

River Voices



Flood Policy and Management: *A Post-Galloway Progress Report*

by Scott Faber

Unlike no other event in our nation's modern history, the Great Flood of 1993 forced the nation to question assumptions about roles and responsibilities for flood-loss reduction.

For 150 years, federal programs had slowly assumed more and more responsibility for flood control and risk management. Long-established policies emphasized structural flood control, such as levees, channels and dams. But the Great Flood of 1993 ignited a national debate about such policies and practices.

The need to reform flood policies could no longer be ignored.

In January 1994, the Clinton Administration's Floodplain Management Task Force handed the Inter-agency Floodplain Management Review Committee three directives: 1) to delineate the major causes and consequences of the 1993 Midwest floods; 2) to evaluate the performance of existing floodplain management and related watershed programs; and 3) to make recommendations on changes in current federal policies, programs and activities. The result was a June 1994 report, commonly known as the "Galloway Report," with more than 60 recommended actions. In the report cover letter, Brigadier General Galloway captured the key theme of the report: "It is time to share responsibility and accountability for accomplishing floodplain management among all levels of government and with the citizens of the nation." Has anything changed?

Shattering Misconceptions of Flood Control

Perhaps the most significant reform occurred not in Washington, D.C., but in floodplain communities, where long-held misconceptions about flood control projects were permanently shattered. Although levees provide a limited level of protection, structural flood control projects often create a false sense of security which encourages floodplain development, multiplying the consequences of the levees' inevitable failure. After spending a tremendous amount of money on such projects nationally, flood losses have nearly tripled since 1951, to more than \$4 billion annually (when adjusted for inflation).

Relocation and land acquisition have been used in the past to reduce losses associated with flooding, but the Great Flood of 1993 sparked the first large-scale exodus from the floodplain since Noah constructed the ark. Rather than return to the river's edge, floodplain landowners throughout the Midwest voluntarily relocated more than 8,000 homes and business — 10 percent of all structures damaged by the flood —

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Give the river room to roam

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from harm's way and voluntarily enrolled more than 50,000 acres of floodplain farmlands into federal easement programs.

Flood-weary homeowners took advantage of amendments to federal disaster laws which set aside 15 percent of all disaster relief for relocation, land acquisition and other forms of hazard mitigation. In some cases, entire communities were relocated to higher ground, permanently reducing the threat of future floods. In Grafton, Illinois, near the confluence of the Illinois and Mississippi rivers, dozens of homes have been relocated to a 235-acre site on the bluff and been replaced by a park and marina to attract recreation and tourism. The entire town of

Grafton, Illinois, (see below) was relocated to higher ground, as were large portions of St. Charles, Missouri, one of the nation's most flood-prone communities. Several levee districts in Iowa and Missouri — including one district which repaired its levee 16 times since 1910 — opted to enroll its land into state and federal easement and acquisition programs.

Federal Policy Reforms

In addition to flood management, Congress and the Clinton Administration also made several important changes at the local level, and have moved on many of the recommendations from the "Galloway Report."

- The Federal Crop Insurance

program has been reformed to limit disaster assistance payments and to increase participation. Rather than continue to provide disaster relief for flood-prone farmers, Congress dramatically restructured the program to require landowners to simply purchase insurance, eliminating a powerful subsidy for farming on marginal lands.

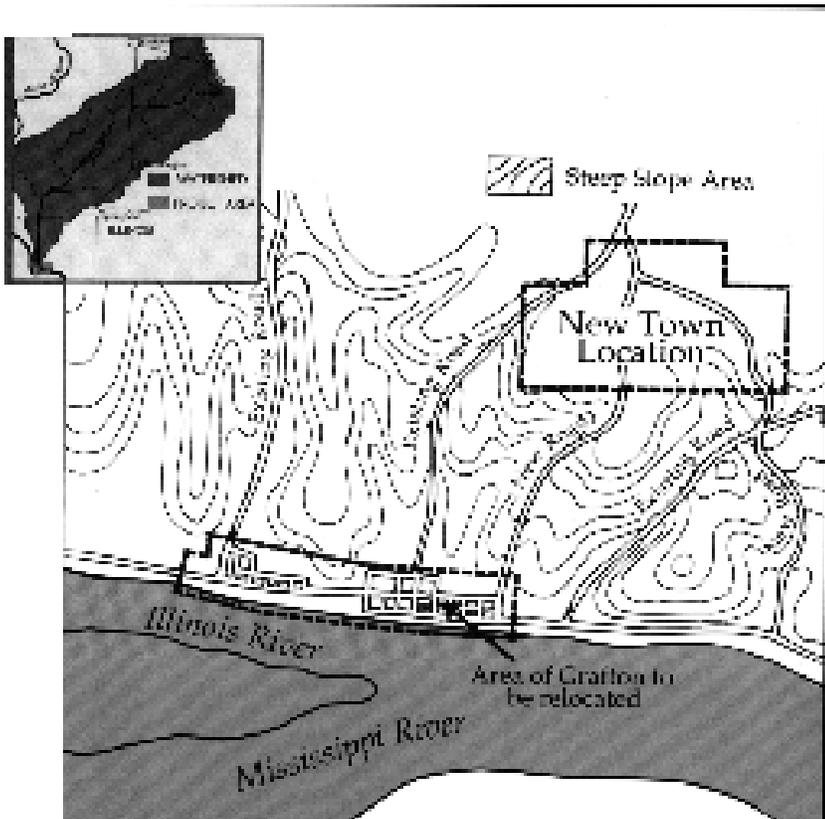
- An ongoing relocation program has been established independent of disaster declarations. Although federal funds were available immediately after the Great Flood of 1993, the federal government has not provided communities funding to relocate homes and businesses before the next flood.

Congress reformed the federal flood insurance program to set aside \$20 million annually for such projects, and the funds will be derived from flood insurance premiums.

- The acquisition of flood insurance policies has increased through mandatory purchase requirements and improved marketing. The Federal Emergency Management Agency (FEMA) has aggressively promoted flood insurance through television, radio and print advertisement, doubling the number of policyholders in just four years.

- The National Flood Insurance Program's (NFIP) Community Rating System has been modified to encourage communities to develop floodplain management plans. The federal flood insurance program is a quid pro quo — communities must meet certain building code requirements in order to participate in the program. Communities which go above and beyond the minimum requirements of the federal insurance program receive discounts on their flood insurance premiums.

- The Corps's environmental mission has been expanded, increasing appropriations for environmental restoration projects. Two of the largest



In Grafton, Illinois, home to 900 people, 262 structures were damaged during the 1993 flood. The community opted to develop a 235-acre relocation site above the floodplain and use the former town site for riverside recreation, open space and restored habitat.

budget requests by the Clinton Administration for FY 1998 relate to the restoration of nationally significant water resources. In addition, Congress and the Clinton Administration increased flexibility and funding for the Corps' Section 1135 Program, which allows the Corps to participate in small-scale restoration projects, including reforestation of portions of the Mississippi River floodplain in Illinois and efforts to transplant seagrass in the Laguna Madre in Texas.

Unfinished Reforms

Congress and the Clinton Administration have failed, however, to implement many of the other recommendations in the "Galloway Report." Some of the most notable include:

- enact a National Floodplain Management Act which would clearly define the roles and responsibilities of federal, state, tribal and local governments; provide fiscal support for state and local floodplain management activities; and recognize states as the nation's principal floodplain managers;
- revitalize the Water Resources Council to coordinate federal and federal-state-tribal activities in water resources;
- reestablish basin commissions to provide a forum for federal-state-tribal coordination on regional issues;
- establish a task force to develop common procedures for federal buyout programs;
- continue the development of a basinwide hydrologic model for the Upper Mississippi River Basin; and
- reform U.S. Army Corps of Engineers planning regulations.

Reforming the Corps

Although many agencies influence floodplain decision-making, the Army Corps of Engineers flood control program has had far greater influence on inappropriate floodplain develop-

ment than the NFIP. Hundreds of dams and thousands of miles of Corps levees and floodwalls have encouraged development in flood-prone areas. Existing Corps projects continue to influence the management of most major river systems, including the Mississippi, Missouri, Ohio and Columbia rivers.

Although local government is ultimately responsible for decisions regarding land use, flood control projects constructed by the Corps provide a powerful incentive for

Escalating Flood Damage Costs in the U.S.

Over the last 30 years, average annual riverine flood damages have exceeded \$2 billion. Over the last 10, they have been more than \$3 billion.

The Galloway Report, 1994

floodplain development. And, as revenue-hungry communities continue to develop flood-prone areas, the Corps continues to be a somewhat reluctant co-conspirator in plans to make such development seem economically sensible.

Corps planning regulations must be changed to allow non-structural flood control projects to better compete with structural flood projects. Although Congressional preference for levees and dams has played a powerful role in the development of federal flood control policy, the Corps' analysis of benefits and costs strongly favors structural flood control projects. Today, the benefits of flood control projects are determined by calculating the damages they prevent. Benefits are determined by delineating the affected area, collecting historical data on the flooding, forecasting

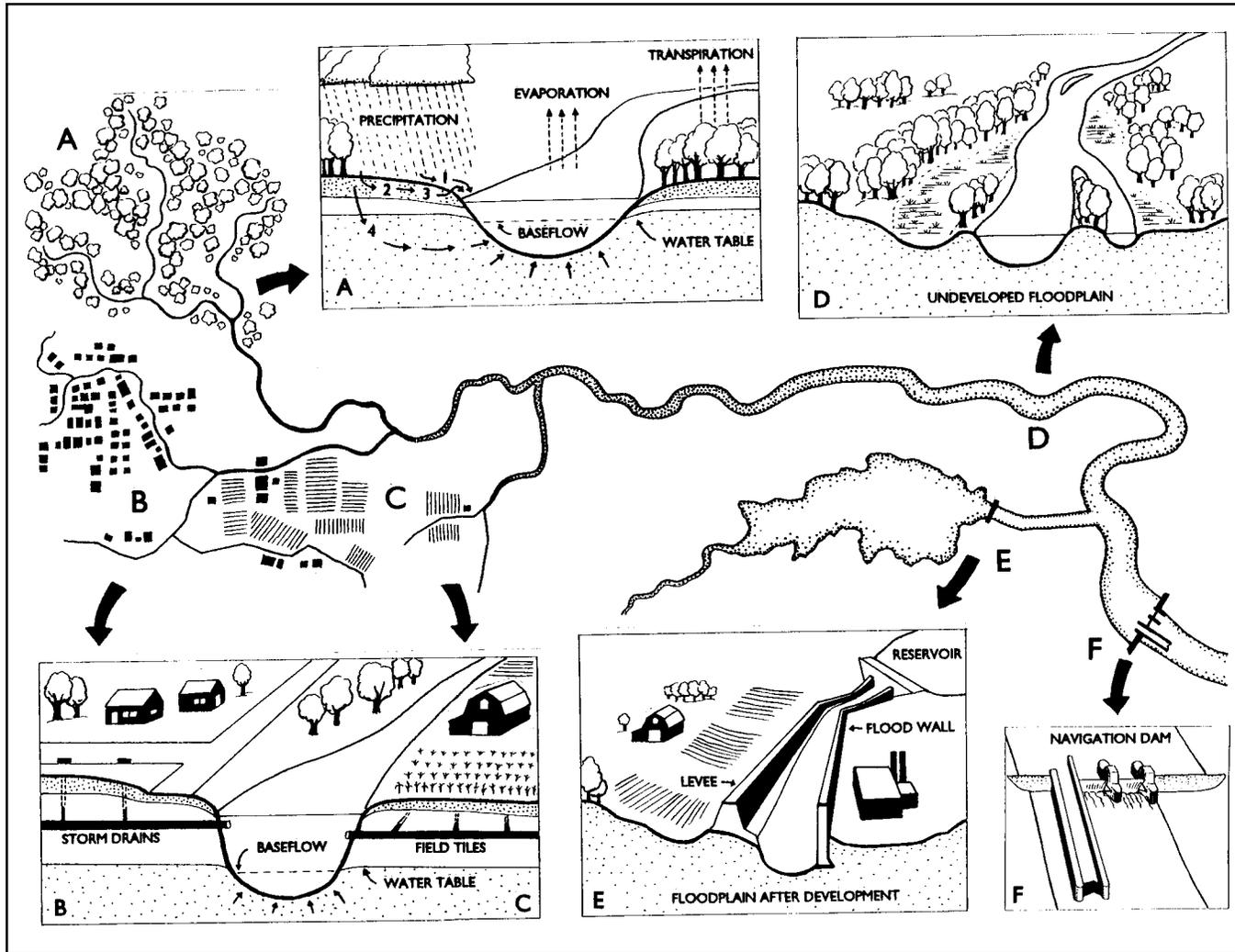
activities in the area, and estimating future flood damages. For example, the benefits of a project designed to protect floodplains planted with corn and soybeans would be equal to the loss of profits the farmer would suffer when floods eliminated his crop. The actual benefits are calculated by determining the per acre value of the crop, but that figure is then annualized over the projected life of the flood control project. The "costs" are the costs of constructing the flood control project. If the benefit-to-cost ratio is greater than 1.0, the project is recommended for Congressional approval.

Five significant criticisms have been made regarding the Corps' calculation of benefits and costs, including: 1) failure to consider the flood control benefits of temporary storage of floodwaters in the floodplain; 2) failure to consider the catastrophic costs associated with the failure of a flood control project; 3) failure to include the environmental benefits of undeveloped floodplains and the environmental costs of flood control projects; 4) conservative estimates of recreation benefits; and 5) the Corps' reluctance to include the non-market or intrinsic value of natural resources in their benefit calculations.

In general, the Corps' cost-benefit analysis understates both the costs of floodplain development — catastrophic flood losses and environmental costs — and the benefits of undeveloped floodplains — flood storage, habitat for wildlife, improved water quality and enhanced recreation. Rather than scrutinize the calculation of these benefits and costs, Congress more often plays the role of rubber stamp.

The Role of River Groups in Additional Flood Reform

River and watershed conservation groups can play a vital role in making more positive changes in flood reform. A few steps organizations can take include:



Natural pathways of water moving downhill, and human influences on hydrology. An undisturbed, forested watershed (A) is used to illustrate basic principles. Runoff from precipitation can be divided into four components. Overland flow (1) occurs when precipitation exceeds the infiltration capacity of the soil. Shallow subsurface stormflow (2) represents water that infiltrates the soil but is routed relatively quickly to the stream channel. Saturated overland flow (3) occurs where the water table is close to the surface, such as adjacent to the stream channel, upstream of first-order tributaries, and in soils saturated by prior precipitation. Groundwater flow (4) represents relatively deep and slow pathways of water movement, and provides water to the stream channel even during periods of little or no precipitation. Collectively, overland and shallow subsurface flow pathways create the peaks in the hydrograph that are the river's response to storm events, whereas deeper groundwater pathways are responsible for baseflow. Urbanized (B) and agricultural (C) land uses increase surface flow by increasing the extent of impermeable surfaces, reducing vegetation cover, and installing drainage systems. Relative to the unaltered state, channels often are scoured to greater depth by unnaturally high flood crests, and water tables are lowered, causing baseflow to drop. Levee or flood walls (E) are constructed along both banks to contain fast-flowing flood waters. Channels often deepen in response to these lateral constraints, and the river ecosystem gives up its previously diverse habitats comprised of side-channels, wetlands and episodically flooded lowlands (D). Dams impede the downstream movement of water and can greatly modify a river's flow regime, depending on whether they are operated for storage (E) or as "run-of-river," such as for navigation.

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• Become an active constituency of the Corps by promoting local restoration projects within Corps districts and urging Congress and the Clinton Administration to support the Corps' emerging environmental mission.

• Sign on to joint testimony to reform the Corps and other agencies. More than 150 local river groups recently submitted joint testimony to the Corps' appropriating subcommittees to support Corps' environmental restoration projects.

• When proposed structural projects ignore the environmental consequences of levees and dams, work with private engineers and hydrologists to devise alternatives which reduce flood losses and meet other objectives for our riverfronts.

Tools for Reducing Flood Losses in Your Watershed

- Tap into the expertise of the National Park Service's Rivers, Trails & Conservation Assistance Program to initiate, plan and implement multi-objective flood management programs. Call (202) 343-3758 for the office nearest you.

- Learn about and from the work of other river conservationists addressing flood issues. Successful strategies typically include promoting the economic value of healthy rivers: clean water, recreation, fisheries, and tourism; and promoting non-structural alternatives: relocation and land acquisition from willing sellers. This issue of *River Voices* has several examples, as does *Floods, Floodplains and Folks* (see page 21).

Conclusion

On the third anniversary of the Galloway Report, some significant reforms have been made to federal flood control policies, but current policies continue to demonstrate a preference for structural flood control projects. Despite the lure of structural flood control, however, many floodplain communities are rejecting levees and dams in favor of solutions which maximize all of the values of their riverside lands, including recreation, pollution prevention, and habitat for wildlife. Both strategies of reforming policy at the federal level and multi-objective flood management planning and practices at the local watershed level are essential in moving our country toward more sound flood management and more holistic river management. 🐟

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Planning and Zoning - Comprehensive plans and land use plans specify how a community should be developed (and where development should not occur). Through these plans, uses of the land can be tailored to match the land's hazards. For example, flood hazard areas can be reserved for parks, golf courses, backyards, wildlife refuges, natural areas or similar uses that are compatible with the natural flooding process.

Open Space Preservation - Keeping the floodplain free from development is the surest way to prevent flood damage. Open space preservation should not be limited to floodplains, because some sites in the watershed (but outside the floodplain) may be crucial to controlling runoff that adds to the flood problem. Areas that need to be preserved in a natural state should be listed in land use and capital improvement plans.

Floodplain Development Regulations - Zoning and open space preservation work to keep damage-prone development out of hazardous or sensitive areas. Floodplain development regulations impose construction standards on what is allowed to be built in the floodplain. They protect buildings, roads, and other projects from flood damage and also prevent development from aggravating the flood problem. The three most common types of floodplain regulations are subdivision ordinances, building codes, and "stand-alone" floodplain ordinances.

Watershed Management - Several measures can help reduce runoff of stormwater and snowmelt throughout the watershed. Retention and detention regulations, usually part of a subdivision ordinance, require developers to build retention or detention basins to minimize the increases in runoff caused by new impervious surfaces and new drainage systems. Best management practices (BMPs) reduce polluted runoff entering waterways. Pollutants in runoff may include lawn fertilizers, pesticides, farm chemicals, oils from street surfaces and industrial areas.

Wetlands Protection - Wetlands is the collective term for marshes, swamps, bogs, and similar areas found in flat vegetated areas, in depressions in the landscape, and between dry land and water along edges of streams, rivers, lakes and coastlines. Wetlands filter runoff and adjacent surface waters to protect the quality of lakes, bays and rivers, and protect many of our sources of drinking water. They can store large amounts of flood waters, slowing and reducing downstream flows. They can protect shorelines from erosion. Wetlands serve as a source of many commercially and recreationally valuable species of fish, shellfish, and wildlife.

Real Estate Disclosure Laws or Policies - After a flood, people often say they would have taken steps to protect themselves if only they had known they had purchased a flood-prone property. All federally regulated lending institutions must tell people who apply for a mortgage or other loan whether or not the building that secures the loan lies in a floodplain as shown on the flood Insurance Rate Map. Because the deadline for meeting this requirement is only five days before closing, often the applicants are already committed to purchasing the property when they first learn of the flood hazard. State laws and local practices by real estate boards can overcome this deficiency and advise newcomers about the hazard earlier.

Property Relocation and Acquisition - Moving a flood-prone building to higher ground is the surest and safest way to protect it from flooding. Acquisition of flood-prone property is undertaken by a government agency, so the cost is not borne by the property owner. After any structures are removed, the land is usually converted to public use, such as a park, or allowed to revert to natural conditions. There are a variety of funding programs that can support a local acquisition project, for example, more than 8000 home were acquired or relocated by FEMA after the 1993 Midwest Flood.

Source: *Using Multi-Objective Management to Reduce Flood Losses in Your Watershed* (ASFPM and U.S. EPA, 1996) See page 21 for ordering information.