



Bald Head Island Conservancy
PO Box 3109
700 Federal Road
Bald Head Island, NC 28461

July 22, 2024

USACE Wilmington District
69 Darlington Avenue
Wilmington, NC 28403
Attn: Wilmington Harbor 403

To Whom It May Concern,

We are writing on behalf of Bald Head Island Conservancy, a 501(c)(3) nonprofit organization on Bald Head Island, NC (BHI), to relay concerns and share information about the Wilmington Harbor Port Expansion Project during this Scoping Period of the 403 Process. Our organization has focused on our mission to Discover, Learn, Conserve, and Preserve Bald Head Island for 40 years. We specialize in sea turtle nesting biology and barrier island conservation, and conduct a number of environmental monitoring projects and studies on behalf of the Village of Bald Head Island. Our staff includes specialists in marine and environmental science (3 PhD level, 1 MS, 1 BS), and we collaborate closely with state and federal conservation organizations and academic institutions throughout North Carolina and the region. Our education and outreach programs serve the Brunswick and New Hanover county populations beyond just BHI; for example, we provide all sixth graders in Brunswick County (~1,000 students) with a science-focused field trip to BHI each year, and we offer overnight summer science camps to underserved Wilmington youth. Our Director of Science participated in Early Scoping Expert Workshops hosted earlier this year.

The goal of this letter is to share potential impacts of the Port Expansion project that should be fully considered during the 403 process, and to also offer data and resources to the project as needed. Bald Head Island, at the mouth of the Cape Fear River adjacent to the current Cape Fear channel, is in a vulnerable location relative to this proposed project. Bald Head Island also consists of rare and special ecosystems that should be preserved and protected. We are also concerned about river-wide impacts that have been more broadly discussed already, which would undoubtedly affect the natural resources throughout the entire watershed, including BHI.

Specifically, our concerns include:

- **Impacts of channel deepening to shoreline sediment dynamics at the river mouth.**
Erosion of BHI beaches and sediment movement from east to west (from BHI's south and

west beaches to the river channel) were severely underestimated during the 2000 channel realignment. This is a complex and vulnerable area and great care should be taken to be as accurate as possible with predicted impacts. **Sediment fluxes along BHI's incredibly dynamic south and west beaches need to be carefully measured, and the Delft 3D model of sediment movement at the river mouth and along the lower Cape Fear barrier islands should be built with ultimate care, using *current and location-specific data to parameterize, calibrate, and validate the model.*** The model presented in the 203 report was far from sufficiently detailed, and thus far, the results of the current Delft 3D model are not yet available to comment on. For example, the 203 report used beach profiles of BHI published in 2013 for its wave model, and the model did not predict wave directions around BHI accurately since there are two dominant wave directions at BHI. It is unclear if/how the GenCade 1D shoreline model will incorporate nonlinear drivers of shoreline change, such as storms and changes in wave/wind direction. It is important that this model accurately predicts erosion around BHI, because impacts of erosion include:

- a. Loss of beach nesting habitat for listed species of concern, including Loggerhead, Green, and Kemp's Ridley sea turtles, and shorebirds such as Least Terns, American Oystercatchers, and Wilson's Plovers. Tides/storms have been the largest threats to BHI sea turtle nests over the past 5 years, and these impacts are also expected to increase with climate change and sea level rise.
 - b. Impacts of erosion and beach loss to individual home and business owners and the local and state economy
 - c. Increasing vulnerability of barrier islands (BHI, Oak Island) and other coastal communities to climate change related sea level rise and predicted increased storminess
 - d. Impacts of erosion and sediment dynamics on back-barrier creeks and marshes, including tidal flushing and water quality
- **Impacts of channel deepening to the freshwater aquifer.** A location-specific 3D model of aquifer-surface water dynamics should be created, including scenarios for channel deepening/widening at different potential depths, and the impacts of sea level rise. This model should include potential impacts to the Castle Hayne and PeeDee aquifers, but also interactions with specific semi-confined aquifers on barrier islands. The model should also include scenarios for changes to riverine tides and salinity that will result from changes to the hydrogeography. It is unclear what the spatial extent of the existing groundwater model is, and whether it included the barrier islands. The existing model from the 203 report stated that saltwater intrusion into the Castle Hayne aquifer is unlikely, but since it was lacking in detail, this is difficult to evaluate. Concerns specific to BHI include:
 - a. Saltwater intrusion into BHI's semiconfined aquifer is already occurring on BHI's west and south beaches (we have data supporting this contention). Further encroachment of salinity caused by channel deepening/widening will reduce the size of BHI's only freshwater source for island ecosystems.
 - b. BHI's maritime forest (Bald Head Woods Coastal Reserve) is fed by this aquifer, is the second-largest maritime forest in the state of North Carolina, is considered a globally-imperiled forest subtype, and is protected by the NC Natural Heritage Program. Several listed plant species are found on BHI.

- c. Loss of a drinking water resource to the public. Most of BHI's drinking water is groundwater-derived. The Village of BHI has invested in careful environmental monitoring and studies of responsible water use to minimize the impact of freshwater production on the island's natural resources.
 - d. Loss of/salinization of freshwater wildlife habitat. The freshwater ponds and lagoons fed by the aquifer are home to one of the largest breeding populations of protected American alligators in the state, and also provide important roosting and feeding grounds for a variety of waterbird species.
- **Impacts of dredging and increased shipping on wildlife and fisheries.** The initial impacts of increasing channel depth and width will be substantial. It is currently unknown how often channel maintenance dredging will occur, but under a 47-foot or 46-foot scenario, we expect that it will need to occur more often and for longer periods than the no-action alternative.
 - a. Already, channel maintenance dredging kills or injures numerous sea turtles and shorebirds each year. BHI Conservancy leads emergency wildlife response on the island, and we spend hundreds of hours each year transporting and providing care for animals hit by boats or caught in dredging equipment (those that survive the initial injury). These animals are also cared for by nonprofit organizations such as Sea Biscuit Wildlife Shelter and the Karen Beasley Sea Turtle Hospital, who rely solely on donations for support.
 - b. The lights and noise from dredging equipment can disturb and change behavior of foraging and nesting sea turtles. We have observed this directly causing false crawls and misorientation of emerging hatchlings.
 - c. Dredging has immediate impacts on the benthic environment, including benthic invertebrates that provide the forage base for sea turtles and important fisheries species. Increasing the magnitude, geographic scale, and frequency of this dredging will have longer-lasting effects throughout the food chain, and impacts on the fisheries economy in the Cape Fear watershed.
 - **Impacts throughout the Cape Fear River and watershed.** The Port of Wilmington is 28 miles from the Atlantic Ocean, which is 28 miles of direct impact to the river. Other regional ports such as Savannah (18 miles) and Charleston (5.5 miles) have shorter distances to the open sea. The scale of hydrodynamic impacts of a project of this size, whether 47- or 46-foot alternatives, cannot be underestimated. Our concerns include:
 - a. An estimated 32 million cubic yards of dredge material will need to be transported and disposed of, not including maintenance dredge materials.
 - b. Placement location of dredge spoil material and quality of the material
 - c. Potential contamination of dredge spoil and impacts of this on water quality (heavy metals, methyl mercury, PFAS)
 - d. Large scale of perturbations and fluidization of the seabed, and impacts on biogeochemical cycling
 - e. Exacerbation of existing acceleration of sea level rise in the Cape Fear Watershed
 - f. Erosion, flooding, and salinization impacts to marshes and wetlands, including the Bald Head Island/Smith Island Complex. Eroding marshes bordering developed areas will have no space to migrate, and marsh loss due to sea level rise may be

accelerated. Marshes provide buffer to storm surge, habitat to wildlife and fisheries species, water filtration, and carbon sequestration benefits.

- g. Increased flooding impacts to vulnerable areas and resources which have already been stressed by Hurricane Florence, PFAS contamination, and are not fully recovered (e.g., residential areas in downtown Wilmington and Brunswick County, wastewater treatment facilities).

We urge you to fully consider the potential impacts of this proposed project by collecting the necessary scientific data, providing clear and complete results in the final EIS, and allowing adequate input from local and regional experts and the public to make an informed decision. We would be glad to provide data that we have already collected for the modeling efforts, or partner with the USACE to collect future data or samples on Bald Head Island as part of the NEPA process. Our datasets include:

- Bald Head Island Sea turtle nesting (1983-present), including annual trends, locations, and impacts of erosion/washover/disturbance on nesting and hatching
- Bald Head Island aquifer volume (2009-present) and water quality (2014-present)
- Bald Head Island aquifer modeling study (Dr. Peter Zamora, 2021)
- Bald Head Creek water quality (2012-present)
- Bald Head Island Bird monitoring (2015-present)
- Bald Head Woods Coastal Reserve maritime forest study (Dr. Jodi Forrester, 2020)
- Bald Head Island alligator population monitoring (2007-present)
- Bald Head Creek siltation and sediment characteristics (2018-2019)
- Bald Head Island wildlife emergency response (2020-present)

Based on our observations of the limited modeling and lack of comprehensive data analysis conducted thus far in the 403 process, we can only support the decision of a No-Action Alternative. It is our scientific opinion that a channel deepening to 47 feet or the alternative of 46 feet would be too environmentally destructive, or at least far too environmentally risky, to garner our support.

Thank you for considering our concerns.

Sincerely,

Elizabeth S. Darrow, Ph.D.
Director of Science
Bald Head Island Conservancy
910-338-0942
darrow@bhic.org

G. Christopher Shank, Ph.D.
Executive Director
Bald Head Island Conservancy
910-338-0910
shank@bhic.org