

MID-CURRITUCK BRIDGE STUDY
Currituck County and Dare County, NC

Federal-Aid Project Number: BRSTP-000S (494)

WBS Element: 34470.1.TA1

STIP No. R-2576

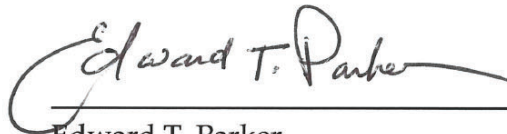
**REEVALUATION OF FINAL ENVIRONMENTAL
IMPACT STATEMENT**

US Department of Transportation, Federal Highway Administration
North Carolina Turnpike Authority
a Division of the North Carolina Department of Transportation

March 6, 2019

3/7/2019

Date



Edward T. Parker
Acting Division Administrator
Federal Highway Administration

3/7/19

Date



Rodger D. Rochelle, PE
NCTA Chief Engineer
North Carolina Department of Transportation
North Carolina Turnpike Authority

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Documentation Prepared By:
WSP USA

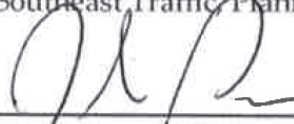
3/6/2019
Date



Lynn Purnell, PE, ENV SP
Southeast Traffic Planning and Environment Manager



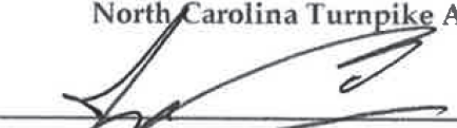
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John Page, AICP
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Documentation Prepared For:
North Carolina Turnpike Authority

3/6/2019
Date



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REEVALUATION OF FINAL ENVIRONMENTAL IMPACT STATEMENT

The North Carolina Department of Transportation (NCDOT), in cooperation with the Federal Highway Administration (FHWA), is evaluating proposed transportation improvements in the Currituck Sound area, including construction of a Mid-Currituck Bridge. The proposed action is defined as a bridge across Currituck Sound from the mainland to the Outer Banks. A bridge across Currituck Sound is a part of the Preferred Alternative identified in the FEIS. The proposed action is included in the NCDOT's *2018 to 2027 State Transportation Improvement Program (STIP)* (August 2017) as project R-2576.

This reevaluation of the Mid-Currituck Bridge Study Final Environmental Impact Statement (FEIS) considers changes that have occurred in the project setting, travel demand, area plans, laws and regulations, environmental impacts, and other information or circumstances since the approval of the FEIS in January 2012. The purpose of this reevaluation is to determine whether the FEIS remains valid or a supplement to the FEIS is needed. This report presents the key findings of the attached *Reevaluation of Final Environmental Impact Statement Study Report (Study Report)*. Relevant sections of the *Study Report* are referenced in the discussion below. The *Study Report* also includes several appendices presenting other relevant post-FEIS information:

- Agency correspondence received since the FEIS and revised relocation reports.
- Responses to comments on the FEIS.
- Correspondence commenting on the FEIS.
- Response to non-governmental organization (NGO) comments received during reevaluation preparation.
- NGO correspondence received during reevaluation preparation.
- Errata to the FEIS.
- Revised project commitments.

1.0 What have been the changes in existing setting?

Changes in the existing setting involved community resources, natural resources, and other physical characteristics, as well as the indirect and cumulative impacts study area characteristics. There were no changes in cultural resources in the project area.

Community Resources. Some construction has occurred within developments (primarily residential development and limited commercial development) identified in the FEIS. In 2016, Currituck County built multi-use paths along NC 12 within the portion of the project area between Albacore Street and Marlin Way. Dominion Power built a second power line in the Preferred Alternative interchange area. See Sections

2.1.1 and 4.1 of the *Study Report*. As shown in Table 1, there are no new significant impacts.

Natural Resources. Based on updated delineations, the primary changes in wetland and other US Army Corps of Engineers (USACE) jurisdictional resource boundaries were along US 158 at the Preferred Alternative's interchange with US 158. Changes also occurred in the east and west boundaries of Maple Swamp. The eastern shoreline of Currituck Sound within the Preferred Alternative's impact area has eroded in some places. Areas logged in Maple Swamp could now be mapped as a different biotic community. These transitional communities reflect habitat types previously identified in the project area and are neither unique nor rare. The boundaries of areas of Submerged Aquatic Vegetation (SAV) in Currituck Sound have changed. The Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) was listed as endangered and granted protection under the Endangered Species Act since the FEIS was prepared. Its listing was anticipated and addressed in the FEIS. Two species, the rufa red knot (*Calidris canutus rufa*) and the northern long-eared bat (*Myotis septentrionalis*) were listed as threatened. See Sections 2.1.3 and 4.3 of the *Study Report*.

Other Physical Characteristics. In 2015, new preliminary Federal Flood Insurance Maps were released that include changes in floodplain boundaries in Currituck County and Dare County. Across both counties, the new maps show a reduction in the extent of the floodplain, as well as a lower base flood elevation. See Section 4.4 of the *Study Report*.

Indirect and Cumulative Impact Study Area Characteristics. Currituck County has entered an agreement with the United States Fish and Wildlife Service (USFWS) to exchange Currituck National Wildlife Refuge land north of Corolla for county-owned land on Knotts Island. A recent North Carolina state law forbids local ordinances that limit the number of bedrooms in a house. The ability of local ordinances to regulate the density of development remains. New development occurred around the Currituck County airport; a waterpark was built in Powell's Point; and there were other small development projects. All are compatible with the Currituck County land use plan. See Section 4.6.1 and 4.6.2 of the *Study Report*.

Changes in existing setting raised no new issues of significance.

2.0 What have been the changes to the existing transportation network?

There were no changes in the existing transportation network in the project area except for the new multi-use paths in Currituck County noted above. Therefore, there are no new issues of significance.

3.0 What have been changes in the planned projects for improvement?

The State Transportation Improvement Program (STIP) was updated. Changes from the FEIS are shown in Figure 1. The current 2018 to 2027 STIP adds access management improvements to US 158 in Dare County from the Wright Memorial Bridge to US 64 in Nags Head (project R-3419). Of the STIP projects shown in the FEIS as a part of the No-Build Alternative, the 2018 to 2027 STIP shows projects R-2544 and R-2545 (widening US 64 to four lanes from Columbia to Mann’s Harbor) as unfunded future year projects (post-Fiscal Year [FY] 2027). One other remains funded in the STIP and another (upgrading existing SR-1222 in northern Currituck County) has been completed. STIP changes necessitated a change in the definition of the No-Build Alternative, as described below.

The Town of Southern Shores updated their land use plan. The Preferred Alternative remains compatible with this plan. ER2 remains not compatible because the Mid-Currituck Bridge is assumed in that plan. Currituck County developed a bicycle, pedestrian, access, and wayfinding plan for their Outer Banks. The revised designs of the Preferred Alternative and ER2 are compatible with the projects recommended in this plan. New comprehensive transportation plans were released by Currituck and Dare counties. The Preferred Alternative reflects the Currituck County plan. The revised design of ER2 on US 158 reflects a component of the Dare County plan. Dare County’s plan does not include the NC 12 improvements included in ER2. See Section 2.2 of the *Study Report*.

Changes in planned projects for improvement raised no new issues of significance.

4.0 How has the socio-economic or land development changed?

As noted above, some new construction has occurred within developments identified in the FEIS. Also, as noted above, new development occurred around the Currituck County airport; a waterpark was built in Powell’s Point; and there were other small development projects in the project area. Since the FEIS, the rate of development on Currituck County mainland and the Outer Banks has slowed (see Section 2.4.1 of the *Study Report*).

The conclusion that there are no concentrations of minority, low-income, and limited English proficiency households residing near the Preferred Alternative or ER2 that could be directly affected by construction or operation did not change. Thus, neither ER2 or the Preferred Alternative would cause disproportionately high and adverse effects on any minority, low-income populations, or limited English proficiency populations in accordance with the provisions of Executive Order 12898 and FHWA Order 6640.23. No further environmental justice analysis is required.

Advance acquisition of right-of-way was made at the Outer Banks terminus of the Preferred Alternative in 2016. The land owners indicated an intention to develop the land. Although difficult to quantify because of its preemptive nature, the advance purchase avoided potential cost and displacement/relocation impacts that would have occurred with development of the land prior to purchase.

4.1 How does future land development impact future traffic forecasts?

Since the FEIS there were no changes in the type and characteristics of planned and expected development that would affect the future traffic forecasts (see Section 2.4.1 of the *Study Report*).

The updated traffic forecasts for NC 12 from Southern Shores north continued to use planned and expected development for all alternatives. No changes in the type and location of planned and expected development were found since the FEIS. From Southern Shores north subdividing of land for development and commitment to specific uses is complete and so planned and expected development is known. Traffic forecasts that accounted for the hourly traffic capacity of NC 12 also were prepared for the No-Build Alternative and ER2. The NC 12 capacity constraint likely would reduce future development levels on the Currituck County Outer Banks with the No-Build Alternative and ER2. Changes in the constrained development levels for the No-Build Alternative and ER2 since the FEIS were minimal. See Section 2.8 of the *Study Report*.

In the development of new traffic forecasts, it was found that fewer trips per dwelling unit are now being made along NC 12 from Southern Shores north. In addition, the growth rate of trips using US 158, which include both trips traveling to destinations along NC 12 from Southern Shores north and on the balance of the Outer Banks, has decreased. See Section 2.4.2 of the *Study Report*.

4.2 How does this impact traffic operations?

The changes in trip making characteristics reduced the traffic forecasts on NC 12 and US 158 for the No-Build Alternative, ER2, and the Preferred Alternative. In addition, the Highway Capacity Manual (HCM) used to identify future congestion was updated in 2016 (see Section 2.5 of the *Study Report*) and the Federal Emergency Management Agency/USACE hurricane clearance model used by emergency management officials to determine when to issue evacuation orders was revised in 2016 (see Section 2.7 of the *Study Report*). These three changes all affected the basis for the project purpose and need. The purpose and need, however, remain. See Section 3.1 of the *Study Report* for a discussion of changes in the basis for the project's need.

Changes in socio-economic characteristics and land development raised no new issues of significance.

5.0 What are the changes to the proposed design?

5.1 No-Build Alternative

State Transportation Improvement Program (STIP) project R-3419 was added to the No-Build Alternative. This project is defined in the No-Build Alternative as a four-lane superstreet with improvements at major intersections, including the US 158 intersection with NC 12. See Section 1.2.1 of the *Study Report*.

Based on right-of-way, utility, and construction costs in the November 2018-2027 STIP, the cost of R-3419 and thus the No-Build Alternative would be \$188.95 million.

5.2 Preferred Alternative

The revised Preferred Alternative design includes a revised interchange between US 158 and the mainland bridge approach road, including the associated toll plaza, and the elimination of most improvements to NC 12 south of those associated with the Outer Banks bridge terminus. The location and features of the FEIS and revised designs are shown in Figure 2 and Figure 3. See Section 1.2.2 of the *Study Report* for a full description of the features of the FEIS and revised design.

A cost estimate review workshop was conducted in January 2018. As a result, total project costs including prior expenditures, for the Preferred Alternative are expected to range from \$439.1 to \$605.4 million. A Monte Carlo simulation, which is a risk-based modeling technique, for the Preferred Alternative resulted in \$490.59 million in year of expenditure dollars at a 70 percent confidence level. This estimate does not include prior expenditures of \$40.48 million, as of November 30, 2017. See Section 1.2.4 of the *Study Report* for further discussion of costs.

5.3 ER2

The revised ER2 design has fewer proposed improvements on NC 12 and a revised intersection instead of an interchange at the intersection of US 158 and NC 12. The location and features of the FEIS and revised design are shown in Figure 4 and Figure 5. See Section 1.2.3 of the *Study Report* for a full description of the features of the FEIS and revised design.

Total costs for ER2 would range between \$277.9 to 288.1 million. ER2 was not included in the January 2018 cost estimate review workshop because its cost is less than and does not approach \$500 million. See Section 1.2.4 of the *Study Report* for further discussion of costs.

6.0 What are the changes to the project impacts from the FEIS?

Table S-1 of the FEIS presented a summary of key impacts for the detailed study alternatives. Table 1 presents a similar summary, comparing the impacts for the Preferred Alternative identified in the FEIS with those identified during the

reevaluation. In many cases, no change in impacts was identified. In others, impacts went down because the revised designs affect less of the existing road network. As shown in Table 1 the reevaluation found that impacts were greater as follows:

- ER2
 - Increased relocations. If ER2 were implemented, reductions in estimated relocations would be sought during final design of the alternative and relocation assistance would be provided for those remaining relocations. See Section 4.1.4 of the *Study Report* for further information on the increased relocations.
 - The width of the US 158 shading Jean Guite Creek, a primary nursery area, increased from 35 to 42 feet, increasing the shading impact an additional 0.02 acre. Mitigation for this impact will be reflected in the NC Coastal Management Act (CAMA) permit required for this impact. See Section 4.3.2 of the *Study Report*.
 - For the new threatened and endangered species, the biological conclusion is “No Effect” for the rufa red knot and “May Affect, Likely to Adversely Affect” for the northern long-eared bat. The USFWS has a programmatic biological opinion (PBO) for the northern long-eared bat in eastern North Carolina. The programmatic determination for the northern long-eared bat is “May Affect, Likely to Adversely Affect.” The PBO provides incidental take coverage for the northern long-eared bat and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes the project area. See Section 4.3.8 of the *Study Report*.
- Preferred Alternative
 - For the new threatened and endangered species, the biological conclusion is “May Affect, Not Likely to Adversely Affect” for the rufa red knot and “May Affect, Likely to Adversely Affect” for the northern long-eared bat. The Preferred Alternative may indirectly affect the rufa red knot because there is a reasonable expectation of induced beach driving if beach use by private vehicles remains unregulated. Increased beach traffic and disturbances could be a source of increased effects to foraging and resting rufa red knot. However, the potential increase in beach driving would not likely create a new form of impact to the rufa red knot. No expansion of the area used for beach driving would occur because of the Preferred Alternative because all beaches that could be affected by increased beach driving are currently open for vehicle use, and are used between the foreshore and the dune line whether for driving or parking. Further, current beach driving volumes are already considered notable, as opposed to minor, by those concerned with the impact of beach driving. Any changes to effects because of the project would be discountable because of the inability to meaningfully measure, detect, or evaluate the change in effects from current beach driving. The discussion for the northern long-eared bat above applies to the Preferred Alternative, too. See Section 4.3.8 of the *Study Report*.

- Impacts to cultivated agricultural land increased 6.7 acres from 15.3 acres to 22.0 acres; however, the use of prime and state and locally important farmland soils decreased by 6.7 acres and 43.1 acres, respectively. See Section 4.1.12 of the *Study Report*. This impact is primarily associated with the US 158/Mid-Currituck Bridge interchange area. It results from a change in the configuration of the interchange and not a change in location. The two changes together are considered a net reduction in farmland impact.
- Wetland clearing associated with the Maple Swamp bridge increased from 25.4 to 32.9 acres. This change is associated with the change in the US 158/Mid-Currituck Bridge interchange configuration, which was done in part to minimize wetland fill impacts, which dropped from 8.3 to 4.2 acres. The wetland to be cleared is within an area that was logged by the property owners beginning in 2008. The vegetation has begun to re-grow and is now primarily young forests. If cleared again by this project, the re-growth process will occur again. During final design, opportunities to reduce clearing will be considered. No grubbing would be associated with the clearing, so it is not considered a USACE jurisdictional impact under Section 404 of the Clean Water Act. See Section 4.3.2 of the *Study Report*.

For both these alternatives, these changes in impacts are not considered significant for the reasons noted in each bullet point above.

7.0 What are the changes to project benefits?

The FEIS identified three underlying needs of the project area:

1. The need to substantially improve traffic flow on the project area’s thoroughfares (US 158 and NC 12);
2. The need to substantially reduce travel time for persons traveling between the Currituck County mainland and the Currituck County Outer Banks; and
3. The need to substantially reduce hurricane evacuation times from the Outer Banks for residents and visitors who use US 158 and NC 168 as an evacuation route.

The purpose of the project is to meet these three needs. These needs remain in the project area with the updated traffic forecast. Changes in the traffic flow, travel time, and hurricane clearance time benefits of the project that were identified in the reevaluation are presented below.

7.1 Traffic Flow Benefits

For all alternatives, the severity of congestion in 2040 is less than in the FEIS for 2035 because the updated traffic forecasts are lower. Using the update traffic forecasts,

compared with the No-Build Alternative and ER2, the Preferred Alternative would offer:

- Less severe congestion, with traffic demand during periods of congestion generally not exceeding the capacity of the road. See Table 2 and Section 3.2.1.1 of the *Study Report*, including the travel benefits Table 3-3 to Table 3-6.
- A shorter duration of congestion on NC 12 in Dare County, 10 to 12 hours versus 13 to 15 hours on the summer weekend with the No-Build Alternative. ER2 would not reduce the duration of congestion on NC 12. See Section 3.2.1.2 of the *Study Report*, including Table 3-7 and Table 3-8 and Figure 3-1 to Figure 3-5.
- The best reduction in the severity of congestion on the summer weekend on the highway network. The Preferred Alternative would eliminate travel demand above the capacity of the road throughout the project area's road network with the sole exception of the US 158/NC 12 intersection area where LOS F would occur for 8 to 10 hours on the summer weekend. See Section 3.2.1.3 of the *Study Report*.
- Travel demand not exceeding the capacity of NC 12 on the summer weekend make it unlikely that queues on NC 12 would back up onto US 158, unless there is a crash or other lane blockage. Such backups disrupt US 158 traffic and cause temptation for visitors to use local streets in Southern Shores to bypass a portion of NC 12. See Section 3.2.1.4 of the *Study Report*.

As shown in Table 2, with the FEIS forecasts and HCM model, the Preferred Alternative resulted in a reduction in total congested annual vehicle-miles traveled (VMT) in the project area. This was the case assuming either constrained or unconstrained development in Currituck County. With the lower updated forecasts and the new HCM model and when taking into consideration the likely constraint on development in Currituck County with the No-Build Alternative, the total annual congested VMT traveled in 2040 is now similar between the No-Build Alternative and the Preferred Alternative. ER2 includes improvement on NC 12 that reduces its development constraint, which results in an annual congested VMT higher than both the No-Build and Preferred alternatives. See Section 3.2.1.2 of the *Study Report*.

7.2 Travel Time Benefits

As was found in the FEIS, the travel time from the Currituck County mainland to its Outer Banks over the Mid-Currituck Bridge would be 11 minutes. With the Preferred Alternative, the average summer travel time from the Mid-Currituck Bridge interchange on US 158 to Albacore Street on the Outer Bands on existing roads would be 64 minutes less in 2040. It was 47 minutes less in 2035 in the FEIS. ER2 would reduce travel time on existing roads by 19 minutes (29 minutes in the FEIS). See Table 2 and Section 3.2.2 of the *Study Report*.

7.3 Hurricane Clearance Benefits

In the FEIS, either ER2 or the Preferred Alternative would reduce hurricane clearance times from 36 to 27 hours. With the new clearance time model, the reduction would be from 37.2 to 32.3. Assuming constrained development in Currituck County with the No-Build Alternative, the reductions would be from 34.3 hours to 32.3 hours for the

Preferred Alternative and to 30.7 hours for ER2. None of the alternatives would meet the Reevaluation's 30-hour clearance time goal or the 18-hour goal used in the FEIS and legislated by the North Carolina General Assembly based on the 24-hour warning timeframe. See Table 2 and Section 3.2.3 of the *Study Report*.

Changes in project benefits raised no new issues of significance.

8.0 Agency Coordination

As a part of new environmental studies, contacts were made with the following environmental resource and regulatory agencies for updating the characteristics of the natural environment:

- USFWS
- USACE
- North Carolina Wildlife Resources Commission
- North Carolina Division of Marine Fisheries
- North Carolina Division of Coastal Management
- North Carolina Division of Water Resources (NCDWR)

Contacts also were made with Dare County, Currituck County, Town of Southern Shores, Town of Duck, and the Town of Kitty Hawk.

Coordination with the State Historic Preservation Office (HPO) affirmed that no new cultural resource surveys were required. This conclusion was stated by HPO for the Preferred Alternative in a July 20, 2015 letter. In a letter dated April 7, 2017, HPO affirmed the same conclusion for ER2. Both letters are included in Appendix A of the *Study Report*.

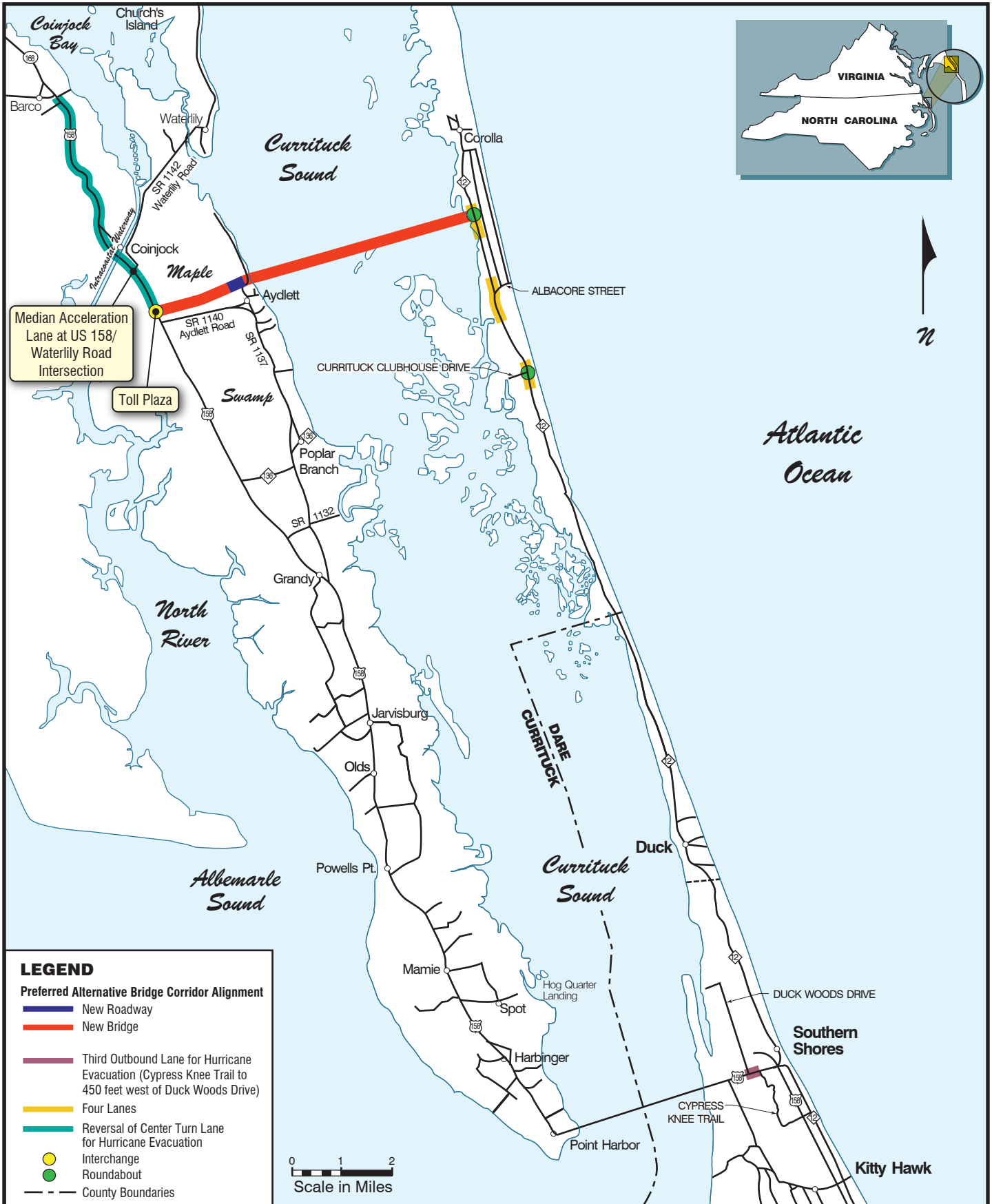
Additional Section 7 consultation was conducted with the USFWS. A related letter from the USFWS is included in Appendix A of the *Study Report*.

On March 14, 2018, FHWA and NCDOT met with the environmental resource and regulatory agencies to provide an update on the project and to review changes that have occurred since the 2012 FEIS. Meeting minutes, including a list of the agencies involved, and the electronic slide show presented are included in Appendix H of the *Study Report*. A framework for regular communication among all the agencies involved in the environmental review process is documented under a Section 6002 Agency Coordination Plan (Section 6002 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users [SAFETEA LU] [23 U.S.C § 139]). An update of the coordination plan also is included in Appendix H of the *Study Report*.

NCDOT met with USACE on March 24, 2017 and August 17, 2017 to discuss updated jurisdictional impacts. NCDOT met with NCDWR on December 18, 2018 to discuss stormwater runoff and SAVs.

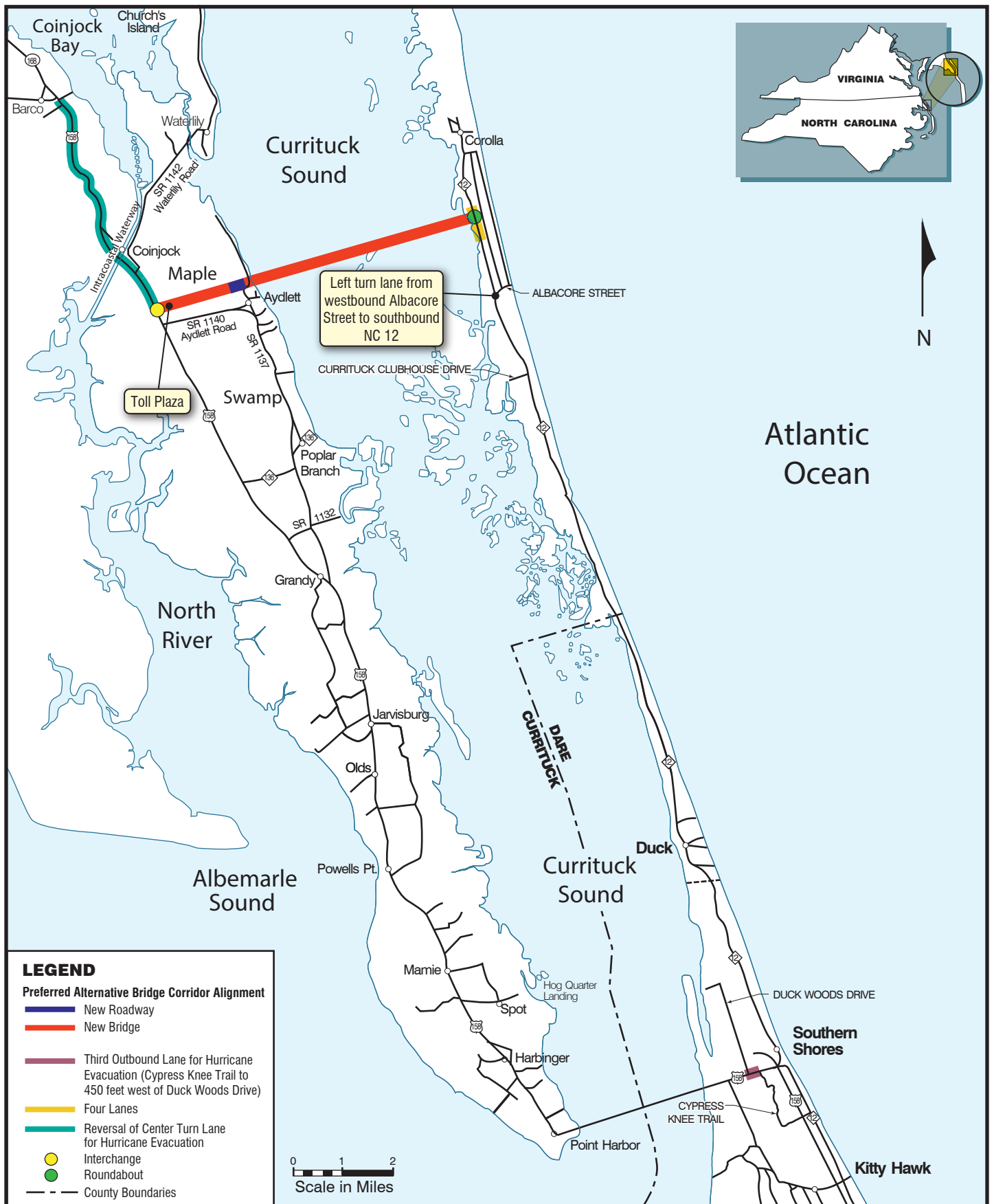
9.0 Conclusion

The updates and changes demonstrate that there are no new issues of significance associated with this project. Conclusions reached in this reevaluation considered all comments on the FEIS that were received, including those from the public, government officials, and non-governmental organizations, as well as comments received from two NGOs during the preparation of this reevaluation. A supplemental EIS is not required because there are no substantial changes in the proposed action nor are there significant new circumstances or information relevant to environmental concerns (40 CFR 1502.9(c)(1)), 23 CFR.771.130(b)(1). Additional discussion of how these conclusions were reached is presented in Section 6.0 of the *Study Report*.



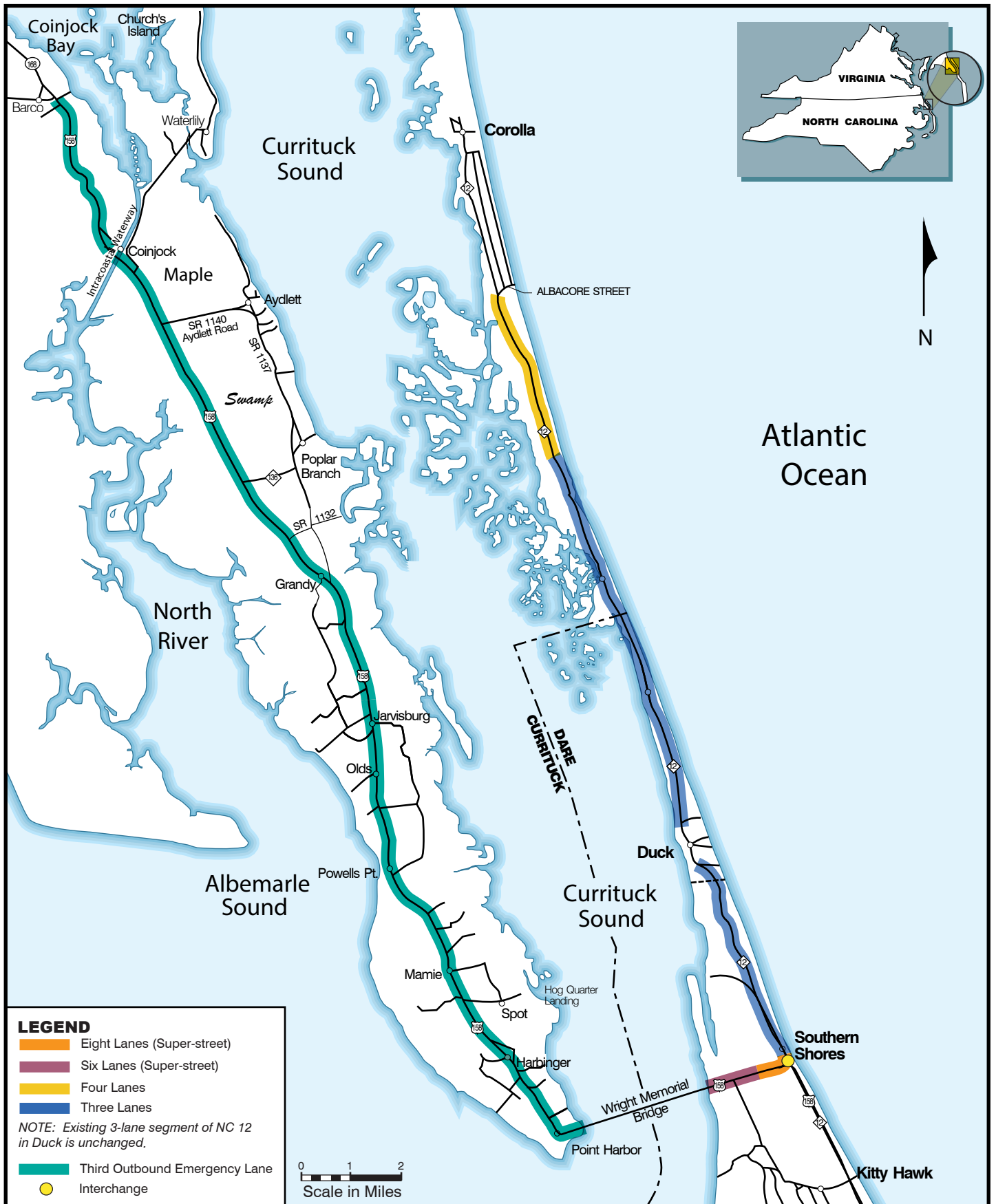
**Preferred Alternative
(FEIS Design)**

**Figure
2**



**Preferred Alternative
(Revised Design)**

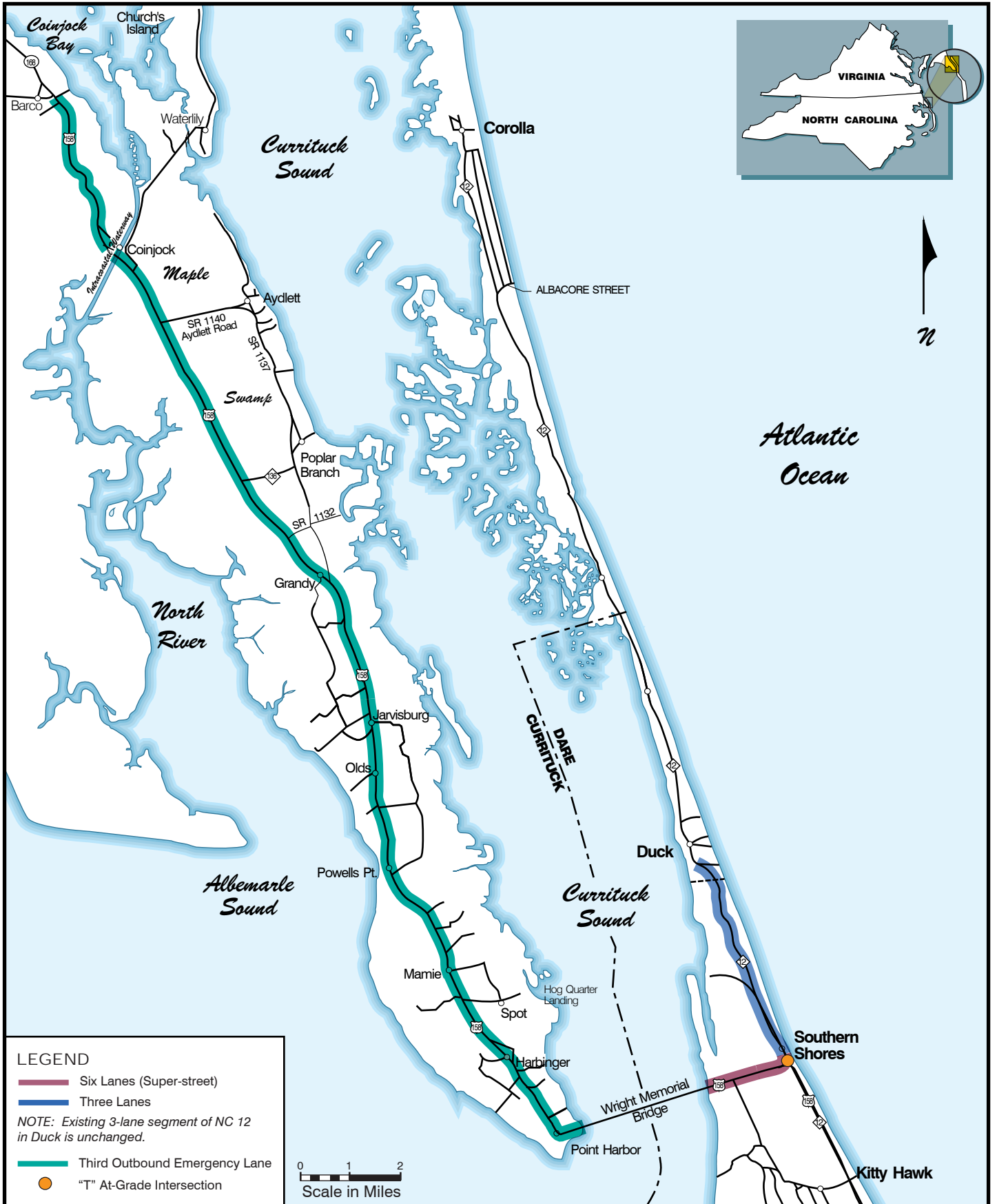
**Figure
3**



**ER2
(FEIS Design)**

Figure

4



**ER2
(Revised Design)**

**Figure
5**

Table 1. Comparison of Key Impacts in the FEIS and This Reevaluation

	ER2		Preferred Alternative	
	FEIS	Reevaluation	FEIS	Reevaluation
Community Impacts				
Loss of Neighborhood or Community Cohesion				
• Mainland	Minor	Same as FEIS	Visual barrier to cohesion in Aydlett	Same as FEIS
• Outer Banks	Pavement widened at two locations with notable pedestrian activity	Pavement widened at one location with notable pedestrian activity	Would be in the currently unimproved Phase II of Corolla Bay subdivision	In same location, now owned by NCDOT
Relocations				
• Residences	16	36 (opportunity to reduce to 20)	6	Same as FEIS
• Businesses	5	6 (opportunity to reduce to 5)	3	Same as FEIS
• Outdoor Advertising Signs	29	55 (opportunity to reduce to 52)	3	Same as FEIS
• Gravesites	66	40	20	2
Land Use Plan Compatibility	Inconsistent in that widening NC 12 not in land use plans or rejected in land use plans; but bridge is compatible	Same as FEIS	Generally, compatible	Same as FEIS
Access Changes				
• Business	Substantial changes in business access at the US 158/NC 12 interchange; notable parking loss at Home Depot (40 spaces/ 10 percent)	Left turners to and from businesses and the Outer Banks Visitor Bureau on US 158 would have to make right turns and use superstreet U-turn opportunities	Substantial changes in business access and 129 parking spaces lost in the Albacore Street area on Outer Banks	Substantial changes in business access on the mainland
• Neighborhoods	Turning movements changed on US 158 in Currituck County. On NC 12, four street intersections closed to through traffic but not emergency vehicles. Alternate access exists. Left turns limited at Crown Point and Orion's Way on the Outer Banks with provisions for U-turns	No impact	Frontage roads used to maintain access to US 158 for properties in the US 158 interchange area. Left turns limited at Orion's Way on the Outer Banks with provisions for U-turns. North access road to North Harbor View Drive relocated	Frontage roads used to maintain access to US 158 for properties in the US 158 interchange area. North access road to North Harbor View Drive relocated
Effects on Pedestrian and Bicycle Provisions	Minor adjustments made to multi-use path location	Same as FEIS	Existing pedestrian and bicycle multi-use paths at the time of construction that are displaced would be replaced	Like FEIS but fewer affected

Table 1 (continued). Comparison of Key Impacts in the FEIS and This Reevaluation

	ER2		Preferred Alternative	
	FEIS	Reevaluation	FEIS	Reevaluation
Farmland				
• Prime Soils Used	Less than 2 acres	Same as FEIS	37.0 acres	30.3 acres
• State and Locally Important Soils Used	Less than 2 acres	Same as FEIS	72.0 acres	28.9 acres
• Agricultural land used	0.2 acre	Same as FEIS	15.3 acres	22.0 acres
Natural Resource Impacts¹				
Water Quality Impact	Increased levels of highway runoff with 89.0 acres of increased impervious surface	Increased levels of highway runoff with 33.7 acres of increased impervious surface	Potential for increased turbidity levels during Mid-Currituck Bridge construction; increased levels of bridge and highway runoff with 71.5 acres of increased impervious surface	Potential for increased turbidity levels during Mid-Currituck Bridge construction; increased levels of bridge and highway runoff with 64.3 acres of increased impervious surface
Natural Upland Biotic Communities Impact				
• Fill in Natural and Naturalized Upland Communities	85.3 acres	23.9 acres	33.6 acres	22.8 acres
• Clearing Natural and Naturalized Upland Communities	0.0 acre	Same as FEIS	1.3 acres	0.0 acres
Land Wildlife Habitat Impact	Least invasive	Same as FEIS	Removal and alteration of wildlife habitat (both by habitat use and bridging) and habitat edge effects	Same as FEIS
Shaded aquatic Bottom <6 feet deep	0.1 acre	0.0 acre	8.7 acres	7.8 acres
Water Wildlife Habitat Impact	Minor	Same as FEIS	Altered light levels and the introduction of piles as a hard substrate in Currituck Sound; localized noise, turbidity, and siltation during construction	Same as FEIS
Shading Jean Guite Creek (a primary nursery area)	36 feet	42 feet	0 feet	Same as FEIS
SAV Impact				
• Existing SAV Beds Shaded	0.0 acre	Same as FEIS	3.8 acres	3.5 acres

Table 1 (continued). Comparison of Key Impacts in the FEIS and This Reevaluation

	ER2		Preferred Alternative	
	FEIS	Reevaluation	FEIS	Reevaluation
<ul style="list-style-type: none"> Existing Beds and Potential (water depths ≤ 6 feet) SAV Shaded² 	0.1 acre	Same as FEIS	8.7 acres	8.8 acres
Wetlands Impacts				
<ul style="list-style-type: none"> Wetlands within Slope-Stake Line, plus Additional 25-foot Buffer 	12.6 acres	8.5 acres	8.3 acres	4.2 acres
<ul style="list-style-type: none"> Total CAMA Wetland Impacts 	0.7 acre	Same as FEIS	0.0 acre	Same as FEIS
<ul style="list-style-type: none"> Wetland clearing associated with the Maple Swamp Bridge 	0.0 acre	Same as FEIS	25.4 acres	32.9 acres
CAMA Areas of Environmental Concern Affected				
<ul style="list-style-type: none"> Fill 	0.9 acre	Same as FEIS	0.0 acre	Same as FEIS
<ul style="list-style-type: none"> Pilings 	0.0 acre	Same as FEIS	0.1 acre	Same as FEIS
<ul style="list-style-type: none"> Clearing 	0.0 acre	Same as FEIS	0.0 acre	Same as FEIS
Essential Fish Habitat Affected				
<ul style="list-style-type: none"> Fill 	1.8 acres	Same as FEIS	0.0 acre	Same as FEIS
<ul style="list-style-type: none"> Pilings 	0.0 acre	Same as FEIS	0.1 acre	Same as FEIS
<ul style="list-style-type: none"> Shading (water depths ≤ 6 feet) 	0.1 acre	Same as FEIS	8.7 acres	7.8 acres
<ul style="list-style-type: none"> Shading (SAV habitat) 	0.0 acre	Same as FEIS	4.8 acres	4.7 acres
<ul style="list-style-type: none"> Clearing 	0.0 acre	Same as FEIS	0.0 acre	Same as FEIS
Threatened and Endangered Species Habitat Affected				
	USFWS Jurisdiction			
Biological Determination	No Effect - 11 species	No Effect – 10 species	May Affect, Not Likely to Adversely Affect – 3 species	May Affect, Not Likely to Adversely Affect – 4 species
		May Affect, Not Likely to Adversely Affect - 1 species	No Effect – 8 species	May Affect, Likely to Adversely Affect – 1 species
	NMFS Jurisdiction			
	NA	NA	May Affect, Not Likely to Adversely Affect – 4 species	May Affect, Not Likely to Adversely Affect – 5 species
			No Effect – 2 species	No Effect – 2 species

Table 1 (continued). Comparison of Key Impacts in the FEIS and This Reevaluation

	ER2		Preferred Alternative	
	FEIS	Reevaluation	FEIS	Reevaluation
Other Physical Features				
Noise Impact	Noise impact at 337 mainland (-1 to 2 dB(A) change at receptors assessed) and 355 Outer Banks receptors (-4 to 9 dB(A) change at receptors assessed). Noise abatement cost-effective at 3 impacted receptors on Outer Banks	Noise impact at 309 mainland (-1 to 2 dB(A) change at receptors assessed) and 101 Outer Banks receptors (-5 to 7 dB(A) change at receptors assessed). Noise abatement cost-effective at 20 impacted receptors on Outer Banks and 4 on the mainland ³	Noise impact at 1 mainland and 21 Outer Banks receptors (-1 to 9 dB(A) change at receptors assessed). Noise abatement cost-effective at 13 receptors on Outer Banks	Noise impact at 2 mainland ⁴ and 3 Outer Banks receptors (-4 to 9 dB(A) change at receptors assessed). Noise abatement not feasible and reasonable for receptors on mainland and Outer Banks ³
Accelerated Sea Level Rise ⁵	Existing roads would be affected by sea level rise	Same as FEIS	Existing roads would be affected by sea level rise. With a breach at the Currituck/Dare county line, a Mid-Currituck Bridge would be the only way off the Currituck County Outer Banks	Same as FEIS
Visual Impact	Interchange introduced into views in Kitty Hawk; changes in views along NC 12 from US 158 to Albacore Street	Changes in views along NC 12 from US 158 to just south of the Duck commercial area	Mid-Currituck Bridge introduced into views along US 158 and in Aydlett; would adversely affect views of Currituck Sound; changes in views along NC 12 at bridge terminus area, Albacore Street area, and Currituck Clubhouse Drive area	Mid-Currituck Bridge introduced into views along US 158 and in Aydlett; would adversely affect views of Currituck Sound; changes in views along NC 12 at the bridge terminus area
Floodplains	No impact.	Same as FEIS	No impact.	Same as FEIS

Table 1 (concluded). Comparison of Key Impacts in the FEIS and This Reevaluation

	ER2		Preferred Alternative	
	FEIS	Reevaluation	FEIS	Reevaluation
Indirect and Cumulative Effects	Forecast development would be the predominant contributor to cumulative impacts even with No-Build; traffic congestion on NC 12 would constrain development on the Outer Banks	Same as FEIS	Forecast development would be the predominant contributor to cumulative impacts even with No-Build; traffic congestion on NC 12 would not constrain development on the Outer Banks; bridge presence could result in business development in proximity to the bridge's interchange with US 158 with associated use of farmland and visual change; day visitor demand would increase, which likely would have the most impact in the unregulated beach-driving area	Same as FEIS

Notes:

- ¹ As an additional cost saving measure, the shoulder width of the bridge across Maple Swamp and Currituck Sound may be further reduced from 8 feet to 6 feet during final design. However, the impacts stated here for all biotic communities, Essential Fish Habitat and Submerged Aquatic Vegetation (SAV) shading are based on 8-foot shoulders.
- ² Mitigation is not required for potential SAV habitat. Mitigation is only required for SAV habitat.
- ³ ER2 reevaluation noise results are from a February 2018 noise reevaluation that used the same noise model as in the FEIS, but with updates that included the revised traffic forecasts, revised roadway design, and additional noise sensitive land uses that were permitted since the FEIS. In addition, the noise study was updated to comply with the 2016 NCDOT Traffic Noise Policy. The Preferred Alternative reevaluation noise results are from the *Traffic Noise Report* completed in June 2018 using a noise model that includes the same updates as with ER2 plus additional ambient noise measurements and updated model validation. See Section 4.4.1 of the *Study Report* for further explanation.
- ⁴ In addition to the two impacted mainland receptors in the bridge interchange area, there would be 54 receptors impacted by traffic noise along US 158 north of the Intracoastal Waterway. Noise barriers would not be feasible and reasonable at any of the 54 receptors. This traffic noise impact, however, is not related to the Preferred Alternative's road improvements because the Preferred Alternative includes no road improvements north of the Intracoastal Waterway, only reversing the existing center turn lane during a hurricane evacuation. The noise impact of traffic north of the Intracoastal Waterway was not assessed in the FEIS because it is unrelated to any change in traffic or road improvements associated with the Preferred Alternative. NCDOT policy now requires a noise impact analysis be done even under these circumstances.
- ⁵ It is acknowledged that there are risks and uncertainty in the future regarding sea level rise and storm events. While NCTA and FHWA are aware of the risks and vulnerability, the Mid-Currituck Project is still a useful project.

Table 2. Travel Benefits

	Previous 2035 Travel Benefits						Updated 2040 Travel Benefits					
	Unconstrained Development		Preferred Alternative	Constrained Development		Preferred Alternative	Unconstrained Development		Preferred Alternative	Constrained Development		Preferred Alternative
	No-Build Alternative	ER2		No-Build Alternative	ER2		No-Build Alternative	ER2		No-Build Alternative	ER2	
Traffic Flow Benefits												
Congested Annual Millions of VMT												
<ul style="list-style-type: none"> Total Congested VMT (millions) <ul style="list-style-type: none"> – 2006 Existing: 5.4 – 2015 Existing: 16.4 	66.1	51.4	40.2	60.8	47.2	40.2	96.8	93.7	35.6	34.4	50.4	35.6
<ul style="list-style-type: none"> VMT with Traffic Demand at or Above Road Capacity (millions) 	60.6	44.4	17.7	51.4	36.5	17.7	23.1	17.3	1.1	3.5	4.2	1.1
<ul style="list-style-type: none"> VMT with Traffic Demand 30 Percent or Above Road Capacity (millions) 	15.8	8.9	4.9	12.7	6.6	4.9	2.4	2.1	0.0	0.0	0.4	0.0
Miles of Road Operating with Traffic Demand at or Above Road Capacity												
<ul style="list-style-type: none"> Summer Weekday (SWD) <ul style="list-style-type: none"> – 2006 Existing: 3.7 – 2015 Existing: 0.0 	14.7	5.9	5.7	7.9	5.9	5.7	5.8	5.8	0.0	0.0	2.3	0.0
<ul style="list-style-type: none"> Summer Weekend (SWE) <ul style="list-style-type: none"> – 2006 Existing: 4.5 – 2015 Existing: 2.8 	43.5	39.0	11.7	41.4	33.4	11.7	15.5	14.1	1.5	8.3	6.9	1.5
<ul style="list-style-type: none"> Weighted Average of SWD & SWE <ul style="list-style-type: none"> – 2006 Existing: 3.9 – 2015 Existing: 0.8 	22.9	15.4	7.4	17.5	13.8	7.4	8.6	8.2	0.5	2.4	3.6	0.5

Table 2 (concluded). Travel Benefits

	Previous 2035 Travel Benefits						Updated 2040 Travel Benefits					
	Unconstrained Development		Preferred Alternative	Constrained Development		Preferred Alternative	Unconstrained Development		Preferred Alternative	Constrained Development		Preferred Alternative
	No-Build Alternative	ER2		No-Build Alternative	ER2		No-Build Alternative	ER2		No-Build Alternative	ER2	
Miles of Road with Traffic Demand 30 Percent or Above Road Capacity												
<ul style="list-style-type: none"> Summer Weekday (SWD) <ul style="list-style-type: none"> 2006 Existing: 0.0 2015 Existing: 0.0 	5.7	3.7	0.8	5.7	3.7	0.8	0.0	0.0	0.0	0.0	0.0	0.0
<ul style="list-style-type: none"> Summer Weekend (SWE) <ul style="list-style-type: none"> 2006 Existing: 0.0 2015 Existing: 0.0 	7.9	5.9	2.0	5.7	3.7	2.0	5.8	5.8	0.0	0.5	3.4	0.0
<ul style="list-style-type: none"> Weighted Average of SWD & SWE <ul style="list-style-type: none"> 2006 Existing: 0.0 2015 Existing: 0.0 	6.3	4.3	1.1	5.7	3.7	1.1	1.7	1.7	0.0	0.1	1.0	0.0
Peak Hour Travel Time Benefit Aydlett Road to Albacore Street (in minutes)												
Summer Travel Time via Wright Memorial Bridge (weighted average of SWD & SWE)	154	125	107	146	116	107	136	117	72	136	117	72
Summer Travel Time via Mid-Currituck Bridge (weighted average of SWD & SWE)	N/A	N/A	11	N/A	N/A	11	N/A	N/A	11	N/A	N/A	11
Hurricane Evacuation Benefit												
Clearance Time with US 158 Reversing Center Turn Lane (in hours)	36 hrs.	27 hrs.	27 hrs.	Not Calculated		27 hrs.	37.2 hrs.	32.3 hrs.	32.3 hrs.	34.4 hrs.	30.7 hrs.	32.3 hrs.
Clearance Time with US 158 Third Outbound Lane (not included in the Preferred Alternative) (in hours)		22 hrs.	22 hrs.			22 hrs.	43.2 hrs.	43.2 hrs.	43.2 hrs.	40.3 hrs.	41.1 hrs.	43.2

Notes: N/A=Not Applicable. Unconstrained data is derived from the 2035 Traffic Alternatives Report, Table 22, and the 2040 Traffic Alternatives Report, Tables 14, 15, and 16. Constrained data is derived from the 2012 Constrained Alternatives Analysis Memorandum, Table 14, and the 2018 Constrained Traffic Memorandum, Tables 16, 17, and 18. Travel Time data is derived from the 2035 Traffic Alternatives Report, Tables 24 and 25, and the 2040 Traffic Alternatives Report, Tables 17 and 18. Travel times are presented as a weighted average of weekday and weekend travel times. Hurricane evacuation data is derived from the 2007 Mid-Currituck Bridge Corridor Study Hurricane Evacuation Analysis, Table 2, and the 2018 Mid-Currituck Bridge Hurricane Evacuation Reevaluation, Tables 3,4,5,6, and 7.