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WHERE DO WE GO FROM HERE IN FLOOD MANAGEMENT?

by

David J. Allee

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No. 72-32

Where Do We Go From Here in Flood Management?^{1/}

by David J. Allee^{2/}

First, I will summarize some of the main points that have been made about the public management of flood losses. Then several proposals will be sketched out for program changes at the state and basin level which deal particularly with the management of flood plain land use. These proposals are intended to give a range of possibilities that are both politically realistic and responsive to the facts of cause and effect in flood losses. The result of adoption of these proposals should be to increase and improve the assistance available to local government officials to serve their constituents. New York State and the Susquehanna River Basin Commission can, and should, take advantage of the public interest aroused by the recent "Agnes" floods to get ready for next time. But this will require better public understanding of the problem than exists today. Thus, we must also think about how this public understanding can be achieved.

Management of Land Use on the Flood Plain -- Key to A Balanced Program of Flood Loss Reduction

Students of flood control have long recognized that any grand design for flood loss management must provide a blend of public activities that range across three important categories of action. First, we can change the flow of water so that it creates less damage. Dams, levees and channel work in their many forms and sizes are familiar, if increasingly controversial, tools. We have well organized agencies to carry out these projects although funding has fallen well behind the rate at which they have been proposed.

Second, we can change the burden of losses once they occur. Anyone standing back and reflecting on the multi-billion dollar response to Agnes' June 1972 ravages has to be impressed at how this nation can provide relief. This is not to say that victims of the flood have been, or ever will be, "made whole" again from the help that has come from all directions. And we will undoubtedly learn much from this flood as to

^{1/} Presented at the Fact Finding Program on Flood Plain Management of the Susquehanna River Basin Commission, September 14, 1972 at Binghamton, New York.

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how to spread the burden more effectively next time. Unfortunately, it is unlikely that we will ever be able to insure against all losses by floods.

As much as they may need our attention, neither engineering works nor flood relief and other forms of catastrophe insurance are the main concern here. Both attract quite effective political support. But note that it is far easier to find organized, articulate opposition to a dam or channel dredging than it is to find effective support for "non-structural" measures to reduce flood losses. A most telling argument of the anti-dam groups is that we have done too little else to protect ourselves from floods.

This third category -- actions to reduce the values susceptible to flood loss -- has a fairly large academic literature, but very few well developed public programs to carry it out. Flood warning systems still depend heavily on telephone communication; are not adequately serviced by stream monitoring; and rarely provide detailed data for more than large urban centers on main stem flood plains. Zoning of flood-prone, undeveloped land is not effectively encouraged in most states; it is not usual to even have flood-prone areas well identified. The attraction of capital gains and tax base from development and the barriers to accurately understanding flood risk are difficult for anyone to deal with, and usually block local governments from acting on their own. Trivial amounts of money are available to assist in the acquisition of development easements or to put land into public open space use, and little of this gets used for flood-prone land. For land where development has already occurred there is little or no cost sharing or other incentives for flood proofing. Urban renewal cost sharing and procedures have only modest incentives to give priority to communities that are flood vulnerable. Objectives for urban redevelopment, public housing, loan guarantees and similar programs do not stress flood damage reduction as much as they stress many other worthy social goals. The flood problem gets lost. Flood insurance as a bribe to obtain responsive land use regulations has only recently come on the scene with fully worked out procedures, but the disincentives to use the program appear large. Many communities have rejected it and even when available most eligible properties don't sign up.

An important point to recognize is that in many cases it is not technically possible to "solve" the flood problem completely with only one kind of approach. Economic and political limitations make a single approach inadequate for many more situations.

Floods are Everyone's Problem -- But Everyone Forgets

The responsibility for avoiding flood losses, in a cause and effect sense, is really everyone's. Individuals who build in flood-prone areas, governments who encourage them, tax payers who bear the costs, are all involved. When a huge flood hits, like Agnes in June 1972, we see how much of the community is affected. Yet in a state like New York, somewhere, is flooded almost every year. In some communities there is a significant flood every few years. None-the-less, what is everyone's problem can easily become no one's responsibility. Our collective memory fades quickly.

In the large catastrophic events, this memory decay factor is speeded up by the psychological drive to return to normal. Even though it could happen again tomorrow, who is to tell those who have just been hit that they should be further disrupted by not being encouraged to put their lives back together in the same flood-prone location they have been in. None-the-less, those who have been through a dramatic flood should be receptive to new ideas.

We need broadly based changes in incentives, more carrots and sticks and many kinds of them. One or more agencies at every level of government must play the role of advocate for flood management. In this way, someone is charged to remind the rest of us of our responsibility. And such advocates must direct their energies toward the many places where change has a chance of helping. It will take more money and effort in places we haven't put them before. The effectiveness of such advocates within government will be greatly increased if they are supported by active citizens groups working outside of government.

First Job -- Identify and Protect the Floodway

The floodway is that space above the established banks of a stream that is needed to carry away the large flood. Obviously, some arbitrariness enters into a decision about what amount of water is to be called a "large" flood. But procedures exist, or can be developed, for the analysis needed to balance off the hydrologic risk against the values affected. Development within the floodway is not only dangerous for the person who would build there; but by doing so he raises the potential that the taxpayer will have to provide flood relief. More to the point, building in the floodway raises the risk that others will be damaged when the flood occurs. Obstructions in the floodway back water up and cause it to spread into properties that otherwise would not be affected. This is the point to suggesting special action to protect the floodway. The fact that an individual's actions can raise the risk for others should be justification enough for stronger state and federal concern to identify and protect the floodway. A requirement for state or county regulation of the floodway should be carefully considered. Proposals have been made to make such regulation a requirement for highway and other federal funds.

The flood fringe is the flood-prone area which surrounds the floodway. The individual using this area runs risk of loss and the rest of us, the risk of flood relief. Perhaps if state and federal programs adequately encouraged the protection of the floodways, then local governments could manage the flood fringe adequately with only the help of traditional federal programs for dam construction and channel changes.

Just identification of the floodway and the flood fringe would help if that knowledge were made generally known. Lending institutions are always concerned over the risk involved in their loans. But we can't expect them to consider flood risks unless such information is readily available in easily understood forms. Flood plain information studies are produced by the Corps of Engineers but funding for this work has never been adequate. The Soil Conservation Service and the New York State Department of Environmental Conservation also have capability here, but not adequate funds. Funding requires support.

But what an engineer sees as a real flood risk and what local people perceive are usually two different things. Thus, support for identification is not easy to develop. The owner of a tract that seems prime for urban development is not apt to be sympathetic to a study that labels it as a flood risk, especially if he hasn't experienced flooding. The same will be true for the leaders of the municipality who look forward to that growth of tax base. This same problem exists for achieving many other measures.

Adopting Regulations to Cut Flood Losses

The Susquehanna River Basin Commission (SRBC) as an extension of the state and federal governments, and agencies in those governments, have an opportunity to help local governments adopt and apply rules and regulations to cut the risks from flooding. Identification is part of the opportunity, but technical assistance and review of enforcement are also steps that can help local governments do their share of the job. Enabling statutes are needed and perhaps even the power to promulgate rules if local governments don't act. At very least, an organization like the SRBC should monitor the situation and call attention to failures to act.

A minimal step would be for the state, perhaps through regional planning agencies, to identify each area hit by a flood after it occurs. At that time, with the event still fresh in mind, building permits would be required for any new construction. To obtain the permit standards for foundation construction and building attachment which varied with the flood risk would have to be met in the proposed design. This should serve as both a warning of the risk present to lenders and builders as well as a means of reducing the losses due to poor design.

A more complete program might be built upon the above mandatory step. Perhaps either at the request of a local jurisdiction, say the county, or upon determination that a major flood hazard exists, say by the Commissioner of Environmental Conservation or the SRBC, the detailed analysis needed for flood plain regulations would be developed. These regulations would involve building permit provisions, aspects of subdivision review, use limitations, rules for sewer and water systems and perhaps some aspects of flood proof design suggestions. Once the data had been provided the county would have a period within which it could draw up suitable regulations with technical assistance provided. This approach is not unlike one that has been successful in Wisconsin and some other states.

But obviously such an approach is limited in what it can do for areas where flood-prone development now exists, and it will be resisted where land values already reflect expected development. Other measures are called for to complement this approach -- and they will cost money.

Flood Insurance -- An Aid to Agreement

While this federal program was signed into law in 1956 it did not become fully operational until 1971. It provides subsidies up to more than 90 percent of the cost of the insurance for existing development on the flood plain in exchange for the adoption of flood plain management regulations.

Subsidized coverage is available for homes and small businesses, with limits of \$17,500 on the home and \$5,000 on its contents. Coverage beyond that is available at the non-subsidized rate which is worked out from detailed flood risk studies.

About 800 communities have taken the steps needed to become eligible. About 450 are waiting for rate making studies to be completed. As information is provided the community is required to bring its building permits, permitted use and design regulations, sewer and water system rules and the like into conformance with what is needed to protect the floodway needed for a 100-year flood and to delineate flood fringe hazard zones for the same size flood. No subsidized coverage is available for non-conforming uses and new construction, nor for large businesses or apartments, nor for land itself. Requirements for full regulations and for limiting flood relief payments of those who could get insurance but didn't are in the legislation but have been temporarily suspended several times and are not likely to be fully imposed in the near future.

There is some evidence that communities which do not already have regulations of the kind required, rarely find it worthwhile adopting them just to get the insurance. Also, many property owners that could get the coverage fail to do so. Premiums to agents have been increased and some information dissemination steps taken to get more policies sold.

What more could be done with flood insurance? Would it help us get on with the task of balanced flood management to encourage the use of flood insurance in areas to be protected by federal flood control structures? Should the state offer to meet the local cost share on such projects on the condition that a substantial part of the protected area is qualified for insurance? Should this offer be extended to the local share for features other than flood control in multiple purpose projects so as to add more inducements? The SRBC could offer a route to obtain federal funds to facilitate this kind of cost sharing for non-traditional measures.

More and more insurance of other kinds is being sold in group plans. Some group plans have a basic coverage that all covered by the plan must take and then there are optional features for broader coverage. Some plans are not mandatory for all. Does this concept apply to flood insurance? A municipality might buy a single package plan just as it carries health or life insurance for its employees, and meet the costs through a tax charge through a special district equal to the premium for each property. Some savings might be possible; but perhaps more to the point, it should make the community more aware of its stake in the problem while still reminding the property owner of his risk.

A Positive Program of Flood Free Industrial Development

Flood-prone areas, especially right after a flood, experience a period when the environment for economic development is uncertain at best and very depressed at the worst. Even locations away from the flood fringe aren't as attractive to national firms if the community is known to have had disruptions due to floods.

This implies that industrial and commercial site development in such communities needs special emphasis on flood risk reduction. In these days of environmental concern such sites also must have waste disposal services assured.

There are existing programs to facilitate the development of industrial parks and the like in areas with problems in job development. The Appalachian Regional Commission which covers the Susquehanna River Basin was created partly in response to several earlier devastating floods. What may be needed is a renewed emphasis on the flood and other water resource aspects of job development.

The SRBC should consider borrowing a page from the Appalachian Regional Commission's book and seek a program of acceleration grants to stimulate the location of jobs outside of the flood-prone areas, and to provide assistance in making job locations in the flood-prone more flood proof. Linked to this should be aid for waste disposal and other environmental safeguards.

Direct Cost Sharing to Reduce Flood Losses

For development that already exists or land that has greatly increased in value in anticipation of development special measures are required. Dams, channel work and levies are the traditional approach, but are usually not able to meet the whole need due to technical, economic and political limitations. It may not be possible to get agreement in the future on very many simple structural projects that are not also tied closely to other approaches. But regulations, subsidized insurance and special incentives for flood-free job creation may not be enough by themselves. Funds will have to be available to do some things in flood-prone areas that will reduce flood risks and increase the acceptability of these other measures. At least three kinds of cost sharing suggest themselves.

First, cost sharing should be provided for flood proofing and relocation of activities now in the flood-prone areas, including easements to control future use. The individual property owner suffers the most from the effects of flood memory "decay." The "half life" of flood memory may be less than two years. The result is that many of the things that a property owner might do to reduce his own flood risk -- even if he knows what could be done -- don't get done. A recently hit property may be so depressed in value that the owner has no choice but to rebuild on the spot unless there is special assistance for relocating.

Such cost sharing is justified on two grounds. Part of it represents paying now what would be spent for flood relief later. Also, such approaches are not realistic political alternatives to structures unless the burden through cost sharing is made more comparable. On several Corps of Engineers proposed projects they have suggested an 80 percent federal cost share as being comparable to the cost sharing on local protection works.

Second, cost sharing may be needed to purchase development easements on some land which is not developed. This would be limited to where value has been driven up by urban use potential but no suitable intensive development is feasible, but suitable open space use is desirable. When this approach is tied to development of flood free structures on adjacent land it should be a means of reducing the pressure against regulation due to lost capital gains and lost tax base growth.

Finally, it is probably a good time to take a careful look at the provisions we have for encouraging low flood risk uses of flood-prone areas. It is often said that farming, parking lots and recreational open space are the proper use for flood plains. It is tempting to zone them for such uses; prohibiting other riskier uses. This should be more acceptable if there is other encouragement. The Agricultural Districts now being formed to encourage farming in parts of New York State have no special incentives built in to encourage their use in high risk flood areas. Programs for park development do not appear to give any special priority either. In both cases some extra incentives would seem to be inexpensive ways to facilitate flood-wise land use planning.

But where are the funds for such approaches to come from? Again, the SRBC would seem to offer an opportunity for the three states involved to obtain federal funds to meet the special needs of these states.

Flood Hazard Evaluation by All Federal and State Agencies

Executive Order 11296, signed August 10, 1966, requires all executive agencies of the federal government to consider flood risks in the planning of any facility, making a loan or grant or disposing of land. The Water Resources Council issued guidelines for this order in April 1972, to replace interim policies. If any regional monitoring of this order is to be done it would seem that the SRBC is a logical agency to do it. Also the SRBC could encourage its member states to adopt similar guidelines for state projects that do not enjoy federal aid.

The potential here is to get the agency that has the flood risk problem to compare notes with the agency that has the information on just what that risk really is and what to do about it. This implies budget, capability and authority to provide this kind of technical assistance. It also implies that someone is able to make an appraisal of which programs are adding to our flood problems and which are adding to the solution.

This is a good example of why there is a need for a flood management advocate at the federal, regional, state and local levels. Highway agencies build roads. Housing administrations are charged to develop

more housing. Small business encouragement, sewer and water development, urban renewal, etc., etc., are all charged with a mission that is not flood management. Someone has to make it easy for them to consider flood risks or it often won't be done.

Cooperative Pilot Program Needed

The State of New York has several agencies that are contenders for the role of flood management advocate -- several parts of the Department of Environmental Conservation, the Office of Planning Services and perhaps some others. New legislation will undoubtedly be introduced in the next session of the Legislature in response to Hurricane Agnes. Some necessary authorities already exist for what needs to be done. In each of the other SRBC states similar situations exist. Whatever the future brings, it would be useful to move quickly on a pilot basis, with funds and authorities that are available now to obtain some experience with a variety of approaches. A pilot project with state and SRBC and related federal agency cooperation should help identify how new funds and authority can best be used. Case examples could be developed for local leaders to consider and for general educational purposes.

A pilot program would allow personnel to gain experience while developing procedures and guidelines for expanded efforts. The practical limits of floodway and flood fringe land use regulations, the best approaches for cost sharing to achieve flood proofing, the use of easements, relocation and the like, are not well known. We simply haven't used such techniques enough.

Changing Support to Support Change

The floods of late June 1972 have done more to inform the people about the problems of flood management than anything that those of us involved in water resources could have done. Flood management is now a salient topic; people are ready for change. But that does not mean that there are automatically effectively organized groups that know what they want to support and how to do it. Community leaders now have to become better informed on what the choices are and seek to support change through the organizations to which they now belong. Many of these groups -- local governments, chambers-of-commerce, service clubs, etc. -- have paid little attention to flood management in the past. Several steps are being taken to make this process more effective.

First, meetings and conferences such as this one, written material and various presentations in the media are being aimed at this need. Cornell University has issued several useful reports and pamphlets, is developing a radio series and a TV presentation. A program of self-administered discussion groups is planned. The Department of Environmental Conservation is stepping up its program of workshops on flood insurance and the activities of the Basin Planning Boards. The Office of Planning Services is encouraging local planners and its staff to be more flood informed. The SRBC is moving ahead on some publications. A state-wide conference, tours for legislators and other events have been suggested and will be explored with care.

Second, a number of community leaders throughout the basin are re-considering the role and function of citizen groups organized on the basis of small watersheds and larger basins. Such organizations have a natural interest in flood management and in particular, have an interest in how one management approach relates to another right there in their watershed. Stewart Wright -- the Cooperative Extension Specialist for Water Resources stationed in Norwich -- has been gathering together information on such organizations. Most of the Susquehanna Basin has now or once had an active organization for every watershed and sub-basin. Several citizen groups were instrumental in achieving the compact under which the Susquehanna River Basin Commission (SRBC) now operates. Wright has been studying the role of citizens in other basins and finds them an important source of support for needed changes.

An active three state basin association has an important role to play in the future development of the Susquehanna River Basin. Any citizen should be able to join and find the association a source of information on needs and alternatives. It should provide a means of doing something about them. Sub-units at the sub-basin and watershed level are needed to reflect different but related levels of interest. In other words, the association should be open to general membership but also act as a federation of sub-basin and watershed units. Annual workshops at the basin and sub-basin level might be an efficient means for extending information to and getting feedback from those community leaders whose support for change will be required. While heavily focused on the SRBC this organization should remain officially separate from it; not serving as an official advisory board, but free to respond to opportunities as they develop.

Many of the effects of water resource development are spread throughout the population. As a result it is difficult to organize effective groups to evaluate and support new public action. Luckily there are always a few citizens who will take such responsibilities and feel adequately rewarded from having a chance to do their part. We must get on with this task.

Summary

Since floods are everyone's responsibility and thus no one's, we need flood management advocates at every level of government. But programs and public support must provide for a wide variety of tools for flood management. Technical, financial and political limitations prevent any small set of means of flood management from being adequate.

More specifically, the state and the Susquehanna River Basin Commission should and will take steps to facilitate a broad range of local actions. Existing, largely federal, programs of flood management structures, flood insurance and flood information studies need to be augmented in at least the following ways:

1. Identify and protect the floodways.
2. Help to move jobs out of flood-prone areas .

3. Cost sharing for easements and land purchase.
4. Cost sharing for flood proofing and relocation.
5. Expanded participatory educational activities.