TECHNICAL GUIDANCE

FROM: Department of Energy and Environment (DOEE)
Natural Resources Administration
Regulatory Review Division

DATE: June 1, 2021

SUBJECT: **Guidance for Permit Applicants with Projects in the Regulated Floodplain**

This document provides technical guidance on how to comply with the District's Flood Hazard Rules and Construction Codes. DOEE hopes that this and other technical guidance documents will make compliance and the application and permitting processes easier. Ultimately, however, compliance with the Flood Hazard Rules and Construction Codes is the responsibility of the applicant.

Specifically, this document provides information for building permit applicants on the requirements and documentation necessary for developing projects within the District's regulated floodplain. It is a high-level overview of what DOEE looks for in permit applications and is intended for applicants that have some familiarity with construction and permitting. Please contact flood.risk@dc.gov if you have any questions about this document or have questions about your specific project.

Do the Flood Hazard Rules Apply to Your Project?

Use these two steps to determine if your project is subject to DOEE's Flood Hazard Rules. If the answer to either of these questions is no, then it is unlikely that your project is subject to the Flood Hazard Rules.

- ❑ **Is your property in the Special Flood Hazard Area?**
  To find out, go to FEMA's National Flood Hazard Layer (NFHL) Viewer.

- ❑ **If yes, is your project type a Substantial Improvement, New Construction, or Development?**[1] [2] [3] [4]
  The structure type (residential or non-residential) and the project type will determine the required flood protections. NOTE: Even if you are doing small value repairs or renovations, you must submit a cost estimate for all projects in the floodplain for DOEE to determine if the project meets the definition of substantial improvement. For guidance on creating a cost estimate, refer to the *Determining Costs Guidance*.

Floodplain Review Checklist – All Projects

If you or DOEE determine from the above questions that your project is subject to the Flood Hazard Rules, your project will need to be reviewed by DOEE. The following checklist outlines the information that you will need to provide DOEE for us to review your application.

- ❑ **Provide your project's Design Flood Elevation (DFE)** [5]
  NOTE: DOEE will determine the DFE at a fee of $100, which is assessed in the Surface and Ground Water Database. The minimum elevation of the top of lowest floor and floodproofing of all classes of buildings and structures shall be 2 feet (610 mm) above the Base Flood Elevation (BFE), or the 500-year flood elevation, whichever is higher. Critical facilities have higher design flood elevations in DOEE's proposed rulemaking.

- ❑ **Provide documentation for each type of flood protection used in the project** [6] [7] [8] [9] [10] [11]
  - ❑ **Flood Protection 1**: Elevate the lowest floor to, or above, the DFE
    You must submit an elevation certificate to confirm flood and elevation data. It must be signed and stamped by a licensed surveyor. Check it for correctness: https://crsresources.org/files/300/2019_ec_checklist.pdf. NOTE: For substantial improvements or new construction of residential structures, only Flood Protection 1 is allowed. For substantial improvement and new construction of non-residential structures Flood Protection 1 and 2 are allowed.

  - ❑ **Flood Protection 2**: Dry floodproofing
    You must submit a flood proofing certificate that is signed and stamped by a licensed professional. NOTE: This option is only allowed for a new construction or substantially improved non-residential property. Dry floodproofing residential properties is prohibited.

  - ❑ **Flood Protection 3**: Wet floodproofing
    Enclosed space below the lowest floor must meet design standards for flood vents. You must submit a certificate signed and stamped by a licensed professional for engineered and non-engineered vents. Also, designs must show that the enclosure uses are limited only to parking, access, and/or storage. NOTE: This option is required anytime an enclosure is present. Enclosures are enclosed walled-in areas below the lowest floor of an elevated building.

  - ❑ **Flood Protection 4**: Elevate or Waterproof Utilities, Anchor Tanks, & Use Flood Resistant[12] [13] Materials[14] [15]
    You must submit construction drawings showing these flood protections. NOTE: These flood protections are not required for utilities, tanks, or materials located above the DFE or below the DFE in a dry floodproofed structure. Please refer to the latest addition of ASCE 24 (Flood Resistant Design and Construction).

- ❑ **Submit all certificates and/or FEMA letters to DOEE** [16] [17]

Floodplain Review Checklist – Special Considerations

If your project answers yes to any of the questions below, you may be required to submit additional information to DOEE.

- ❑ **Will your project involve land disturbance?**
  Excavation and grading require an approved Erosion and Sediment Control Plan. Submit this plan with your application.

- ❑ **Will your project involve hazardous materials?** [18] [19][20]
  - ❑ New or substantially improved structures must be elevated or designed and constructed to remain completely dry, up to at least one and one-half feet (1-1/2 ft.) above the base flood; and designed to prevent pollution from the structure or activity during the course of a base flood
  - ❑ You must submit a flood proofing certificate that is signed and stamped by a licensed professional.

- ❑ **Will your project alter a watercourse?**
  If yes, submit an engineering analysis to DOEE[21]

- ❑ **Will your project create any obstructions in a watercourse?**
  The development (e.g. bridges and culverts) must be designed to minimize obstruction [22]

- ❑ **Will your project involve encroachment in a Floodway or any part of the Special Flood Hazard Area?**[23]
  For additional information, refer to the *Encroachment Requirement Guidance.* Application requirements depend on the location of your project as described below

  - ❑ **If the work is in a designated Floodway**[24] [25]
    - ❑ You must submit an encroachment analysis and a "No Rise" certification
    - ❑ If an exception is granted and an increase is allowed by DOEE, you must:
      - fully offset any increase with stream or channel improvements [26]
      - submit a LOMR[27] [28] with justification and notifications to impacted properties and adjacent communities.

  - ❑ **If the work is in a SFHA without a designated Floodway** [29]
    - ❑ You must demonstrate that cumulative impacts will not increase BFE more than 1 foot. DOEE may request an encroachment analysis

  - ❑ **If the work is in a SFHA where BFEs exists, but there is no designated floodway** [30] [31]
    - ❑ You must demonstrate that cumulative impacts will not increase BFE more than 1 foot. DOEE may request an encroachment analysis.

[1] Title 20 DCMR, Chapter 31, Section 3101.3- This Chapter shall be applicable to all applicants for building permits for new construction or development, including substantial improvements, in an SFHA.

[2] Title 20 DCMR, Chapter 31, Section 3105.2-Within SFHAs, the lowest floor (including basement) of any new construction of, or substantial improvement to, residential structures shall be at least one and one-half feet (1-1/2 ft.) above the base flood elevation and shall be verified by an Elevation Certificate (FEMA Form 81-31) or its latest available version from www.fema.gov.

[3] Title 20 DCMR, Chapter 31 Section 3105.3 -Within SFHAs, the lowest floor (including basement) of any new construction of, or substantial improvement to, non-residential structures shall be at least one and one-half feet (1-1/2 ft.) above the base flood elevation or be designed and constructed to be floodproofed during any flood up to that height. Elevation and floodproofing shall be verified by an Elevation Certificate (FEMA Form 81-31) and a Floodproofing Certificate (FEMA 81-65), or their latest available versions from www.fema.gov.

[4] Title 20 DCMR, Chapter 31, Section 3199. Development – any manmade change to improved or unimproved real estate, including but not limited to: buildings or other structures, streets and other paving, utilities, filling, grading, excavation, mining, dredging, drilling operations, storage of equipment or materials, and the subdivision of land.

[5] 12-A DCMR Section 1612.4.1 - The design and construction of buildings and structures located in flood hazard areas…shall be in accordance with Chapter 5 of ASCE 7 and ASCE 24. [The] minimum elevation of the top of lowest floor and floodproofing of all classes of buildings and structures shall be 2 feet (610 mm) above the Base Flood Elevation, or 500-year flood elevation, whichever is higher.

[6] Title 20 DCMR, Chapter, 31, Section 3105.2-Within SFHAs, the lowest floor (including basement) of any new construction of, or substantial improvement to, residential structures shall be at least one and one-half feet (1-1/2 ft.) above the base flood elevation and shall be verified by an Elevation Certificate (FEMA Form 81-31) or its latest available version from www.fema.gov

[7] Title 20 DCMR, Chapter 31, Section 3105.3-Within SFHAs, the lowest floor (including basement) of any new construction of, or substantial improvement to, non-residential structures shall be at least one and one-half feet (1-1/2 ft.) above the base flood elevation or be designed and constructed to be floodproofed during any flood up to that height. Elevation and floodproofing shall be verified by an Elevation Certificate (FEMA Form 81-31) and a Floodproofing Certificate (FEMA 81-65), or their latest available versions from www.fema.gov.

[8] Title 20 DCMR, Chapter 31, Section 3104.4- In addition to the information required by § 3104.3, the following additional data and documentation shall be filed by applicants: (a) For any non-residential structure which will not be elevated, a Floodproofing Certificate (FEMA Form 81-65) or its latest available version from www.fema.gov, certified by a District registered professional engineer or architect that the structure is designed and constructed to be floodproof; (b)For any elevated structure, an Elevation Certificate (FEMA Form 81-31) or its latest available version from www.fema.gov, certified by a District registered professional engineer, land surveyor, or architect.

[9] Title 20 DCMR Chapter 31, Section 3105.4 - For any new construction of, or substantial improvement to, non-residential structures within SFHAs, enclosed space below the lowest floor (including basement) which will be used solely for the parking of a vehicle, building access, or incidental storage in an area other than a basement, shall be designed and constructed to allow for the automatic entry and exit of flood waters for the purpose of equalizing hydrostatic forces on exterior walls. Designs shall be certified by a District registered professional engineer or architect that designs are in accordance with ASCE 24 publication (Flood Resistant Design and Construction) or shall meet or exceed the following minimum criteria: (a) A minimum of two (2) openings having a net total area of not less than one square inch…for every square foot…of enclosed space;
(b) The bottom of all openings shall be no higher than one foot (1 ft.) above grade; and (c) Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

[11] Title 20 DCMR, Chapter 31, Section 3105.6-"The following minimum standards shall apply for all new construction or **development** proposed to be undertaken within any SFHA: (c) Water and sanitary sewer facilities and systems shall be designed as follows: (1) All new or replacement water and sanitary facilities and systems shall be designed in accordance with ASCE 24 publication (Flood Resistant Design and Construction), and located and constructed to minimize or eliminate flood damage and the infiltration of flood waters; (2) Sanitary sewer facilities and systems shall be designed in accordance with ASCE 24 publication (Flood Resistant Design and Construction) to prevent the discharge of untreated sewage into flood waters; and (3) No part of any on-site sewage system, and waste disposal system shall be located within any SFHA except in strict compliance with all local regulations for

such systems. If any such system is permitted, it shall be located so as to avoid impairment to it, or contamination from it, during a flood; (d) All gas lines, electrical, meters, transformers, generators, and telephone systems, and utilities other than water and sanitary sewer systems, shall be located, elevated (wherever possible), and constructed to minimize the chance of impairment during a flood; (k) Electrical distribution panels shall be at least three feet (3 ft.) above the base flood elevation. Separate electrical circuits shall serve lower levels and shall be dropped from above; (l) Water heaters, furnaces, air conditioning and ventilating units, and other electrical, mechanical, or utility equipment or apparatuses shall not be located below the regulatory flood elevation; and (m) All gas and oil supply systems shall be designed to prevent the infiltration of flood waters into the system and discharges from the system into the flood waters. Additional provisions shall be made for drainage of these systems in the event that flood water infiltration occurs."

[12] Title 20 DCMR, Chapter 31, Section 3105.6 (b) All utilities and facilities, such as sewer, gas, electrical, and water systems, are located and constructed to minimize or eliminate flood damage

[13] Title 20 DCMR, Chapter 31, Section 3105.6 (d) All gas lines, electrical, meters, transformers, generators, and telephone systems, and utilities other than water and sanitary sewer systems, shall be located, elevated (wherever possible), and constructed to minimize the chance of impairment during a flood (k) Electrical distribution panels shall be at least three feet (3 ft.) above the base flood elevation. Separate electrical circuits shall serve lower levels and shall be dropped from above; (l) Water heaters, furnaces, air conditioning and ventilating units, and other electrical, mechanical, or utility equipment or apparatuses shall not be located below the regulatory flood elevation and (m) All gas and oil supply systems shall be designed to prevent the infiltration of flood waters into the system and discharges from the system into the flood waters. Additional provisions shall be made for drainage of these systems in the event that flood water infiltration occurs.

[14] Title 20 DCMR, Chapter 31, Section 3105.6 (i)-Floors, walls, and ceilings shall be designed as follows: (1) Wood flooring used at or below the regulatory flood elevation shall be installed to accommodate a lateral expansion of the floor, perpendicular to the flowing grain without causing structural damage to the building; (2) Plywood used at or below the regulatory flood elevation shall be of a "marine" or "water resistant" variety; (3) Walls and ceilings at or below the regulatory flood elevation shall be designed and constructed of materials that are water resistant and will withstand flooding; (4) Windows, doors, and other components at or below the regulatory flood elevation shall be made of metal or other water resistant material; and (5) Wood fasteners used at or below the regulatory flood elevation shall be of a corrosive resistant type (such as hot dipped galvanized or stainless steel)

[15] Paints and adhesives shall be used as follows: (1) Paints or other finishes used at or below the regulatory flood elevation shall be of a "marine" or "water resistant" quality; (2) Adhesives used at or below the regulatory flood elevation shall be of a "marine" or "water resistant" quality; and (3) All wooden components (such as doors, trim, and cabinets shall be finished with a "marine" or "water resistant" paint or other finishing material.

[16] Title 20 DCMR, Chapter 31, Section 3102.2 (e)-Ensuring that all records that are necessary for the administration of this Chapter are maintained and permanently kept, and made available for public inspection, including FIRMs, FISs, Letters of Map Amendment, and Letters of Map Revision, required certifications and documentation specified by this Chapter

[17] Title 20 DCMR, Chapter 31, Section 3102.2 (g)- Ensuring that records of as-built lowest floor elevations or Elevation Certificates, Floodproofing Certificates, and other certifications or proof of compliance required by § 3104 are maintained.

[18] Title 20 DCMR, Chapter 31, Section 3106.2- "Any new or substantially improved structure which will be used for the production or storage of any of the following materials or substances or which will be used for any activity requiring the maintenance of a supply (more than five hundred fifty (550) gallons or other comparable volume, or any amount of radioactive substances) of any of the following potentially dangerous materials or substances on the premises shall be subject to §§ 3106.3 and 3106.4 in addition to any other provisions of this Chapter: (a) Acetone; (b) Ammonia; (c) Benzene; (d) Calcium Carbide; (e) Carbon Disulfide; (f) Celluloid; (g) Chlorine; (h) Hydrochloric Acid; (i) Hydrocyanic Acid; (j) Magnesium; (k) Nitric Acid and Oxides of Nitrogen; (l) Petroleum Products (such as gasoline, fuel, and oil); (m) Phosphorus; (n) Potassium; (o) Sodium; (p) Sulfur and Sulfur Products; (q) Pesticides (such as insecticides, fungicides, and rodenticides); and (r) Radioactive substances, insofar as these substances are not otherwise regulated."

[19] Title 20 DCMR, Chapter 31, Section 3106.3- "Where permitted within any SFHA, any structure of the kind described in § 3106.2 shall be constructed as follows: (a) Elevated or designed and constructed to remain completely dry, up to at least one and one-half feet (1-1/2 ft.) above the base flood; And (b) Designed to prevent pollution from the structure or activity during the course of a base flood"

[20] Title 20 DCMR, Chapter 31, Section 3106.4- " 3106.4 Any structure as described in § 3106.2, or part thereof, that will be built below the regulatory flood elevation shall be designed and constructed in accordance with the standards for completely dry floodproofing contained in the publication Non-Residential Floodproofing – Requirements and Certification (Technical Bulletin 3-93)" or its latest available version by FEMA from www.fema.gov, or with other equivalent watertight standards available in the FEMA library.

[21] Title 20 DCMR, Chapter 31, Section 3104.10- "As applicable to the location and nature of the proposed construction or development, and in addition to the requirements of this section, the applicant shall have the following analyses prepared and sealed by a District registered professional engineer for submission with the site plan: (c) For alteration of a watercourse, an engineering analysis prepared in accordance with standard engineering practices which demonstrates that the flood-carrying capacity of the altered or relocated portion of the watercourse will not be decreased, and certification that the altered watercourse shall be maintained in a manner which preserves the channel's flood-carrying capacity.

[22] Title 20 DCMR, Section 3105.6 (g)- All buildings and structures shall be designed, located, and constructed so as to offer the minimum obstruction to the flow of water and shall be designed to have a minimum effect upon the flow and height of flood water.

[23] 44 CFR 60.3(d)(3): [In the regulatory floodway, communities must] Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

[24] 44 CFR 60.3(d)(3): [In the regulatory floodway, communities must] Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

[25] FEMA 480-"Minor projects: Some projects are too small to warrant an engineering study and the certification. Many of these can be determined using logic and common sense: a sign post or telephone pole will not block flood flows. Barbed wire farm fences that will be pushed over or ripped out early in the flood may also be per- mitted without a certification; however, larger more massive fences could be an obstruction to flood flows and may require an engineering study and certification. A driveway, road or parking lot at grade (without any filling) won't cause an obstruction, either."

[26] Title 20 DCMR, Chapter 31, Section 3105.7-Within any floodway as designated in the FIRM, no development which would result in any increase in the base flood elevation shall be permitted unless the increase in flood elevation is fully offset by stream or channel improvements which have been approved by the Department.

[27] The conditions in the NFIP regulations at 44 CFR §65.12 must be met, including: An evaluation of alternatives that would not result in a BFE increase above that permitted, demonstrating why these alternatives are not feasible; Documentation of individual legal notice to all affected property owners within and outside of the community, explaining the impact of the proposed action on their property; Concurrence of the Chief Executive Officers of any communities affected by the proposed actions; and Certification that no structures are in areas that would be affected by the increased BFE.

[28] Title 20 DCMR, Chapter 31, Section 3104.10 (a) (1)- If the applicant proposes to undertake activities that increase the base flood elevation, the applicant shall submit such analysis to FEMA as specified in § 3105.7 of this chapter and shall have received a Conditional Letter of Map Revision from FEMA

[29] Title 20 DCMR, Chapter 31, Section 3105.8 -Within any SFHA without a floodway, no new construction or development shall be allowed unless it is demonstrated to the satisfaction of the Department that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the base flood elevation more than one foot (1 ft.) at any point.

[31]Title 20 DCMR, Chapter 31, Section 3104.10- As applicable to the location and nature of the proposed construction or development, and in addition to the requirements of this section, the applicant shall have the following analyses prepared and sealed by a District registered professional engineer for submission with the site plan: (c) For activities proposed to be located in any SFHA for which base flood elevations are included in the FIS or on the FIRM and floodways have not been designated, an encroachment analysis which demonstrates that the

cumulative effect of the proposed development, when combined with all other existing and anticipated flood hazard area encroachment, will not increase the base flood elevation more than one foot (1 ft.) at any point