

2. Legal Aspects

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2.1. Overview

2.1.1 Introduction

This chapter discusses various drainage laws and rules applicable to highway facilities, to help outline the hydraulic designer's role. This chapter should not be treated as a manual on which to base legal advice or make legal decisions. It is also not a summary of all existing drainage laws and, most emphatically, this chapter is not a substitute for legal counsel.

The following generalizations apply when determining liability:

- A goal in highway drainage design should be to perpetuate natural drainage.
- The courts look with disfavor on infliction of injury or damage that could reasonably have been avoided by a prudent designer, even where some alteration in flow is legally permissible.
- The laws relating to the liability of government entities are changing, with a trend toward increased government liability.

2.1.2 Order of Authority

The descending order to law supremacy is federal, state, and local, and—except as provided for in the statutes or constitution of the higher level of government—the superior level is not bound by laws, rules, or regulations of a lower level. For example, federal agencies do not secure permits issued by state agencies, except as required by federal law. Many laws of one level of government are passed to enable that level to comply with or implement provisions of laws of the next higher level. In some cases, however, a

lower level of government may promulgate a law, rule, or regulation that would require an unreasonable or even illegal action by a higher level. An example is a local ordinance that would require an expenditure of state funds for a purpose not intended in the appropriation. Many such conflicts involve constitutional interpretation and must be determined case by case. Refer such conflicts to the statewide hydraulic engineer before taking any action.

2.1.3 Related Publications

There are numerous publications on the legal aspects of drainage and water laws. For additional information, refer to the following:

1. *Highway Drainage Guidelines*, American Association of State Highway and Transportation Officials, Washington, D.C., Volume V, The Legal Aspects of Highway Drainage, which includes a glossary of legal definitions
2. *Legal Research Digest*, Transportation Research Board
3. *Code of Federal Regulations*, Title 23 - Highways, Office of the Federal Register, National Archives and Records Administration, Washington, D.C.

2.2. Federal Laws

2.2.1 Constitutional Power

Congress has constitutional power to regulate “commerce among the several states.” Part of that power is the right to legislate on matters concerning the instrumentalities of interstate commerce, such as navigable waters. The definition of navigable waters expands and contracts depending on the breadth required to adequately carry out the federal purpose. The result is Congress can assert regulatory authority over at least some aspects of waterways that are not in themselves subject to navigation.

2.2.2 General Laws

Federal law consists of the Constitution of the United States, Acts of Congress, regulations that governmental agencies issue to implement these acts, executive orders issued by the President, and case law. Acts of Congress are published immediately upon issuance and are cumulated for each session of Congress and published in the United States Statutes

At Large. Compilations of Federal Statutory Law, revised annually, are available in the United States Code (USC) and the United States Code Service (USCS).

The Federal Register, which is published daily, provides a uniform system for making regulations and legal notices available to the public. Presidential proclamations and executive orders, federal agency regulations/documents having general applicability and legal effect, documents required to be published by an Act of Congress, and other federal agency documents of public interest are published in the Federal Register. Compilations of federal regulatory material revised annually are available in the Code of Federal Regulations (CFR).

2.2.3 *Drainage*

Federal law does not deal with drainage per se, but many laws have implications that affect drainage design. These include laws concerning:

- Flood insurance and construction in flood hazard areas
- Navigation and construction in navigable waters
- Water pollution control
- Environmental protection
- Protection of fish and wildlife
- Coastal zone management

Federal agencies formulate and promulgate rules and regulations to implement these laws, and highway designers and hydraulic engineers should remain informed on proposed and final regulations.

2.2.4 *Significant Laws*

Some of the more significant federal laws affecting highway drainage are listed below with a brief description of their subject area.

- **Department of Transportation Act (80 Stat. 941, 49 USC 1651 et seq.):** This act established the Department of Transportation and set forth its powers, duties, and responsibilities to establish, coordinate, and maintain an effective administration of the transportation programs of the federal government.
- **Federal-Aid Highway Acts (23 USC 101 et seq.).** The Federal-Aid Highway Acts provide for

the administration of the Federal-Aid Highway Program. Proposed federal-aid projects must be adequate to meet the existing and probable future traffic needs and conditions in a manner conducive to safety, durability, and economy of maintenance, and must be designed and constructed according to standards best suited to accomplish these objectives and to conform to the needs of each locality.

- **Federal-Aid Highway Act of 1970 (84 Stat. 1713, 23 USC 109 [h]):** This act provided for the establishment of general guidelines to ensure that federal-aid project development has fully considered all possible adverse economic, social, and environmental effects. In compliance with the act, FHWA issued process guidelines included in 23 CFR 771 for the development of environmental action plans.
- **Federal-Aid Highway Act of 1966 (80 Stat. 766), Amended by the Act of 1970 (84 Stat. 1713, 23 USC 109 [g]):** This act required the issuance of guidelines for minimizing possible soil erosion from highway construction. In compliance with these requirements, FHWA issued guidelines that are applicable to all federal-aid highway projects. Regulatory material is found in 23 CFR 650 Subpart B.
- **The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991:** This act provided authorization for highways, highway safety, and mass transportation for six years. The act developed a National Highway System that is economically efficient and environmentally sound. It created a foundation for the nation to compete in the global economy and move people and goods in an energy-efficient way. Under the act, state and local governments have more flexibility in determining transportation solutions, whether transit or highways, and the tools on enhanced planning and management systems to guide them in making the best choices. Funding for the new technologies as well as activities for enhancing environment and safety are also available.
- **The Transportation Equity Act for the 21st Century (TEA-21) of 1998:** This act, which provides authorization for transportation programs for six years, builds on the initiatives established by ISTEA. TEA-21 continues the ISTEA

programs and increases the emphasis on improving highway safety, enhancing communities and the natural environment, and expanding the nation's economic growth through efficient and flexible transportation. TEA-21 retains the realignment of the federal-aid highway system established by ISTEA, which included the National Highway System.

2.3. Federal Agencies

The FHWA, U.S. Army Corps of Engineers (USACE), U.S. Coast Guard (USCG), and U.S. Environmental Protection Agency (USEPA) carry out existing federal regulations. The U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) review permits and provide comments to the lead agency.

When obtaining approvals from federal agencies, be aware that these agencies do not always work in concert and often will not agree. This can result in significant project delays unless you coordinate early. These conflicts between federal agencies occur as a result of their varying rules; some are “regulators” while others are resource-motivated. For this reason, they will have different goals and, in some instances, different definitions of such elements as wetlands. When conflicts occur, it is best to determine which agency has primary responsibility and attempt to satisfy its needs.

2.3.1 Federal Highway Administration (FHWA)

The FHWA approves environmental documents developed for federal-aid projects (23 CFR 771). As the federal lead agency, FHWA is responsible for ensuring the requirements of all applicable laws, regulations, statutes, and executive orders are met for federal-aid projects.

The USACE will generally conduct its public interest review for Section 404 and Section 10 permits concurrent with FHWA's public review of the environmental document. The Section 404 and Section 10 permits for projects approved by FHWA as Categorical Exclusions under 23 CFR 771.117, will generally qualify for authorization under USACE Nationwide Permit No. 23. There are specific general and regional conditions to meet, including a pre-discharge notification.

The FHWA has the responsibility under 23 USC 144(h) to determine that a USCG permit is not

required. This determination shall be made at an early stage of project development so that any necessary coordination can be accomplished during environmental processing.

2.3.2 US Army Corps of Engineers (USACE)

The USACE has regulatory authority over the construction of dams, dikes, or other obstructions (that are not bridges and causeways) across any navigable water of the United States under Section 9 (33 USC 401). The USACE also has regulatory authority under Section 10 of the River and Harbor Act of 1899 (33 USC 403), which prohibits the unauthorized alteration or obstruction of any navigable waterway, including the excavation or deposition of fill material in such waterways.

Section 11 of the River and Harbor Act of 1899 (33 USC 404) authorizes the Secretary of the Army to establish harbor lines. Work channel-ward of those lines requires separate approval of the Secretary of the Army and work shoreward requires Section 10 permits and, if applicable, Section 404 of the Clean Water Act permits.

Section 404 of the Clean Water Act (33 USC 1344) authorizes the Secretary of the Army to issue permits for the discharge of dredged or fill material into waters of the United States, including navigable waters and wetlands. The term “discharges of fill material” means the addition of rock, sand, dirt, concrete, or other material into the waters of the United States incidental to construction of any structure.

The USACE has granted a nationwide permit for certain activities under 33 CFR 330. Under the provision of the current Nationwide Permit No. 15 USCG Approved Bridges, fill associated with construction of bridges across navigable waters of the United States, including cofferdams, abutments, foundation seals, piers, temporary construction, and access fills, are authorized under the Nationwide Section 404 Permit provided USCG has permitted such fill under Section 9 of the River and Harbor Act of 1899 as part of the bridge permit. Therefore, formal application to the USACE for a Section 404 Permit is not required unless bridge approach embankment is located in a wetland area contiguous to said navigable stream. Although formal application may not be

required, USACE requires the submission of a preconstruction notice for the proposed work.

The 1992 Energy and Water Development Appropriation Act provides guidance to use the 1987 manual of the USACE in the delineation of wetlands. This allows more flexibility in the definition and determination of wetlands.

Note that Section 401 of the Clean Water Act (33 USC 1344) requires any applicant for a federal permit for any activity that may affect the quality of waters of the United States to also obtain a water quality permit from the state in which the discharge originates or will originate. In Alaska, the Alaska Department of Environmental Conservation issues water quality permits.

2.3.3 U.S. Coast Guard (USCG)

The USCG has regulatory authority under Section 9 of the Rivers and Harbors Act of 1899 (33 USC 401) (delegated through the Secretary of Transportation in accordance with 49 USC 1655 [g]) to approve plans and issue permits for bridges and causeways across navigable water. As outlined in 23 CFR 650, the USCG has the responsibility:

1. To determine whether or not a USCG permit is required for the improvement or construction of a bridge over navigable waters except for the determination exercised by the FHWA as stated in Subsection 2.3.1.
2. To approve the bridge location and alignment, and appropriate navigational clearances in all bridge permit applications

For more information on navigational clearances for bridges, see 23 CFR 650 Subpart H.

2.3.4 U.S. Environmental Protection Agency (USEPA)

The USEPA has regulatory authority under Section 404 of the Clean Water Act (33 USC 1344) to prohibit the use of any area as a disposal site when it is determined that the discharge of materials at the site will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational.

The USEPA is authorized under Section 402 of the Clean Water Act (33 USC 1344) to administer and issue a National Pollutant Discharge Elimination System (NPDES) permit (33 USC 1342) for point

source discharges, provided prescribed conditions are met. 40 CFR 122.26 (b) (14) defines storm water discharge from an industrial activity, including construction activities, to be a point-source discharge.

Under NPDES, any construction project involving one or more acres (cumulative) of disturbed land must be permitted for the discharge of storm water (rain and snowmelt) from the areas of disturbance. In Alaska, the USEPA administers this requirement. These regulations include the development of a general permit that may be employed at the discretion of the USEPA to simplify and accelerate the process of obtaining the required permit. Obtaining authorization to use a general permit requires:

- Preparation of a Storm Water Pollution Prevention Plan
- Filing a Notice of Intent with USEPA
- Scheduled inspection reports
- Plan amendments
- Notice of Termination

Detailed information regarding storm water discharge permits for construction projects is available in the Department's *Storm Water Pollution Prevention Plan Guide*.

There is no state storm water permit required at this time, however, the Alaska Department of Environmental Conservation reviews Storm Water Pollution Prevention Plans.

2.3.5 Fish and Wildlife Service

The Fish and Wildlife Act of 1956 (16 USC 742 et seq.), the Migratory Game-Fish Act (16 USC 760c-760g), and the Fish and Wildlife Coordination Act (16 USC 661-666c) express the concern of Congress with the quality of the aquatic environment as it affects the conservation, improvement, and enjoyment of fish and wildlife resources.

The Fish and Wildlife Coordination Act requires that "whenever the waters of any stream or body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatsoever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under federal permit or license, such department or agency

shall first consult with the United States Fish and Wildlife Service (USFWS), Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular state with a view to the conservation of wildlife resources by preventing loss of and damage to such resources as well as providing for the development and improvement thereof.”

The role of USFWS in the permit review process is to review and comment on the effects of a proposal on fish and wildlife resources. It is the function of the regulatory agency to consider and balance all factors, including anticipated benefits and costs in accordance with NEPA, in deciding whether to issue the permit (40 FR 55810, December 1, 1975).

2.3.6 National Marine Fisheries Service (NMFS)

In 1996 Congress added new habitat provisions to the Magnuson-Stevens Fishery Conservation and Management Act, the federal law that governs U.S. marine fisheries management. Under the Magnuson-Stevens Act, each fishery management plan must describe and identify essential fish habitat (EFH) for the fishery, minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH.

Federal agencies must consult with NMFS regarding any action they authorize, fund, or undertake that may adversely affect EFH, and NMFS must provide conservation recommendations to federal and state agencies regarding any action that would adversely affect EFH.

NMFS Habitat Conservation Division (HCD) works in coordination with industries, stakeholder groups, government agencies, and citizens to avoid, minimize, or offset the adverse effects of human activities on EFH and living marine resources in Alaska. HCD identifies technically and economically feasible alternatives and offers realistic recommendations for the conservation of valuable living marine resources.

HCD focuses on activities in habitats used by federally managed fish species located offshore, nearshore, in estuaries, and in freshwater areas important to anadromous salmon.

2.4. National Flood Insurance Program (NFIP)

2.4.1 Flood Insurance

The National Flood Insurance Act of 1968, as amended (42 USC 4001-4129), requires that communities adopt adequate land-use and control measures to qualify for flood insurance. Federal criteria promulgated to implement this provision contain the following requirements, which can affect certain highways:

- In riverine situations when the administrator of the Federal Insurance Administration has identified the flood-prone area, the community must require that, until a floodway has been designated, no use, including land fill, be permitted within the floodplain area having special flood hazards for which base flood elevations have been provided. An exception is if it is demonstrated that the cumulative effect of the proposed use, when combined with all other existing and reasonably anticipated uses of a similar nature, will not increase the water surface elevation of the 100-year flood more than 1 foot at any point within the community.
- After the floodplain area having special flood hazards has been identified and the water surface elevation for the 100-year flood and floodway data have been provided, the community must designate a floodway that will convey the 100-year flood without increasing the water surface elevation of the flood more than 1 foot at any point. The community must also prohibit—within the designated floodway—fill, encroachments, new construction and substantial improvements of existing structures that would result in any increase in flood heights within the community during the occurrence of the 100-year flood discharge.
- The participating cities and/or counties must agree to regulate new development in the designated floodplain and floodway through regulations adopted in a floodplain ordinance. The ordinance requires that development in the designated floodplain be consistent with the intent, standards, and criteria set by the National Flood Insurance Program (NFIP).

2.4.2 Flood Disaster Protection

The Flood Disaster Protection Act of 1973 (Pl 93-234, 87 Stat. 975, 42 USC 4002) denies federal financial

assistance to communities that fail to qualify for flood insurance. Formula grants to states are excluded from the definition of financial assistance, and the definition of construction in the act does not include highway construction; therefore, federal aid for highways is not affected by the act.

The act does require communities to adopt certain land-use controls to qualify for flood insurance. These land-use requirements could impose restrictions on the construction of highways in floodplains and floodways in communities that have qualified for flood insurance.

2.4.3 Community Responsibilities

The community with land-use jurisdiction, whether it is a city, borough, or state, is responsible for enforcing the NFIP regulations in that community, if the community is participating in the NFIP. Consistency with NFIP standards is a requirement for federal-aid highway actions involving regulatory floodways.

The community, by necessity, is the entity that must submit proposals to Federal Emergency Management Agency (FEMA) for amendments to NFIP ordinances and maps in that community if it becomes necessary. The highway agency should deal directly with the community and, through them, deal with FEMA.

Determination of the status of a community's participation in the NFIP and review of applicable NFIP maps and ordinances are, therefore, essential first steps in conducting location hydraulic studies and preparing environmental documents.

2.4.4 NFIP Maps

Where NFIP maps are available, their use is mandatory in determining whether a highway location alternative will include an encroachment on the base floodplain. Three types of NFIP maps are published:

1. Flood Hazard Boundary Map (FHBM)
2. Flood Boundary and Floodway Map (FBFM)
3. Flood Insurance Rate Map (FIRM)

A FHBM is generally not based on a detailed hydraulic study and, therefore, the floodplain boundaries shown are approximate. A FBFM, on the other hand, is generally derived from a detailed hydraulic study and should provide reasonably accurate information.

The hydraulic data from which the FBFM was derived are available through the regional office of FEMA.

These are normally in the form of computer input data records for calculating water surface profiles. A FIRM is generally produced at the same time using the same hydraulic model and has appropriate rate zones and base flood elevations added.

Communities may or may not have published one or more of the above maps depending on their level of participation in the NFIP. Information on community participation in the NFIP is provided in the "National Flood Insurance Program Community Status Book," which is published semiannually for each state.

2.4.5 Coordination With FEMA

There should be departmental coordination with FEMA when administrative determinations are needed involving a regulatory floodway, or where flood risks in NFIP communities are significantly affected. The circumstances that would ordinarily require coordination with FEMA include the following.

- When a proposed crossing encroaches on a regulatory floodway and, as such, would require an amendment to the floodway map
- When a proposed crossing encroaches on a floodplain where a detailed study has been performed but no floodway designated, and the maximum 1-foot increase in the base flood elevation would be exceeded
- When a community is expected to enter into the regular program within a reasonable period and detailed floodplain studies are under way
- When a community is participating in the NFIP program, and base FEMA flood elevation in the vicinity of insurable buildings is increased by more than 1 foot. Where insurable buildings are not affected, it is sufficient to notify FEMA of changes to base flood elevations as a result of highway construction.

The draft Environmental Impact Statement or Environmental Assessment (EIS/EA) should indicate the NFIP status of affected communities, the encroachments anticipated, and the need for floodway or floodplain ordinance amendments. Coordination with FEMA includes furnishing to FEMA the draft EIS/EA and, upon selection of an alternative, furnishing to FEMA, through the community, a preliminary site plan and water surface elevation information and technical data in support of a floodway revision request as required.

If a determination by FEMA would influence the selection of an alternative, obtain a commitment from FEMA prior to the final environmental impact statement (FEIS) or a finding of no significant impact (FONSI). Otherwise, this later coordination may be postponed until the design phase.

For projects that will be processed with a categorical exclusion, you may coordinate during design. However, the outcome of the coordination **during design has the potential of changing** the class of environmental processing.

2.4.6 Consistency with Standards

In many situations it is possible to design and construct highways in a cost-effective way so that their components are excluded from the floodway. This is the simplest way to be consistent with the standards and should be the initial alternative you evaluate.

If a project element encroaches on the floodway but has a very minor effect on the floodway water surface elevation (such as piers in the floodway), the project may normally be considered consistent with the standards, if hydraulic conditions can be improved so that no water surface elevation increase is reflected in the computer printout for the new conditions.

2.4.7 Revisions of Floodway

Where it is not cost-effective to design a highway crossing to avoid encroachment on an established floodway, modify the floodway itself as a second alternative.

Often, the community will be willing to accept an alternative floodway configuration to accommodate a proposed crossing, provided NFIP limitations on increases in the base flood elevation are not exceeded. This approach is useful where the highway crossing does not cause more than a 1-foot rise in the base flood elevation.

In some cases, it may be possible to enlarge the floodway or otherwise increase conveyance in the floodway above and below the crossing to allow greater encroachment. Such planning is best accomplished when the floodway is first established. However, where the community is willing to amend an established floodway to support this option, the floodway may be revised.

The responsibility for demonstrating that an alternative floodway configuration meets NFIP requirements rests with the community. However, this responsibility may

be borne by the agency proposing to construct the highway crossing. **Floodway revisions are applied to** the hydraulic model used to develop the currently effective floodway but updated to reflect existing encroachment conditions. This will allow determination of the increase in the base flood elevation that has been caused by encroachments since the original floodway was established. You may then analyze alternate floodway configurations.

Base flood elevation increases are referenced to the profile obtained for existing conditions when the floodway was first established.

2.4.8 Data for Revisions

Include the following in data you submit to FEMA through the community in support of a floodway revision request:

- Copy of current regulatory Flood Boundary and Floodway Map, showing existing conditions, proposed highway crossing, and revised floodway limits
- Copy of computer printouts (input, computation, and output) for the current 100-year model and current 100-year floodway model
- Copy of computer printouts (input, computation, and output) for the revised 100-year floodway model. Any fill or development that has occurred in the existing flood fringe area must be incorporated into the revised 100-year floodway model
- Copy of engineering certification required for work performed by private subcontractors

The revised and current computer data required above should extend far enough upstream and downstream of the floodway revision area to tie back into the original floodway and profiles using sound hydraulic engineering practices. This distance will vary depending on the magnitude of the requested floodway revision and the hydraulic characteristics of the stream.

If input data representing the original hydraulic model are unavailable, develop an approximation. Establish a new model using the original cross-section topographic information, where possible, and the discharges contained in the Flood Insurance Study that established the original floodway. The model should then be run confining the effective flow area to the currently established floodway and calibrate to reproduce, within

0.10 foot, the “With Floodway” elevations provided in the Floodway Data Table for the current floodway. You may then evaluate floodway revisions using the procedures outlined above.

2.4.9 Allowable Floodway Encroachment

When it would be demonstrably impractical to design a highway crossing to avoid encroachment on the floodway and where the floodway cannot be modified so that the structure could be excluded, FEMA will approve an alternate floodway with backwater in excess of the 1-foot maximum only when the following conditions have been met:

- A location hydraulic study performed in accordance with 23 CFR 650, Subpart A and FHWA finds the encroachment is the only practicable alternative.
- The constructing agency has made appropriate arrangements with affected property owners and the community to obtain flooding easements or otherwise compensate them for future flood losses due to the effects of backwater greater than 1 foot.
- The constructing agency has made appropriate arrangements to ensure that the National Flood Insurance Program and Flood Insurance Fund will not incur any liability for additional future flood losses to existing structures that are insured under the program and grandfathered in under the risk status existing prior to the construction of the structure.
- Prior to initiating construction, the constructing agency provides FEMA with revised flood profiles, floodway and floodplain mapping, and background technical data necessary for FEMA to issue revised Flood Insurance Rate Maps and Flood Boundary and Floodway Maps for the affected area, upon completion of the structure.

Highway Encroachment on a Floodplain with a Detailed Study (FIRM)

In communities where a detailed flood insurance study has been performed but no regulatory floodway designated, design the highway crossing to allow no more than a 1-foot increase in the base flood elevation based on technical data from the flood insurance study.

Submit technical data supporting the increased flood to the community and, through them, to FEMA for its files.

Highway Encroachment on a Floodplain Indicated on an FHBM

In communities where detailed flood insurance studies have not been performed, the highway agency must generate its own technical data (other than base flood quantity) to determine if the structure encroaches into the regulatory floodway in accordance with 23 CFR 650 Subpart A.

Furnish base floodplain elevations to the community, and coordinate with FEMA as outlined previously where the increase in base flood elevations in the vicinity of insurable buildings exceeds 1 foot.

Highway Encroachment on Unidentified Floodplains

Encroachments that are outside of NFIP communities or NFIP-identified flood hazard areas should be designed in accordance with 23 CFR 650 Subpart A.

2.4.10 Levee Systems

For purposes of the NFIP, FEMA will only recognize in its flood hazard and risk mapping effort those levee systems that meet, and continue to meet, minimum design operation and maintenance standards consistent with the level of protection sought through the management criteria outlined in the NFIP.

The levee system must provide adequate protection from the base flood. Supply information supporting this to FEMA via the community or other party seeking recognition of such a levee system at the time a flood-risk study or restudy is conducted, when a map revision is sought based on a levee system, and upon request by the administrator during the review of previously recognized structures. The FEMA review will be for the sole purpose of establishing appropriate risk zone determinations for NFIP maps and shall not constitute a determination by FEMA as to how a structure or system will perform in a flood.

For more information on the requirements related to levee systems see *National Flood Insurance Program and Related Regulations*, Federal Emergency Management Agency, Revised October 1, 1986 and amended June 30, 1987 (44 CFR 65.10).

2.4.11 Revisions to NFIP Maps

FEMA has established administrative procedures for changing or correcting effective FIRMs and Flood Insurance Study (FIS) reports based on new or revised technical data. A physical change to the affected

FIRM panels and portions of the FIS report is referred to as Physical Map Revision (PMR).

A PMR is an official republication of a community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways, and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas, or corrections to base flood elevations or Special Flood Hazard Areas (SFHAs).

Changes to NFIP maps may also be made by a Letter of Map Change (LOMC). The three LOMC categories are described below:

1. **Letter of Map Amendment (LOMA):** A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative procedure that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in an SFHA.
2. **Letter of Map Revision Based on Fill (LOMR-F):** A LOMR-F is an official revision by letter to an effective NFIP map. An LOMR-F states FEMA's determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is therefore excluded from the SFHA.
3. **Letter of Map Revision (LOMR):** An LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations, and planimetric features. Make all requests for LOMRs to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for an LOMR is not submitted through the chief executive officer of the community, you must submit evidence that the community has been notified of the request.

2.4.12 Conditional Letter of Map Revision (CLOMR)

NFIP maps must be based on existing, rather than proposed, conditions. Because flood insurance is a financial protection mechanism for real-property

owners and lending institutions against existing hazards, flood insurance ratings must be made accordingly. However, communities, developers, and property owners often undertake projects that may alter or mitigate flood hazards and would like FEMA's comment before constructing them.

A CLOMR is FEMA's formal review and comment on whether a proposed project complies with the minimum NFIP floodplain management criteria. If it does, the CLOMR also describes any eventual revisions that will be made to the NFIP maps upon completion of the project.

Obtaining conditional approval is not automatically required by NFIP regulations for all projects in the floodplain. A CLOMR is required only for those projects that will result in an increase in the water surface elevation greater than 1 foot for the 100-year flood for streams with base flood elevations specified, but no floodway designated. A CLOMR is also required for any proposed construction within a regulatory floodway that will result in an increase in the water surface elevation for the 100-year flood.

The technical data needed to support a CLOMR request generally involve detailed hydrologic and hydraulic analyses and are very similar to the data needed for a LOMR request.

A request for a CLOMR by a private individual, including homeowners and land developers, must be made through the community participating in the NFIP. The following are reasons a CLOMR request is made through the community:

1. The community must be aware of changes by the proposed project and determine if they are consistent with local ordinances.
2. The community will collect fees for FEMA that apply to requests for map revisions.
3. The community must determine that the existing FIRM is not accurate and that the hydrologic and hydraulic information provided by the private individual is more up to date.

2.5. Executive Orders

2.5.1 Background

Presidential executive orders (EO) have the effect of law in the administration of programs by federal agencies. Although executive orders do not directly

apply to state highway departments, these requirements are usually implemented through general regulations.

2.5.2 EO 11988 Floodplain Management

Executive Order 11988, dated May 24, 1977, requires each federal agency, in carrying out its activities, to take the following actions:

- To reduce the risk of flood loss; to minimize the impact of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains
- To evaluate the potential effect of any actions it may take in a floodplain, and to ensure its planning programs reflect consideration of flood hazards and floodplain management

These requirements are contained in the 23 CFR 650 Subpart A and were published in the Federal Register, April 26, 1979 (44 FR 24678).

2.5.3 EO 11990 Protection of Wetlands

Executive Order 11990, dated May 24, 1977, orders each federal agency to:

- Minimize the destruction, loss, or degradation of wetlands; and to preserve and enhance the natural and beneficial values of wetlands
- Avoid undertaking or providing assistance for new construction in wetlands unless the head of the agency finds that there is no practicable alternative and all practicable measures are taken to minimize harm that may result from the action
- Consider factors relevant to the proposal's effects on the survival and quality of the wetlands

These requirements are contained in 23 CFR 771.

2.6. State Drainage Law

2.6.1 Derivation

State drainage law is derived mainly from two sources:

1. Common law is the body of principles that developed from immemorial use and custom and that receives judicial recognition and sanction through repeated application. These principles were developed without legislative action and are embodied in the decisions of the courts.

2. The Legislature enacts statutory laws of drainage to enlarge, modify, clarify, or change the common law applicable to particular drainage conditions. This type of law is derived from constitutions, statutes, ordinances, and codes.

2.6.2 Predominates

In general, the common-law rules of drainage predominate unless they have been enlarged or superseded by statutory law. In most instances where statutory provisions have been enacted, it is possible to determine the intent of the law. If, however, there is a lack of clarity in the statute, the point in question may have been litigated for clarification.

In the absence of clarity of the statute or litigation, a definitive statement of the law is not possible, although the factors that are likely to be controlling may be indicated.

2.6.3 Classification of Waters

State drainage laws originating from common law, or court-made law, first classified water, after which the rule that was pertinent to the particular classification was applied to obtain a decision.

The first step in the evaluation of a drainage problem is to classify the water as surface water, stream water, floodwater, or ground water. These terms are defined below. Once the classification has been established, the rule that applies to the particular class of water determines responsibilities with respect to disposition of the water.

Surface Waters

Surface waters are those waters formed by rain or that have been forced to the surface in springs, and that have then spread over the ground without being collected into a definite body or channel.

Stream Waters

Stream waters are former surface or ground waters that have entered and now flow in a well-defined natural watercourse, with other waters reaching the stream by direct precipitation or rising from springs in the bed or banks of the watercourse. A watercourse in the legal sense refers to a definite channel with bed and banks within which water flows either continuously or intermittently.

Floodwaters

Floodwaters are former stream waters that have escaped from a watercourse (and its overflow channels) and flow or stand over adjoining lands. They remain floodwaters until they disappear from the surface by infiltration or evaporation, or return to a natural watercourse.

Ground Waters

In legal considerations, ground waters are divided into two classes: percolating waters and underground streams. The term “percolating waters” generally includes all waters that pass through the ground beneath the surface of the Earth without a definite channel.

All underground waters are presumed to be percolating. To take them out of the percolating class, you must clearly show the existence and course of a permanent channel. Underground streams are waters passing through the ground beneath the surface in permanent, distinct, well-defined channels.

2.7. State Water Rules

2.7.1 Surface Waters

The following three basic rules govern liability for surface water runoff:

- The common enemy rule
- The civil law rule
- The rule of reasonable use

The first two rules are often modified, with the principal modification being the requirement that the landowner’s or highway authority’s action must not be unreasonable.

Common Enemy Rule

According to common law, under the common enemy rule, the owner of land over which surface water flowed from a higher elevation has the right to obstruct the flow of the water, to turn it back, or to divert it onto the land of another owner without incurring liability for any damage that might occur. However, as noted, many courts have applied a reasonableness test to the landowner’s action to reduce the harsh impact of the rule.

Civil Law Rule

Under the civil law rule, the owner of the higher land has an easement or servitude over a lower parcel, which allows the upper landowner to discharge surface waters as they naturally flow from the higher land onto the lower land of the servient owner. Again, many states have modified the civil law rule by requiring the respective landowners not to be unreasonable in their conduct.

Rule of Reasonable Use

In a majority of the states, including Alaska, the courts apply the modern rule, which is one of determining the reasonableness of the landowner’s action. A landowner’s conduct in using or altering property in a manner that affects the discharge of surface water onto adjacent property is subject to a test of reasonableness.

Every person must take reasonable care in using his or her property to avoid injury to adjacent property owners; the rule applies equally to upper and lower landowners. The courts have stated that if the actions of both landowners are reasonable, then the upper landowner, who changes a natural system of drainage, must bear the cost as provided under the civil law rule relating to the liability for runoff of surface water.

Under the reasonable use rule, each property owner can legally make reasonable use of his land, even though it alters the flow of surface and causes some harm to others. However, liability attaches when the harmful interference with the flow of surface water is unreasonable, which is determined by a nuisance-type balancing test. The analysis involves several questions:

- Was there reasonable necessity for the actor to alter the drainage to make use of his or her land?
- Was the alteration done in a reasonable manner?
- Does the utility of the actor’s conduct reasonably outweigh the gravity of harm to others?

Where natural watercourses are unquestioned in fact and in permanence and stability, there is little difficulty in application of the reasonable use rule. Highways cross channels on bridges or culverts, usually with some constriction of the width of the channel and obstruction by substructure within the channel, both causing backwater upstream and acceleration of flow downstream. The changes in regime must be so small as to be tolerable by adjoining owners, or there may be liability of any injuries or damages suffered.

2.7.2 Stream Waters

Surface waters from highways are often discharged into the most convenient watercourse. The right is unquestioned if those waters were naturally tributary to the watercourse and unchallenged if the watercourse has adequate capacity. However, if all or part of the surface waters has been diverted from another watershed to a small watercourse, any lower owner may complain and recover for ensuing damage.

2.7.3 Floodwaters

Floodwaters are treated as a “common enemy” of all people, lands, and property attacked or threatened by them.

Considering floodwaters a common enemy permits all affected landowners, including owners of highways, to act in any reasonable way to protect themselves and their property from the common enemy. They may obstruct flow from entering their land, backing or diverting water onto lands of another without penalty, by gravity or pumping, by diverting dikes or ditches, or by any other reasonable means.

Again, the test of “reasonableness” has frequently been applied, and liability can result where unnecessary damage is caused. Ordinarily, the hydraulic designer should make provisions for overflow in areas where it is foreseeable. There is a definite risk of liability if such waters are impounded on an upper owner or, worse, are diverted into an area where they would not otherwise have gone. Merely to label waters as “floodwaters” does not mean they can be disregarded.

2.7.4 Ground Water

In groundwater law, the reasonable use law has modified the English Rule based on the doctrine of absolute ownership of water beneath the property by the landowner. This means that each landowner is restricted to a reasonable exercise of his or her own right and a reasonable use of his or her property in view of the similar right of his or her neighbors.

The key word is “reasonable.” While this may be interpreted somewhat differently from case to case, it can generally be taken to mean that landowners can use subsurface water on their property for the benefit of agriculture, manufacturing, irrigation, etc., pursuant to the reasonable development of their property, although such action may interfere with the underground waters of neighboring proprietors. However, it generally precludes the withdrawal of underground waters for distribution or sale for uses not connected with any

beneficial ownership or enjoyment of the land from which they were taken.

A further interpretation of “reasonable” in relation to highway construction would view the excavation of a deep “cut section” that intercepts or diverts underground water to the detriment of adjacent property owners as unreasonable. There are also cases where highway construction has permitted the introduction of surface contamination into subsurface waters and thus incurred liability for resulting damages.

2.8. Statutory Law

2.8.1 Introduction

The inadequacies of the common law or court-made laws of drainage led to a gradual enlargement and modification of the common law rules by legislative mandate. In the absence of statute, the common-law rules adopted by state courts determine surface water drainage rights. If the common-law rules have been enlarged or superseded by statutory law, the statute prevails. In general, statutes have been enacted that affect drainage in the subject areas described below.

2.8.2 Eminent Domain

In the absence of an existing right, public agencies may acquire the right to discharge highway drainage across adjoining lands through the use of the right of eminent domain. Eminent domain is the power of public agencies to take private property for public use.

Provisions of the Alaska Constitution, Article 1, Section 18, grants the state the right of eminent domain, which allows that taking of property for public purposes. It is important to remember, however, that whenever any property is taken under eminent domain, the private landowner must be compensated for the loss.

There are numerous statutory provisions delegating the right of eminent domain. However, the power to grant the right of eminent domain rests with the State of Alaska.

2.8.3 Water Rights

The water right that attaches to a watercourse is a right to the use of the flow, not ownership of the water itself. This is true under both the riparian doctrine and the prior appropriation doctrine. This right of use is a property right, entitled to protection to the same extent as other forms of property, and is regarded as real

property. After the water has been diverted from the stream flow and reduced to possession, the water itself becomes the personal property of the riparian owner or the appropriator.

- **Riparian Doctrine:** Under the riparian doctrine, lands contiguous to watercourses have prior claim to waters of the stream solely by reason of location and regardless of the relative productive capacities of riparian and nonriparian lands.
- **Doctrine of Prior Appropriation:** The essence of this doctrine, which applies in Alaska, is the exclusive right to divert water from a source when the water supply naturally available is not sufficient for the needs of all those holding rights to its use. Such exclusive right depends upon the effective date of the appropriation, the first in time being the first in right. Under AS 46.15, the Alaska Department of Natural Resources grants water rights.

Proposed highway work near a stream should not impair the quality or quantity of flow of any water rights to the stream.

2.9. State Agencies

The Departments of Natural Resources, Environmental Conservation, and Fish & Game administer existing state regulations. When obtaining permits from state agencies, be aware that these agencies do not always work in concert. This can result in significant project delays unless you coordinate early. When conflicts occur, it is best to determine which agency has primary responsibility and attempt to satisfy its needs.

2.9.1 Department of Natural Resources (ADNR)

The mission of the Division of Mining, Land, and Water of ADNR is to provide for the use and protection of Alaska's state-owned land and water. This Division administers the following:

- Safety of Dams and Reservoirs (AS 46.17)
- The Alaska Water Use Act (AS 46.15)
- The State Policy on Navigability

The Office of Project Management and Permitting is the lead agency for the Alaska Coastal Management Program (ACMP). The ACMP provides stewardship for Alaska's rich and diverse coastal resources to

ensure a healthy and vibrant Alaska coast that efficiently sustains long-term economic and environmental productivity.

The program was established by AS 46.40 and is administered by the Alaska Coastal Policy Council established by AS 44.19.155. As part of the ACMP, all proposed activities within the coastal area are subject to a consistency review and determination.

The Office of Habitat Management and Permitting fulfills specific statutory responsibilities for:

1. Protecting freshwater anadromous fish habitat under the Anadromous Fish Act (AS 41.14.870) and
2. Providing free passage of anadromous and resident fish in fresh waterbodies under the Fishway Act (AS 41.14.840).

2.9.2 Department of Environmental Conservation (ADEC)

ADEC was established by AS 46.03. The Division of Air and Water quality provides leadership and technical assistance in preventing and solving public health and environmental problems that affect the lives of Alaskans. The mission of the ADEC Water Quality Standards program is to protect the waters of the state from pollutants. Acquaint yourself with the requirements that may affect the design.

The mission of the ADEC Wetlands Program is to improve our understanding of Alaska's wetlands so we know which wetlands can be developed and which wetlands should be preserved.

2.9.3 Department of Fish & Game (ADF&G)

Established by AS Title 16, the mission of ADF&G is to protect, maintain, and improve the fish, game, and aquatic plant resources of the state, and manage their use and development in the best interest of the economy and the well-being of the people of the state, consistent with the sustained yield principle.

The ADF&G reviews permits and comments on the effects of a proposal on fish and wildlife resources. ADF&G no longer administers fish habitat permits. Fish habitat permits are administered by ADNR (See Subsection 2.9.1).

Under the authority of 5 AAC 95, Fish & Game administers Special Areas Permits. Special areas are legislatively designated critical habitat areas, refuges

and sanctuaries. All land use activities in special areas that are likely to have a significant effect on vegetation, drainage, water quality, soil stability, fish, wildlife, or their habitats, or which disturbs fish and wildlife other than lawful hunting, trapping, fishing, viewing and photography, are subject to regulation.

2.10. Local Laws And Applications

2.10.1 Local Laws

Local governments (cities, boroughs, improvement districts) have ordinances and codes that require consideration during design. For example, zoning ordinances can have a substantial effect on the design of a highway and future drainage from an area.

On occasion, a question may arise as to whether the state must comply with local ordinances. Generally, the state is not legally required to comply except where compliance is required by specific state statute. Quite often, however, the state conforms to local ordinances as a matter of courtesy, especially when it can be done without imposing a burden on the state.

2.10.2 Floodplain Ordinances

Typically, the boroughs in Alaska administer floodplain ordinances.

2.10.3 Municipal Liability

A municipality is generally treated like a private party in state drainage matters. A municipality undertaking a public improvement is liable like an individual for damage resulting from negligence or an omission of duty. As a general rule, municipalities are under no legal duty to construct drainage improvements unless public improvements necessitate drainage, as in those situations in which street grading and paving or construction accelerate or alter storm runoff. It is also generally held that municipalities are not liable for adoption or selection of a defective plan of drainage.

Municipalities can be held liable for negligent construction of drainage improvements, negligent maintenance and repair of drainage improvements, and for failing to provide a proper outlet for drainage improvements.

In general, in the absence of negligence, a municipality will not be held liable for increased runoff occasioned by the necessary and desirable construction of storm drains. A municipality will not be held liable for damages caused by overflow of its storm drains occasioned by extraordinary, unforeseeable rains, or

floods. Municipal liability will attach where a municipality:

- Collects surface water and casts it in a body onto private property where it did not formerly flow
- Diverts, by artificial drains, surface water from the course it would otherwise have taken, and casts it in a body large enough to do substantial injury on private land, where, but for the artificial storm drain, it would not go
- Fills up, dams back, or otherwise diverts a stream of running water so that it overflows its banks and flows on the land of another

2.10.4 Acts of Others

The general rule is that a municipality is not liable for the acts of officers, agents, or employees that are governmental in nature, but is liable for negligent acts of its agents in the performance of duties relating to proprietary or private corporate purposes of the municipality.

If the construction, maintenance, and repair of drainage improvements are regarded as proprietary or corporate functions, then a municipality may be held liable for the acts of its officers, agents, or employees for injuries resulting from negligent construction, maintenance, or dangerous conditions of a public facility.

2.10.5 Acts of Developers

Unless an ordinance or statute imposes a duty on a municipality to prevent or protect land from surface water drainage, a municipality will not incur liability for wrongfully issuing building permits, failing to enforce an ordinance, or approving defective subdivision plans. However, there is a trend toward imposing a greater burden of responsibility on municipalities for the drainage consequences of urban development.

2.10.6 Personal Liability

Public employees generally have been personally liable for injuries caused by their negligent actions within the scope of employment, even when the defense of sovereign immunity was available to their employers.

2.10.7 Drainage Improvements

A municipality's inherent police powers enable it to enact ordinances that serve the public health, safety, morals, or general welfare. Ordinances addressing

drainage problems are clearly a proper exercise of a municipality's police powers.

Become acquainted with specific local drainage ordinances that may affect the design.

2.11. Legal Remedies

2.11.1 Common Actions

The most common legal actions through which a complainant may seek legal recourse include inverse condemnation, injunction, tort claims, and legislative claims.

Inverse Condemnation

Inverse (or reverse) condemnation is a legal process by which a property owner may claim damages for loss in value as a result of "taking or damaging" of his or her property and receive compensation when proposed condemnation action has not been instituted by the condemning body.

Injunction

Where a statutory right is violated to the landowner's material injury, courts ordinarily grant an injunction. The injunction could enjoin the highway agency from taking a certain action or require the abatement of a certain condition it created. This does not prevent the recouping of compensation for damages. As a general rule, injunctions may be granted even though the extent of the injury is incapable of being ascertained or computed in dollars.

Tort Claims

In the early development of the law, the courts recognized that whenever it was possible, they should award compensation to people harmed by the actions of others. This was the origin of the theory of tort liability. In essence, a tort, or civil wrong, is the violation of a personal right guaranteed to the individual by law. A person has committed a tort if he or she has interfered with another person's safety, liberty, reputation, or private property. If the injured party can prove the defendant proximately caused harm, the court will hold the defendant responsible for the plaintiff's injury, and the defendant will be forced to pay for the damage.

2.12. Role of the Hydraulic Designer

2.12.1 Responsibility

You as the hydraulic designer have a two-fold responsibility for the legal aspects of highway drainage. First, you should know the legal principles involved

and apply this knowledge to all designs; and, secondly, work closely with the legal staff of your organization, as necessary, in the preparation and trial of drainage cases. Your duties include direct legal involvement:

- To conduct investigations, advise, and provide expert testimony on the technical aspects of drainage claims involving existing highways
- To provide drainage design information during right-of-way acquisition to assist appraisers in evaluating damages and provide testimony in subsequent condemnation proceedings, when necessary

2.12.2 Investigating Complaints

It is imperative that you deal with drainage complaints promptly and in an unbiased manner. This means accepting the fact that the flooding, erosion, diversion, etc. is a serious problem for the complainer, and not accepting anyone's preconceived conclusions.

Assemble and analyze all facts before drawing conclusions on what happened and why. Also, it is best to list any action by others that could possibly be responsible for causing or providing a remedy for the flooding.

For example, when the hydraulic engineer is asked to investigate a flooding complaint, we recommend the following guidelines.

Step 1: Determine Facts about the Complaint

1. Show on a map the location of the problem on which the complaint is based.
2. Clearly determine the basis for the complaint by obtaining information including what was flooded; complainer's opinion on what caused the flooding; description of the alleged damages; and dates, times, and durations of flooding.
3. Briefly relate the history of any other grievances that were expressed prior to the claim presently being investigated.
4. Obtain approximate dates that the damaged property and/or improvements were acquired by those claiming damages.
5. Collect facts about the specific flood(s) involved.
6. Obtain rainfall data including dates, amounts, time periods, and locations of gauges. Rainfall data are often helpful, regardless of the source.

7. Document observed high-water information at or in the vicinity of the claim. Locate high-water marks on a map and specify datum. Always try to obtain high-water marks upstream and downstream of the highway and the time the elevations occurred.
8. Determine the duration of flooding at the site of alleged damage.
9. Determine the direction of flood flow at the damaged site.
10. Describe the condition of the stream before, after, and during the flood(s). Determine if the growth in the channel and floodplain was light, medium, or heavy, and if there were drift jams. Determine whether the stream carries much drift in flood stage. Determine if the flow was fast or sluggish and if light, moderate, or severe erosion occurred.
11. Document the flood history at the site.
12. Determine whether the flood overtopped the highway. If so, determine the depth of overtopping; and, if possible, estimate a flow velocity across the highway.
13. Obtain narratives from any eyewitnesses to the flooding.
14. Obtain facts about the flood(s) from sources outside the Department, such as newspaper accounts, witnesses, measurements by other agencies (USGS, USACE, NRCS) and individuals, maps, and Weather Bureau rainfall records.
15. State facts about the highway crossing involved.
16. Show a profile of the highway across the stream valley.
17. Give the date of the original highway construction and dates and descriptions of all subsequent alterations to the highway.
18. Describe what existed prior to the highway, such as a borough road, city street, or abandoned railroad embankment, etc. Also include a description of the drainage facilities and drainage patterns that were there prior to the highway.
19. Give a description of the existing drainage facilities.

20. Give the original drainage design criteria, or give capacity and frequency of the existing facility based upon current criteria.
21. List possible effects by others.
22. Determine if there are any other stream crossings in the vicinity of the damaged site that could have affected the flooding. Determine if there are any other contributing factors such as pipelines, highways, streets, railroads, or dams.
23. Determine if there have been any significant constructed changes to the stream or watershed that might affect the flooding.

Step 2: Analyze the Facts

From the facts, decide what should be done to relieve the problem regardless of who has responsibility for the remedy. Identify others who may assist.

Step 3: Make Conclusions and Recommendations

1. Determine the contributing factors leading to the alleged flood damage.
2. Specify feasible remedies. This should be done without any regard for who has responsibility to effect a remedy.

The list under Step 1 is not all-inclusive, nor is it intended that the entire list will be applied in each case. This outline is a guide to the type and scope of information desired from an investigation of a drainage complaint. It is advantageous to have available hydraulic design documentation as outlined in the documentation chapter of this manual.

When the investigation report is completed, you should again analyze the facts, consider the conclusions and recommendations, and prepare a response to the complainer explaining the results of the investigation. Documentation of the facts and findings is important in the event there is future action.

2.12.3 Legal Opinion

Drainage matters range from the simple to the complicated. If you ascertain the facts and develop a plan before initiating a proposed improvement, the likelihood of an injury to a landowner is remote and the Department or developer should be able to undertake such improvements relatively assured of no legal complications.

If you need a legal opinion on a particular drainage problem or improvement, state in the request for an opinion as a minimum:

- Whether the watercourse under study has been viewed
- If there are problems involved, and what caused them (obstructions, topography, and development—present and future)
- Whether the proposed improvements will indeed make the situation better
- Whether the proposal requires that the natural drainage be modified
- If there is potential liability for doing something versus doing nothing
- Whether someone will benefit from the proposed improvements
- In general, whether what is proposed is “reasonable”

2.12.4 As A Witness

You should accept the responsibility of providing expert testimony in highway drainage litigation. Witness duty ordinarily requires considerably more time than the time spent in the courtroom. The best use of the hydraulic designer’s time can be arranged by consulting with legal counsel to determine what types of information and data and presentation will be needed, and when testimony will be required.

Testimony often involves presenting technical facts in layperson’s terms so they will be clearly understood by those in the courtroom. Your testimony generally describes the highway drainage system involved in the alleged injury or damage, and how that system affects the complainant. Documentation of design considerations and evidence of conditions existing prior to construction of the highway will be necessary to support all testimony.

2.12.5 Witness Conduct

The hydraulic designer who is to serve as a witness should bear one fact in mind: the purpose of the court is to administer justice. Testimony should have one purpose: to bring out all known facts relevant to the case so that justice can better be served. Following are some pointers in being a witness.

- Tell the truth and do not try to color or change your testimony to help either side.
- Never lose your temper or show prejudice in favor of one side that is not supported by facts.
- Do not be afraid of lawyers, and give your information honestly.
- Speak clearly and loudly enough to be heard by everyone involved in the proceeding.
- If you do not understand a question, ask that it be explained. If you still do not understand what is being asked, explain that you cannot give an answer to that question.
- Answer all questions directly and never volunteer information the question does not ask for.
- Stick to the facts and what you personally know. Do not be apprehensive. Your purpose is to present the facts as you know them and that is all that will be expected.
- If you do not know the answer to a question, just admit it. It is to your credit to be honest, rather than try to have an answer for everything that is asked of you.
- Do not try to memorize your story. There is no more certain way to cross yourself than to memorize your story and try to fit this story with the questions being asked.
- Work with your lawyer in preparing your testimony and stick to the facts as you know them.

2.13. References

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Alaska Department of Transportation and Public Facilities. Current edition, *Alaska Storm Water Pollution Prevention Plan Guide.*

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US Army Corps of Engineers. 1987. *Handbook Of How To Compute A Floodway.* (Copies of this

publication can be obtained from FEMA Region V, 175
West Jackson Blvd., Fourth Floor, Chicago Illinois
60604.)