

Cooperative Planning in Use of Flood Plains

State's Role in Development and Utilization of Corps of Engineers Studies

LORING F. OEMING

Executive Secretary, Michigan Water Resources Commission

•MICHIGAN'S PARTICIPATION in flood-plain information activities is authorized by the statute creating the Water Resources Commission. This statute states in part that:

The Commission is hereby designated the state agency to cooperate and negotiate with other governments, governmental units and agencies thereof in matters concerning the water resources of the state, including but not limited to flood control and beach erosion control.

By an order issued by the Governor on June 21, 1961, the commission was designated as the coordinating agency of the State on flood-plain studies undertaken and completed by the Corps of Engineers under authority of Section 206 of the Flood Control Act of 1960.

Flood-plain development and encroachment, while occurring to some extent throughout the lower half of Michigan, has been greatest in the southeastern metropolitan region. Since WW II, rapid population growth and accompanying commercial and industrial expansion have placed a premium on valley bottom lands that were formerly ignored as being unsuitable for most types of development. This situation is undoubtedly typical of most industrially oriented areas of the eastern United States. It is exemplified by the Rouge and Clinton River valleys of Michigan, both of which traverse the metropolitan complex centered about the City of Detroit. A complete range of valley developments can be found in this area, starting with rural in the headwaters, through residential and commercial along the reaches passing through the communities surrounding the central city into the industrial complexes in the lower reaches.

The Rouge River valley, in particular, has experienced an additional kind of pressure demanding utilization of bottom lands. Interstate, State, and major local highway additions are being made which interlace the basin. The construction of these traffic arteries created a disposal need for vast quantities of spoil, especially from depressed highway projects. It did not take long for road builders, faced with the disposal of thousands of cubic yards of spoil, to complete negotiations with property owners for permission to fill in the river lowlands and abandoned channel pockets, created by natural changes in the river's course. Landowners, quick to recognize the development and sale possibilities of these tracts of land, agreed to their use for spoil disposal. Fears arose concerning the effects of these filling operations, and were expressed in letters of complaint addressed to drain commissioners, State water agencies, and other public bodies. Protest meetings were called by local valley protective associations, and petitions were circulated and filed with city councils demanding that further fillings be prevented. Due to the absence of channel restriction information on which to justify flood-plain zoning, local governments were not prepared to control these operations so the complainants resorted to the courts, with inconclusive results insofar as establishing precedents clearly setting forth legal regulation procedures were concerned.

The Water Resources Commission, seeking to resolve the developing conflicts through a unified approach to the problem, called a meeting of Rouge Valley interests in April 1961. The basin then contained 26 separate local government units, all of

which were involved in some degree with flood-plain encroachments. At this meeting, representatives of the U. S. Geological Survey and the Corps of Engineers described their respective interests and functions in flood-plain problems, and the assistance they were prepared to render in the mapping of the flood plains. This first venture by the commission in this activity resulted in an application to the Corps of Engineers for studies on 99 mi of the Rouge River Valley. This mileage excludes approximately two miles of the valley covered by an application filed with the District Engineer by the City of Farmington prior to the initiation of the commission's measures to coordinate study interests.

In discharging the commission's duties and responsibilities as coordinator at the State level, assistance is provided not only to the local governmental units but also to the Corps of Engineers as well. The State agency has functioned primarily as a service organization to all parties involved in a study, and has adjusted or modified its activities to meet the needs as they develop.

In early contacts with interested officials of local governmental units, it was found that they welcomed the consultation and guidance offered by the commission in appraising the local problems and evaluating the need for studies.

Immediately on learning of the area interests' desire to undertake a study of their problem, the commission's staff informs the local officials of the services available to them. Meetings with local officials to review at first hand the problem area are then scheduled. Through these early meetings, an opportunity is afforded to explain the mechanics of a study program and to discuss the details of required local interests' cooperation. From field reconnaissance, recommendations are made to the local officials concerning the desirable scope of the study. Information is provided that they can draw on in drafting the description of the valley area to be studied. These contacts also allow the staff to assist local officials in preparing an application for the study. To provide the information required for Federal and State action in the study requests, the staff has prepared a six-page application form. It includes a sample resolution proposed for adoption by the local governing body in making its application. The form and sample resolution were drafted to meet certain requirements of Section 206 of Public Law 86-845, particularly with reference to disclosures regarding the statutory authority of the local unit to cooperate with the Federal Government, the willingness of the applicant to supply engineering data where available, and the dissemination of information from the completed flood-plain studies.

The completed application, with the supporting resolution after being reviewed in detail by the commission's staff, is then submitted to the commission for approval. Following the commission's approval, the applications are transmitted to the District Engineer's office in Detroit for further processing. The information supplied on these forms, with the assistance of the commission staff, greatly facilitates the processing of the application both at the State and Federal level.

Coordination with the Corps of Engineers follows a well-established pattern. Shortly after receipt of the application at the district office, arrangements are made for district and commission staffs to conduct a careful field reconnaissance of the study area. Information is obtained on the topography, condition and development of the flood problem area, location of existing gaging stations operated by the U. S. Geological Survey, channel conditions, cost for the detailed study, and on other factors that will influence the work load. This preliminary examination also permits district staff engineers to become acquainted with the local area officials. During this reconnaissance trip or on subsequent visits, joint staff determinations are made concerning the need for and location of crest-stage gages. The crest-stage gages, required for the study, are installed by the local government with the assistance of the commission staff.

The commission staff also works with district personnel in the survey, assisting in the collection of essential field data on channel and flood-plain dimensions, and in the gathering of information on previous floods and high water marks. It was also found desirable to maintain close bilateral liaison with both the District Engineer's staff and local officials as the study progressed. The issuance of status reports at intervals keeps all interests (local, State and Federal) working together so that the approved final report is received with enthusiasm by all.

An added service is provided by the commission staff after completion of the study and approval of the report by the Corps. On notification from the District Engineer of the expected publication date, a meeting is arranged with local officials, their technicians, and representatives from the District Engineer's office. At this time, the report is presented to the local officials, the contents are reviewed, and all questions are clarified.

One meeting of this nature has been held on a completed report. The outcome, in terms of promoting mutual understanding among all parties and in generating support of the recommendations, supports the view that this approach can be used to advantage in future study projects. In this case, the city council adopted flood-plain ordinances soon after the meeting was held.

The commission also handles the distribution of study copies on request, generally to interests outside the study area.

Four applications for flood-plain information studies have been processed at this time through the agency for a total of 319 miles of river systems in the State. The streams involved in these requests and the sponsoring entities are as follows: (1) The Clinton River in Macomb County, covering 56 miles of section along the main stem and two branches. Sponsors are the Macomb County Drain Commission and Macomb County Planning Commission. (2) The Grand River in Ingham, Clinton and Eaton Counties, covering 139 miles of section along the main stem and its tributaries, the Lookingglass, Cedar and Sycamore. Sponsor is the Tri-County Regional Planning Commission. (3) The Rouge River in Wayne and Oakland Counties, covering 99 miles of section on the main stem and three branches. Sponsor is the Detroit Metropolitan Area Regional Planning Commission. As previously noted, a study of the Farmington area was requested in an application filed directly with the District Engineer. Stream mileage reported here excludes that covered in the Farmington area application. (4) Clinton River in Oakland County, covering 25 miles of section on the main stem and its tributary, Paint Creek. Sponsor is the Oakland County Planning Commission.

It has been difficult to accurately estimate the cost for the studies due to limited experience. In 25 separate units, cost estimates ranged from \$5,000 to \$750 per mile. Many factors influence these costs—most important of which are availability of accurate topographic maps, giving relatively close contour intervals, and previously completed valley flood problem engineering studies. Experiences thus far seem to indicate that \$1,500 per mile is a good rule of thumb for preliminary estimates.

With 319 miles of stream valley to map, involving 21 separate reaches, and with extremely limited Congressional funding (\$700,000 per year for the entire United States), it was necessary to establish a priority system to assist the Corps in assigning study funds. A "first come, first served" approach does not permit study of those areas that have the most urgent need for this technical assistance. The priority system endeavors to provide for studies in the areas of greatest need and for the maximum valley coverage per study cost dollar.

Once each year, new applications and all other unfunded applications are evaluated and assigned priority points under the following allotment system:

1. Date of application—One to four points are assigned on the basis of the date of the application with respect to other applications on hand.

2. Need—One to four points are assigned on the basis of need for the study based on local conditions. Consideration is given to problems of zoning, lawsuits, local government interest, citizen interest, and public meetings concerning valley flood problems.

3. Study cost—One to four points are assigned on the basis of the anticipated cost of the study. Availability of information in the form of records of high water marks, location of established stream gaging stations, existence of up-to-date topographic maps, aerial photographs, and engineering flood reports are all considered.

4. Area development potential—One to four points are assigned on the basis of the development (both present and anticipated for the future). Patterns of land use and trends in respect to the location and axis of the valley system are considered. New highway routings and industrial development (both creating urban growth pressures) are extremely important.

5. Exposure to flooding—One to four points are assigned on the basis of exposure to floods and flood damage. Frequency and magnitude of flooding, width of flood plains, and other related hydrologic factors are weighed.

Under this system, it is possible to assign a maximum of 20 points to any one project. Study applications are certified to the Detroit District Engineer on the basis of point totals assigned, and their respective position with other projects. Thus far, this priority system has served well in establishing the flood-plain areas most deserving of study. At the end of 1963, a total of 76 miles of stream were under study. Should funds allocated for 1964 become available, they will permit completion of three projects covering 56 miles and a modest effort on the remaining 20 miles.

In summary, the role of the commission as the State coordinator in flood-plain information studies has been found to be fruitful and satisfying. It has consisted of consulting with local officials in preparing and filing applications; of cooperating with the District Engineer's office in field reconnaissance activities; and of arranging for exchange of information between all parties through local contacts and public meetings. The objectives sought in this role have been to assist in developing solutions to flood-plain encroachment problems that will receive public acceptance, and to enhance the prospects of constructive action toward placing in effect the remedial measures found necessary.

Acceptance by the District Engineer of the commission's role as coordinator and his encouragement of a partner relationship between his staff and the commission's, has combined to produce an overall effective effort. Experience in Michigan supports the view that the State, acting in a coordinating capacity, can perform a variety of services in formulating and conducting flood-plain information studies that will reflect to the mutual benefit of all interests concerned.