Chapter 11
Legislative Acts and Executive Orders Pertaining to Floodplain Management

Chapter Overview

The framework for floodplain management includes a number of federal and state legislative acts and executive orders that assist in carrying out various program measures. The federal framework is summarized in this chapter. State-specific legislation and executive actions are beyond the scope of this discussion.

Significant Legislative Acts

Regulation of Activities in Public Waters

Passage of legislation aimed at prohibiting the obstruction of navigable waters gave the U.S. Army Corps of Engineers (Corps) increased authority to regulate activities in the nation's rivers. The Rivers and Harbors Act of 1899 required approval by the Chief of Engineers, the Secretary of the Army, and the consent of the Congress for the construction of bridges, dams or dikes across navigable waters and outlawed the deposit of refuge in these waters. In 1905, the Corps established a permit system to implement this Congressional act. Anyone who wished to change the course, location, condition, or capacity of a water body now had to apply for permission from the local Corps district office.

The Clean Water Act is the principal law governing pollution control and water quality of the nation's waterways. The Act has been amended numerous times. The 1972 amendments established a national goal of eliminating all pollutant discharges into U.S. waters and to make the waters safe for fish, shellfish, wildlife and humans. The 1977 amendments gave the Act its current title.

Section 404 of the Federal Water Pollution Control Act Amendments of 1972 supplemented the Corps existing permitting authority (authorized by Section 10 of the Rivers and Harbors Act of 1899) regarding activities in traditional navigable waters. *Section 404 requires permits for discharge of dredged or fill material into all waters of the United States*. Various court decisions have expanded the Corps jurisdiction to cover all waters of the United States, including adjacent wetlands. This is a major regulatory tool at the federal level for managing floodplain natural resources. The Section 404 regulatory program is jointly administered by the Corps of Engineers and the U.S. Environmental Protection Agency (EPA). Information on the Corps role may be found at the following Internet website: www.usace.army.mil. Clicking on the "Obtain a Permit?", then on "News and Information" and on "Nationwide Permit Information" provides information on the Corps Nationwide Permit program. The Corps administers the Section 404 program either through issuance of a Nationwide or individual permit for the proposed activity. Utilization of a "Nationwide Permit" provides an expedited review process for activities in waters of the United that are similar in nature and cause only minimal adverse environmental impacts separately or on a cumulative basis. General conditions and decision documents have been developed for

consideration of issuance of such permits, according to categories of activities. The Nationwide Permit Information site reveals that there are 44 categories of activities. These are listed in the Summary Table for 2002 Nationwide Permits under "Text of 2002 Nationwide Permits." Also found at this site are General Conditions for 2002 Nationwide Permits and Decision Documents for 2002 Nationwide Permits.

Section 401 of the 1972 amendments requires certification from the state or interstate water control agencies that a proposed project is in compliance with established effluent limitations and water quality standards. Applicants for Corps permits must obtain these certifications before the Corps will act on permits involving discharges. In Tennessee, the Division of Water Pollution Control within the Department of Environment and Conservation. administers the Section 401 requirements. Applicants seeking project certifications must complete an Aquatic Resource Alteration Permit/Section 401 Certification form (Form CN-1091). Information about the program and the form may be found at the Division Internet address. Start at tn.gov and continue to the Division's website.

Permit applications are subject to a "public interest review" that includes consideration of floodplain resources, flood hazards, flood conveyances, flood storage, and flood damage potential in their evaluation. EPA guidelines, developed for administration of the program, provide extensive environmental criteria for judging permit applications, emphasizing the need to prevent avoidable losses of aquatic resources, as well as the need to minimize adverse environmental impacts. The guidelines include a series of mitigation measures to minimize the effects (including those of floodplain natural resources) of permitted discharges into the nation's waters.

National Historic Preservation Act of 1966

The Act establishes preservation as a national policy and directs the federal government to provide leadership in preserving, restoring and maintaining the historic and cultural environment of the nation. "Preservation is" defined as the protection, rehabilitation, restoration, and reconstruction of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, or engineering. The Act authorizes the Secretary of the Interior to maintain a National Register of the preceding items. It also created the Advisory Council on Historic Preservation.

The Act gave the National Park Service authority to designate privately owned cultural resources as "significant" and to provide grants for their rehabilitation. In addition, the Act broadly defined the federal interest in historic resources to include resources of state and local value, as well as nationally significant properties. Section 106 of the Act directs federal agencies, with direct or indirect jurisdiction over proposed federal or federally assisted undertakings, to take into account effects on historic properties, in accordance with regulations issued by the Advisory Council on Historic Preservation and the applicable State Historic Preservation Officer.

Photograph of covered bridge, a historic structure.

The Act remains the key federal law designed to encourage identification and preservation of America's cultural resources. The National Park Service, within the Department of the Interior, is the agency with principal federal responsibility for historic and cultural resources.

Wild and Scenic Rivers Act of 1968

The Act established the policy that certain rivers of the nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations (16 USC 1271). The Act both identifies specific river reaches for designation as wild or scenic, and provides criteria to be used for classifying additional river reaches.

"Wild river areas" are those rivers or sections of rivers that are free from impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent the vestiges of primitive America.

"Scenic river areas" are those rivers or sections of rivers that are free from impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

"Recreational river areas" are those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundments or diversion in the past.

The National and Scenic River System was established to protect the environmental values of free-flowing streams from degradation by impacting activities, including water resources projects. The system is administered jointly by the U.S. Forest Service, Department of Agriculture, and the

National Park Service, Department of Interior. The Park Service maintains a list of designated rivers in the System. They list may be found at the following Internet website: nps.gov, typing in the search box "wild and scenic rivers."

Section 5(d) of the Act requires all federal agencies involved in "planning for the use and development of water and related land resources" to give consideration to potential national wild, scenic and recreational river areas. Further, no department or agency of the United States is to assist by loan, grant, license or otherwise in the construction of any water resources project that would have a direct and adverse effect on the "wild and scenic" resources of designated rivers.

National Environmental Policy Act of 1969

The National Environmental Policy Act (NEPA) is the basic national charter for protection of the environment. The Act declares it is a national policy to "encourage productive and enjoyable harmony between man and the environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man and to enrich the understanding of the ecological systems and natural resources important to the Nation" (42 USC 4321). Section 102(2)© requires that every recommendation or report on proposals for legislation and other major federal actions significantly affecting the quality of the human environment, include a statement on the environmental impacts of the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented; alternatives to the proposed action; the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and, any irreversible and irretrievable commitments of resources which would be involved in the proposed actions should it be implemented. Agencies responsible for the action shall consult with and obtain comments from other agencies with jurisdiction by law or special expertise, with respect to any environmental impact. The requirement for preparation of an environmental assessment or environmental impact statement has been of major importance in identifying federal activities that may be subject to flood damage and that may cause damage to floodplain natural resources.

NEPA also establishes the Council on Environmental Quality (CEQ) in the Executive Office of the President. The Council develops and evaluates federal policies and activities on environmental quality.

Coastal Zone Management Act of 1972

The Act (as amended) establishes a policy: to 1) preserve, protect, develop and where possible, restore and enhance the resources of the nation's coastal zone for current and future generations; and 2) to encourage and assist states in their responsibilities in the coastal zone though development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and esthetic values, as well as the needs for compatible economic development (16 USC 1452). Guidelines are set forth to develop a program for the management, beneficial use, protection and development of the land and water resources of the nation's coastal zones through protection of natural resources, management of development, providing public access, and establishment of pollution control. It delegates responsibility to coastal states to exercise their responsibilities as owners of coastal zone areas to develop and implement management programs to achieve wise use of the land and water resources.

The Act authorized federal grants to states for development and implementation of coastal management programs for water and land resources in coastal zones, consistent with the above policy and guidelines. When the Act was amended in 1980, goals for both flood loss reduction and protection of natural resources were incorporated in the coastal management goals. States were required to provide for "the management of coastal development to minimize the loss of life and property caused by improper development in flood-prone, storm surge, geological hazard, and erosion-prone areas and in areas of subsidence and saltwater intrusion, and by the destruction of natural protective features such as beaches, dunes, wetlands and barrier islands."

Endangered Species Act of 1973

The Act established a national program to designate and protect species of flora and fauna that have become threatened or endangered, and in immediate or foreseeable danger of extinction throughout all or a major part of their geographic range, as a result of natural events and human activities. The program is administered by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. The Act authorizes the Secretary of Interior to identify endangered and threatened species, designate habitats critical to their survival, establish and conduct programs for their recovery, and enter into agreements with states to conserve endangered and threatened species. It further requires other federal agencies to cooperate with the Secretary for enhancement of those species, including acquiring land to conserve designated animals and plants. Federal agencies are directed not to authorize, fund, or carry out actions that may jeopardize the existence of or modify the habitats of endangered or threatened species. Many states have their own designations irrespective of federal designation. A list of species in Tennessee may be found at the following Internet website: tennessee.gov/environment/nh. Click on "Natural Heritage Inventory Program." Species locations are not specifically identified to protect them against harmful public contact.

Unlike most other legislation, this Act contains provisions for civil penalties and criminal violations for acts against endangered and threatened species.

Coastal Barrier Resources Act of 1982

Concerns over past and possible future damage costs, along with environmental and public safety concerns and the realization that federal programs have historically encouraged and assisted development of barrier islands with resulting losses of natural, cultural, recreational, and other resources, led to the enactment of the Coastal Barrier Resources Act. The Act (reauthorized and amended in 1990) established a policy that coastal barriers, in certain geographic areas of the United States, and their adjacent inlets, waterways, and wetlands resources are to be protected by restricting federal expenditures which have the effect of encouraging development of coastal barriers. The Act provided for a Coastal Barrier Resources System (CBRS) which identified undeveloped coastal barriers along the Atlantic and Gulf Coasts, including islands, spits, and bay barriers that are subject to wind, waves, and tides such as estuaries and nearshore waters. These areas were outlined on a set of maps dated September 30, 1982 and approved by the Congress.

Except for specific exempted projects (e.g., dredging, federal navigation projects, some habitat management and enhancement activities), no new federal expenditures or financial assistance are allowed within the system. The purpose was to minimize loss of human life, wasteful expenditure of federal revenues, and damage to fish, wildlife and other natural resources associated with the development of coastal barriers. The 1990 reauthorization (Coastal Barrier Improvement Act) provided for the technical revision of maps, modification of boundaries, and additions to the CBRS.

As a result of these Acts, there is now established a system of largely undeveloped barriers along the Atlantic and Gulf coasts (totaling 656 miles of oceanfront shoreline and encompassing 454,000 acres), along with restrictions of federally subsidized development of those barriers. The Act prohibits, within the System, most expenditures of federal funds that serve to promote economic growth and development. The major types of federal funds no longer available for use on the coastal barriers protected by the Act are: federal assistance for construction of sewer systems, water supply systems, airports, highways, bridges, jetties, seawalls and piers, federal flood insurance, Corps of Engineers structural development projects, and VA and FHA loans.

Figure 6-19 (which is repeated on the following page) shows CRBS designations on a flood insurance map.

Disaster Relief Act of 1974, Amendments, and Subsequent Acts

Section 406 of the Disaster Relief Act of 1974 (P.L. 93-288) required rebuilding after a natural disaster, utilizing federal funding, be done in conformance with applicable codes, specifications, and standards, typically those of the NFIP. The Robert T. Stafford Disaster Relief and Emergency Assistance Amendments of 1988 (P.L. 100-707) significantly changed existing disaster relief programs in an attempt to increase post-disaster mitigation measures and reduce vulnerability to damages from future disasters. It stressed hazard mitigation, including 1) funding to acquire destroyed or damaged properties and not for rebuilding in flood hazard areas, 2) rebuilding in non-hazardous areas, and 3) reducing exposure to flood risk in reconstruction.

As briefly discussed in Chapter Nine, after the 1993 Midwest flood, Congress enacted the Hazard Mitigation and Relocation Assistance Act of 1993 to increase federal support for relocating floodprone properties and to significantly increase the amount of mitigation funds available after a disaster. Funding was increased from 10 percent of the portion of the disaster costs to 15 percent of all federal disaster costs. The Act also clarified acceptable conditions for the purchase of damaged homes and businesses, required the complete removal of the structures, and dictated that the purchased land be dedicated "in perpetuity for a use that is compatible with open space, recreational, or wetland management practices." As estimated 20,000 structures damaged by the flood were acquired and removed through this program. This Act was also used to acquire and remove several thousand structures in eastern North Carolina damaged by floods resulting from Hurricane Floyd in 1999. It continues to be used for acquisition of substantially damaged properties as part of federal post-disaster response and recovery activities.

Executive Order 11988 – Floodplain Management

Executive Orders are issued by the President or a Governor of a state and are an instruction or directive to the heads of agencies or departments to carry out certain actions or activities. They have the force of law and are in effect until replaced or repealed by another order or by an act of Congress or state legislature.

Executive Order (E.O.) 11988 was part of a comprehensive environmental message issued by President Carter on May 24, 1977. It replaced an earlier executive order (11296) pertaining to floodplain management issued in 1966.

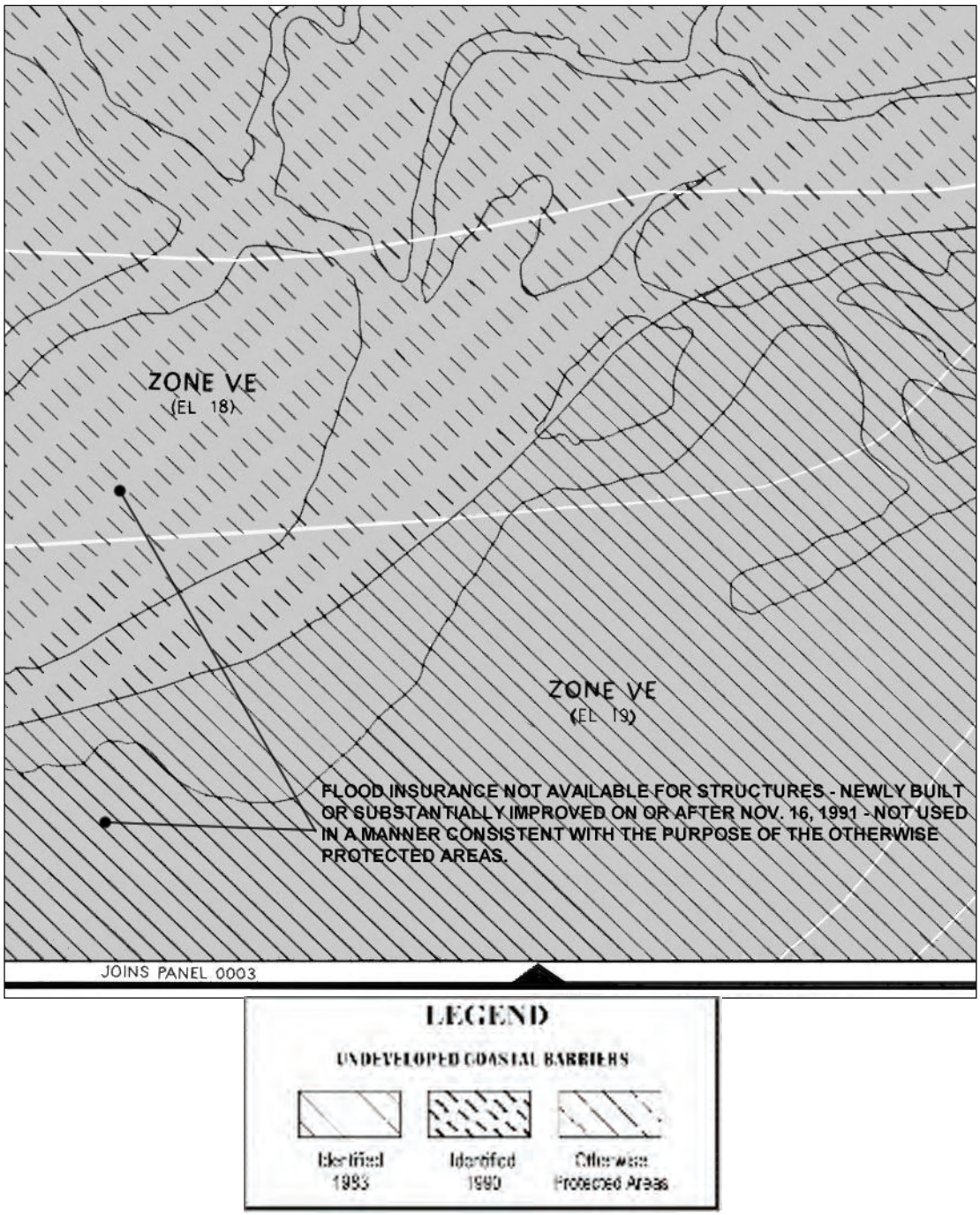

Figure 6-19. Identified undeveloped coastal barrier.

Also concurrently issued was Executive Order 11990 – Protection of Wetlands. The wetlands protection executive order is closely related and similar in structure to the floodplain executive order. Most federal agencies have combined the two orders into a common implementation process. Because most inland wetlands are located within riverine floodplains, the orders often cover the same areas.

In the decade following the earlier executive order, there developed a widespread recognition that the natural and beneficial resources of floodplains and wetlands must be restored and preserved. The new executive order was a significant policy initiative, tying together the need to protect lives and property with the need to restore and preserve natural and beneficial floodplain resources.

Objectives of the order

- Avoid the adverse impacts associated with the occupancy and modification of floodplains.
- Avoid direct and indirect support of floodplain development whenever there is a practicable alternative.

The order applies to any federal ***action*** including:

- Acquiring, managing or disposing of federal lands and facilities;
- Undertaking financing, or assisting construction and improvements;
- Conducing activities and programs affecting land use, including planning, regulating and licensing.

It applies at a minimum to areas subject to inundation by a flood with a one percent chance of occurring in any year. An activity for which even a slight chance of flooding would be too great (i.e., a "critical action") requires use of a higher 0.2 percent-chance standard (500-year flood).

Critical Actions

- *Those used by occupants who are relatively immobile* (or cannot be moved quickly), e.g., hospitals, nursing homes, and schools.
- *Uses that must maintain operability during flooding*, e.g., power generation plants, water supply facilities, fire houses, ambulance services.
- *Storage of volatile, toxic or water-reactive chemicals*, e.g., liquid natural gas storage facilities, petrochemical tank farms.
- *Storage of essential or irreplaceable records*, e.g., archives, data processing storage facilities.

Agencies are required to avoid the "base" (one percent chance) floodplain unless it is the only practicable alternative, **or** adjust to the base floodplain if it cannot be avoided in order to:

1. Reduce the hazard and the risk of flood loss;
2. Minimize the impact of floods on human safety, health and welfare; and
3. Restore and preserve natural and beneficial floodplain functions.

The federal government is to lead by example in promoting policies and actions for the wise use of floodplains, including recognition of their natural and beneficial resources.

The order requires an eight-step decision-making process for any above federal action within the base floodplain (see Figure 11-1). [1]

Step 1 – Determine If a Proposed Action is in the Base Floodplain
The Order states that this determination shall be made using a Flood Insurance Study map, or a more detailed map of the area, if available. If the map does not delineate the flood hazard boundaries in the vicinity of the proposed site, information and assistance in making the determination is to be sought from other federal agencies or independent sources.

Step 2 – Early Public Review
The objective of public involvement is to provide sufficient information early enough in the process of making decisions affecting floodplains so that the public can have impact on the decision outcome. The Order includes requirements that the public be provided adequate information, opportunity for review and comment, and an accounting for the rationale for proposed actions affecting the floodplain.

Step 3 – Identify and Evaluate Practicable Alternatives to Locating in the Base Floodplain
Having determined that a proposed action is located in the base floodplain, the agency is required by the Order to identify and evaluate practicable alternatives to locating in the base floodplain. Alternatives to be evaluated include: 1) carrying out the proposed action at a location outside the base floodplain (alternative sites); 2) other means which accomplish the same purpose as the proposed action (alternative actions); and 3) no action.

Alternative Sites
Alternative sites must be identified and the practicability of such sites evaluated. If a practicable site exists outside the base floodplain, the proposed action must not be located in the base floodplain. Whenever a floodplain site is the only practicable alternative, the agency analysis leading to this conclusion should be fully documented.

Alternative Actions
Alternative actions must be considered before a decision is made to carry out the action in the base floodplain. These are actions which substitute for the proposed action in that they comprise new solutions or approaches which serve the same function or purpose as that proposed, but which have less potential for harm. For example, where an agency has proposed the construction of a new federal facility within the floodplain, the expansion of existing facilities located outside the floodplain could allay the need for the new facility.

No Action
No action is also an alternative and assessment of this course is required. The alternative of no action probably cannot be fully evaluated until a determination has been made in Step 4 of the harm to or within the floodplain resulting from the proposed action.

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[1] Figure 11-1 and following descriptions of the steps in the decision-making process are excerpted from "Floodplain Management Guidelines For Implementing E.O. 11988," U.S. Water Resources Council, 1978.

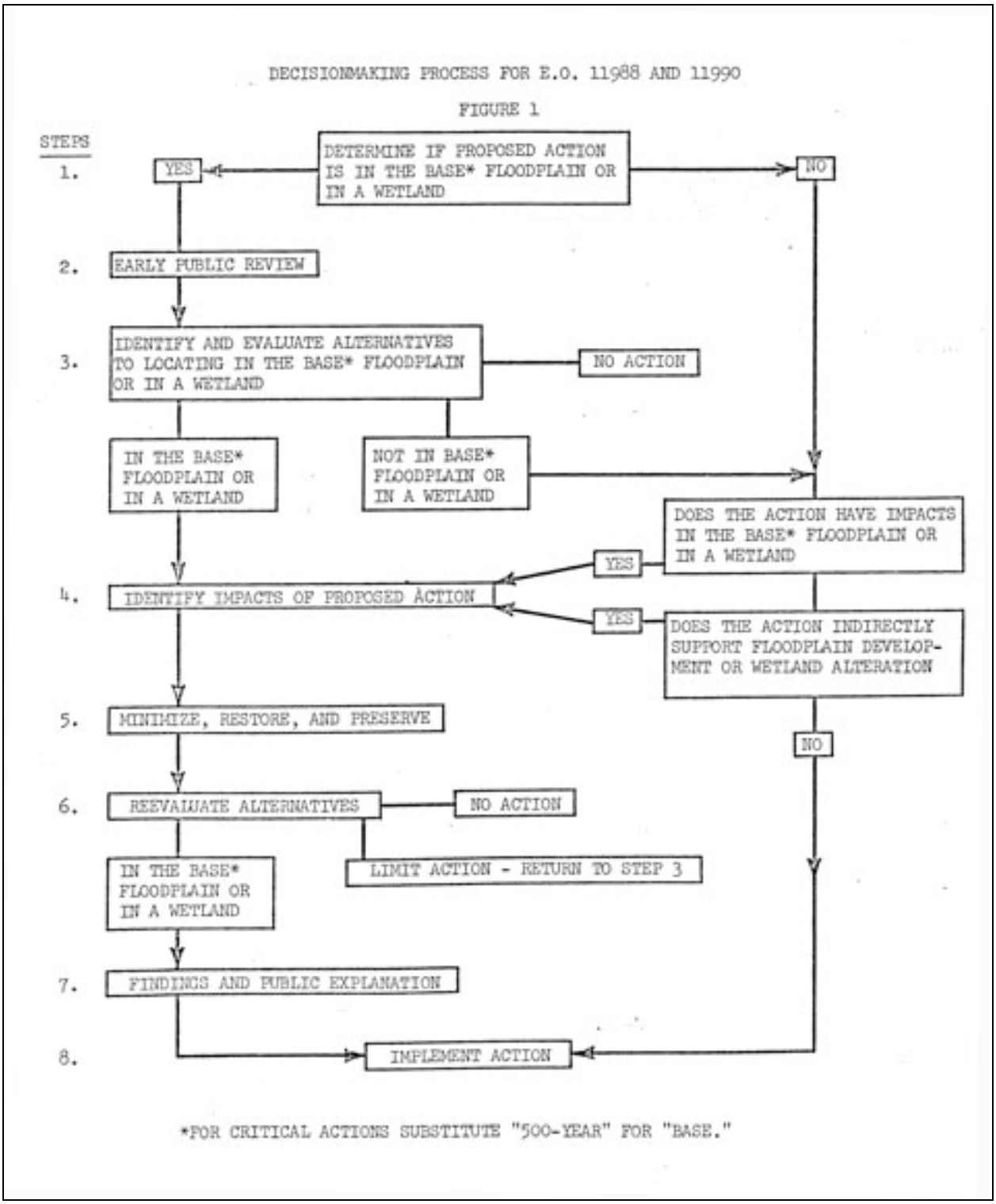

Figure 11-1. Decisionmaking process for E.O. 11988 and 11990.

Step 4 – Identify Impacts of the Proposed Action
If the agency has determined that the only practicable alternative is locating in the base floodplain, the impacts of the proposed action must be identified. Similarly, where actions proposed to be located out of the floodplain will affect the base floodplain, impacts resulting from these actions must be identified. The Order requires the agencies to avoid the direct and indirect support of floodplain development. An action supports floodplain development if it encourages, allows, serves, or otherwise facilitates additional floodplain development. Direct support results from actions located on the floodplain, while indirect support results from those outside the floodplain. For example, the location of a major public service structure or facility (office building, depot) in the floodplain requires new or additional investment in or construction of support facilities. Further, simply through their location, such actions would foster additional developments in the floodplain. Floodplain development could be indirectly supported by developments outside the floodplain. Examples might include highway networks (Interstate interchanges in or at the edge of the floodplain) and facilities located in the proximity of the floodplain that encourage new or additional investment and construction in the floodplain.

Floodplain actions also require a careful assessment of their impact on natural and beneficial floodplain resources and functions. Water and the adjacent floodplain exist in nature in a state of dynamic equilibrium. If one part of a riverine or coastal system is disturbed, the entire system usually readjusts towards a new equilibrium. The environmental effects of this readjustment may affect areas far from the original site of the disturbance and can last for decades.

Step 5 – Minimize, Restore, Preserve
The requirements of the Order to minimize, restore, and preserve apply if a proposed action will result in harm to or within the floodplain. The term "harm" as used in the context of the Order, applies to both lives and property and natural and beneficial floodplain resources. The concept of minimization applies to harm. The concept of restoration and preservation applies only to floodplain resources.

Minimize
Minimize is a demanding standard and requires the agency to reduce harm to the smallest possible degree. From the standpoint of lives and property, the goal is to avoid increasing the flood loss potential associated with the level of the base flood prior to the proposed action. Similarly, from the standpoint of floodplain resources, minimization requires that harm to such resources be reduced to the smallest possible amount or degree.

Restore and Preserve
In the context of the Order, "restore" focuses upon conditions existing as a result of prior actions, while "preserve" focuses upon the impacts of a proposed action. Restore means to reestablish a setting or environment in which the natural and beneficial floodplain resources and functions can again operate. Preserve means to prevent modification of the natural floodplain environment, or to maintain it as closely as possible to its natural state. (These strategies were covered in more detail in Chapter Nine.) The preserve strategy applies foremost to floodplains showing little or no disruption by human activity. If an action will result in harm to or within the floodplain, the agency must design or modify the action to assure that it will be carried out in a manner which preserves as much of the natural and beneficial floodplain resources as is possible.

Methods to Minimize, Restore and Preserve
A wide range of methods has been developed over time to minimize harm to lives and property from flood hazards. A detailed treatment of these methods if found in Chapter Seven. In the recent past, other methods directed toward minimizing harm to natural and beneficial environmental resources, including those associated with the floodplain, have been developed. A detailed discussion of these methods is found in Chapter Nine. The "tools" that might be applied are listed in Table 9-2 (which is repeated below). The tools and approaches, which are directed toward attaining the minimization, restoration, and preservation goals of the Order, should be considered and applied at all stages of a proposed action, as appropriate.

Step 6 – Reevaluate Alternatives
Having identified the impacts the proposed action would have on the floodplain (Step 4), methods to minimize these impacts, and opportunities to restore and preserve floodplain resources (Step 5), the Order requires that proposed action be reevaluated. For proposed actions in the base floodplain, the reevaluation should consider if the action is still feasible at this site. If not, the action should be limited to make non-floodplain sites practicable. If neither is acceptable, the alternative is no action. If the alternative is outside the base floodplain but has impacts which cannot be minimized (Step 5), the agency is to consider whether the action can be modified or relocated to eliminate or reduce the identified impacts or if the no action alternative should be chosen.

The reevaluation should also include a provision for comparison of the relative adverse impacts associated with the proposed action located in and out of the floodplain. The comparison should emphasize floodplain resources. However, a site out of the floodplain should not be chosen if the overall harm is significantly greater than that associated with the floodplain site.

Step 7 – Findings and Public Explanation
If reevaluation results in the determination that there is no practicable alternative to locating in or impacting the floodplain, a statement of finding and public explanation must be provided for the proposed action. The agency should explain how any tradeoff analysis was conducted in making its findings. Agency procedures must incorporate the development and issuance of a written statement of findings and public explanation which includes:

- A description of why the proposed action must be located in the floodplain.
- A description of all significant facts considered in making the determination including alternative sites and actions.
- A statement indicating whether the actions conform to applicable state or local floodplain protection standards.

In addition, in keeping with the concept of the overall public involvement process discussed in Step 2, the Order specifies that the following items be included in the statement of findings and public explanation: 1) A provision for a brief public comment period prior to agency action (15 to 30 days); 2) A description of how the activity will be designed or modified to minimize harm to or within the floodplain; and 3) A statement indicating how the action affects natural and beneficial floodplain resources.

Table 9-2. Examples of tools for protecting and managing natural floodplain resources.

Flood Storage and Conveyance:

- Minimize floodplain fills and other actions that require fills, such as construction of dwellings, factories, highways, etc.
- Require that structures and facilities on wetlands provide for adequate flow circulation.
- Use minimum grading requirements and save as much of the site from compaction as possible.
- Relocate nonconforming structures and facilities outside of the floodplain.
- Return site to natural contours.
- Preserve free natural drainage when designing and constructing bridges, roads, fills and large built-up centers.
- Prevent intrusion on and destruction of wetland, beach, and estuarine ecosystems, and restore damaged dunes and vegetation.

Water Quality Maintenance:

- Maintain wetland and floodplain vegetation buffers to reduce sedimentation and delivery of chemical pollutants to the water body.
- Support agricultural practices that minimize nutrient flows into water bodies.
- Control urban runoff, other storm water, and point and nonpoint discharges of pollutants.
- Support methods used for grading, filling, soil removal, and replacement, etc. to minimize erosion and sedimentation during construction.
- Restrict the location of potential pathogenic and toxic sources on the floodplain, such as sanitary land fills and septic tanks, heavy metal wastes, etc.

Groundwater Recharge:

- Require the use of pervious surfaces where practicable.
- Design construction projects for runoff detention.
- Dispose of spoils and waste materials so as not to contaminate ground or surface water or significantly change land contours.

Living Resources and Habitat:

- Identify and protect wildlife habitat and other vital ecologically sensitive areas from disruption.
- Require topsoil protection programs during construction.
- Restrict wetland drainage and channelization.
- Reestablish damaged floodplain ecosystems.
- Minimize tree cutting and other vegetation removal.
- Design floodgates and seawalls to allow natural tidal activity and estuarine flow.

(table continued on next page)

Table 9-2. Examples of Tools for Protecting and Managing Natural Floodplain Resources. (continued)

Cultural Resources:

- Provide public access to and along the waterfront for recreation, scientific study, educational instruction, etc.
- Locate and preserve from harm historical and cultural resources; consult with appropriate government agencies or private groups.

Agricultural Resources:

- Minimize soil erosion on cropped areas within floodplains.
- Control use of pesticides, herbicides, and fertilizer.
- Limit the size of fields and promote fence rows, shelter belts, and stripcropping for improved wildlife habitat.
- Strengthen water bank and soil bank type programs in a manner consistent with alternate demands for the use of agricultural land.
- Minimize irrigation return flows and excessive applications of water.
- Eliminate feedlot-type operations.
- Discourage new agricultural production requiring use of drainage.
- Retain agricultural activity on highly productive soils where flood risk is compatible with the value of crops grown.

Aquacultural Resources:

- Construct impoundments in a manner that minimizes alteration in natural drainage and flood flow. Existing natural impoundments such as oxbow lakes and sloughs may be used with proper management.
- Limit the use of exotic species, both plant and animal, to those organisms already common to the area or those known not to compete unfavorably with existing natural populations.
- Discourage mechanized operations causing adverse impacts. Machinery such as dredges, weeders, and large-scale harvesting equipment may lead to environmental problems such as sediment loading in adjacent watercourses.
- Use extreme caution in the disposal of animal waste.

Forestry:

- Control the practice of clear-cutting, depending upon the species harvested, topography, and location.
- Complement state law governing other aspects of harvest operations; proximity to watercourses, limits on road-building, equipment intrusions, etc.
- Include fire management in any overall management plans. Selective burning may reduce the probability of major destructive fires.
- Require erosion control plans on all timber allotments, roads, and skidways.

Source: Federal Interagency Floodplain Management Task Force. A Unified National Program for Floodplain Management. Washington, DC, Federal Emergency Management Agency, 1986.

Step 8 – Implement Action
With the conclusion of the decision-making process described in Steps 1-7, the proposed action can be implemented. However, there is a continuing responsibility for insuring that the action is carried out in compliance with the Order. This is especially important for projects with long-term operation and maintenance programs.

To test comprehension of the eight-step decision-making process specified by the order, two case studies are presented on the following pages.

Chapter Homework Assignment

1. Spend a few minutes trolling through the Corps of Engineers website regarding permits in public waters. Download and print the Application for Department of Army Permit.

2. Also spend a few minutes trolling through the Tennessee Division of Water Quality website regarding Section 401 Certification permits. Download and print a copy of the Tennessee Aquatic Resource Alteration Permit/Section 401 Certification.

3. What two Dr. Seuss books epitomize the Endangered Species Act? Discuss why,

4. What Wild and Scenic Rivers have been designated in Tennessee? Print a description of the designations.

5. Answer the questions at the end of the two case studies pertaining to E.O. 11988 – Floodplain Management.

E.O. 11988 – Floodplain Management

Case Study 1
The Department of Government (DOG) plans to construct a new post office building in the small but growing Town of Howes Bayou, Louisiana. DOG has studied floodplain maps and determined that the entire town and its surrounding suburbs are located in the floodplain of the Mississippi River.

When town officials requested that the town be given its own post office last year, DOG officials met with the Town Planning Board for discussions and planning. (These meetings were not publicized, as local environmental groups had in the past delayed similar projects through lengthy lawsuits.) DOG and Town officials examined alternative sites for the proposed structure but, since the whole town lies in the floodplain, it was decided that there was no practicable alternative but to build it in the floodplain.

DOG then contracted with an engineering firm to study possible impacts on the floodplain, as well as the likely effect on flooding on the structure and its contents. The study indicated that the height of the base flood would be four feet at the site.

In order to minimize flood damage to the structure and its contents, the design was changed to elevate the building on 12-foot concrete columns, placing the first floor well above the base flood level. The space below the building would be used for employee parking, and would be readily evacuated in the event of impending flooding. The National Weather Service confirmed that at least two weeks warning was available prior to such flooding.

Upon reviewing the plan and reevaluating alternatives, DOG maintains that there is no practical alternative to constructing at this site. Therefore, DOG is issuing a press release announcing the location of the new post office building and explaining why it is being located in a floodplain. The press release, along with notices to the appropriate federal agencies, will be issued today. Construction of the post office will begin next week.

The Regional Director, DOG, will ensure that all proper specifications, including elevation on concrete columns to minimize flood damage, are followed in the construction of the structure.

Given this information, has DOG complied with E.O. 11988? If not, with what steps in the decision-making process have they failed to comply? Explain.

E.O. 11988 – Floodplain Management

Case Study 2
You are reviewing DOGs finding and public explanation for a proposal to permit construction of a bridge connecting an undeveloped barrier island with the mainland. At the initiation of the proposal, DOG placed notices of their intent in the Federal Register (for notification to other officials) and three local newspapers. Now after detailed analysis, DOG has decided to grant the permit.

It is apparent to you from the finding that DOG has gone to great lengths and much expense to ensure that the flood risk to the bridge will be minimized, and that construction-related disruptions of natural and beneficial resources has been adequately addressed. After analyzing alternatives such as reliance on a ferry service, DOG has found that there is no practicable alternative available. They emphasize that there logically can be no alternative location for the bridge if it is to connect the island with the mainland. DOG's finding and public explanation is carefully drawn and well documented.

Given this information, has DOG complied with E.O. 11988? If not, with what steps in the decision process have they failed to comply? Explain.