

PURPOSE AND NEED AND STUDY AREA DEFINED

Solving Access for NC 12 in Dare County (SAND) Plan

Dare County

STIP Project HO-0020

North Carolina Department of Transportation

Division 1



MERGER CONCURRENCE POINT NUMBER 1

August 19, 2026, 1:00pm

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1. Introduction

Lead federal agency: Federal Highway Administration (FHWA)

Primary points of contact for the subject project are:

Table 1. Contacts

Agency/Firm	Name
Federal Highway Administration (FHWA)	Seth Wilcher
U.S. Army Corps of Engineers (USACE)	Kyle Barnes
North Carolina Division of Water Resources (NCDWR)	Paul Nyarko
North Carolina Division of Coastal Management (NCDCM)	Cathy Brittingham
North Carolina Department of Transportation (NCDOT)	Lindsay Crocker
Stantec (NCDOT consultant)	Amy Sackaroff

The purpose of this meeting is to reach concurrence on CP 1, Purpose and Need and Study Area Defined for future transportation improvements that may result from the Solving Access for NC 12 in Dare County (SAND) Plan.

1.1 SAND Plan Description

The North Carolina Department of Transportation (NCDOT), in coordination with the Federal Highway Administration (FHWA) and partner agencies, is developing the SAND Plan for an approximately 11-mile stretch of NC 12 in Dare County between the Marc Basnight Bridge and the Rodanthe “Jug Handle” Bridge. The corridor has experienced repeated storm damage, flooding, erosion, overwash, and periodic closures that disrupt travel and access along the Outer Banks.

A [Planning and Environment Linkages \(PEL\) process](#) will be used to support planning decisions and identify funding opportunities for future transportation projects in the corridor. This process includes evaluating National Environmental Policy Act (NEPA) review of both near- and long-term transportation solutions that improve reliable access along the corridor.

The NC 12 SAND Plan is funded via a FHWA PROTECT grant and is programmed in the State Transportation Improvement Program (STIP) as Project No. HO-0020 described to “Conduct planning study for the long-term operation of the roadway during major storm events.” The project location is shown in Figure 1.

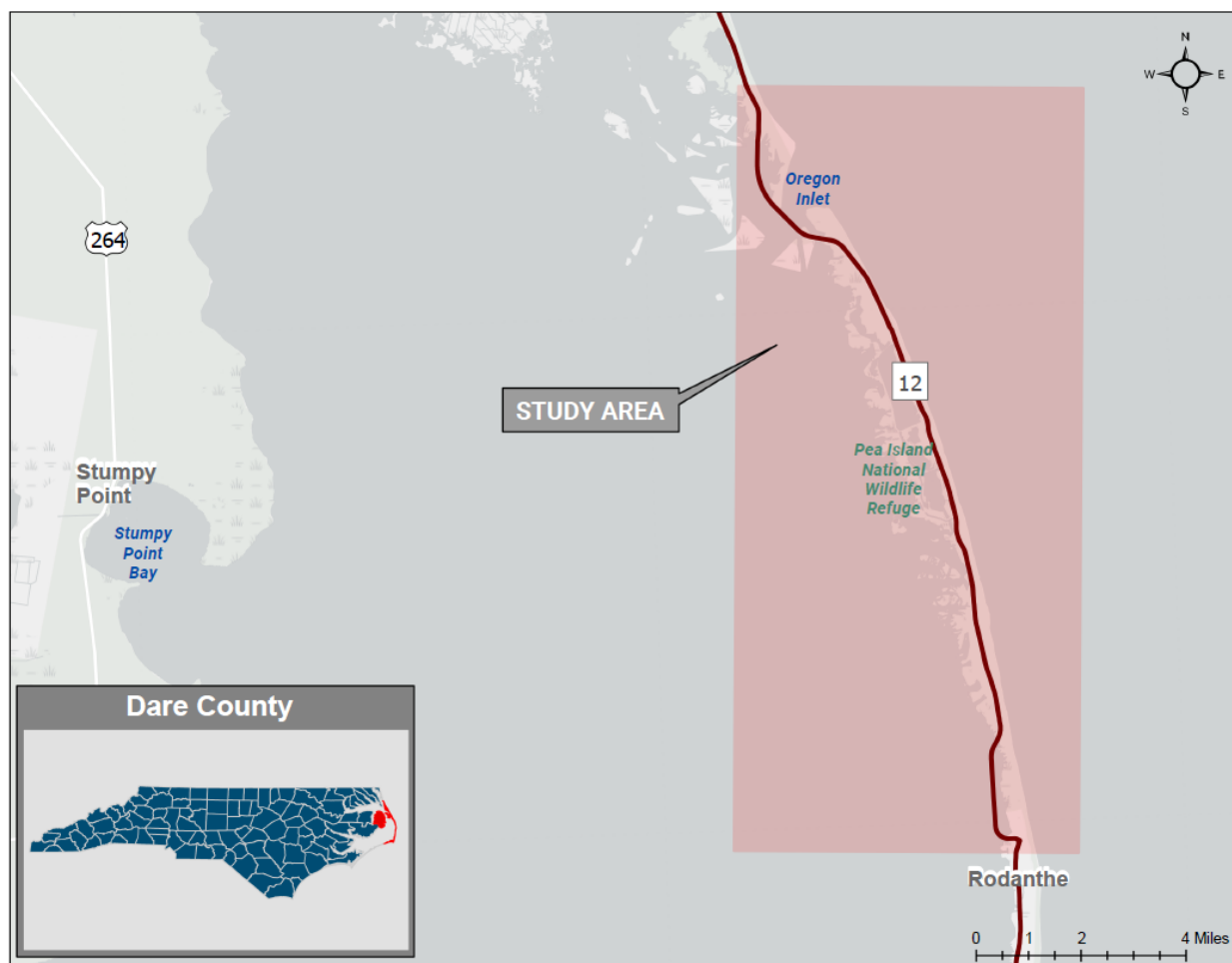


Figure 1: Project Location and Project Study Area

1.2 NC 12 Planning History and Current Merger Plan

The SAND Plan builds on previous efforts related to long-term access and resiliency along NC 12, including the 2023 NC 12 Task Force Final Report, the Southern Environmental Law Center (SELC) settlement agreement, previous Merger concurrence, and prior project-specific NEPA environmental reviews. The PEL process will guide development of the SAND plan, aiming to identify near and long-term, sustainable strategies for maintaining reliable access through the corridor. These strategies will be consistent with the NC 12 Transportation Management Plan (TMP) as detailed in the Preferred Alternative identified in the [May 2010 Environmental Assessment](#) and December 2010 ROD for the Bonner Bridge Replacement Project (B-2500) and 2016 ROD for the Rodanthe “Jug Handle” Bridge (B-2500B).

Funding currently supports the completion of the PEL study, i.e. – the SAND Plan. In accordance with 23 U.S.C. 168, participants in NCDOT’s Section 404 / NEPA Merger Process may concur on a Purpose and Need Statement and Defining of Study Area (CP1), as well as on Detailed Study Alternatives Carried Forward (CP2) as part of the PEL study. Those concurrences can then be incorporated into future NEPA documentation when funding becomes available for project development. Planning-level cost estimates

for future right of way, utility relocation, and construction associated with specific preliminary alternatives will be developed later in the study as preliminary alternatives are screened and refined. These representational costs will be used to inform future project funding decisions and needs.

No funding is currently programmed for design or construction of this project.

Table 2. Draft HO-0020 Project Schedule*

Milestone	Format	Anticipated Date
Project Informational Meeting (Project Team Meeting #1)	Virtual	June 11, 2026
CP 1 Pre-Meeting	Virtual	July 15, 2026
CP 1 (Project Team Meeting #2)	Hybrid	August 19, 2026
Public Meetings (Series of 3)	In-person	September 2026
Project Informational Meeting (Project Team Meeting #3)	Virtual	October 2026
Public Meetings (Series of 3)	In-person	December 2026
Project Informational Meeting (Project Team Meeting #4)	Virtual	January 2027
CP 2 (Project Team Meeting #5)	Hybrid	March 2027
Project Informational Meeting (Project Team Meeting #6)	Virtual	April 2027
Draft PEL Study	NA	April 2027
Project Informational Meeting (Project Team Meeting #7)	Virtual	May 2027
Final PEL Study	NA	June 2027

*Draft, subject to change

1.3 Other STIP Projects Nearby

Generally, nearby projects are between 1 to 3 miles from the project centerline. This may vary based on project location and length.

- HB-0001: Replace Alligator River Bridge on U.S. 64. LET 12/2024.
- HB-0001A: US 64 (Future I-87) from I-95 interchange to NC 12. Install broadband fiber and ITS for traveler information systems.
- HO-0027: US 64 from east of the East Lake community to west of Robertson Landing Road. Install wildlife crossings.
- STIP F-5700: Hatteras to Ocracoke Ferry. Purchase river class ferry. Complete 2017.
- STIP F-5702 A & B: Hatteras to Ocracoke Ferry - Loading Facility; Improve parking lot and construct connectivity measures; dock and pedestrian waiting and access accommodations. LET HB12/2017.

2. Existing Conditions

2.1 Transportation Features

NC 12 is the only continuous land-based transportation route serving Hatteras Island and, within this portion of Dare County, functions as a critical route for residents, visitors, businesses, emergency responders, and service providers. As described in Section 1.1 and shown in Figure 1, the project corridor occupies a highly constrained barrier-island setting associated with both Pea Island National Wildlife Refuge and Cape Hatteras National Seashore. This setting is unusual from a transportation perspective because the roadway must function within a federally managed coastal landscape shaped

by shoreline change, overwash, inlet processes, and soundside flooding, while also supporting access, visitor circulation, and infrastructure and land-management activities tied to these federal lands.

NC 12 is classified as a minor arterial, meaning that it provides for moderate length trips and connectivity between higher road classifications and local roads that provide access to homes and businesses. It is a two-lane roadway with two 12-foot lanes with paved shoulders varying from 2-4 feet in width. The posted speed limit is 55 miles per hour (mph).

Recurring transportation issues in this setting include roadway closures, emergency repairs, sand removal, dune repair, temporary protective measures, and other maintenance actions needed to keep the route open after coastal events. More detailed discussion of the study area boundaries is provided in Section 4, and environmental resources are summarized in Section 2.2.

2.2 Environmental Features

Environmental resources within the study area are shown in the Environmental Features Maps (Figures 2 and 3). The project corridor is in a dynamic barrier-island setting within the Pea Island National Wildlife Refuge (PINWR) and Cape Hatteras National Seashore (CHNS). This setting includes oceanfront, dune, overwash, marsh, estuarine shoreline, and soundside environments. It also includes federally managed public lands and associated recreation, visitor-use, habitat, and resource-management areas.

The study area includes habitat for federally listed species and designated critical habitat; bird nesting areas; submerged aquatic vegetation; High Quality Waters; and extensive wetland resources. Important public and recreational resources in or near the corridor include facilities and destinations associated with PINWR, CHNS, and Oregon Inlet.

The project will require consideration of publicly owned park and recreation lands, wildlife and waterfowl refuges, and any publicly or privately owned historic site listed or eligible for listing on the National Register of Historic Places in accordance with Section 4(f) of the USDOT Act of 1966. Because the corridor is located within the coastal zone, future actions will also require review under the Coastal Area Management Act (CAMA), including consistency with applicable Areas of Environmental Concern (AECs) and coastal permitting requirements. In addition, future federal decisions will need to address Endangered Species Act (ESA) requirements, including potential Section 7 consultation with the U.S. Fish and Wildlife Service and/or NOAA Fisheries for listed species and critical habitat. For any future alternative involving new or expanded use of refuge lands, U.S. Fish and Wildlife Service refuge-specific requirements also apply, including compatibility and right-of-way considerations. These resource and regulatory considerations are a principal reason the project is using the PEL process to support early screening, avoidance, and minimization, while also building from the abundance of resource data and analyses from prior environmental studies.

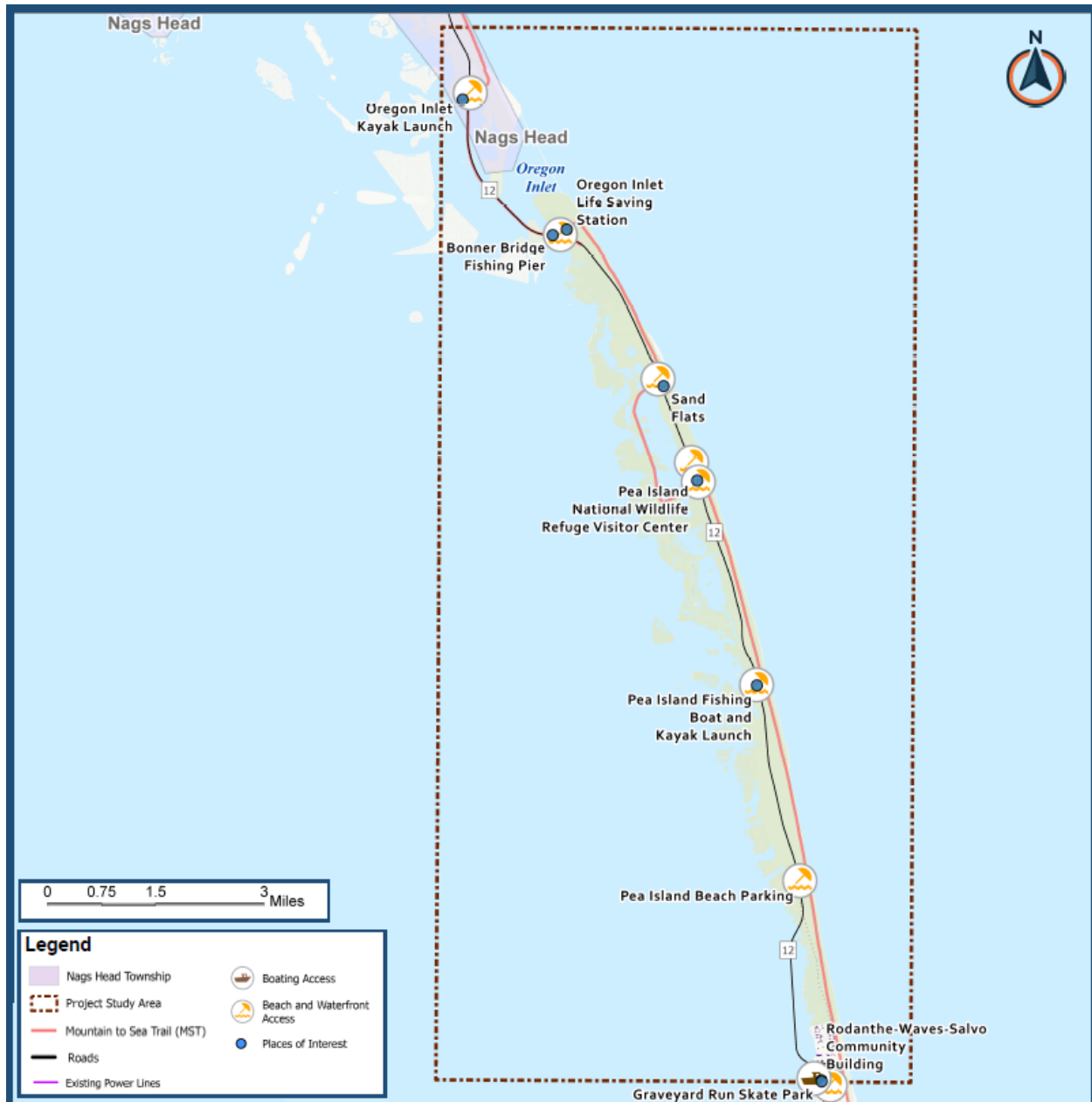


Figure 2: Human Environment Features

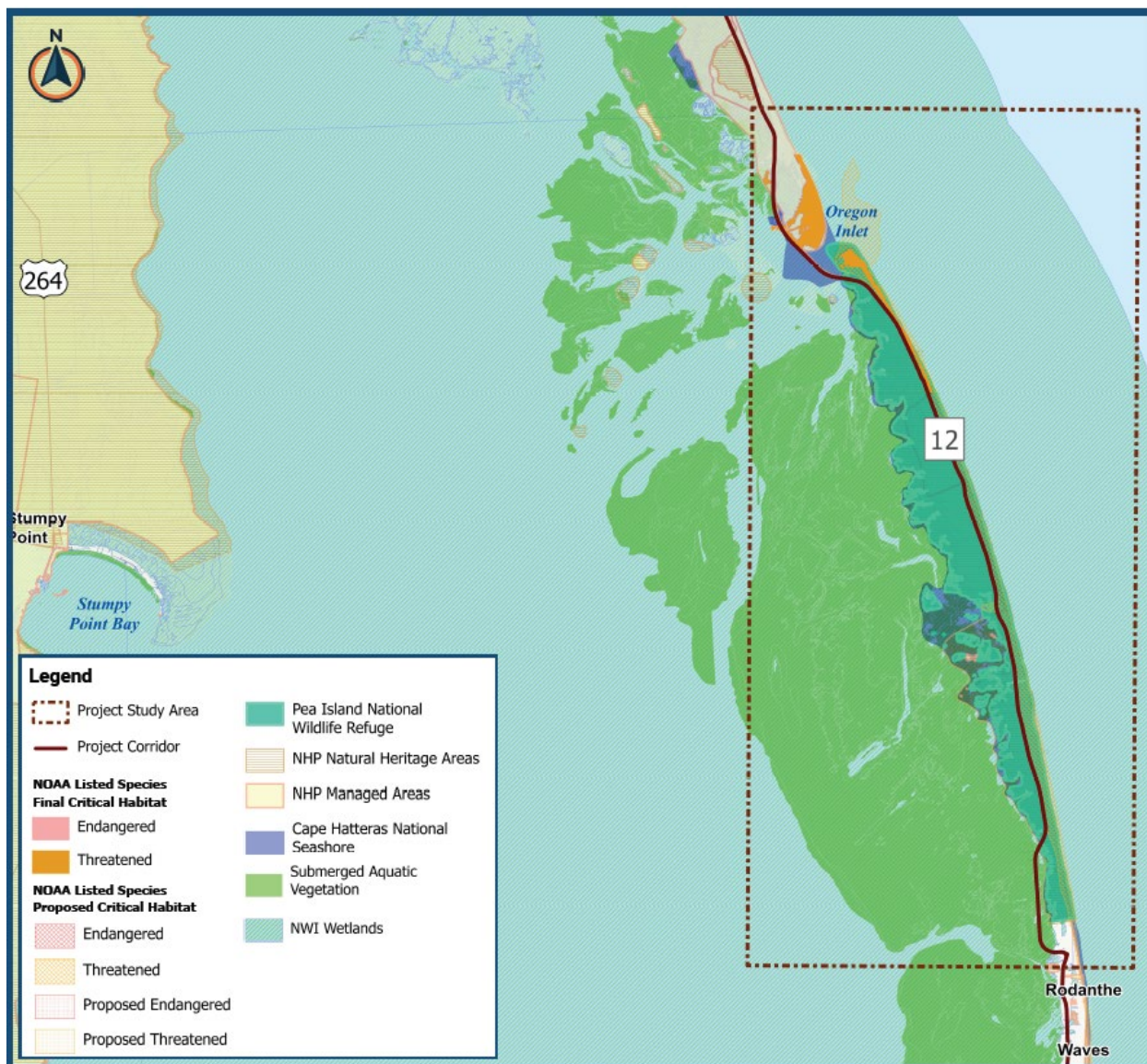


Figure 3: Natural Environment Features

3. Project Purpose and Need

3.1 Identified Needs

A range of transportation improvement alternatives will be developed for potential inclusion in future NEPA documentation, contingent upon funding for subsequent phases of project development. The need for these improvements is described below:

- NC 12 is the only land-based route through the corridor. Frequent closures and overwash events reduce public confidence in the corridor's regional connectivity and reliability, particularly among visitors. The frequency of short-term repairs reflects a cycle of disturbance where roadway functionality is restored without reducing underlying exposure. Even minor storms increasingly trigger closures and repair work. Residents, businesses, and visitors depend on

continuous access between Bodie Island and Hatteras Island. Reliable access supports 1) emergency response and evacuation efforts 2) tourism as Dare County's primary economic driver and 3) essential infrastructure management, including power and broadband connectivity.

- Repeated roadway repairs, dune stabilization, and other temporary measures create ongoing disturbance within a sensitive ecological setting. Access disruptions affect refuge/seashore management, function, and recreational use. USFWS requires corridor access for Pea Island National Wildlife Refuge (PINWR) management, including public access, species management, migratory bird habitat restoration, and monitoring activities. NPS requires corridor access for Cape Hatteras National Seashore (CHNS) management including visitor services, resource protection, and facility maintenance. Maintaining access to DCM public trust areas is also needed to support continued public use and coastal resource management.
- The Oregon Inlet terminal groin and habitat restoration ponds require ongoing maintenance access. The Bonner Bridge pier requires access for fishing and maintenance. The Oregon Inlet Life-Saving Station and other existing facilities in the corridor also require reliable access for maintenance and operations.
- A more resilient long-term approach is needed that accommodates natural barrier island dynamics including inlet migration, overwash processes, and landward migration. Solutions should allow natural island processes to continue without disrupting transportation access. Future coastal change, costs, and lack of funding create magnified uncertainty in this setting. Near-term solutions must not preclude long-term options.

3.2 Proposed Purpose

The purpose of future near- and long-term transportation improvements is to:

- Improve reliability on NC 12 in Dare County and promote regional connectivity by providing consistent daily and emergency access.
- Maintain access on Pea Island for public land management agencies, including support USFWS Pea Island National Wildlife Refuge (PINWR), NPS Cape Hatteras National Seashore (CHNS), and other public agencies.
- Enhance corridor resilience and reduce vulnerability.

Other desired outcomes, specific to the SAND Plan, include:

- Establish a timeline for near-and long-term transportation improvements.
- Support economic activities dependent on NC 12 access.
- Streamline project delivery through efficient environmental reviews and project decision-making
- Leverage available federal funding opportunities.

3.3 Proposed Purpose and Need Statement

The purpose of the proposed action is to improve reliability on NC 12 in Dare County and promote regional connectivity by providing consistent daily and emergency access for residents, visitors, and public land management agencies while enhancing resilience and reducing vulnerability in consideration of the natural barrier island processes affecting the corridor. The project will build on previous NEPA decisions, settlements and commitments in the decision-making framework.

4. Project Study Area Defined

The proposed Project Study Area is shown in Figure 1. The study area was defined broadly to support evaluation of both near- and long-term transportation solutions in this dynamic barrier island setting. It includes the project corridor and extends beyond the roadway footprint to encompass all of Pea Island and adjacent areas of Pamlico Sound. This includes adjacent oceanfront, soundside, inlet-influenced, and overwash-prone areas that may be relevant to hydrodynamic modeling, potential roadway realignments, bridge or causeway concepts, mitigation measures, access needs, construction considerations, and resilience strategies. The study area is intended to be large enough to capture areas of potential impact associated with a reasonable range of alternatives while supporting planning-level environmental screening and coordination.

Given NC 12's role as sole access for residents south of the project corridor, a demographic study area encompassing all of Hatteras Island will be used to assess community impacts. The project team will evaluate demographic data like age, employment, vehicle access, and other community characteristics to inform and contextualize how area residents are impacted by NC 12 closures.

5. Avoidance and Minimization

Avoidance and minimization for future NC 12 projects starts with early coordination at the planning level given the project corridor's location within a constrained, sensitive coastal setting. This early agency coordination effort is intended to support later NEPA, Section 4(f), ESA, CAMA, and permitting decisions by identifying alternatives and design approaches that reduce resource conflicts to the maximum extent practicable. The following summarize avoidance and minimization goals:

- Coordinate planning-level hydrologic, geomorphic, and constructability considerations with environmental screening so that alternatives are evaluated for transportation performance, and the potential to reduce recurring maintenance and long-term resource conflict.
- Consider if near-term/long-term transportation solutions can remain within or nearby existing transportation corridors where practicable, while also evaluating new-location and hybrid concepts.
- Consider alternatives and design concepts that reduce encroachment into ocean hazard, estuarine shoreline, public trust, wetland, and other CAMA-regulated areas to the extent practicable.
- Use the broad study area described in Section 4 to evaluate whether alternatives can avoid or reduce direct use of refuge, park, recreation, and any historic resources subject to Section 4(f).
- Incorporate early coordination and effects screening for federally listed species, critical habitat, and other priority habitats so that avoidance and minimization can be built into alternatives before later ESA consultation.

- Account for refuge compatibility, right-of-way, and land-management considerations early when alternatives involve PINWR lands or facilities.

6. Merger Plan Review/Next Steps

Following CP 1, the project team will continue development of the SAND Plan through preliminary alternatives development, technical screening, public involvement, and agency coordination consistent with the draft schedule in Section 1.2 and the Merger Plan. Work following CP 1 is expected to include refinement of study assumptions, continued coordination with resource and regulatory agencies, development and screening of preliminary alternatives, and preparation for CP 2 concurrence on preliminary alternatives to be carried forward within the PEL process. As the study advances, NCDOT and FHWA will continue using the PEL framework to document planning-level analyses, stakeholder input, and avoidance and minimization considerations so that the resulting planning products can inform subsequent NEPA, permitting, and implementation decisions.

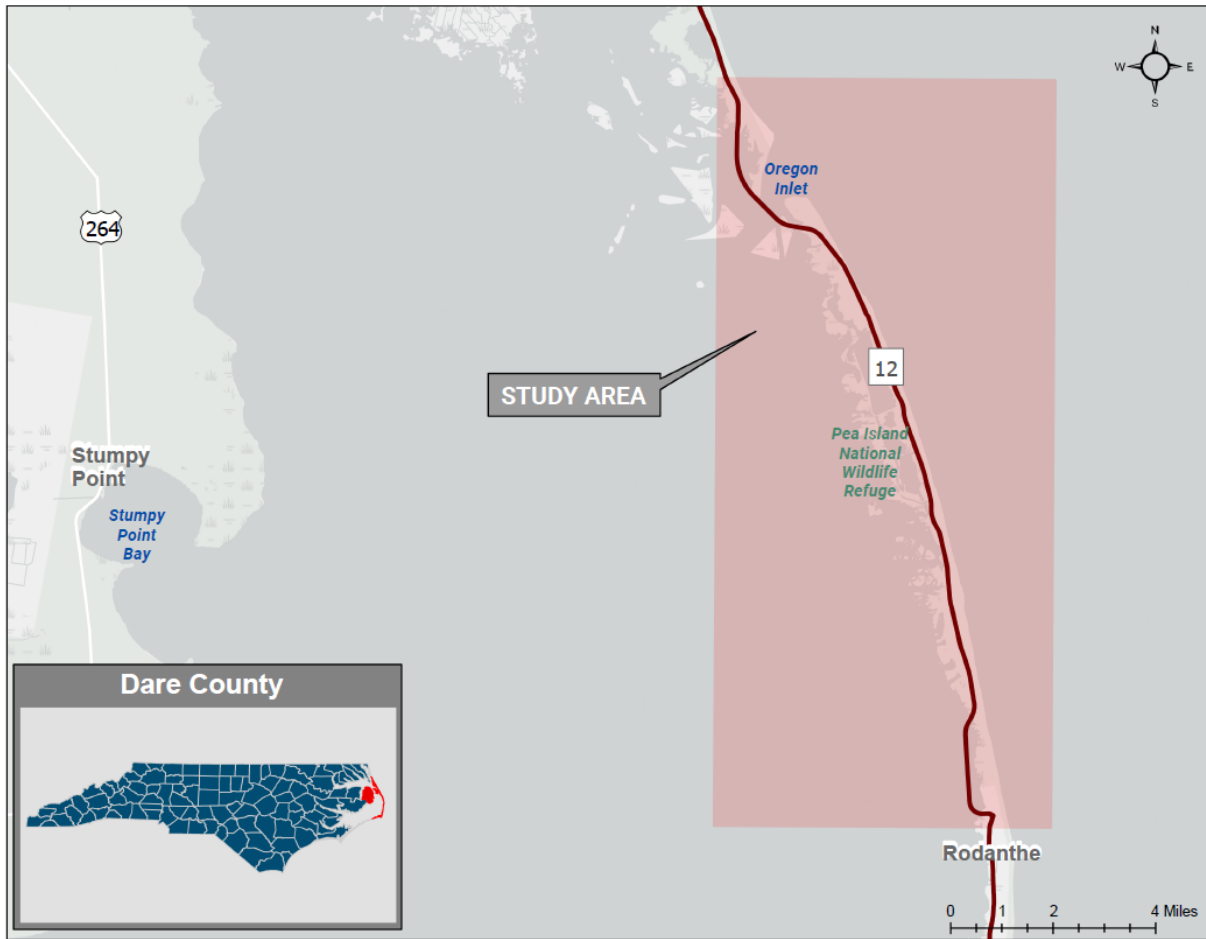
STIP PROJECT NO. HO-0020

MERGER PLAN



PROJECT INFORMATION					
SPOT ID OR STIP PROJECT No.		HO-0020		DIVISION:	1
EXISTING No. OF LANES		2		WBS:	51665.1.11
NCDOT CONTACT:		Lindsay Crocker, PMU		PROPOSED No. OF LANES: 2	
PEF CONTACT, FIRM:		Amy Sackaroff, Stantec Consulting Services Inc.		LEAD FEDERAL AGENCY: FHWA (Seth Wilcher)	
DOCUMENT TYPE:		PROJECT LEAD:		EXISTING CONTROL OF ACCESS:	
☒ PEL ☐ CE/MCDC ☐ NEPA ☐ EA/FONSI ☐ SEPA ☐ EIS		☐ DIVISION ☒ PMU ☐ SMU ☐ RAIL		☒ No Control ☐ PARTIAL CONTROL ☐ LIMITED CONTROL ☐ FULL CONTROL	
PROPOSED CONTROL OF ACCESS:					
☒ No Control ☐ PARTIAL CONTROL ☐ LIMITED CONTROL ☐ FULL CONTROL					
MERGER PRE-SCREENING DATE:		NA (already in Merger)		MERGER SCREENING DATE: NA (already in Merger)	
IDENTIFIED NEED(S) OF THE PROJECT: The purpose of the proposed action is to improve reliability on NC 12 in Dare County and promote regional connectivity by providing consistent daily and emergency access for residents, visitors, and public land management agencies while enhancing resilience and reducing vulnerability in consideration of the natural barrier island processes affecting the corridor. The project will build on previous NEPA decisions, settlements and commitments in the decision-making framework.					
PROJECT DESCRIPTION: The transportation project area includes the 11-mile section of NC 12 from south of Oregon Inlet to north of the Rodanthe Jug Handle Bridge within and adjacent to Pea Island National Wildlife Refuge in Dare County. The project builds on previous planning efforts consistent with the Transportation Management Plan element of the Preferred Alternative identified in the 2010 ROD for the Bonner Bridge Replacement Project (B-2500) and 2016 ROD for the Rodanthe Jug Handle Bridge (B-2500B). The existing facility is a two-lane highway and planning-level alternatives will be based on a two-lane typical section. A Planning and Environment Linkages (PEL) study will undertake advance planning for the corridor to evaluate a full range of long and near-term transportation and resilience strategies. Concepts will include No-Build and Build scenarios that consider ongoing maintenance challenges, storm-related disruptions, and long-term vulnerability of the corridor. Alternatives may include roadway improvements or new bridges on or near the existing alignment; new location bridge concepts; nature-based or hybrid shoreline approaches; and phased combinations of near-term and long-term actions. Results from the PEL study may be applied to planning decisions for future transportation projects in the corridor.					

PROJECT SCOPING STUDY AREA OR VICINITY MAP:



MERGER CONTACTS

The NC 12 PEL study team includes a broader project structure consisting of the core team, project team, subject matter experts, and stakeholder and local government participants. Within that structure, the Merger Team is the subset of agency representatives participating in the Section 404/NEPA Merger Process. Team roles and contact information are maintained in the [project contact spreadsheet](#).



METHODOLOGY & LEVEL OF DETAIL

The project will use a PEL approach coordinated with the 404/NEPA Merger Process so that planning products can support later NEPA and permitting decisions. Work includes review of prior studies, plans, and technical information, including prior B-2500 NEPA decisions, NC 12 Task Force materials, Coastal Monitoring Program (CMP) reports, geotechnical information, hazard and resilience studies, and available operational and maintenance data. GIS screening and baseline condition documentation will be used to characterize the corridor's physical, environmental, and operational context, including shoreline erosion, overwash areas, sensitive habitats, hydrology, access needs, and other constraints.

This review considers the corridor decision framework established through earlier NEPA decisions for the Bonner Bridge/NC 12 corridor, including the Transportation Management Plan component identified for future phases south of Oregon Inlet, so that the PEL study can help inform how long and near-term strategies for this segment are advanced into future project development.

The study proposes a preliminary Purpose and Need statement and Measures of Effectiveness (MOEs), then evaluates alternatives through a three-level screening process: Level 1 screening of the full range of alternatives, Level 2 screening of reasonable alternatives, and Level 3 screening of recommended alternatives. Alternatives development will use Quantum alignment optimization software and other planning-level tools, informed by environmental constraints, available cost data, design assumptions, and technical studies. The PEL study evaluates previous alternatives identified in the 2017 Alternatives Report as well as combinations of roadway and structure sections on existing and new alignments to identify near and long-term solutions. Technical inputs include planning-level environmental screening, hydrodynamic and geomorphic considerations, geotechnical screening, cost estimation, constructability review, bike/ped connectivity, community impacts, and related resilience analyses. Public and local stakeholder input includes project team meetings, stakeholder outreach, and public involvement activities. Documentation includes a PEL Study and associated technical memoranda sufficient to inform later NEPA transition.

SCHEDULE & FORMAT

CONCURRENCE POINT	MEETING DATE	MEETING FORMAT:	NOTES:
Project Informational Meeting	June 11, 2026	Hybrid in-person/virtual	Project orientation
Pre-CP1	July 15, 2026	Hybrid in-person/virtual	Preliminary purpose and need review
1	August 19, 2026	Hybrid in-person/virtual	Purpose and Need and Study Area Defined
2	Winter 2026	Hybrid in-person/virtual	Confirm alternatives recommended for future NEPA review
2A, 3, 4A-C	NA- TBD	NA	Only CP1 and CP2 are part of the PEL process.

MERGER PLAN DATE & LIST OF REVISIONS

Date of original Merger Plan

VERSION	DATE	NOTES
V2	MM/YYYY	
V3	MM/YYYY	

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 1 – Purpose and Need (CP1 Refresh)

Project No./TIP No./Name/Description:

Federal Project Number:

STIP Project Number: HO-0020

Description: Conduct Planning Study for the Long-Term Operation of the Roadway During Major Storm Events.

Purpose of and Need for the Proposed Project:

The purpose of the proposed action is to improve reliability on NC 12 in Dare County and promote regional connectivity by providing consistent daily and emergency access for residents, visitors, and public land management agencies while enhancing resilience and reducing vulnerability in consideration of the natural barrier island processes affecting the corridor. The project will build on previous NEPA decisions, settlements and commitments in the decision-making framework.

- **Improve reliability on NC 12 in Dare County and promote regional connectivity by providing consistent daily and emergency access.**

Needs Addressed: NC 12 is the only land-based route through the corridor. Frequent closures and overwash events reduce public confidence in the corridor's regional connectivity and reliability, particularly among visitors. The frequency of short-term repairs reflects a cycle of disturbance where roadway functionality is restored without reducing underlying exposure. Even minor storms increasingly trigger closures and repair work. Residents, businesses, and visitors depend on continuous access between Bodie Island and Hatteras Island. Reliable access supports 1) emergency response and evacuation efforts 2) tourism as Dare County's primary economic driver and 3) essential infrastructure management, including power and broadband connectivity.

- **Maintain access on Pea Island for public land management agencies, including support US Fish and Wildlife Service (USFWS) Pea Island National Wildlife Refuge (PINWR), National Park Service (NPS) Cape Hatteras National Seashore (CHNS), and other public agencies.**

Needs Addressed: Repeated roadway repairs, dune stabilization, and other temporary measures create ongoing disturbance within a sensitive ecological setting. Access disruptions affect refuge/seashore management, function, and recreational use. USFWS requires corridor access for PINWR management, including public access, species management, migratory bird habitat restoration, and monitoring activities. NPS requires corridor access for CHNS management including visitor services, resource protection, and facility maintenance. Maintaining access to NC Division of Coastal Management (DCM) public trust areas is also needed to support continued public use and coastal resource management.

The Oregon Inlet terminal groin and habitat restoration ponds require ongoing maintenance access. The Bonner Bridge pier requires access for fishing and maintenance. The Oregon Inlet Life-Saving Station and other existing facilities in the corridor also require reliable access for maintenance and operations.

- **Enhance corridor resilience and reduce vulnerability**

Needs Addressed: A more resilient long-term approach is needed that accommodates natural barrier island dynamics including inlet migration, overwash processes, and landward migration. Solutions should allow natural island processes to continue without disrupting transportation access. Future coastal change, costs, and lack of funding create magnified uncertainty in this setting. Near-term solutions must not preclude long-term options.

The Project Team concurred on this date of _____ with the purpose of and need for the proposed project as stated above and study area as shown in attached figure.

USACE _____	NCDOT _____
USEPA _____	USFWS _____
NCDWR _____	NCWRC _____
NCDNCR _____	FHWA _____
NMF _____	NCDMF _____
NCDCM _____	USCG _____
PINWR _____	NPS _____
ARPO _____	

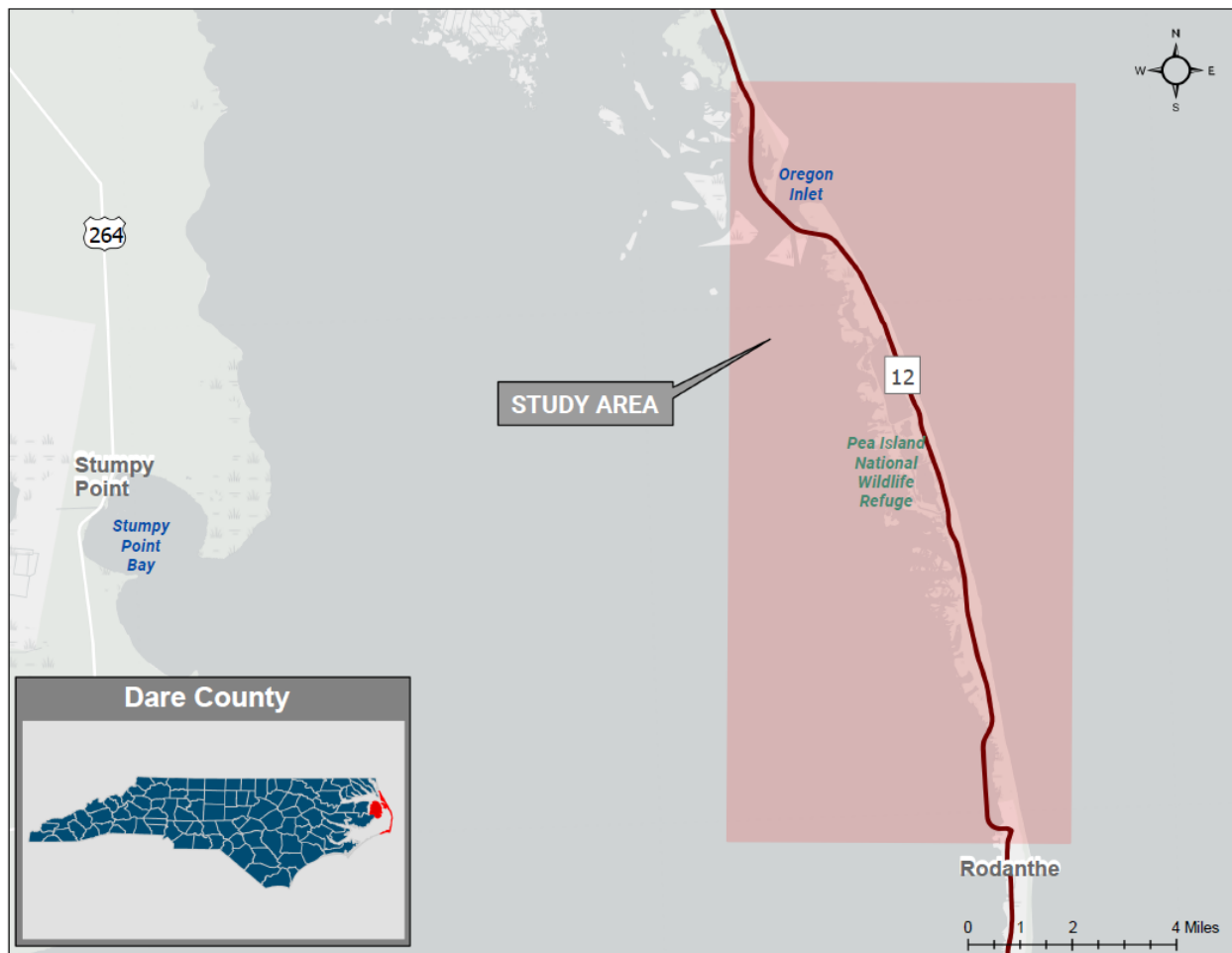


Figure 1: Project Location and Project Study Area

1.0 Purpose of, and Need for, Action

The North Carolina Department of Transportation's (NCDOT, 2008) *2009 to 2015 State Transportation Improvement Program* (TIP) includes the replacement of the Herbert C. Bonner Bridge (Bridge No. 11) over the Oregon Inlet in Dare County (TIP Project No. B-2500). Studies are underway in accordance with the requirements set forth in the National Environmental Policy Act (NEPA) of 1969, as amended. This purpose and need statement explains why the project should be implemented. The project location is illustrated in Figure 1-1.

The Bonner Bridge spans Oregon Inlet within North Carolina's Outer Banks and connects Bodie Island with Hatteras Island. The bridge provides the only highway connection of Hatteras Island and the mainland via NC 12 and US 64. The Bonner Bridge was built in 1962.

1.1 Project Need

The need for an Oregon Inlet crossing will continue past the end of the service life of the Bonner Bridge. A NCDOT Bridge Inspection Report from June 2006 rates the present condition of the bridge as "poor," with a sufficiency rating of two out of 100. This report also estimates the remaining practical service life of Bonner Bridge to be five years (as of 2007), indicating a need for extensive ongoing maintenance and rehabilitation. A planned rehabilitation project (TIP Project No. B-5014) is expected to increase the estimated practical service life to 10 years. The 2006 Bridge Inspection Report indicates there are places on the bridge that show deterioration of bridge girders and substructure. Replacement of the Bonner Bridge is needed for three reasons:

1. Continued demand for convenient daily and emergency access across the Oregon Inlet is expected.
2. The natural channel or gorge through the Oregon Inlet migrates. A replacement bridge needs to provide spans of sufficient height and width for navigation through the anticipated area of future natural channel migration, helping to reduce future dredging needs, dredging impacts, and the cost of dredging.
3. The southern terminus of the Bonner Bridge is north of portions of NC 12 currently threatened by shoreline erosion and overwash. Placing the southern terminus of a replacement bridge (or incorporating a long-term NC 12 maintenance and protection project) south of these areas will reduce the frequency of maintenance of these threatened segments of NC 12.

The following paragraphs describe these needs.

1.1.1 Need for Access across Oregon Inlet

The existing crossing provides the only highway access to Hatteras Island. The only other way to access the island is via the ferry between Ocracoke Island and Hatteras Island. The need for continued access to Hatteras Island, with a capacity equivalent to that provided by the Bonner Bridge, is reflected in the following ways:

- **Tourist use of Hatteras Island (including the use of Cape Hatteras National Seashore), use of the Pea Island National Wildlife Refuge, and Dare County's reliance on tourism as its primary industry.**

Tourism is the number-one industry in Dare County and on Hatteras Island. The tourist industry creates a large number of local jobs and generates substantial revenue for both Dare County and the State of North Carolina. Sixty-one percent of the employment in Dare County relates to the tourism industry. Dare County promotes both tourism during the peak (summer) season, as well as the development of "shoulder" season tourism (in the spring and fall). The labor force in Dare County increases by approximately 75 percent between off-peak season and peak season. In 1999, the seasonal economic revenues represented more than 70 percent of the annual economy in Dare County (Outer Banks Chamber of Commerce, 2003). The abundant natural resources in Dare County will continue to be a major draw for tourists.

Cape Hatteras National Seashore is home to many species of flora and fauna and a number of biotic communities. It is a popular local, state, and national vacation destination. Recreation visit statistics posted on the National Park Service (NPS) web site show that the Cape Hatteras National Seashore (including Bodie, Hatteras, and Ocracoke islands) had 2,237,378 recreational visitors in 2007. Visitors enjoy a variety of activities, including birding, fishing, surfing, windboarding, swimming, hiking, and attending interpretive programs offered by NPS rangers. The Pea Island National Wildlife Refuge reports 2.7 million visitors annually, including birders, canoeists, beach users, fishermen, and photographers (Pea Island National Wildlife Refuge web site, August 18, 2008). Eco-tourism, a concept of combining ecological awareness and tourism, has become a new marketing tool for all of northeastern North Carolina. Dare County supports the concept of combining natural resources and tourism to promote the area's ecological values (2003 *Dare County Land Use Plan*).

- **Reliance of the permanent Hatteras Island population on mainland goods and services.**

The southern beaches on Hatteras Island are all part of unincorporated Dare County and feature the six recreational-oriented communities of Rodanthe, Waves, Salvo, Avon, Buxton, and Frisco (see Figure 1-1). Hatteras, a seventh community, is home to the Hatteras Inlet Ferry Terminal. Development in Hatteras reflects its status as a commercial fishing village, and a dominant commercial presence exists along NC 12. Hatteras serves as both a year-round community and a seasonal resort destination. The permanent population on Hatteras Island was 4,001 in 2000.

Products and services involved with daily life on Hatteras Island are transported across the Bonner Bridge. All types of goods can be purchased on the island, but the selection currently is limited, necessitating regular shopping trips north across Bonner Bridge to Manteo or communities on Bodie Island (Nags Head, Kill Devil Hills, etc). The island residents rely heavily on repair and other services from the mainland. Residents, as well as visitors, of

Hatteras Island rely on off-island community services. Telephone and electric service are brought to Hatteras Island via Bonner Bridge.

On Hatteras Island, the communities of Avon, Buxton, Frisco, and Hatteras are served by the Dare County Water Department. The other Hatteras Island communities of Rodanthe, Waves, and Salvo rely on private wells, as well as the County's reverse osmosis plant for potable water.

Dare County provides trash collection for the unincorporated areas of Dare County. Refuse is removed from Hatteras Island via Bonner Bridge. Dare County owns and operates transfer stations in Buxton and Manteo. On-site septic tank and drainfield systems are the predominant methods of wastewater treatment on Hatteras Island.

Hospitals are located in Nags Head, North Carolina; Elizabeth City, North Carolina; Norfolk, Virginia; and Chesapeake, Virginia. Ambulance destinations always are off the island.

- **Hatteras Island and Ocracoke Island emergency evacuation requirements.**

In 1992, the Dare County Emergency Management Control Group was established to administer the *Dare County Emergency Operation Plan*. The plan describes evacuation procedures in the event Dare County is evacuated because of the threat of hurricanes or other storm events. An underlying objective of the plan is to minimize physical damage, injury, and loss of life in the event of a hurricane strike. In such an event, the plan provides for both Hatteras and Ocracoke islands to be evacuated to Bodie Island via Bonner Bridge and, subsequently, to the mainland via US 64 and US 158. Therefore, Bonner Bridge is considered a critical evacuation route in the plan

The 2001 US Army Corps of Engineers (USACE) Hurricane Evacuation Model estimated that, for a Category 3-5 hurricane during a period of tourist high occupancy in 2000, 9,530 vehicles could have been expected to evacuate via NC 12 on Hatteras Island. There would be approximately 14,761 evacuating vehicles on Bonner Bridge in response to a Category 3 – 5 storm during the peak tourist season in 2025.

A 2005 hurricane evacuation study prepared for NCDOT (PBS&J, 2005) modeled 2004 and 2030 evacuation response times (time to move all evacuees through the road network) for North Carolina coastal areas. Clearance times for evacuees using US 64 to Columbia (the closest evacuation route for Hatteras Island residents and visitors) was 17.5 hours in 2004 (assuming 75 percent tourist occupancy and a Category 3 to 5 hurricane). This time is expected to rise to 26.4 hours by 2030. An 18-hour clearance time standard was adopted by the North Carolina Legislature in 2005 (NC Gen. Stat. § 136-102.7, "Hurricane Evacuation Standard"). However, the link in the coastal road system controlling the current and future clearance time when evacuating along US 64 is between Columbia, North Carolina in Tyrrell County and Mann's Harbor in Dare County and not NC 12 in the project area.

- **Travel demand.**

The 2002 annual average daily traffic (AADT) volume over Bonner Bridge was estimated to be 5,400 vehicles per day (vpd). Summer peak season (June through August) daily traffic flows are substantially higher than the AADT. In 2002 during the peak summer season, average weekday traffic crossing the bridge was 8,000 vpd. Average weekend traffic carried in peak

season was 10,900 vpd. By 2025, these daily volumes are forecast to rise to 9,600 vpd (AADT), 14,200 vpd (summer average weekday), and 19,200 vpd (summer average weekend).

1.1.2 Migration of the Natural Channel Gorge

The Oregon Inlet channel migrates, and channel movement must be considered when determining the proper horizontal alignment of any replacement bridge. Since its opening during a storm in 1846, the midpoint of Oregon Inlet has migrated steadily southward just over two miles (3.2 kilometers) at an average rate of 70 feet (21.3 meters) per year. The history of Oregon Inlet's migration is punctuated by alternate widening and narrowing, typically in response to severe storms. Widening and narrowing of Oregon Inlet generally occurs because of erosion and accretion along the Bodie Island (north) shoulder of the inlet. Until construction of the terminal groin in 1989, the Hatteras Island shoulder moved steadily southward. Thus, most of the current variation in inlet width is the result of Bodie Island movement.

Like all active tidal inlets, Oregon Inlet requires periodic dredging to maintain a navigation channel; dredging also is required to maintain this channel such that it passes under the Bonner Bridge navigation span. The current natural inlet gorge is 30 to 40 feet (9 to 12 meters) deep.

1.1.3 Erosion of the Hatteras Island Shoreline

Shoreline erosion and ocean overwash threaten to sever segments of the NC 12 roadway for several miles south of Bonner Bridge.

In August 1991, the NCDOT sponsored a research project conducted by North Carolina State University to identify critical sections of North Carolina's coastal highways and options available for maintaining these highway corridors. The study concluded that NC 12 has six critical sections, or "hot spots," between Oregon Inlet and the southwestern tip of Ocracoke Island. Three of the hot spots are at the north end of Hatteras Island: Canal Zone, Sandbag Area, and Rodanthe 'S' Curves. The NCDOT has completed vulnerability studies (*NC 12 Shoreline Erosion Analysis, Canal and Sandbag Areas*, 2002) for the two northernmost hot spots, the Canal Zone and Sandbag Area (see Figure 1-1).

The northern Rodanthe area, including the Rodanthe 'S' Curves Hot Spot, has the highest erosion rates in the Bonner Bridge replacement project area, with a maximum rate of about 15 feet (4.6 meters) per year. Erosion rates in the Canal Zone and Sandbag Area hot spots are as high as 8 feet (2.4 meters) per year. (Overton and Fisher, June 2005).

In recognition of the need to address long-term maintenance of NC 12 on Hatteras and Ocracoke islands, a partnering agreement was formulated and adopted by the USACE, the NPS, the US Fish and Wildlife Service (USFWS), the National Marine Fisheries Service, the Federal Highway Administration (FHWA), the North Carolina Department of Environment and Natural Resources, Dare County, Hyde County, and the NCDOT. The Executive Committee and Interagency Task Force on the Transportation System on North Carolina's Outer Banks were established in October 1993 because of the partnering agreement. The Interagency Task Force's (titled the Outer Banks Task Force [OBTF]) mission has been to take an integral role in developing the long-term protection and maintenance plan for the transportation system on the Outer Banks. The Memorandum of Agreement (MOA) establishing the OBTF has expired, but the OBTF continues to meet to share information and to foster continued relationships.

In addition, the USACE is planning to conduct a feasibility study of Hatteras and Ocracoke islands to determine possible long-term solutions to the transportation problems that exist on both Hatteras and Ocracoke islands. NCDOT is the local sponsor for this Congressionally authorized feasibility study (TIP No. R-3116H). This study is currently unfunded by the US Congress.

1.2 Project Purpose

The purposes of the proposed project are to:

- **Provide a new means of access from Bodie Island to Hatteras Island for its residents, businesses, services, and tourists prior to the end of Bonner Bridge’s service life.**

Needs Addressed: Although Bonner Bridge is reaching the end of its service life, demand for convenient daily and emergency access across Oregon Inlet is expected to continue.

- **Provide a replacement crossing that takes into account natural channel migration expected through year 2050 and provides the flexibility to let the channel move.**

Needs Addressed: The natural channel or gorge through Oregon Inlet migrates. A replacement bridge needs to provide spans of sufficient height and width for navigation through the anticipated areas of future natural channel migration, thereby helping to reduce future dredging needs. Construction of the replacement crossing west of Oregon Inlet where less sand movement occurs also could help reduce future dredging needs.

- **Provide a replacement crossing that will not be endangered by shoreline movement through year 2050.**

Needs Addressed: The southern terminus of Bonner Bridge is north of portions of NC 12 threatened by shoreline erosion and overwash. Placing the southern terminus of a replacement bridge south of these areas, or including a long-term NC 12 maintenance and protection component, will reduce the need for frequency of maintenance of these threatened segments of NC 12. All the alternatives were ultimately developed for a service life through 2060.

1.3 Background Information

1.3.1 Project Area Setting and Land Use

The Herbert C. Bonner Bridge spans Oregon Inlet within North Carolina’s Outer Banks (see Figure 1-1) and connects Bodie Island with Hatteras Island. The bridge provides the only highway connection of Hatteras Island and the mainland via NC 12 and US 64.

Oregon Inlet is within Dare County and is the northernmost inlet along the Outer Banks. The inlet was opened in 1846 by a severe storm and, after closing, reopened in 1864. The history of Oregon Inlet has been one of regular southward migration, accompanied by alternate widening and narrowing of the inlet. To maintain navigability of Oregon Inlet, maintenance dredging by the USACE has been necessary since 1960.

Section 404/NEPA Merger Project Team Meeting Agreement Concurrence Point No. 1 - Purpose and Need

Project No./TIP No./Name/Description:

Federal Project Number: BRNHF-12(24) (previously BRS-2358(15));

State Project Number 8.1051205 (previously 8.1051201);

TIP Project Number: B-2500

Description: Replacement of the Herbert C. Bonner Bridge (Bridge No. 11) over Oregon Inlet in Dare County

Purpose of and Need for the Proposed Project:

(See the Purpose and Need Statement for more information.)

The purposes of the proposed action are to:

- Prior to the end of the service life of the Bonner Bridge, provide a new means of access from Bodie Island to Hatteras Island for its residents, businesses, services, and tourists, ~~including users of the Hatteras Island portion of the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge.~~ 1/27/20

Needs Addressed: Although the existing Bonner Bridge is reaching the end of its service life, continued demand for convenient daily and emergency access across Oregon Inlet is expected to occur.

- Provide a replacement crossing that takes into account natural channel migration expected through year 2050 and provides the flexibility to let the channel move.

Needs Addressed: The natural channel or gorge through Oregon Inlet migrates. A replacement bridge needs to provide spans of sufficient height and width for navigation through the anticipated area of future natural channel migration, helping to reduce future dredging needs.

- Provide a replacement crossing that will not be endangered by shoreline movement through year 2050 and is placed so it can continue to serve NC 12 easily, even if that road must be shifted because of shoreline erosion and overwash.

Needs Addressed: The southern terminus of the existing bridge is north of portions of NC 12 threatened by shoreline erosion and overwash. Placing the southern terminus of a replacement bridge south of one or more of these areas will eliminate the need to maintain these threatened segments of NC 12.

The Project Team concurred on this date of 7.31.02 with the purpose of and need for the proposed project as stated above.

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