Tar-Pamlico River Basin Flood Risk Management Feasibility Study

Appendix H. Nonstructural Implementation Plan

US Army Corps of Engineers

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TABLE OF CONTENTS

1. Introduction 3
1.1. Leveraging National Assets for Success 3
1.2. Historic Properties 3
2. Recommended Plan 3
3. Project Implementation 4
3.1. Acquisition Strategy 4
3.2. Determining Eligibility 5
3.3. Execution and Recordation of Agreement 6
3.4. Commencement of Construction 7
3.4.1. Structure Elevation and Floodproofing 7
3.4.2. Structure Floodproofing 8
3.4.3. Target Design Elevation 8
3.5. Notice of Construction Complete (NCC) 9
3.6. Eligible Project Costs: 9
3.6.1. Structure elevation 9
3.6.2. Structure Floodproofing 10
3.6.3. Historic Structures 10
3.7. Ineligible Project Costs 11
4. Federal Procurement Implementation Method 11
5. Prioritization Strategy for Nonstructural Measures 12
5.1. Clustering 12
5.2. Risk-Level 12
6. Operations, Maintenance, Repair, Rehabilitation and Replacement (OMRR&R) 12

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1. Introduction

This Nonstructural Implementation Plan outlines resources and describes general procedures for the implementation of nonstructural measures. Nonstructural measures work to reduce the consequences, and therefore the economic and life-safety impacts, of riverine flooding. The recommended plan for the Tar-Pamlico River Basin was developed with the intention of reducing flood damages through the implementation of nonstructural measures as described in this document.

1.1. Leveraging National Assets for Success

The U.S. Army Corps of Engineers (USACE) recognizes that there are unique challenges related to implementing a relatively large nonstructural plan. Because of this, USACE has proactively leveraged national experts in the planning, design, and construction of nonstructural measures. Within the enterprise, these groups include the USACE National Nonstructural Committee and Flood Risk Management Center of Expertise. The non-Federal sponsor (NFS), the North Carolina Department of Environmental Quality (NCDEQ), has also provided valuable information pertinent to the project. The USACE places a priority on continuing this coordination during Preconstruction Engineering and Design (PED) and construction, and sharing lessons learned with other USACE teams.

1.2. Historic Properties

Each of the nonstructural measures has the potential to cause adverse effects to historic properties. A Section 106 Programmatic Agreement will be executed for this plan and identify the process by which USACE will determine which of the participating structures are historic properties (see Appendix C). This process also includes conducting archaeological investigations associated with structures determined to be historic properties. The investigations, coordination and consultation required by the Section 106 Programmatic Agreement and any resulting mitigation will be conducted after participating structures are identified but before any of the nonstructural measures identified below are carried out. Where possible, the Secretary of the Interior's Guidelines on Flood Adaptation for Rehabilitating Historic Buildings, Standards for Rehabilitation, and other appropriate historic resources guidelines or standards will be taken into consideration. Implementation of this PA, and completion of all needed identification (i.e., surveys), avoidance and minimization efforts of historic properties will be completed during PED and covered by funds allocated in the 30 account for Planning and Environmental Compliance. It is expected that implementation of the PA will require most of the funds within this account. If adverse effects on historic properties cannot be avoided or minimize, then mitigation efforts will be covered by contingency.

2. Recommended Plan

The recommended plan for the Tar-Pamlico River Basin Flood Risk Management

Feasibility Study, as shown in Chapter 5.2 of the integrated feasibility report/environmental assessment (EA), includes the following:

- Elevation and Flood Venting:
  - Structure Elevation – 35 structures
  - Structure Flood Venting – 8 structures
  - Elevation and Flood Venting - 18 structures
- Dry Floodproofing:
  - Structure Dry Floodproofing – 94 structures

Per USACE Planning Bulletin (PB) 2016-01 "Clarification of Existing Policy for USACE Participation in Nonstructural Flood Risk Management and Coastal Storm Damage Reduction Measures," dated 22 December 2015, and PB 2019-03 "Further Clarification of Existing Policy for USACE Participation in Nonstructural Flood Risk Management and Coastal Storm Damage Reduction Measures," dated 13 December 2018, structure elevation and floodproofing will be implemented on a voluntary basis, allowing property owners to choose whether or not to participate in this plan.

The specific nonstructural measures to be implemented at each structure/property will be reviewed and refined in the PED phase to ensure that the proposed measures, and the potential participants are appropriately identified. Property owners included in the final recommendation arising from the Tar-Pamlico River Basin Flood Risk Management Study will be informed of the details of project implementation, including eligibility criteria, the eligibility process, and the related duties and obligations of USACE, the NFS and the property owner.

If the structure owner does not want to participate in this plan, USACE and the NFS would defer any further action on that structure until such time as the structure owner elects to participate or until the period of construction ends for the Project, which is expected to end 10 years after the period of construction begins. The Government reserves, at its sole discretion, the right to determine whether or not a structure may be included in the recommended plan after a structure owner has declined participation, and if allowed to participate, the timing and scheduling of such participation in the plan.

3. Project Implementation

3.1. Acquisition Strategy

The implementation of this plan will utilize a federal procurement process to obtain design and construction contractors for the various nonstructural measures. The Government will procure contracts that will allow a contractor to perform nonstructural measures on multiple structures through a series of one or more design-build task orders. The Contractor will also be responsible for eligible work associated with the elevation including the final design of the nonstructural measure, obtaining the required local, state, and

federal permits, and all necessary elements to complete construction to desired intent.

3.2. Determining Eligibility

As of the date of this Implementation Plan, an initial inventory has been compiled which identifies 61 residential structures in the study area that have been deemed preliminarily eligible for elevation and/or flood venting and 94 non-residential structures for dry floodproofing. The USACE and NFS will require additional structure-specific analysis during PED to determine final eligibility, which could result in structures being removed prior to implementation.

Eligibility: Owners of eligible structures may voluntarily participate in having their residential structure elevated or non-residential structure floodproofed. Individual structure inspections will occur on each potentially eligible structure for which the owner has made application to participate. The inspection team will be comprised of USACE specialists, the non-Federal Sponsor, and a design/construction contractor of the USACE. A property owner may elect not to participate at any time prior to execution of an agreement for the implementation of the nonstructural measure upon the property. Refusal to grant temporary right-of-entry will constitute the property owner not electing to participate.

Site Investigations: The following is a general overview of the site investigations that will be required for those structures deemed eligible. Additional details concerning the process, eligibility criteria, and related requirements will be developed during PED and provided prior to project implementation.

- The property owner will be required to grant a temporary right-of-entry to USACE, their contractor, and the non-Federal Sponsor to enter the property to conduct investigations necessary to determine final eligibility for participation in the project. The inspection may include activities such as structural wall and foundation integrity assessments, mechanical equipment assessment, surveys, limited environmental testing for hazardous and toxic materials or wastes, utility inspections, and a site investigation verifying existing elevations, and conducting such other activities deemed necessary by USACE and the non- Federal Sponsor to make a final determination of eligibility for implementation of nonstructural measures.

- The property owner shall submit all requested documentation to the NFS, which may include:

    - Proof of ownership: Legal description of the property, deed, or a tax assessor's receipt. This should identify the names of all owners of the property and provide information regarding the names and addresses of all third-party interest holders and any holders of a lien or encumbrance against the property.

    - Signatory authority: In instances involving the representation of a person or persons whose signature is required for any document, subordination, or release that may be required to be executed, either through a trust, agency,

succession, partnership, business, or corporation or any other form of representation under law or contract, documentation will be provided along with the title evidence that documents the identity, powers, and authorities of the person or persons authorized to act on behalf of the required signatory.

- The NFS shall conduct title research to confirm the property has clear title and appraisals that may be necessary.
- An ASTM Phase I Environmental Site Assessment (ESA) and asbestos investigation may be conducted to confirm the absence of HTRW and damaged or friable asbestos or asbestos-containing materials. Asbestos, if found, will be dealt with by the contractor on a case-by-case basis in accordance with applicable state and local laws, including handling and proper disposal. HTRW and CERCLA concerns, if discovered during PED, must be dealt with by the property owner before nonstructural flood risk mitigation measures are implemented. The property owner shall be obligated, at their sole cost and expense, to conduct all necessary response and remedial activities in full compliance with applicable local, state, and federal laws and regulations and provide proof of same before the structure can be deemed to have met the eligibility requirements.
- The property will be evaluated by USACE to ensure that each of the following criteria are satisfied:
    - If a structure is proposed for elevation, that the structure can be elevated to meet the target design elevation.
    - If a structure is proposed for elevation, that the structure is in a condition that is suitable for elevation without the need for repair or rehabilitation as determined by a professional registered structural engineer. Any repair or rehabilitation necessary to achieve that condition will be at the sole cost and expense of the property owner (see 3.5 “Eligible Project Costs” below).
    - Implementation of nonstructural measures will not impact threatened or endangered species.
    - Implementing nonstructural measures on the property does not require fill in the waters of the United States and would not result in any impact to wetlands.
    - The property has not previously received any disaster assistance for the elevation of the structure. Situations where the property owner received assistance for a flood-related repair to their structure that was not elevation or floodproofing will be examined on a case-by-case basis. Confirmation of previous assistance should be coordinated by the USACE, NFS, and FEMA.

3.3. Execution and Recordation of Agreement

A floodproofing agreement shall be executed between the NFS and the property owner.

The agreement will be binding upon the owners, their heirs, assigns, transferees, and any other successors in interest. This agreement will be developed during the PED phase; however, it is anticipated that the agreement will include the following provisions:

- Permission to determine if a historic property is present and an assessment of effect and mitigation of adverse effects in accordance with the Section 106 Programmatic Agreement.
- The agreement will obligate the structure owner to expend any and all costs that may be necessary in connection with the elevation of the structure which are not deemed “eligible costs” (as described in Section 3.5).
- The agreement will release and hold USACE and the NFS harmless for any and all loss, cost, damage, or expense arising out of any claims, including third party claims that arise directly or indirectly from any project-related activity.
- The agreement will include language to prohibit the conversion of any part of the structure located below the lowest habitable finished floor for purposes of human habitation, the alteration of the structure in any way that would impede the movement of flood waters under the structure and would prohibit the construction of any new habitable structures on the property that do not meet the requirements of the project.
- The agreement will contain restrictive covenants that run with the land in perpetuity.
- The agreement will include the right for the NFS and federal government to inspect the property during structure elevation and after construction is completed to ensure correct implementation.

The agreement, as well as any required curative documents, subordination agreements, or release agreements, shall be recorded by the NFS in the Clerk of Court in the county in which the property is located prior to commencement of the nonstructural improvements on the property.

3.4. Commencement of Construction

3.4.1. Structure Elevation and Floodproofing

Several phases of geotechnical investigation will be required for structure elevation. An office investigation will be performed to review available soil maps, as-built drawings, and any other available site-specific subsurface information. The information gathered during the office investigation will be used to evaluate existing foundation depths and types, as well as the soil bearing strata condition and material properties. A site-specific subsurface investigation will be designed to supplement the information gathered during the office investigation and fill any data gaps. The subsurface investigation may consist of test pits, test borings, or a combination of both. The location and number of proposed test pits and test borings will depend on the locations of the eligible structures relative to one another. The data gathered from the office and subsurface investigations will be utilized to assess

new foundation types and bearing stratum properties for the structures to be elevated. Foundation designs will be performed based on the site-specific data collected during the office and subsurface investigations.

The entire foundation of the structure will be lifted and placed on a new foundation (i.e., columns, piers, posted or raised foundation walls) so that the lowest habitable finished floor is at or above the target design elevation. All utilities and mechanical equipment, including air conditioners and hot water heaters, will also be raised to the required elevation. Flood vents will be installed, as appropriate, on elevated structures, as well as structures for which the first floor is already above the target design elevation but lack appropriate flood venting. Structure owners may choose to raise the structure, utilities, and/or mechanical equipment in excess of the target design elevation; however, costs attributable to elevation in excess of the minimum requirements set forth herein are not deemed eligible costs (described below in Section 3.5) and would be performed at the sole cost, risk and expense of the property owner. For applicable properties determined to be listed on the National Register of Historic Places, or eligible for listing, conditions described in the Section 106 Programmatic Agreement would be satisfied prior to commencement of nonstructural improvements.

3.4.2. Structure Floodproofing

Dry floodproofing makes the structure watertight by sealing all areas from the ground level up to approximately 4 feet of a structure by making walls, doors, windows, and other openings resistant to infiltration by floodwaters. Dry floodproofing may include the use of one or more of the following methods: waterproof membranes or sealants to reduce seepage of floodwater through walls; watertight shields for doors and windows; and/or installing measures to prevent sewer backup. Common floodproofing measures include:

- Backflow valves.
- Temporary or permanent closures on doors, windows, stairwells, and/or vents.
- Rearranging or protecting damageable property, including relocating or raising utilities.
- Sump pumps, sub-drains, and floor drains.
- Water resistant material, including waterproof adhesives and sealants.

While each eligible structure will be evaluated for the most cost-effective nonstructural measure, the federal government reserves the right to determine which measures shall be implemented for each structure.

3.4.3. Target Design Elevation

In accordance with North Carolina Building Codes, the target design elevation for structure elevation is the 1% annual exceedance probability (AEP) flood elevation plus two feet. The target design elevation for dry floodproofing is the 1% AEP flood elevation plus two feet up to a maximum of 4 feet.

3.5. Notice of Construction Complete (NCC)

Upon completion of the improvements, an inspection will be performed by USACE, and upon final approval by the USACE District Engineer or identified designee, a NCC will be issued to the NFS and the individual structure elevation will be closed out as complete.

3.6. Eligible Project Costs:

All structure elevations will require local permits prior to any onsite construction. 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.

3.6.1. Structure elevation

Elements of structure elevation work that are deemed to be potentially eligible project costs include: historic property investigations, including mitigation in accordance with the Section 106 Programmatic Agreement, design costs; costs of obtaining all required permits (i.e., zoning or land use approvals, environmental permits or required certifications, historic preservation approvals, and building permits), except as identified to be an ineligible item of project cost; costs of title searches (in review of title information submitted by the property owner), surveys, and costs for the following tasks:

- Elevating the structure.
- Raising the roof and extending the walls of a side structure attached to the main structure (i.e., garage).
- Raising mechanical equipment (i.e., 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.
- Installation of flood vents.
- Filling in of existing basements.
- Meeting access requirements of applicable building codes (i.e., stairs with landings, guardrails).
- In instances where special access improvements (i.e., elevators, lifts, ramps, etc.). may be required (i.e., in the case of physically handicapped or elderly homeowners or occupants), special handicapped access can be considered an eligible improvement cost when documented by the medical certificate of a licensed physician. Multiple special access points may also be eligible for funding 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 restoring landscaping to its preconstruction condition.
- For historic properties, costs associated with the investigations, coordination, consultation and mitigation undertaken in accordance with the Section 106 Programmatic Agreement, including costs to complete any necessary archaeological investigations, preserve the historic façade and character of the building whether through exterior structural modifications, landscaping, lighting, paint, disguising and/or blending of the nonstructural measure with the building, etc.).
- Temporary site protection measures during site work.
- Allowable relocation assistance funds for displaced tenants in accordance with Uniform Relocation Assistance (URA) and Real Property Acquisition Policies for Federal and Federally Assisted Programs of 1970, Public Law 91-646, 84 Stat. 1894 (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 (See Appendix D, Real Estate Plan for more detailed information). Property owners whose properties are voluntarily elevated will not be eligible for benefits in accordance with URA.

3.6.2. Structure Floodproofing

Cost specific to dry floodproofing include:

- Water resistant sealant and masonry veneer
- Water resistant materials
- Certified closure panels
- CMU wall if needed, including footing and foundation
- Sewer backflow values and skimmer pumps
- Raising electrical and relocating utilities

3.6.3. Historic Structures

For historic structures that are listed or eligible for listing on the National Register of Historic Places, costs associated with maintaining the historic designation as determined by the State Historic Preservation Office (including such costs so as to preserve the historic façade and character of the structure) and temporary site protection measures during implementation activities.

3.7. Ineligible Project Costs

The costs that exceed those deemed as necessary to safely elevate an eligible structure are deemed ineligible costs and any such costs remain the sole responsibility of the property owner. These costs may include, among others, costs associated with:

- 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.
- Cost for elevation above the identified target design elevation or 12 ft. Elevation greater than 12 feet above the adjacent ground elevation is not permitted due to potential cost increases as a result of wind factors, and the associated risk with occupancy evacuation. There are no elevations foreseen at this time to be greater than 12 feet in the study area.
- Modifications to structures that are not attached to the eligible structure, such as garages or outbuildings.
- 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 (i.e., stairways and landing modifications).
- The proper remediation, removal, and disposal of environmental contaminants including but not limited to HTRW, asbestos, and asbestos-containing materials in damaged or friable form.
- Bringing a non-conforming structure into compliance with current building code, housing code, and/or other applicable codes.
- Special access improvements (i.e., elevators, lifts, ramps, etc.) that are not deemed eligible.
- Improvements to structures not considered the primary residence (i.e., detached garage, shed and/or barns.

4. Federal Procurement Implementation Method

The traditional method of implementation is generally described in publications of the USACE National Nonstructural Committee and Flood Risk Management Planning Center of Expertise. This method of implementation utilizes a federal procurement to obtain design and construction contractors for the various structure elevation and floodproofing 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. The contractor will also be responsible for all work associated with the structure elevation or floodproofing action for each structure to final inspection.

5. Prioritization Strategy for Nonstructural Measures

Structures that have been identified as preliminarily eligible as part of the recommended plan are located across the study area. In order to effectively implement the recommended plan, a defined process to rank and prioritize eligible structures should be developed and put into place. The ranking of individual structures will be revisited as elevation or floodproofing work is completed, as additional funding is allocated, and as new groupings of at-risk structures are identified. The locations for scheduling or prioritizing the implementation of nonstructural work will be determined during PED but will be fully assessed for implementing the nonstructural plan in an efficient and cost-effective manner. A method of scheduling or prioritizing nonstructural work that can be considered is described below. Additional methods of scheduling or prioritizing such work will also be considered.

5.1. Clustering

Addressing groups of structures within a small geographic area is more cost effective, efficient, and allows for a more strategic methodology for implementing nonstructural measures. The eligible property owners in a contiguous neighborhood or subdivision (i.e., small scale area) would be targeted for priority in nonstructural plan implementation. The size of a cluster would need to be defined but would consist of an area where multiple eligible structures would be constructed simultaneously. This approach would rank efficiency as the main factor in determining which eligible properties should be prioritized.

5.2. Risk-Level

Structures within a geographic cluster will be evaluated and prioritized based on flood risk. In such cases, the focus would be on willing property owners that exhibit the highest risk for flood damages. For example, if several property owners execute agreements with the NFS within the clustered area, the property owners who reside in the 0.1 AEP floodplain would be prioritized for construction over those located in the 0.04 AEP floodplain. Once these properties are elevated, the next highest-risk properties would be targeted. This approach couples risk exposure and clustering to determine the prioritization of eligible structures.

6. Operations, Maintenance, Repair, Rehabilitation and Replacement (OMRR&R)

For all structure types, OMRR&R costs are expected to be ‘de minimus’ and will be confined to regular, periodic surveys and site visits by the NFS to determine that the agreement requirements are being met. Once the nonstructural measures have been implemented and NCC given, the owner of the property will be responsible for all cost and risk associated with maintaining, repairing, rehabilitating, and replacing the nonstructural flood risk management measures that were implemented on the subject property. A draft OMRR&R Manual will be developed by the USACE and provided to the NFS prior to finalizing any construction activities. At the time of the issuance of the NCC, the NFS’s obligations for OMRR&R for the subject structure or lands commences.

The NFS is responsible for the enforcement of the provisions of the agreement executed by the owners of property benefiting from the nonstructural measures and for enforcement of the requirements of the OMRR&R manual, including by not limited to, compliance with the requirements of Section 402 of the Water Resources Development Act of 1986, as amended.

Upon NCC of the entire recommended plan, the USACE will furnish to the NFS a final OMRR&R manual addressing, among other things, the NFS responsibility for enforcement of terms of the floodproofing agreement, as well as other OMRR&R requirements. The NFS shall conduct periodic inspections at the intervals specified in the OMRR&R manual to ensure that the owners, their heirs, and assigns, are in compliance with the terms and conditions of the executed agreements and shall provide written certifications to USACE that the structures and lands have been inspected and that no violations have been found.

Regarding the elevated residential structures, 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 otherwise altered in any manner which would impede the movement of waters beneath the structure; that the area below the target design elevation 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 target design elevation; and 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 completed elevation or floodproofing of structures.