowners and an in-depth understanding of local conditions; they often fund employees who work in conservation district offices; they build and finance roads and other infrastructure in rural areas; and they make the laws which charter soil conservation districts, drainage districts, levee districts and other related branches of local government. One state conservationist suggested that the federal government use its financial resources as an incentive to get individual states to take a more active role in flood prevention and control.

Several state conservationists also stressed that the national headquarters should focus upon results, such as the number of flood recovery projects completed or communities assisted, and not upon erasing differences in approaches to EWP work taken by various state offices.[101] Others put the need for variation between states into the context of "empowering" employees to make decisions at the local level. They specifically pointed to the four hundred square mile dividing line between SCS and the Corps levee repair projects as the sort of arbitrary decision that greater participation from the state level would have prevented.[102] Many felt that cooperation between state offices and the Corps' district offices was good until each agency's national headquarters became involved in decisions.

Utilizing the data compiled by Bob Bartles, Midwest Flood Recovery Coordinator at the Midwest National Technical Center, the Watershed Projects Division became a clearing house for information on flood recovery efforts. One way to look at the workload faced by SCS is through the demands placed upon personnel resources. To enable the Service to keep pace with requests for EWP assistance in the four states most devastated by the flood (Illinois, Iowa, Kansas, and Missouri), outside help was brought in. From August 1993 through June 1994, over two hundred engineers, contracting officers, soil conservationists, district conservationists, and others provided assistance. During the busiest period (August through November of 1993) detailees supplied a total of 606 person/weeks of assistance to SCS operations in these four states. Bob Bartles predicted that a total of 1,260 weeks of outside assistance would be devoted to flood recovery by

[101] Variations between states included the organization of each state's EWP effort, methods of working with sponsors, dividing responsibility for levee repairs with the Corps, SCS involvement in state DFO's, approaches to conservation compliance, wetlands easements, and overtime payments for regular staff and detailees. Most of these differences, however, were concerned with the methods, not the goals, of flood recovery.

[102] See the section on levee repair for more details.

October 1, 1994.[103] Most important were SCS employees from other states; they numbered 158 and supplied 831 person/weeks of help. Next came thirty-six employees from the U. S. Forest Service, who gave 282 weeks of their time. Third were the Canadian volunteers from the Prairie Farm Rehabilitation Administration, an organization with a mission roughly equivalent to that of SCS. Ten volunteers provided 139 person/weeks of assistance in such important areas as engineering and damage assessment. Finally, three volunteers from the California Association of Flood Control Agencies provided nine person/weeks of help. Turn-over among detailees was high, as only thirty-three worked longer than ten weeks on flood recovery work.[104]

As the following charts illustrate, the volume of EWP work was impressive. By July 1 of 1994, SCS staff had prepared 4,298 DSR's for work in three general categories: debris removal, erosion control, and levee repair. Almost half the requests (forty-five percent) for assistance were for debris removal from streams, often around bridges. The balance was split between levee repair (twenty-two percent) and erosion control (thirty-four percent).[105] The actual number of projects eligible for EWP assistance, however, numbered only 2,441 (forty-five percent for debris removal, thirty-seven percent for erosion control, and nineteen percent for levee repair). Although survey reports and repair work were severely hampered by standing water in many of the nine states, 1,490 projects were under contract or completed by the beginning of July 1994.[106] The various state staffs estimated that it would cost about $96 million ($74 million for contracts and $22 million for technical assistance) to complete this work. The contracting costs for levees were expected to be only fifteen percent of the total contracting costs.

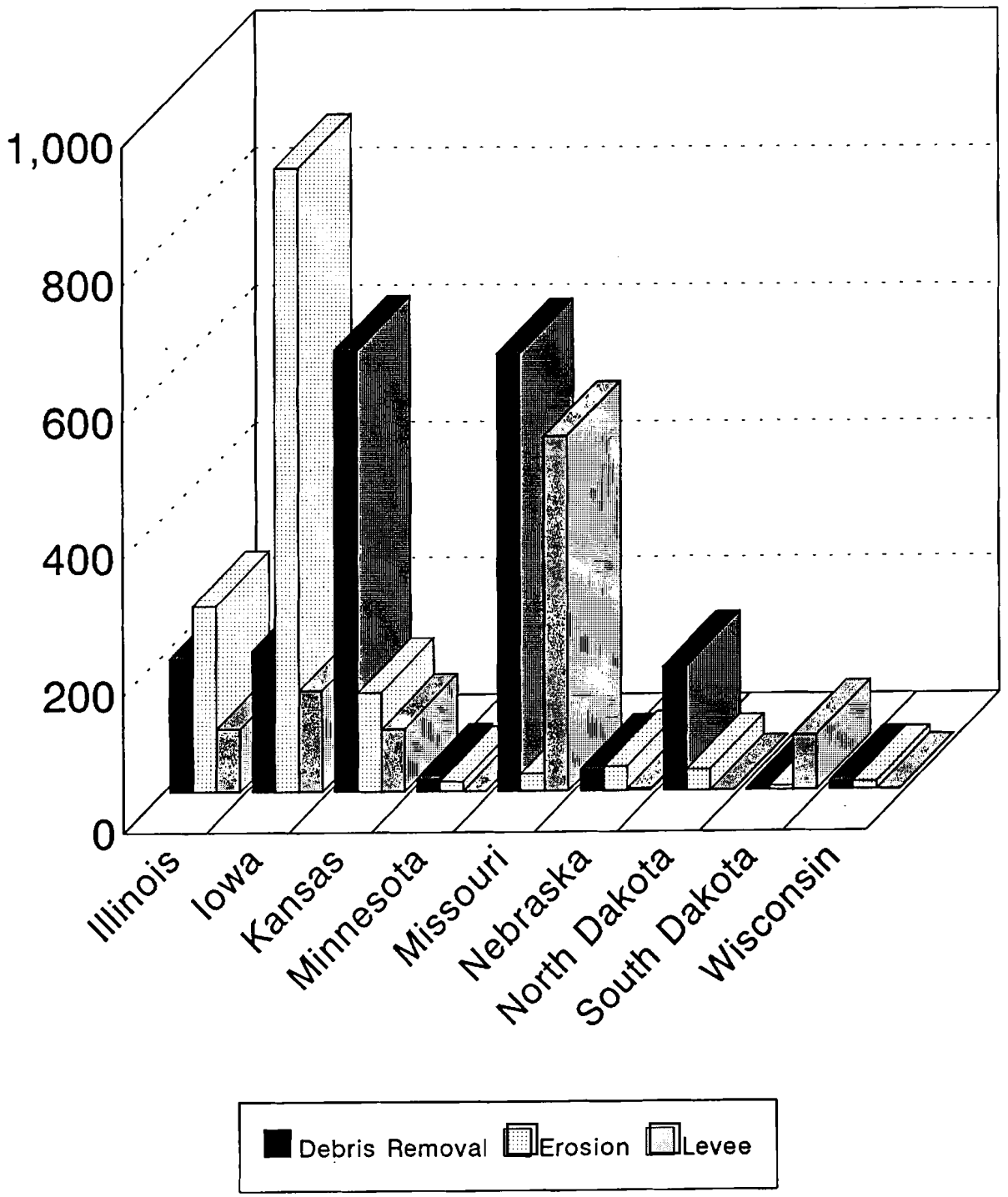
[103] The average work-week for these detailees was sixty hours.

[104] Report sent via fax from Bob Bartles, MNTC to the Watershed Projects Division, August 8, 1994.

[105] Numbers may not equal one hundred percent due to rounding.

[106] A valuable resource for tracking the progress of the Service's EWP efforts was the monthly reports prepared by the staff of the Watershed Projects Division.

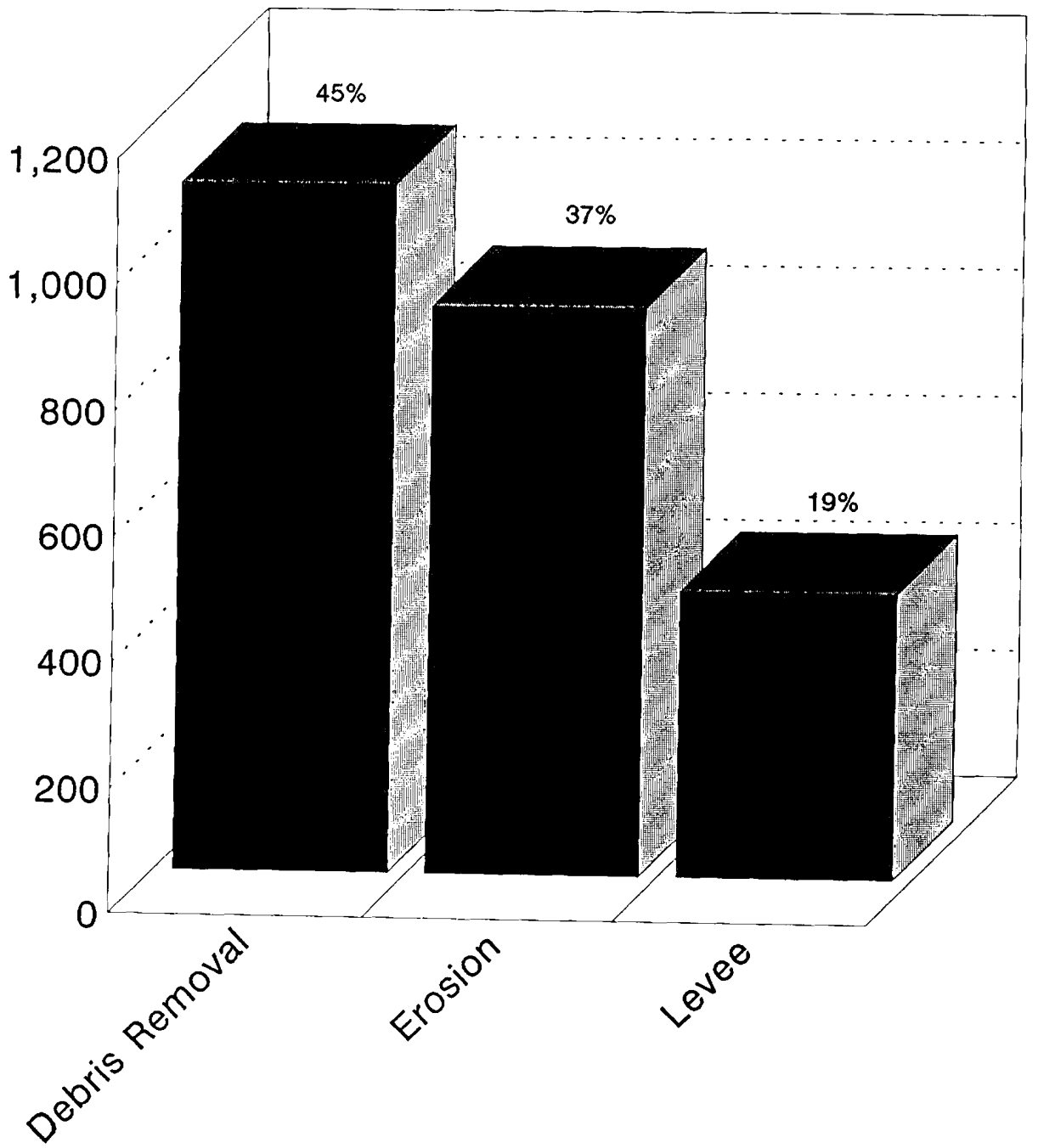
Damage Survey Reports Received



Total = 4,298 Projects

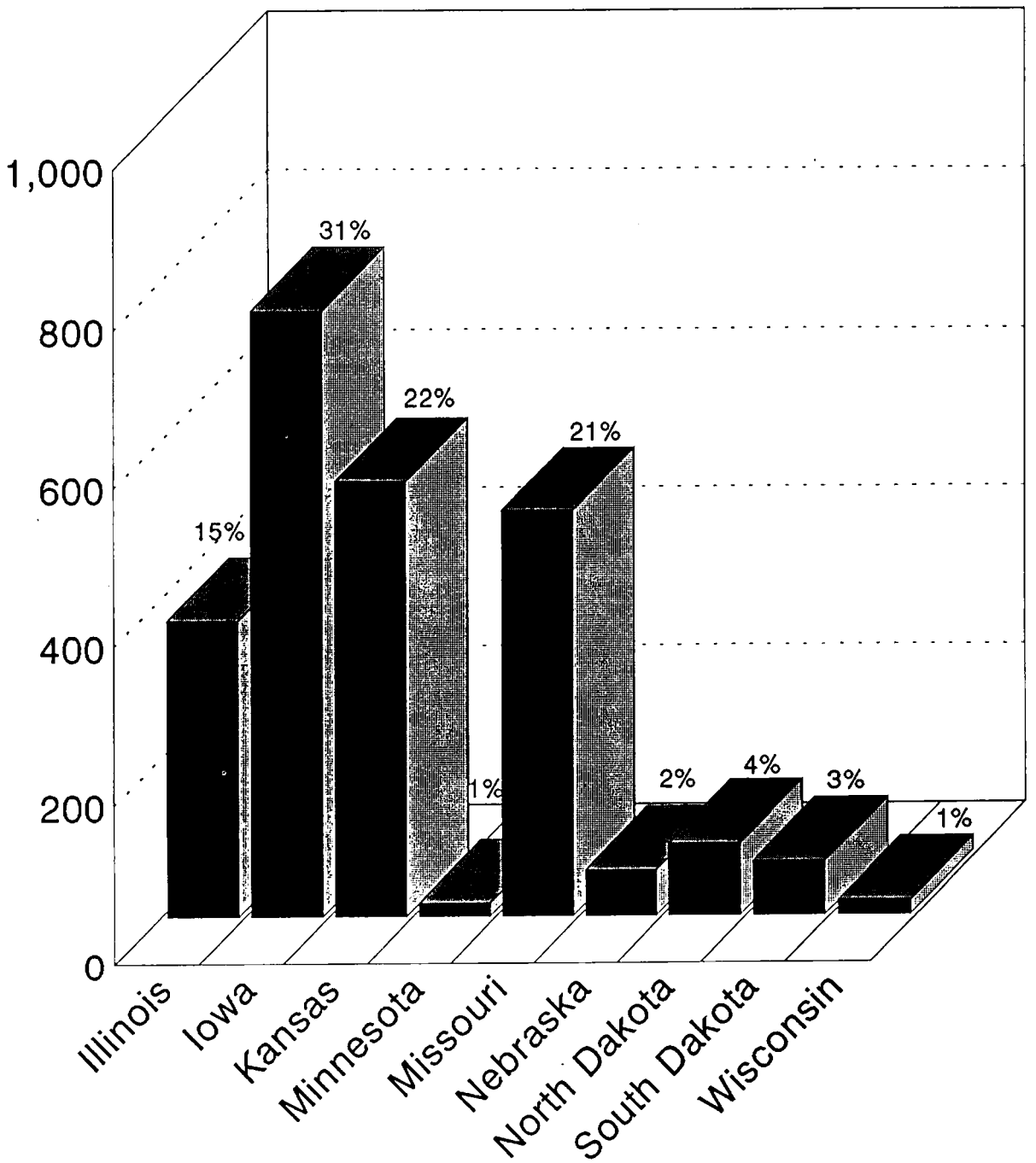
USDA/SCS/ECN - July 1994

Projects Eligible for EWP



Total = 2,441 Projects

Projects Eligible for EWP



Total = 2,441 Projects

Flood Control and Floodplain Management Debates

Even as personnel in the field completed Damage Survey Reports (DSR's) and emergency repair work got underway, the Service found itself in the midst of heated national debates over floodplain management and flood control policies.[107] Besides the immediate needs and pressures of the flood recovery work, the prominence of these disputes reflected shifting political winds, changing demographics and the decline of the American farmer, and budget restraints on flood control projects and agricultural subsidies. SCS experts in Washington and the Midwest participated in studies of floodplain management organized by the Clinton White House. As a result, the Service played a role in shaping long-term federal policies.

SCS's flood prevention and recovery work must be placed into the context of long-term trends in floodplain management. For example, the Federal Interagency Floodplain Management Task Force was one of many committees established to attack the problem of floodplain management over the years. Its 1992 report placed their efforts into a four-part chronological framework for understanding the changing federal role in flood control. The 1900 to 1960 period was the "Structural, Federal Era." During these sixty years, the Corps of Engineers built dams and other structures in the major river bottoms. These projects were authorized by legislation like the Flood Control Acts of 1917, 1928, and 1936. SCS gradually became involved through the Flood Control Act of 1936 and the Watershed Protection and Flood Prevention Act of 1954. The latter law created the Small Watershed Program, which focused on structural measures during this period.

At their most extreme, experts saw nature as something broken that needed repairing. For example, at a 1908 symposium on Missouri River flood control, one participant stated that "in no portion of her works has Nature left so much to be done by the engineer to supplement her deficiencies as in the modification of the natural flow of streams.[108] According to Corps of Engineers historian Martin Reuss, it was not until 1936 that "an official government document recommended something other than building dams, floodwalls, and levees to protect life and property."[109]

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[107] The glossary to the Interagency Floodplain Management Review Committee's July 1994 report defines floodplain management as "A decision-making process whose goal is to achieve appropriate use of the nation's floodplains. Appropriate use is any activity or set of activities that is compatible with the risk to natural resources and human resources. The operation of an overall program of corrective and preventative measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works, and floodplain management regulations."

[108] Stout, "The Relation of Power and Irrigation," in *The Control, Development, and Utilization of the Missouri River*, 353.

[109] Martin Reuss, "Coping with Uncertainty: Social Scientists, Engineers, and Federal Water Resources Planning," *Natural Resources Journal* 32, 1 (Winter, 1992): 101-136.

According to the 1992 Task Force's report, the 1960's were "A Time of Change" when alternatives to structures began to receive greater attention, including efforts to reduce flood hazards through zoning, land use regulations, flood forecasting, relocation, and new methods of water storage. The increasing use of the phrase "floodplain management" during this period reflected the interest in cooperative efforts among all levels of government and various professions. Such efforts grew from a growing recognition of the need for a comprehensive approach to flood control, water supply, and environmental concerns in the floodplains.[110]

The increasingly influential environmental movement as well as ever-tightening budget constraints on construction work have led to greater criticism of structural measures in flood control. For example, at a conference in early 1968, J. W. Howe, Chairman of the Department of Mechanics and Hydraulics at the University of Iowa, made statements that could easily have been uttered after the 1993 Midwest flood. In evaluating structural measures, he wrote that

> complete flood control is not usually achieved; but the public, with complete faith in the protection works, rushes in with construction clear to the river bank, little realizing that damage frequency has been reduced, but not its inevitability.[111]

He also addressed the issues of benefit-cost analysis and conflicts over property rights when restrictive regulations are implemented in order to limit flood damages, two other problems that stirred debate in 1993 and 1994.

The 1970's were deemed "The Environmental Decade." A variety of new laws, beginning with the National Environmental Policy Act of 1969, marked a continued movement away from the use of structural measures. Several executive orders issued during the Carter administration stressed that federal agencies needed to consider wetlands and floodplains in their work. Also, during this period, states and local communities became more involved in floodplain management. The Service, with its increased emphasis on water quality and land treatment measures in its Small Watershed Program, was part of these trends. The 1980's were the period of "Continuing Evolution." Efforts in this decade focused on carrying out the policies and procedures mandated in the 1970's.[112]

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[110] James E. Goddard, "Man Should Manage the Flood Plains," in Dougal, ed., *Flood Plain Management.*

[111] J. W. Howe, "An Introductory Philosophy of Flood Plain Management," in Dougal, ed., *Flood Plain Management.*

[112] "Chapter 3: Floodplain Development and Losses" in *Floodplain Management in the United States,* 3-16 to 3-20.

These trends continued into the 1990's. The concept of using floodplains for flood control had gained acceptance before 1993's disaster. For example, the 1992 Federal Interagency Floodplain Management Task Force report stated that

> natural, unaltered floodplain systems can reduce flood velocities, reduce flood peaks, and reduce wind and wave impacts because their physical characteristics affect flood flows, and typically, provide space for the dispersal and temporary storage of flood waters until the natural drainage can carry the water away. The natural function obviously can reduce the potential damages and loss of life from floods.[113]

Within the context of these general trends, it is vital to bear in mind that each of the different approaches to flood control and floodplain management comes with its own agenda.[114] Not surprisingly, solutions offered to the problems of flood control have corresponded closely to the duties of the author and his employer. For example, in 1928, E. A. Sherman, associate forester of the Forest Service, wrote that

> in times past, even before the white man had disturbed the heavy forests of the Mississippi River Basin, floods were known there. With the settlement of the country, forest fires, overcutting, and the abuse of forest and other lands have served to increase the possibility of floods and their severity and the amount and extent of erosion.[115]

The Corps, chief builder of levees and dams, has been accused of being fixated on structural measures of flood control. SCS has traditionally focused on the needs of smaller rural communities and commercial agriculture through its small watershed approach. These attitudes, sometimes conflicting and sometimes complementary, along with local, state, and federal rivalries, have hampered cooperation and coordination in floodplain management.[116]

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[113] *Floodplain Management in the United States: An Assessment Report, Volume 1: Summary Report* (Federal Interagency Floodplain Management Task Force, 1992), 9.

[114] Luna and Maddock begin their well-known history, *The Flood Control Controversy*, with the line, "Flood control has grown to be a big business." Luna and Maddock, 3.

[115] E. A. Sherman, *The Protection Forests of the Mississippi River Watershed and Their Part in Flood Prevention*, U.S. Department of Agriculture, Circular No. 37, August 1928, 1.

[116] It is important to note that some authors believe that the division of flood control and prevention responsibilities and missions "at least has the advantage of bringing differences to light; and the vigor generated by the clash of ideas and opinions--even though the clash is at times wasteful--provides a forceful approach to the flood control problem." Luna and Maddock, *The Flood Control Controversy*, 237.

As was the case after other major floods, the interest in flood control and floodplain management picked up dramatically in late 1993. Some framed the debate simply by stating that "Farmers and other landowners want levees repaired and things returned to pre-flood conditions. Environmental activists, on the other hand, want the government to abandon some levees and to replace farmlands with wetlands."[117] Others take a more comprehensive view. In an article co-authored with Mary Fran Myers, longtime commentator on America's water resource policies, Gilbert F. White, wrote that "It seems possible that, within the current window of opportunity, the nation could resolve three major issues." The first issue was levee repair. Second was floodplain management. Third was a comprehensive water management policy for the entire United States. The authors stressed that many issues received attention recently only due to the flood.[118] White and Myers called the interest in relocating flood-damaged structures "unprecedented," and discussion of alternatives to levee reconstruction a "pioneering effort."[119]

Congress held a variety of hearings on topics such as hazard mitigation (relocating away from the floodplain) and cost-sharing for flood control structures. As Chairman of the Senate Committee on Environment and Public Works, Max Baucus, stated during November, 1993 hearings,

> The flood raises important questions. For instance, should the Federal Government repair levees that have not been properly maintained or should we focus on the creation of nonstructural solutions like wetlands instead. Moreover, how do we pay for needed repairs to all levees with limited Federal resources?[120]

The Association of State Floodplain Managers and the Association of State Wetlands Managers also held major conferences to discuss these issues.

One common complaint voiced by those both inside and outside the government was that the flood control and floodplain management policies were uncoordinated and often contradictory. For example, two unusual bedfellows, environmental groups and the Corps, agreed on the need for a more unified and centralized approach; however, they

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117 Jim Patrico, "The Levee Fix," *Top Producer* (March 1994): 32-34.

118 Mary Fran Myers and Gilbert White, "The Challenge of the Mississippi Flood," *Environment* 35:10 (December 1993), 7-8.

119 Myers and White, "The Challenge of the Mississippi Flood," 29-30.

120 Opening Statement of Hon. Max Baucus, U.S. Senator from the State of Montana, Committee on Environment and Public Works, November 9, 1993. Many statements by Senators are contained in a short publication, *Federal Response to the Midwest Floods of 1993*, Hearing before the Committee on Environment and Public Works, United States Senate, 103d Congress, First session, S. Hrg. 103-434 (Washington: U.S. Government Printing Office, 1994).

differed greatly on what organization should be in control. In early August 1993, American Rivers requested that President Clinton investigate problems with flood control policies. The organization complained that no single agency was in command of flood control efforts and that local, state, and federal programs often contradicted one another.[121] In a report by Reuters, Lieutenant General Williams, Commander of the Corps, stated that the flood damages were greater than they might have been due to the mismatched flood control systems built by local, state, and federal agencies. He called for a uniform system similar to that already under the Corps' management for the lower Mississippi River from Cairo, Illinois, to the Gulf of Mexico.[122]

A *Christian Science Monitor* opinion piece criticized the lack of a single authority over the upper Mississippi River. It also attacked the Corps' attempt to use levees for flood control. The author, an adviser to the Committee for the National Institute for the Environment, claimed the lack of coordination among agencies proved the need for a federally-funded National Institute for the Environment.[123] Similar calls for a unified approach to the Mississippi River came from the National Fish and Wildlife Foundation.[124] As Senator Paul Simon pointed out, "North of Cairo, Illinois, it's just a patchwork, the Corps of Engineers takes this, a local levee or drainage district takes that, a State takes that. There is no system and I think we ought to look at what should be done."[125]

In late August, the White House responded to these pressures and formed a task force to discuss alternatives to levee reconstruction. Participants included FEMA, the Corps, SCS, the FWS, EPA, OMB, and the White House Office of Environmental Policy. In October the group expanded its duties into an assessment of floodplain management on the upper Mississippi and lower Missouri.[126] This formally became the White House Interagency Floodplain Management Review Committee in January of 1994. Under the leadership of Brigadier General Gerald Galloway, the Committee had several goals:

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121 "American Rivers Calls for Comprehensive Review of National Flood Control Policy As Flood Waters Recede," U.S. Newswire, August 11, 1993.

122 "Delays Seen in Repair of U.S. Floods Damage," Reuters wire service report, August 4, 1993.

123 David Blockstein, "Heeding Nature's Warnings," *Christian Science Monitor*, September 14, 1993.

124 "The Mississippi River Initiative," (part of the National and Fish and Wildlife Foundation's fiscal year 1994 Fisheries and Wildlife Assessment) National Fish and Wildlife Foundation, 96.

125 "Statement on Hon. Paul Simon, U.S. Senator from the State of Illinois," in *Federal Response to the Midwest Floods of 1993*, 10.

126 Between 1966 and 1986, four major efforts have been made to develop a rational and unified approach to floodplain management. These efforts began with House Document 465 "A Unified National Program for Managing Flood Losses."

> [T]o undertake an intensive review to determine what happened and why in the Mississippi River Basin floods of 1993 and to make recommendations as to what changes in current policies, procedures, and programs would most effectively achieve the goals of floodplain management: risk reduction, economic efficiency, and environmental enhancement.[127]

SCS personnel from the Watershed Protection Division participated in this effort. Tom Wehri, assistant director of that division, attended its White House meetings and played an important role in the Committee's work. The final report was delivered to the Clinton Administration in June of 1994.

The Service also participated in the effort to provide technical information to the Interagency Committee. In Sioux Falls, South Dakota, the Scientific Assessment and Strategy Team (SAST) was formed under the guidance of John Kelmelis of the U. S. Geological Survey. SAST was charged with "organizing existing databases to aid in the near-term and long-term decision-making process."[128] James Reel, from the water resources planning staff at the Iowa state office, David Buland, an economist from Huron, South Dakota, and Maurice Mausback from the national headquarters in Washington were the SCS participants in this group.[129] Besides combining data from a wide variety of sources and government agencies (both federal and state), four reports involving SCS activities were prepared: 1) investigating the Food Security Act and the effect of land treatment practices on run-off, 2) looking at the relationship between land use changes caused by the Conservation Reserve Program and run-off, 3) examining the flood damage reduction caused by the Small Watershed Program, and 4) investigating four model watersheds in the Midwest to see the results of various programs singly and in combination.[130]

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[127] "Floodplain Management Review: Information Update," press release from the Floodplain Management Committee, February 7, 1994. As structured after January of 1994, the following agencies were full-time members on the Committee: the Corps, USDA (SCS and the Economic Research Service), Department of Interior (FWS, Geological Survey, and National Biological Survey), EPA, and FEMA. The following groups provided support: Office of Environmental Policy, OMB, the Council of Economic Advisors, the Council on Environmental Quality, the Department of Justice, and the Tennessee Valley Authority.

[128] Memorandum from John H. Gibbons, Assistant to the President for Science and Technology, T. J. Glauthier, Associate Director, Office of Management and Budget, and Katie McGinty, Director, White House Office of Environmental Policy, November 24, 1993.

[129] Many SCS employees involved in flood recovery work, including James Reel, took advantage of the early retirement incentives offered in 1994. Karl Otte of the Watershed Projects Division took the buy-out in 1994. He left the Service in August. His duties were gradually taken over by George Bluhm. Another important leader in the flood recovery effort who left was Assistant Chief for the Midwest, John Peterson. He was replaced by Gary Margheim.

[130] These four model watersheds were used to examine the effect of various USDA programs on flooding, erosion, and sedimentation.

A farm near Hartsburg, Missouri, lies partially buried in sand. When farms like this do not recover, local government loses tax revenue and the local economy suffers. But who will bear the costs of flood prevention and recovery? Photo by Charles Rahm, SCS-Missouri.

The final report of the Interagency Committee, based on the expertise of the participants, field visits throughout the Midwest, and the SAST materials, was published in July of 1994.[131] It may point the way to the future of floodplain management. Changes resulting from this report, in turn, could impact upon SCS's own work, especially the Small Watershed Program. The report stressed that the P.L. 566 projects provided flood prevention benefits at the local level. Thanks to the structural and non-structural measures implemented since the mid-1950's, flood damage was reduced by an estimated $400 million. Water was held in small lakes and reservoirs, thus slowing the flow of water into the larger tributaries.[132]

[131] *Sharing the Challenge: Floodplain Management into the 21st Century, Report of the Interagency Floodplain Management Review Committee to the Administration Floodplain Management Task Force* (Washington: U.S. Government Printing Office, 1994).

[132] For some specific details on the benefits of SCS small watershed projects, see the individual state sections, particularly Kansas.

The report also blamed increased flooding upon the loss of wetlands and upland cover. The Service's work in support of the Wetlands Reserve Program, the Emergency Wetlands Reserve Program, the Conservation Reserve Program, and the conservation compliance provisions of the 1985 FSA and 1990 Food, Agriculture, Conservation and Trade Act all contributed to limiting run-off. The report acknowledged, however, that the flood prevention effects of these upland treatment programs were local in nature.

Although economic development had been the touchstone of federal, state, and local water resources policy until the 1970's, the pendulum has swung toward environmental protection recently. The goal of the report was not to match the mistakes of the past with new excesses in a different direction.[133] Above all, the report and its recommendations were an attempt to balance economic and environmental needs.

As explained by Tom Wehri, SCS's representative on the Committee, both the final result, the report and its recommendations, and the process of investigation and discussion were valuable. Placing personnel from different and often competing organizations together to work on a common goal built relationships and understanding that may reduce friction in the future. Further, the variety of viewpoints on the Committee, the broad mandate supplied by the White House, the many meetings with individuals and groups in the flood areas, the comments of commercial agricultural and environmental groups, and congressional input all enabled officials to step back from the day-to-day rush of the flood response to consider larger, long-term policy issues.

Perhaps the most important question was not what to do about these issues--there have been plenty of studies on that--but rather how to negotiate the thicket of political, economic, regional, and bureaucratic rivalries in order to bring about substantive change in floodplain management. A key issue is whether or not there will be enough momentum to carry through on the reforms suggested by the committee, even as memory of the flood fades. Further, in light of the fact that so many levees and other structures were restored after the 1993 flood, it is possible that the impact of the policy changes that come from 1994's report will be most clearly felt after the next major flood.

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[133] The comments on the draft Interagency Report in June and July of 1994, make clear that the report had taken the middle road in floodplain management debates. Personnel in USDA, Congressmen and Senators, levee and drainage districts, environmental groups, state farm bureaus, and individuals criticized aspects of the report. In general, the comments were of two types: first, that the recommendations did not do enough to protect the environment and mitigate flood dangers. Second, that following the recommendations in the report would result in undue hardship upon the economic health of the Midwest. Those taking the latter position often raised pointed questions about the perceived lack of mitigation efforts for those in earthquake- or hurricane-prone areas.

As David Galat, associate professor of fisheries and wildlife at the University of Missouri and participant in the SAST effort, told the *Kansas City Star*, "Everyone is talking about non-structural solutions. But all I see is everyone putting Humpty Dumpty back together again on the wall."[134]

Another important outcome of environmental trends, budget constraints, and the immediate needs of the flood was a willingness to fund relocation away from the floodplain.[135] The ultimate goal was to reduce the amount of property requiring flood protection.[136] Here, too, SCS contributed its expertise. On September 12, a long opinion piece in the *Washington Post* by an advocate of relocating people outside the floodplains focused on the success of Soldiers Grove, a village of six hundred people in Wisconsin. The author wrote that relocation is cheaper than flood control in the long run and praised Secretary Espy's apparent willingness to at least consider this option.[137] At least in the short-term, it promised to be an expensive process. In early November, a FEMA official estimated that it would cost $400 million to relocate those who wanted to move in 207 communities, but that funding was limited. The town of Valmeyer, Illinois, was expected to be among the first to move.[138] The American Institute of Architects, the American Planning Association, and the American Society of Landscape Architects held a competition to select a new town plan and design for Valmeyer. An SCS employee, Ed Weilbacher, was on the team which presented the winning design. Weilbacher, a Resource Conservation and Development (RC&D) Coordinator, made sure that important issues like erosion and sink holes were considered throughout the planning process.

The 1993 Midwest flood increased interest in floodplain management issues and accelerated long-term trends in this field. SCS experts participated in these discussions. In turn, these debates, both in the public sphere and within the government, influenced the Service's own work, as can be seen most clearly in policies involving levee repair and wetlands.

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134 James Kuhnhenn, "Levee Repairs Slowed," *Kansas City Star*, July 13, 1994.

135 Relocation is the attempt to use government funds, primarily federal, to help entire communities move out of flood-prone areas. On December 3, President Clinton signed the "Hazard Mitigation and Relocation Assistance Act of 1993." This law was designed to increase the federal financial contribution for moving structures damaged by the flood.

136 Nationally, from 1916 to 1985 the average number of flood-related deaths remained close to one hundred persons per year. However, per capita flood damages continually increased due to increasing numbers of structures in the flood plains. After adjusting for inflation, annual damages for the 1951 to 1985 period were 2.5 times greater than 1916-1950 annual damages. For more information, see "Chapter 4: History of Floodplain Management," in *Floodplain Management in the United States.*

137 William Becker, "Noah's Architecture: Let's Not Rebuild on the Flood Plain," *Washington Post*, September 12, 1993.

138 George Gunset, "Flood Relocation to Cost $400 Million," *Chicago Tribune*, November 3, 1993.

Levee Policy

The levees built by federal, state, local, and private entities were and are vital to the economic health of the Midwest. They protect major cities like St. Louis, historic small towns like Hannibal, Missouri, and some of America's most productive farmland.[139] Yet, even today the overall number, size, and protection offered by these structures remains unclear since there was no central database before the 1993 flood.[140] Many structures are built and maintained by local government, drainage districts or private citizens. Creating a unified, comprehensive database was one of the goals of the SAST. In late 1993, the Corps had the most complete lists and maps, especially for the major river bottoms. The Service relied heavily upon its data.

The Army Corps of Engineers, as the most important single builder of flood control structures, was the focus of most levee repair discussions. The Corps and others involved in flood control often stressed the value of the property protected over the long-term by these structures. The Corps claimed its levees prevented $250 billion in damage and had a 10:1 return on investment.[141] The Corps paid one hundred percent of the repair costs for their own levees and eighty percent for levees with proper sponsorship which were maintained according to its standards. If a levee district wished to improve its levee, the Corps offered to provide seventy-five percent of those costs.[142]

It is important to recognize that, like SCS, the Corps was caught between many contending forces. Environmentalists criticized the Corps for rebuilding levees with inadequate concern for environmental, especially wetlands, concerns. Farmers and landowners were equally vehement in their criticism that the Corps was not rebuilding enough levees or was not rebuilding them fast enough.

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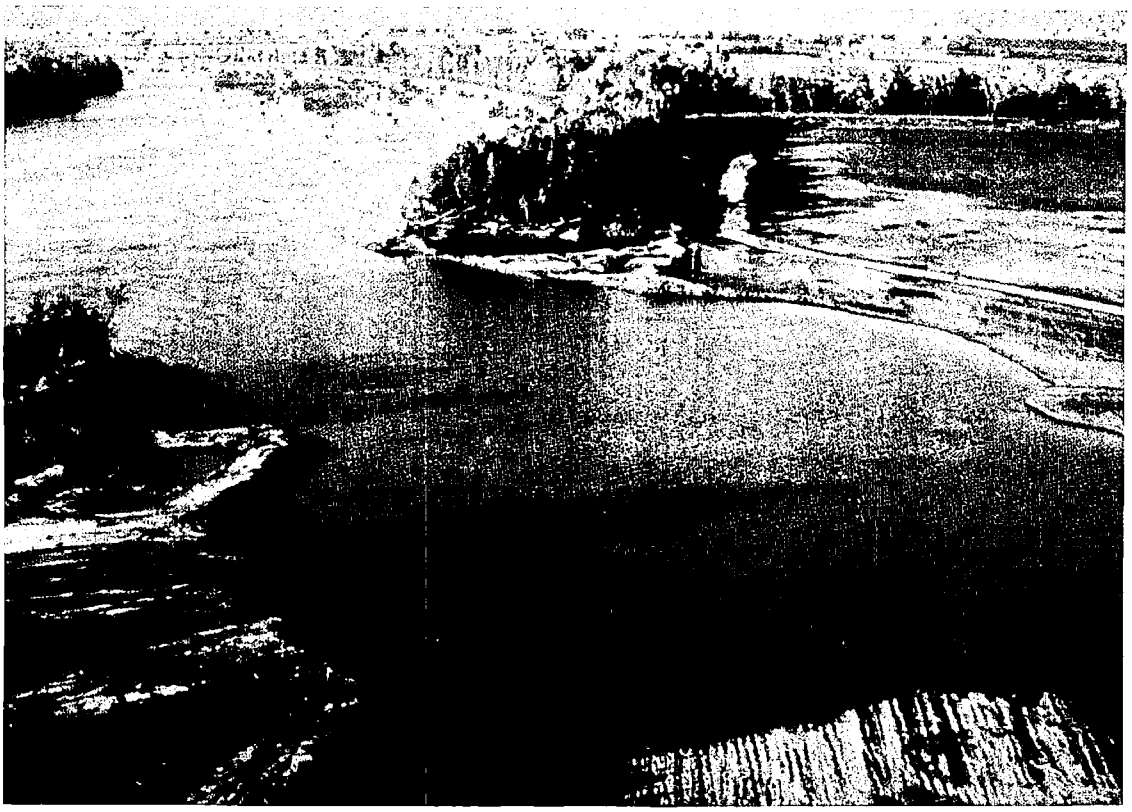
[139] As the 1994 report by the Interagency Floodplain Management Review Committee pointed out, "Corn yields in well-drained floodplains uniformly average 15 percent higher than the state average in Missouri." *A Blueprint for Change*, 46.

[140] "Chapter 12: Modifying Flooding," in *Floodplain Management in the United States*, 12-28. The Scientific Assessment and Strategy Team in Sioux City, South Dakota, made this one of their data collection tasks.

[141] Stephen Labaton, "U.S. Weighs Scrapping Levees for Flood Control," *New York Times*, August 28, 1993.

[142] Candice Bowman, "US Rain Impact: Flood Raises Many Issues Related to River Control," Knight-Ridder Financial News, August 12, 1993. See also Michael C. Robinson, "Nightmare in the Heartland: the Great Midwest Flood of 1993," *APWA Reporter*, September 1993, 6-7. APWA is the American Public Works Association.



Levee break and "blue hole" along the Missouri River. Some holes were up to sixty feet deep. Material from the levee and hole washed onto the surrounding cropland. Photo by Charles Rahm, SCS-Missouri.

Traditionally, SCS has built relatively few levees and has played a minor role in flood control efforts along major rivers. It did, however, repair some levees under the EWP program. As a result, the Service was thrust into the contentious debate over the use of structural measures in flood control. Furthermore, criticism of larger and more prominent structural measures, such as those built by the Corps, could not help but have a ripple effect and raise questions about the Service's small watershed construction and EWP repair work.

Disagreements over the role of levees in increasing or controlling flooding are not new. For example, in 1920, the Weather Bureau weighed-in with its view: "It is probable that the levees constructed previous to 1871 from Cape Girardeau to Vicksburg had the effect of increasing the height of the flood plain in certain reaches of the river."[143] In 1947, writer Rufus Terral called levees along the Missouri River "self-defeating" because they constricted the river and thus raised the level of the water.[144] In 1993, many groups

[143] Samuel C. Emery, *Mississippi River Levees and Their Effect on River Stages During Flood Periods*, U.S. Department of Agriculture, Weather Bureau Bulletin No. 38 (Washington: Weather Bureau, 1910).
[144] Terral, *Missouri Valley*, 86-87.

used the flooding to attack the use of structural measures in flood control. For example, the Environmental Defense Fund (EDF) in New York issued "Key Issues in Targeting Areas for Not Rebuilding Levees." The EDF wrote that levee repair was not the best option when the levee had been substantially damaged, when the levee was in an area frequently flooded, or when restoration of the area would have "substantial environmental benefits." It also suggested that more data be gathered on floodplains, land use, and "prime environmental restoration areas."[145]

Other observers with varying degrees of technical ability were more blunt. Essayist Andrei Codrescu wrote that "There is little doubt now that the mighty works of the Army Corps of Engineers to contain the river for new farms and growing cities has been a failure," and "The billions of dollars the floods cost will mean nothing if we don't learn the essential lesson: let the river take its course."[146]

In response, experts from the Corps and other agencies tried to make clear again and again that levees, like all flood control structures, were built with the expectation that they would fail eventually.[147] Theoretically, the consequences of flooding, that is, the threat to life or property, determine the level of protection which is economically viable to provide. For example, an individual farmer may build a small levee which provides protection only to the five-year level. In others words, a five-year storm will almost overtop the levee. As determined by the farmer, the cost of building a higher levee is greater than the potential losses (generally crop damage) incurred from the occasional failure of that levee. Obviously, areas with valuable infrastructure or dwellings are protected by more substantial and expensive structures.

Others defended levees and stated that their negative effect upon flow levels was overstated. For example, a Corps engineer in St. Louis stressed that any rise in the water level due to levees was a local phenomenon. Also, this flood illustrated that the ability of floodplains to store water is limited. James Durkay, assistant director of civil

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145 Fax from the Environmental Defense Fund, September 9, 1993.

146 Andrei Codrescu, "Down in the Flood," *Sierra* (March-April 1994): 86 and 91. See also Michael E. Diegel, "Mississippi Levee Blues," *Outdoor America* (Winter 1994): 8-10.

147 As the Chief of Engineers stated before Congress in November, "there are a lot of different types of levees that are built to different standards and many of them were damaged. We shouldn't try to categorize them all in one swoop and say that they weren't designed properly. Probably the vast majority of levees, regardless of who built them, probably held up for the design for which they were intended." Statement of Dr. G. Edward Dickey, Acting Assistant Secretary of the Army for Civil Work, U.S. Department of the Army, Accompanied by Lieutenant General Arthur Williams, Chief of Engineers, in *Federal Response to the Midwest Floods of 1993*, 42.

works for the Corps, pointed out that although agricultural levees, which were built to provide a relatively low level of protection, failed upstream and the water filled the floodplain bluff to bluff, downstream areas still faced massive flooding.[148]

Of the 275 levees the Corps built in the overall flood area, thirty-one were overrun, eight ruptured, and three were breached by floodwaters.[149] On the flood-affected parts of the Mississippi and Missouri rivers, there were 229 federally built and maintained levees, 258 non-federal levees that met the Corps' standards, and 1,091 levees that did not meet the standards. One paper estimated that only 110 of 465 damaged levees along the Missouri River were eligible for Corps assistance.[150] It is vital to remember, however, that levees vary greatly in length, the area they protect, and the level of protection they provide. The Corps repaired the largest levee systems which protected the most important infrastructure or towns and cities. On the other hand, many of the levees ruled ineligible for Corps assistance were smaller agricultural levees built and maintained by a single landowner.

Based on the enormity of the levee repair task, limited resources, and a long-term drive to systematize the levee system under its control, the Corps emphasized that it would not repair levees that were not in its Non-Federal Flood Control Works Inspection Program.[151] As the Acting Assistant Secretary of the Army for Civil Works told Congress in November of 1993,

> In 1986, the Corps recognized that we were expending substantial amounts of money on restoration of levees which were not properly maintained, or were not built to any particular design standard. So in 1986, we established a formal program where to be eligible for Corps of Engineers assistance under Public Law 84-99, a levee had to be built to a certain minimum design standard, had to be regularly inspected by the Corps to assure that it was regularly and properly maintained, and finally, that there was public sponsorship to ensure that if there was Federal assistance, that maintenance would continue in the future.[152]

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[148] James Denning, "When the Levee Breaks," *Civil Engineering* (January 1994), 39.

[149] Stephen Labaton, "U.S. Weighs Scrapping Levees for Flood Control," *New York Times*, August 28, 1993.

[150] Dan Looker, "A Clouded Future for Floodplain Farmers," *Successful Farming* (December 1993): 32-34.

[151] See the U.S. Army Corps of Engineers, *Natural Disaster Procedures*, ER 500-1-1, March 11, 1991.

[152] Statement of Dr. G. Edward Dickey, Acting Assistant Secretary of the Army for Civil Works, U.S. Department of the Army, Accompanied by Lieutenant General Arthur Williams, Chief of Engineers, in *Federal Response to the Midwest Floods of 1993*, 40-41. Public Law 84-99 authorizes the Corps to make emergency levee repairs.

In the late 1980's, the Corps had sent letters to many levee districts in the Midwest urging them to bring levees up to its standards and threatening to withhold emergency repairs otherwise. The response to these notifications was apparently less than overwhelming. Nevertheless, the Corps used the standards as a method of determining eligibility for post-flood levee repair.

Under great public and Congressional pressure, the Corps appeared to back off slightly by late September. First, the Corps announced that it would fix any levee built since 1986. Since few levees were constructed in the 1980's, this was not a major concession. Second, levee districts that did not receive adequate notice of Corps standards in the late 1980's could remain in the program. Scott Saunders, a spokesman for the Corps in Washington, stated that their policy had been set by Congress and the President.[153] There was, however, a great deal of debate over the intentions of Congress and the Administration. One major question became whether SCS, FEMA, or another federal entity could fund any levee repair turned down by the Corps. In the early stages of the disaster recovery effort, SCS generally avoided the issue since the water was usually too high to work in the larger river bottoms. With a few exceptions, the Service was repairing levees on small tributaries to the Missouri and Mississippi rivers that were clearly outside the Corps' jurisdiction.

Levee repair caused some of the most heated criticism of the federal government, particularly of the Corps, in the Midwest. As early as August 8, A *Des Moines Register* article stressed that farmers were dissatisfied with the Corps' work. They complained that the Corps focused too much on creating a nine-foot deep channel in the Mississippi and not enough on levee repair. Congressman Jim Ross Lightfoot of Iowa met with Lt. General Arthur Williams of the Corps, but said that he was unable to get any firm answers on future repair work. A levee district chairman also complained that the Corps was slow. He wanted the agricultural levees in his district raised. A Corps spokesman responded that many levees were not eligible for assistance.[154] In other news reports, farmers complained that environmentalists were setting the Corps' levee repair policy.[155] Public frustration grew over the pace of levee repairs. For example, the *Atlanta Constitution* reported on the complaints of landowners in Alexander County, Illinois, where a levee was breached on July 15. First, the levee was not in the Corps' program. Second, although SCS had said they would rebuild the levee, the Service was not sure when work could start.[156] In a move that did little to improve relations between the

[153] Lyle Graham, "Corps Refuses to Fix Some Levees," *Kansas City Star*, October 2, 1993.
[154] John Carlson, "Broken Levees Scar the Land," *Des Moines Register*, August 8, 1993.
[155] Bill Graham, "Effort to Restore Flood-Damaged Farmlands Expected," *Kansas City Star*, October 29, 1993.
[156] Phil Gast, "Frustration Still Runs High as Recovery Proceeds Slowly," *Atlanta Constitution*, October 26, 1993.

federal agencies, Des Moines Mayor John Dorrian complained publicly about the allegedly slow pace of repairs in his city. He compared the Corps' work to the faster pace of SCS and FEMA repairs.[157] Missouri congressmen urged President Clinton to reverse the Corps' levee repair policy.[158] They wanted more non-federal levees rebuilt.[159]

On the other hand, some in the press came out in favor of the Corps and its policy of repairing only those levees that were part of its maintenance program. For example, a *Kansas City Star* editorial criticized the Missouri congressional delegation for trying to obtain more money for levee repair. The editorial emphasized two points: first, budgetary constraints made limiting spending vital; second, this was not the first time that people who had not purchased flood insurance received federal flood recovery aid. In the long-run, only by allowing the Corps to enforce its policy would levee districts be motivated to maintain levees properly.[160]

Levee repair became tied to other aspects of long-term flood recovery. For example, one potential barrier to legislation increasing funding for buy-outs, that is, federally funded relocation of communities out of the floodplain, was that some Missouri representatives and senators wanted to add language to the bill which would force the Corps of Engineers to rebuild more levees.[161] The attempt to hold relocation hostage to levee repair largely failed as only $18 million was authorized for the Economic Development Administration (EDA) in November. The EDA was to use this money to

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[157] The Corps responded that cold weather delayed work and that they did not expect the area behind the breached levee to be flooded again soon. Chris Osher, *Des Moines Register*, December, 21, 1993.

[158] James Worsham, "Missouri Lawmakers Ask Clinton to Lift Flood-Aid Restriction," *Kansas City Star*, October 15, 1993.

[159] Senator Christopher Bond of Missouri was the most prominent congressman pushing federal agencies to complete levee repairs quickly. The media noted that Bond's strong advocacy of federal help to repair more levees placed him in conflict with two unlikely allies--environmentalists and the Corps. In late 1994, the White House also opposed the Senator's proposal to force the Corps to repair levees it had ruled ineligible. Two other important pressures which helped increase support for more levee repair were the farm lobby and the potential public relations disaster if the Midwest were to suffer preventable flood damage in the spring of 1994. Robert L. Koenig, "Environmentalists and the Army Oppose Bond's Levee-Repair Push," *St. Louis Post Dispatch*, November 28, 1993. Senators and representatives from the flood area almost without exception publicly stressed the need for quick levee repair. For example, see the statements of Senators Charles E. Grassley of Iowa and Carol Moseley-Braun of Illinois in *Federal Response to the Midwest Floods of 1993*.

[160] "Get Backbone on Flood Aid," editorial, *Kansas City Star*, November 1, 1993.

[161] James Worsham, "Federal Flood-Buyout Bill Advances," *Kansas City Star*, November 4, 1993.