



Mississippi Valley Division,  
Regional Planning and Environment Division South

## South Central Coast Louisiana



Hurricane Ike flooding in Delcambre, Louisiana 2008.

### Appendix K – Nonstructural Implementation Plan

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# Section 1

## Introduction

This Nonstructural Implementation Plan describes the general framework to guide the implementation of the South Central Coast Louisiana project (Project). The Project consists of nonstructural dry and wet floodproofing measures to reduce the risk of flood damages caused by hurricane and storm surge in St. Martin, St. Mary, and Iberia Parishes. The primary goal of the Nonstructural Plan is to reduce flood risk for structures that have a first floor elevation (FFE) at or below the 0.04 Annual Exceedance Probability (AEP) storm surge floodplain, based on hydrologic conditions predicted to occur in 2025 (the beginning of the 50-year period of analysis).

At the time of this Final Report, a structure inventory has been compiled that identifies 2,240 preliminarily eligible structures in the study area that have an FFE at or below the 0.04 AEP storm surge floodplain and which are “economically justified.” This inventory of structures consists of 1,790 residential structures, 233 commercial structures, 32 public buildings, and 185 industrial complexes and warehouses. These structures will require additional structure-specific analysis during the preconstruction engineering and design (PED) phase to determine final eligibility and the most appropriate and cost-effective floodproofing measures to be employed. Property owners who have preliminarily eligible structures that wish to voluntarily participate in the floodproofing measures must submit an application and provide a right-of-entry for their structure/s to undergo an environmental site assessment, appraisal, and other inspections and evaluations to determine the final eligibility of the structure/s for floodproofing. Structures are only eligible for elevation or floodproofing; buyouts are not part of the Project.

The Nonstructural Implementation Plan consists of these floodproofing measures:

1. Elevation of residential structures so that habitable floors are raised to levels (not exceeding 13 feet), which will protect the average residential structure from storm surge flooding at the 0.004 AEP flood stage predicted to occur in 2075.
2. Dry floodproofing of structures so that the occupied floors are dry floodproofed up to 3 feet to protect the structure from storm surge flooding.
3. Wet floodproofing so that the occupied floors are wet floodproofed up to 12 feet for the structure and 6 feet for contents for storm surge flooding.

The USACE and/or the Non-federal Sponsor (NFS) will engage in a public education campaign to inform property owners of the Nonstructural Implementation Plan, including but not limited to eligibility criteria, the application process, responsibilities of property owners to clear title and remediate contaminated properties, and other key information about the Project. USACE and/or the NFS shall prepare and distribute written materials such as project information pamphlets, letters of invitation to participate, and public

meeting notices. In addition, USACE and/or the NFS will issue press releases, and may hold public meetings and workshops, make presentations to homeowner's associations and other civic groups and organizations, and utilize a variety of social media and other public relations methods to inform property owners and tenants of the Project.

Maps of the project area will be prepared and regularly updated to depict the current stage of structure eligibility, structures to be acquired, property addresses, names of the property owners, property line boundaries, locations of hazardous, toxic, and radioactive waste (HTRW), zoning districts, boundaries of regulatory floodways, flood zones, and other important information. It is anticipated that implementation of the Nonstructural Plan will occur over an approximate 25-year period. However, the scale is highly dependent upon the number of structures actually receiving nonstructural measures and the amount of funding allocated in any given year.

## Section 2

# Process for the Elevation of a Residential Structure

If after completion of a structural investigation of the property, USACE determines that the structure is eligible for elevation, the entire foundation of the structure will be lifted and placed on a new foundation (e.g., columns, piers, posted, or raised foundation walls) so that the lowest finished floor is at or above the 0.004 AEP flood stage predicted to occur in 2075. All utilities and mechanical equipment, such as air conditioners and hot water heaters, will also be raised to or above this elevation. Property owners may choose to raise the structure, utilities, and/or mechanical equipment in excess of the predicted 2075 0.004 AEP flood stage; however, costs attributable to elevations in excess of the minimum requirements set forth herein are not eligible and must be borne solely by the property owner. Due to engineering and risk related factors, in no situation will a structure be elevated greater than 13 feet above ground level.

### 2.1 PRELIMINARY ELIGIBILITY

Each residential structure that has an FFE at or below the 0.04 AEP storm surge flood stage, based on hydrologic conditions predicted to occur in 2025 (the beginning of the 50-year period of analysis) will be considered preliminary eligible for elevation of the structure “in place.”

Residential property owners will then be asked to grant a temporary right-of-entry to USACE and the NFS to enter upon the property to conduct such property and structural investigations deemed necessary to determine final eligibility for participation in the Project. These investigations may include, structural inspections, surveys, limited environmental testing and site assessments, verifying current elevation and determining elevation requirements, and conducting such other activities deemed necessary by USACE and the NFS to make a final determination of eligibility. A property owner may elect not to participate at any time prior to execution of an agreement for the performance of the nonstructural measure upon the property. Refusal to grant temporary right-of-entry will constitute the election not to participate.

### 2.2 ELEVATION COSTS

Costs for the following items are considered eligible to be covered:

- Elevation of the structure;
- Raising mechanical equipment (e.g., air conditioner, furnace, water heater, electrical panel, fuel storage, valves, or meters);

- Connecting, disconnecting, and extending utility connections for electrical power, fuel, incoming potable water, wastewater discharge;
- Meeting access requirements of applicable building codes (e.g., stairs with landings, guardrails) or the Americans with Disabilities Act;
- Creating large vent openings in the foundation and walls to meet requirements for floodwater entry and exit;
- In instances where special access improvement (e.g., elevators, lifts, ramps, etc.) may be required (e.g., in the case of physically handicapped or elderly homeowners or occupants) special handicapped access can be considered an eligible improvement when a medical professional/DMV documentation is provided. Multiple access points may also be eligible where necessary to meet state or local building code compliance;
- Removal of any trees which restrict the elevation of a structure;
- Site grading and site restoration including grading landscaping to its preconstruction condition;
- Temporary site protection measures during site work;
- Allowable relocation assistance funds for displaced tenant in accordance with the Uniform Relocation Assistance (URA) and Real Property Acquisition Policies for Federal and Federally Assisted Programs of 1970, Public Law 91-646, 84 Stat. 1984 (42 U.S.C. 4601), as amended by the Surface Transportation and Uniform Relocation Assistance Act of 1987, Title IV of Public Law 100-17, 101 Stat. 246-256. Relocation assistance for tenants may include, among other things, advisory services, differential housing payments, and reimbursement of costs of moving personal property, rental assistance to supplement the costs of leasing a comparable replacement dwelling, or down payment assistance to purchase a replacement dwelling. Landowners whose properties are voluntarily elevated will not be eligible for benefits in accordance with URA; however, tenants of these structures may be eligible for these benefits.

Eligible costs for floodproofing work shall include actual costs (itemized costs for each task), including but not limited to: design costs, costs of obtaining all required permits (e.g., zoning or land use approvals; environmental permits or required certifications; historic preservation approvals; and building permits), and costs of title searches, surveys, appraisal fees, and state and local applicable tax.

If additional work is required as a condition of building permit issuance, and if such work is not listed previously as eligible, the property owner will be required to provide funds equal to the amount of the cost to complete the required work. In no event shall the structure be elevated if it is formally determined that the structure is not physically sound and capable of being raised or floodproofed safely.

The costs that exceed that which is necessary to safely elevate a structure are deemed ineligible costs and any such costs remain the sole responsibility of the structure owner. The following items are ineligible.

- Any structural and system repair due to existing deficiencies;
- Modifications or improvements to a septic system except for extension of lines from the raised structure to the existing system and back flow valves;
- Cost for elevation above the maximum allowable elevation for the eligible structure;
- Modifications to structures that are not attached to the eligible structure;
- Modifications to tubs, pools, spas, hot tubs, and related structures or accessories;
- Modifications to decks and patios not connected to or immediately adjacent to the structure except for modifications that are expressly required by building codes (e.g. stairways and landing modifications);
- The proper remediation, removal and disposal of environmental contaminants including but not limited to (HTRW), lead, asbestos, and asbestos-containing materials in damaged or friable form;
- Costs associated with bringing a non-conforming structure into compliance with current building code, housing code, and/or other applicable codes; and
- Costs associated with special access improvement (e.g. elevators, lifts, ramps, etc.) that are not deemed eligible (as noted in eligible costs above), and improvements to structures not considered the primary residence (e.g. detached garage, shed and/or barns).

## Section 3

# Process for the Dry Floodproofing of Structures

Dry floodproofing consists of sealing all areas below the hurricane and storm surge flood damage risk reduction level of a structure to make it watertight and ensure that floodwaters cannot get inside by making walls, doors, windows and other openings impermeable to water penetration. Generally, dry floodproofing can generally only be performed on the walls and portions of a conventionally built structure from the ground level to up to 3 feet above ground level. Walls are coated with sealants, waterproofing compounds, or plastic sheeting is placed around the walls and covered, and back-flow from water and sewer lines prevention mechanisms such as drain plugs, standpipes, grinder pumps, and back-up valves are installed. Openings, such as doors, windows, sewer lines, and vents, may also be closed temporarily, with sandbags or removable closures, or permanently.

Dry floodproofing of non-residential structures must be performed in accordance with NFIP Technical Bulletin (TB) 3-93, Non-Residential Floodproofing—Requirements and Certification, and the requirements pertaining to dry flood-proofing of non-residential structures found in 44 C.F.R. § 60.3(b)(5) and 44 C.F.R. § 60.3 (c)(4). Design standards identified in Appendix B: Engineering and associated costs identified in Appendix M: Cost Engineering were developed to comply with current standards as of December 2020.

### **3.1 PRELIMINARY ELIGIBILITY**

Each structure that has an FFE at or below the 0.004 AEP flood stage, based on hydrologic conditions predicted to occur in 2025 (the beginning of the 50-year period of analysis) will be considered preliminarily eligible for dry floodproofing of the structure “in place.”

Property owners will then be asked to grant a temporary right-of-entry to USACE and the NFS to enter upon the property to conduct such property and structural investigations deemed necessary to determine final eligibility for participation in the Project. These investigations may include, structural inspections, surveys, limited environmental testing and site assessments, verifying current elevation and determining wet floodproofing requirements, and conducting such other activities deemed necessary by USACE and the NFS to make a final determination of eligibility. A property owner may elect not to participate at any time prior to execution of an agreement for the performance of the nonstructural measure upon the property. Refusal to grant temporary right-of-entry will constitute the election not to participate.

If after completion of the investigation of the property, USACE determines that the structure is eligible for dry floodproofing, applicable methods for three feet of dry floodproofing above ground level will be determined.

Dry floodproofing achieves hurricane and storm surge flood damage risk reduction, but it is not recognized by the NFIP for any flood insurance premium rate reduction when applied to residential structures, and may not be used under the NFIP for new or substantially damaged buildings located in a Special Flood Hazard Area.

### **3.2 DRY FLOODPROOFING COSTS**

These costs are considered eligible to be covered in the case of dry floodproofing:

- Dry floodproofing of the structure
- Installation of backflow valves;
- Closures on doors, windows, stairwells and vents-- temporary or permanent;
- Rearranging or protecting damageable property--e.g., relocate or raise utilities;
- Sump pumps and sub-drains;
- Water resistant material; water resistant window coverings, doors and jambs; waterproof adhesives; sealants and compounds, and floor drains;
- Plastic sheeting around the walls;
- Meeting access requirements of applicable building codes (e.g., stairs with landings, guardrails) or the Americans with Disabilities Act;
- In instances where special access improvement (e.g., elevators, lifts, ramps, etc.) may be required (e.g., in the case of physically handicapped or elderly homeowners or occupants) special handicapped access can be considered an eligible improvement when a medical professional/DMV documentation is provided. Multiple access points may also be eligible where necessary to meet state or local building code compliance;
- Connecting, disconnecting, and extending utility connections for electrical power, fuel, incoming potable water, wastewater discharge;
- Removal of any trees which restrict the dry floodproofing of a structure;
- Site grading and site restoration including grading landscaping to its preconstruction condition; and
- Temporary site protection measures during site work.

Work for items that are eligible costs shall include actual costs (itemized costs for each task), including but not limited to: design costs, costs of obtaining all required permits (e.g., zoning or land use approvals; environmental permits or required certifications; historic preservation approvals; and building permits), and costs of title searches, surveys, appraisal fees, state and local applicable tax. If additional work is required as a condition of building permit issuance, and if such work is not listed previously as eligible, the property owner will be required to provide funds equal to the amount of the cost to complete the required work.

The costs that exceed that which is necessary to safely dry wet proof a structure are deemed ineligible costs and any such costs remain the sole responsibility of the structure owner. The following items are ineligible.

- Any structural and system repair due to existing deficiencies;
- Modifications or improvements to a septic system except for extension of lines from the flood proofed structure to the existing system and back flow valves;
- Cost for dry floodproofing more than 3 feet above ground level;
- Modifications to structures that are not attached to the eligible structure;
- Modifications to tubs, pools, spas, hot tubs, and related structures or accessories;
- Modifications to decks and patios not connected to or immediately adjacent to the structure except for modifications that are expressly required by building codes (e.g. stairways and landing modifications);
- The proper remediation, removal and disposal of environmental contaminants including but not limited to HTRW, lead, asbestos, and asbestos-containing materials in damaged or friable form;
- Costs associated with bringing a non-conforming structure into compliance with current building code, housing code, and/or other applicable codes.

## Section 4

# Process for the Wet Floodproofing of Structures

Wet floodproofing prevents or provides resistance to damage from flooding while allowing floodwaters to enter the structure or area and equalize pressures on foundation walls or lower-level walls. A key feature associated with wet floodproofing are openings to allow floodwaters in, consisting of engineered flood vents in the structure walls. Per FEM TB, 7-93:

*Flooding of a structure's interior is intended to counteract hydrostatic pressure on the walls, surfaces, and supports of the structure by equalizing interior and exterior water levels during a flood. Inundation also reduces the danger of buoyancy from hydrostatic uplift forces. Such measures may require alteration of a structure's design and construction, use of flood-resistant materials, adjustment of building operation and maintenance procedure, relocation and treatment of equipment and contents, and emergency preparedness for actions that require human intervention.*

Wet floodproofing of warehouse structures must be performed in accordance with FEMA TB 1-93, Openings in Foundation Walls for Buildings Located in Special Flood Hazard Areas, and FEMA 259, Engineering Principles and Practices for Retrofitting Flood Prone Residential Buildings, FEMA 348, Protecting Building Utilities from Flood Damage, and the requirements pertaining to floodproofing of structures found in 44 C.F.R. §§ 60.3(b)(5) and (c)(4). Design standards identified in Appendix B: Engineering and associated costs identified in Appendix M: Cost Engineering were developed to comply with current standards as of December 2020.

### 4.1 PRELIMINARY ELIGIBILITY

Each structure that has an FFE at or below the 0.04 AEP storm surge floodplain, based on hydrologic conditions predicted to occur in 2025 (the beginning of the 50-year period of analysis) will be considered preliminary eligible for wet floodproofing of the structure “in-place.”

Property owners will then be asked to grant a temporary right-of-entry to USACE and the NFS to enter upon the property to conduct such property and structural investigations deemed necessary to determine final eligibility for participation in the Project. These investigations may include, structural inspections, surveys, limited environmental testing and site assessments, verifying current elevation and determining wet floodproofing requirements, and conducting such other activities deemed necessary by USACE and the NFS to make a final determination of eligibility. A property owner may elect not to participate at any time prior to execution of an agreement for the

performance of the nonstructural measure upon the property. Refusal to grant temporary right-of-entry will constitute the election not to participate.

If after completion of the investigation of the property, USACE determines that the structure is eligible for wet floodproofing, applicable methods for wet floodproofing at the 0.004 AEP flood stage predicted to occur in 2075 will be determined to protect structures up to 12 feet and contents up to 6 feet.

Wet floodproofing achieves hurricane and storm surge flood damage risk reduction, but it is not recognized by the NFIP for any flood insurance premium rate reduction, and may not be used under the NFIP for new or substantially damaged buildings located in a Special Flood Hazard Area.

## 4.2 WET FLOODPROOFING COSTS

These costs are considered eligible to be covered in the case of wet floodproofing:

- Wet floodproofing of the structure;
- Engineered flood vents;
- Flood-resistant construction materials such as rigid foam board wall insulation or cement board and molding within the interior of the building,
- Elevation of electric outlets,
- Concrete floor treatment and interior wall and floor sealer/stains;
- Crane(s) and the installation of cranes for the elevation of portable equipment/contents;
- Storage racks for the elevation of equipment and inventory;
- Exterior paint coatings;
- Sand/water blasting or other manual removal of rusted coatings and application of epoxy coatings;
- Elevation of mechanical and electrical equipment;
- Elevation of existing first floor offices to 6 feet within wet flood proofed structures;
- Relocation of existing first floor offices within structures modular steel structures elevated 6 feet above ground level adjacent to, and on the same property of, the wet flood proofed structure (only when elevation of first floor offices within the structure is not structurally possible)
- Meeting access requirements of applicable building codes (e.g., stairs with landings, guardrails) or the Americans with Disabilities Act;
- In instances where special access improvement (e.g., elevators, lifts, ramps, etc.) may be required (e.g., in the case of physically handicapped or elderly homeowners or occupants) special handicapped access can be considered an eligible improvement when a medical professional/DMV documentation is provided. Multiple access points may also be eligible where necessary to meet state or local building code compliance;
- Connecting, disconnecting, and extending utility connections for electrical power, fuel, incoming potable water, wastewater discharge;

- Removal of any trees which restrict the elevation of a structure;
- Site grading and site restoration including grading landscaping to its preconstruction condition;
- Temporary site protection measures during site work;

If additional work is required as a condition of building permit issuance, and if such work is not listed as eligible above, the property owner will be required to provide funds equal to the amount of the cost to complete the required work. Work that are eligible costs shall include actual costs (itemized costs for each task), including but not limited to: design costs, costs of obtaining all required permits (e.g., zoning or land use approvals; environmental permits or required certifications; and building permits), and costs of title searches, surveys, appraisal fees, state and local applicable tax.

The costs that exceed that which is necessary to safely elevate a structure are deemed ineligible costs and any such costs remain the sole responsibility of the structure owner. These items are ineligible:

- Any structural and system repair due to existing deficiencies;
- Modifications or improvements to a septic system except for extension of lines from the flood proofed structure to the existing system and back flow valves;
- Cost for wet floodproofing contents beyond 6 feet and structures beyond 12 feet;
- Modifications to structures that are not attached to the eligible structure;
- Modifications to tubs, pools, spas, hot tubs, and related structures or accessories;
- Modifications to decks and patios not connected to or immediately adjacent to the structure except for modifications that are expressly required by building codes (e.g. stairways and landing modifications);
- The proper remediation, removal and disposal of environmental contaminants including but not limited to HTRW, lead, asbestos, and asbestos-containing materials in damaged or friable form;
- And Costs associated with bringing a non-conforming structure into compliance with current building code, housing code, and/or other applicable codes.

## Section 5

# Eligibility Requirements

The structure will be assessed to make sure that these eligibility requirements are satisfied:

- a. The structure is in a condition suitable for human habitation (elevation) or occupation (wet or dry floodproofing);
- b. The structure can be:
  - i. elevated so that, at a minimum, habitable floors are raised to levels (not exceeding 13 feet) which will protect the residential structure from storm surge flooding at the 0.02 AEP flood stage predicted to occur in 2075;
  - ii. dry floodproofing of occupied first floor up to three feet to protect the structure from storm surge flooding at the 0.004 AEP flood stage predicted to occur in 2075; or
  - iii. wet floodproofing for storm surge flooding at the 0.004 AEP flood stage predicted to occur in 2075.
- c. The property is not located on Federal property and leased land;
- d. Based on a signed written certification by the property owner, as confirmed by the assessment, the structure does not have signs of actual or potential significant structural defects, distress, or failure (e.g., no evidence of corrosion of steel framing or concrete; no active water or insect damage to wood framing; no framing that is in obvious need of repair or replacement, no settlement, cracking, buckling, or collapse of the foundation in immediate need of repair or replacement; no damage to load bearing or masonry walls in immediate need of repair or replacement; no damage to veneer or siding, no evidence of unrepairs roof leaks, etc.);
- e. The property owner does not owe taxes or other debts to any state or local governmental entity or to the Federal government;
- f. The property owner has not previously received any disaster assistance for the elevation, dry, or wet floodproofing of the structure;
- g. The structure complies with the building code and floodplain management codes under which the structure was originally permitted;

In the case of non-residential dry and wet floodproofing, unless otherwise limited by state, federal, or local laws or ordinances or structural limitations, the floodproofing option that provides the greatest level of protection at the storm surge flooding at the 0.004 AEP flood stage predicted to occur in 2075 shall be the option available to the owner of the structure.

44 CFR 60.3(d) restricts new development from obstructing the flow of water and increasing flood heights. State and local building and zoning codes must also be taken into consideration in the implementation process. Some zoning codes contain

restrictions on “substantial improvements” to existing non-confirming structures, which require that the entire structure be brought up to current building code requirements which may increase the costs beyond that of the elevation costs alone. In addition, zoning codes may have height restrictions for buildings in residential areas that might affect the ability of certain structures to be raised without obtaining a variance or other form of relief from the zoning code. All elevations shall be considered “development in the floodplain” and will require local permits prior to any onsite construction. Failure to obtain the required local permits may result in a violation of the local floodplain ordinance and/or the NFIP. The elevated structure must comply with the locally adopted floodplain ordinances. The local government with jurisdiction will be responsible for ensuring that the structure is compliant with the NFIP. Only the costs of elevation and foundation retrofitting are eligible costs. No Federal funds will be used to restore, replace, or repair the structure. No additions to the habitable spaces of the structure will be permitted in the performance of the elevation work. Detailed guidance on foundation construction can be found in FEMA 550, “Recommended Residential Construction for the Gulf Coast: Building on Strong and Safe Foundations.”

## Section 6

# Application and Approval Process

The following is a general description of the process that will apply to willing owners of preliminarily eligible structures. If a structure owner who was identified as preliminary eligible does not want their structure raised, they may elect to not participate. If the home is sold, and the Project is still authorized, the new owner(s) may elect to participate.

1. Eligible property owners, who wish to participate in the project, must complete and submit an application, which will include a temporary right-of-entry to USACE and the NFS to enter upon the property to conduct investigations to determine final eligibility of the property for inclusion in the project. A property owner may withdraw the application at any time prior to the execution of a Floodproofing Agreement by the property owner and USACE and/or the NFS. Incomplete applications or applications that contain false or misleading information or substantial errors will not be processed;
2. As part of the application, the property owners must execute an authorization for entry which will grant USACE and the NFS authorization to enter in and upon the structure and land for purposes of investigating, inspecting, surveying, performing required environmental surveys, testing, and site assessments, evaluating the condition of the structure, determining elevation requirements, verifying the current elevation, performing an appraisal, and conducting other activities necessary for USACE to make a determination of structure eligibility;
3. The property owner must submit satisfactory proof of ownership. Proof of ownership shall require a Certificate of Title and a Certificate of Mortgage that identifies the names of all of the owners of the property, as well as any holders of a lease interest, third party interest holders and any holders of a lien or encumbrance against the property. Additionally, the property owner shall provide written verification from the tax assessor that no taxes are due and payable on the property, as well as documentation from any holder of a mortgage, lien, or encumbrance, that the mortgage, lien, or encumbrance is in good standing or has been satisfied and released.;
4. Title research and appraisals will be completed by the NFS to confirm fee ownership and the existence of leases, third party interests and the existence of any liens, judgments or mortgages on the property. The title research will identify the names and addresses of all of the owners of an interest in the property, inclusive of owners of the fee interest, leasehold or third party interest and holders of any liens, mortgages or judgments against the property. The property must have clear title that is not subject to any outstanding right or interest that would present an impediment to the implementation of the project and compliance with the terms of the

- Floodproofing Agreement. To that end, as one of the conditions of being determined to be eligible to participate in the project, the property owner shall be responsible to clear the title of all ownership issues and to obtain any necessary release instruments or subordination agreements, in accordance with the conditions and requirements deemed necessary by the Government, from holders of leases, liens, judgments, encumbrances, or third party interests at the property owner's sole expense. The failure by the property owner to provide title documentation that the Government deems satisfactory to establish clear title shall result in a determination by the Government of ineligibility of the structure to participate in the non-structural project.;
5. An ASTM Phase I Environmental Site Assessment (ESA) and Asbestos investigation (and if warranted, additional HTRW investigations and a Phase II, ESA), inspections, surveys and boundary monumentations will be completed. An ESA Report shall be prepared and shall include an HTRW and asbestos certification. The report shall state whether the property is "clean" and cleared to proceed with the elevation process; or shall identify miscellaneous debris (e.g. appliances, junk vehicles and parts, general debris, etc.) that must be cleaned up or removed from the property; or shall identify that there is the potential for HTRW on the property and state that a Phase II ESA is required for further evaluation. The property owner shall be notified in writing of the results of the Phase I ESA. If the Phase I ESA indicates the potential presence of HTRW on the property, the property owner shall be notified in writing the property has been identified for potentially HTRW. The notice shall also request the property owner to execute a separate right-of-entry for the HTRW investigations and the performance of a Phase II ESA. In addition, the notice shall advise the property owner that if contamination is found, the property owner be responsible for all costs of clean-up under state and Federal laws (regardless of whether the property owner participates in the project), and that if the property owner refuses to provide the additional right-of-entry for the Phase II ESA, the property owner will be removed from project eligibility. The property owner shall be notified in writing of the results of the Phase II ESA. If the Phase II ESA identifies contamination, the property owner will be notified in writing of the remediation that is required to be performed, at the owners cost and expense, that the work must be performed by a licensed HTRW remediation professional and that documentation from a third party licensed HTRW remediation profession must be provided to the Government with sufficient evidence to support that the contamination has been successful and properly remediated is required before a final determination on eligibility can be made.;
  6. A NFIP compliance and permit application will be completed on each structure. Design compliance with NFIP technical standards will be prepared and final compliance documented with local permitting requirements prior to execution of the Floodproofing Agreement. Coordination of NFIP compliance should be completed with each parish floodplain manager. Floodplain managers are listed at <http://maps.lsuagcenter.com/floodmaps/>.

A determination that a structure is qualified for elevation, wet, or dry floodproofing will be made after all inspections, investigations, assessments, title research and all other work required to determine eligibility for elevation, wet, or dry floodproofing is complete and prior to the development of the elevation scope of work. The Floodproofing Agreement will authorize USACE, the NFS, or their contractors to enter the property for purposes of implementing the floodproofing action and for inspection and enforcement purposes, and will include the agreement of the property owners to hold harmless the NFS and USACE for any damages arising from the floodproofing work, and a covenant running with the land shall be executed by all owners of the property.

## Section 7

# Hurricane Storm Surge Damage Risk Reduction Actions to be taken by the NFS in St. Martin, St. Mary, and Iberia Parishes

Hurricane and storm surge flood damage risk reduction actions taken to comply with Section 402 of the Water Resources Development Act of 1986, as amended (33 U.S.C. 701b-12) will be the obligation of the NFS, which will work to ensure development, compliance and enforcement by municipal and Parish governments in St. Martin, St. Mary, and Iberia Parishes with local floodplain management plans and regulations, adoption of more stringent local floodplain regulations, adoption of more restrictive parish and municipal building codes, land use and zoning regulations, and other developmental controls.

The NFS obligations in this regard include:

- Not less than once each year the NFS will inform affected interests of the extent of protection afforded by the NED Plan;
- The NFS will participate in and comply with applicable Federal floodplain management and flood insurance projects.
- The NFS will comply with Section 402 of the Water Resources Development Act of 1986, as amended (33 U.S.C. 701b-12), which requires a non-Federal interest to prepare a floodplain management plan within 1 year after the date of signing the Project Partnership Agreement (PPA), and to implement such plan not later than 1 year after completion of construction of the NED Plan, or functional elements of the NED Plan. The plan shall be designed to reduce the impacts of future hurricane and storm surge flood events in the project area, including but not limited to, addressing those measures to be undertaken by non-Federal interests to preserve the level of hurricane storm surge risk reduction provided by the NED Plan. The NFS will provide an information copy of the plan to USACE upon its preparation.
- The NFS will publicize floodplain information in the area concerned and will provide this information to zoning and other regulatory agencies for their use in adopting regulations, or taking other actions, to prevent unwise future development and to ensure compatibility with hurricane and storm surge flood risk reduction levels provided by the NED Plan.

Additionally, the NFS will be obligated to prevent obstructions or encroachments on the properties that have been flood proofed (including prescribing and enforcing regulations

to prevent such obstructions or encroachments) or the addition of facilities which might reduce the level of protection the NED Plan affords, hinder operation and maintenance of the NED Plan, or interfere with the NED Plan's proper function. Presently, St. Martin Parish, St. Mary Parish, and Iberia Parish, including the cities and towns of Arnaudville, Morgan City, New Iberia, St. Martinville, Henderson, Jeanerette, Franklin, Breaux Bridge, Broussard, Baldwin, Berwick, Loreauville, Parks Village, Patterson, and Chitimacha Tribe of Louisiana who hold tribal/reservation lands within the sturdy area, are all communities participating in the NFIP (See: FEMA Community Status Book, Louisiana October 2019; <https://www.fema.gov/cis/LA.html>).

## 7.1 IMPLEMENTATION METHOD

The project will use the traditional method of implementation. The “traditional method” of implementation is generally described in publications of the USACE National Floodproofing Committee and Flood Risk Management Planning Center of Expertise. Under the traditional method, the USACE District utilizes a Federal procurement to obtain design and construction contractors for the various floodproofing and elevation measures. The Government will procure contracts that will allow a contractor to perform floodproofing work on multiple structures through a series of one or more task orders and who will be responsible for all work associated with flood risk mitigation approval of the engineering plans for each structure to final inspection.

The property owner enters into a Floodproofing Agreement with USACE that will authorize USACE, the NFS, or their contractors to enter the property for purposes of implementing the floodproofing action and for inspection and enforcement purposes, and will include the agreement of the property owners to hold harmless the NFS and USACE for any damages arising from the floodproofing work, and a covenant running with the land shall be executed by all owners of the property.

Elevation and floodproofing of eligible structures will require that the NFS acquire an easement as a part of the agreement, which runs with the land, and prohibits conversion or occupancy of any part of the structure located below the lowest habitable finished floor for human habitation and prohibits the alteration of the structure in any way to impede the movement of flood waters under the structure. The easement language included will also prohibit the construction of any other structure in a manner that would impede the movement of floodwaters under the structure. The draft easement language will be submitted through CEMVD to CEHQ-RE as a request for approval of a Non-Standard Estate.

The executed agreement will be recorded, by the NFS in the appropriate public records of the parish where the property is located. A Certificate of Occupancy must be issued by a qualified building official to certify that the construction was properly completed. When the elevation or floodproofing work is completed, all structures must be covered by flood insurance in an amount at least equal to the costs of the floodproofing work or to the maximum limit of coverage made available with respect to the property, whichever is less. Upon completion of the elevation or floodproofing a professional land

surveyor and verifying that the structure has been elevated to the required elevation. The final inspection checklist shall be signed by the local floodplain administrator/coordinator. Upon completion of the elevation or floodproofing of each structure, a Notice of Construction Completion is issued by USACE to the NFS. The NFS is responsible for ensuring and maintaining compliance with any enforceable restrictions for the structure and property. The property owner is required to operate and maintain the integrity of their specific nonstructural measures.

## **7.2 VARIOUS METHODS FOR PRIORITIZING THE NONSTRUCTURAL ELEVATION WORK**

Any implementation of a decision on scheduling or prioritization will be subject to the availability of Federal funds. Some of the methods for scheduling or prioritizing nonstructural elevation work that will be considered are as follows; however, additional methods of scheduling or prioritizing such work may be considered:

*Structures included in the Project’s Feasibility Report and in the 2017 Coastal Protection and Restoration Authority (CPRA) Master Plan*

The South Central Coast Feasibility Report identifies 2,240 structures preliminary eligible for elevation, dry, or wet floodproofing. The CPRA, through the 2017 Louisiana Comprehensive Master Plan (<https://coastal.la.gov/our-plan/2017-coastal-master-plan/>), has also identified and prioritized structures. This approach would rank inclusion in both the *2017 CPRA Master Plan* and the South Central Coast Project as the main factor in determining which eligible properties should be prioritized.

### **7.2.1 Clustering**

If numerous property owners in a contiguous neighborhood or subdivision agree to participate, that particular area could be targeted for priority in structure elevation implementation. A focus on clustered properties can create a ranking hierarchy of which properties to address first. The size of a cluster would need to be defined but could consist of zip codes or neighborhoods. This approach would rank efficiency as the main factor in determining which eligible properties should be prioritized.

### **7.2.2 Clustering Based on Low-income or Environmental Justice Communities**

The methodology would identify populations that are exposed to high levels of environmental stressors and are low-income or minority populations within the project area using up-to-date economic statistics, aerial photographs, and U.S. Census Bureau 2013-2017 American Community Survey (ACS) estimates. EPA has developed a new environmental justice (EJ) mapping and screening tool called EJSCREEN, which is based on nationally consistent data and an approach that combines environmental and demographic indicators in the form of EJ indexes. EJSCREEN relies on the 2013-2017 ACS 5-year summary file data. This approach would rank environmental and demographic data as the main factor in determining which eligible properties should be prioritized.

### 7.2.3 Risk-Level

Willing property owners may not exist in clusters. In such cases, an alternative option is to focus on the willing property owners that exhibit the highest risk for flood damages. For example, if 1,000 property owners execute Floodproofing Agreements, the owners who reside in the 0.5 AEP floodplain would be prioritized for construction. Once these properties are elevated, the next highest-risk properties (0.2 AEP floodplain) would be targeted. This approach would rank risk exposure as the main factor in determining which eligible properties should be prioritized.

### 7.2.4 First-Come, First-Served

This approach would involve creating a list of eligible property owners and ranking them by how quickly their contracts and eligibility documentation are processed. This approach would help ensure that resources would be used effectively by focusing on properties that have owner support for the floodproofing measures.

## 7.3 OPERATIONS AND MAINTENANCE

A draft Operations and Maintenance Manual (O&M Manual) shall be provided to the NFS as early as possible in the period of implementation because USACE will issue a Notice of Construction Completion (NCC) for each floodproofed structure and acquired lands once the floodproofing or acquisition is complete. At the time of the issuance of an NCC, the NFS's obligations for operation and maintenance for the subject structure or lands commences. Flood proofed structures and acquired tracts shall be considered a separable element and functional portion of the Project. USACE shall have no operation and maintenance responsibilities. Enforcement of restrictive Covenants including those contained in Floodproofing Agreements or deeds of conveyance and subordination/release agreements is the sole responsibility of the NFS. The NFS shall conduct periodic inspections at the intervals specified in the O&M Manual to ensure that all Covenants executed by property owners participating in the project are being followed and adhered to and shall provide written certifications to USACE that the structures and lands have been inspected and that no violations have been found. The inspections will determine among other things, that no part of the structure located below the level of the lowest habitable finished floor has been converted to living area for human habitation or occupancy, or otherwise altered in any manner which would impede the movement of waters beneath the structure; that the area below the predicted 2075 0.004 AEP flood stage is being used solely for the parking of vehicles, limited storage, or access to the structure and not for human habitation; that mechanical, electrical or plumbing devices have not been installed below the BFE; that the property is in compliance with all applicable floodplain ordinances and regulations. USACE shall have the right, but not the obligation, to perform its own inspections of the flood proofed structures and lands acquired pursuant to the project.

## 7.4 PRIOR REPORTS AND GUIDANCE USED IN FORMULATING THE NONSTRUCTURAL PLAN

In preparing this Plan, the SCCL Project Delivery Team (PDT) reviewed numerous nonstructural floodproofing plans, reports, and publications from the USACE National Floodproofing Committee, other USACE Districts, and other state and Federal entities that have administered and are administering nonstructural plans and projects, specifically including FEMA. Projects reviewed for lesson learned were completed under a separate Congressional authorities and then provided by the USACE non-structural mission and that, therefore, they were subject to differing authorized purposes and conditions for implementation.

The PDT also communicated extensively with the Vertical Team. The elevation and floodproofing projects that were reviewed by the PDT include, but are not limited to: Southwest Coastal (CEMVN), the Huntington District Nonstructural Flood Reduction Projects SOP and related documents; the Mill Creek Risk Management Study (Nashville District); the City of Tehama, CA Flood Damage Reduction Project (Sacramento District); the Wayne County (Tug Fork) Nonstructural Project, Wayne County, West Virginia; the Fargo-Moorehead Metropolitan Area Flood Risk Management Project, North Dakota and Minnesota (Omaha District); Pierre-Fort Pierre South Dakota Elevation Project (Omaha District); Tug Fork Basin Elevation Project (Huntington District) Upper Des Plaines River and Tributaries Feasibility Study (Chicago District); Mississippi Coastal Improvements Project (Mobile District); Dry Creek, TN Project (Nashville District); the King County, WA Elevation Project; the Snohomish, WA Elevation Project; State of New York Home Elevation Pilot Project; Louisiana Coastal Protection and Restoration Final Technical Report and Nonstructural Plan Component Appendix; Snoqualmie, WA Home Elevation Project; Bucks County, PA Home Elevation Project; FEMA Hazard Mitigation Grant Projects.

The PDT also utilized the following materials: CECW-PD Implementation Guidance for Section 219 of the Water Resources and Development Act of 1999, Nonstructural Flood Control Projects (22 Jan. 2001); Memorandum between FEMA and USACE regarding Joint Actions on Planning for Flood Risk Management Projects dated June 2012. Section 308 of the Water Resources Development Act of 1990; Executive Order 11988, "Floodplain Management" (24 May 1977) as amended (Jan. 2015); FEMA Revised Guidelines for Implementing Executive Order 11988, Floodplain Management; FEMA P-467-2, National Flood Insurance Project, Floodplain Management Bulletin, Historic Structures (May 2008); EP 1165-2-314 "Floodproofing Regulations" (15 Dec. 1995); ER 1165-2-25 "Implementation of Executive Order 11988 on Flood Plain Management" (30 March 1984); ER 1105-2-100 Section III "Flood Damage Reduction" (22 April 2000); ER 1105-2-101 "Risk Analysis for Flood Damage Reduction Studies" (3 Jan 2006); EM 1110-2-1619 "Risk Based Analysis for Flood Damage Reduction Studies" (1 Aug 1996); USACE National Floodproofing Committee, "Non-Structural Flood Damage Risk Reduction within the Corps of Engineers- What Districts are Doing" (October 2001); National Floodproofing Committee, "Implementation of Nonstructural Projects" (August 2013); Non-Structural Flood Damage Risk Reduction within the Corps of Engineers,

(Oct. 2003); Coastal Risk Reduction and Resilience: Using the Full Array of Measures, USACE, Civil Works Directorate, (Aug. 2013); National Economic Development Procedure Manual, IWR Report 09-R-2, June 2000 (Overview Manual by USACE); ER 405-1-16 “Relocation Assistance Project” (1 Jan. 2014); Section 73 of the Water Resource and Development Act of 1974; Section 219 of the Water Resource and Development Act of 1999; Section 308 of the Water Resource and Development Act of 1990; 33 U.S.C Section 2213 “Flood control and other purposes;” FEMA Community Status Book Report, Louisiana (2015); FEMA, “Procedures for Developing Scopes of Work for the Elevation of Flood Prone Structures” (Jan. 2005); FEMA P-347 “Above the Flood: Elevating Your Flood-Prone House;” City of Lake Charles, Louisiana Floodplain Management Regulations; Calcasieu Parish Police Jury, Code of Ordinances, Article IX, Flood Plain Management; 44 CFR Parts 59 and 60.

## Section 8

# Definitions

Term	Definition
Preliminary Structure Eligibility Criteria	To be considered preliminarily eligible for participation in the Nonstructural Project, a structure must meet the following criteria: <ol style="list-style-type: none"><li>1. Have a first floor elevation (FFE) at or below the 0.04 AEP flood stage, based on hydrologic conditions predicted to occur in 2025 (the beginning of the 50-year period of analysis)</li></ol>
0-25-Year Storm Surge Floodplain	The 0-25-Year Storm Surge Floodplain is defined as having up to a 4% chance of being exceeded in any given year.
Base Flood	Defined by the National Flood Insurance Project (NFIP) as the “flood having a 1% chance of being exceeded in any given year and is also called the 100-year flood”.
Base Flood Elevation (BFE)	The computed elevation to which floodwater is anticipated to rise during the base flood. The BFE is shown on community's Flood Insurance Rate Map (FIRM).
Contamination	In addition to the definition of HTRW substances, contamination may also include lead based paint, asbestos or asbestos containing materials.
Economically Justified	The cost to elevate the structure does not exceed the total monetary cost of the flood damages that are anticipated to be avoided over the 50-year period of analysis (years 2025-2075).
Eligible structures	Structures that are determined by the United States Army Corps of Engineers (USACE) to be eligible for floodproofing after the completion of the investigations and analyses as described herein.
Floodproofing	As defined by the Federal Emergency Management Agency (FEMA) in 44 CFR, Chapter 1, Part 59, means any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

Hazardous, Toxic, or Radioactive Waste (HTRW)	HTRW means hazardous, toxic and radioactive waste as more specifically defined in Engineer Regulation (ER) 1165-2-132, “Hazardous, Toxic, and Radioactive Waste (HTRW) Guidance for Civil Works Projects”.
Non-Federal Sponsor (NFS)	The NFS is the cost-sharing partner for the study, design, and construction phases of the project.
Nonstructural Flood-proofing Measures	Nonstructural Floodproofing Measures are permanent or contingent measures applied to a structure and/or its contents that prevent or provide resistance to damage from flooding. Nonstructural Flood Proofing measures differ from Structural Floodproofing measures (e.g., levees, floodwalls, etc.) in that they focus on reducing the consequences on flooding instead of focusing on reducing the probability of flooding.