DELAWARE RIVER BASIN COMMISSION

Administrative Manual - Part III

BASIN REGULATIONS - FLOOD PLAIN REGULATIONS

Adopted November 10, 1976
Effective January 1, 1977

This document contains the full text of Flood Plain Regulations adopted by the Delaware River Basin Commission on November 10, 1976. The regulations went into effect on January 1, 1977.

The standards of flood plain use contained in these regulations apply to the non-tidal portions of the Delaware River and its tributaries. They will be utilized by the Delaware River Basin Commission in reviewing certain categories of water-related projects pursuant to Section 3.8 of the Delaware River Basin Compact. They are also designed as minimum compliance standards to be followed by local units of government in the promulgation of flood plain regulation ordinances.

Attached at the back of this document is a copy of a resolution of policy (No. 76-15) relating to flood damage reduction. This policy was adopted by the Delaware River Basin Commission on November 10, 1976, and will be the framework within which the Flood Plain Regulations are administered.

Questions concerning these regulations should be addressed to Dr. Richard C. Tortoriello, Head, Operations Branch, Delaware River Basin Commission, P.O. Box 7360, West Trenton, New Jersey 08628; phone 609-883-9500.

NO. 76-16

A RESOLUTION to adopt flood plain regulations relating to non-tidal areas of the Delaware River Basin.

WHEREAS, the Commission by Resolution No. 71-12 adopted December 15, 1971, amended the Comprehensive Plan by the addition of a new policy to read as follows:

> "Any project substantially encroaching upon the 100-year flood plain of the Delaware River or its tributaries shall not conflict with standards of flood plain use as approved by the Commission to safeguard the public health, safety and property, or standards of water quality. Neither shall such project conflict with applicable flood plain zoning ordinances or other land use regulations duly established by state or local government agencies," and

WHEREAS, the Commission subsequently engaged the consulting firm of Anderson-Nichols and Co., Inc., for the development of sound criteria and procedures for flood plain delineation; the preparation of general standards relative to the development of flood-prone areas to safeguard health, safety and property; and the application of the criteria and procedures to a pilot delineation study of a major mainstream segment of the Delaware River; and

WHEREAS, the Anderson-Nichols study and report was released in the fall of 1973, and the Commission proceeded to create a Flood Plain Regulation Advisory Committee, comprised of two persons appointed by each Commissioner, to review the consultant's report and to recommend appropriate standards of flood plain use for adoption by the Commission; and

WHEREAS, major portions of the Delaware River Basin are presently not subject to flood plain regulation by state or local agencies, and the Advisory Committee, by its report dated July 1975, recommended a program of flood plain regulation by the Commission, and it is the purpose of the Commission to adopt a comprehensive flood plain management plan for the basin utilizing a range of implementation tools to reduce flood losses and to meet other Compact objectives, including water supply, pollution control, fish and wildlife protection, soil conservation, and provision for recreational opportunities; and

WHEREAS, the range of implementation mechanisms available to the Commission includes flood plain regulations, flood control works, public acquisition of flood-prone lands for open space, conservation and recreational purposes, and project review under Section 3.8 of the Compact (as to new projects), and the Commission is prepared at this time to adopt and administer regulations, including standards and criteria of flood plain regulation and additions to existing project review regulations; now therefore

BE IT RESOLVED by the Delaware River Basin Commission:

1. The Administrative Manual is hereby amended by adding new Articles to Part III, Basin Regulations, to read as follows:

FLOOD PLAIN REGULATIONS

ARTICLE 6-1

GENERAL; DEFINITIONS

Section 6.1 General

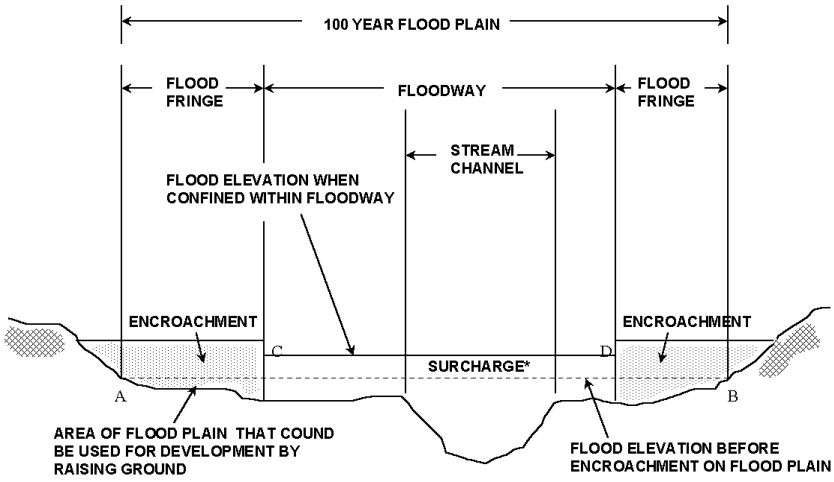
6.1.1 **Short Title.** This Article shall be known and may be cited as the **Flood Plain Regulations**.

6.1.2 **Definitions**. For the purposes of this Article, except as otherwise required by the context:

A. "Project" means the same word as defined in Section 1.2(g) of the Compact.

B. "Floodway" means the channel of the watercourse and those portions of the adjoining flood plains which are reasonably required to carry and discharge the regulatory flood. For this purpose the limit of the floodway shall be established by allowing not more than a one-foot rise of the water surface elevation of the regulatory flood as a result of encroachment. Wherever practical, equal conveyance reduction from each side of the flood plain shall be used. (See Figure 1)

FIGURE 1



LINE A - B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C - D IS THE FLOOD ELEVATION AFTER ENCROACHMENT

*SURCHARGE NOT TO EXCEED 1.0 FOOT (FIA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE

C. "Flood fringe" means that portion of the flood hazard area outside the floodway.

D. "Flood hazard area" means the area inundated by the regulatory flood.

E. "Flood plain" means the area adjoining the channel of a stream which has been or hereafter may be covered by flood water.

F. "Floodproofing" means any combination of structural and non-structural additions, changes, or adjustments to properties and structures which reduce or eliminate flood damage to lands, water and sanitary facilities, structures, and contents of buildings.

G. "Flood protection elevation" means one foot above the elevation of the flood that has a one percent chance of occurring in any one year (The 100-year flood).

H. "Major tributary" means the mainstream of the following streams:

Pennsylvania: Brandywine Creek, Brodhead Creek, Big Bushkill Creek, Lackawaxen, Lehigh, Schuylkill, Neshaminy

New York: East Branch Delaware River, Mongaup, Neversink, West Branch Delaware River

Delaware: Brandywine Creek, Cristina

New Jersey: Assunpink, Musconetcong, Paulins Kill, Rancocas, Pequest

I. "Official flood plain map" means a map showing the flood plain area of a community prepared pursuant to the National Flood Insurance Act, or a map recognized by the Executive Director as meeting equivalent hydraulic or engineering criteria.

J. "Regulatory flood" means the flood which has a one percent chance of occurring in any one year (The 100-year flood).

K. "Structure" means any assembly of material above or below the surface of land or water, including but not limited to, buildings, dams, fills, levees, bulkheads, dikes, jetties, embankments, causeways, culverts, roads, railroads and bridges.

6.1.3 **Purpose and Findings.**

A. The Commission hereby finds and determines that the use of flood plains is affected with a public interest due to:

1. The danger to life and property due to increased flood heights or velocities caused by encroachments.

2. The danger that materials may be swept onto other lands or downstream to the injury of others.

3. The requirements of a facility for a waterfront location.

B. In order to protect the public interest, the following principles and goals have been determined:

1. The overall goal is prudent land use within the physical and environmental constraints of the site.

2. The principle of equal and uniform treatment shall apply to all flood plain users who are similarly situated.

3. Flood plain use shall not result in nuisance to other properties.

4. Flood plain use shall not threaten public safety, health and general affairs.

5. Future land uses in private flood plains shall not result in public expense to protect the property and associated public services from flood damage.

6. All future public and private flood plain users shall bear the full direct and indirect costs attributable to their use and actions.

7. Restrictions on flood plain use, and flood hazard information shall be widely publicized.

8. Land and water use regulations of responsible units of government shall not impair or conflict with the flood plain use standards duly adopted for the basin, except as provided for in Section 6-4.3(A) hereof.

9. Plans for land and water use adopted by responsible agencies shall not impair or conflict with these flood plain use standards.

10. No action of any unit of government shall impair or conflict with these flood plain use standards.

Section 6-2 Types of Projects and Jurisdiction

6.2.1 **Class I Projects.** Projects described in sub-paragraphs A and B below shall be subject to review by the Commission under standards provided by this Article and in accordance with the provisions of Section 6-3 hereof, as follows:

A. All projects subject to review by the Commission under Section 3.8 of the Compact and the regulations thereunder.

B. State and local standards of flood plain regulation.

6.2.2 **Class II Projects.** Class II projects, subject to review in accordance with Article 6-4 hereof, include all projects other than Class I projects, in non-tidal areas of the basin, which involve either:

A. a development of land, either residential or non-residential within a flood hazard area which:

1. includes one or more structures covering a total land area in excess of 50,000 square feet; or

2. contains in excess of 25 residential building lots or 25 dwelling units as part of an integrated development plan whether or not such development is included in a single application; or

B. a development of land in the flood hazard area to mine, manufacture, process, store or dispose of materials which, if flooded, would pollute the waters of the basin or threaten damage to off-site areas, including, without limitation thereto, materials which are poisonous, radioactive, biologically undesirable or floatable.

Section 6.3 Standards

6.3.1 **Regulations Generally.** The uses of land within a flood hazard area shall be subject to regulation within one of the following categories:

A. Prohibited uses

B. Permitted uses generally

C. Uses by special permit

6.3.2 **Prohibited Uses.**

A. Within the floodway, except as permitted by special permit, the following uses are prohibited:

1. Erection of any structure for occupancy at any time by humans or animals.

2. Placing, or depositing, or dumping any spoil, fill or solid waste.

3. Stock piling or disposal of pesticides, domestic or industrial waste, radioactive materials, petroleum products or hazardous material which, if flooded, would pollute the waters of the basin.

4. The storage of equipment or of buoyant materials, except for purposes of public safety.

B. Within the flood fringe, except as permitted by special permit, the following uses are prohibited:

1. Stock piling or disposal of pesticides, domestic or industrial waste, radioactive materials, petroleum products or hazardous material which, if flooded, would pollute the waters of the basin.

2. Any use which will adversely affect the capacity of channels or floodways of any tributary to the main stream, drainage ditch, or any other drainage facility.

6.3.3 **Permitted Uses Generally.**

A. Within the floodway, the following uses are permitted to the extent that they do not require structures, fill or storage materials or permanently installed equipment, and do not adversely affect the capacity of the floodway:

1. Agricultural uses such as general farming, livestock and dairy farming, horticulture, truck farming, sod farming, forestry, wild crop harvesting, and normal operating practices associated therewith.

2. Industrial-commercial uses such as loading areas, parking areas and airport landing strips.

3. Private and public recreational uses such as golf courses, driving ranges, archery ranges, picnic grounds, boat launching ramps, swimming areas, parks, wildlife and nature preserves, game farms, shooting preserves, target ranges, trap and skeet ranges, hunting and fishing areas, hiking and horseback riding trails.

4. Uses such as lawns, gardens, parking areas and play areas.

B. Within the flood fringe, the following uses are permitted:

1. Any use permitted in the floodway.

2. Residences and other structures constructed so that the first floor, including basement, is above the Flood Protection Elevation. When fill is used, the finished fill elevation shall be no lower than the Flood Protection Elevation for the particular area and shall extend at least 15 feet beyond the limits of any structure or building erected thereon.

6.3.4 **Uses by Special Permit.**

A. Within the floodway, the following uses by special permit may be authorized under the standards hereinafter provided:

1. Uses or structures accessory to open space use.

2. Circuses, carnivals and similar transient enterprises.

3. Drive-in theaters, signs and billboards.

4. Extraction of sand, gravel and other non-toxic materials.

5. Marinas, boat liveries, docks, piers, wharves and water control structures.

6. Fish hatcheries.

7. Railroads, streets, bridges, utility transmission lines and pipelines.

B. Within the flood fringe, the following uses by special permit may be authorized under standards hereinafter provided:

1. **Non-residential uses generally.** Structures other than residences shall ordinarily be elevated as herein provided but may in special circumstances be otherwise flood proofed to a point above the Flood Protection Elevation.

2. **Commercial uses.** Commercial structures shall be elevated so that no first floor or basement floor is below the Flood Protection Elevation, or such structures may be flood proofed to the Flood Protection Elevation. Accessory land uses, such as yards, railroad tracks and parking lots may be at lower elevations. However, a permit for such facilities to be used by the general public shall not be granted in the absence of

a flood warning system, if the area is inundated to a depth greater than two feet or subject to flood velocities greater than four feet per second upon the occurrence of the Regulatory Flood.

3. **Manufacturing and industrial uses.** Manufacturing and industrial buildings, structures, and appurtenant works shall be elevated so that no first floor or basement floor is below the Flood Protection Elevation; or such structures may be flood proofed to the Flood Protection Elevation. Measures shall be taken to minimize flood water interference with normal plant operations especially for streams having protracted flood durations. Certain accessory land uses as yards and parking lots may have lesser protection subject to the flood warning requirements set out in 2 above.

4. **Utilities, railroad tracks, streets and bridges.** Public utility facilities, roads, railroad tracks and bridges shall be designed to minimize increases in flood elevations and shall be compatible with local comprehensive flood plain development plans to the extent applicable. Protection to the Flood Protection Elevation shall be provided where failure or interruption of these public facilities would result in danger to the public health or safety, or where such facilities are essential to the orderly functioning of the area. Where failure or interruption of service would not endanger life or health, a lesser degree of protection may be provided for minor or auxiliary roads, railroads or utilities.

5. **Water supply and waste treatment.** No new construction, addition or modification of a water supply or waste treatment facility shall be permitted unless the lowest operating floor of such facility is above the Flood Protection Elevation, or the facility is flood proofed according to plans approved by the Commission, nor unless emergency plans and procedures for action to be taken in the event of flooding are prepared. Plans shall be filed with the Delaware River Basin Commission and the concerned state or states. The emergency plans and procedures shall provide for measures to prevent introduction of any pollutant or toxic material into the flood water or the introduction of flood waters into potable supplies.

Section 6.4 Administration

6.4.1 **Administrative Agency.**

A. Class I projects as defined by Section 6.2-1 hereof shall be subject to review and approval by the Commission.

B. Class II projects as defined by Section 6-2.2 shall be subject to review and approval by a duly empowered state or local agency; and if there be no such state or local agency at any time on and after January 1, 1978, and only during such time, the Commission

may review any such project which has been identified by the Executive Director as having special flood hazards, and: (i) is located along the mainstream Delaware River or a major tributary thereof, or (ii) an agency of a signatory party requests such review.

6.4.2 **Special Permits.** A special permit may be granted, or granted on stated conditions, provided:

A. There is a clear balance in favor of the public interest in terms of the following environmental criteria:

1. The importance of a facility to the community.

2. The availability of alternative locations not subject to flooding for the proposed use.

3. The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.

4. The relationship of the proposed use to any applicable comprehensive plan or flood plain management program for the area.

5. The safety of access to the property in times of flood for ordinary and emergency vehicles.

6. The expected heights, velocity, duration, rate of rise and sediment transport of the flood water expected at the site.

7. The degree to which the proposed activity would alter natural water flow or water temperature.

8. The degree to which archaeological or historic sites and structures, endangered or rare species or animal or plants, high quality wildlife habitats, scarce vegetation types, and other irreplaceable land types would be degraded or destroyed.

9. The degree to which the natural, scenic and aesthetic values at the proposed activity site could be retained.

B. The project shall not:

1. Endanger human life.

2. Have high flood damage potential.

3. Obstruct flood flows nor increase flood heights or velocities unduly whether acting along or in combination with other uses.

4. Degrade significantly the water carrying capacity of any delineated floodway or channel.

5. Increase significantly the rate of local runoff, erosion, or sedimentation.

6. Degrade significantly the quality of surface water or the quality or quantity of ground water.

7. Be susceptible to flotation.

8. Have service facilities installed below the elevation of the regulatory flood without being adequately flood proofed.

6.4.3 **Technical Standards.**

A. Standards used by state and local governments shall conform in principle to Commission standards but may vary in detail provided that resulting flood plain use will not be less restrictive than would result from the application of Commission standards. The Commission will review proposed state and local flood plain regulations to determine their compliance with Commission standards.

B. Because of the variety and diversity of presently recognized hydrologic procedures, no one procedure or method is prescribed for determining the peak flow in cubic feet per second for the 100-year storm (Q 100) on which profiles for the delineation of flood hazard areas are based. The following may be used:

1. A uniform Technique for Determining Flood Flow Frequencies - Bulletin No. 15 - Water Resources Council, December 1967.

2. Basin-Wide Program for Flood Plain Delineation - Delaware River Basin Commission - Anderson-Nichols & Co., Inc., June 1973.

3. Magnitude and Frequency of Floods in New Jersey with Effects of Urbanization - Special Report 38 U.S.G.S. - New Jersey Department of Environmental Protection, 1974.

4. Guidelines for Determining Flood Flow Frequency - Bulletin No. 17 - Water Resources Council, March 1976.

State and local agencies may use methods resulting in Q 100s which are in reasonable agreement with those of the Commission. Any significant difference shall be reviewed with and subject to approval by the Executive Director.

C. Methods and procedures shall be uniform, so far as practicable, within sub-basins which have a major effect on the larger basins of which they are a part. To assist in achieving this objective, the Commission staff will periodically provide to the various interested governmental agencies and others Q 100 data as developed by the Delaware River Basin Commission Hydrology Coordinating Committee for key locations in the Delaware River Basin. These will be based on a Log Pearson Type 3 analysis of data from the U.S.G.S. gaging stations using station skew, regional skew, or weighted skew, depending on the scope of data at each station.

6.4.4 **Mapped and Unmapped Delineations.**

A. Whenever an official flood plain map providing the pertinent information is available with respect to a given project, the map shall be used for delineation of the flood hazard area, floodway, flood fringe and determination of flood protection elevation.

B. Whenever an official flood plain map providing the required information is not available with respect to a given project, the administrative agency shall require the project landowner to submit details concerning the proposed uses as needed to determine the floodway and flood fringe limits at the proposed site, including: cross-sections of the stream channel and overbanks, stream profile, and factors involved in determining obstructions to flow. From the data submitted, soil surveys, historic flood maps, high water marks and other empirical data, the applicant, subject to verification by the administrative agency, shall calculate flood hazard areas and establish the flood protection elevation for the particular site.

C. Pending the preparation and completion of flood plain mapping, a "general flood plain" area shall be prescribed by the administrative agency to delineate for public guidance the areal limits of site locations which are required to be submitted for review under this regulation.

Section 6.5 Enforcement

6.5.1 **General Conditions.** On and after January 1, 1978, where: (i) the flood hazard at the site is clear, present and significant, or the local government having jurisdiction has special flood hazard areas identified pursuant to the National Flood Insurance Act; and (ii) the site is not subject to an approved state or municipal regulatory system having the same or similar effect on the flood hazard as this regulation, the Commission may

condition its approval on any local government project under Section 3.8 of the Compact upon the adoption and enforcement of flood plain regulations, approved hereunder, by the state or local government having jurisdiction.

6.5.2 **Prior Non-Conforming Structures.** A structure which was lawful before the adoption of this regulation but which is not in conformity with the provisions hereof, shall be subject to the following conditions (to be enforced by the appropriate authority as to Class I and Class II projects, respectively, under Article 6-4 hereof):

A. A non-conforming structure in the floodway may not be expanded, except that it may be modified, altered or repaired to incorporate flood proofing measures provided such measures do not raise the level of the 100-year flood.

B. A non-conforming structure in the floodway which is destroyed or damaged by any means, including a flood, to the extent of 50 percent or more of its market value at that time, may not be restored, repaired, reconstructed or improved except in conformity with the provisions of these regulations.

6.5.3 Any violation of this regulation shall be subject to penalties imposed by the Compact.

2. This regulation shall become effective on January 1, 1977.

/s/ John C. Bryson
Chairman, pro tem

/s/ W. Brinton Whitall
Secretary

ADOPTED: November 10, 1976

NO. 76-15

A RESOLUTION to amend the Comprehensive Plan in relation to flood damage reduction policy.

WHEREAS, Article 6 of the Delaware River Compact authorizes the Commission to undertake programs to reduce losses from flood damages throughout the basin; and

WHEREAS, the Commission has developed flood plain regulations, including recommended standards for the use of lands subject to flooding; and

WHEREAS, the Commission's flood plain regulations were widely distributed for public review and comment, and were the subject of a public hearing held in July 1976, and the Commission is now prepared to amend the Comprehensive Plan as it relates to flood damage reduction policy; now therefore

BE IT RESOLVED by the Delaware River Basin Commission:

1. The Comprehensive Plan is amended by deleting that portion of the Comprehensive Plan added by Resolution No. 71-12 and inserting in lieu thereof the following:

Flood Damage Reduction

Flood damage reduction shall be achieved in part through non-structural measures. To that end, no project shall be approved under Section 3.8 of the Compact unless it complies with such regulations and standards relating to the nature and extent of the uses of land in flood plains as the Commission may adopt and from time to time amend pursuant to Section 6.2 of the Compact.

/s/ John C. Bryson
Chairman, pro tem

/s/ W. Brinton Whitall
Secretary

ADOPTED: November 10, 1976