Cape Hatteras National Seashore
North Carolina

U.S. Department of the Interior
National Park Service

Cape Hatteras National Seashore

CONSIDERATION OF MODIFICATIONS TO THE FINAL RULE FOR ORV MANAGEMENT ENVIRONMENTAL ASSESSMENT

February 2016

United States Department of the Interior National Park Service
National Park Service
Cape Hatteras National Seashore

Consideration of Modifications to the Final Rule for Off-Road Vehicle Management Environmental Assessment

Executive Summary

The National Park Service (NPS) proposes changes to Cape Hatteras National Seashore's (Seashore) 2012 final off-road vehicle (ORV) special regulation (2012 Final Rule). The National Defense Authorization Act for Fiscal Year 2015 (2014 Act) directs the Secretary of the Interior to consider three specific changes to the 2012 Final Rule regarding (1) morning opening of beaches that are closed to ORV use at night, (2) the dates for seasonal ORV routes, and (3) the size and location of vehicle-free areas (VFAs). NPS is proposing additional changes in this Environmental Assessment (EA), including access improvements and different ORV permit durations to improve ORV management at the Seashore. Other provisions of the 2014 Act, including modifications to wildlife buffers at the Seashore, have already been addressed through NPS planning efforts in 2015 and are not within the scope of this EA.

NPS prepared this EA to evaluate three action alternatives, describe the environment that would be affected by the alternatives, and assess the environmental consequences of implementing the alternatives. The NPS also evaluated the impacts of a no-action alternative, which would be the continuation of current management under the 2012 Final Rule and related Seashore management plans. This EA examines potential impacts on wetlands, federally-listed species, state-listed and special status species, non-listed shorebirds, visitor use and experience, socioeconomics, and seashore operations and management.

This EA has been prepared in compliance with the National Environmental Policy Act to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet objectives of the proposal, 2) evaluates potential issues and impacts on the park's resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts. The NPS conducted internal, public, and agency scoping to assist with the development of this document. If the NPS decides to implement any of the action alternatives, it will be necessary to modify the 2012 Final Rule.

Public Comment

If you wish to comment on this EA, you may post comments online using the National Park Service Planning, Environment, and Public Comment (PEPC) website at http://parkplanning.nps.gov/caha-orv-ea. Or you may mail or hand-deliver comments to: Superintendent, Cape Hatteras National Seashore, 1401 National Park Drive, Manteo, NC 27954.

Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask in your comment to withhold your personal identifying information from public review, NPS cannot guarantee that it will be able to do so.

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CHAPTER 1: PURPOSE AND NEED

INTRODUCTION

The National Park Service (NPS) proposes changes to Cape Hatteras National Seashore's (Seashore) off-road vehicle (ORV) special regulation. In 2010, NPS finalized the Off-Road Vehicle Management Plan and Environmental Impact Statement (ORV FEIS) for ORV use at Cape Hatteras National Seashore to guide the management and use of ORVs at the Seashore (NPS 2010a). As part of the selected alternative, certain elements of the plan were implemented through a special rulemaking process. The Final Rule for ORV management at the Seashore (2012 Final Rule) was published in the *Federal Register* on January 23, 2012. Since that time, ORV management as described in the 2012 Final Rule has been in place at the Seashore. On December 19, 2014, the President signed the National Defense Authorization Act for Fiscal Year 2015 (2014 Act). The 2014 Act required NPS to review and modify wildlife buffers, expedite construction of vehicle access points and roads, and undertake a public process to consider changes to ORV management at the Seashore. NPS addressed the wildlife buffers portion of the 2014 Act by developing the Review and Adjustment of Wildlife Protection Buffers Environmental Assessment (EA) and completing the process with a Finding of No Significant Impact (FONSI), which was signed in June 2015. Regarding ORV management, the 2014 Act requires the Secretary of the Interior to consider three specific changes to the 2012 Final Rule regarding (1) morning opening of beaches that are closed to ORV use at night, (2) the dates for seasonal ORV routes, and (3) the size and location of VFAs. These three areas are described further under the "Need for the Action" section below. NPS is considering additional changes in this EA, including access improvements and different ORV permit durations to improve ORV management at the Seashore.

This EA has been prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), and implementing regulations, 40 Code of Federal Regulations (CFR) Parts 1500–1508, Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making* (Director's Order 12) (NPS 2011a) and its associated NEPA handbook (NPS 2015a). This EA analyzes one no-action alternative and three action alternatives and their impacts on the environment.

PURPOSE OF THE ACTION

The purpose of the project is to consider changing morning beach openings from nighttime closures, seasonal ORV route dates, and the size and location of VFAs, as well as to explore alternative ORV permit options and access improvement projects within the Seashore.

NEED FOR THE ACTION

The action is needed as a result of the 2014 Act, which directs NPS to undertake a public process to consider, consistent with management requirements at the Seashore, the following changes to the 2012 Final Rule:

- opening beaches at the Seashore that are closed to night driving restrictions by opening beach segments on a rolling basis as daily management reviews are completed
- extending seasonal ORV routes for additional periods in the fall and spring if ORV use would not create resource management problems at the Seashore
- modifying the size and location of VFAs

Action also is needed to continue to improve other aspects of ORV management at the Seashore, which could include changes to the existing ORV permit system and improvements to public access.

BACKGROUND

Background information relevant to the proposed action is provided at length in the ORV FEIS (NPS 2010a). That information is not repeated in this EA, but can be reviewed in a copy of the ORV FEIS posted at http://parkplanning.nps.gov/document.cfm?parkID=358&projectID=10641&documentID=37448. Please refer to that document for specific information on the following topics:

- Seashore administrative background, including a history of the Seashore and a summary of ORV use and management at the Seashore, pages 11–27
- Related laws and policies for Seashore management, including Executive Orders (EOs) 11644 and 11989, which discuss the use of ORVs on public lands, as well as federal regulations that apply to all Seashore management actions, pages 38–48
- Relationship to other Seashore planning documents, policies, and actions, including past ORV planning efforts, the Seashore's General Management Plan, Resource Management Plan, Visitor Services Project Report, and Long-Range Interpretation Plan, pages 48–49
- Relationship to other federal planning documents and actions relating to the protection of threatened and endangered species found at the Seashore, pages 49–50
- Relationship to other state and local planning documents, policies, actions, laws, and regulations, including state species protection plans, transportation planning, and local plans within Dare and Hyde Counties, pages 50–54

The actions analyzed in this EA relate to both the ORV FEIS and the 2012 Final Rule for ORV management. The alternative elements analyzed within the ORV FEIS include pedestrian access, species buffers, prenesting closures, and pet restrictions. While the management of wildlife buffers is included only in the ORV FEIS (and amended by the 2015 Review and Adjustment of Wildlife Protection Buffers EA/FONSI), both the ORV FEIS and the 2012 Final Rule designate the areas that are open or closed to ORVs and set forth requirements related to the protection of resources from ORV impacts, including the dates that ORV routes are open/closed, restrictions on night driving, designated speed limits, and required equipment. Therefore, even though the ORV FEIS specifically discusses ORV routes, hours of operation, and VFAs, those elements are now controlled by special regulation—the 2012 Final Rule. If the NPS decides to implement any of the action alternatives, it will be necessary to modify the 2012 Final Rule.

PURPOSE AND SIGNIFICANCE OF CAPE HATTERAS NATIONAL SEASHORE

All units of the national park system were formed for a specific purpose and to conserve significant resources or values for the enjoyment of future generations. The purpose and significance of the park provides the basis for identifying uses and values that individual NPS plans will support. The following provides background on the purpose and significance of the Seashore.

As noted in the Seashore's enabling legislation, Congress authorized the Seashore in 1937 as a national seashore for the enjoyment and benefit of the people, and to preserve the area (NPS 1937). The enabling legislation states:

> *Except for certain portions of the area, deemed to be especially adaptable for recreational uses, particularly swimming, boating, sailing, fishing, and other recreational activities of similar*

> *nature, which shall be developed for such uses as needed, the said areas shall be permanently reserved as a primitive wilderness and no development of the project or plan for the convenience of visitors shall be undertaken which would be incompatible with the preservation of the unique flora and fauna or the physiographic conditions now prevailing in this area.*

The enabling legislation also states:

> *…when title to all the lands, except those within the limits of established villages, within boundaries to be designated by the Secretary of Interior within the area of approximately one hundred square miles on the islands of Chicamacomico [Hatteras], Ocracoke, Bodie, Roanoke, and Collington, and the waters and the lands beneath the waters adjacent there to shall have been vested in the United States, said areas shall be, and is hereby, established, dedicated, and set apart as a national seashore for the benefit and enjoyment of the people and shall be known as the Cape Hatteras National Seashore.*

Park significance statements capture the essence of the park's importance to the nation's natural and cultural heritage. Understanding park significance helps managers make decisions that preserve the resources and values necessary for the park's purpose. The following significance statements recognize the important features of the Seashore. As stated in the 2006–2011 Strategic Plan, the Seashore has the following significance (NPS 2007):

> *This dynamic coastal barrier island system continually changes in response to natural forces of wind and wave. The flora and fauna that are found in a variety of habitats at the park include migratory birds and several threatened and endangered species. The islands are rich with maritime history of humankind's attempt to survive at the edge of the sea, and with accounts of dangerous storms, shipwrecks, and valiant rescue efforts. Today, the Seashore provides unparalleled opportunities for millions to enjoy recreational pursuits in a unique natural seashore setting and to learn of the nation's unique maritime heritage.*

RELATIONSHIP OF THE PROPOSAL TO OTHER PLANNING EFFORTS

The ORV FEIS and the additional planning efforts listed on pages 48–49 of the ORV FEIS are related to this EA and include:

- **Review and Adjustment of Wildlife Buffers EA/FONSI.** In 2015, NPS approved modified protection buffers and provided corridors around buffers for multiple species within the Seashore. The plan maintains protections for wildlife along the Seashore by augmenting the Seashore's monitoring and on-the-ground management program through increased staff presence. The EA and subsequent adjustment of buffers were completed as a result of the 2014 Act.
- **Proposal to Facilitate Additional Public Beach Access EA.** In 2013, NPS selected an alternative to implement 29 development projects along the Seashore to improve public access. Some of these projects are designed to facilitate visitor access in key recreational areas within the Seashore, including parking areas, unpaved roads and ramps, and accessible boardwalks. These construction projects and general locations were selected because of their location on the Seashore in relation to ORV routes and VFAs. Construction of these projects is ongoing within the Seashore.

ISSUES AND IMPACT TOPICS

During internal and public scoping, NPS identified potential issues and impacts associated with modifying the 2012 Final Rule. The issues and concerns identified during scoping were used to identify impact topics that are discussed in "Chapter 3: Affected Environment" and are analyzed in "Chapter 4: Environmental Consequences." Impact topics analyzed in this document are as follows:

WETLANDS

Wetlands may be affected by ORVs if certain VFAs are opened to ORV use. Public access construction projects also have the potential to impact wetlands and could require a Wetlands Statement of Findings (NPS 2004, 2012a).

FEDERALLY LISTED SPECIES

Altering existing ORV and pedestrian use or constructing access improvement projects at the Seashore could impact species listed as threatened or endangered under the Endangered Species Act (ESA) or their habitats. The Seashore is home to federally listed species year-round, including both the endangered Great Lakes piping plover population (considered threatened on wintering grounds, which include the Seashore) and the threatened Atlantic Coast piping plover population (for breeding and wintering, with breeding occurring at the Seashore). Since the completion of the ORV FEIS, the US Fish and Wildlife Service (USFWS) listed the rufa subspecies of the red knot as a threatened species. This species is a migrant and occasional winter resident at the Seashore. Seabeach amaranth, a federally listed threatened plant species, has been found in limited numbers at the Seashore in the past. However, because no plants have been documented since 2005, despite annual surveys, seabeach amaranth is not included in this EA analysis.

Nesting sea turtles at the Seashore include threatened loggerhead and green turtles and the endangered Kemp's ridley, leatherback, and hawksbill turtles. Hawksbill turtles were known to occur on the beaches of the Seashore only through strandings; however, in 2015, at least two hawksbill nests were documented. Threats to listed sea turtles, their nesting sites, and young include storm events, predation, artificial lighting, campfires, and recreational beach equipment; disturbance by pedestrians and pets; and direct and indirect impacts of ORVs.

STATE-LISTED AND SPECIAL STATUS SPECIES

Habitat for state-listed and special status species, such as the American oystercatcher and several species of colonial waterbirds, may be vulnerable to disturbances caused by recreational uses, including ORV and pedestrian use. NPS *Management Policies 2006* directs park units to inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species, to the greatest extent possible. As of May 2008, the North Carolina Wildlife Resources Commission lists the American oystercatcher, Wilson's plover, least tern, common tern, and black skimmer as species of special concern (15A North Carolina Administrative Code [NCAC] 10I.0105). The North Carolina Wildlife Resources Commission also lists the gull-billed tern as a state-threatened species. The Southeastern Shorebird Conservation Plan lists American oystercatcher as a species of concern, and both the American oystercatcher and the Wilson's plover are identified in the *U.S. Shorebird Conservation Plan* as "Species of High Concern" (Schulte et al. 2007; Brown et al. 2001). All these state-listed or special status species have had historically low reproductive rates, and the lack of large, undisturbed areas for successful breeding contributes to low rates at the Seashore. In addition, frequent human disturbance can cause the abandonment of nest sites as well as direct loss of eggs and chicks.

The Seashore is also home to migratory bird species, protected by the Migratory Bird Treaty Act, that use habitat at the Seashore during the winter or migration.

NON-LISTED SHOREBIRDS

The Seashore provides nesting, resting, foraging, and feeding habitat for a diverse assemblage of birds, including many that are not federally or state-listed species. In 1999, the American Bird Conservancy designated the Seashore as a Globally Important Bird Area in recognition of its value in bird migration, breeding, and wintering (American Bird Conservancy 2005). ORV and pedestrian use along the Seashore could disrupt individuals and their habitat directly or by associated noise and disturbance and could cause a loss of habitat in high use areas.

VISITOR USE AND EXPERIENCE

Visitors may be impacted by the proposed changes to the 2012 Final Rule evaluated in this EA. The existing mix of recreational visitors at the Seashore includes ORV users, day-users without ORVs, swimmers, anglers, bird watchers, water sports enthusiasts, and others. Some visitors want to use an ORV to access the Seashore, while others wish to engage in recreational activities on foot and away from the presence of motorized vehicles; use ORVs to access an area and then walk; access the beach from a boardwalk or the side of the road and stay in one place for their entire experience or use the beach simply as a way to get to the water to surf, paddleboard, swim, scuba dive, or engage in other activities in the ocean or sound. Altering the VFAs or the existing ORV routes could enhance the recreational experience for some visitors or diminish it for others. It also could provide new opportunities for certain user groups. Visitor experience could be affected by conflicts between motorized and nonmotorized recreation users. An additional component of visitor experience is providing for the safety of all visitors at the Seashore.

SOCIOECONOMICS

Modifications to the current management of ORV use at the Seashore could impact the local economy by changing the demand for goods and services from ORV users. Additionally, alterations to the existing ORV permit system and expansion of the seasonal ORV route periods could increase or decrease the number of tourists who visit the region of influence (ROI).

SEASHORE OPERATIONS AND MANAGEMENT

Continued management of recreational uses while protecting sensitive species requires a sufficient number of personnel and an adequate level of funding. Modifications to the existing ORV management plan and 2012 Final Rule, including marking and protecting sea turtle nests earlier to allow for earlier morning beach openings, could potentially increase the demand for NPS resources, including staff, funding, and equipment.

IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

NEPA and the Council on Environmental Quality (CEQ) regulations direct agencies to prepare NEPA documents that are "concise, clear, and to the point" (1500.2(b)). NEPA reviews should focus on important environmental issues and avoid "amassing needless detail" (1500.1(b)).

Furthermore, agencies are directed to discuss non-significant issues only in enough detail to show why more study is not warranted (40 CFR 1502.2 and Section 4.2(E) of the NPS NEPA handbook). The impact topics that have been dismissed from detailed analysis in this EA are listed below. For impact topics that were dismissed in the ORV FEIS, the specific reasons for dismissing each impact topic can be

found in the ORV FEIS; these reasons are hereby incorporated by reference into this EA. In those cases where impacts are not anticipated, expected to be minor or less, and are not different among alternatives, the impact topics are dismissed from detailed analysis and the rationale for dismissal is included below.

SEABEACH AMARANTH

Although federally listed species has been retained as an impact topic, potential impacts on seabeach amaranth populations and habitat at the Seashore are not evaluated in this EA as part of that topic. At the Seashore, seabeach amaranth populations have fluctuated greatly since surveys began in 1985; however, no plants have been found since 2005. Therefore, the proposed actions are not expected to affect seabeach amaranth.

SOUNDSCAPES

Although soundscapes are analyzed in the ORV FEIS, the selected alternative is expected to result in long-term, minor, adverse impacts on soundscapes at the Seashore. The changes under consideration in the proposed actions included in this EA would not noticeably alter the existing soundscape at the Seashore. As a result, soundscapes are dismissed as an impact topic for analysis under this EA.

VEGETATION

Proposed access improvements could involve clearing vegetation; however, the amount of clearing would be minimal and would not exceed minor impacts on vegetation. Also, any impacts on wetland vegetation are discussed under the "Wetlands" impact topic. Therefore, vegetation is not fully analyzed in this EA.

FLOODPLAINS

The topic of floodplains is analyzed in the ORV FEIS, with the selected alternative expected to result in long-term, minor, adverse impacts from the construction of surfaced and unsurfaced parking areas. Under all action alternatives in this EA, access improvements would include locating unsurfaced road improvements and parking areas within the floodplain. Floodplain functions and values would not be affected because access improvements would use natural, permeable materials that would not hold water, would result in little change in elevation, and no structures would be installed. Also, as noted in the ORV FEIS, recreational ORV use at the Seashore would have no measurable impacts on floodplains because driving on beaches or on any ORV access routes would not impact the natural function of the floodplain. Therefore, impacts on floodplains would be negligible. As a result, the topic of floodplains is not fully analyzed in the EA.

WILDLIFE OTHER THAN SHOREBIRDS (MAMMALS, AQUATIC WILDLIFE, FISH, AND INVERTEBRATES)

In the ORV FEIS, beach invertebrates and non-listed shorebirds are addressed under the topic of wildlife and wildlife resources. Marine mammals and fish are not analyzed in detail in the ORV FEIS because impacts on aquatic wildlife would not occur. Impacts on terrestrial mammals in the ORV FEIS are considered negligible and dismissed because mammals (other than predators that would capitalize on nesting wildlife) would be most likely to use grassland habitats and would not be expected frequently in these areas. For the actions proposed in this EA, impacts on mammals that may be in or near the areas of proposed access improvements would be negligible because of the limited area affected (a maximum of 0.5 acre land disturbance for access and parking in any given project area), the lack of direct disturbance to suitable habitat, the relatively short time over which construction would occur, and the temporary avoidance response expected during times of noise and disturbance. These species are therefore not

addressed in this EA. The topic of invertebrates also is dismissed from further analysis in this EA because although impacts on invertebrates could occur under any of the alternatives where beach driving is permitted, there would be little difference among the alternatives, given the limited changes in ORV route distances and use patterns included in the alternatives in this EA. For example, opening up a few miles of beach to ORV use and opening existing routes a little earlier in the morning under the alternatives in this EA wouldn't have a noticeable effect on invertebrates than what was already disclosed in the ORV FEIS. Also, construction of access improvements would be limited mainly to areas landward of the dune line and in upland areas not inhabited by beach invertebrates. Therefore, this topic is not analyzed further in this EA.

Topics dismissed from detailed analysis in the ORV FEIS that also are dismissed in this EA are listed below. Reasons for dismissals can be found on pages 28–38 of the ORV FEIS and are hereby incorporated by reference into this EA.

- Geologic resources
- Geohazards
- Unique ecosystems, biosphere reserves, World Heritage sites
- Water quality/marine and estuarine resources
- Air quality
- Non-native species
- Cultural resources (archeological resources, cultural landscapes, historic structures and districts, ethnographic resources, and museum collections)
- Indian trust resources
- Sacred sites
- Environmental justice
- Energy resources
- Greenhouse gas emissions and climate change
- Urban quality, gateway communities
- Paleontological resources

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CHAPTER 2: ALTERNATIVES

NEPA requires federal agencies to explore a range of reasonable alternatives aimed at addressing the purpose of and need for the proposed action. Reasonable alternatives include alternatives that are "technically and economically practical or feasible and meet the purpose and need of the proposed action" (43 CFR § 46.420(b)). The alternatives under consideration must include a no-action alternative as prescribed by CEQ regulations for implementing NEPA (40 CFR Part 1502.14).

The alternatives analyzed in this document, in accordance with NEPA, are based on feedback from the public and the result of internal and agency scoping. Table 1, at the end of this chapter, provides a comparison of all alternatives analyzed in this EA. Alternatives and actions that were considered but are not technically or economically feasible, do not meet the purpose of and need for the project, create unnecessary or excessive adverse impacts on resources, or conflict with the overall management of the Seashore or its resources were dismissed from detailed analysis. These alternatives or alternative elements and their reasons for dismissal are discussed at the end of this chapter.

Under all of the alternatives, areas of the Seashore would continue to be subject to resource management closures, as described in the 2015 Review and Adjustment of Wildlife Buffers EA/FONSI and ORV FEIS.

NO-ACTION ALTERNATIVE

Under the no-action alternative, the Seashore would continue to implement ORV management actions as described under alternative F, the selected alternative from the ORV FEIS. The five elements described below do not represent all of the elements contained in alternative F of the ORV FEIS, just the elements that are under consideration to change under the alternatives in this EA.

Morning Beach Openings

From May 1 through November 15, all potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would continue to be closed to non-essential ORV use from 9:00 p.m. until 7:00 a.m. to provide for sea turtle protection and allow enforcement staff to concentrate their resources during the daytime hours. However, from September 16 through November 15, ORV routes with no turtle nests remaining (as determined by NPS) would reopen to night driving, subject to the terms and conditions established under the ORV permit.

Seasonal Off-Road Vehicle Routes

Areas that would continue to be seasonally open to ORV use would be the same as those described in the ORV FEIS and 2012 Final Rule and include a portion of Bodie Island Spit, the areas in front of the Ocracoke campground, and the areas in front of the villages (Rodanthe, Waves, Salvo, Avon, Buxton, Hatteras and Ocracoke), except for Rodanthe north of the pier and Buxton, which would be vehicle free year-round. The dates for seasonally designated ORV routes in front of the villages and Ocracoke campground would be November 1 to March 31. Bodie Island Spit would be designated as a seasonal ORV route from September 15 through March 14 and would be vehicle free from March 15 through September 14. Seasonal ORV routes under the no-action alternative are displayed in figures 1–7. Some seasonal ORV routes included in the selected alternative in the ORV FEIS no longer exist as a result of the changing nature of the Seashore geography; however, they are still authorized under the 2012 Final Rule. Figures 1–7 may not accurately depict areas subject to erosion, notably at the spits and inlets.

Vehicle-Free Areas

VFAs and designated ORV routes under the no-action alternative would be the same as those described under alternative F in the ORV FEIS and the 2012 Final Rule. These areas and routes are provided in detail in the ORV FEIS in table 7-1 (page 107). Figures 1–7 in this EA display the ORV route locations under the no-action alternative. Overall, there would continue to be approximately 28 miles designated as year-round ORV routes, 13 miles of seasonal ORV routes, and 26 miles of VFAs. However, the mileages of designated routes are expected to change as erosion, deposition, flooding, and other natural process affect access.

Access Improvements

No additional access improvements would be constructed. Approved access improvements, including proposed ramps, roads, and parking areas included in the ORV FEIS and the 2013 Proposal to Facilitate Additional Public Beach Access EA would continue to be constructed.

ORV Permit Lengths

The Seashore would continue to issue only 7-day and annual ORV permits valid for the calendar year.

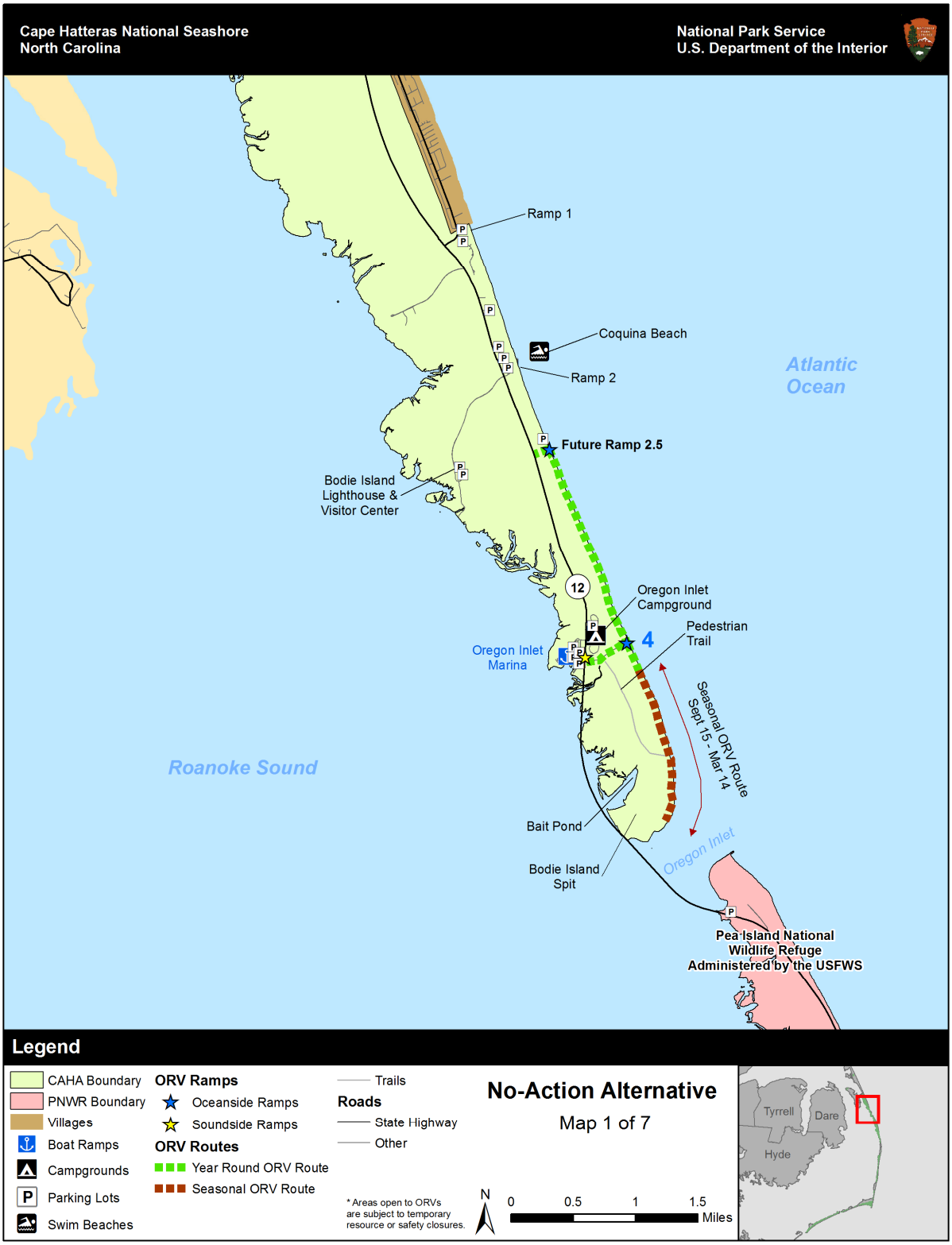


FIGURE 1. NO-ACTION ALTERNATIVE (MAP 1 OF 7)

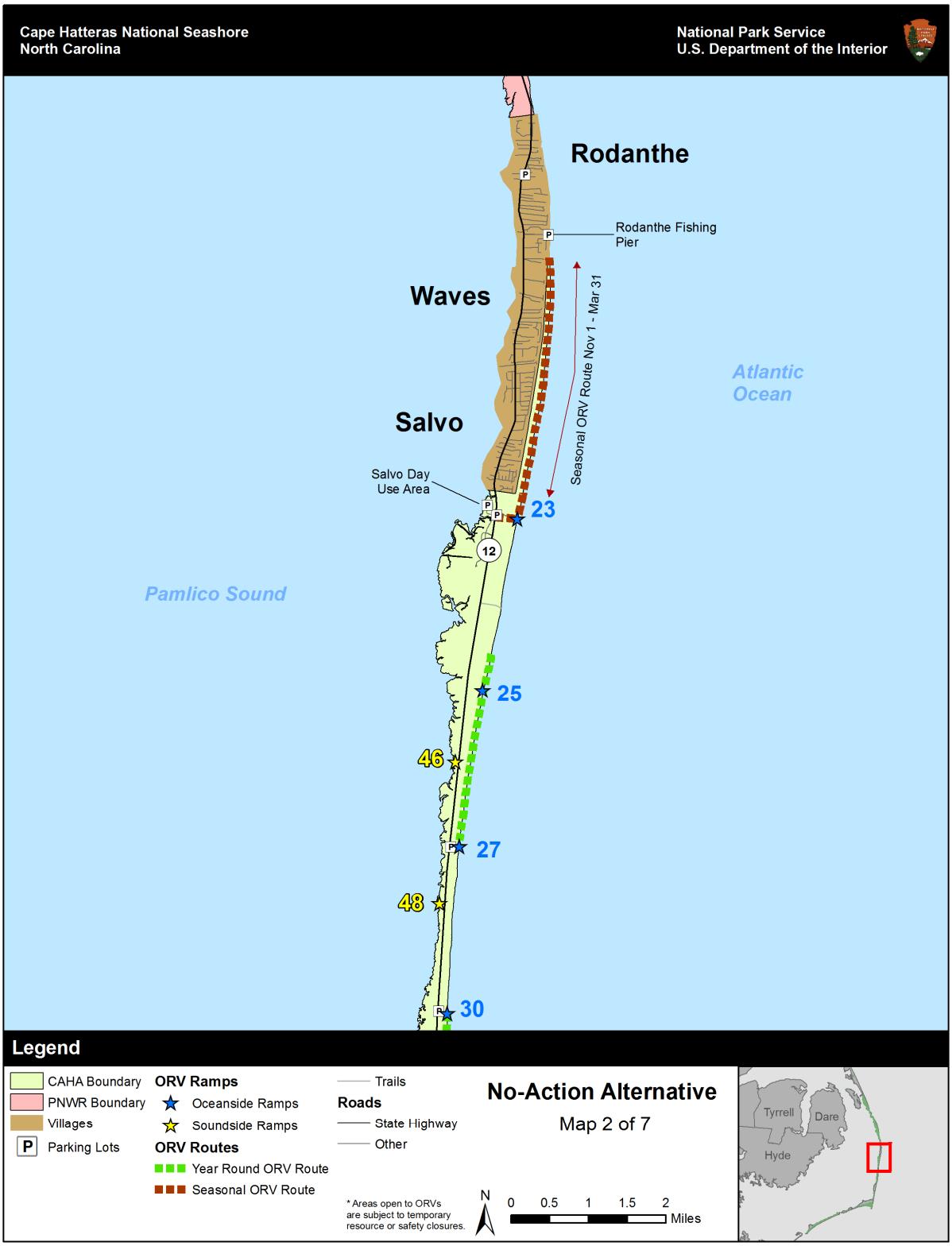


FIGURE 2. NO-ACTION ALTERNATIVE (MAP 2 OF 7)

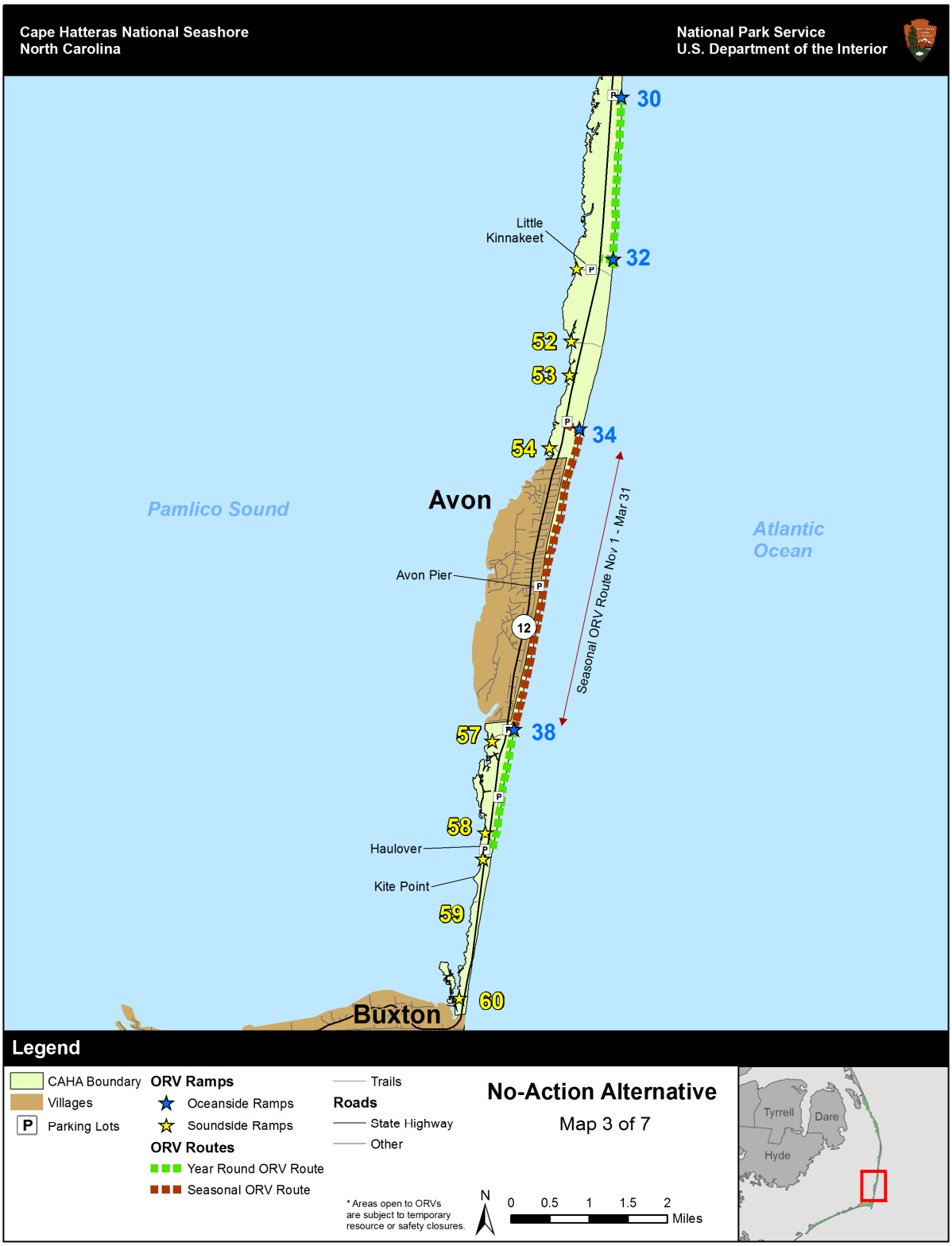


FIGURE 3. NO-ACTION ALTERNATIVE (MAP 3 OF 7)

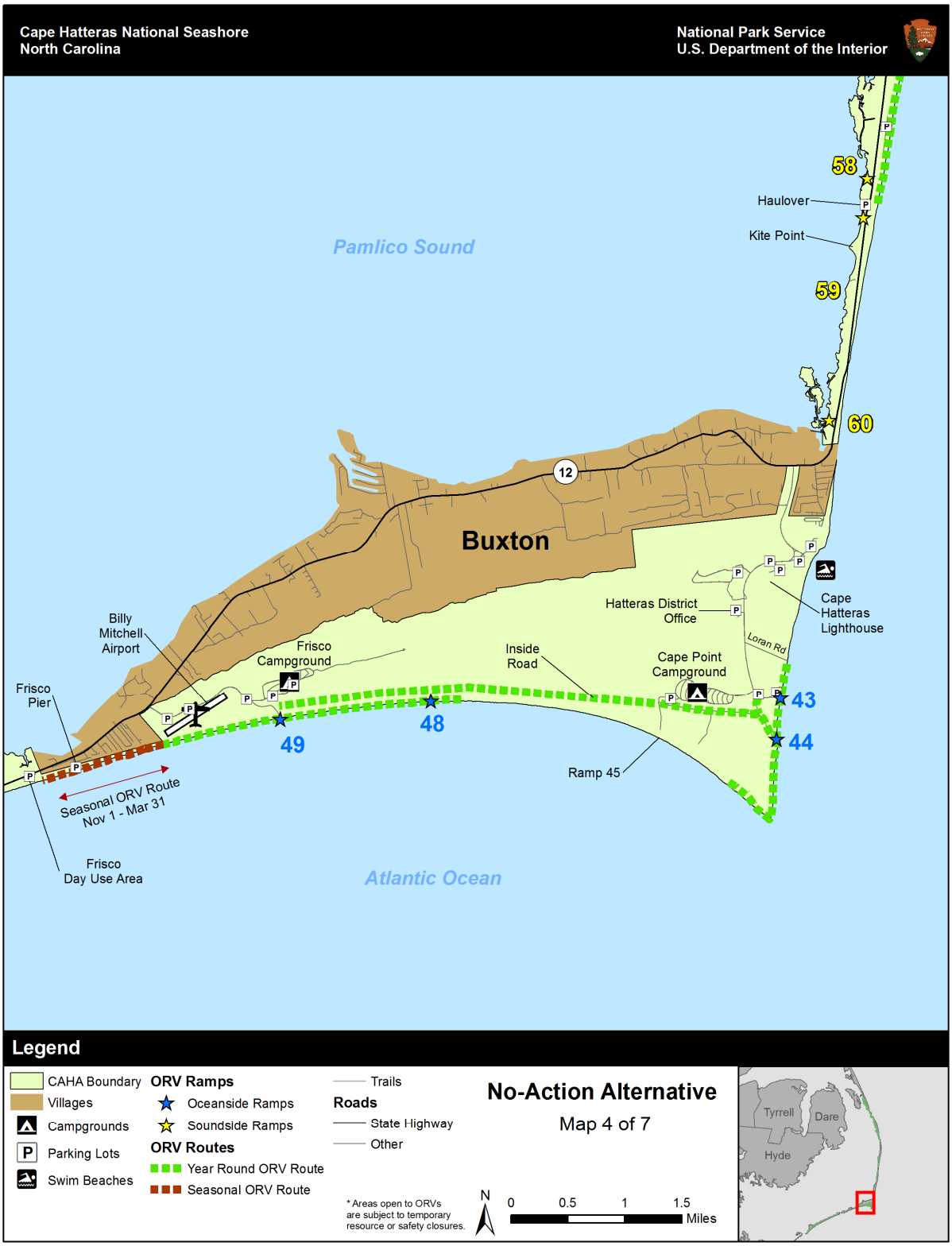


FIGURE 4. NO-ACTION ALTERNATIVE (MAP 4 OF 7)

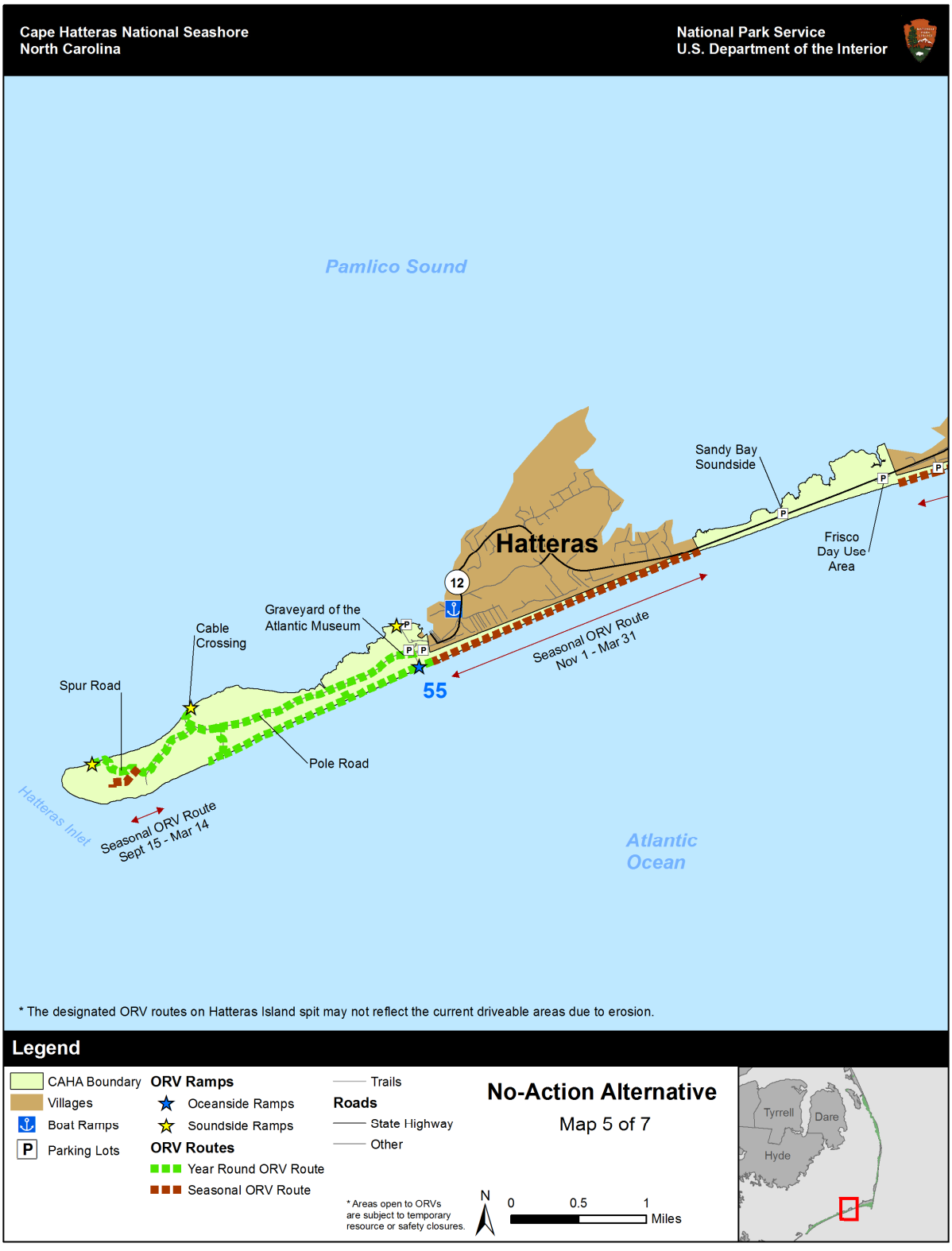


FIGURE 5. NO-ACTION ALTERNATIVE (MAP 5 OF 7)

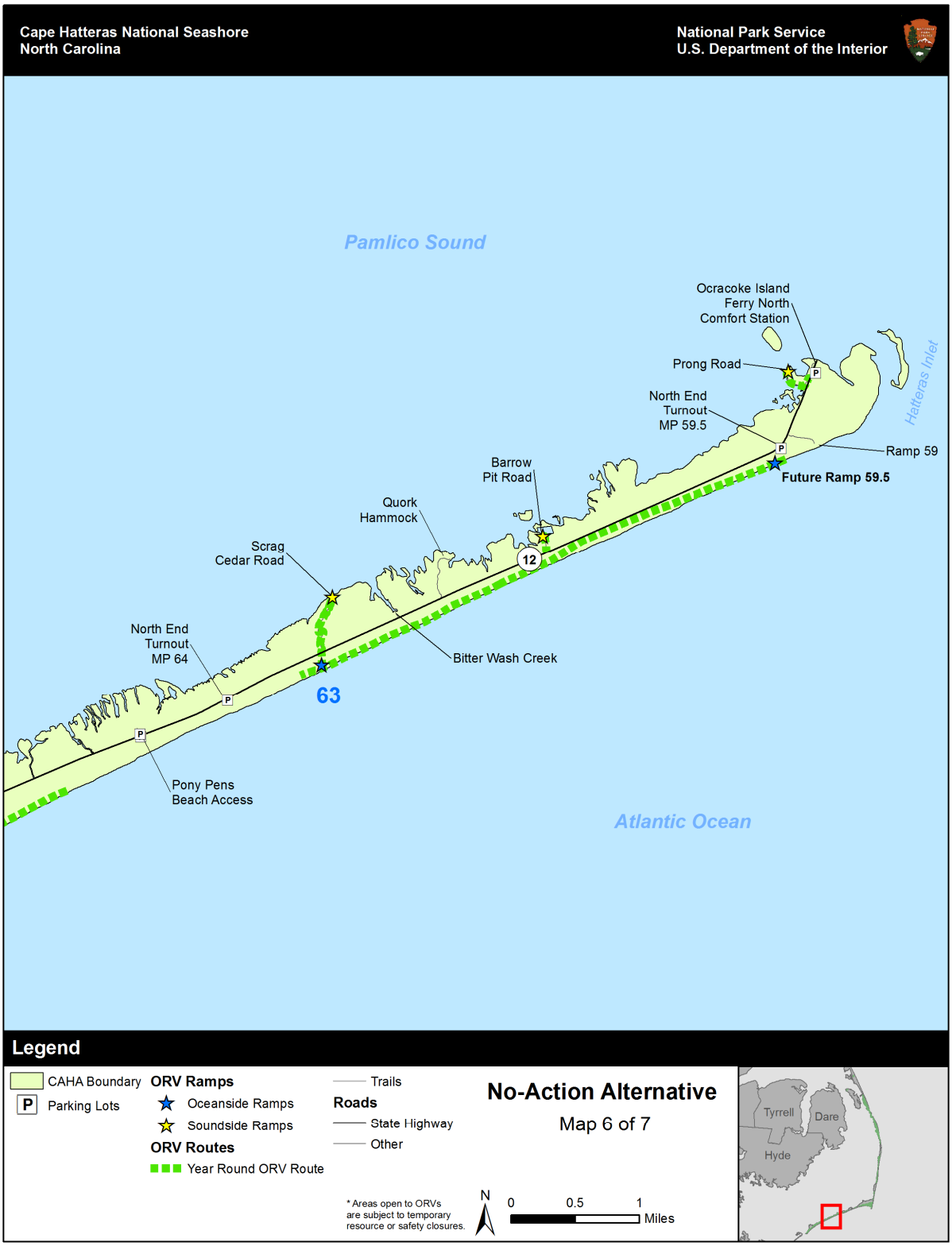


FIGURE 6. NO-ACTION ALTERNATIVE (MAP 6 OF 7)

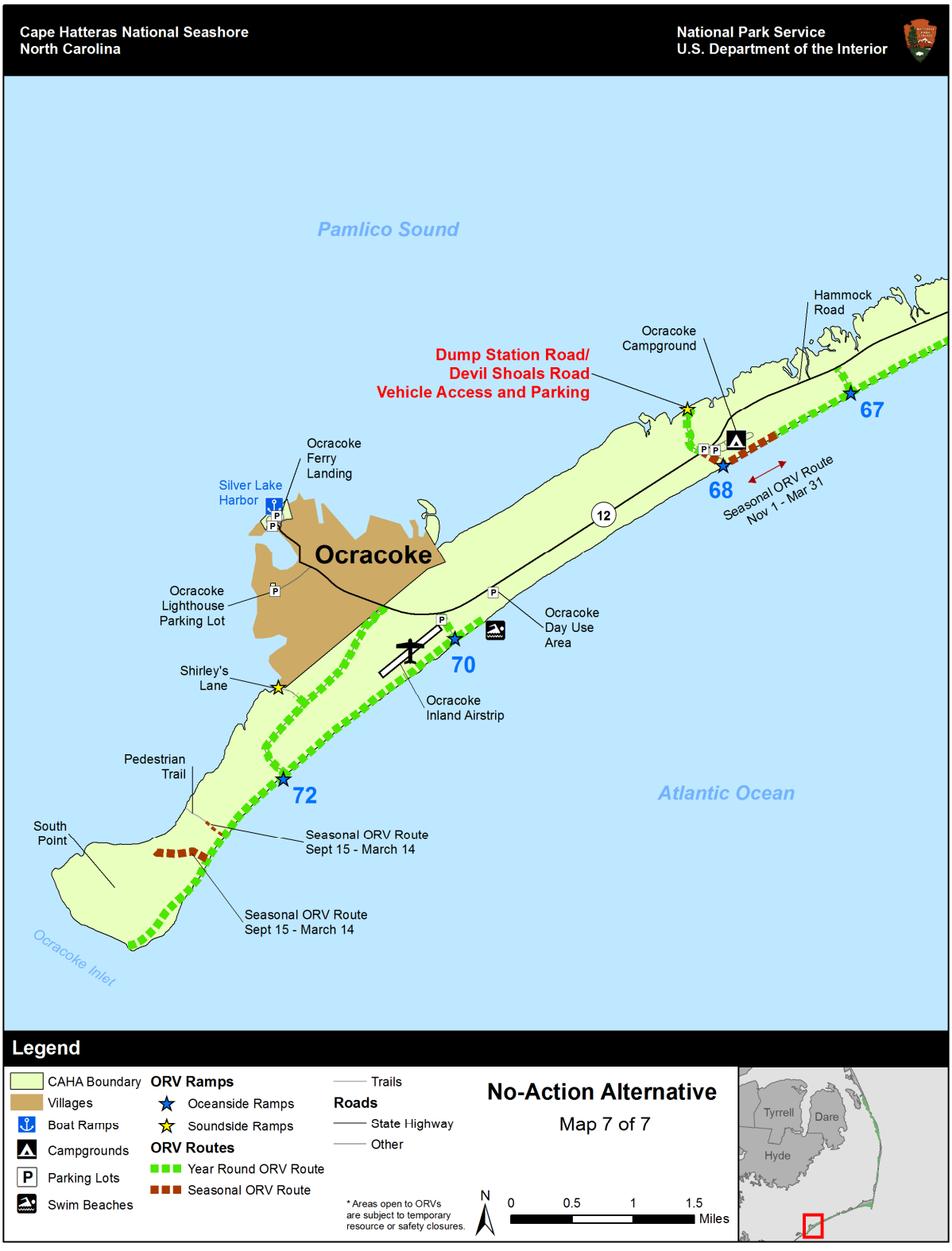


FIGURE 7. NO-ACTION ALTERNATIVE (MAP 7 OF 7)

ALTERNATIVE 1

Morning Beach Openings

Under all action alternatives, from May 1 through November 15, Seashore sea turtle protection staff would survey designated priority routes for new nests, install nest protections, and manage existing closures and buffers earlier in the morning than currently occurs. Upon completion, priority routes would be opened for ORV use at 6:30 a.m. The NPS selected these priority routes based on their proximity to villages and their popularity with ORV users. Priority routes have been identified as those designated year-round ORV routes accessible from Ramp 2, Ramp 4, Ramp 25, Ramp 27, Ramp 43, Ramp 44, Ramp 48, Ramp 49, and Ramps 70 and 72 (figures 8–11). If any of these priority routes are closed for an extended period of time due to erosion or weather conditions, such as flooding, alternate year-round ORV routes could be opened at 6:30 a.m. in lieu of designated priority routes, as long as there is no conflict with any restrictions expressed in the Seashore's existing ORV/species management plans or regulations. Other ORV routes would continue to open at 7:00 a.m. during this period as described in the no-action alternative. All other aspects of night driving would remain unchanged from the no-action alternative.

Seasonal Off-Road Vehicle Routes

Under alternative 1, the dates for seasonally designated ORV routes in front of the villages and Ocracoke campground would be expanded by two weeks in the fall and spring, allowing ORV use in these areas from October 15 through April 14. The dates of use for all other seasonal ORV routes would remain the same as those under the no-action alternative.

Vehicle-Free Areas

Under alternative 1, proposed Ramps 2.5 and 59.5 (as described in the 2013 Proposal to Facilitate Additional Public Beach Access EA) would not be constructed. Instead, NPS would restore Ramp 2 to ORV use and extend the existing year-round ORV route 0.5 mile north, providing dual access to this ORV route from Ramp 4 and Ramp 2. Restoring Ramp 2 would maintain the current entrance location from the parking area, but would realign approximately 100 to 150 feet of the length of the ramp to the south by approximately 200 feet. Realigning the ramp would help to separate it from the lifeguarded beach. The ramp would be approximately 36 feet wide, and the surface would be a pervious mixture of sand, shell, and clay. Figure 12 displays the approximate location of the realignment of Ramp 2.

Similarly, Ramp 59 would be re-authorized for ORV use, extending the existing year-round ORV route approximately 0.5 mile. No improvements to Ramp 59 would be needed. Approximately 1 mile of VFAs would be redesignated as ORV routes, resulting in approximately 29 miles designated as year-round ORV routes, 13 miles of seasonal ORV routes, and 25 miles of VFAs. Proposed ORV route locations under alternative 1 are displayed in figures 13–19.

Access Improvements

Alternative 1 would focus on improving soundside access on Ocracoke Island. Devil Shoals Road, currently known as Dump Station Road, located across from the Ocracoke campground, is an existing dirt road currently designated as an ORV route. Under alternative 1, Devil Shoals Road would be improved and designated as a park road instead of an ORV route. Visitors would not be required to purchase an ORV permit to drive on this road. The existing one-lane road would be widened to two lanes, up to 28 feet wide, and one small parking area containing approximately five parking spaces would be constructed. The parking area would be up to 35 feet wide and 70 feet long. The last 400 feet of roadway closest to the

sound would not be widened to avoid affecting wetlands. The road and parking areas would be composed of sand, crushed shells, and clay rather than impermeable paving materials.

Bitter Wash Creek is located at approximately 4 miles from the north end of Ocracoke Island on the western side of the island. Access improvements at this site would include designating a parking area and footpath and formalizing a road where a disturbed vehicle pathway already exists. The formalized road would be approximately 160 feet long by 36 feet wide and would be designated as a park road. A 10 to 12 car parking area (up to 150-feet by 50 feet in size) would be constructed at the end of the roadway. To minimize stormwater runoff, the road and parking area would be constructed using a pervious mixture of sand, shell, and clay. A primitive pedestrian path, approximately 175 feet long and 7 feet wide, would be installed to provide access from the parking area to the sound. To construct the primitive path, vegetation would be cleared to expose the existing sand, and no additional surfacing materials would be used. Because these access improvements would occur under all action alternatives, the locations of these improvements are provided on the maps for each action alternative. General aerial locations for both access improvements are provided in figures 20 and 21.

ORV Permit Lengths

Under alternative 1, the existing annual permit would change from being valid for a calendar year to being valid for one year from the date of issue. Under this alternative, the existing 7-day ORV permit would be retained, and a 14-day permit would also be made available. Permits would continue to be assigned to a particular vehicle.

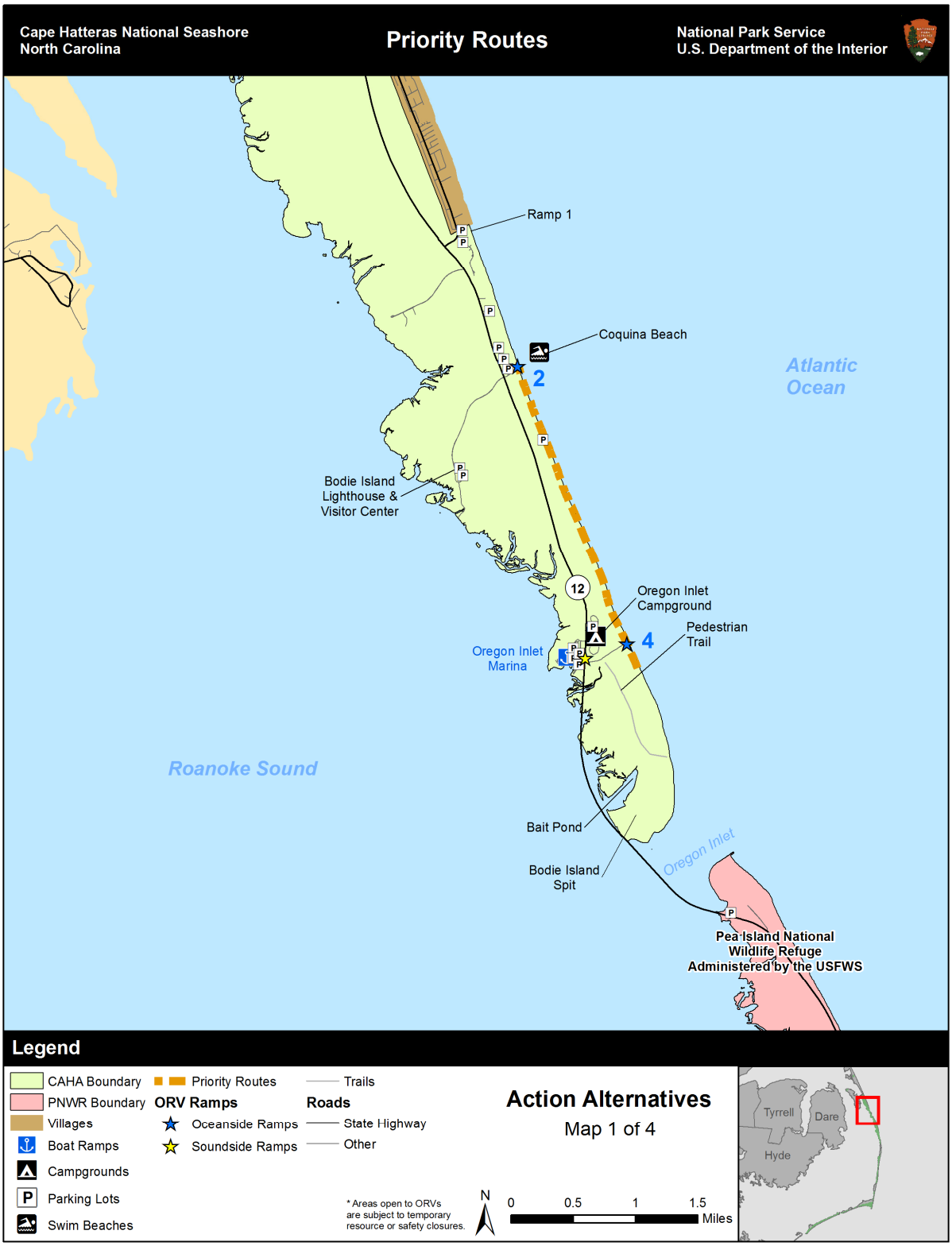


FIGURE 8. PRIORITY ROUTES (MAP 1 OF 4)

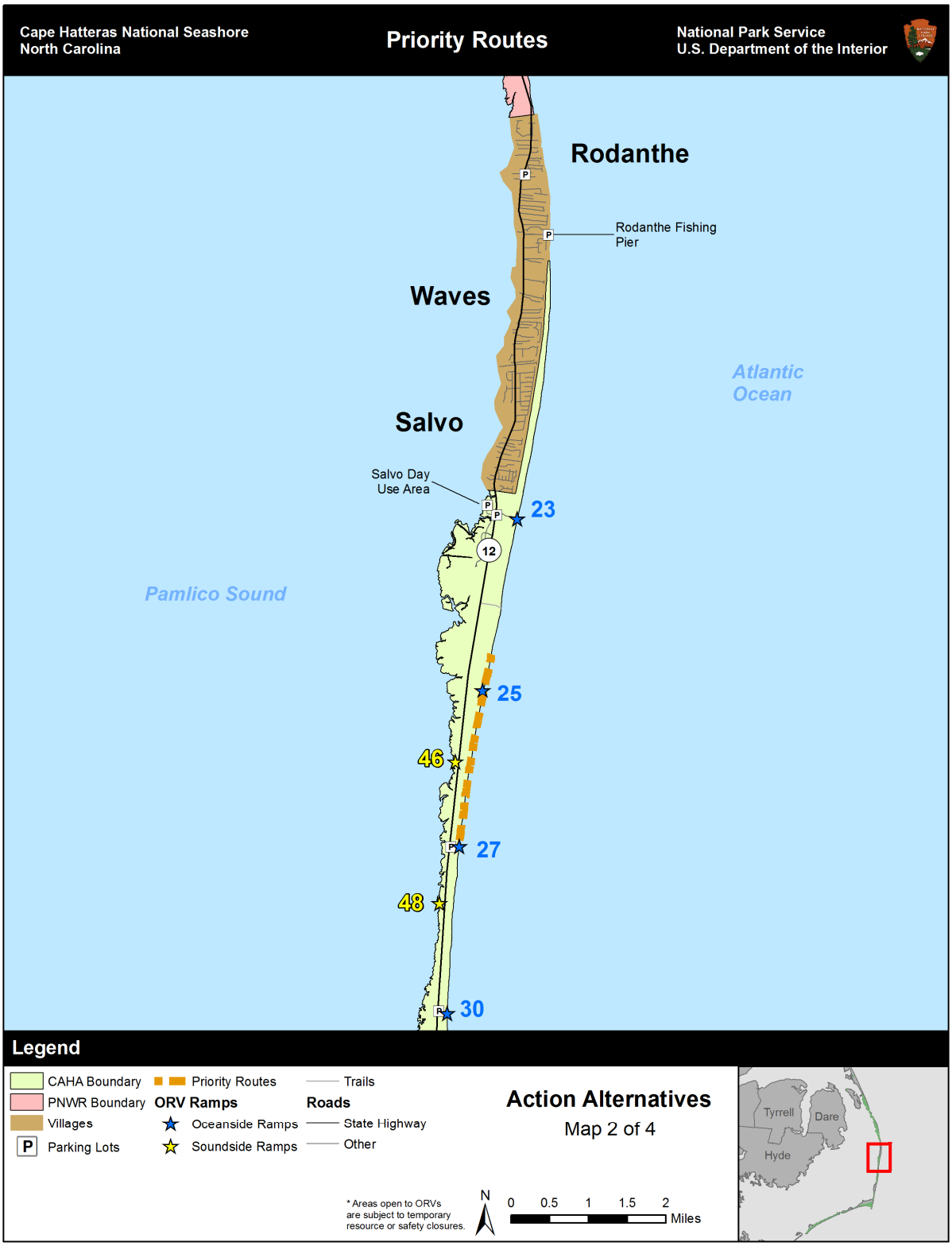


FIGURE 9. PRIORITY ROUTES (MAP 2 OF 4)

FIGURE 10. PRIORITY ROUTES (MAP 3 OF 4)

FIGURE 11. PRIORITY ROUTES (MAP 4 OF 4)

FIGURE 12. RAMP 2 REALIGNMENT

FIGURE 13. ALTERNATIVE 1 (MAP 1 OF 7)

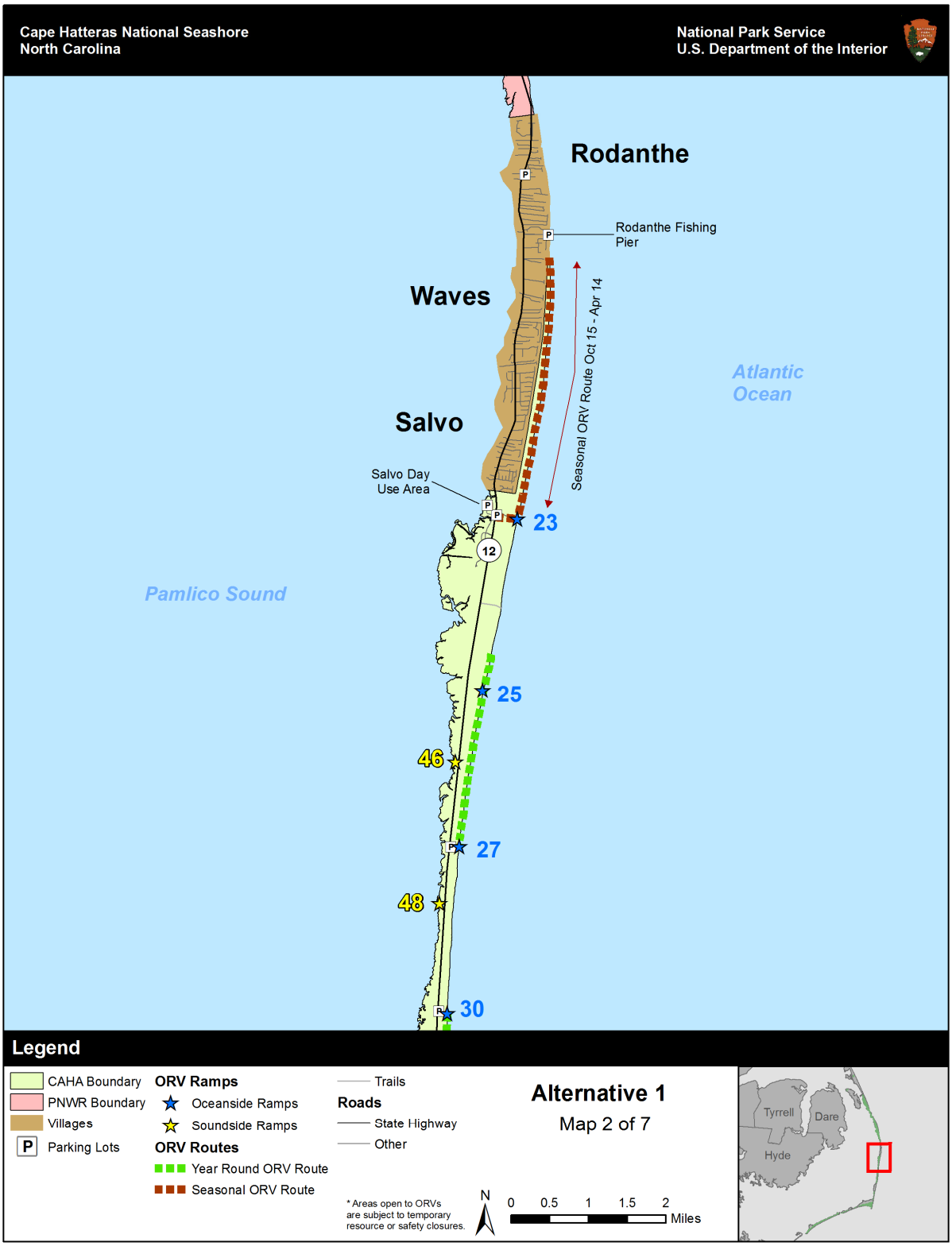


FIGURE 14. ALTERNATIVE 1 (MAP 2 OF 7)

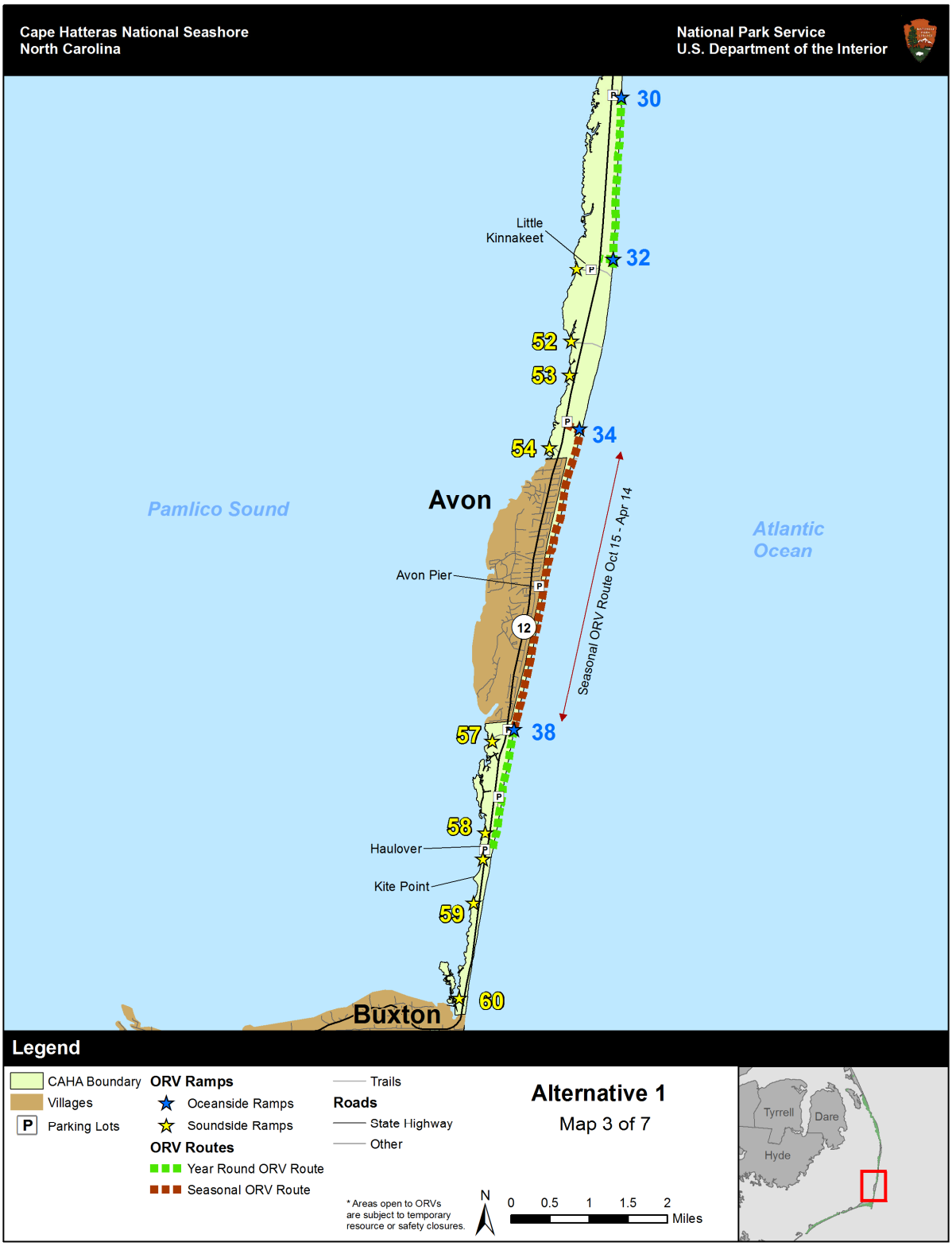


FIGURE 15. ALTERNATIVE 1 (MAP 3 OF 7)

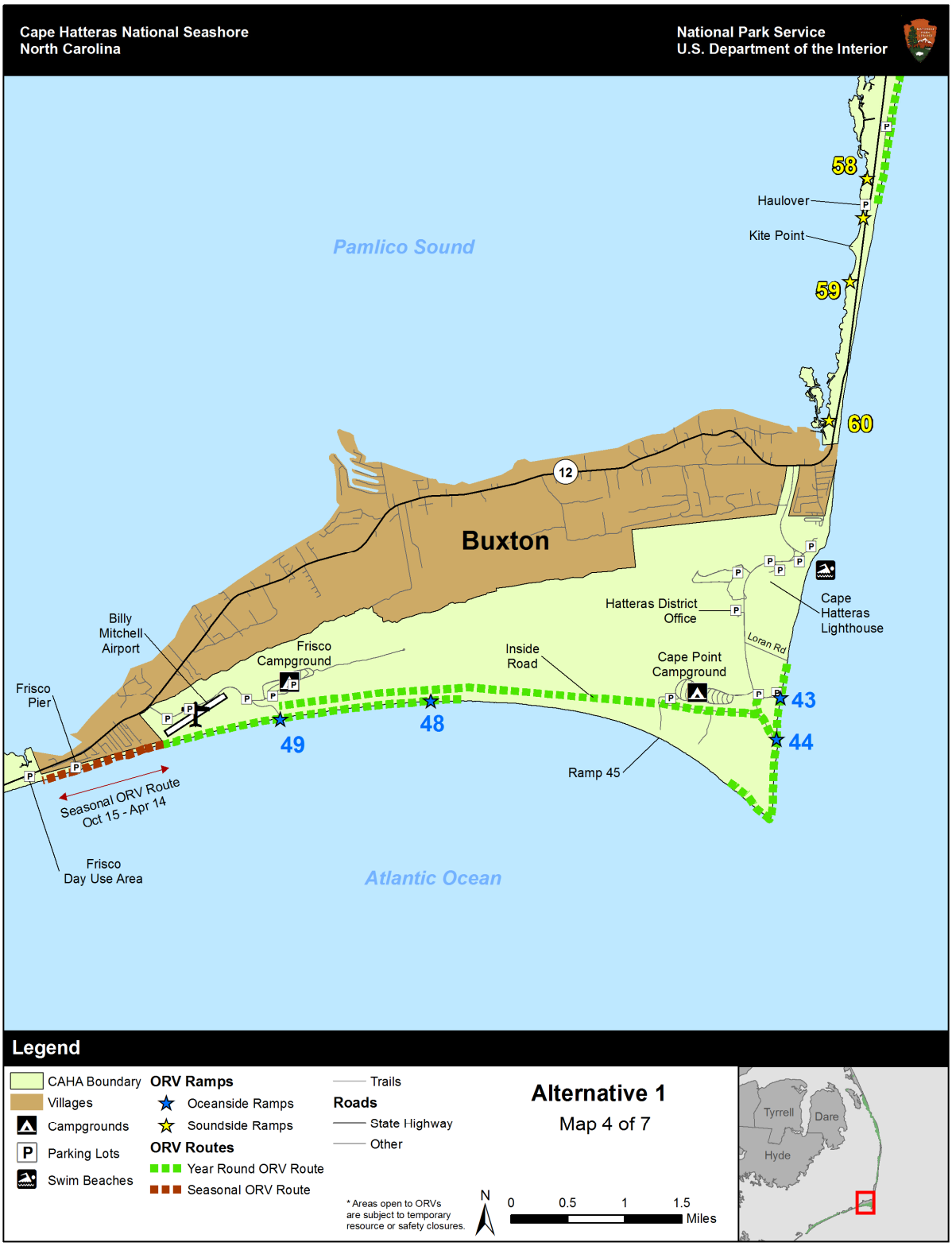


FIGURE 16. ALTERNATIVE 1 (MAP 4 OF 7)

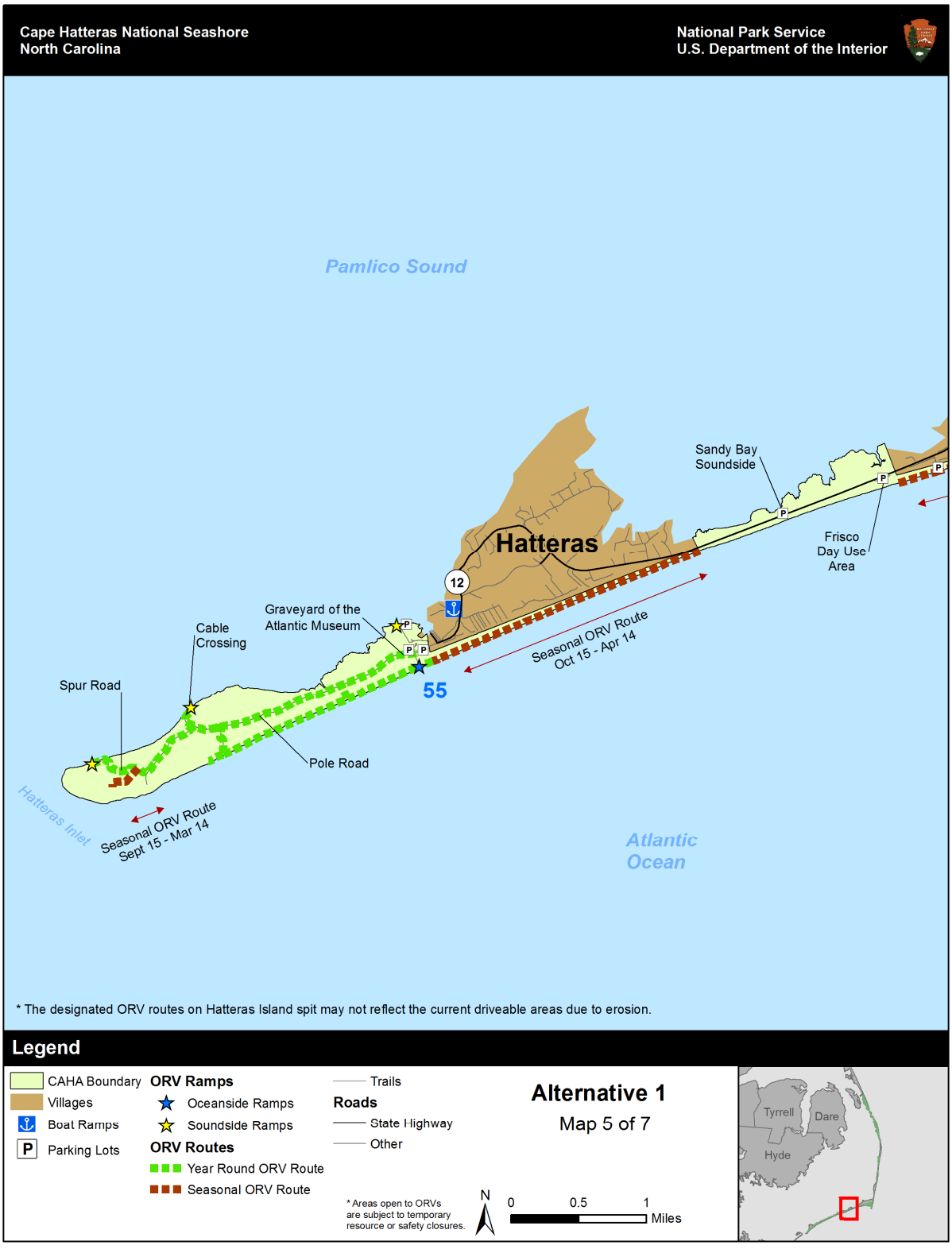


FIGURE 17. ALTERNATIVE 1 (MAP 5 OF 7)

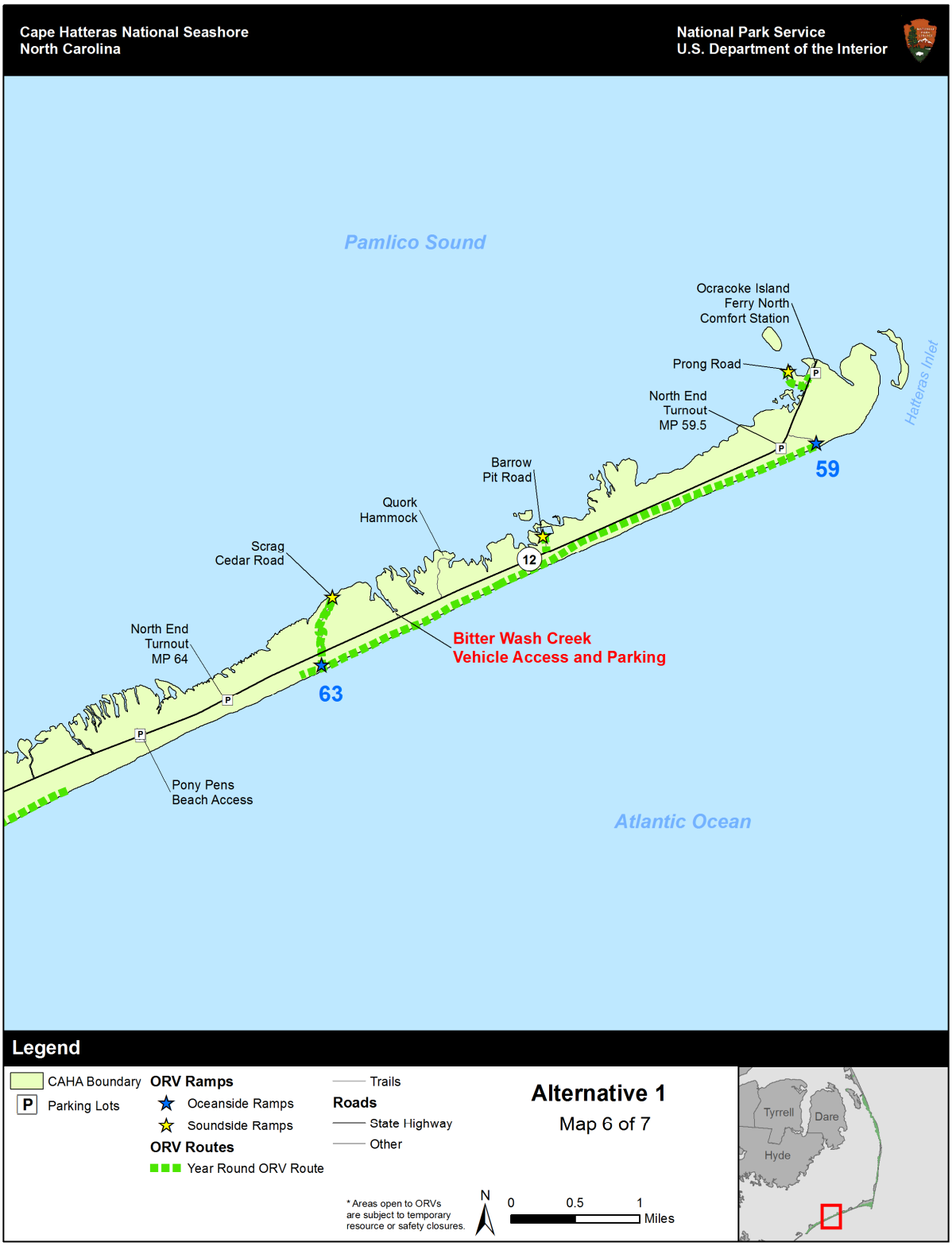


FIGURE 18. ALTERNATIVE 1 (MAP 6 OF 7)

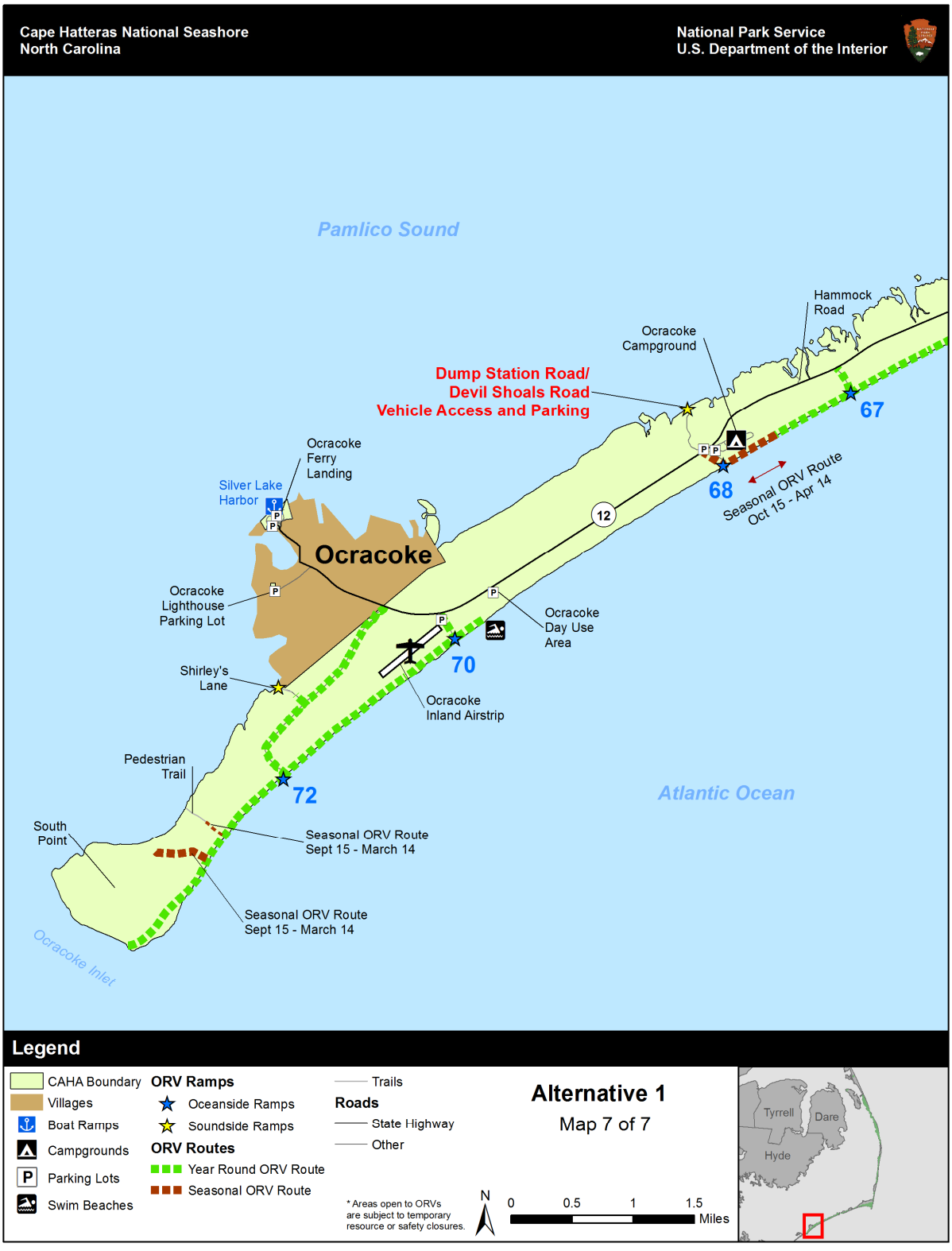


FIGURE 19. ALTERNATIVE 1 (MAP 7 OF 7)

FIGURE 20. DEVIL SHOALS ROAD ACCESS IMPROVEMENTS

FIGURE 21. BITTER WASH CREEK ACCESS IMPROVEMENTS

ALTERNATIVE 2 (NATIONAL PARK SERVICE PREFERRED ALTERNATIVE)

Morning Beach Openings

Under this alternative, priority routes (figures 8–11) would open to ORV use at 6:00 a.m. in May, June, and July. In August and September, priority routes would open to ORV use at 6:30 a.m., and then all beaches with ORV routes would open at 7:00 a.m. from October until November 15. If any of these priority routes are closed for an extended period of time due to erosion or weather conditions, such as flooding, alternate year-round ORV routes could be opened at the earlier times, as described above, in lieu of designated priority routes, as long as there is no conflict with any restrictions expressed in the Seashore's existing ORV/species management plans or regulations. Other ORV routes would continue to open at 7:00 a.m. during this period as described in the no-action alternative. All other aspects of night driving would remain unchanged from the no-action alternative.

Seasonal Off-Road Vehicle Routes

Under alternative 2, seasonally designated ORV routes in front of the villages and Ocracoke campground would be open to ORV use from October 15 through April 14. All other routes would remain the same, as stated in the no-action alternative.

Vehicle-Free Areas

The ORV route modifications for Ramps 2 and 59 would be the same as those described for alternative 1. In addition, under alternative 2, the existing VFA south of Ramp 23 would be redesignated as a seasonal ORV route, extending the seasonal ORV route in front of Rodanthe-Waves-Salvo south by 1.5 mile. Similarly, a portion of the existing VFA at Ramp 34 would be redesignated as a seasonal ORV route, extending the seasonal ORV route in front of Avon for 1 mile north. Both locations would still be subject to resource closures. The length of Ramp 45 (0.2 miles) would also be designated as a park road to provide additional pedestrian access to the Cape Point area as well as the parking area described under "Access Improvements," below. The existing VFA locations would be redesignated as 1 mile of year-round ORV routes and 2.5 miles of seasonal ORV routes and 1 mile of year-round ORV route would be redesignated as a park road, resulting in approximately 29 miles designated as year-round ORV routes, 15 miles of seasonal ORV routes, and 23 miles of VFAs. Proposed ORV route locations under alternative 2 are provided in figures 22–28.

Access Improvements

In addition to including the soundside access improvements on Ocracoke Island described for alternative 1, alternative 2 would extend the existing interdunal (bypass) road at Cape Point south of the Salt Pond at the narrows. This existing bypass road would be extended approximately 0.4 mile north to Ramp 44. The extension may improve access to Cape Point at some times when certain resource closures are in place. The bypass road would be extended behind the overwashed dunes. The 0.4-mile extension would be approximately 30 feet wide. Construction would be minimal because the road would be primitive and there is little vegetation in this location. The location of this improvement is provided in figure 25 and an aerial photograph is provided in figure 29. Alternative 2 also would include additional parking at Ramp 45. A 15 to 20-space parking area would be designated at Ramp 45 to improve pedestrian access to the beaches near Cape Point. The parking area would be approximately 180 feet long and 140 feet wide. To minimize stormwater runoff and flooding, the parking area would be constructed using a pervious mixture of sand, shell, and clay. An aerial photograph for the approximate location of the parking area under alternative 2 is provided in figure 30.

ORV Permit Lengths

As with alternative 1, the existing annual ORV permit would change from being valid for a calendar year to being valid for one year from the date of issue. Also under alternative 2, the 7-day ORV permit would no longer be issued and would be replaced with a 10-day permit. Permits would continue to be assigned to a particular vehicle.

FIGURE 22. ALTERNATIVE 2 (MAP 1 OF 7)

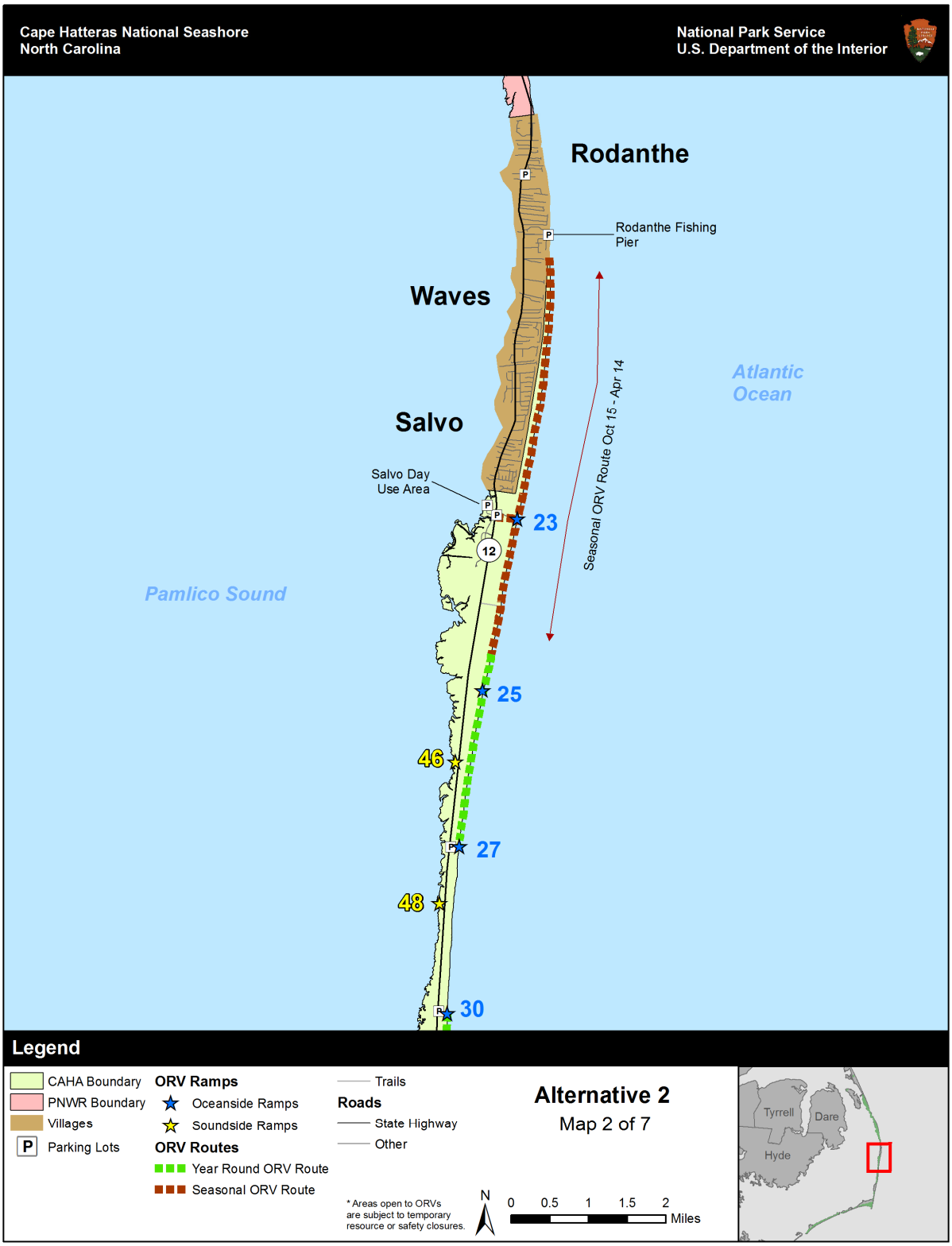


FIGURE 23. ALTERNATIVE 2 (MAP 2 OF 7)

FIGURE 24. ALTERNATIVE 2 (MAP 3 OF 7)

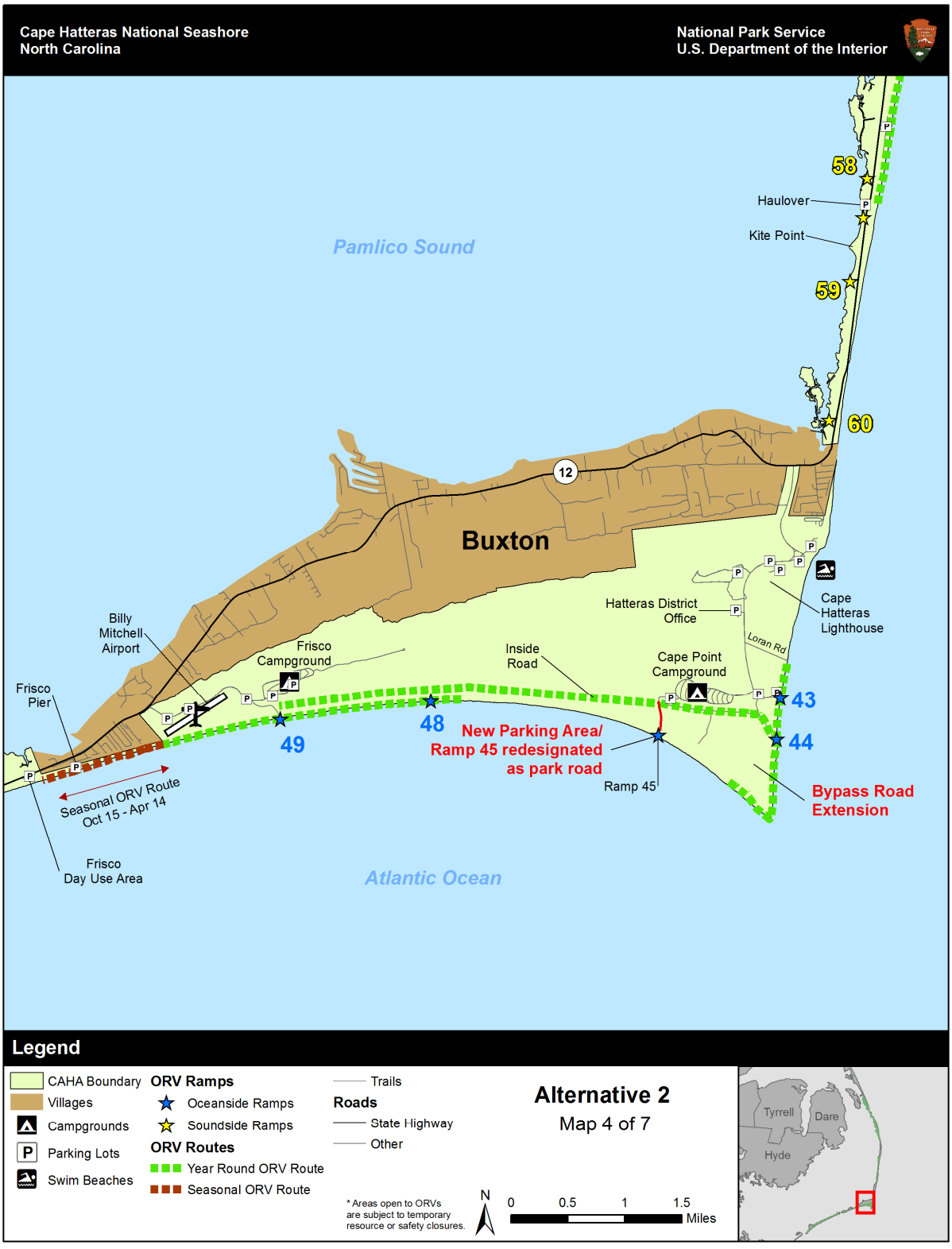


FIGURE 25. ALTERNATIVE 2 (MAP 4 OF 7)

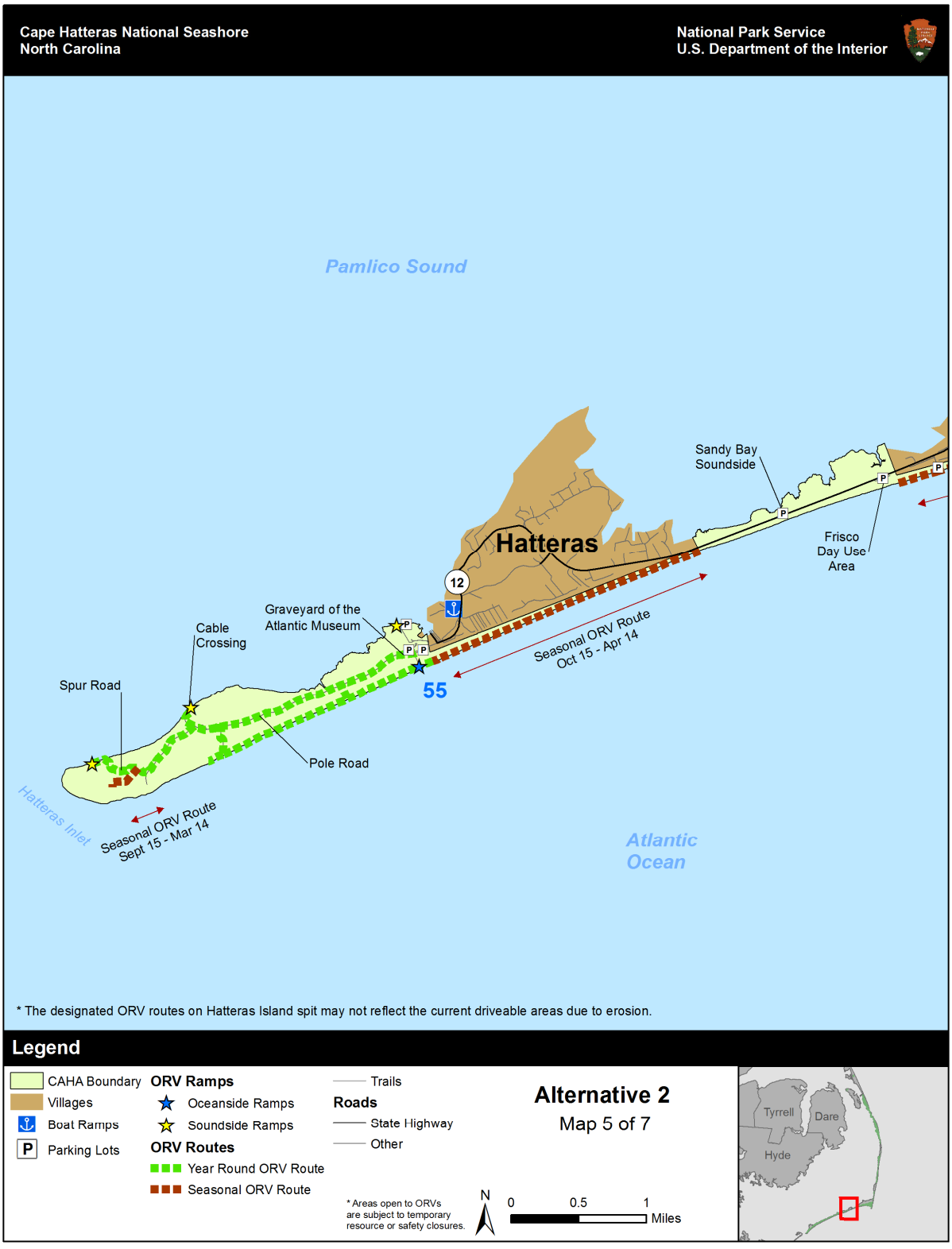


FIGURE 26. ALTERNATIVE 2 (MAP 5 OF 7)

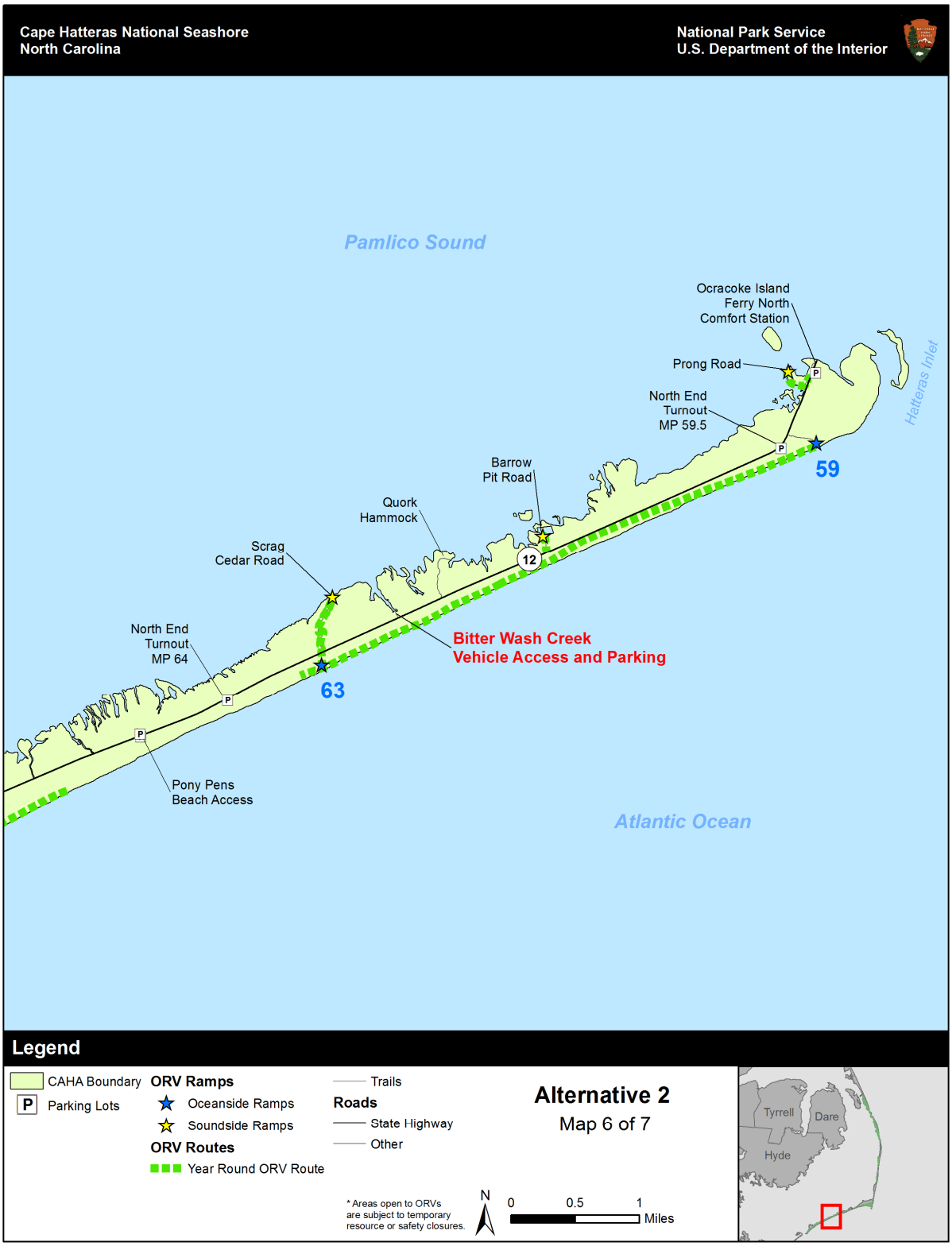


FIGURE 27. ALTERNATIVE 2 (MAP 6 OF 7)

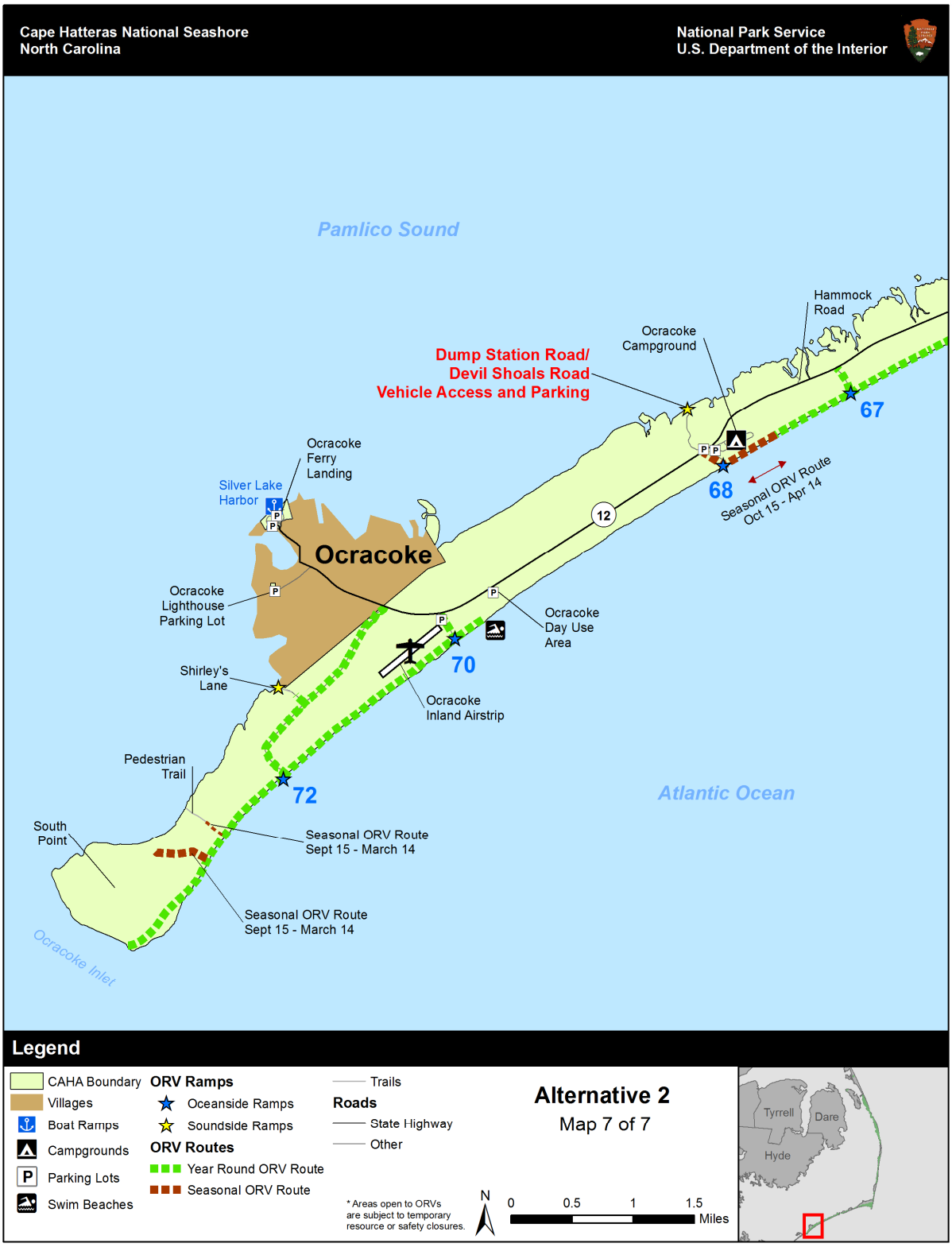


FIGURE 28. ALTERNATIVE 2 (MAP 7 OF 7)

FIGURE 29. BYPASS ROAD EXTENSION

FIGURE 30. PARKING AREA NEAR RAMP 45

ALTERNATIVE 3

Morning Beach Openings

Under alternative 3, priority routes (as shown on figures 8–11) would open to ORV use at 6:00 a.m. from May 1 through November 15. If any of these priority routes are closed for an extended period of time due to erosion or weather conditions, such as flooding, alternate year-round ORV routes could be opened at 6:00 a.m. in lieu of designated priority routes, as long as there is no conflict with any restrictions expressed in the Seashore's existing ORV/species management plans or regulations. Other ORV routes would continue to open at 7:00 a.m. during this period as described in the no-action alternative. All other aspects of night driving would remain unchanged from the no-action alternative.

Seasonal Off-Road Vehicle Routes

Under alternative 3, the dates for seasonally designated ORV routes in front of the villages and Ocracoke campground would be expanded by four weeks in the fall and spring, allowing ORV use from October 1 through April 30. All other seasonal ORV routes would remain the same, as stated in the no-action alternative.

Vehicle-Free Areas

The ORV route modifications for Ramps 2 and 59 would be as those described under alternative 1. As with alternative 2, the entire existing VFA south of Ramp 23 (1.5 miles) would be designated as a seasonal ORV route and the length of Ramp 45 would be designated as a park road. Additional modifications under alternative 3 would include designating the entire existing VFA north of Ramp 34 (2.0 miles) as a seasonal ORV route. With the redesignation of 1 mile of year-round ORV routes and 3.5 miles of seasonal ORV routes from existing VFAs and the redesignation of 1 mile of year-round ORV route as a park road, there would be 29 miles designated as year-round ORV routes, 16 miles of seasonal ORV routes, and 22 miles of VFAs. Proposed ORV route locations under alternative 3 are provided in figures 31–37.

Access Improvements

Access improvements under alternative 3 would be the same as those described under alternative 2.

ORV Permit Lengths

Under alternative 3, the Seashore would issue 3-day, 7-day, 14-day, and annual ORV permits with the annual permits being valid for one year from the date of issuance. NPS would determine the cost of each permit prior to implementation. Permits would continue to be assigned to a particular vehicle.

FIGURE 31. ALTERNATIVE 3 (MAP 1 OF 7)

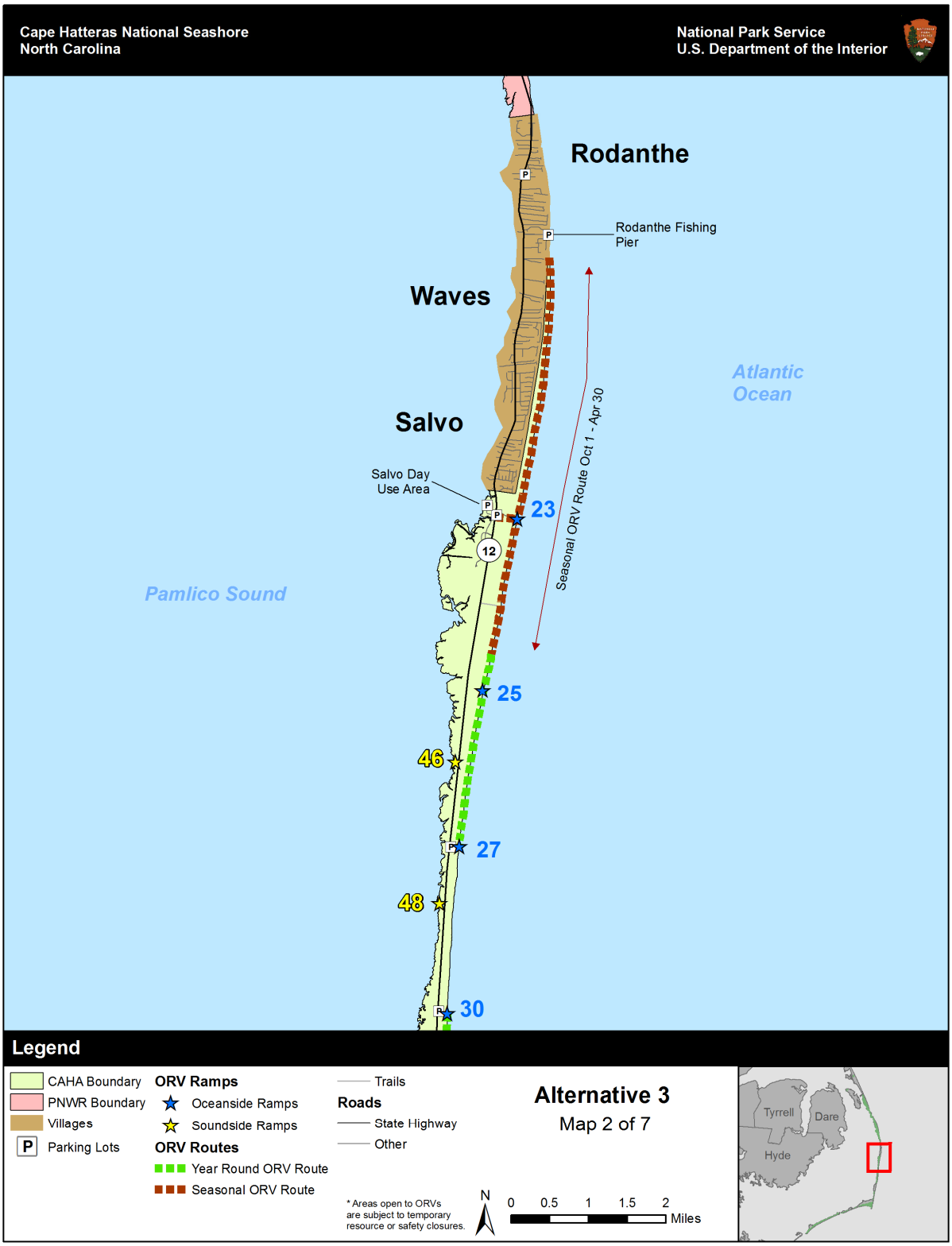


FIGURE 32. ALTERNATIVE 3 (MAP 2 OF 7)

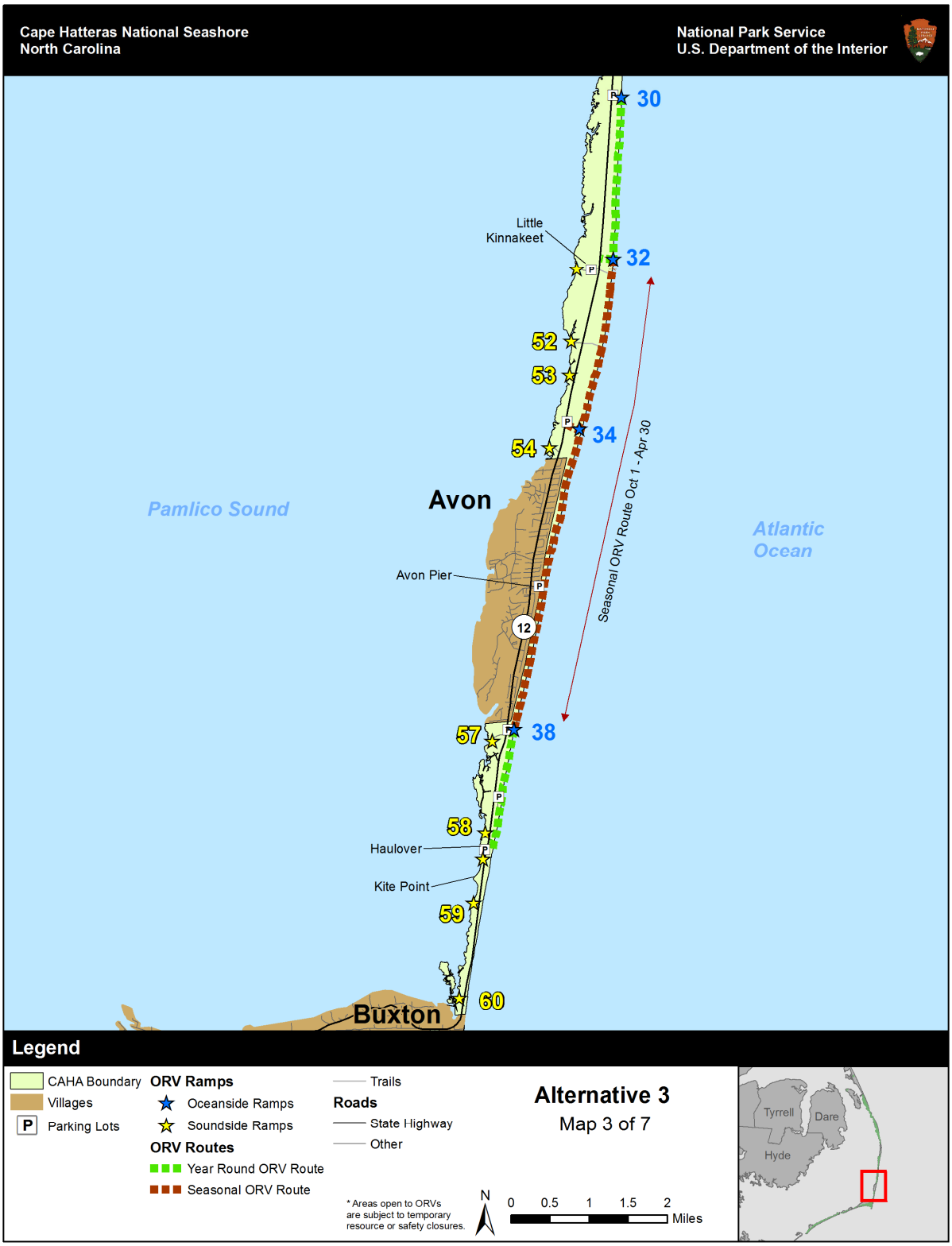


FIGURE 33. ALTERNATIVE 3 (MAP 3 OF 7)

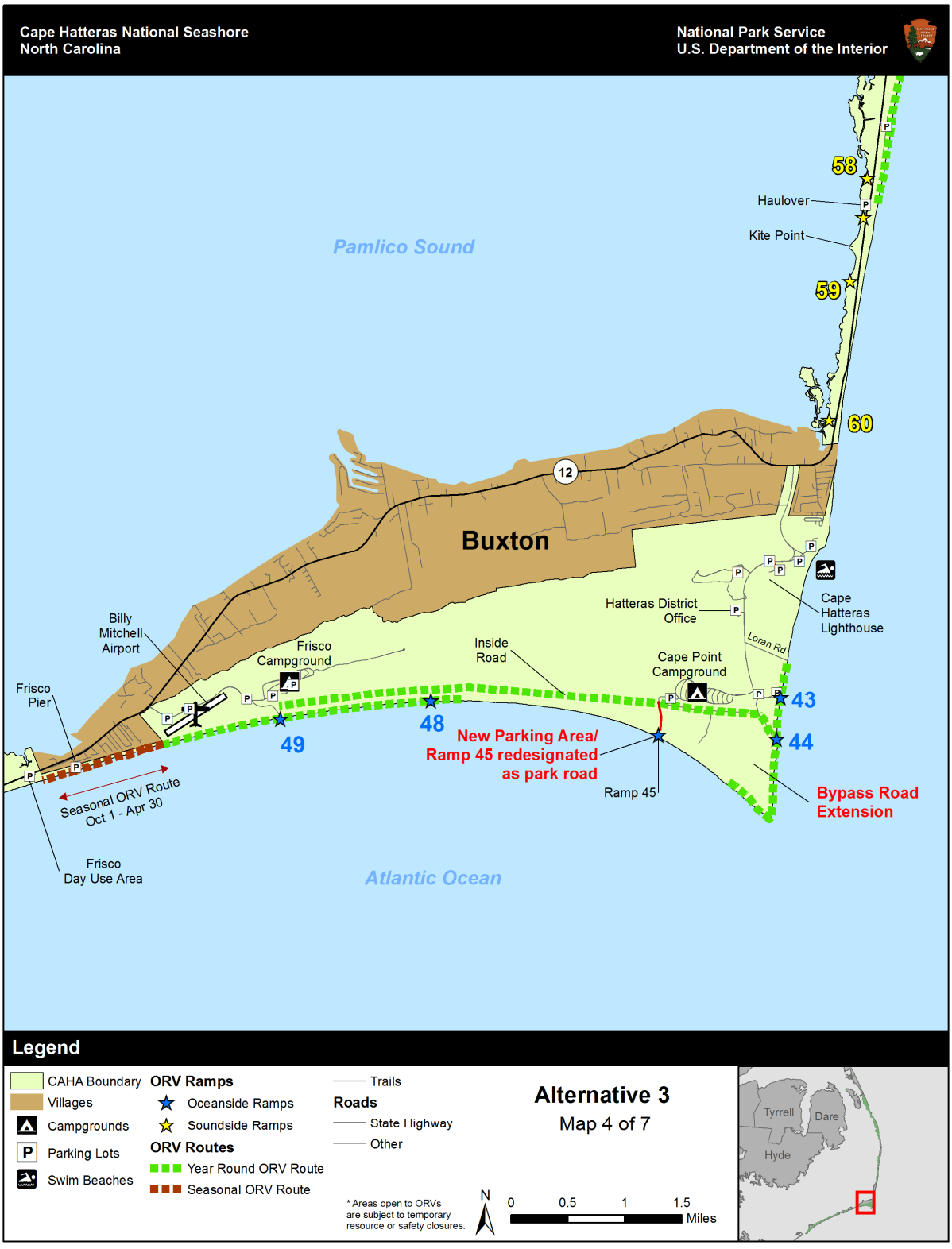


FIGURE 34. ALTERNATIVE 3 (MAP 4 OF 7)

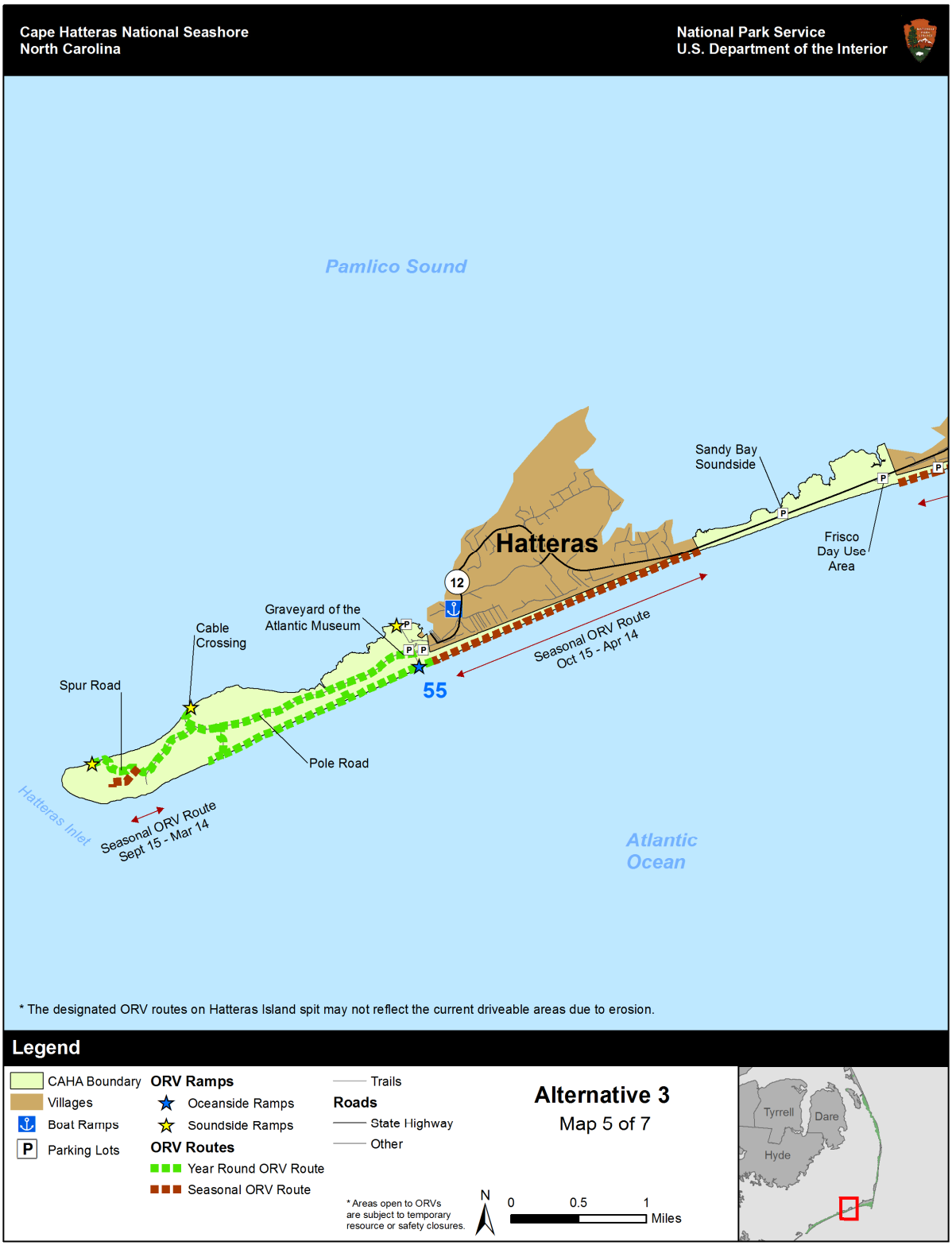


FIGURE 35. ALTERNATIVE 3 (MAP 5 OF 7)

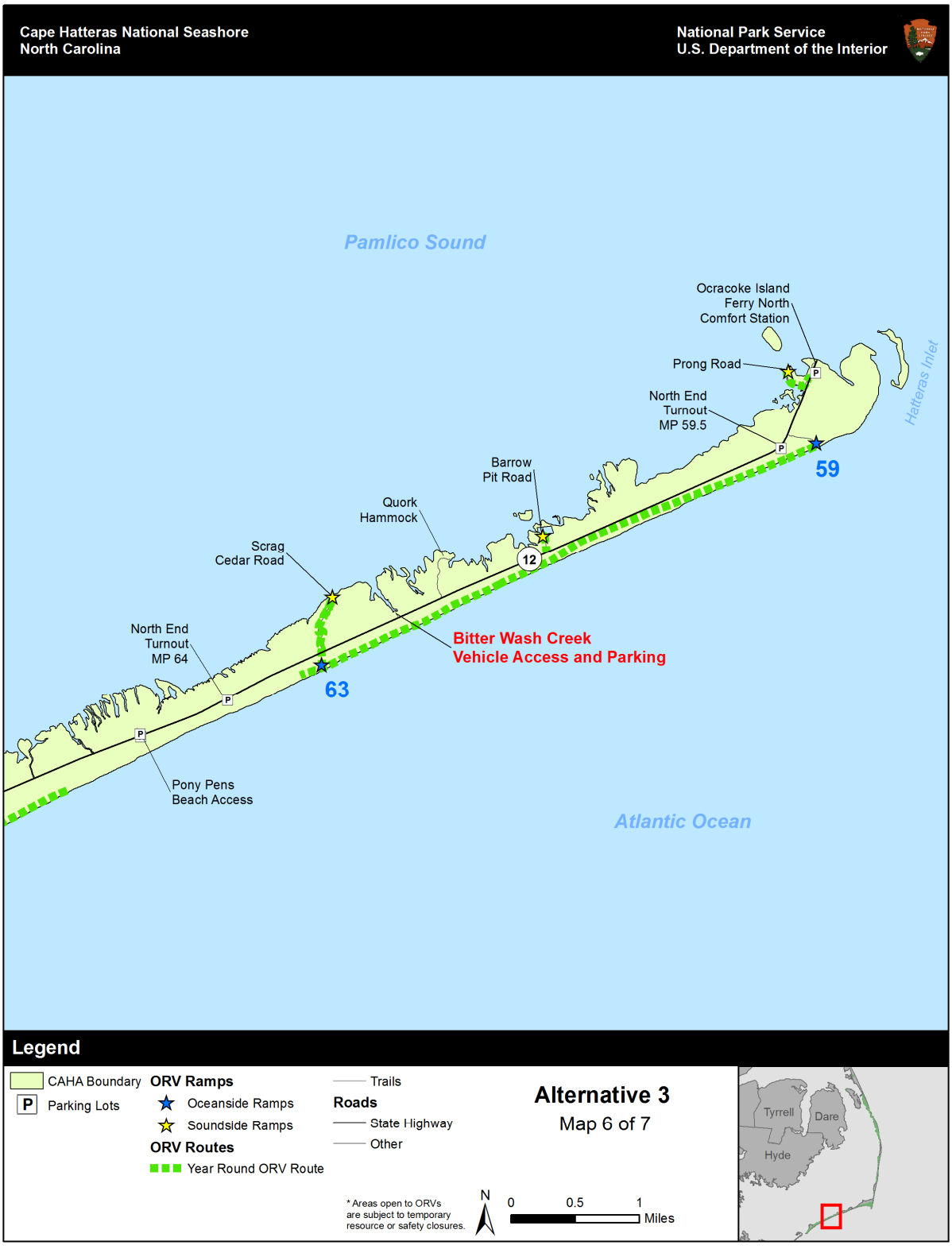


FIGURE 36. ALTERNATIVE 3 (MAP 6 OF 7)

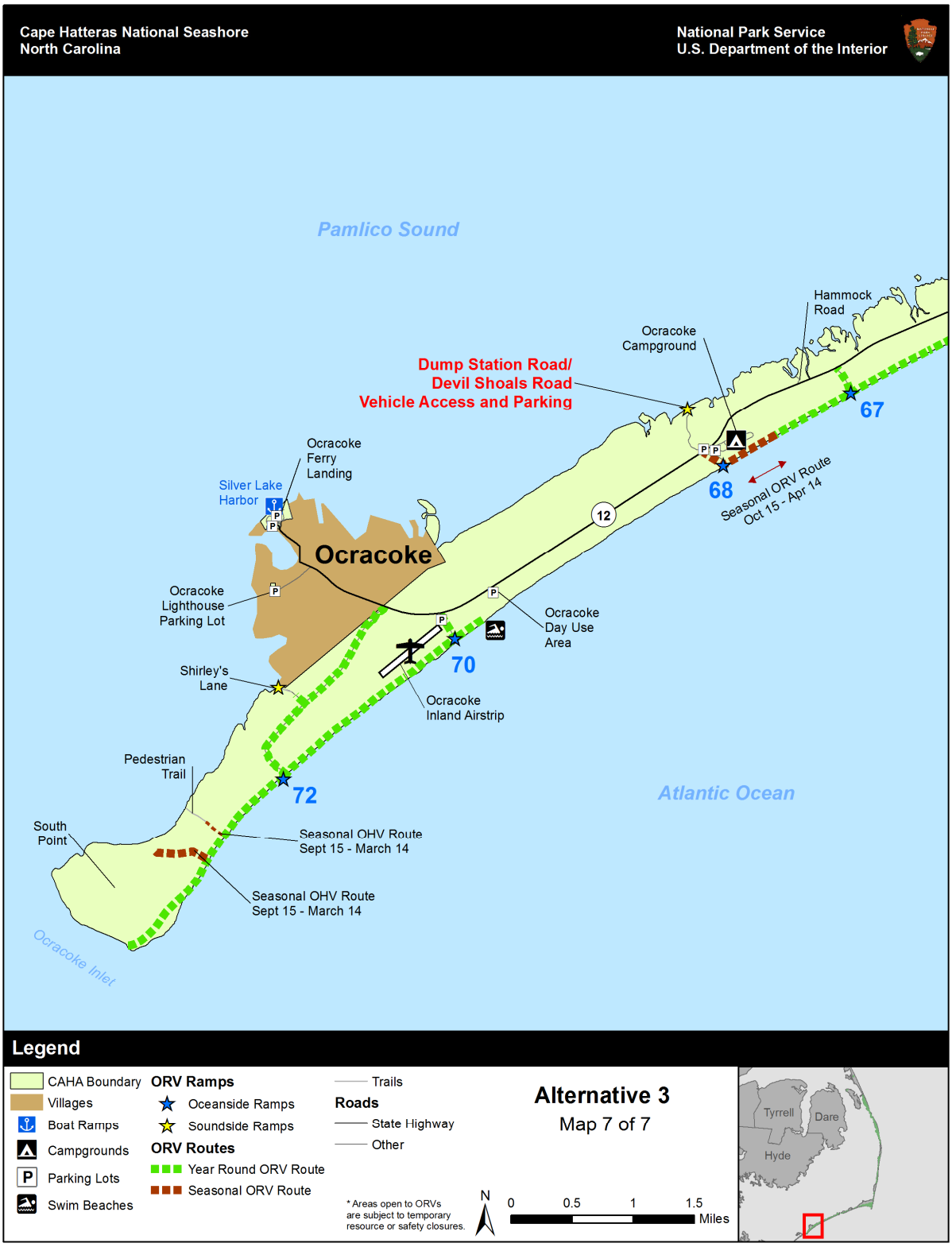


FIGURE 37. ALTERNATIVE 3 (MAP 7 OF 7)

TABLE 1. ALTERNATIVES SUMMARY

Alternative	No-Action Alternative	Alternative 1	Alternative 2	Alternative 3
Morning beach openings	All beaches would continue to open to ORV use at 7:00 a.m.	Open priority routes (Ramps 2, 4, 25, 27, 43, 44, 48, 49, 70, and 72) at 6:30 a.m. All non-priority routes open at 7:00 a.m.	Priority routes (same beaches as in alternative 1) open at 6:00 a.m. May, June July; open at 6:30 a.m. August and September; open at 7:00 a.m. Oct–Nov. 15 All non-priority routes open at 7:00 a.m.	Priority routes (same beaches as in alternative 1) open at 6:00 a.m. All non-priority routes open at 7:00 a.m.
Seasonal ORV routes	No change from existing management Villages/Ocracoke campground open seasonally to ORVs (Nov 1–Mar 31)	Extend seasonal ORV use two weeks in spring and fall in front of Villages and Ocracoke campground (Oct 15–Apr 14)	Same as alternative 1 (Oct 15–Apr 14)	Extend seasonal ORV use by four weeks in spring and fall in front of Villages and Ocracoke campground (Oct 1–Apr 30)
Vehicle-free areas	No change from existing management	Restore Ramp 2 and use Ramp 59, extending each existing year-round ORV route approximately 0.5 mile in both locations	Same as alternative 1, plus: VFA south of Ramp 23 (1.5 miles) would be redesignated as a seasonal ORV route; a portion of the VFA north of Ramp 34 (1 mile) would be redesignated as a seasonal ORV route, and Ramp 45 designated as a park road	Same as alternative 2, except: the entire VFA at Ramp 34 (north) would be redesignated as a seasonal ORV route (2 miles)
Access improvements	None	Road improvements and parking area installation at Bitter Wash Creek and Devil Shoals Road sites; both are designated as park roads	Same as alternative 1, plus: Extend bypass road north to Ramp 44 for 0.4 mile, and install a parking area near Ramp 45	Same as alternative 2
Permits	7-day, annual by calendar year	Annual by date of issue, 7-day permit, and 14-day permits available	Annual by date of issue, and 10-day permits available	Annual by date of issue, 3-day, 7-day, and 14-day permits available
Total VFA and ORV route mileage	28 miles of year-round ORV routes 13 miles of seasonal ORV routes 26 miles of VFAs	29 miles of year-round ORV routes 13 miles of seasonal ORV routes 25 miles of VFAs	29 miles of year-round ORV routes 15 miles of seasonal ORV routes 23 miles of VFAs	29 miles of year-round ORV routes 16 miles of seasonal ORV routes 22 miles of VFAs

MITIGATION MEASURES FOR THE PROPOSED ACTION

NPS places strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the following protection measures would be implemented as part of the proposed action.

All access improvements and the realignment of Ramp 2 would be completed using best management practices and environmentally sensitive standards to minimize stormwater runoff and mitigate impacts on wetland. Construction fencing would be placed at the intersections of the construction area and anywhere else visible to visitors to discourage visitors from entering the construction site. As noted under the alternatives, the existing wildlife buffers would continue to be in place for all prenesting and nesting activities for protected species, in both the ORV routes and VFAs.

Additional mitigation includes the inclusion of educational material regarding turtle nesting as part of the permit program. Every ORV permittee would receive information regarding what turtle crawls and turtle nesting activities look like so that they can notify Seashore staff if they notice nesting activity that has not already been marked.

ALTERNATIVES CONSIDERED BUT DISMISSED FROM DETAILED ANALYSIS

A number of alternatives or elements of alternatives were identified during internal and public scoping, but were eliminated from further analysis in this EA. These alternatives were dismissed because of technical feasibility, potential for too great of an environmental impact on the Seashore, conflicts with the purpose of and need for the project, or for other reasons specified below. These dismissed alternatives, when combined with the alternatives fully evaluated above, constitute the full range of alternatives that NPS is required to consider under NEPA. Alternatives considered but dismissed from detailed analysis are described below.

Earlier Morning Beach Openings

During internal scoping, NPS explored the potential to allow visitors to access sections of beaches just as the resource management staff clears them for opening in the morning. This alternative was dismissed because NPS would be unable to provide consistent and predictable access for visitors. During public scoping, the public also suggested a range of earlier morning beach openings, including a range from 6:30 a.m. to one hour before sunrise. Suggestions from 6:00 a.m. to 6:30 a.m. have been included as alternatives. Monitoring for nesting activity is difficult to complete accurately in the dark. New nests or nesting activity could be missed if staff were operating too early before sunrise, and turtles could nest in the morning hours after resource staff already have surveyed the beach, resulting in the potential for unmarked nests. Additionally, surveying requires the operation of specialized equipment, and there would be higher safety risks for resource management staff to be continually operating in the dark. Therefore, opening the beaches before 6:00 a.m. was dismissed due to the potential for missed nests and for safety concerns.

Install Gates

Seashore staff discussed construction of gates at each ramp, which would be opened when the beaches were considered open for the day. This alternative option was dismissed because it would create additional work for Seashore staff to open the gates at each ramp location, which could prevent them from continuing to check beaches for nesting activity. Gates also would not meet the purpose of and need for the action, which is to provide earlier access to the beach.

Extending Seasonal Off-Road Vehicle Routes Longer than Four Weeks

Similarly, during internal and public scoping, the Seashore considered expanding the seasonal ORV route period for an additional six weeks in the spring and fall, which would allow ORV use between September 15 and May 14. With further discussion, the Seashore dismissed this alternative from full analysis because turtle and bird nests may be active during this timeframe, which would increase the management complexity and workload of Seashore staff.

Modifying Additional Vehicle-Free Areas

During internal scoping, NPS considered numerous modifications to existing VFAs located throughout the Seashore. Additionally, the public also suggested a multitude of specific VFA alterations in comments received during the public scoping period. NPS considered several factors when determining what existing VFA locations could be feasibly modified, including proximity to visitor amenities (e.g., parking, bathrooms, and lifeguarded beaches); shorebird nesting and wintering habitat; safety factors associated with the width or narrowness of beaches; ability to meet the enabling legislation to provide an undeveloped and wilderness-like experience; and proximity of both ORV routes and VFAs to each village. Given these constraints, Seashore staff determined which VFAs would be considered for modification in this EA. All other existing VFAs were not considered appropriate for modification at this time. Some of these VFAs are in place so that the Seashore can continue to meet natural resource management goals, in accordance with the Seashore's purpose and significance. Responses to specific requests for VFA alterations are provided in the ORV FEIS in appendix C.

Modifying Additional Seasonal ORV Routes

During internal scoping, NPS also considered changes to the existing seasonal ORV routes, including the seasonal ORV route on Bodie Island. This seasonal ORV route is shorter than the visitor-use related seasonal ORV routes in front of the villages and Ocracoke campground. The timing of the seasonal ORV route generally reflects the nesting activities occurring each year at that location. The seasonal ORV route also is consistent with the 2014 Act, which states changes to seasonal ORV routes should not result in resource management problems. Therefore, NPS did not alter this seasonal ORV route.

Additional Permit Lengths

During public scoping, commenters recommended additional permit periods, including daily, 12-day, 17-day, 20-day, 30-day, and 2-year permits. NPS determined that the range of permit periods provided in the action alternatives covers the majority of visitor use needs and responded to the requests made by the public during the three years the permit system has been in place. Because of the logistics required to enforce the permit system and feasibility and cost issues associated with issuing numerous different permit lengths, only a certain number of permit periods are feasible for implementation, and these have been retained for full analysis.

Additional Access Improvements

Additional access improvements were explored during internal scoping and as a result of public scoping comments. Suggested improvements included construction of new ramps below Ramp 38, Ramp 49, and Ramp 67 to provide dual access to existing ORV routes or to alter existing VFAs, as well as constructing a parking area at Kite Point/Haulover and widening the interdunal road between Ramps 44 and 45. These and other alternative ramp and access improvement options were dismissed because of their potential for too great of an environmental impact or because the suggested improvements (or very similar

improvements) are already authorized in the 2013 Proposal to Facilitate Additional Public Beach Access EA.

To improve soundside access on Ocracoke Island, additional access improvements were considered at Scrag Cedar Road, Try Yard Creek, Hammock Road, and at other locations. These access points were dismissed because of concerns about constructing new access points in previously undisturbed locations, adverse environmental impacts, and visitor safety issues. Bitter Wash Creek and Devil Shoals Road locations would require minimal construction in previously disturbed areas and were retained for analysis; the remaining alternative locations were dismissed from full analysis.

NATIONAL PARK SERVICE PREFERRED ALTERNATIVE

The preferred alternative is the alternative that "would best accomplish the purpose and need of the proposed action while fulfilling [the NPS] statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors" (46.420(d)). The preferred alternative ultimately may not be the selected alternative and identification of the preferred alternative is not a final agency decision.

NPS has identified alternative 2 as the preferred alternative in this EA.

CHAPTER 3: AFFECTED ENVIRONMENT

The "Affected Environment" chapter describes existing conditions for those elements of the human environment that would be affected by the implementation of the alternatives considered in this EA. The components addressed include wetlands; federally listed threatened or endangered species; state-listed and special status species; non-listed shorebirds; visitor use and experience; socioeconomics; and Seashore management and operations. Impacts for each of these topics are analyzed in "Chapter 4: Environmental Consequences."

Because this document tiers off the ORV FEIS, readers are directed to the detailed discussion of the affected environment in that document, which is incorporated herein by reference and can be found at http://parkplanning.nps.gov/document.cfm?parkID=358&projectID=10641&documentID=37448. The affected environment discussion in this EA updates information available since the EIS was completed in 2010, including species numbers, socioeconomic data, and visitation numbers. For construction projects under this EA, site-specific information is also provided under relevant topics.

WETLANDS

Wetlands include areas inundated or saturated by surface or groundwater for a sufficient length of time during the growing season to develop and support characteristic soils and vegetation. The ORV FEIS includes detailed information on wetlands at the Seashore, including wetland classifications, additional details on the types of wetlands found at the Seashore, and the predominant vegetation in those wetlands. The affected environment in this document for wetlands provides a brief overview of the existing conditions at the Seashore as well as site-specific information at locations that could be impacted by proposed access improvements. A full discussion of the wetland types that occur at the Seashore is available in the ORV FEIS on pages 199–200.

The majority of the undeveloped acreage within the Seashore can be classified as a wetland. The predominant wetland types at the Seashore are marine and estuarine. Marine intertidal wetlands occur along the beaches on the oceanside of the Seashore, and estuarine intertidal wetlands generally occur along the soundside, adjacent to the many tidal creeks that are prevalent along the islands. Some small estuarine wetlands are found in low areas and ditches located behind or within the dunes. Non-wetland or "upland" areas of the Seashore include most areas landward of the dune line, areas around North Carolina State Highway 12 (NC-12), and other developed areas, such as those in and around villages and Seashore facilities.

The majority of the proposed access improvement projects would not be located near wetlands. Estuarine wetlands that are near Ramp 2, the bypass road extension location, or the proposed parking area location near Ramp 45 are behind the main dunes in low areas that can be avoided during siting of access facilities.

Estuarine intertidal wetlands are located near the proposed Bitter Wash Creek access improvements location. Vegetation contained in these wetlands includes both emergent (rooted, herbaceous plants, typically perennials) as well as scrub-shrub (woody vegetation less than 20 feet tall). This area is irregularly flooded, meaning tidal water floods the area less than once a day.

Similarly, estuarine intertidal wetlands are located near the Devil Shoals Road access improvements location, especially closer to the sound. In addition to scrub-shrub vegetation, forested estuarine intertidal wetlands characterized by woody vegetation taller than 6 feet are found in this area. The wetlands in this location also are irregularly flooded.

FEDERALLY LISTED SPECIES

Detailed information in the ORV FEIS, located on pages 200–241, includes species descriptions, general biology information, and Seashore-specific data prior to 2010. This document serves to supplement information included in the ORV FEIS by providing updated Seashore-specific data from 2010 through 2015.

This section addresses species present at the Seashore that are listed by USFWS as either endangered or threatened. In some cases, the species may also be listed by the State of North Carolina. These species include the federally and state-listed piping plover (*Charadrius melodus*); federally listed rufa red knot (*Calidris canutus rufa*); federally and state-listed loggerhead (*Caretta caretta*), green (*Chelonia mydas*), Kemp's ridley (*Lepidochelys kempii*), leatherback (*Dermochelys coriacea*), and hawksbill (*Eretmochelys imbricata*) sea turtles.

Species listed only by the state, and not federally listed as threatened and endangered, are discussed in the "State-Listed and Special Status Species" section of this chapter.

PIPING PLOVER

Locally, breeding piping plovers arrive at the Seashore in mid-March, begin courting and pairing in April, and begin to scrape and/or build nests by the third week of April. Bodie Island Spit, Cape Point, South Beach, North Ocracoke Spit, and South Point Ocracoke (South Point) all contain potential and/or historic nesting habitat. Nesting has been documented in all of these areas within the last six years (as of 2015). Seashore personnel document brood status, behavior, individual bird and/or brood movements, human disturbance, predator interactions, and other significant environmental events (NPS 2015b).

Nonbreeding Population

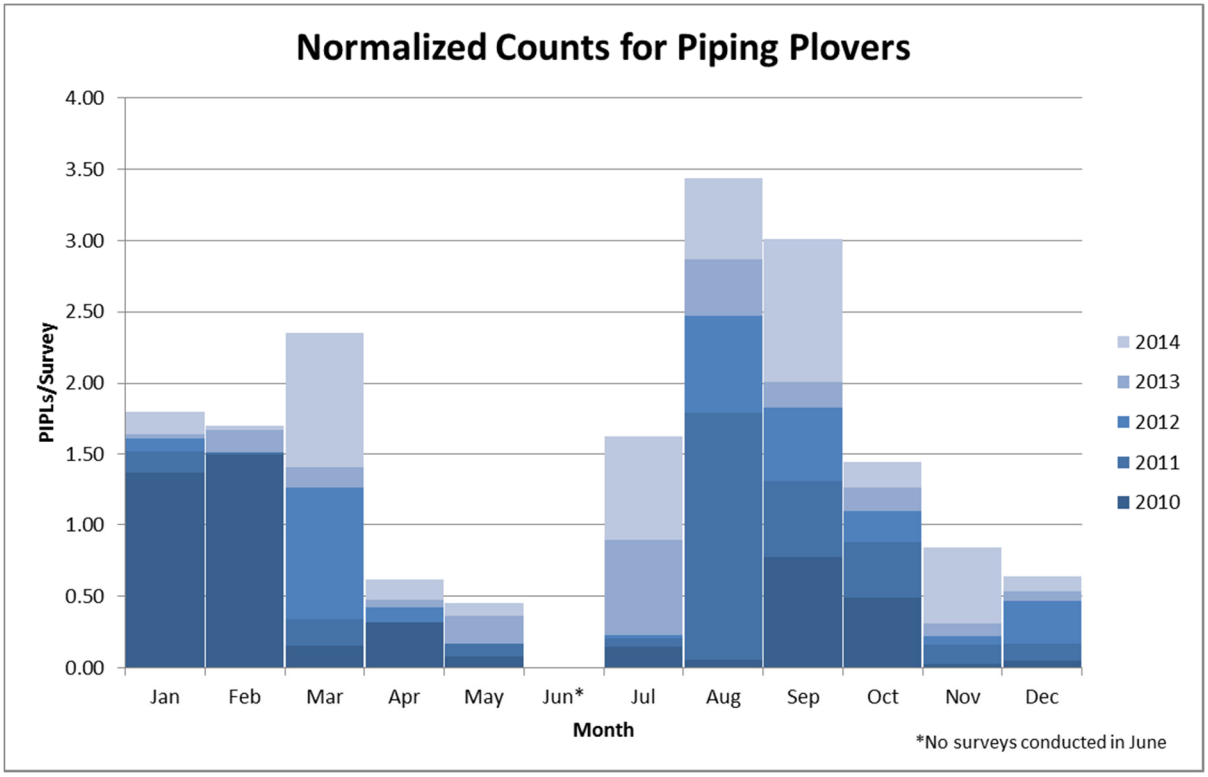
In addition to supporting a local breeding population, the Seashore also hosts migrating and wintering piping plovers from the threatened Atlantic Coast population and the endangered Great Lakes population. The Outer Banks is an important stopover area for migrating shorebirds along the Atlantic Coast. Fall migrants arrive at the Outer Banks in July, peak in August and September, and depart by November (Dinsmore et al. 1998). This migratory pattern is supported by data collected by Seashore staff from 2010–2014, provided in figure 38, which shows the number of nonbreeding piping plovers observed per survey per month.[1] The distribution and abundance of nonbreeding populations at the Seashore are less understood than the local breeding population. Through nonbreeding standardized surveys, a preference for the spits and the "Hook" area of Cape Point can be observed, as illustrated in figure 39, which shows the number of nonbreeding piping plovers observed by park mile. Figure 42 displays the park miles of the Seashore.

Documenting and protecting nonbreeding piping plovers and their habitats are priorities articulated in the recovery plans for all three North American breeding populations (USFWS 1988, 1996, 2003, 2009). Recognizing the importance of the Outer Banks to wintering piping plovers, USFWS designated 2,043 acres of critical habitat in Dare and Hyde Counties in November 2008 (USFWS 2008a).

[1] Survey counts for nonbreeding piping plovers are presented as normalized data to provide information about the relative abundance of nonbreeding piping plovers at different times of year and at different locations within the Seashore because there is a large difference in the survey effort for many of the park miles that are surveyed and normalizing the data removes this bias. Cape Point and the spits are considered high intensity sampling sites and are surveyed on a weekly basis, whereas the other park miles are surveyed only once a month. Weather also plays a role as to whether an area is surveyed or not, with high winds either cancelling or delaying surveys, flooding impeding access to survey areas, or flooding of the actual survey transect itself.

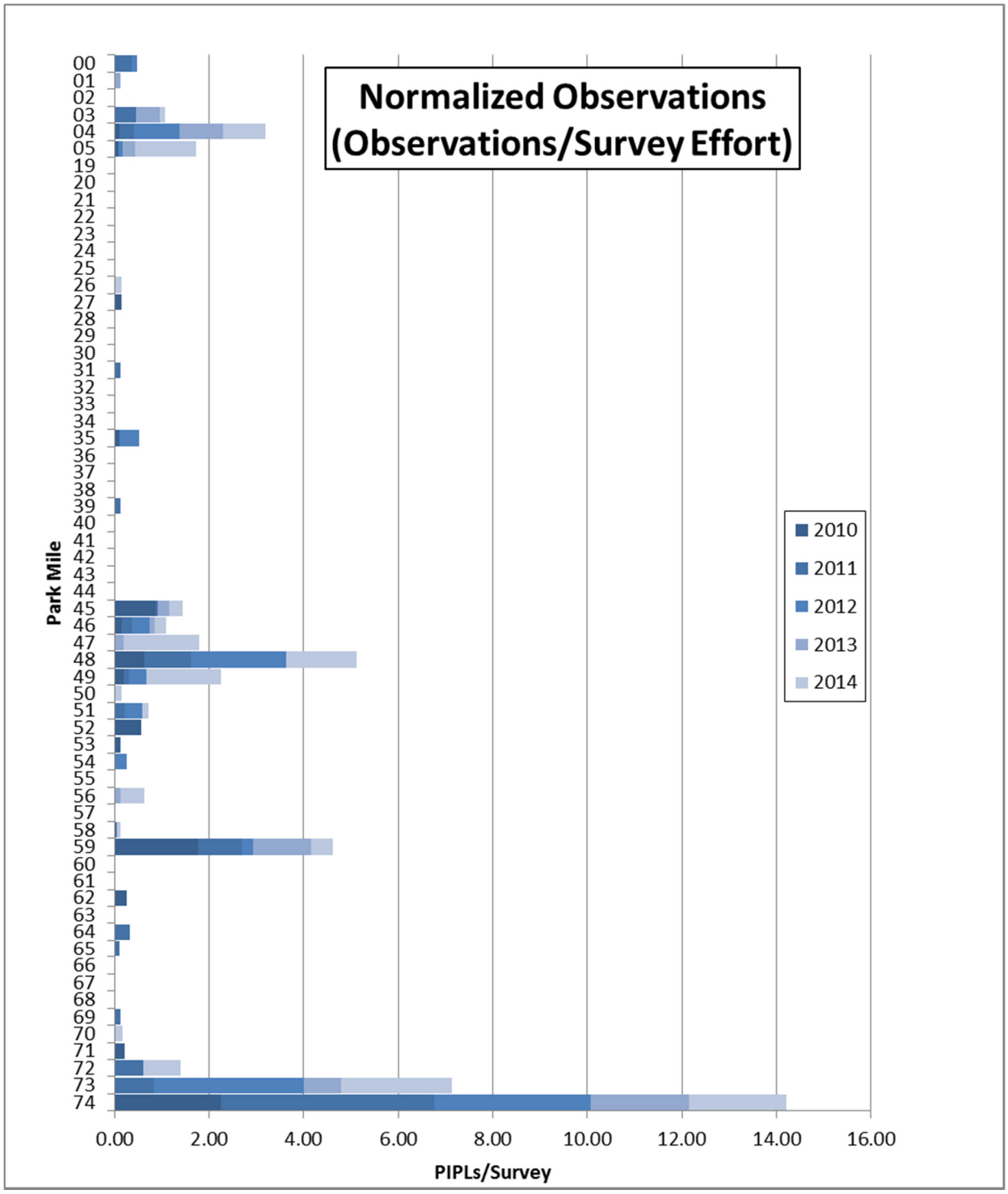
Wintering piping plovers on the Atlantic Coast select wide beaches in the vicinity of inlets that are associated with a high percentage of moist substrate habitat (Nicholls and Baldassarre 1990; Wilkinson and Spinks 1994). Because tidal regimes and fall and winter storm patterns often cause piping plovers to move among habitat patches, a diversity of habitat patches may be important to wintering populations (Burger 1994; Nicholls and Baldassarre 1990).

NPS staff documented nonbreeding piping plovers' use of the Seashore from 2010 through 2014, including the habitat type in which migratory and wintering piping plovers were observed. Of the 751 observations over the five-year period, 367 were observed in the foreshore, 290 were observed in the mud flat/algal flat, 41 were observed in the backshore, 20 were observed in the sand flat, 17 were observed in the wrack line, and 16 were observed in habitat defined as "other," which includes open water, secondary dunes, marshes, overwash, swales, and blowouts (NPS n.d.).



Source: NPS, n.d.

FIGURE 38. MONTHLY NONBREEDING PIPING PLOVER OBSERVATIONS



Source: NPS, n.d.

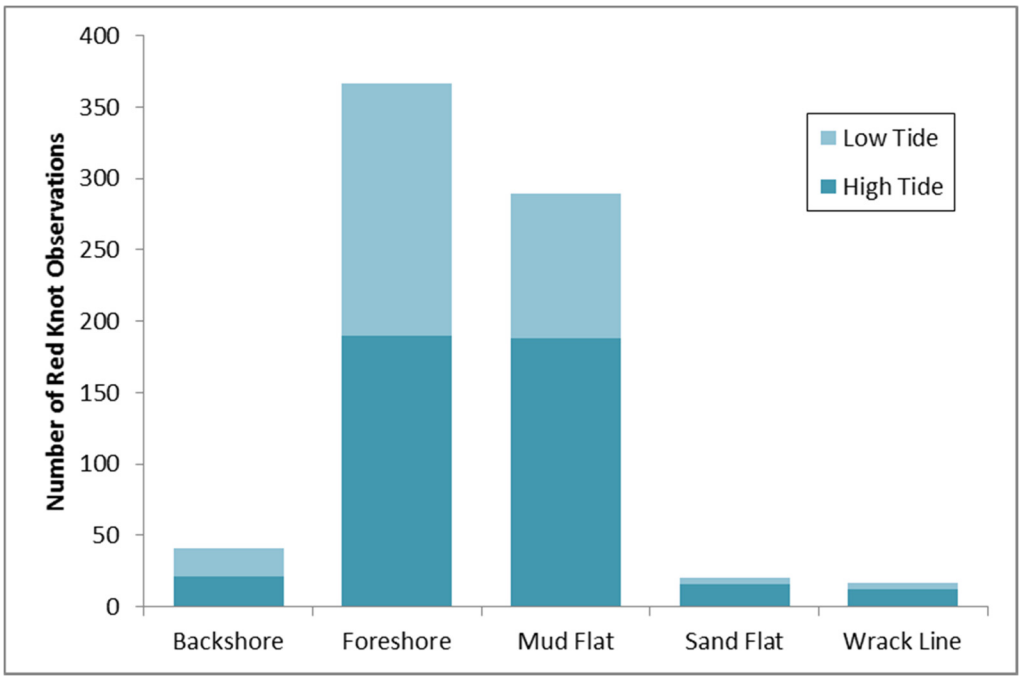
FIGURE 39. NORMALIZED PIPING PLOVER OBSERVATIONS BY PARK MILE (2010–2014)

RED KNOT

The red knot is a shorebird that breeds in the Canadian Arctic, but is only a migrant and an occasional winter resident of the entire eastern seaboard of the United States, including North Carolina, the Outer Banks, and the Seashore (Harrington 2001). There are five subspecies currently recognized (*Calidris canutus canutus, C.c. rufa, C.c. islandica, C.c. rogersi, C.c. roselaari*), two of these (*C.c. rufa* and *C.c. roselaari*) are found in the United States, but only during migration and in the winter. Southward migration of *C.c. rufa* and *C.c. roselaari* begins in mid-July, with staging occurring along the United States Atlantic Coast (Harrington 2001). On January 12, 2015, the rufa subspecies of the red knot was federally listed as a threatened species under the ESA (USFWS 2015). The red knot does not carry state regulatory status in North Carolina, but is a non-regulatory Partners in Flight Priority Species (North Carolina Wildlife Resources Commission 2005a).

Migratory and Wintering Population

Even though this species does not breed on the Seashore, it was included in a comprehensive survey of migratory and wintering shorebirds conducted by the NPS Southeast Coast Network (SECN) Monitoring Program during the 2006–2007 season, and it has been monitored by Seashore staff since 2010. During the 2010–2014 wintering and migratory shorebird surveys, red knot observations occurred primarily in the foreshore and mud flat habitat types (figure 40). A relatively equal distribution of observations occurring at low and high tides in the foreshore habitat type and almost twice as many observations occurred at high tide compared to low tide in the mud flat habitat type.



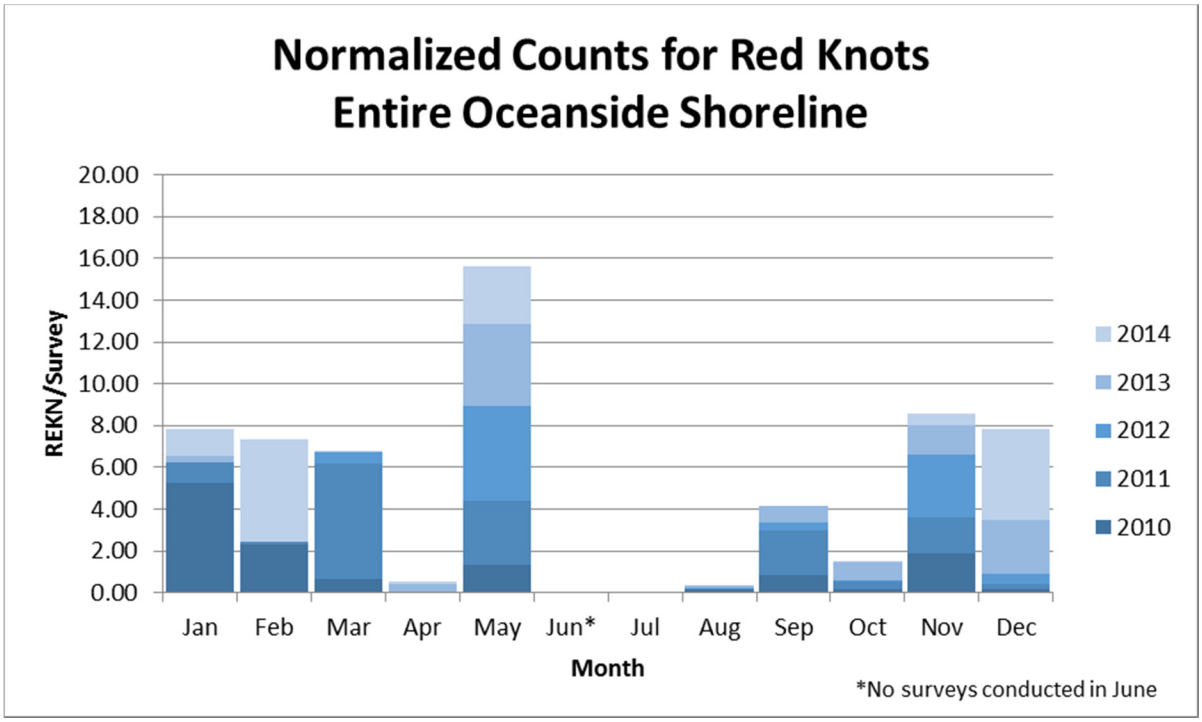
Source: NPS, Muiznieks, pers. comm., 2015d

FIGURE 40. NUMBER OF RED KNOT OBSERVATIONS BY HABITAT TYPE AND TIDAL STAGE, 2010–2014

When the Seashore took over monitoring from SECN staff, staff surveyed only the points and spits of the Seashore to meet the migratory and wintering piping plover survey requirements of the biological opinion issued by USFWS in consultation with NPS on April 14, 2006, to analyze the effects of the Interim

Protected Species Management Strategy preferred alternative on federally listed species occurring at the Seashore. At that time, limited staffing in the winter months prohibited more extensive surveys. As the result of additional full-time staffing in the early part of 2010, resource management staff began surveying the entire shoreline for red knots along with other shorebirds on March 18, 2010. The survey protocol was revised to accommodate the increased staffing level and provide a more comprehensive, standardized approach for determining use of the shoreline by selected shorebirds.

Between 2010 and 2014, the greatest annual total of red knots observed during formal, consistent surveys at the Seashore was 840 birds (2011), while the smallest annual total was 399 birds (2010). As part of the SECN survey protocol, Cape Point and the spits were considered high-intensity sampling sites and were surveyed on a weekly basis, whereas the other low-intensity sites were only surveyed once a month. Weather also played a role as to whether an area was surveyed or not, with high winds either cancelling or delaying surveys, flooding impeding access to the survey areas, or flooding of the actual transect itself. As a result, the observation data were normalized to provide information about the relative abundance of red knots at different times of year and at different locations within the Seashore. Figure 41 shows that red knots are consistently observed in the winter months and peak during their northern migration in May, while few, if any, occur during the summer months of July and August. Figure 42 shows Seashore miles and ramp locations to provide context for the information in figures 43 to 45. Figures 43 to 45 show that within the Seashore, red knots are found mostly on south facing beaches (park mile 45 to 74), with very few found on east-facing beaches (park mile 00 to 44).



Source: NPS, Muiznieks, pers. comm., 2015d

FIGURE 41. NORMALIZED RED KNOT OBSERVATIONS BY MONTH, 2010–1014

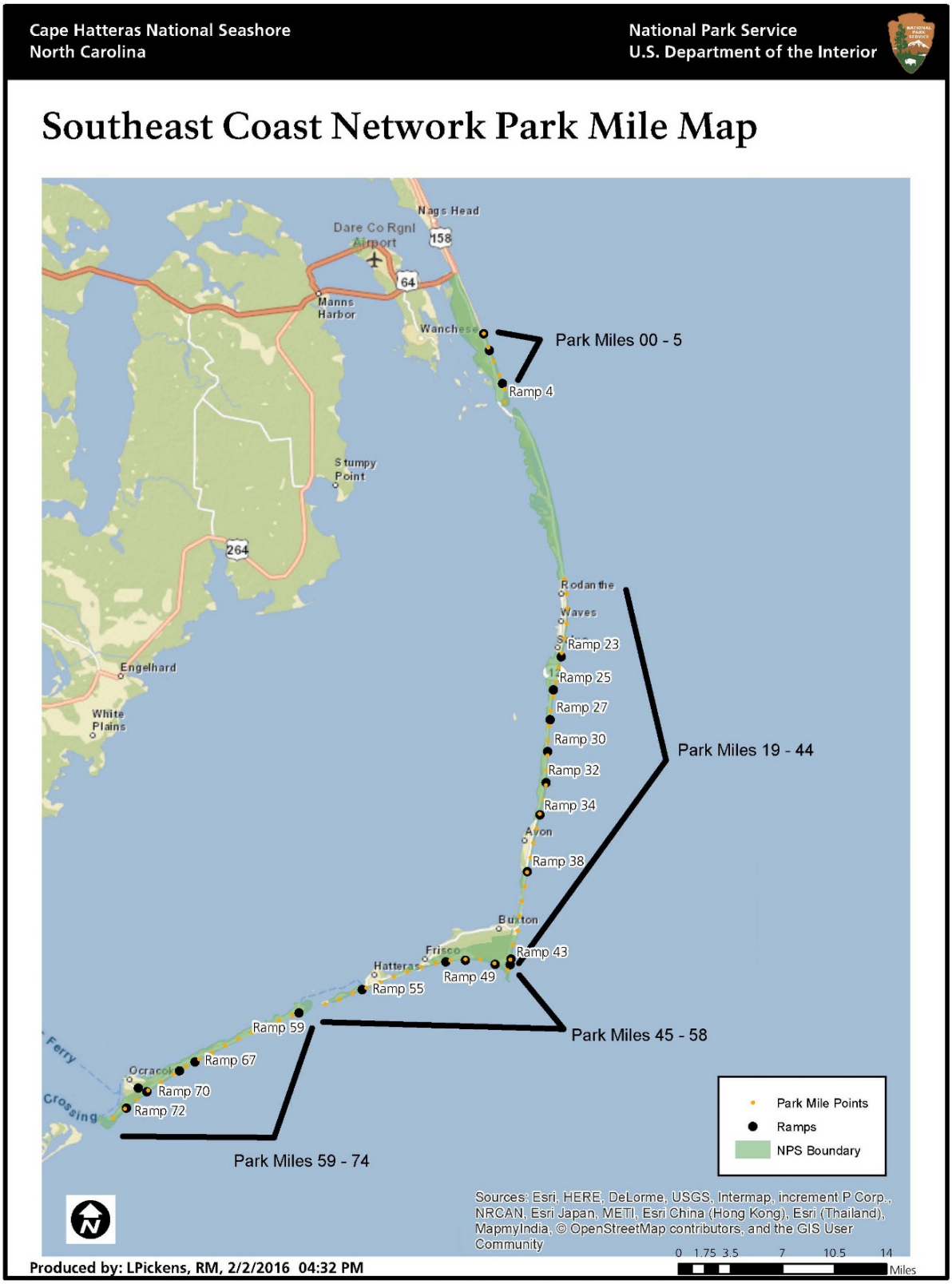
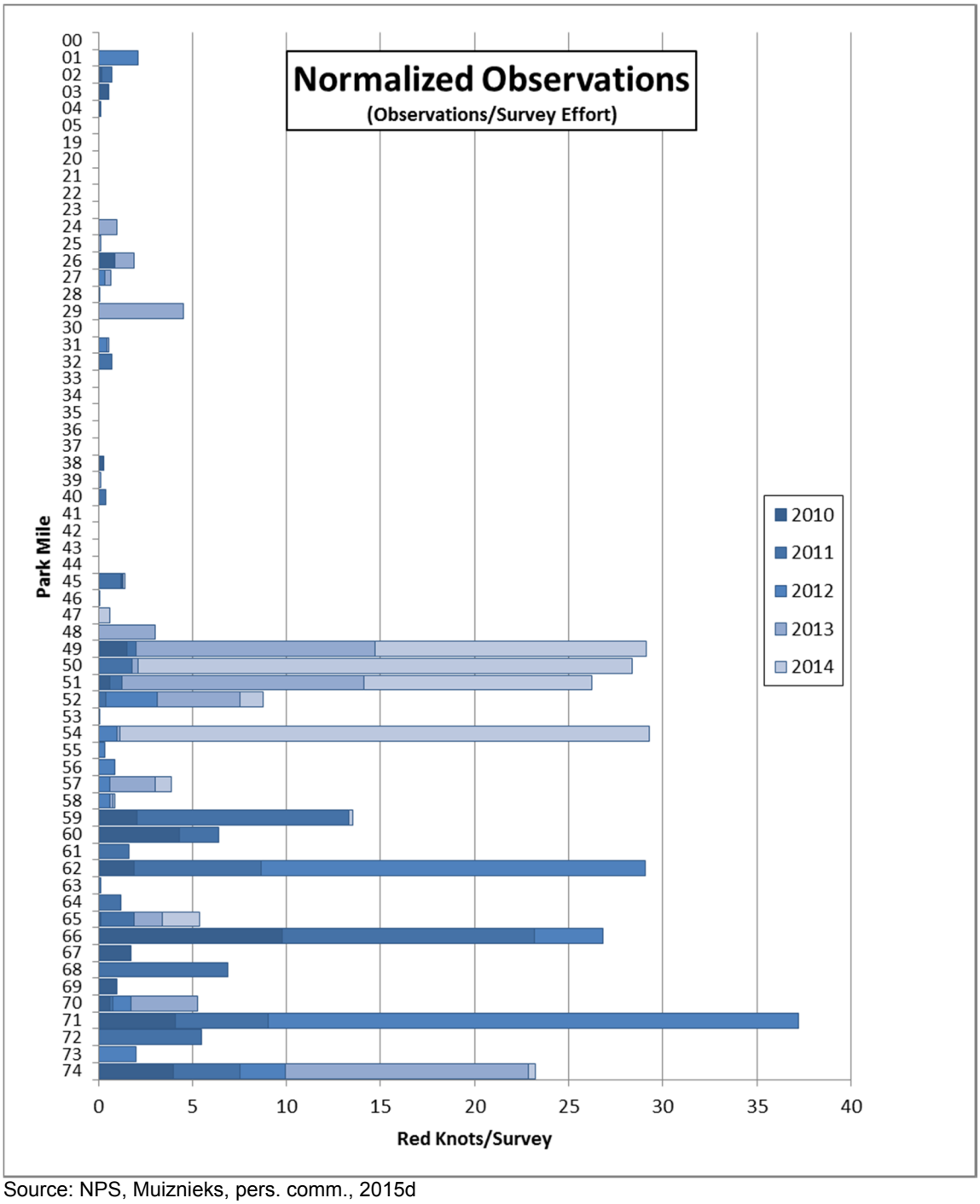
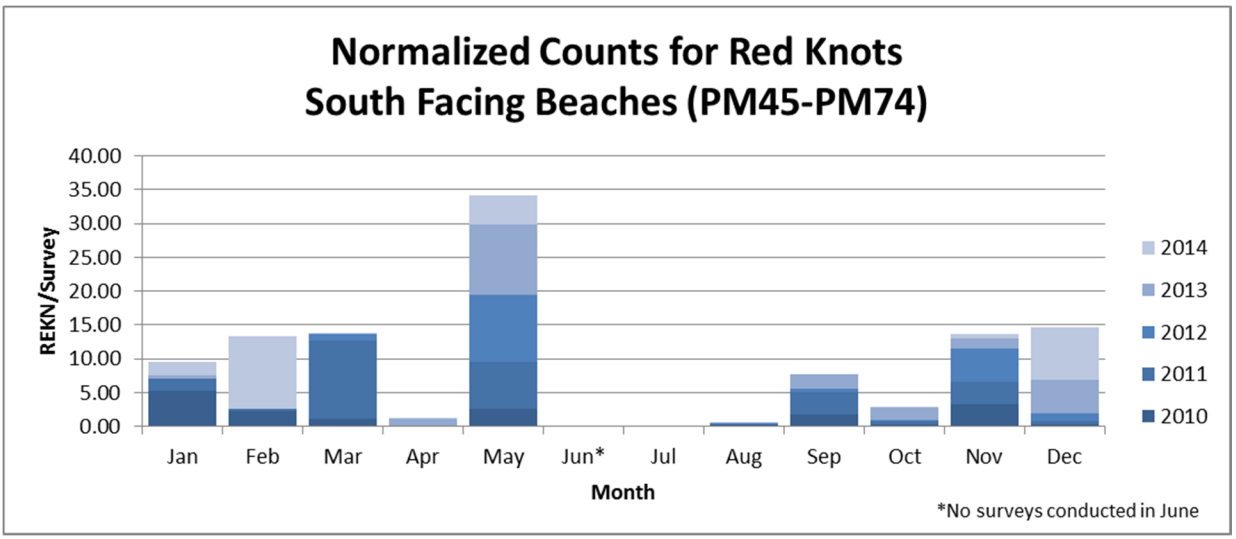


FIGURE 42. RAMPS BY PARK MILE



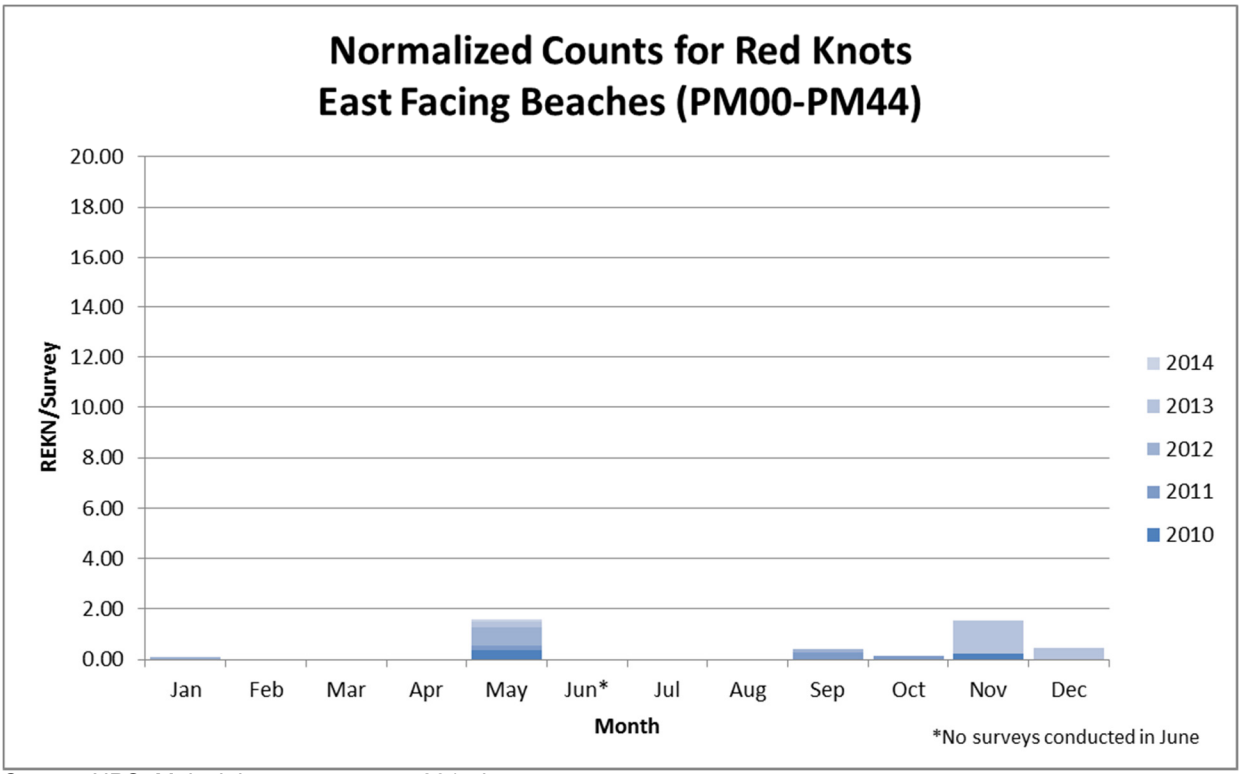
Source: NPS, Muiznieks, pers. comm., 2015d

FIGURE 43. NORMALIZED RED KNOT OBSERVATIONS BY PARK MILE, 2010–2014



Source: NPS, Muiznieks, pers. comm., 2015d

FIGURE 44. NORMALIZED RED KNOT OBSERVATIONS ON SOUTH FACING BEACHES, 2010–2014



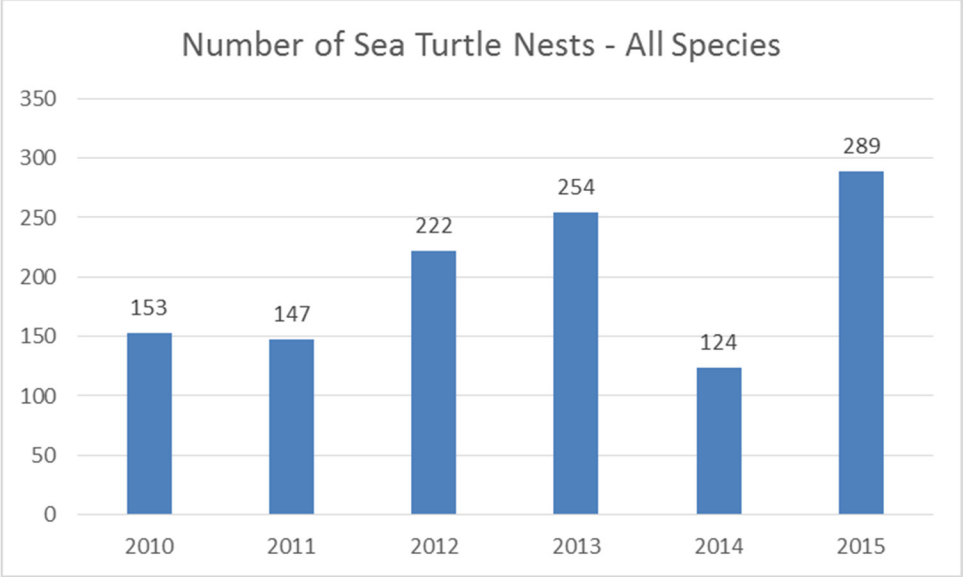
Source: NPS, Muiznieks, pers. comm., 2015d

FIGURE 45. NORMALIZED RED KNOT OBSERVATIONS ON EAST FACING BEACHES, 2010–2014

SEA TURTLES

This section describes sea turtle data collected at the Seashore from 2010 through 2015 as summarized in the Seashore's annual Sea Turtle Monitoring Reports (NPS 2010b, 2011b, 2012b, 2013a, 2014a, 2015c). Nesting sea turtles at the Seashore include loggerhead, green, Kemp's ridley, leatherback, and hawksbill

turtles. Hawksbill turtles were previously known to occur only on the beaches of the Seashore through strandings; however, in 2015 there were at least two documented hawksbill nests. A total of 1,189 sea turtle nests were reported from 2010 through 2015, of which 289 were reported in 2015, which is the most ever recorded at the Seashore (figure 46).



Source: NPS 2010b, 2011b, 2012b, 2013a, 2014a, and NPS, Swilling, pers. comm., 2015f

FIGURE 46. SEA TURTLE NESTS DOCUMENTED AT CAPE HATTERAS NATIONAL SEASHORE, 2010–2015

Loggerhead sea turtles are by far the most common species at the Seashore and accounted for approximately 95% of the total nests reported from 2010 through 2015, reaching an annual maximum of 277 nests during the 2015 season. Green sea turtles were the second most abundant species and accounted for the majority of the remaining 5% of nests. Only one Kemp's ridley turtle nest has ever been documented at the Seashore, and it was reported in 2011. Kemp's ridley turtles typically nest in the daylight hours, as opposed to other turtle species that nest at night. One leatherback sea turtle nest was reported in 2012. Prior to 2015, hawksbill turtles only had been documented at the Seashore via stranding. However, in 2015, two hawksbill nests were confirmed by DNA analysis, although DNA analysis is still pending for two additional nests (NPS, Swilling, pers. comm., 2015f). The percentage of successful nesting attempts for sea turtles, as opposed to false crawls, remained relatively stable in recent years ranging from 52.4% (2013) to 57.3% (2010) with an average rate of 54.8% (NPS 2010b; 2013a). This equates to an average ratio of nests to false crawls of 1:0.83 (ranging from 1:0.91 to 1:0.75), which is above the 1:1 ratio typically expected for normal, undisturbed conditions (North Carolina Wildlife Resources Commission, Godfrey, pers. comm. 2005b).

Sea turtle nests at the Seashore were documented at Hatteras Island, Ocracoke Island, and Bodie Island with the greatest number of nests reported at Hatteras Island during each of the six years. Overall, approximately 71% of the total nesting activity at the Seashore occurred at Hatteras Island from 2010 to 2015. On average, 141 sea turtle nests were reported at Hatteras Island during each year. Ocracoke Island was the second most common nesting location, accounting for approximately 27% of the total nesting activity, averaging 53 nests per year. Bodie Island accounted for only 2% of the total nesting activity, averaging just under four nests per year during the six-year period (table 2).

The earliest annual nesting activity reported at the Seashore from 2010 through 2015 was a turtle crawl on May 5, 2015. The earliest active nest was recorded on May 11, 2012. The latest nest reported during the

six-year period was documented on September 11, 2013. Peak nesting at the Seashore from 2010 through 2015 generally occurred between mid-June and late July of each year. Nesting slows dramatically by the end of August and stops by the second week of September. Similarly, hatch success declines for nests laid later in the season. Hatch success data collected at the Seashore from 2010 through 2015 indicated that hatch success was virtually zero for nests laid on or after August 19 (NPS 2015e).

TABLE 2. LOCATIONS OF SEA TURTLE NESTS AT CAPE HATTERAS NATIONAL SEASHORE, 2010–2015

Year	Hatteras Island	Ocracoke Island	Bodie Island District
2010	104	48	1
2011	113	29	5
2012	166	54	2
2013	187	58	9
2014	80	42	2
2015	199	85	5

Source: NPS 2010b, 2011b, 2012b, 2013a, 2014a, 2015b

STATE-LISTED AND SPECIAL STATUS SPECIES

Because this document tiers off the ORV FEIS, readers are directed to the detailed discussion of species biology and habitat descriptions in that document, which is incorporated herein by reference. Detailed information in the ORV FEIS includes species descriptions, general biology information, and Seashore-specific data prior to 2010. This document serves to supplement information included in the ORV FEIS by providing updated Seashore-specific data from 2010 through 2015.

This section addresses the recent population trends and impacts at the Seashore on several species of shorebirds that are listed or recognized as special status species by the State of North Carolina but are not federally listed as endangered or threatened. Most of these species breed on the Seashore and in other areas of North Carolina. Species described include American oystercatcher (*Haematopus palliatus*); five species of colonial waterbirds, including gull-billed terns (*Gelochelidon nilotica*), least terns (*Sternula antillarum*), common terns (*Sterna hirundo*), black skimmers (*Rynchops niger*), and Forster's tern (*Sterna forsteri*); and Wilson's plover (*Charadrius wilsonia*).

AMERICAN OYSTERCATCHER

Breeding pairs of oystercatchers begin nesting in late February and early March by establishing and holding a nesting territory and then scraping multiple shallow depressions in the sand. Oystercatchers can nest in proximity to colonial waterbirds, including but not limited to common tern, least tern, and black skimmer. Oystercatchers will re-nest if eggs or nestlings are lost early in the season. Since 2010, the number of nesting pairs at the Seashore has fluctuated between 23 to 27 pairs (NPS 2011c, 2012c, 2013b, 2014b, 2015g, and 2015h).

Nonbreeding Oystercatchers

Data for nonbreeding (i.e., potential breeders) oystercatchers are only available from the 2014–2015 seasons. Over both years, three surveys in June were conducted. In 2014, 26 nonbreeding oystercatcher individuals were observed at the Seashore. One individual was observed on Bodie Island, 7 were observed on Hatteras Island, and 18 were observed on Ocracoke Island (NPS 2015h). In 2015,

12 nonbreeding oystercatcher individuals were observed at the Seashore. On June 3, six were observed on Bodie Island, two on Hatteras Island, and four on Ocracoke Island. On June 5, five were observed on Bodie Island and seven on Hatteras Island (NPS 2015g).

Wintering and Migratory Oystercatchers

American oystercatcher migration generally begins at the end of August and continues through November. American oystercatchers are short-distance, partial migrants and generally winter along the southeast coast of the United States (Schulte et al. 2007; Nol et al. 2000).

Winter and migratory habitat appear to be similar to breeding habitat, although additional research is needed to determine preferred habitat in the winter, especially for birds on migration. Limited observations indicate that winter birds roost on open ground without vegetation in areas near foraging habitat (Nol and Humphrey 1994). A study conducted during the winter of 2002–2003 found that oystercatchers commonly use shell rakes as winter roost sites (Brown et al. 2005). Other habitat types used by wintering oystercatchers include sand islands, inlet beaches, sand spits, edges and interior mudflats on marsh islands, and occasionally docks and jetties (Brown et al. 2005; Schulte et al. 2007).

WILSON'S PLOVER

From 2009 to 2015, there were between one and four nesting pairs of Wilson's plover on the Seashore each year (NPS 2015i). In 2015, the earliest nest was discovered on April 25, 2015, and the latest nest was found on May 31, 2015, with an average time to hatch eggs of 26 days (NPS 2015i). While determining the cause of chick mortality is difficult, it is presumed that it can be attributed to mammalian, ghost crab, and avian predators (NPS 2015i).

Migratory and Wintering Population

Wintering occurs mainly in northeast and central Florida (Corbat and Bergstrom 2000), as well as in west Louisiana and south Texas throughout the remainder of the breeding range (NPS 2010a) to northern South America (Hayman et al. 1986).

COLONIAL WATERBIRDS

Colonial waterbirds at the Seashore include gull-billed terns, common terns, least terns, and black skimmers. In addition, 2013 was the first year that multiple Forster's tern nests were observed at the Seashore (NPS 2014d). None of these species is federally listed as threatened or endangered.

The beaches of the Seashore have been important in providing suitable habitat for these colonial nesters. Colonial waterbird breeding at Cape Hatteras generally occurs between the beginning of May and the middle of August. In many cases, colonial waterbirds use areas that were colonized in previous seasons, which include areas protected as pre-nesting closures for piping plovers. Colonies are commonly composed of small groups of least terns, but more diverse colonies sometimes occur.

Of the colonial waterbirds, common terns, gull-billed terns, and black skimmers have shown the greatest declines over the last 30 years, both statewide and at the Seashore. These species are early nesters that require habitats of bare sand or shell with little or no vegetation for nesting. Historically, these species have nested primarily on barrier island beaches and have suffered declines most likely due to habitat loss and degradation (Cameron and Allen 2008). Other reasons for the decline in North Carolina's colonial waterbirds include mammal and bird predation, human development, beach stabilization, recreational disturbance, and perhaps, impacts on the wintering grounds (Parnell et al. 1995; Cohen et al. 2010).

Recommended methods for colonial waterbird conservation include continued monitoring and management, habitat protection and restoration, predator management, and protection from human disturbance (Cameron and Allen 2008; Burger et al. 2004).

With the exception of the least tern, colonial waterbird nest observations at the Seashore increased from 2010 to 2012, with the highest numbers observed during the 2012 season. From 2012 through 2015, the number of observed nests declined (table 3). In 2013, Forster's terns were observed breeding at the Seashore for the first time, but observed nests decreased substantially in 2014 and 2015 with only four and two Forster's terns nests observed, respectively. Although a slight decline was observed from 2012 to 2015, black skimmer nest numbers have greatly increased from the five observed in 2010 (NPS 2011d, 2012d, 2013c, 2014d, 2015j, 2015k).

TABLE 3. NUMBERS OF COLONIAL WATERBIRD NESTS AT CAPE HATTERAS NATIONAL SEASHORE, 2010–2015

Species	2010	2011	2012	2013	2014	2015
Gull-billed tern	1	15	43	6	1	3
Common tern	21	112	218	34	38	16
Least tern	381[a]	1,063	833	802	469	291
Black skimmer	5[b]	99	221	119	95	85
Forster's tern	--	--	--	42	4	2
Total	**408**	**1,289**	**1,315**	**1,003**	**607**	**397**

Source: NPS 2011d, 2012d, 2013c, 2014d, 2015j, 2015k

Notes: [a]The number of least terns recorded in 2010 is likely an underestimate because there were 118 chicks on the ground in addition to the nests counted.

[b]The number of black simmers recorded in 2010 is likely an underestimate because there were five additional chicks on the ground that were counted during surveys for other species, after the survey window for black simmers closed.

NON-LISTED SHOREBIRDS

The Seashore supports an array of animal life in its aquatic and terrestrial habitats. Readers are directed to the detailed discussion of wildlife and wildlife habitat descriptions in the ORV FEIS, pages 269–272, which provide more detailed information on invertebrates and additional species located within the Seashore. For reasons described in chapter 1, this EA focuses only on federally or state listed (protected) shorebirds potentially impacted by the action alternatives. Shorebirds that are not federally or state listed (protected) species also could potentially be impacted and are summarized below.

The Outer Banks of North Carolina provide a critical link in the migratory path of several shorebird species. Nearly 400 species of birds have been sighted within the Seashore and its surrounding waters (Fussell et al. 1990). Migration routes for many raptor species include southeastern barrier islands. Thousands of migrating shorebirds use the barrier islands as a stopover point to rest, forage, or spend the winter (Manning 2004). In 1999, the American Bird Conservancy designated the Seashore as a Globally Important Bird Area in recognition of its value in bird migration, breeding, and wintering (American Bird Conservancy 2005).

Studies have recorded 21 species of shorebirds on the beaches of the Outer Banks of North Carolina, including whimbrels (*Numenius phaeopus*), willets (*Catoptrophorus semipalmatus*), and sanderlings (*Calidris alba*). These shorebirds are most abundant in May and August. Non-listed shorebirds like willets have similar nesting and foraging habitats to those of state- and federally listed species. The willet, for instance, breeds in late spring to early summer in coastal saltmarshes, nests on the ground, often in

colonies, and forages on mudflats or on shallow water. Although not state- or federally listed, several of the shorebirds found at the Seashore appear on the USFWS Birds of Conservation Concern list, which identifies migratory birds that, without additional conservation actions, are likely to become candidates for listing under the ESA (USFWS 2008b). Other waterbirds found at the Seashore include gulls, pelicans (*Pelecanus* spp.), terns, and egrets (family Ardeidae) (North Carolina Wildlife Resources Commission 2005a).

Migratory birds often are found at the Seashore throughout the year on their way to and from their destinations. During the winter months, the common loon (*Gavia immer*), pied-billed grebe (*Podilymbus podiceps*), northern gannet (*Morus bassanus*), tundra swan (*Cygnus columbianus*), and Canada goose (*Branta canadensis*) can be found at the Seashore (NPS 2010a). Studies have demonstrated the importance of the Outer Banks as a staging area for piping plovers, whimbrels, and sanderlings when compared to other areas along the Atlantic Coast and have confirmed that the area provides a critical link in the migratory path of several shorebird species (Dinsmore et al. 1998).

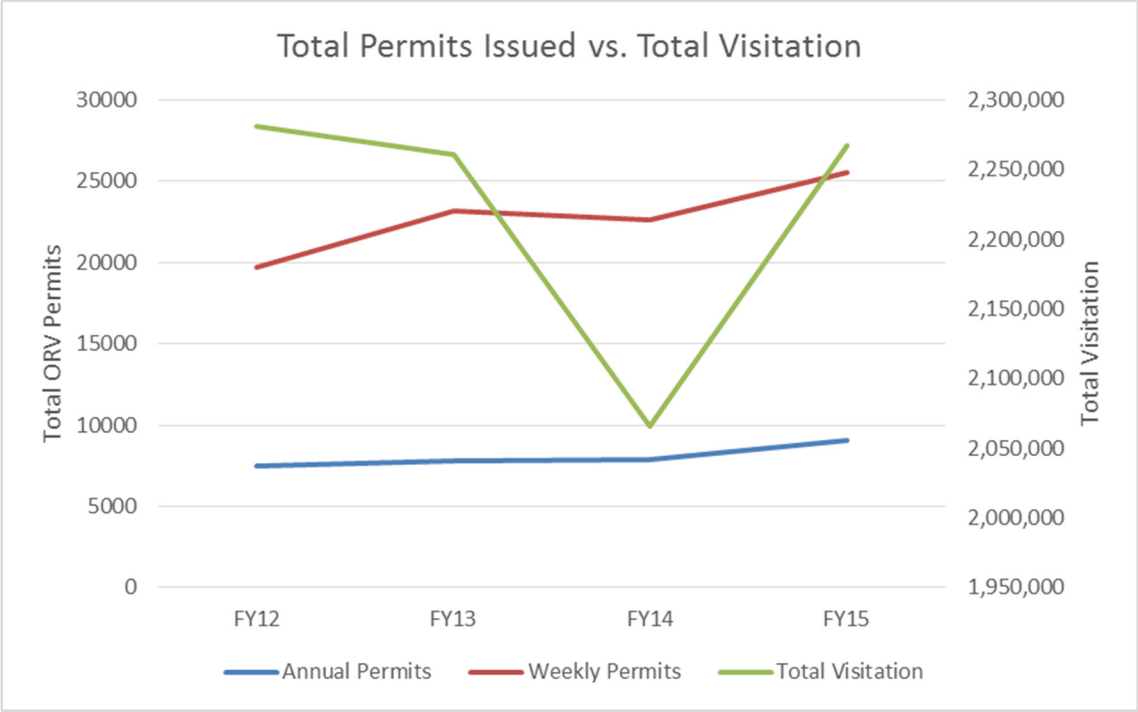
VISITOR USE AND EXPERIENCE

The ORV FEIS includes detailed information on visitor use and experience, including visitor characteristics, recreational opportunities and use, crowding, visitor encounters and visitor safety, as well as visitor satisfaction. A full discussion of the visitor use and experience at the Seashore is available in the ORV FEIS on pages 280–300. This document serves to supplement information included in the ORV FEIS by providing updated visitor use and permitting data from 2010 through 2015.

The Seashore is managed according to NPS *Management Policies 2006*, which state that park resources and values are to be enjoyed presently and in the future by the people of the United States, and that NPS is committed to providing appropriate high-quality opportunities for all visitors (NPS 2006). Accordingly, there are a number of visitor use opportunities at the Seashore. Recreational activities include shelling, birding, kayaking, canoeing, windsurfing, camping, fishing, hunting, swimming, auto touring, biking, hiking, horseback riding, stargazing, surfing, kite boarding, and wildlife viewing. ORV access to the beach is via designated ramps leading from NC-12 to the beach. In accordance with the guidelines in the ORV FEIS and regulated by the 2012 Final Rule, some areas of the Seashore are now either closed part of the year or all of the year to ORVs. Depending on the perspective of the visitor, a beach closed to ORVs can be a pleasant experience or an inconvenience. Visitors who value the solitude and natural surroundings of the beach may enjoy the pedestrian-only beach areas. However, visitors who prefer to use vehicles to assist in the hauling of their recreation gear or who have difficulty walking along the sand to the beach may find that the beach closures prevent them from accessing parts of the beach for recreation.

Annual visitation to the Seashore over the last 10 years has ranged from 1.9 million to 2.3 million visits, with the lowest count occurring in 2011 and the highest in 2012 (NPS 2015l). Visits are highest in June, July, and August with more than 300,000 visits in each of those months in 2015 (NPS 2015m).

In accordance with the ORV FEIS and the 2012 Final Rule, the Seashore began implementing an ORV permit system in 2012. Annual (by calendar year) and 7-day permits are currently issued at the Seashore. Figure 47 displays the total number of permits sold each year compared with total visitation at the Seashore for the past three years. Permits issued are tracked by fiscal year, from October 1 through September 30. To ensure an accurate comparison, visitor use numbers were calculated using the monthly reports for this same time period, not the annual report, which calculates figures for January 1 through December 31.



Source: NPS, 2015m; NPS 2015n

FIGURE 47. ANNUAL AND WEEKLY PERMITS ISSUED AND TOTAL VISITATION

SOCIOECONOMICS

Because this document tiers off the ORV FEIS, readers are directed to the detailed discussion of socioeconomics on pages 300–322 of that document, which includes the demographics, employment, and unemployment for the period relevant to that document. Additional detailed information includes a business survey, tourism contributions to the economy, and the regional distribution of tax receipts within Dare County. This section describes the social and economic environment from 2010–2014 that could be affected by the proposed alternatives. The social and economic environment of a region is characterized by its demographic composition, the structure and size of its economy, and the types and levels of public services available to its citizens. The socioeconomic environment evaluated for this EA encompasses both Dare and Hyde Counties in North Carolina. These two counties form the economic ROI. The ROI defines the geographic area in which the predominant social and economic impacts from the proposed alternatives are likely to take place. Statistics for the state of North Carolina are presented in this analysis for comparison to the ROI.

DEMOGRAPHICS

The ROI is primarily rural in character, although portions of Dare County, especially in the north, are developed with large tracts of vacation homes and small businesses that support the area's robust tourism industry. Much of Dare County's permanent population also resides in this area, the most densely populated portion of the ROI. On average, annually, between 2009 and 2013 there were approximately 40,000 persons residing within the ROI. This represents an approximately 12% increase in the total population of the ROI from 2000. As displayed in table 4, Dare County experienced a 12.6% increase while Hyde County had a 1% decrease. For comparison, population growth in the state of North Carolina was just under 17% over this same period.

TABLE 4. POPULATION, 2000 AND 2009–2013 ANNUAL AVERAGE

Geographic Area	2000	2009–2013 Annual Average	Percent Change (2000–2013)
North Carolina	8,049,313	9,651,380	16.6%
Dare County, NC	29,967	34,289	12.6%
Hyde County, NC	5,826	5,771	-1.0%

Source: US Census 2000, 2013a

On average, annually, between 2009 and 2013 a majority (90%) of the individuals residing within the ROI identified themselves as White alone. Approximately 8% of all individuals in the ROI identified themselves as Black or African American alone during this period, which is lower than the percentage at the state level. Approximately 6% of individuals in the ROI identified themselves as Hispanic or Latino. Hyde County, as a percentage of its total population, had 35% more residents identify as Black or African American alone compared to Dare County, where only 3% of its population identify as Black or African American. All other races in either county made up less than 1% of the total population in each county.

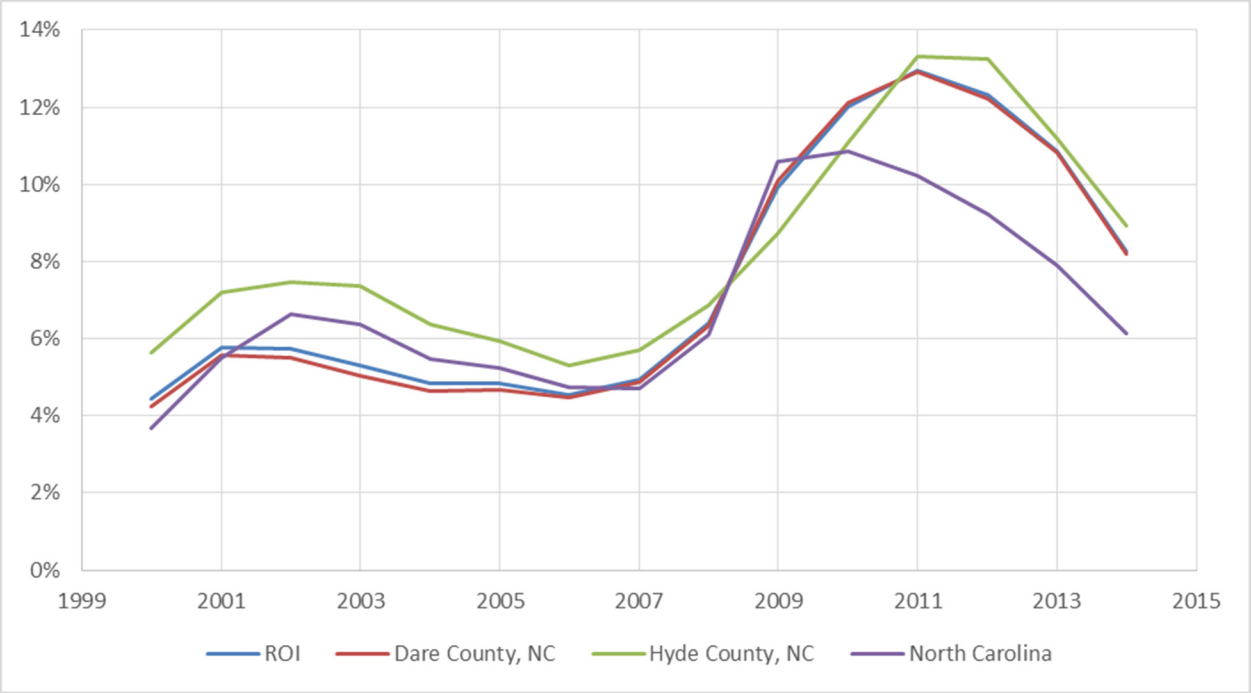
EMPLOYMENT

Labor Force and Unemployment

In 2014, the ROI had an unemployment rate of 8% (BLS 2014), which was higher than the state of North Carolina's unemployment rate of 6% in the same year. Historically, the unemployment rate in Hyde County has been higher than Dare County. However, during the national economic recession that started in the late 2000s, Dare County's unemployment rate was higher than Hyde County's. The ROI's unemployment rate peaked in 2011 at 13% and has since declined to levels last observed in 2008. Figure 48 illustrates the unemployment rate in the ROI and the state of North Carolina between 2000 and 2014.

Employment by Industry

Within the ROI, much of the employment caters to tourists visiting the area. Major industries in terms of total non-farm employment in the ROI include the retail trade; real estate and rental and leasing; and accommodation and food services industries. Combined, these industries make up 44% of all jobs in the ROI. A majority (85%) of all jobs in the ROI are located in Dare County. The retail trade industry experienced an 11% increase in the number of retail trade jobs between 2010 and 2013 (BEA 2014).



Source: BLS 2014

FIGURE 48. UNEMPLOYMENT RATES, 2000–2014

INCOME AND POVERTY

The US Census Bureau sets poverty thresholds that vary by family size to determine the level of poverty for a given area. As presented in table 5, between 2009 and 2013, the average annual percentage of individuals living below the poverty level in Dare County was lower than in the state of North Carolina as a whole. However, the percentage of individuals living below the poverty level in Hyde County was higher than the percentage of individuals living below the poverty level in the state of North Carolina.

TABLE 5. MEDIAN HOUSEHOLD INCOME AND POVERTY STATISTICS, 2009–2013 ANNUAL AVERAGE

Geographic Area	Median Household Income	Individuals Living Below Poverty
North Carolina	46,334	17.5%
Dare County, NC	55,481	8.8%
Hyde County, NC	42,279	25.6%

Source: US Census 2013b

TOURISM AND RELATED SPENDING

The economy of the ROI is largely driven by the region's tourist draw, mainly during the summer months. Visitation to the Seashore contributes to the local economy in several ways. First, it provides jobs to park employees, including seasonal, term, and permanent full- or part-time positions. Seashore employees spend their income and wages in local communities, which support additional jobs and income in these communities. The Seashore may also support the local economy if local vendors are utilized, through contracted construction services or purchases of supplies and materials, for example. Seashore

visitors also spend their money in local gateway communities, which supports jobs, income, sales and tax revenues in those communities.

In 2014, park visitors spent an estimated $131.6 million in local gateway communities while visiting the Seashore. Visitor spending at restaurants, hotels, and retail establishments support local jobs, sales and incomes. In 2014, these visitor expenditures supported a total of 2,000 jobs and generated $55.7 million in local labor income. The total economic output to local gateway communities as a result of park visitors spending was $162.8 million in 2014 (NPS 2015o).

Between 2012 and 2015, the number of weekly ORV permits issued to park visitors increased by 30%. Over this period, the number of annual permits increased from approximately 7,500 in the 2012 fiscal year to more than 9,000 in the 2015 fiscal year (a 22% increase). Total visitation over this period increased by approximately 2%, indicating that the number of ORV permits issued compared to total visitation increased over this period. In addition, the total value of all permit sales, adjusted for inflation, increased by 22% over the period between the 2012 and 2015 fiscal years. Figure 47 in "Visitor Use and Experience" illustrates the change in visitation for each fiscal year and the change in number of weekly and annual ORV permits issued per fiscal year (NPS, 2015n).

SEASHORE OPERATIONS AND MANAGEMENT

Because this document tiers off the ORV FEIS, readers are directed to the detailed discussion of Seashore operations. This document serves to supplement information included in the ORV FEIS by providing updated Seashore management requirements since implementation of the ORV FEIS Record of Decision and 2012 Final Rule.

Management of ORV use at the Seashore and implementation of the related administrative activities and field operations involves all five NPS operational divisions and the Superintendent's Office.

MANAGEMENT AND ADMINISTRATION

Management and administrative staff members at the Seashore have a variety of responsibilities related to ORV management, including compiling and sending out weekly access and resource updates, managing payroll for the Seashore, resource protection, fielding questions from visitors regarding ORV management, fulfilling human resources functions and supervisory roles, and providing information technology and other technical support, in addition to the superintendent's role in ORV management.

VISITOR AND RESOURCE PROTECTION

Law enforcement rangers at the Seashore are responsible for enforcing all applicable regulations, including those related to ORV and species management and providing emergency services response. With regard to ORV management, duties of law enforcement rangers include patrolling the Seashore, as well as providing on-the-spot interpretation and education to visitors regarding the reasons for certain ORV regulations and species management efforts. Other duties include responding to violations and conducting investigations. Division staff also issue and manage the ORV permit system and park fee collection at entrance stations, campgrounds, and ORV offices.

RESOURCE MANAGEMENT

Resource management staff is responsible for all monitoring and surveying of species at the Seashore, as well as establishing and changing the required resource closures once state- or federally listed species are found at the Seashore. Resource management staff are responsible for detecting turtle activities, including

nesting and hatching. Surveying the beaches includes detecting nesting activities and installing nest protections, as well as documenting hatched nests. Staff also monitor resource closures and buffers. This staff includes supervisory roles as well as full-time and seasonal field staff to implement species management measures. Field and Geographic Information System (GIS) staff implement closure requirements and provide weekly reports and mapping of the closures to keep the public informed. Resource management staff is also responsible for preparing all required reports for protected species, any research on protected species or factors that affect the species, predator control activities, and coordinating regulatory and scientific activities with other entities, such as USFWS and the North Carolina Wildlife Resources Commission.

INTERPRETATION

Interpretation staff members at the Seashore are responsible for providing informative programs to park visitors, including the topic of species management. Support (or materials) costs for these Seashore staff include printing newsletters and brochures, and obtaining materials for visitor programs.

FACILITY MANAGEMENT

Facility management staff members at the Seashore are responsible for providing maintenance and repairs for beach ramps and parking areas, general facility maintenance, and installing informational signs along the beach. Facility management is also responsible for maintaining the housing units for seasonal and some permanent employees.

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CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

GENERAL METHODOLOGY FOR ESTABLISHING IMPACTS

In accordance with CEQ regulations, direct, indirect, and cumulative impacts are described (40 CFR 1502.16), and the impacts are assessed in terms of context and intensity (40 CFR 1508.27). Where appropriate, mitigating measures for adverse impacts are also described and incorporated into the evaluation of impacts.

GEOGRAPHIC AREA EVALUATED FOR IMPACTS (AREA OF ANALYSIS)

The geographic study area (or area of analysis) for this assessment is the Cape Hatteras National Seashore. The specific area of analysis for each impact topic is defined at the beginning of each topic discussion.

TYPE OF IMPACT

The potential impacts of alternatives are described in terms of type, as follows:

Direct: Impacts that would occur as a result of the proposed action at the same time and place of implementation (40 CFR 1508.8).

Indirect: Impacts that would occur as a result of the proposed action but later in time or farther in distance from the action (40 CFR 1508.8).

Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.

Adverse: A change that declines, degrades, and/or moves the resource away from a desired condition or detracts from its appearance or condition.

IMPACT THRESHOLDS

Determining impact thresholds is a key component in applying NPS *Management Policies 2006* and Director's Order 12. These thresholds provide the reader with an idea of the intensity of a given impact on a specific topic. The impact threshold is determined primarily by comparing the effect to a relevant standard based on applicable or relevant/appropriate regulations or guidance, scientific literature and research, or best professional judgment. Because definitions of intensity vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this document. Intensity definitions are provided throughout the analysis for negligible, minor, moderate, and major impacts. The impact thresholds are defined for adverse impacts, and beneficial impacts are addressed qualitatively.

ASSESSING IMPACTS USING COUNCIL ON ENVIRONMENTAL QUALITY CRITERIA

The impacts of the alternatives are assessed using the CEQ definition of "significantly" (1508.27), which requires consideration of both context and intensity, as described below. The significance of an impact is based on the change from the current condition of a resource resulting from the implementation of any of the alternatives.

(a) Context – This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

(b) Intensity – This refers to the severity of impact.

CUMULATIVE IMPACTS ANALYSIS METHOD

To assess cumulative impacts, it is necessary to identify other past, ongoing, or reasonably foreseeable future actions at and around the Seashore that would affect the resources evaluated in this EA. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are determined for each impact topic by combining the impacts of the alternative being analyzed and other past, present, and reasonably foreseeable actions that also would result in beneficial or adverse impacts. Because some of these actions are in the early planning stages, the evaluation of the cumulative impact is based on a general description of the projects. These actions were identified through the internal project scoping process and are summarized below.

- **Cape Hatteras National Seashore Off-Road Vehicle Management Plan / Final Environmental Impact Statement.** In addition to the elements included for consideration under this EA, the selected alternative under the ORV FEIS implemented additional management actions including camping and nighttime beach use, beach fires, pets, horses, and resource protection measures. Impacts from this project affect all resources analyzed in this EA.
- **Review and Adjustment of Wildlife Buffers EA/FONSI.** In 2015, NPS implemented modified species protection buffers and also provided corridors around buffers for multiple species within the Seashore. The adjusted wildlife buffers affect federal and state-listed species, visitor use and experience, and park operations.
- **North Carolina Highway 12 Protection Activities Special Use Permit – Beach Nourishment EA.** NPS is a cooperating agency with the US Army Corps of Engineers on reviewing a special use permit request from Dare County for beach nourishment along NC-12 north of Buxton Village along 3 miles of the Seashore. There is a narrow isthmus north of Buxton that is regularly overwashed during storm events, leading to emergency closures of NC-12. An EA was prepared, and the preferred alternative would involve placing 2.6 tons of material on about 3 miles of beach during the summer months. NPS has not issued a decision document yet; however, the timeframe for the preferred alternative would include work being completed between May and August in the year the project is approved and funded. Potential impacts relevant to this EA include socioeconomics, state and federally-listed species, non-listed shorebirds, and visitor use and experience.
- **Other Large-scale Beach Nourishment Projects.** Three other beach nourishment projects are in planning and permitting stages for three Outer Banks communities. These encompass portions of Duck (1.6 miles), Kitty Hawk (3.8 miles), and Kill Devil Hills (2.6 miles). All projects are slated for 2016. Sand used in these projects would come from an offshore dredge site. Potential impacts relevant to this EA include socioeconomics, state and federally-listed species, non-listed shorebirds, and visitor use and experience.
- **The Bonner Bridge Replacement Project.** NPS has approved a special use permit for the North Carolina Department of Transportation to replace the existing bridge over Oregon Inlet and

provide for the long-term retention of NC-12 between Oregon Inlet and Rodanthe. The project will construct a bridge parallel to the existing Bonner Bridge, provide two 12-foot travel lanes, and two 8-foot shoulders to accommodate both vehicle and bicycle traffic. A record of decision that approved the special use permit was signed in September 2015. Construction is anticipated to begin in spring 2016. Impacts from this project affect all resources analyzed in this EA.

- **Proposal to Facilitate Additional Public Beach Access EA.** In 2013, NPS selected an alternative to implement 29 development projects along the Seashore to improve public access. Some of these projects are designed to facilitate visitor access in key recreational areas within the Seashore, including parking areas, unpaved roads and ramps, and accessible boardwalks. Construction of these projects is ongoing within the Seashore. Impacts from this project affect all resources analyzed in this EA.

WETLANDS

Methodology and Assumptions. To assess the magnitude of impacts on Seashore wetlands under the various alternatives, wetland types were identified as needed for the impact analysis, based on the sources described in "Chapter 3: Affected Environment." Actions under each alternative were considered and impacts were assessed by examining the types of uses and impacts that could occur in or near various wetlands, examining the area that could be directly or indirectly affected by the proposed alternatives, and assessing impacts on wetland functions and values using best professional judgment, input from NPS staff, and a review of relevant literature.

Alternative elements related to the timing of morning beach openings and ORV permit lengths would not have any impacts on wetlands; therefore, they are not analyzed further in this document. A wetlands statement of findings will be completed for the preferred alternative before the FONSI is signed.

Intensity Definitions. The intensity definitions for wetlands are taken from the ORV FEIS and are based on the size, integrity, and connectivity of the wetlands affected. These indicators are defined as follows:

Size. The severity of impacts on wetlands depends on the size of the wetland impacted. A small area of impact in a large wetland would be likely to have less of an effect than a large area of impact in a small wetland. The change in the size of a wetland, as a result of an impact, also would influence the integrity and connectivity of the wetland.

Integrity. Highly intact wetland areas with little prior disturbance would be more susceptible to impacts from direct development than a wetland previously degraded by development or other activities. The loss of function and productivity of the higher quality wetland would be a greater loss than that of a lower quality wetland. Additionally, indirect impacts due to human trampling or a change in vegetation or hydrology also would impact the integrity of the wetland.

Connectivity. The relationship of wetlands to other wetlands or other valuable natural resources is also important in determining the degree of impact. Plant communities that are isolated from each other are less productive and functional than those that are connected. For example, narrow, previous trail corridors that are infrequently or seasonally used would have less fragmenting effect than would a wide hard-surface roadway with high volumes of vehicular or pedestrian traffic. Establishment of structures in wetland areas could also create barriers to the natural dispersal of plants and animals and impact the connectivity of wetlands.

The following definitions for evaluating impacts on wetlands were defined.

Negligible: No measurable or perceptible effects on size, integrity, or connectivity of wetlands would occur.

Minor: The effect on wetlands would be measurable or perceptible, but small in terms of area and the nature of the impact. A small effect on size, integrity, or connectivity would occur; however, the overall viability would not be affected. If left alone, an adversely affected wetland would recover, and the impact would be reversed.

Moderate: The impact would cause a measurable effect on one of the three wetlands indicators (size, integrity, connectivity) or would result in a permanent loss in wetland acreage, but not to large areas. Wetland functions would not be affected in the long term.

Major: The impact would cause a measurable effect on all three wetlands indicators (size, integrity, connectivity) or a permanent loss of large wetland areas. The impact would be substantial and highly noticeable. The character of the wetland would be changed so that the functions typically provided by the wetland would be substantially altered.

Duration: Short-term effects for wetlands: recovers in less than three years from any action taken.

Long-term effects for wetlands: takes longer than three years to recover, or effect is almost permanent.

Study Area. The study area for assessment of the various alternatives is the Seashore. The study area for the cumulative impacts analysis is the Seashore plus the adjacent lands outside of the Seashore boundaries on Bodie, Hatteras, and Ocracoke Islands.

IMPACTS COMMON TO ALL ALTERNATIVES

Impacts on Non-vegetated Marine Intertidal Wetlands from ORV Use. As described in the ORV FEIS, marine intertidal wetlands are located between extreme high tide and extreme low tide. Each alternative provides for some ORV access in the intertidal zone, either seasonally or year-round. Impacts on marine intertidal wetlands would continue to include rutting and compaction of sediments in the intertidal zone from ORV use; however, these impacts would be short term due to the continuous movement and deposition of sand in the intertidal areas and the ability of the shoreline to "restore" itself in the long term. Because of the nature of the impacts and the consistent regeneration by wave action of wetland soils affected by ORV use, there would be no measurable effect on the size, continuity, or connectivity of the marine intertidal wetlands, and impacts related to changes in seasonal or year-round ORV routes or VFAs would be short term, negligible, and adverse across all alternatives. The analysis is therefore focused on impacts on vegetated estuarine wetlands from proposed access improvements. Impacts on intertidal marine wetlands are addressed in the conclusions only.

NO-ACTION ALTERNATIVE

Analysis

Under the no-action alternative, there would be no additional access improvements constructed within the Seashore; therefore, no new impacts on wetlands from construction of access roads or parking areas would occur. Negligible, adverse impacts on marine intertidal wetlands, as described above, would continue.

Cumulative Impacts

Past, present, and future planned actions within and near the Seashore have the potential to impact wetlands. The Bonner Bridge replacement project would result in the permanent loss of approximately 0.08 acre of wetlands, and would have temporary impacts on 0.98 acre. These impacts are expected to be long term, minor, and adverse because measures were incorporated into the final design to minimize impacts on wetlands. In addition, a mitigation plan is required to include the eradication of exotic species in Seashore wetlands. Several beach nourishment projects would contribute cumulative impacts, including nourishment of 3 miles of Buxton beaches along NC-12, 1.6 miles near Duck, 3.8 miles near Kitty Hawk, and 2.6 miles near Kill Devil Hills. These beach nourishment projects would have short-term, minor, adverse impacts on the intertidal wetlands during construction because of disruption to the marine intertidal wetland during sand dredging and placement on the beach, but the expanded shoreline would provide long-term, beneficial impacts because more intertidal wetland would be created. Impacts on wetlands from the construction of 29 public beach access projects and additional access improvements discussed in the ORV FEIS would be long term, localized, and negligible to minor and adverse; impacts on wetlands were reduced by avoiding wetlands or minimizing impacts in the planning stage and using pervious surfaces for the majority of the proposed parking areas and ORV ramps. Other actions associated with the selected alternative under the ORV FEIS do not impact wetlands.

When combined with the continued short- and long-term, negligible adverse impacts on wetlands under the no-action alternative, overall cumulative impacts on wetlands would be short and long term, negligible to minor, and adverse. The no-action alternative would contribute a small, incremental impact to overall cumulative impacts from ORV use in marine intertidal wetland areas.

Conclusion

There would be continued short-term, negligible, adverse impacts on marine intertidal wetlands as a result of continued ORV use along beaches that are seasonally open or that allow ORV use year-round. Overall cumulative impacts on wetlands would be short and long term, negligible to minor, and adverse. The no-action alternative would contribute a small, incremental impact to overall cumulative impacts.

ALTERNATIVES 1, 2, AND 3

Analysis

Under all action alternatives, soundside access would be constructed on Ocracoke Island, including road improvements and parking area construction at Bitter Wash Creek and Devil Shoals Road sites. Long-term, adverse impacts would occur in these areas where fill (sand, crushed shell, and clay) has to be added to any wetland areas to stabilize soils for the parking or road base. At Bitter Wash Creek, it is expected that wetland impacts could be avoided by siting the road and parking area in uplands that are available in that general vicinity and routing the trail leading to the water to limit impacts on estuarine wetlands. As a result, only 0.01 acre of wetland would be directly affected. At Devil Shoals Road, siting of the road and parking would occur so that the road narrows as it approaches the sound, which would limit direct

wetland impacts to 0.1 acre in total. The parking area and roadway would be constructed using a permeable base of sand, shells, and clay, so there would be minimal indirect effects on adjacent wetlands from water running off or ponding. These impacts would be considered localized, minor, and adverse because although there would be a permanent loss in the footprint of the parking area and part of the road or path, a relatively small area of wetland would be lost. The surface would not be paved, which would keep impacts on the subsurface and impacts on nearby wetland hydrology to a minimum by allowing for infiltration on the site and avoiding surface runoff. There would be no wetland impacts from the realignment of Ramp 2.

Under alternatives 2 and 3, access improvements for the bypass road at Ramp 44 and parking area at Ramp 45 could be sited so that estuarine wetlands in that area are avoided. Therefore, although alternatives 2 and 3 involve additional access improvements, there would be no wetland impacts associated with those improvements and impacts on wetlands under all of the action alternatives would be the same, resulting in long-term, negligible to minor, adverse impacts.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternatives 1, 2, or 3 would be identical to those described for the no-action alternative. When combined with the long-term, negligible to minor, adverse impacts on wetlands under alternatives 1, 2, or 3, overall cumulative impacts on wetlands would be long term, minor, and adverse. Alternatives 1, 2, or 3 would contribute a small incremental impact to overall cumulative impacts because although there would be long-term, minor, adverse effects as a result of a permanent loss of wetland, this only would affect a small area (0.01 acre at Bitter Wash Creek and 0.1 acre at Devil Shoals).

Conclusion

Long-term, localized, negligible to minor adverse impacts on wetlands would result from construction of access improvements in and around vegetated wetlands on the soundside, disturbing a total of 0.11 acres of wetlands, with no impacts on wetlands along interior ORV routes or parking locations. Overall cumulative impacts on wetlands would be long term, minor, and adverse. Alternatives 1, 2 or 3 would contribute a small incremental impact to overall cumulative impacts.

FEDERALLY LISTED SPECIES

METHODOLOGY AND ASSUMPTIONS

The following information was used to assess impacts on all listed species:

1. Species found in areas likely to be affected by actions described in the alternatives.

2. Habitat loss or alteration caused by the alternatives.

3. Displacement and disturbance potential of the actions and the species' potential to be affected by the activities.

According to the ESA, the term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

Specific methodologies and assumptions pertaining to the piping plover, red knot, and sea turtles are described under the relevant descriptions in the following text.

The ESA defines the terminology used to assess impacts on the piping plover, red knot, and sea turtles.

No effect:	When a proposed action would not affect a listed species or designated critical habitat.
May affect/not likely to adversely affect:	When effects on listed species are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where "take" occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.
May affect/likely to adversely affect:	When any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. If the overall effect of the proposed action is beneficial to the listed species, but is also likely to cause some adverse effects, the proposed action "is likely to adversely affect" the listed species. If incidental take is anticipated to occur as a result of the proposed action, then it "is likely to adversely affect" the species. Incidental take is the take of a listed species that results from, but is not the purpose of, carrying out an otherwise lawful activity.
Is likely to jeopardize species / adversely modify critical habitat:	The appropriate conclusion when NPS or USFWS identifies an adverse effect that could jeopardize the continued existence of a species or destroy or adversely modify critical habitat of a species within or outside Seashore boundaries.

The EA will serve as the biological assessment in compliance with ESA section 7 consultation requirements and analyzes impacts using the above terminology. Each action alternative includes an ESA summary after the conclusion section to facilitate this compliance. An ESA summary is provided under the no-action alternative for red knots and sea turtles only because the red knot was not federally listed and two turtle species were not known to exist at the Seashore at the time the ORV FEIS was completed. To provide the public with additional information on the intensity of impacts, NEPA intensity definitions for impacts on each species were defined based on those previously used in the ORV FEIS and 2015 Review and Adjustment of Wildlife Buffers EA and are used throughout the analysis.

PIPING PLOVER

Species-Specific Methodology and Assumptions. Potential impacts on the federally threatened piping plover populations and habitat were evaluated based on available data on the species' past and present occurrence at the Seashore, scientific literature on the species, life history, scientific studies on the impacts of human disturbance on piping plovers, as well as documentation of the species' association with humans and ORVs. Information on habitat and other existing data were acquired from staff at the Seashore, USFWS, and available literature.

Piping Plover Intensity Definitions. The following thresholds for evaluating impacts on piping plovers were defined.

Negligible: There would be no observable or measurable impacts on piping plovers, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.

Minor Impacts on piping plovers would be detectable, but would not be outside the natural range of variability. Occasional responses by some individuals to disturbance could be expected and may result in minimal interference to feeding, reproduction, resting, or other factors affecting population levels but would not be expected to result in changes to local population numbers, population structure, and other demographic factors. Some impacts might occur during critical reproduction periods for piping plover, but would not result in injury or mortality. Sufficient habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.

Moderate: Impacts on piping plover, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Frequent responses by some individuals to disturbance could be expected, with some negative impacts on feeding, reproduction, resting, or other factors affecting local population levels. Small changes to local population numbers, population structure, and other demographic factors may occur. Some impacts might occur during critical periods of reproduction or in key habitats in the Seashore and result in harassment, injury, or mortality to one or more individuals. However, sufficient population numbers and habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.

Major: Impacts on piping plover, their habitats, or the natural processes sustaining them would be detectable and would be expected to be outside the natural range of variability. Frequent responses by some individuals to disturbance would be expected, with negative impacts on feeding, reproduction, or other factors resulting in a decrease in Seashore population levels or a failure to restore levels that are needed to maintain a sustainable population in the Seashore. Impacts would occur during critical periods of reproduction or in key habitats in the Seashore and result in direct mortality or loss of habitat. Local population numbers, population structure, and other demographic factors might experience large declines.

Duration: Short-term effects would be one to two breeding seasons for piping plover.

Long-term effects would be anything beyond two breeding seasons for piping plover.

Study Area. The study area for assessment of the impacts of the alternatives is the Seashore. The study area for the cumulative impacts analysis is the Seashore and the region, including the Carolina area included in the recovery plan for the piping plover (USFWS 1996).

Critical Habitat. Of the 2,042 acres of designated critical habitat for piping plover in Dare and Hyde Counties, approximately 1,827 acres are located within the boundaries of the Seashore, more specifically at Bodie Island Spit, Cape Point, Hatteras Inlet Spit, Ocracoke Inlet Spit, and South Point. The ORV FEIS provides a detailed description of the four units of designated critical habitat on pages 205–207. These units were designated to protect piping plover wintering habitat.

USFWS in consultation with NPS issued a biological opinion on November 15, 2010, to analyze the effects of the ORV FEIS preferred alternative on piping plover critical habitat. Impacts on critical habitat for the piping plover from the selected alternative, including the establishment of 26 miles of VFAs were determined to be may affect/not likely to adversely affect. Because the no-action alternative continues current management direction and none of the activities under the action alternatives would occur in areas designated as critical habitat for wintering piping plovers, no additional adverse effects on critical habitat are expected. Therefore, all actions considered in this EA, including under the no-action and action alternatives, would have *no effect* on critical habitat for wintering piping plovers, and this topic is not discussed further in this analysis.

NO-ACTION ALTERNATIVE

Analysis

Morning Beach Openings. Piping plovers are known to be active at night (Staine and Burger 1994; Majka and Shaffer 2008), and plover chick and fledging response to vehicles can increase their vulnerability to ORVs (USFWS 1996, 2009). As a result, continuing to close the Seashore at night to all non-essential ORV traffic and not reopening it until 7:00 a.m. would continue to provide long-term, beneficial impacts on piping plovers during nighttime and early morning hours. There would be no new impacts as a result of implementing the no-action alternative.

Seasonal Off-Road Vehicle Routes. There would be no new impacts as a result of implementing the no-action alternative. However, as discussed in the ORV FEIS, ORV and other recreational activities have the potential to impact breeding, resting, and foraging birds from vehicle use and associated noise and presence of people and pets. Impacts on foraging birds could instigate the birds to engage in frequent escape flights, reducing their time foraging and their ability to add the body fat they need for migration (Tarr 2008). Having 12.7 miles of seasonal ORV routes designated under the no-action alternative would continue to reduce pressure from recreational activities on piping plovers and provides long-term, beneficial impacts. Not only would the seasonal restrictions continue to reduce direct disturbance from ORVs, but the seasonal ORV routes also would continue to indirectly protect piping plovers by protecting their food source. During a 3-year study on Cape Cod and Fire Island New York, Kluft and Ginsberg (2009) found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Because piping plovers feed on invertebrates in the wrack line, protecting the wrack line from ORV traffic would continue to provide benefits to the piping plover. While the seasonal routes would continue to provide beneficial impacts, the impacts would be minimal. Although the areas would be closed to ORVs from April 1 to October 31 in front of villages and Ocracoke campground and from March 15 to September 14 on a portion of Bodie Island Spit, which overlaps with when breeding and migrating plovers are at the Seashore, few plovers are found in these areas. The timeframe when the seasonal routes are open to ORV use overlaps with when wintering plovers are at the Seashore. However, because few plovers are found in the areas of the seasonal ORV routes, impacts on wintering plovers would continue to be long term, negligible, and adverse.

Vehicle-Free Areas. There would be no new impacts as a result of implementing the no-action alternative. The 26.4 miles of year-round VFAs would continue to provide long-term, beneficial impacts on piping plovers by reducing pressure on the species from recreational activities and protecting the wrack line and the invertebrates inhabiting the wrack line that provide a source of food for piping plovers. Use of the routes that remain open to year-round ORV access would continue to have long-term, minor to moderate, adverse impacts from disturbance from vehicles and their occupants, as described in the ORV FEIS.

Access Improvements. No new access improvements would be implemented under the no-action alternative, so there would be no impacts on piping plover.

ORV Permit Lengths. The continued use of the 7-day and annual ORV permit would continue to have no impact on piping plovers.

Cumulative Impacts

Other past, present, and future planned actions within and around the Seashore have the potential to impact the population of piping plovers at the Seashore.

The 2015 Review and Adjustment of Wildlife Buffers EA/FONSI modifies the buffers from the original ORV EIS. Some of the modifications include reducing ORV and pedestrian buffers for nesting plovers from 75 meters to 50 meters, while reducing buffers for unfledged chicks from 1,000 meters to 500 meters if there is an existing ORV corridor, or to no less than 200 meters if a corridor does not exist. For a complete list of the modifications see the 2015 Review and Adjustment of Wildlife Protection Buffers EA (NPS 2015e). Increased impacts on piping plovers from ORVs and pedestrian disturbance caused by reducing the buffers would be offset by intensive monitoring by Seashore staff, but would still result in overall impacts that are long-term, minor to moderate, and adverse.

Several beach nourishment projects would contribute cumulative impacts, including nourishment of 3 miles of Buxton beaches along NC-12, 1.6 miles near Duck, 3.8 miles near Kitty Hawk, and 2.6 miles near Kill Devil Hills. These projects may have short-term, negligible to minor, adverse impacts on piping plovers because the dredging and placement of sand could disrupt piping plovers nesting, foraging, and/or resting in the areas where beach nourishment would take place; buffers may be required during construction for bird protection. There would also be long-term, beneficial impacts by creating more nesting and resting habitat (a wider dry beach) and more foraging habitat (a lower slope intertidal beach).

The Bonner Bridge replacement project would occur within the Seashore. An EIS and biological opinion for this project found that, "the proposed replacement of the Bonner Bridge… as proposed, is not likely to jeopardize the continued existence of these species [including piping plover], and is not likely to destroy or adversely modify proposed critical wintering habitat for the piping plover." Given these findings, this project would be expected to result in short-term, negligible, adverse impacts on piping plovers if minimal disturbance from construction noise and lighting to courting, nesting, and foraging plovers is experienced.

Most of the additional access improvements discussed in the ORV EIS and 2013 Proposal to Facilitate Additional Public Beach Access EA would impact areas landward of the primary dune line. These areas are not habitat for nesting piping plovers and would not impact critical habitat for wintering piping plovers; therefore, there would be no impact on this species. While some new ORV ramps and boardwalks would extend seaward of the primary dune line, none of them would occur in areas near piping plover nesting areas; therefore, there would be no impacts.

When combined with the continued long-term benefits and continuing minor to moderate, adverse impacts under the no-action alternative, overall cumulative impacts on piping plovers would be long term, minor to moderate, and adverse, driven mainly by the moderate, adverse impacts from the reduction of buffers associated with the 2015 Review and Adjustment of Wildlife Buffers EA/FONSI. Continuing impacts associated with the no-action alternative would add only a small, incremental impact to overall cumulative impacts.

Conclusion

Continuing to keep beaches closed to non-essential ORV use until 7:00 a.m. and designating seasonal ORV route closures and year-round VFAs would provide long-term, beneficial impacts on piping plovers. Use of the routes that remain open to year-round ORV access would continue to have long-term, minor to moderate, adverse impacts. No new access improvements would be implemented, so no impacts would occur. The duration of the current ORV permits does not impact piping plovers. Overall cumulative impacts on piping plover would be long term, minor to moderate, and adverse, driven mainly by the moderate, adverse impacts from the reduction of buffers. The no-action alternative would add only a small, incremental impact to overall cumulative impacts.

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Morning Beach Openings. Opening priority routes to ORV use up to an hour earlier under any of the action alternatives would have negligible impacts on non-breeding plovers because of the limited amount of area impacted and the very small amount of additional time that ORVs would have access to those beaches. Any impacts from the disturbance from ORV presence during the small window of additional time allowed would be well within the range of natural variability for piping plovers that might be present on the beaches and would have no measurable effects on the species. Breeding piping plovers would still be protected by established buffers and closures resulting in no impacts on piping plovers resulting from changes to morning beach opening times under the action alternatives.

Seasonal Off-Road Vehicle Routes. Extending the seasonally designated ORV routes in front of the villages and Ocracoke campground by two weeks (alternatives 1 and 2) or four weeks (alternative 3) in the spring and fall would not impact piping plovers. Piping plovers, both breeding and non-breeding, generally are not found in these areas and continuing to establish prenesting closures, as appropriate, by March 15 would protect any birds that use these areas for breeding from ORV impacts prior to April 14 (alternatives 1 and 2) or April 30 (alternative 3), when the areas become closed to ORV use.

Vehicle-Free Areas – Ramp 2 and 59. Extending the year-round ORV route north of Ramp 4 by 0.5 mile to Ramp 2 and the year-round ORV route north of Ramp 63 by 0.5 mile to Ramp 59 would have long-term, negligible, adverse impacts on piping plovers under all action alternatives. While these actions would potentially expose piping plovers to disturbance from ORVs, generally few, if any, piping plovers (breeding and non-breeding) are found in these areas. Continuing to survey and monitor for piping plovers and establishing prenesting closures and buffers around suitable habitat, nesting adults and unfledged chicks would greatly minimize any potential direct impacts in these areas. Higher ORV traffic in these areas could result in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates that piping plovers could feed on in that area. However, given the relatively small area that could be affected, the indirect impacts on piping plovers likely would be negligible because there would be no measurable effects on the plovers, and any changes would be well within natural fluctuations.

Access Improvements – Ocracoke Island. The access improvements located on Ocracoke Island under all action alternatives would be limited to the soundside areas of the Seashore and would have no impacts on piping plovers or their habitat because there is no available habitat in these areas.

ORV Permit Lengths. Assuming that the number of ORVs remains about the same under any permitting scenario, the duration of an ORV permit generally has no impact on piping plover populations. However, it is possible that a 3-day permit, as included under alternative 3, may increase visitation on weekends, though it is not known if an actual increase would occur and if it did, to what extent. If any increase were to occur with a 3-day permit, it is likely it would be dispersed throughout the Seashore and well within

the Seashore's carrying capacity limits such that any disturbance to piping plovers would be negligible and well within the natural range of variability expected. Additionally, the wildlife buffers and other species protection measures would mitigate any increased visitation resulting from a change in ORV permit lengths. Therefore, under all action alternatives, there would be no impacts, or possibly negligible impacts under alternative 3, related to ORV permit lengths.

ALTERNATIVE 1

Analysis

Impacts under alternative 1 would be the same as those described under "Impacts Common to All Action Alternatives," above.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 1 would be identical to those described for the no-action alternative. When combined with the long-term, negligible, adverse impacts on piping plover under alternative 1, overall cumulative impacts on piping plover would be long term, minor to moderate, and adverse. Alternative 1 would contribute minimally to overall cumulative impacts because most actions under alternative 1 would not be located where plovers are found at the Seashore and wildlife buffers would continue to be used throughout the Seashore.

Conclusion

Continuing to establish prenesting closures and buffers around suitable habitat and nesting adults and unhatched fledglings would protect breeding and nesting piping plovers from any additional impacts caused by opening priority routes to ORV use at 6:30 a.m., as well as from extending the seasonal ORV routes in front of the villages and Ocracoke campground by two weeks in the spring and fall. Given the small area of beach impacted by the early morning opening of priority routes and the short amount of additional time that ORVs would be able to access theses beaches, long-term, adverse impacts on non-breeding plovers would be negligible. Impacts on non-breeding plovers would also be long-term and negligible from extending the seasonal ORV routes because few non-breeding plovers occur in the areas where the ORV route extensions would occur. Converting 1 mile of VFAs to year-round ORV routes would result in direct impacts from disturbance by ORVs and indirect impacts from driving over the wrack line and reducing the invertebrate population. However, few breeding and non-breeding plovers occur in these areas and continuing to establish prenesting closures and buffers around suitable habitat, nesting adults and unhatched fledglings in these areas, as applicable, would protect piping plovers from most of the impacts, and result in just long-term, negligible, adverse impacts. Changes proposed for access improvements and ORV permits would have no impacts on piping plovers. Overall cumulative impacts on piping plover would be long term, minor to moderate, and adverse. Alternative 1 would contribute minimally to overall cumulative impacts.

Determination of Effect

Under the ESA, the actions taken under alternative 1 *may affect and are not likely to adversely affect* piping plover as a result of long-term, negligible, adverse impacts. While opening priority routes to ORV use at 6:30 a.m. would expose piping plovers to an additional 30 minutes of potential disturbance from ORVs, the limited area of beach impacted and the small amount of additional time that ORVs would have access to those beaches would minimize impacts on non-breeding plovers. In addition, continuing to establish prenesting closures and buffers around suitable habitat, nesting adults and unhatched fledglings would protect breeding piping plovers and minimize any potential impacts and also would protect piping

plovers from potential ORV impacts resulting from extending the seasonal ORV routes in front of the villages and Ocracoke campground by two weeks in the spring and fall. Also, few piping plovers, breeding and non-breeding, are found in these areas, minimizing potential impacts. Converting 0.5 mile of VFA to year-round ORV routes both north of Ramp 63 to Ramp 59 and north of Ramp 4 to Ramp 2 could result in direct impacts from disturbance by ORVs and indirect impacts from driving over the wrack line and reducing the invertebrate population. However, few breeding and non-breeding plovers occur in these areas and continuing to establish prenesting closures and buffers around suitable habitat, nesting adults, and unhatched fledglings in these areas, as applicable, would protect piping plovers from most of the impacts, and result in long-term, negligible, adverse impacts. Changes proposed for access improvements and ORV permits would have no impacts on piping plovers. No impacts on critical habitat would occur under alternative 1.

ALTERNATIVE 2

Analysis

Vehicle-Free Areas. In addition to the extension of year-round ORV routes at Ramp 2 and Ramp 59 described under "Impacts Common to all Action Alternatives," portions of the VFAs south of Ramp 23 (1.5 miles) and north of Ramp 34 (1 mile) would be designated as seasonal ORV routes. While these actions would potentially expose piping plovers to disturbance from ORVs, piping plovers, breeding and non-breeding, are generally not found in these areas and continuing to survey and monitor for piping plovers, as well as continuing to establish prenesting closures and buffers around suitable habitat, nesting adults, and unfledged chicks would greatly minimize any potential direct impacts in these areas. Though still negligible, with impacts well within natural fluctuations, the impacts under alternative 2 would be slightly greater than those under alternative 1 given the larger area being opened to ORV use. Higher ORV traffic in these newly opened areas could result in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates that piping plovers could feed on in that area. However, given the relatively small additional area that could be impacted, the indirect impacts on piping plovers likely would be long term, negligible, and adverse, though they would be slightly larger than under alternative 1 given the larger area being opened up for ORV use. In addition to the above-noted areas, Ramp 45 also would be opened to all vehicles as a park road. Most of Ramp 45 is behind the primary dune line and is not considered piping plover habitat. In those areas that do provide habitat for the species, any birds present would be adequately protected by continuing to survey and monitor for piping plovers and continuing to establish prenesting closures and buffers around suitable habitat, adults, and unfledged chicks, as appropriate. Overall, changes to VFAs under alternative 2 would have long-term, negligible, adverse impacts on piping plovers because impacts would still be well within natural fluctuations of changes to population, habitat, and processes sustaining them.

Access Improvements. Similar to the proposed access improvements on Ocracoke Island, the proposed additional parking area at Ramp 45 would not occur in piping plover habitat, so there would be no impacts. More visitors may park and access Cape Point from this parking area, but with only 15 to 20 spaces, this would result in only a small increase in the number of pedestrians accessing the beach at different times, and any additional disturbance due to noise or physical presence would result in negligible, adverse impacts on non-breeding piping plovers in the area. Breeding plovers would still be protected from additional impacts by existing buffers/closures. Impacts from extending the ORV bypass road on Cape Point 0.4 mile north to Ramp 44 would have long-term, negligible, adverse impacts on piping plovers. Extending the bypass road itself would not directly impact any piping plover habitat, but would bring ORVs closer to piping plovers in the overwash area of the Salt Pond and could potentially cause disturbance. Potential impacts would be on wintering or migrating piping plovers only due to the continued use of buffer protections for nesting birds.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have potential for cumulative impacts under alternative 2 would be identical to those described for the no-action alternative. When combined with the long-term, negligible, adverse impacts on piping plover under alternative 2, overall cumulative impacts on piping plover would be long term, minor to moderate, and adverse. Alternative 2 would contribute minimally to overall cumulative impacts because most actions under alternative 2 would not be located where plovers are found at the Seashore, and wildlife buffers would continue to be used throughout the Seashore.

Conclusion

Continuing to establish prenesting closures and buffers around suitable habitat, nesting adults, and unhatched fledglings would protect piping plovers from any additional impacts caused by opening priority routes to ORV use prior to 7:00 a.m., as well as from extending the seasonal ORV routes in front of the villages and Ocracoke campground by two weeks in the spring and fall. Given the small area of beach impacted by the early morning opening of priority routes and the short amount of additional time that ORVs would be able to access theses beaches, long-term, adverse impacts on non-breeding plovers would be negligible. Impacts on non-breeding plovers would also be long-term and negligible from extending the seasonal ORV routes because few non-breeding plovers occur in the areas where the ORV route extensions would occur. Converting 2.5 miles of the VFAs to seasonal ORV routes and 1 mile of VFAs to year-round ORV routes would result in direct impacts from disturbance by ORVs and indirect impacts from driving over the wrack line and reducing the invertebrate population. However, few breeding and non-breeding plovers are found in these areas and continuing to establish prenesting closures and buffers around suitable habitat, nesting adults, and unhatched fledglings in these areas, as applicable, would protect piping plovers from most of the impacts and result in long-term, negligible, adverse impacts. Extending the bypass road on Cape Point 0.4 mile north to Ramp 44 would result in long-term, negligible, adverse impacts from potential disturbance from ORV use near wintering or migrating piping plovers. Changes to ORV permit lengths and construction of a parking area at Ramp 45 would have no impacts on piping plovers. Impacts on piping plovers from the relatively small amount of increased pedestrian use of the beach near Ramp 45 resulting from easier access created by the new parking area would be negligible.

Overall cumulative impacts on piping plover would be long term, minor to moderate, and adverse. Alternative 2 would contribute minimally to overall cumulative impacts.

Determination of Effect

Under the ESA, the actions taken under alternative 2 *may affect and are not likely to adversely affect* piping plover as a result of long-term, negligible, adverse impacts. While opening priority routes to ORV use prior to 7:00 a.m. could expose piping plovers to additional potential disturbance from ORVs, the limited area of beach impacted and the small amount of additional time that ORVs would have access to those beaches would minimize impacts on non-breeding plovers and continuing to establish prenesting closures and buffers around suitable habitat, nesting adults, and unhatched fledglings would protect breeding piping plovers and minimize any potential impacts. Continuing to establish prenesting closures and buffers around suitable habitat, nesting adults and unhatched fledglings also would protect piping plovers from potential ORV impacts resulting from extending the seasonal ORV routes in front of the villages and Ocracoke campground by two weeks in the spring and fall. Also, few piping plovers, breeding and non-breeding, are found in these areas, further minimizing potential impacts. Converting 2.5 miles of VFA to seasonal ORV routes south of Ramp 23 and north of Ramp 34 would result in direct impacts from disturbance by ORVs and indirect impacts from driving over the wrack line and reducing

the invertebrate population. However, few, if any, breeding and non-breeding plovers are found in these areas, and continuing to establish prenesting closures and buffers around suitable habitat, nesting adults and unhatched fledglings in these areas, as applicable, would protect piping plovers from most of the impacts, resulting in long-term, negligible, adverse impacts. Soundside access improvements and construction parking at Ramp 45 would have no impacts on piping plover. With 15 to 20 spaces, this new parking area would result in only a small increase in the number of pedestrians accessing the beach at different times, and any additional disturbance due to noise or physical presence would result in negligible, adverse impacts on non-breeding piping plovers in the area. Breeding plovers would still be protected from additional impacts by existing buffers/closures. Because such a small area would be affected, extending the bypass road on Cape Point 0.4 mile north to Ramp 44 would result in long-term, negligible, adverse impacts. ORV permits would have no impact on piping plovers. Also, no additional impacts on critical habitat would occur under alternative 2.

ALTERNATIVE 3

Analysis

Vehicle-Free Areas. Overall, changes to VFAs under alternative 3 would have long-term, negligible, adverse impacts on piping plovers because impacts would still be well within natural fluctuations. Alternative 3 is similar to alternative 2, with one more mile of seasonal ORV route added at Ramp 34 and the redesignation of the entire VFA as a seasonal ORV route in that location. Piping plovers, both breeding and non-breeding, generally are not found in these areas. Should a breeding piping plover be found in these locations, there would be adequate protections from continuing surveying and monitoring efforts for piping plovers and continuing to establish prenesting closures and buffers around suitable habitat, nesting adults and unfledged chicks. However, higher ORV traffic in these locations could result in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates that both breeding and non-breeding piping plovers could feed on in that area. As described under alternative 2, Ramp 45 also would be opened to all vehicles as a park road, but most of Ramp 45 is behind the primary dune line and is not considered piping plover habitat.

Access Improvements. Access improvements and impacts would be the same as those described under alternative 2.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 3 would be identical to those described for the no-action alternative. When combined with the long-term, negligible, adverse impacts on piping plover under alternative 3, overall cumulative impacts on piping plover would be long term, minor to moderate, and adverse. Alternative 3 would contribute minimally to overall cumulative impacts because most actions under alternative 3 would not be located where plovers are found at the Seashore, and wildlife buffers would continue to be used throughout the Seashore.

Conclusion

Continuing to establish prenesting closures and buffers around suitable habitat, nesting adults and unhatched fledglings would protect piping plovers from any additional impacts caused by opening priority routes to ORV use at 6:00 a.m., as well as from extending the seasonal ORV routes in front of the villages and Ocracoke campground by four weeks in the spring and fall. Given the small area of beach impacted by the early morning opening of priority routes and the short amount of additional time that ORVs would be able to access these beaches, long-term, adverse impacts on non-breeding plovers would be negligible. Impacts on non-breeding plovers also would be long-term and negligible from extending

the seasonal ORV routes because few non-breeding plovers occur in the areas where the ORV route extensions would occur. Converting 1 mile of VFA to year-round ORV routes, allowing year-round use of Ramp 45, and converting a total of 3.5 miles of VFA to seasonal ORV routes would result in potential direct impacts from disturbance by ORVs and indirect impacts from driving over the wrack line and reducing the invertebrate population. However, few breeding and non-breeding plovers are found in these areas, and continuing to survey and monitor for piping plover and continuing to establish prenesting closures and buffers around suitable habitat, nesting adults and unhatched fledglings in these areas, as applicable, would protect nesting piping plovers from most of the impacts and result in long-term, negligible, adverse impacts. Extending the bypass road on Cape Point would result in long-term, negligible, adverse impacts; no other proposed improvements would impact piping plovers, though the new parking area at Ramp 45 would result in a small increase in pedestrian use of the beach in that area that would result in long-term, negligible, adverse impacts. In general, changes to the duration of ORV permits would have no impact to negligible impacts on piping plovers. Also, no additional impacts on critical habitat would occur under alternative 3. Overall cumulative impacts on piping plover would be long term, minor to moderate, and adverse. Alternative 3 would contribute minimally to overall cumulative impacts.

Determination of Effect

Under the ESA, the actions taken under alternative 3 *may affect and are not likely to adversely affect* piping plover due to long-term, negligible, adverse impacts. Continuing to establish prenesting closures and buffers around suitable habitat, nesting adults and unhatched fledglings would protect nesting piping plovers from any additional impacts caused by opening priority routes to ORV use at 6:00 a.m. The limited area of beach impacted by opening the priority routes to ORV use at 6:00 a.m. and the small amount of additional time that ORVs would have access to those beaches would minimize impacts on non-breeding piping plovers. Continuing to establish prenesting closures and buffers around suitable habitat, nesting adults and unhatched fledglings would protect nesting piping plovers from potential ORV impacts resulting from extending the seasonal ORV routes in front of the villages and Ocracoke campground by four weeks in the spring and fall. Also, few piping plovers, breeding and non-breeding, are found in these areas, further minimizing potential impacts. Converting 0.5 mile of VFA to year-round ORV routes at both Ramp 2 and Ramp 59, allowing year-round use of Ramp 45, and converting a total of 3.5 miles of VFA to seasonal ORV routes south of Ramp 23 and between Ramps 32 and 34 would result in potential direct impacts from disturbance by ORVs and indirect impacts from driving over the wrack line and reducing the invertebrate population. However, few breeding and non-breeding plovers are found in these areas, and continuing to survey and monitor for piping plover and continuing to establish prenesting closures and buffers around suitable habitat, nesting adults and unhatched fledglings in these areas, as applicable, would protect breeding piping plovers from most of the adverse impacts. Soundside access improvements would not impact piping plovers and because such a small area would be affected, extending the bypass road on Cape Point 0.4 mile north to Ramp 44 would result in long-term, negligible, adverse impacts. Changes to the duration of ORV permits generally would have no impact on piping plovers. However, if an increase in visitor use were to occur with the implementation of a 3-day permit, it is likely it would be dispersed throughout the Seashore. As a result, any additional disturbance to breeding and non-breeding piping plovers would be negligible and well within the natural range of variability for disturbance to the species. The proposed additional parking area at Ramp 45 would not occur in piping plover habitat, so there would be no impacts, and the small increase in the number of pedestrians accessing the beach at different times as a result of the new parking area only would result in negligible, adverse impacts on non-breeding piping plovers in the area. Breeding plovers still would be protected from additional impacts by existing buffers/closures. Also, no additional impacts on critical habitat would occur under alternative 3.

RED KNOT

Species-Specific Methodology and Assumptions. Potential impacts on the federally threatened red knot and habitat were evaluated based on available data on the species' past and present occurrence at the Seashore, scientific literature on the species, life history, scientific studies on the impacts of human disturbance on red knots, as well as documentation of the species' association with humans and ORVs. Information on habitat and other existing data were acquired from staff at the Seashore and available literature.

No critical habitat has been designated or proposed for red knots in the Seashore; therefore, there would be no impacts on critical habitat, and it is not analyzed further in this document.

Red Knot Intensity Definitions. The following thresholds for evaluating impacts on red knots were defined.

Negligible: There would be no observable or measurable impacts on red knots, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.

Minor Impacts on red knots would be detectable, but would not be outside the natural range of variability. Occasional responses by some individuals to disturbance could be expected, and may result in minimal interference to feeding, resting, or other factors affecting population levels, but would not be expected to result in changes to local population numbers, population structure, and other demographic factors. Sufficient habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.

Moderate: Impacts on red knots, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Frequent responses by some individuals to disturbance could be expected, with some negative impacts on feeding, resting, or other factors affecting local population levels. Small changes to local population numbers, population structure, and other demographic factors may occur. Some impacts might occur in key habitats in the Seashore and result in harassment, injury, or mortality to one or more individuals. However, sufficient population numbers and habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.

Major: Impacts on red knots, their habitats, or the natural processes sustaining them would be detectable and would be expected to be outside the natural range of variability. Frequent responses by some individuals to disturbance would be expected, with negative impacts on feeding, resting, or other factors resulting in a decrease in Seashore population levels. Impacts would occur in key habitats in the Seashore and result in direct mortality or loss of habitat. Local population numbers, population structure, and other demographic factors might experience large declines.

Duration: Short-term effects would be one to two migratory seasons for red knots.

Long-term effects would be anything beyond two migratory seasons for red knots.

Study Area. The geographic study area for assessment of the various alternatives is the Seashore. The geographic study area for the cumulative impacts analysis is the Seashore and regional project near the park.

NO-ACTION ALTERNATIVE

Analysis

Morning Beach Openings. ORV use, as well as other recreational activities, that occur in the months when red knots are present at the Seashore (stopovers during spring and fall migration; winter residents) have the potential to adversely impact red knots by disturbing their resting and foraging behaviors. Disturbance of shorebirds can cause behavioral changes that result in less time resting or foraging, shifts in feeding times, decreased food intake, and more time and energy spent in alert postures or fleeing from the disturbance, also known as frequent escape flight (Burger 1994; Burger et al. 2007; Johnson and Baldassarre 1988; Lafferty 2001a, 2001b; Tarr 2008).

Each year red knots migrate long distances between their breeding grounds in the Arctic and their wintering areas. Wintering areas include the Atlantic and Gulf of Mexico coasts of North America, the Caribbean, and along the north and southeast coasts of South America (USFWS 2013). Because of the long distances traveled, stopover areas, such as the Seashore, are important for the birds to be able to feed on easily digestible food to quickly restore weight gain for the next leg of their migration (USFWS 2013). Disturbance of migratory birds at stopover areas is of concern because frequent escape flights result in a reduction in time foraging or resting and an increase in the time spent flying (Tarr 2008). By reducing time spent foraging and increasing energy spent fleeing, disturbance by ORVs and other recreational activities may hinder the red knot's ability to replenish its fat reserves for the next phase of its migration (USFWS 2013). In a study of shorebirds on Delaware Bay beaches in New Jersey, Burger et al. (2004) found that wintering shorebirds flew away and did not return to forage in response to 58% or more of the human disruptions and showed no indications of habituating to disturbance. Escudero et al. (2012) also found that total red knot feeding time was 0.5 hour shorter as a result of continuous disturbance and flushing of birds by ORVs, people, and dogs during prime feeding time just after high tide.

Red knots are known to be active at night (Niles et al. 2008). Continuing to close the Seashore at night to all non-essential ORV traffic and not reopening it until 7:00 a.m. would continue to provide long-term, beneficial impacts on red knots by preventing disturbance from ORVs during the nighttime and early morning hours.

Seasonal Off-Road Vehicle Routes. When seasonal ORV routes are closed to ORV use, they would continue to minimize disturbance from ORVs to resting and foraging behavior. In addition, the seasonal ORV routes, when closed to ORVs, would continue to indirectly protect red knots by protecting their food source (invertebrates) from ORV impacts.

Therefore, continuing to designate 12.7 miles of seasonal ORV routes that would be closed to ORV use from April 1 to October 31 in front of the villages and Ocracoke campground and from March 15 through September 14 at Bodie Island Spit would continue to provide long-term, direct and indirect, beneficial impacts on red knots during April, May, August, September, and October when red knots are present at the Seashore. The greatest benefits though would be realized in the seasonal ORV routes in front of the Ocracoke campground and in front of Buxton by the Frisco Pier. Few (less than five, if any) red knots have been found during surveys covering the other seasonal ORV routes. During November through March when the seasonal ORV routes are open to ORV use, red knots would be subject to disturbance by ORVs, but mainly only in front of Ocracoke campground and Buxton village, resulting in continued long-term, minor, adverse impacts.

Vehicle-Free Areas. Similar to seasonal ORV routes, the designation of 26.4 miles of VFAs would continue to provide long-term, direct and indirect, beneficial impacts on red knots by reducing disturbance to their resting and foraging behavior and by protecting their invertebrate food source. The beneficial impacts from VFAs would be greater than those experienced from seasonal ORV routes, not only because of the larger area protected, but because the benefits would occur during all months when red knots are present at the Seashore. Use of the routes that remain open to year-round ORV access would continue to have long-term, minor, adverse impacts from disturbance from vehicles and their occupants, as described in the ORV FEIS.

Access Improvements. No new access improvements would be implemented under the no-action alternative; therefore, there would be no impacts on red knots.

ORV Permit Lengths. The use of the of the 7-day and annual ORV permits would continue to have no impact on red knots.

Cumulative Impacts

Other past, present, and future planned actions within and around the Seashore have the potential to impact the population of red knots at the Seashore.

Because the red knot does not nest at the Seashore, no prenesting closures, breeding closures, or buffers are established for red knots on the Seashore. However, through closures for other breeding birds and VFAs as established under the 2015 Review and Adjustment of Wildlife Buffers EA/FONSI, the Seashore provides protection to important foraging areas for the red knot during their migration through the area, resulting in long-term, beneficial impacts.

Several beach nourishment projects would contribute cumulative impacts, including nourishment of 3 miles of Buxton beaches along NC-12, 1.6 miles near Duck, 3.8 miles near Kitty Hawk, and 2.6 miles near Kill Devil Hills. While these areas are not prime red knot habitat, these projects may have short-term, negligible to minor impacts on red knots because the dredging and placement of sand could disrupt foraging, and/or resting in areas where beach nourishment would take place. There also would be long-term, beneficial impacts by creating more resting habitat (a wider dry beach) and more foraging habitat (a lower slope intertidal beach).

The Bonner Bridge replacement project would occur within the Seashore. The project area occurs mostly on the soundside of the Seashore in the vicinity of Bodie Island Spit/Oregon Inlet south of Ramp 4. Based on red knot surveys conducted at the Seashore since 2010, Bodie Island Spit is not heavily used by the red knot. Red knot habitat overlaps that of the piping plover, and for piping plover within the project area, the EIS and biological opinion for this project found that, "the proposed replacement of the Bonner Bridge… as proposed, is not likely to jeopardize the continued existence of these species [including piping plover], and is not likely to destroy or adversely modify proposed critical wintering habitat for the piping plover." Given these findings, and the general lack of use of Bodie Island Spit by the red knot, the Bonner Bridge replacement project would be expected to result in short-term, negligible, adverse impacts on the red knot if minimal disturbance from construction noise and lighting to resting and foraging red knots is experienced.

Most of the additional access improvements discussed in the ORV EIS and 2013 Proposal to Facilitate Additional Public Beach Access EA would impact areas landward of the primary dune line. These areas are not areas where the red knot is found at the Seashore; therefore, there would be no impact on this species. New ORV ramps and boardwalks would extend seaward of the primary dune line into areas where red knots occur. Resource closures for other nesting bird species would help protect the red knot as

well, and given the relatively small area impacted compared to available habitat, impacts would be long term, negligible, and adverse.

When combined with the continued long-term, beneficial and minor, adverse impacts under the no-action alternative, overall cumulative impacts would be long term, negligible, and adverse. The no-action alternative would contribute a small incremental impact to overall cumulative impacts.

Conclusion

Continuing to keep beaches closed to non-essential ORV use until 7:00 a.m. and designating seasonal ORV route closures and year-round VFAs would continue to provide long-term, beneficial impacts on red knots, although the benefits resulting from seasonal ORV route closures would be minimized by the fact that a large portion of the timeframe for when the routes are closed to ORV use does not overlap when red knots are most abundant at the Seashore. Use of the routes that remain open to year-round ORV access would continue to have long-term, minor, adverse impacts. No new access improvements would be implemented, so no impacts would occur, and the duration of ORV permits does not impact red knots.

Overall cumulative impacts on red knot would be long term, negligible, and adverse. The no-action alternative would contribute a small incremental impact to overall cumulative impacts.

Determination of Effect

Under the ESA, the actions taken under the no-action alternative *may affect and are not likely to adversely affect* red knots because most impacts would be beneficial and those that are adverse would be minor. While no resource buffers are put into place specifically to protect red knots, continuing to keep beaches closed to non-essential ORV use until 7:00 a.m. and designating seasonal ORV route closures and year-round VFAs would provide long-term, beneficial impacts on red knots by protecting resting and foraging red knots from ORV disturbances. The beneficial impacts from the seasonal ORV routes only would occur when the routes are closed to ORV use during April through October and would be minimized because red knots are most abundant at the Seashore from September through March, with a peak also occurring during May. When the seasonal ORV routes are open to ORV use from November 1 to March 31 in front of the villages and Ocracoke campground and from March 15 through September 14 at Bodie Island Spit, impacts on red knots would occur from disturbance by ORVs. However, potential impacts would really only be realized in the seasonal ORV routes in front of Ocracoke campground and Buxton village because few (less than five per survey, if any) red knots have been documented in front of the other villages and at Bodie Island Spit during surveys. The VFAs and the time when the seasonal routes are closed to ORVs also would indirectly benefit the red knot by protecting beach invertebrates, which are a food source for red knots, from ORV impacts. Additionally, prenesting closures and buffers established for other nesting shorebirds throughout the Seashore, including in areas designated as year-round ORV routes, overlap with red knot habitat and therefore would help protect red knots and their habitat, though mainly during the spring when closures and buffers are in place and the red knot is migrating. No new access improvements would be implemented under the no-action alternative, so no impacts would occur, and the duration of ORV permits does not impact red knots. No critical habitat has been designated or proposed for red knots in the Seashore.

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Morning Beach Openings. Under all alternatives, continuing to close the Seashore at night to all non-essential ORV traffic would provide long-term, beneficial impacts on red knots by preventing disturbance from ORVs during nighttime and early morning hours. Opening priority routes to ORV use up to an hour earlier under any of the action alternatives would have negligible impacts on the red knot from ORV

disturbance because (1) the relatively short amount of additional time that the beaches would be open (30 to 60 minutes); (2) the relatively small amount of beach area affected, (3) the fact that from June through July, red knots are generally not found at the Seashore and during August through October, relatively few are found; and (4) the priority routes at Ramp 4, Ramp 27 to the north, and Ramp 43 are east-facing beaches, and very few red knots are found on east-facing beaches at the Seashore. Additionally, resource closures for other nesting shorebirds, which generally overlap red knot habitat, would provide additional protection to red knots. As a result, impacts under all of the action alternatives would be long term, negligible, and adverse on the red knot with no measurable impacts, and any effects would be well within the naturally occurring fluctuations in population, habitat, and the processes sustaining them.

Seasonal Off-Road Vehicle Routes. Allowing ORV use in front of the villages and Ocracoke campground for an additional two weeks (alternatives 1 and 2) or four weeks (alternative 3) in the spring and fall would have long-term, negligible, adverse impacts on the red knot. Although the changes would increase the amount of time that red knots could be impacted by ORVs at the Seashore, very few red knots are found at the Seashore during October and April; therefore, extending the seasonal ORV routes by two or four weeks during these months would have little impact. The villages of Waves, Salvo, and Avon are also on east-facing beaches where few red knots are found, so impacts would be minimal. Additionally, resource closures for other bird species would continue to provide some protection for red knots from ORVs.

Vehicle-Free Areas – Ramp 2 and 59. Extending the year-round ORV route north of Ramp 4 by 0.5 mile to Ramp 2 and the year-round ORV route north of Ramp 63 by 0.5 mile to Ramp 59 would have adverse impacts on the red knot under all action alternatives. Though the area to be extended north of Ramp 4 to Ramp 2 is on an east-facing beach, and east-facing beaches generally are not where red knots are found at the Seashore, a few (less than one per survey) red knots have been observed in this area in previous years. Red knots routinely have been observed in the area of Ramp 59 (which was never closed and is still in use) in previous years. While opening these areas to ORV use would potentially expose red knots to direct impacts from ORVs during their resting and foraging behaviors and indirect impacts on their invertebrate food source, these areas are immediately adjacent to year-round VFAs (north of Ramp 2 and north of Ramp 59) that provide ample and suitable habitat for the red knot. Given the relatively small area of new ORV routes that would be opened to year-round ORV use and the fact there is suitable habitat for red knots that is vehicle free immediately adjacent to the areas, direct and indirect impacts on the red knot would be long term, negligible to minor, and adverse. Although impacts would be detectable, mortality would not be expected, impacts would not affect population levels, and sufficient habitat would remain to maintain a sustainable population in the Seashore.

Access Improvements – Ocracoke Island. The access improvements on Ocracoke Island under all action alternatives would be limited to the soundside areas of the Seashore and would have no impact on red knots or their habitat.

ORV Permit Lengths. Assuming that the number of ORVs remains about the same under any permitting scenario, the duration of an ORV permit generally has no impact on red knots. However, it is possible that a 3-day permit, as included under alternative 3, may increase visitation on weekends, though it is not known if an actual increase would occur, and if it did, to what extent. If any increase were to occur with a 3-day permit, it is likely it would be dispersed throughout the Seashore and well within the Seashore's carrying capacity limits such that any disturbance to red knots would be negligible and well within the natural range of variability expected for their population, habitat, and the processes sustaining them. Therefore, under all action alternatives, there would be no impacts, or possibly negligible impacts under alternative 3, related to ORV permit lengths.

ALTERNATIVE 1

Analysis

Impacts under alternative 1 would be the same as those described under "Impacts Common to All Action Alternatives," above.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 1 would be identical to those described under the no-action alternative. When combined with the long-term, negligible to minor, adverse impacts on red knot under alternative 1, overall cumulative impacts on red knot would be long term, negligible, and adverse. Alternative 1 would contribute minimally to overall cumulative impacts because most actions would be in areas where few red knots are located.

Conclusion

Opening priority routes to ORV use at 6:30 a.m. and extending the seasonal ORV routes in front of the villages and Ocracoke campground by two weeks in the spring and fall would have long-term, negligible, adverse impacts on red knots caused by disturbance from ORVs to their resting and foraging behavior. Converting 0.5 mile of VFA to year-round ORV routes both north of Ramp 4 to Ramp 2, an east-facing beach where few red knots have been observed, and Ramp 63 to Ramp 59, an area where red knots are frequently observed, would result in direct impacts from disturbance by ORVs and indirect impacts from ORVs reducing the invertebrate population. These impacts would be long term, negligible to minor, and adverse. Changes proposed for access improvements and the duration of ORV permits would have no impacts on red knots. Overall cumulative impacts on red knot would be long term, negligible, and adverse. Alternative 1 would contribute minimally to overall cumulative impacts.

Determination of Effect

Under the ESA, the actions taken under alternative 1 *may affect and are not likely to adversely affect* red knots. Opening priority routes to ORV use at 6:30 a.m. and extending the seasonal ORV routes in front of the villages and Ocracoke campground by two weeks in the spring and fall would have long-term, negligible, adverse impacts on red knots caused by disturbance from ORVs to their resting and foraging behavior. The potential impacts are minimized because some of the priority routes and the villages of Waves, Salvo, and Avon are on east-facing beaches where few red knots occur and because very few red knots occur at the Seashore during October and April, the timeframe when seasonal ORV routes would be extended for ORV use in front of the villages. Converting 0.5 mile of VFA to year-round ORV routes both north of Ramp 4 to Ramp 2, an east-facing beach where few red knots have been observed, and Ramp 63 to Ramp 59, an area where red knots are frequently observed, would result in direct impacts from disturbance by ORVs and indirect impacts from ORVs reducing the invertebrate population that are long term, negligible to minor, and adverse. Impacts would be minimized because of the relatively small area impacted and the fact that these areas are immediately adjacent to year-round VFAs (north of Ramp 2 and north of Ramp 59) that provide ample and suitable habitat for the red knot. Additionally, prenesting closures and buffers established for other nesting shorebirds throughout the Seashore would help protect red knots and their habitat, though mainly during the spring when closures and buffers are in place and the red knot is migrating. Changes proposed for access improvements and the duration of ORV permits would have no impacts on red knots. No critical habitat has been designated or proposed for red knots in the Seashore.

ALTERNATIVE 2

Analysis

Vehicle-Free Areas. Extension of the year-round ORV routes to Ramps 2 and 59 would be the same as those described under "Impacts Common to all Action Alternatives," with negligible to minor, adverse impacts. Extending the seasonal ORV routes at Ramp 23 by 1.5 mile to the south and at Ramp 34 by 1 mile to the north would have long-term, negligible, adverse impacts on red knots because impacts from disturbance from ORVs would not be noticeable and would be well within the natural range of variability of their population, habitat, and natural processes sustaining them. These actions would potentially expose red knots to disturbance from ORVs during their resting and foraging behaviors, as well as have indirect impacts by potentially reducing the invertebrate population in these areas as described under the no-action alternative. However, any potential impacts would be greatly reduced by the fact that Ramps 23 and 34 are located on east-facing beaches that are not preferred habitat for red knots at the Seashore—during surveys conducted since 2010, no red knots have been observed in these areas. Resource closures established for other bird species also would continue to provide some additional protection for red knots.

In addition to the above areas, Ramp 45 also would be opened to year-round vehicle use as a park road. Most of Ramp 45 is behind the primary dune line, and few birds (less than one per survey) have been observed during surveys in this area (see figure 43 in chapter 3). Additionally, resource closures for other bird species would provide some protection for the red knot. Therefore, impacts on red knots would be long term, negligible, and adverse.

Access Improvements. Extending the ORV bypass road north to Ramp 44 would have long-term, negligible, and adverse impacts on red knots. While extending the bypass road would potentially expose red knots to ORV impacts during their resting and foraging behavior, any impacts would be greatly minimized by the relatively small area impacted and the fact that red knots have generally not been found in this area during surveys conducted since 2010. As a result, it is expected that impacts would not be noticeable. The proposed additional parking area at Ramp 45 would not occur in red knot habitat, so there would be no impacts. More visitors may park and access the beach adjacent to parking area, but with only 15 to 20 spaces, this would result in only a small increase in the number of pedestrians accessing the beach at different times, and any additional disturbance due to noise or physical presence would result in negligible, adverse impacts on red knots because few (less than one observed per survey) occur in this area. In addition, resource closures for other protected species such as the piping plover overlap red knot habitat and would provide some protection from impacts, though mainly during the spring when closures and buffers are in place and the red knot is migrating.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 2 would be identical to those described under the no-action alternative. When combined with the long-term, negligible to minor adverse impacts on red knot under alternative 2, overall cumulative impacts on red knot would be long term, negligible, and adverse. Alternative 2 would contribute minimally to overall cumulative impacts because most actions would be in areas where few red knots are located.

Conclusion

Opening priority routes to ORV use at 6:00 a.m. during May, June, and July, at 6:30 a.m. during August and September, and at 7:00 a.m. during October until November 15 would have long-term, negligible, adverse impacts on the red knot, with impacts from these changes occurring mainly during May when red

knots are present at the Seashore. Extending the seasonal ORV routes in front of the villages and Ocracoke campground by two weeks in the spring and fall would have long-term, negligible, adverse impacts on red knots caused by disturbance from ORVs to their resting and foraging behavior. Converting 0.5 mile of VFA to year-round ORV routes both north of Ramp 4 to Ramp 2, an east-facing beach where few red knots have been observed; Ramp 45; and Ramp 63 to Ramp 59, an area where red knots are frequently observed, would result in direct impacts from disturbance by ORVs and indirect impacts from ORVs reducing the invertebrate population that are long term, negligible to minor, and adverse. Converting 2.5 miles mile of VFAs to seasonal ORV routes south of Ramp 23 and north of Ramp 34 would result in direct and indirect, long-term, negligible, adverse impacts from disturbance by ORVs and indirect impacts from driving over and reducing the invertebrate population, a food source for the red knot. Extending the bypass road on Cape Point north to Ramp 44 would result in long-term, negligible, adverse impacts since it encompasses a relatively small area and red knots have generally not been found in there. Changes to the duration of ORV permits and construction of a parking area at Ramp 45 would have no impact on red knots. Impacts on red knots from the relatively small amount of increased pedestrian use of the beach near Ramp 45 resulting from easier access created by the new parking area would be negligible. Overall cumulative impacts on red knot would be long term, negligible, and adverse. Alternative 2 would contribute minimally to overall cumulative impacts.

Determination of Effect

Under the ESA, the actions taken under alternative 2 *may affect and are not likely to adversely affect* red knots. Opening priority routes to ORV use at 6:00 a.m. during May, June, and July, at 6:30 a.m. during August and September, and at 7:00 a.m. during October until November 15 would have long-term, negligible, adverse impacts on the red knot, with impacts from these changes only occurring during May when red knots are present at the Seashore. Impacts during May and September would be minimized by the fact that some of the priority routes are east-facing beaches where few red knots occur at the Seashore. Extending the seasonal ORV routes in front of the villages and Ocracoke campground by two weeks in the spring and fall would have long-term, negligible, adverse impacts on red knots caused by disturbance from ORVs to their resting and foraging behavior. The potential impacts would be minimized by the fact that the villages of Waves, Salvo, and Avon are on east-facing beaches where few red knots occur and the fact that very few red knots occur at the Seashore during October and April, the timeframe when seasonal ORV routes would be extended in front of the villages. Converting 0.5 mile of VFA to year-round ORV routes both north of Ramp 4 to Ramp 2, an east-facing beach where few red knots have been observed; Ramp 45 (as a park road); and Ramp 63 to Ramp 59, an area where red knots are frequently observed, would result in direct impacts from disturbance by ORVs and indirect impacts from ORVs reducing the invertebrate population that are long term, negligible to minor, and adverse. Potential impacts from ORVs on red knots from converting 2.5 miles of VFAs to year-round ORV routes south of Ramp 23 and north of Ramp 34 would be direct from disturbances by ORVs on resting and foraging behavior and indirect from driving over and reducing the invertebrate population, a food source for the red knot. However, potential impacts would be minimized by the fact that Ramps 23 and 34 are on east-facing beaches where red knots have not been observed during surveys conducted since 2010. Soundside access improvements would not impact red knots, and adverse impacts from ORV disturbance resulting from extending the bypass road on Cape Point 0.4 mile north to Ramp 44 would be minimized because of the relatively small area impacted and the fact that red knots have rarely been found there during the surveys conducted since 2010. Additionally, prenesting closures and buffers established for other nesting shorebirds throughout the Seashore would help protect red knots and their habitat, though mainly in the spring when closures and buffers are in place and the red knot is migrating. Changes to the duration of ORV permits and construction of a parking area at Ramp 45 would have no impacts on red knots. With 15 to 20 spaces, the new parking area at Ramp 45 would result in only a small increase in the number of pedestrians accessing the beach at different times, and any additional disturbance due to noise or physical presence would result in negligible adverse impacts on red knots because few (less than one per survey) have been observed in

this area. In addition, resource closures for other protected species such as the piping plover overlap red knot habitat and would provide some protection. No critical habitat has been designated or proposed for red knots within the Seashore.

ALTERNATIVE 3

Analysis

Vehicle-Free Areas. Extension of the year-round ORV routes to Ramp 2 and Ramp 59 would be the same as those described under "Impacts Common to all Action Alternatives." Impacts from the designation of Ramp 45 as a park road would be the same as those described under alternative 2. Impacts from the expansion of the seasonal ORV routes at Ramps 23 and 34 would be similar to those described for alternative 2, but for a greater distance (3.5 miles total as opposed to 2.5 miles); these areas are on east-facing beaches where, during surveys conducted since 2010, very few, and in some instance, no red knots have been observed. Impacts here would be negligible because although there would be a slightly higher risk of disturbance because of the longer length of beach seasonally open, survey data indicate very little use of these areas by red knot, and impacts would not be noticeable. Overall, changes to VFAs under alternative 3 would have long-term, negligible to minor, adverse impacts on red knots.

Access Improvements. Under alternative 3, access improvements and related impacts would be the same as those described under alternative 2.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 3 would be identical to those described under the no-action alternative. When combined with the long-term, negligible to minor, adverse impacts on red knot under alternative 3, overall cumulative impacts on red knot would be long term, negligible, and adverse. Alternative 3 would contribute minimally to overall cumulative impacts because most actions would be in areas where few red knots are located.

Conclusion

Opening priority routes to ORV use at 6:00 a.m. from May through November 15 would have long-term, negligible, adverse impacts on the red knot. Extending the seasonal ORV routes in front of the villages and Ocracoke campground by four weeks in the spring and fall would have long-term, negligible, adverse impacts on red knots caused by disturbance from ORVs to their resting and foraging behavior. Converting 1 mile of VFA to year-round ORV routes would result in direct impacts from disturbance by ORVs and indirect impacts from ORVs reducing the invertebrate population that are long term, negligible to minor, and adverse. Converting 3.5 miles of VFA to seasonal ORV routes would result in direct and indirect, long-term, negligible, adverse impacts from disturbance by ORVs and indirect impacts from driving over and reducing the invertebrate population. Changes proposed for access improvements, namely extending the bypass road on Cape Point would result in long-term, negligible, adverse impacts because the improvements would encompass a relatively small area and red knots have generally not been found there during surveys conducted since 2010. Changes to the duration of ORV permits and the construction of the new parking area at Ramp 45 would have no impact on red knots. Impacts on red knots from the relatively small area of increased pedestrian use of the beach near Ramp 45 resulting from easier access created by the new parking area would be negligible. Overall cumulative impacts on red knot would be long term, negligible, and adverse. Alternative 3 would contribute minimally to overall cumulative impacts.

Determination of Effect

Under the ESA, the actions taken under alternative 3 *may affect and are not likely to adversely affect* red knots. Opening priority routes to ORV use at 6:00 a.m. from May 1 to November 15 would have long-term, negligible to minor, adverse impacts on the red knot because red knots are not found at the Seashore during June and July, and relatively few are found at the Seashore during August through October. Additionally, potential impacts when the red knots are present at the Seashore, especially during May, are minimized by the fact that some of the priority routes are east-facing beaches where few red knots occur. Extending the seasonal ORV routes in front of the villages and Ocracoke campground by four weeks in the spring and fall would have long-term, negligible, adverse impacts on red knots caused by disturbance from ORVs to their resting and foraging behavior. The potential impacts would be minimized by the fact that the villages of Waves, Salvo, and Avon are on east-facing beaches where few red knots occur at the Seashore and the fact that very few red knots occur at the Seashore during October and April, the timeframe when seasonal ORV routes would be extended for ORV use.

Converting 0.5 mile of VFA to year-round ORV routes both north of Ramp 4 to Ramp 2, an east-facing beach where few red knots have been observed, and Ramp 63 to Ramp 59, an area where red knots are frequently observed, would result in direct impacts from disturbance by ORVs and indirect impacts from ORVs reducing the invertebrate population that are long term, negligible to minor, and adverse. Impacts would be minimized by the relatively small area impacted and the fact that these areas are immediately adjacent to year-round VFAs (north of Ramp 2 and north of Ramp 59) that provide ample and suitable habitat for the red knot. Potential impacts from ORVs on red knots from converting 1.5 miles of VFA to a seasonal ORV route south of Ramp 23 and 20 miles of VFA to a seasonal ORV route north of Ramp 34 would be direct from disturbance by ORVs on resting and foraging behavior and indirect from driving over and reducing the invertebrate population, a food source for the red knot. However, potential impacts would be minimized by the fact that Ramps 23 and 34 are on east-facing beaches where very few to no red knots have not been observed during surveys conducted since 2010. Soundside access improvements would not impact red knots, and adverse impacts from ORV disturbance resulting from extending the bypass road on Cape Point 0.4 mile north to Ramp 44 would be minimized because of the relatively small area impacted and the fact that red knots have rarely been found there during the surveys conducted since 2010. Additionally, prenesting closures and buffers established for other nesting shorebirds throughout the Seashore would help protect red knots and their habitat. The proposed additional parking area at Ramp 45 would not occur in red knot habitat, so there would be no impacts. With 15 to 20 spaces, the new parking area at Ramp 45 would result in only a small increase in the number of pedestrians accessing the beach at different times, and any additional disturbance due to noise or physical presence would result in negligible, adverse impacts on red knots because few (less than one per survey) have been observed in this area. In addition, resource closures for other protected species, such as the piping plover, overlap red knot habitat and would provide some protection. No critical habitat has been designated or proposed for red knots within the Seashore.

SEA TURTLES

Species-Specific Methodology and Assumptions. Potential impacts on federally listed sea turtle populations and their habitat within the Seashore were evaluated based on the species' known interactions with humans, domestic pets, recreational and nighttime activities, predators, artificial lighting, and ORVs.

All five threatened or endangered sea turtle species that occur in the waters of North Carolina, the loggerhead, green, Kemp's ridley, leatherback, and hawksbill sea turtles, have been documented nesting at the Seashore. The hawksbill was previously only known to occur at the Seashore through occasional stranding, usually due to either death or incapacitation from hypothermia; however, in 2015 there were at least two documented hawksbill nests. Except for the timing of nest laying activities, the nesting habits

for loggerhead, green, leatherback, and hawksbill sea turtles at the Seashore are similar. Kemp's ridley differ from the other nesting sea turtle species because they nest predominantly during daytime hours; though only one nest has ever been recorded at the Seashore. Therefore, the analysis generally discusses the impacts on the sea turtles as a group. Impacts on a specific species are noted where they differ from impacts on the other sea turtle species.

In general, direct and indirect impacts on sea turtles, their nests, eggs, and hatchlings would primarily occur during the sea turtle nesting and hatching seasons from May 1 to November 15 and during summer and fall storm events when post-hatchlings may wash ashore. Direct impacts on live stranded turtles may occur year-round.

The information contained in this analysis was obtained through best professional judgment of Seashore staff and experts in the field and by reviewing applicable scientific literature.

The duration of an ORV permit has no impact on sea turtles; therefore, this topic is not analyzed further in this document.

Sea Turtle Intensity Definitions. The following intensity definitions for evaluating impacts on sea turtles were defined.

Negligible: There would be no observable or measurable impacts on sea turtles, their habitats, or the natural processes sustaining them. Impacts would be well within the natural range of variability.

Minor: Impacts on sea turtles, their habitats, or the natural processes sustaining them would be detectable, but would not be outside the natural range of variability. Disturbance to some nesting females could be expected to occur, but would be infrequent. Complete or partial nest loss as a result of human activities would occur infrequently. Occurrences of disorientation/disruption of hatchling movement would occur infrequently (less than 10% of all hatchling emergence events). Direct hatchling mortality from human activities would be rare.

Moderate: Impacts on sea turtles, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Occasional disturbance to some nesting females could be expected, with negative impacts on reproduction affecting local population levels. Complete or partial nest loss as a result of human activities would occur occasionally. Occurrences of disorientation/disruption of hatchling movement would occur occasionally (more than 10% and less than 30% of all hatchling emergence events). Direct hatchling mortality from human activities would occasionally occur. However, sufficient population numbers and habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.

Major: Impacts on sea turtles, their habitats, or the natural processes sustaining them would be detectable and would be expected to be outside the natural range of variability. Frequent disturbance to nesting females would be expected, with negative impacts on reproduction, or other factors resulting in a decrease in Seashore population levels or a failure to restore levels that are needed to maintain a sustainable population in the Seashore. Impacts could include in direct mortality to one or more nesting females. Complete or partial nest loss as a result of human activities would occur frequently. Occurrences of disorientation/disruption of hatchling movement would occur frequently (more than 30% of all hatchling emergence events). Direct hatchling mortality from human activities would frequently occur. Local population numbers, population structure, and other demographic factors might experience large declines.

Duration: Short-term effects would last up to two seasons.

Long-term effects would be continued beyond two seasons.

Study Area. The study area for assessment of the alternatives is the Seashore. The study area for the cumulative impacts analysis is the state of North Carolina.

NO-ACTION ALTERNATIVE

Analysis

Morning Beach Openings. With the exception of Kemp's ridley, sea turtles generally nest at night, though some early morning daytime nesting does occur. Since 2009, approximately five nests per year on average have been recorded at the Seashore as being laid after daylight/while surveys were being conducted (i.e., after sunrise but prior to 7:00 a.m.). Therefore, continuing to close the beach to non-essential ORV use from 9:00 p.m. until 7:00 a.m. would continue to provide long-term, beneficial impacts by greatly reducing the potential impacts from ORVs to nesting turtles and hatchlings throughout the Seashore. It also would generally allow Seashore staff time to survey the majority of the beach for nests prior to the onset of ORV use, reducing the possibility that tracks left by nesting turtles would be obscured by ORV tracks, which in turn could cause nests to be missed by Seashore staff, and therefore not protected. Since the ORV FEIS in 2010, one Kemp's ridley sea turtle nest has been recorded at the Seashore (NPS 2011b) and on rare occasion, other daytime nesting events have occurred (NPS 2005). So after beaches have been surveyed in the morning (1) ORVs could contribute to false crawls, (2) crawls of daytime nesting turtles likely would be obscured by ORV tracks, and (3) nesting turtles themselves may be struck or run over. However, given the extreme rarity of daytime nesting events at the Seashore, the increased risk of impacts would be relatively small. Additionally, by adhering to the speed limit on the beach, ORV drivers likely would be able to see a nesting turtle and avoid striking it. As a result, impacts would continue to be long term, negligible, and adverse.

Seasonal Off-Road Vehicle Routes. Seasonal ORV routes would continue to protect 12.7 miles of the Seashore during the majority of the sea turtle nesting and hatching season, providing continued long-term, beneficial impacts. The seasonal ORV routes are closed to ORV use prior to when sea turtle nesting starts at the Seashore, though on rare occasion nests are laid late enough in the season that they could potentially hatch after the seasonal ORV routes are opened up to ORV use. Monitoring and appropriate buffer protections would still be put into place protecting the nests and any hatchlings that may emerge from ORV impacts, resulting in no impacts on sea turtles.

Vehicle-Free Areas. While not all areas closed to ORV use have historically received concentrated turtle nesting activity, the year-round VFAs would continue to protect 26.4 miles of Seashore from the impacts caused by ORVs to sea turtles, such as deterioration of nesting habitat, providing continued long-term, beneficial impacts. Use of the routes that remain open to year-round ORV access would continue to have long-term, minor to moderate, adverse impacts from disturbance from vehicles and their occupants, as described in the ORV FEIS.

Access Improvements. No new access improvements would be implemented under the no-action alternative, so there would be no impacts on turtles.

Cumulative Impacts

Other past, present, and future planned actions within and around the Seashore have the potential to impact the population of all four species of sea turtles that nest at the Seashore.

The 2015 Review and Adjustment of Wildlife Buffers EA/FONSI, modifies the buffers from the original ORV EIS. Some of the modifications include, but are not limited to, reducing the size of the buffers to be expanded 50–55 days after a nest is laid to 15 meters on both sides and 5 meters behind the nest when light filter fencing is installed, expanding buffers around nests laid prior to June 1 may optionally be delayed until day 60, and nests laid after August 20 that block ORV access will be monitored for signs of hatching with expanded buffers put in place when hatching occurs. Additionally, beach driving would be allowed seaward of select sea turtle expanded closures. However, impacts would be offset by daily raking of ORV ruts. For a complete list of the modifications see the 2015 Review and Adjustment of Wildlife Protection Buffers EA (NPS 2015e). While sea turtles would still be exposed to mortality and injury risks from recreational activity (both pedestrian- and ORV-related), the buffers established under this plan would reduce, but not eliminate this risk. Impacts would be long term, minor, and adverse as a result of recreational access throughout the Seashore during the sea turtle nesting season.

Several beach nourishment projects would contribute cumulative impacts, including nourishment of 3 miles of Buxton beaches along NC-12, 1.6 miles near Duck, 3.8 miles near Kitty Hawk, and 2.6 miles near Kill Devil Hills. These projects may have short-term, negligible, adverse impacts on the quality of nesting habitat for sea turtles, but long-term, beneficial impacts would result from providing additional nesting habitat for the sea turtles.

During the Bonner Bridge replacement project, construction noise and lighting may adversely impact nesting females, and dredging in Pamlico Sound could impact waterborne turtles resulting in short-term, minor to moderate, adverse impacts. The presence of shading from the bridge and pilings driven into the substrate may also alter the optimal suitability of the beach surrounding the bridge for turtle nesting. However, the new bridge also would provide some long-term benefits by allowing barrier island processes to occur more naturally than with the present bridge. The new bridge would allow the natural formation of new habitats such as overwash fans, new inlets, and low sloping beaches that could provide suitable habitat for nesting turtles. The EIS for this project found that the proposed replacement of the Bonner Bridge, and subsequent phases of elevating portions of NC-12 onto bridges is not likely to jeopardize the continued existence of listed sea turtles (FHWA 2007).

Most of the additional access improvements discussed in the ORV EIS and 2013 Proposal to Facilitate Additional Public Beach Access EA would impact areas landward of the primary dune line. These areas are not habitat for nesting sea turtles; therefore, there would be no impact on sea turtles. New ORV ramps and boardwalks would extend seaward of the primary dune line into areas where sea turtles potentially nest. While new ORV ramps would adversely impact nesting habitat through the compaction of sand, the creation of ruts by ORVs, and potential erosion caused by ORV use, and the piles of the new boardwalks

could present obstacles for nesting turtles, the amount of habitat impacted by these access improvements is extremely small compared to the overall sea turtle nesting habitat available at the Seashore. Therefore, these actions would result in long-term, negligible to minor, adverse impacts on sea turtles. Continued restrictions on beach fires and camping would continue to benefit sea turtles.

When combined with the continued long-term benefits and minor to moderate, adverse impacts under the no-action alternative, overall cumulative impacts on sea turtles would be long term, minor to moderate, and adverse. The no-action alternative would continue to contribute small incremental impacts to overall cumulative impacts.

Conclusion

Continuing to keep beaches closed to non-essential ORV use until 7:00 a.m., designating seasonal ORV route closures, and year-round VFAs would provide continued long-term, beneficial impacts. However, some long-term, negligible, adverse impacts could occur from impacts on daytime nesters, Kemp's ridley sea turtles, and on rare occasion, other sea turtles. Use of the routes that remain open to year-round ORV access would continue to have long-term, minor to moderate, adverse impacts. No new access improvements would be implemented under the no-action alternative. Overall cumulative impacts on sea turtles would be long term, minor to moderate, and adverse. The no-action alternative would contribute a small incremental impact to overall cumulative impacts.

Determination of Effect

Under the ESA, actions taken under the no-action alternative *may affect and are not likely to adversely affect* sea turtles because potential impacts would be beneficial. While the no-action alternative represents continuation of impacts from the ORV FEIS, Kemp's ridley and hawksbill turtles were not known to occur at the Seashore at that time and have since nested within the Seashore. Continuing to keep beaches closed to non-essential ORV use until 7:00 a.m. would provide long-term, beneficial impacts by greatly reducing the potential impacts from ORVs on nesting turtles and hatchlings throughout the Seashore because turtles generally nest and hatch during nighttime hours. It also would allow Seashore staff time to survey the beach for nests prior to the onset of ORV use, reducing the possibility that nesting crawls would be obscured by ORV tracks, which could lead to staff missing a nest and thus not protecting it. Establishing seasonal ORV routes and year-round VFAs would protect nesting sea turtles and their habitat along 39.1 miles of shoreline during the nesting season. No new access improvements would be implemented under the no-action alternative, and the duration of ORV permits does not have an impact on sea turtles.

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Seasonal Off-Road Vehicle Routes. Allowing ORV use in front of the villages for an additional two weeks (alternatives 1 and 2) and four weeks (alternative 3) in the spring and fall would have no impact on sea turtles because both time periods do not overlap with the sea turtle nesting season. Additionally, for nests laid late in the season, monitoring and appropriate buffer protections would still be put in place, protecting the nests and any hatchlings that may emerge from nests after October 1 (alternative 3) or October 15 (alternatives 1 and 2), resulting in no impacts on sea turtles.

Vehicle-Free Areas – Ramp 2 and 59. Under all action alternatives, there would be a 1 mile increase in the amount of Seashore open to year-round ORV use. As a result, these areas would be subject to impacts on the nesting habitat of sea turtles as described in the ORV FEIS, including sand compaction and erosion. Surveying, monitoring, and protection of sea turtles, nests, and hatchlings through the use of buffers still would occur, minimizing impacts on sea turtles in the newly opened areas. Given the

relatively small area being opened to ORV use and the protective measures in place, impacts would be long term, negligible, and adverse with no measurable effects and impacts well within the natural range of variability.

Access Improvements – Ocracoke Island. The access improvements on Ocracoke Island under all action alternatives would be limited to the soundside of Ocracoke Island and would have no impacts on sea turtles because this area is not considered sea turtle nesting habitat.

ALTERNATIVE 1

Analysis

Morning Beach Openings. Though priority routes would be opened to ORV use at 6:30 a.m., which is earlier than the current 7:00 a.m. timeframe, they would still be surveyed for turtle crawls/nests prior to opening them for ORV use. Surveying the priority routes for nests prior to the onset of ORV use would reduce the possibility that nesting crawls would be obscured by ORV tracks, which in turn could cause nests to be missed by Seashore staff, and therefore not protected. However, some nesting may still occur in the early morning hours after a beach has been surveyed, resulting in the nest being unprotected. Since 2009, approximately five nests per year have been recorded as occurring during daylight hours/while surveys were being conducted (i.e., prior to 7:00 a.m.) (NPS n.d.). Additionally, since the ORV FEIS was published in 2010, the first Kemp's ridley nest ever documented at the Seashore occurred in 2011 (NPS 2011b). Kemp's ridley sea turtles nest primarily during daylight hours (NMFS, USFWS, and SEMARNAT 2010), and though extremely rare, as discussed in the ORV FEIS, other sea turtles have nested or hatched during daylight hours as well (NPS 2005). As a result, opening the beach to ORV use earlier than 7:00 a.m. would slightly increase the risk that (1) nests are laid on priority routes after the beaches have been surveyed resulting in unprotected nests (2) ORVs could contribute to false crawls, (3) crawls of daytime nesting turtles would be obscured by ORV tracks, and (4) nesting turtles themselves may be struck or run over. However, given the extreme rarity of daytime nesting events at the Seashore, the relatively small area that priority routes compose of the Seashore, and the relatively small change in time for reopening the Seashore, the increased risk would be relatively small. As a result, impacts likely would be long term, negligible, and adverse because these impacts would not be measurable and would be well within the natural range of variability.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 1 would be identical to those described for the no-action alternative. When combined with the long-term, negligible, adverse impacts on sea turtles under alternative 1, overall cumulative impacts on sea turtles would be long term, minor to moderate, and adverse. Alternative 1 would contribute minimal incremental impacts to overall cumulative impacts, mainly as a result of the earlier morning beach surveys.

Conclusion

Although priority routes may be opened to ORV use prior to 7:00 a.m., they would still be surveyed for turtle crawls/nests, prior to being opened. For any early morning nesting that might occur on priority routes after the beaches have been surveyed and for daytime nesting events, opening the areas to ORV use prior to the current 7:00 a.m. timeframe could increase slightly the risk of ORVs contributing to false crawls, obscuring crawls, or striking nesting turtles, resulting in long-term, negligible, adverse impacts. Opening an additional mile of the Seashore to year-round ORV use would expose these areas to potential impacts on sea turtle nesting habitat, but because of the relatively small area impacted and the fact that surveying, monitoring, and establishing buffers would still occur, adverse impacts would be long term

and negligible. Changes to seasonal ORV routes and access improvements would have no impacts on sea turtles. Overall cumulative impacts on sea turtles would be long term, minor to moderate, and adverse. Alternative 1 would contribute minimally to overall cumulative impacts.

Determination of Effect

Under the ESA, the actions taken under alternative 1 *may affect and are not likely to adversely affect* sea turtles. Even though priority routes would be opened to ORV use at 6:30 a.m. from May 1 to November 15, the beaches would still be surveyed for turtle nests prior to opening, providing beneficial impacts. However, some early morning nesting events could occur on these beaches after the surveys are conducted. Since 2009, approximately five nests per year have been recorded as occurring during daylight hours/while surveying was being conducted (i.e., after sunrise and prior to 7:00 a.m.). Given the relatively small change in time for concluding surveys and opening the beaches to ORV use from current practices (30 minutes) and the relatively small area of beach that the priority routes occupy, any increase in risk of potentially not protecting a nest because it was laid after a beach was surveyed would be minimal. Kemp's ridley sea turtles are typically daytime nesters and one Kemp's ridley nest has been recorded at the Seashore in 2011 (NPS 2011b). Because daytime nesting events are extremely rare at the Seashore, and abiding by the Seashore's speed limit should allow drivers to see and avoid nesting sea turtles, the increased risk to daytime nesters/nests from ORVs causing false crawls, obscuring nesting crawls, or striking nesting turtles would be minimal. Allowing ORV use in front of the villages for an additional two weeks in the spring and fall would have no impact on sea turtles because allowing ORV use from October 15 through April 14 does not overlap with the sea turtle nesting season. Additionally, for nests laid late in the season, monitoring and appropriate buffer protections would still be put into place, protecting the nests and any hatchlings that may emerge from nests after October 15, resulting in no impacts on sea turtles. The proposed changes in areas open to ORV use would reduce the amount of Seashore closed to ORV use by 1 mile. As a result, these areas would be subject to impacts on the nesting habitat of sea turtles, including sand compaction and erosion, which can make the habitat less suitable for nesting. However, given the relatively small area impacted and the fact that surveying, monitoring, and protection of sea turtles, nests, and hatchlings through the use of buffers would still occur, impacts in these newly opened areas to ORV use would be minimized, resulting in long-term, negligible, adverse impacts. Access improvements would be limited to the soundside areas of the Seashore and have no impacts on sea turtles; changes to the duration of ORV permits also would have no impact on sea turtles.

ALTERNATIVE 2

Analysis

Morning Beach Openings. Though priority routes would be opened to ORV use as early as 6:00 a.m. during May, June, and July; at 6:30 a.m. during August and September; and at 7:00 a.m. during October until November 15, which roughly corresponds with sunrise, the beaches would still be surveyed for turtle crawls/nests prior to opening them for ORV use. As described under alternative 1, opening the beaches to ORV use prior to the current 7:00 a.m. timeframe would slightly increase the risk that nesting may occur in the early morning hours after a beach has been surveyed, resulting in the nest being unprotected from impacts associated with ORV use. However, given the relatively small area of beach affected and the fact that early morning nesting events are fairly rare, potential additional impacts would be minimal, though slightly more than under alternative 1 given the additional 30 minutes that the priority routes would be open during May, June, and July under alternative 2 compared. As noted under alternative 1, since the ORV FEIS in 2010, one Kemp's ridley sea turtle nest has been recorded at the Seashore (NPS 2011b) and on rare occasion, other daytime nesting events have occurred (NPS 2005). So after beaches have been surveyed in the morning (1) ORVs could contribute to false crawls, (2) crawls of daytime nesting turtles would likely be obscured by ORV tracks, and (3) nesting turtles themselves may be struck or run over.

However, given the extreme rarity of daytime nesting events at the Seashore, the increased risk of impacts would be relatively small. Additionally, by adhering to the speed limit on the beach, ORV drivers likely would be able to see a nesting turtle and avoid striking it. As a result, impacts would be long term, negligible, and adverse.

Vehicle-Free Areas. In addition to the 1 mile of year-round ORV routes described under "Impacts Common to all Action Alternatives," alternative 2 would add 2.5 miles of seasonal ORV routes to the Seashore. These routes would be seasonally open for use from October 15 through April 15. These timeframes do not overlap sea turtle nesting timeframes, and would therefore have no impact on nesting sea turtles. Additionally, for nests laid late in the season, monitoring and appropriate buffer protections would still be put into place, protecting the nests and any hatchlings that may emerge from nests after October 15, resulting in no impacts on sea turtles. Ramp 45 also would be designated as a park road. However, much of that area occurs behind the primary dune line and is not considered sea turtle nesting habitat. The area of the ramp seaward of the primary dune line would be subject to ORV impacts on sea turtle nesting habitat as described in the ORV FEIS, including sand compaction and erosion, resulting in long-term, negligible, adverse impacts as a result of the relatively small amount of additional Seashore being impacted and would not result in measurable effects.

Access Improvements. Impacts from extending the ORV bypass road north to Ramp 44 would have long-term, beneficial impacts on sea turtles by bypassing ocean beach that is suitable habitat for sea turtle nesting, thus removing potential impacts from ORV use. Impacts would be negligible because only a small area would be affected and resource closures would still be put into place as appropriate and necessary, so impacts would not be measurable and would be well within the natural range of variability. The proposed additional parking area at Ramp 45 would not occur in sea turtle nesting habitat, so there would be no impact. Any increase in pedestrian use of the beach adjacent to the parking area also would not impact sea turtles because any nests in the area would be protected by resource closures.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 2 would be identical to those described under the no-action alternative. When combined with the long-term, negligible, adverse impacts on sea turtles under alternative 2, overall cumulative impacts on sea turtles would be long term, minor to moderate, and adverse. Alternative 2 would contribute minimally to overall cumulative impacts, mainly as a result of the earlier morning beach surveys.

Conclusion

Although priority routes may be opened to ORV use prior to 7:00 a.m., they would still be surveyed for turtle crawls/nests prior to opening. Though not common, early morning nesting events may occur after a priority beach has been surveyed, resulting in the nesting turtle and nest being unprotected from impacts associated with ORV use, which would result in long-term, negligible, adverse impacts. After beaches have been surveyed in the morning ORVs may contribute to false crawls, obscure crawls, or strike nesting turtles, resulting in long-term, negligible, adverse impacts. Changes to seasonal ORV routes and VFAs would have no impacts on sea turtles. Soundside access improvements and construction of a parking area at Ramp 45 would not impact sea turtles, and any increased pedestrian use of the beach adjacent to Ramp 45 resulting from the easier access also would not impact sea turtles because nests would be protected by resource closures. Extending the ORV bypass road on Cape Point would have long-term, beneficial impacts on sea turtles by bypassing ocean beach that is suitable habitat for sea turtle nesting, thus removing potential impacts from ORV use. Overall cumulative impacts on sea turtles would be long term, minor to moderate, and adverse. Alternative 2 would contribute minimally to overall cumulative impacts.

Determination of Effect

Under the ESA, the actions taken under alternative 2 *may affect and are not likely to adversely affect* sea turtles. Even though priority routes would be opened to ORV use between 6:00 a.m. and 7:00 a.m. from May 1 to November 15 (6:00 a.m. for May, June, and July; 6:30 a.m. for August and September; and 7:00 a.m. for October and November), roughly corresponding to sunrise each month, the beaches would still be surveyed for turtle nests prior to opening them for ORV use, providing beneficial impacts. However, this earlier timeframe would increase the risk that some early morning nesting events could occur on the priority routes after the surveys have been conducted. Since 2009 approximately five nests have been recorded annually at the Seashore as occurring during daylight hours/while surveying was being conducted (i.e., after sunrise and prior to 7:00 a.m.). ORVs could adversely impact these early morning nesters by contributing to false crawls, obscuring turtle nesting tracks and crawls, or striking nesting turtles. Obscured tracks could result in some nests and their potential hatchlings being unprotected from ORV impacts. However, given that early morning nesting events are fairly uncommon and the relatively small area of beach affected, the potential additional impacts would be minimal. Kemp's ridley sea turtles are typically daytime nesters and since the 2010 ORV FEIS was published, only one Kemp's ridley nest has been recorded at the Seashore (NPS 2011b) and, on rare occasions, other daytime nesting events have occurred at the Seashore (NPS 2005). However, because daytime nesting events are extremely rare at the Seashore, and abiding by the Seashore's speed limit should allow drivers to see and avoid nesting sea turtles, the increased risk to daytime nesters/nests from ORV use would be minimal. Allowing ORV use in front of the villages for an additional two weeks in the spring and fall would have no impact on sea turtles, nor would adding 2.5 miles of seasonal ORV routes (1.5 mile south of Ramp 23 and 1 mile north of Ramp 34) because allowing ORV use in all of these areas from October 15 through April 15 does not overlap with the sea turtle nesting season. Additionally, for nests laid late in the season, monitoring and appropriate buffer protections would still be put into place, protecting the nests and any hatchlings that may emerge from nests after October 1, resulting in no impacts on sea turtles. Soundside access improvements and construction of a parking area at Ramp 45 would not impact sea turtles, and any increased pedestrian use of the beach adjacent to Ramp 45 resulting from the easier access would also not impact sea turtles because nests would be protected by resource closures. Extending the ORV bypass road on Cape Point 0.4 mile north to Ramp 44 would have long-term, beneficial impacts on sea turtles by bypassing ocean beach that is suitable habitat for sea turtle nesting, thus removing potential impacts from ORVs. No direct impacts on sea turtles would occur because resource closures would still be put into place as appropriate and necessary. Indirect impacts from ORV use of the bypass road would result from sand compaction and erosion, making the habitat less suitable for nesting, but because of the small area impacted, impacts would be long term, negligible, and adverse. Proposed changes to the duration of ORV permits would have no impact on sea turtles.

ALTERNATIVE 3

Analysis

Morning Beach Openings. Though priority routes would be opened to ORV use at 6:00 a.m., they would still be surveyed for turtle crawls/nests prior to opening them for ORV use. However, given sunrise occurs after 6:00 a.m. later in the season (August and after), it is likely that in order to complete the surveys by 6:00 a.m. they would have to be conducted prior to first light, which generally occurs about 30 minutes prior to sunrise. Conducting surveys in the dark could cause some nesting crawls to be missed by Seashore staff, resulting in adverse impacts from nests going unprotected from the impacts caused by ORVs. Additionally, some nesting may still occur in the early morning hours after a beach has been surveyed. Since 2009 there has been approximately 5 nests recorded annually as occurring during daylight hours/while surveying were being conducted (i.e., after sunrise and prior to 7:00 a.m.). This would result in the nesting turtle and nest being unprotected from impacts associated with ORV use such

as ORVs causing false crawls or obscuring the crawls by their tracks, striking nesting turtles themselves, or running over nests. The number of turtles nesting at the Seashore declines dramatically beginning in August and stops by the end of September. Given the declining number of nesters and the relatively small amount of beach affected, opening priority routes by 6:00 a.m. would result in adverse impacts that would be long term and minor. As described under alternatives 1 and 2, Kemp's ridley sea turtles are daytime nesters and on rare occasion other sea turtles nest during the daytime as well, so after beaches have been surveyed in the morning (1) ORVs could contribute to false crawls, (2) crawls of daytime nesting turtles would likely be obscured by ORV tracks, and (3) nesting turtles themselves may be struck or run over. However, given the extreme rarity of daytime nesting events at the Seashore, the increased risk of impacts would be relatively small resulting in long-term, negligible adverse impacts.

Vehicle-Free Areas. In addition to the 1 mile of area open year-round to ORV use, alternative 2 also would add 3.5 miles of seasonal ORV routes open for use from October 1 through April 30. As described under alternative 2, these dates do not overlap with sea turtle nesting dates and would therefore have no impacts. Impacts from the designation of Ramp 45 as a park road would be the same as those described under alternative 2.

Access Improvements. Under alternative 3, access improvements and associated impacts would be the same as those described under alternative 2.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 3 would be identical to those described for the no-action alternative. When combined with the long-term, negligible, adverse impacts on sea turtles under alternative 3, overall cumulative impacts on sea turtles would be long term, minor to moderate, and adverse. Alternative 3 would contribute minimally to overall cumulative impacts, mainly as a result of the earlier morning beach surveys.

Conclusion

Although priority routes may be opened to ORV use at 6:00 a.m., they would still be surveyed for turtle crawls/nests, prior to opening, providing beneficial impacts. However, given sunrise occurs after 6:00 a.m. late in the season (August and after) some surveys would likely be conducted in the dark increasing the risk that Seashore staff miss some nesting crawls allowing some nests to go unprotected from impacts associated with ORVs. Additionally, some nesting may still occur in the early morning hours after a beach has been surveyed, resulting in the nesting turtle and nest being unprotected from impacts associated with ORV use. Thus opening priority routes by 6:00 a.m. would result in long-term, minor, adverse impacts. After beaches have been surveyed in the morning ORVs could contribute to false crawls, obscure crawls, or strike daytime nesting turtles. However, given the extreme rarity of daytime nesting resulting impacts would only be long-term, and negligible. Changes to seasonal ORV routes and ORV permit durations and soundside access improvements and the additional parking area at ramp 45 would have no impacts on sea turtles, and any increased pedestrian use of the beach adjacent to Ramp 45 resulting from the easier access would also not impact sea turtles due to nests being protected by resource closures. Opening an additional mile of the Seashore to ORV use year-round would expose these areas to potential impacts on sea turtle nesting habitat, resulting in long-term, negligible, adverse impacts. Extending the bypass road on Cape Point would have long-term, beneficial impacts on sea turtles by bypassing ocean beach that is suitable habitat for sea turtle nesting, thus removing potential impacts from ORVs. The additional 3.5 miles of seasonal ORV routes open for use from October 1 through April 30 does not overlap with sea turtle nesting dates and would therefore have no impacts.

Overall cumulative impacts on sea turtles would be long term, minor to moderate, and adverse. Alternative 3 would contribute minimally to the overall cumulative impacts.

Determination of Effect

Under the ESA, the actions taken under alternative 3 *may affect and are likely to adversely affect* sea turtles. Even though priority routes would be opened to ORV use at 6:00 a.m. from May 1 to November 15, the beaches would still be surveyed for turtle nests prior to opening the beaches to ORV use. , providing beneficial impacts. However, given sunrise occurs after 6:00 a.m. later in the season (August and after), it is likely that in order to complete the surveys by 6:00 a.m. they would have to be conducted prior to first light which generally occurs about 30 minutes prior to sunrise. Conducting surveys in the dark could cause some nesting crawls to be missed by Seashore staff, resulting in nests going unprotected from the impacts caused by ORVs. Additionally, some nesting may still occur in the early morning hours after a beach has been surveyed. Since 2009 there has been approximately 5 nests recorded annually as occurring during daylight hours/while surveys were being conducted (i.e., after sunrise and prior to 7:00 a.m.). This would result in the nesting turtle and nest being unprotected from impacts associated with ORV use such as ORVs causing false crawls or obscuring turtle nesting tracks and crawls by ORV tracks, striking nesting turtles themselves, or running over nests. The potential impacts would be minor as they would be minimized by the fact that number of turtles nesting at the Seashore declines dramatically beginning in August and stops by the end of September and the relatively small amount of beach affected, both of which would minimize the number of nesting crawls that could be missed and the number of turtles that may nest after surveys are complete. Kemp's ridley sea turtles are daytime nesters and the first and only nest ever recorded at the Seashore occurred in 2011 (NPS 2011b). On rare occasion, other daytime nesting events have also occurred (NPS 2005), so after beaches have been surveyed in the morning ORVs could adversely impact daytime nesters by contributing to false crawls, obscuring nesting turtle tracks and crawls, or striking nesting turtles. However, because daytime nesting events are extremely rare at the Seashore, and abiding by the Seashore's speed limit should allow drivers to see and avoid nesting sea turtles, the increased risk would be minimal, resulting in long-term, negligible, adverse impacts. Allowing ORV use in front of the villages for an additional four weeks in the spring and fall would have no impact on sea turtles, nor would adding 1 mile to areas open year-round to ORV use and 3.5 miles to seasonal ORV routes open for use from October 1 through April 30. No impacts would occur because allowing ORV use in all of these areas from October 1 through April 30 does not overlap with the sea turtle nesting season. Additionally, for nests laid late in the season, monitoring and appropriate buffer protections would still be put into place, protecting the nests and any hatchlings that may emerge from nests after October 1, resulting in no impacts on sea turtles. Soundside access improvements would not impact sea turtles and extending the ORV bypass road on Cape Point 0.4 mile north to Ramp 44 would have long-term, beneficial impacts on sea turtles by bypassing ocean beach that is suitable habitat for sea turtle nesting, thus removing potential impacts from ORV use. The proposed additional parking area at Ramp 45 would not occur in sea turtle nesting habitat so there would be no impact, and any increased pedestrian use of the beach adjacent to Ramp 45 resulting from the easier access would also not impact sea turtles due to nests being protected by resource closures. Proposed changes to the duration of ORV permits would have no impact on sea turtles.

STATE-LISTED AND SPECIAL STATUS SPECIES

ASSUMPTIONS, METHODOLOGY, AND INTENSITY DEFINITIONS

Methodology and Assumptions. Potential impacts on state-listed/special status species populations and habitat were evaluated based on available data on the species' past and present occurrence at the Seashore, as well as the species' association with humans and ORVs. Information on habitat and other existing data were acquired from staff at the Seashore and available literature.

Intensity Definitions. The following definitions for evaluating impacts on state-listed and special status species were defined.

Negligible: There would be no observable or measurable impacts on state-listed/special status species, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.

Minor: Impacts on state-listed/special status species, their habitats, or the natural processes sustaining them would be detectable, but would not be outside the natural range of variability. Occasional responses by some individuals to disturbance could be expected, but without interference to feeding, reproduction, resting, or other factors affecting population levels. Small changes to local population numbers, population structure, and other demographic factors might occur. However, some impacts might occur during critical reproduction periods for a native species, but would not result in injury or mortality. Sufficient habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.

Moderate: Impacts on state-listed/special status species, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Frequent responses by some individuals to disturbance could be expected, with some negative impacts on feeding, reproduction, resting, or other factors affecting local population levels. Some impacts might occur during critical periods of reproduction or in key habitats in the Seashore and result in harassment, injury, or mortality to one or more individuals. However, sufficient population numbers and habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.

Major: Impacts on state-listed/special status species, their habitats, or the natural processes sustaining them would be detectable, would be expected to be outside the natural range of variability, and would be permanent. Frequent responses by some individuals to disturbance would be expected, with negative impacts on feeding, reproduction, or other factors resulting in a decrease in Seashore population levels or a failure to restore levels that are needed to maintain a sustainable population in the Seashore. Impacts would occur during critical periods of reproduction or in key habitats in the Seashore and result in direct mortality or loss of habitat. Local population numbers, population structure, and other demographic factors might experience large declines.

Duration: Short-term effects would be up to two breeding seasons for state-listed/special status species.

Long-term would be anything beyond two breeding seasons for state-listed/special status species.

Study Area. The study area for state-listed and special status species is defined as the Seashore for the analysis of the impacts of the alternatives and the areas affected by additional local projects for the analysis of cumulative impacts.

NO-ACTION ALTERNATIVE

Analysis

Morning Beach Openings. State-listed and special status shorebird species are known to be active at night (Staine and Burger 1994; Majka and Shaffer 2008), and chick and fledging response to vehicles can increase their vulnerability to ORVs (USFWS 1996). As a result, continuing to close the Seashore at night to all non-essential ORV traffic and not reopening it until 7:00 a.m. from May 1 to November 15 would continue to provide long-term, beneficial impacts on state listed shorebirds because it would reduce the potential disturbance from ORVs during nesting, resting, and foraging behaviors and possible mortality.

Seasonal Off-Road Vehicle Routes. As discussed in the ORV EIS, ORV and other recreational activities have the potential to impact breeding, resting, and foraging shorebirds from vehicle use and associated noise and presence of people and pets. Vehicular or pedestrian disturbance can cause nesting birds to flush from their nests, exposing eggs to predators or excessive temperatures. Impacts on foraging birds could instigate the birds to engage in frequent escape flights, reducing their time foraging and their ability to add the body fat needed for migration (Tarr 2008). Designation 12.7 miles of seasonal ORV routes would continue to reduce pressure from recreational activities on state-listed and special status shorebirds and would continue to provide long-term, beneficial impacts because the closures would overlap with the time that these species are at the Seashore. Additionally, continuing to survey and monitor for state-listed and special status species and establishing prenesting closures and buffers around suitable habitat, nesting adults and unfledged chicks would reduce impacts from ORVs and pedestrians and provide continued long-term, beneficial impacts. Not only would the seasonal ORV routes continue to reduce direct disturbance from ORVs when they are vehicle free, but they also would indirectly protect the shorebirds by protecting their food source. A 3-year study on Cape Cod and Fire Island New York (Kluft and Ginsberg 2009) found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Because American oystercatchers, colonial waterbirds, and Wilson's plover feed on invertebrates in the wrack line, protecting the wrack line from ORV traffic continues to provide long-term benefits to these species.

Vehicle-Free Areas. Similar to the timeframe when seasonal ORV routes are vehicle free, the 26.4 miles of year-round VFAs under the no-action alternative would continue to provide long-term, beneficial impacts on state-listed and special status shorebird species by reducing pressure on the species from recreational activities and by protecting the wrack line and the invertebrates inhabiting the wrack line that provide a source of food for the birds. Use of the routes that remain open to year-round ORV access would continue to have long-term, minor to moderate, adverse impacts from disturbance from vehicles and their occupants, as summarized under "Seasonal Off-Road Vehicle Routes," above, and fully described in the ORV FEIS.

Access Improvements. No access improvements would be implemented under the no-action alternative, so there would be no impacts to state-listed and special status shorebird species.

ORV Permit Lengths. The continued use of the 7-day and annual ORV permit would have no impact on American oystercatchers, colonial waterbirds, or Wilson's plover.

Cumulative Impacts

Other past, present, and future planned actions within and around the Seashore have potential to impact the population of state-listed and special status shorebirds at the Seashore.

Under the 2015 Review and Adjustment of Wildlife Buffers EA/FONSI, ORV and pedestrian buffers for state-listed and special status shorebirds would generally be reduced in size. With the addition of ORV

corridors, pedestrians and/or ORVs would be in closer proximity to the birds. While intensive monitoring would help offset some of the increased adverse impacts from the potential increased disturbance from ORVs and pedestrians, impacts from reducing the buffer sizes and adding ORV corridors would be long term, minor to moderate, and adverse.

Several beach nourishment projects would contribute cumulative impacts, including nourishment of 3 miles of Buxton beaches along NC-12, 1.6 miles near Duck, 3.8 miles near Kitty Hawk, and 2.6 miles near Kill Devil Hills. These projects may have short-term, negligible to minor impacts on state-listed and special status species because the dredging and placement of sand could disrupt shorebird nesting, foraging, and/or resting in areas where beach nourishment would occur. There also would be long-term, beneficial impacts as a result of the creation of more nesting and resting habitat (a wider dry beach) and more foraging habitat (a lower slope intertidal beach).

The Bonner Bridge replacement project would occur within the Seashore. An EIS and biological opinion for this project found that, "the proposed replacement of the Bonner Bridge… as proposed, is not likely to jeopardize the continued existence of these species [including piping plover], and is not likely to destroy or adversely modify proposed critical wintering habitat for the piping plover." Since state-listed and special status species have similar behaviors and occupy similar habitats as piping plovers, given the findings on piping plover, this project would be expected to result in short-term, negligible, adverse impacts on state-listed and special status species.

Most of the additional access improvements discussed in the ORV FEIS and 2013 Proposal to Facilitate Additional Public Beach Access EA would impact areas landward of the primary dune line. These areas are not habitat for state-listed and special status species; therefore, there would be no impact to these species. New ORV ramps and boardwalks would extend seaward of the primary dune line into areas where these species could nest and/or rest. However, monitoring and surveying measures would still be conducted by Seashore staff, and prenesting closures and buffers around suitable habitat, nesting adults and unfledged chicks would still be put into place, as appropriate, minimizing potential impacts from the access improvements. Therefore impacts would be long term, negligible, and adverse.

When combined with the continued long-term benefits and minor to moderate, adverse impacts under the no-action alternative, overall cumulative impacts on state-listed and special status species would be long term, minor to moderate, and adverse. The no-action alternative would contribute a noticeable incremental impact to overall cumulative impacts from continued ORV use.

Conclusion

Continuing to keep beaches closed to non-essential ORV use until 7:00 a.m. and designating seasonal ORV route closures and year-round VFAs would continue to provide long-term, beneficial impacts on state-listed and special status species. Use of the routes that remain open to year-round ORV access would continue to have long-term, minor to moderate, adverse impacts from disturbance from vehicles and their occupants. No access improvements would be implemented, so no impacts would occur and the duration of ORV permits does not impact these species.

Overall cumulative impacts on state-listed and special status species would be long term, minor to moderate, and adverse. The no-action alternative would contribute a noticeable adverse impact to overall cumulative impacts.

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Morning Beach Openings. Under all action alternatives, closing the Seashore at night to all non-essential ORV traffic would provide long-term, beneficial impacts on state-listed and special status species by preventing disturbance from ORVs during nighttime and early morning hours. Opening priority routes to ORV use up to an hour earlier under any of the action alternatives would have negligible impacts on state-listed and special status species because (1) resource closures, including prenesting closures and buffers protecting nesting adults and unfledged chicks would still be in place, as appropriate; (2) a limited area of Seashore beaches would be impacted; and (3) the amount of additional time that ORVs would have access to those beaches would be small. Any impacts from the disturbance from ORV presence during the small amount of additional time allowed would be well within the range of natural variability for the shorebird species that might be present on the beaches and would have no measurable effects on the species.

Seasonal Off-Road Vehicle Routes. Extending the seasonally designated ORV routes in front of the villages and Ocracoke campground by two weeks (alternatives 1 and 2) or four weeks (alternative 3) in the spring and fall would have long-term, negligible to minor, adverse impacts on state-listed and special status species because there could be occasional responses by some birds and small changes to local numbers could occur. Based on the 2014 annual survey reports that summarize nesting locations from 2009 to 2014 (NPS 2014c, 2015h, 2015i), American oystercatchers, Wilson's plover, and colonial waterbirds generally are not found nesting in these areas. However, they may forage along the intertidal area and encounter disturbance from ORVs. While not expected to nest in these areas, continuing to establish prenesting closures, as appropriate, by March 15 for American oystercatchers and Wilson's plover and establishing buffers around birds found to be scraping or nesting would help protect any birds that may use these areas to nest prior to April 14 (alternatives 1 and 2) or April 30 (alternative 3) when the areas would close to ORV use.

Vehicle-Free Areas – Ramps 2 and 59. Extending the year-round ORV routes to Ramp 2 and Ramp 59 would have long-term, negligible to minor, adverse impacts on state-listed and special status species because there could be occasional responses by some birds and small changes to local numbers could occur. While these actions would potentially expose American oystercatchers, Wilson's plover, and colonial waterbirds to disturbance from ORVs, based on the 2014 annual survey reports that summarize nesting locations from 2009 to 2014 (NPS 2014c, 2015h, 2015i), these species generally are not found nesting in these areas. However, they may forage along the intertidal area and encounter disturbance from ORVs. While not expected to nest in the areas, continuing to establish prenesting closures, as appropriate, by March 15 for American oystercatchers and Wilson's plover and establishing buffers around birds found to be nesting would help protect any birds that may use these areas. Higher ORV traffic in these areas could result in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area that species could feed on, as described under the no-action alternative. However, given the relatively small area that could be impacted, the indirect impacts on the shorebird species likely would be negligible.

Access Improvements – Ocracoke Island. Under all action alternatives, the access improvements on Ocracoke Island would be limited to the soundside of Ocracoke Island and would have no impacts on state-listed and special status species along the ocean beaches. Improving Devil Shoals Road and formalizing a road where an existing disturbed vehicle pathway already exists to access Bitter Wash Creek would not impact state-listed and special status species habitat, nor would the construction of the parking areas proposed for these locations.

ORV Permit Lengths. Assuming that the number of ORVs remains about the same under any permitting scenario, the duration of an ORV permit generally has no impact on state-listed and special status

shorebird populations. However, it is possible that a 3-day permit, as included under alternative 3, may increase visitation on weekends, though it is not known if an actual increase would occur and if it did, to what extent. If any increase were to occur with a 3-day permit, it is likely it would be dispersed throughout the Seashore and well within the Seashore's carrying capacity limits such that any disturbance to state-listed and special status shorebird species would be negligible and well within the natural range of variability expected. Therefore, under all action alternatives, there would be no impacts, or possibly negligible impacts under alternative 3, related to ORV permit lengths.

ALTERNATIVE 1

Analysis

All impacts under alternative 1 would be the same as those described under "Impacts Common to All Action Alternatives," above.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 1 would be identical to those described for the no-action alternative. When combined with the long-term, negligible to minor, adverse impacts on state-listed and special status species under alternative 1, overall cumulative impacts on these species would be long term, minor to moderate, and adverse. Alternative 1 would contribute minimally to overall cumulative impacts as a result of the small areas of change Seashore-wide and the continued use of species protection buffers.

Conclusion

Continued establishment of prenesting closures and buffers around suitable habitat, nesting adults and unhatched fledglings would help protect state-listed and special status species from additional impacts caused by opening priority routes to ORV use at 6:30 a.m. and from the extension of the seasonal ORV routes periods. The small area of beach impacted by the early morning opening of priority routes and the short amount of additional time that ORVs would be able to access theses beaches also would minimize any additional impacts. The addition of 1 mile of year-round ORV routes at Ramps 2 and 59 would result in direct impacts from disturbance by ORVs and indirect impacts from driving over the wrack line and reducing the invertebrate population, resulting in long-term, negligible to minor, adverse impacts. Access improvements would occur only on the soundside of Ocracoke Island and would not impact state-listed and special status species habitat. Changes to the duration of ORV permits would not affect these species. Overall cumulative impacts on state-listed and special status species would be long term, minor to moderate, and adverse. Alternative 1 would contribute minimally to overall cumulative impacts as a result of the small areas of change Seashore-wide and the continued use of species protection buffers.

ALTERNATIVE 2

Analysis

Vehicle-Free Areas. When combined with the impacts from the extension of year-round ORV routes to Ramps 2 and 59, changes to VFAs under alternative 2 would have long-term, minor, adverse impacts on state-listed and special status species because there could be occasional responses by some birds. Impacts would be minor because interference during reproduction would not affect population levels, and sufficient habitat would remain to maintain a sustainable population. Extending the seasonal ORV routes at Ramp 23 by 1.5 mile to the south and at Ramp 34 by 1 mile to the north would have long-term, minor, adverse impacts on state-listed and special status species because there could be occasional responses by some birds and small changes to local numbers could occur. The 2014 annual survey reports for

American oystercatcher, Wilson's plover, and colonial waterbirds that summarize nesting locations from 2009 to 2014 (NPS 2014c, 2015h, 2015i), indicate that American oystercatcher and colonial waterbirds have been found nesting in areas south of Ramp 23 and north of Ramp 34. Opening these previously VFAs to seasonal ORV use would bring ORVs closer to the birds and possibly cause disturbance during nesting, resting, or foraging behavior. However, surveying, monitoring, and establishing prenesting closures for American oystercatchers by March 15 and by April 14 for colonial waterbirds would still occur and help protect the species from impacts until those areas are closed for ORV use after April 30. Indirect impacts also would occur from ORV impacts on beach invertebrates in the wrack line, as described for the no-action alternative.

In addition to the areas noted above, Ramp 45 also would be opened to year-round use as a park road. Most of Ramp 45 is behind the primary dune line and is not considered nesting habitat for American oystercatcher, Wilson's plover, or colonial waterbirds. For those seaward areas of the ramp that do provide habitat for the species, any birds present would be adequately protected by continuing to survey and monitor for the species and establishing prenesting closures and buffers around adults and unfledged chicks, as appropriate.

Access Improvements. In addition to the soundside access improvements on Ocracoke Island, under alternative 2, the additional access improvement of extending the ORV bypass road north to Ramp 44 would have long-term, negligible, adverse impacts on state-listed and special status species. The impact would be negligible because the area impacted would be relatively small and surveying and monitoring for species would continue, as would establishing prenesting closures and buffers around suitable habitat, nesting adults and unfledged chicks, as appropriate, which would greatly reduce potential impacts experienced from ORVs. Impacts would not be noticeable and would be well within the natural range of variability. The proposed additional parking area at Ramp 45 would not occur in habitat used by state-listed and special status species, so there would be no impacts. While more visitors may park and access Cape Point from this parking area, with 15 to 20 spaces, this would result in only a small increase in the number of pedestrians accessing the beach at different times, and any additional disturbance as a result of noise or physical presence would result in negligible, adverse impacts on state-listed and special status species in the area that would still be protected by resource closures and buffers, as appropriate.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 2 would be identical to those described for the no-action alternative. When combined with the long-term, negligible to minor, adverse impacts on state-listed and special status species under alternative 2, overall cumulative impacts on these species would be long term, minor to moderate, and adverse. Alternative 2 would contribute minimally to overall cumulative impacts as a result of the small areas of change Seashore-wide and the continued use of species protection buffers.

Conclusion

Continued establishment of prenesting closures and buffers around suitable habitat, nesting adults and unhatched fledglings would help protect state-listed and special status species from additional impacts caused by opening priority routes to ORV use as early as 6:00 a.m. and from the extension of the seasonal ORV routes periods. Converting 0.5 mile of VFA to year-round ORV routes at both Ramps 2 and 59, allowing year-round use of Ramp 45, and converting a total of 2.5 miles of VFA to seasonal ORV routes south of Ramp 23 and north of Ramp 34 would result in potential direct impacts from disturbance by ORVs and indirect impacts from driving over the wrack line and reducing the invertebrate population, resulting in long-term, negligible to minor, adverse impacts. Access improvements that would occur on the soundside of Ocracoke Island would not impact state-listed and special status species habitat.

Extending the bypass road north to Ramp 44 would result in long-term, negligible, adverse impacts. Changes to the duration of ORV permits and construction of a parking area at Ramp 45 would have no impact on these species, and any small increase in pedestrian use of the beach adjacent to the parking area only would result in long-term, negligible, adverse impacts. Overall cumulative impacts on state-listed and special status species would be long term, minor to moderate, and adverse. Alternative 2 would contribute minimally to overall cumulative impacts as a result of the small areas of change Seashore-wide and the continued use of species protection buffers.

ALTERNATIVE 3

Analysis

Vehicle-Free Areas. When combined with the impacts from the extension of year-round ORV routes to Ramps 2 and 59, changes to VFAs under alternative 3 would have long-term, minor, adverse impacts on state-listed and special status species because there could be occasional responses by some birds. Similar to alternative 2, impacts would be minor because interference during reproduction would not affect population levels and sufficient habitat would remain to maintain a sustainable population. State-listed and special status species have been found to nest in the areas south of Ramp 23 and north of Ramp 34 that would be converted from VFAs to seasonal ORV routes. Similar to alternative 2, while these species could be impacted by ORVs during the early nesting season, continuing to survey and monitor for birds, as well as continuing to establish prenesting closures for American oystercatchers and Wilson's plover by March 15 and by April 14 for colonial waterbirds, would help protect the species and minimize potential impacts. Higher ORV traffic in these newly opened ORV use areas could also result in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates and indirectly impacting the shorebirds that feed on them. Any birds present at Ramp 45 would be adequately protected by continuing to survey and monitor for the species and establishing prenesting closures and buffers around suitable habitat, nesting adults and unfledged chicks, as appropriate.

Access Improvements. Impacts would be the same as those described for alternative 2, resulting in long-term, negligible, adverse impacts on state-listed and special status species given the relatively small area impacted. The proposed additional parking area at Ramp 45 would not occur in habitat used by state-listed and special status species, so there would be no impacts.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 3 would be identical to those described for the no-action alternative. When combined with the long-term, negligible to minor, adverse impacts on state-listed and special status species under alternative 3, overall cumulative impacts on these species would be long term, minor to moderate, and adverse. Alternative 3 would contribute minimally to overall cumulative impacts as a result of the small areas of change Seashore-wide and the continued use of species protection buffers.

Conclusion

Continued establishment of prenesting closures and buffers around suitable habitat, nesting adults and unhatched fledglings would help protect state-listed and special status species from additional impacts caused by opening priority routes to ORV use at 6:00 a.m. and from the extension of the seasonal ORV routes periods. Converting 0.5 mile of VFA to year-round ORV routes at both Ramps 2 and Ramp 59, allowing year-round use of Ramp 45, and converting a total of 3.5 miles of VFA to seasonal ORV routes south of Ramp 23 and north of Ramp 34 would result in potential direct impacts from disturbance by ORVs and indirect impacts from driving over the wrack line and reducing the invertebrate population, resulting in long-term, negligible to minor, adverse impacts. Changes proposed for access improvements

on the soundside of Ocracoke Island would not impact state-listed and special status species habitat. Extending the bypass road to Ramp 44 would result in long-term, negligible, adverse impacts. The proposed additional parking area at Ramp 45 would not occur in habitat used by state-listed and special status species, so there would be no impacts. Any small increase in pedestrian use of the beach adjacent to the parking area only would result in long-term, negligible, adverse impacts. Changes to the duration of ORV permits would have no impact to negligible impacts on these species. Overall cumulative impacts on state-listed and special status species would be long term, minor to moderate, and adverse. Alternative 3 would contribute minimally to overall cumulative impacts as a result of the small areas of change Seashore-wide and the continued use of species protection buffers.

NON-LISTED SHOREBIRDS

ASSUMPTIONS, METHODOLOGY, AND INTENSITY DEFINITIONS

Methodology and Assumptions. The following describes the methodology used to evaluate the impacts of the proposed alternatives on non-listed shorebirds at the Seashore. As noted in chapter 1, other wildlife species were not carried forward for analysis because impacts would not occur (aquatic species) or the species would not be found in areas affected by the alternatives (mammals), or impacts would be negligible and similar for all alternatives discussed (invertebrates). Therefore, this topic focuses on non-listed shorebird species (those not state or federally protected or species of special concern). These birds use many of the same habitats as the protected bird species addressed in this EA and contribute to its status as a Globally Important Bird area; many are migratory species.

Information about habitats and other existing data were acquired from the ORV EIS, staff at the Seashore, and available literature. For each alternative, impacts were evaluated based on the potential for the species to be present in areas that would be affected by the proposed changes, the distribution of ORV and pedestrian use, and the disturbance potential of the action. The information in the analysis was obtained through review of the ORV EIS and through best professional judgment of the authors and reviewers.

Intensity Definitions. The following intensity definitions for evaluating impacts on shorebirds were developed from the definitions used for wildlife in the ORV FEIS.

Negligible: There would be no observable or measurable impacts on shorebirds, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.

Minor Adverse: Impacts on shorebirds, their habitats, or the natural processes sustaining them would be detectable, but would not be outside the natural range of variability. Occasional responses by some individuals to disturbance could be expected, but without interference to feeding, reproduction, resting, or other factors affecting population levels. Small changes to local population numbers, population structure, and other demographic factors might occur. However, some impacts might occur during critical reproduction periods for a species, but would not result in injury or mortality. Sufficient habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.

Moderate Adverse: Impacts on shorebirds, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Frequent responses by some individuals to disturbance could be expected, with some negative impacts on feeding, reproduction, resting, or other factors affecting local population levels. Some impacts might occur during critical periods of reproduction or in key habitats in the Seashore and result in harassment, injury, or mortality to one or more individuals. However, sufficient population numbers and habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.

Major Adverse: Impacts on shorebirds, their habitats, or the natural processes sustaining them would be detectable, would be expected to be outside the natural range of variability, and would be permanent. Frequent responses by some individuals to disturbance would be expected, with negative impacts on feeding, reproduction, or other factors resulting in a decrease in Seashore population levels or a failure to restore levels that are needed to maintain a sustainable population in the Seashore. Impacts would occur during critical periods of reproduction or in key habitats in the Seashore and result in direct mortality or loss of habitat. Local population numbers, population structure, and other demographic factors might experience large declines.

Duration: Short-term effects would be one to two breeding seasons.

Long-term effects would be anything beyond two breeding seasons

Study Area. The study area for assessment of the various alternatives is the Seashore boundary. The study area for the cumulative impacts analysis is the Seashore plus the adjacent lands outside of the Seashore boundaries on Bodie, Hatteras, and Ocracoke Islands.

NO-ACTION ALTERNATIVE

Analysis

Morning Beach Openings. Under the no-action alternative, beaches would continue to open to ORV use at 7:00 a.m. Closing the Seashore at night to all non-essential ORV traffic and not reopening it until 7:00 a.m. would continue to provide long-term, beneficial impacts on shorebirds by preventing disturbance from ORVs during nighttime and early morning hours. There would be no new impacts on non-listed shorebirds under the no-action alternative.

Seasonal Off- Road Vehicle Routes. There would be no new impacts on non-listed shorebirds under the no-action alternative. However, many shorebird species are present at the Seashore during their wintering and migration periods, which overlap with when the seasonal and year-round ORV routes are open to ORV use. As discussed in the ORV EIS, ORV and other recreational activities have the potential to impact resting and foraging birds from vehicle use and associated noise and presence of people and pets. Vehicular or pedestrian disturbance to foraging shorebird species could instigate the birds to engage in frequent escape flights, reducing their time foraging and their ability to add the body fat they need for migration (Tarr 2008).

Having 12.7 miles of seasonal ORV routes that would be closed to ORVs from April 1 to October 31 in front of the villages and Ocracoke campground and from March 15 to September 14 on a portion of Bodie Island Spit would continue to reduce pressure from recreational activities on shorebirds that are present during that period and continue to provide long-term, beneficial impacts. However, during the timeframe when these areas are seasonally open to ORV use, impacts on shorebirds and their habitat would continue

to be long term, minor, and adverse because there would be detectable effects such as occasional responses to noise or human presence; however, any response would be within the natural range of variability and would not affect shorebird population levels.

Vehicle-Free Areas. The 26.4 miles of year-round VFAs under the no-action alternative would continue to provide long-term, beneficial impacts on invertebrates and shorebird species. The year-round VFAs would continue to reduce pressure on shorebird species from ORV impacts. Besides directly protecting shorebirds, VFAs also would indirectly benefit them. Because many shorebirds feed on invertebrates in the wrack line and intertidal areas, protecting invertebrates in these areas from ORV traffic also provides benefits to shorebird species. Use of the routes that remain open to year-round ORV access would continue to have long-term, minor, adverse impacts from disturbance from vehicles and their occupants, as described in the ORV FEIS.

Access Improvements. Under the no-action alternative, no additional access improvements would be built; therefore, no impacts on shorebirds on the Seashore would occur from construction or additional access.

ORV Permit Lengths. Continued use of a 7-day permit and annual permit issued by calendar year would not affect ORV use and therefore would have no impact on shorebirds.

Cumulative Impacts

Past, present, and future planned actions within the Seashore have the potential to impact shorebird species. Under the 2015 Review and Adjustment of Wildlife Buffers EA/FONSI, ORV and pedestrian buffers for federally and state-listed and special status shorebirds were generally reduced in size and additional ORV corridors added, placing pedestrians and/or ORVs in closer proximity to the birds. Some of the shorebirds, such as willet and sanderling, inhabit the same beach environment and could be affected by the increase in activity, but it is not expected that the change in buffers would have any appreciable effect on these birds. Impacts from reducing the buffer sizes and adding ORV corridors would therefore be long term and negligible.

Several beach nourishment projects would contribute cumulative impacts, including nourishment of 3 miles of Buxton beaches along NC-12, 1.6 miles near Duck, 3.8 miles near Kitty Hawk, and 2.6 miles near Kill Devil Hills. These projects may have short-term, negligible to minor, adverse impacts on bird species that use the shoreline because the dredging and placement of sand would disrupt foraging and resting areas and could disturb birds that may be nesting in this area; buffers may be required during construction for bird protection. There would also be long-term, beneficial impacts by creating more nesting and resting habitat (a wider dry beach) and more foraging habitat (a lower slope intertidal beach).

The EIS and biological opinion for the Bonner Bridge project found that, "the proposed replacement of the Bonner Bridge… as proposed, is not likely to jeopardize the continued existence of these species [including piping plover], and is not likely to destroy or adversely modify proposed critical wintering habitat for the piping plover (FHWA 2007)." Given the findings on piping plover and the fact that many shorebirds occupy similar habitats as wintering piping plovers, this project would be expected to result in short-term, negligible, adverse impacts on shorebirds because they would readily recover from any temporary adverse impacts during the construction phase of the project.

Most of the additional access improvements discussed in the ORV EIS and 2013 Proposal to Facilitate Additional Public Beach Access EA would impact areas landward of the primary dune line. These areas are not habitat for the shorebird species considered; therefore, there would be no impacts in these areas. New ORV ramps and boardwalks would extend seaward of the primary dune line into areas where these

species could nest and/or rest. Impacts in these areas would occur from disturbance and disruption of birds, but areas of important habitat for shorebirds would not be lost, and populations would not be noticeably affected, so impacts would be short term, minor, and adverse.

When combined with the continued long-term, beneficial and long-term, minor adverse impacts under the no-action alternative, overall cumulative impacts on non-listed shorebirds would be long term, negligible to minor, and adverse. The no-action alternative would contribute a small incremental impact to overall cumulative impacts from the detectable effects such as occasional responses to noise or human presence from ORVs on the beach.

Conclusion

Continuing to keep beaches closed to non-essential ORV use until 7:00 a.m., and designating seasonal ORV route closures and year-round VFAs would continue to provide long-term, beneficial impacts on non-listed shorebirds. Opening seasonal ORV routes during the fall and winter months and ongoing use of year-round ORV routes would continue to result in minor, adverse impacts on migrating and wintering shorebirds that are present at that time. No new access improvements would be implemented, so no impacts would occur from construction or increased access. Additionally, continuing a 7-day duration of ORV permits would not impact these species. Overall cumulative impacts would be long term, negligible to minor, and adverse. The no-action alternative would contribute a small incremental impact to overall cumulative impacts.

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Morning Beach Openings. Under all alternatives, closing the Seashore at night to all non-essential ORV traffic and not reopening it until after sunrise would provide long-term, beneficial impacts on non-listed shorebirds by preventing disturbance from ORVs during nighttime and early morning hours. Opening priority routes to ORV use up to an hour earlier under any of the action alternatives would have negligible impacts because of the limited area of Seashore beaches impacted and the very small amount of additional time that ORVs would have access to those beaches. Any impacts from the disturbance from ORV presence during the small amount of additional time allowed would be well within the range of natural variability for shorebirds that might be present on the beaches and would have no measurable effects on the species.

Vehicle-Free Areas – Ramp 2 and 59. All action alternatives would result in the conversion of 1 mile of existing vehicle-free areas to year-round ORV routes near Ramp 2 and Ramp 59. Extending the year-round ORV route north of Ramp 4 by 0.5 mile to Ramp 2 and the year-round ORV route north of Ramp 63 by 0.5 mile to Ramp 59 would have long-term, negligible to minor, adverse impacts on shorebird species. While opening these areas to ORV use potentially would expose shorebirds to disturbance from ORVs, the area being opened to ORV use is relatively small and it is in areas adjacent to other suitable habitat that is vehicle-free and could be readily used by the birds. Because shorebirds use the same habitat as protected species, surveying and prenesting closures and other resource closures in these areas would provide some protection for shorebird species. However, that protection would be minimized by the fact that many resource closures are not in place when migrating or wintering shorebirds are present at the Seashore. Overall, the impacts would be detectable but would not result in any population level impacts.

Access Improvements – Ocracoke Island. Under all action alternatives, access improvements include improving soundside access on Ocracoke Island. Long-term, negligible, adverse impacts on shorebirds in the Seashore would occur because most of the habitat that would be developed into roads and parking areas is not in areas frequented by resting or foraging shorebirds, but is in areas leading from NC-12 to the soundside shoreline. Short-term, minor, adverse impacts on birds resting or foraging along nearby

soundside shoreline could occur from the noise during construction because noise could cause occasional responses if it carries offsite toward the shoreline.

ORV Permit Lengths. Assuming that the number of ORVs remains about the same under any permitting scenario, the duration of an ORV permit generally has no impact on shorebird populations. However, it is possible that a 3-day permit, as included under alternative 3, may increase visitation on weekends, though it is not known if an actual increase would occur and if it did, to what extent. If any increase were to occur with a 3-day permit, it is likely it would be dispersed throughout the Seashore and well within the Seashore's carrying capacity limits such that any disturbance to shorebirds would be negligible and well within the natural range of variability expected. Therefore, under all action alternatives, there would be no impacts, or possibly negligible impacts under alternative 3, related to ORV permit lengths.

ALTERNATIVE 1

Analysis

Seasonal Off-Road Vehicle Routes. Under alternative 1, there would be an additional two weeks of ORV access in the fall and spring to the seasonally designated ORV routes in front of the Villages and Ocracoke campground. This would result in an increase in disturbance to shorebirds in those areas from the use of vehicles for an additional two weeks. The majority of the Seashore's non-listed shorebirds are wintering or migratory. Any migratory birds that still may be present during these additional two weeks would experience additional disturbance from vehicle use and associated noise and presence of people and pets, resulting in long-term, negligible to minor, adverse impacts. Other shorebirds that breed in the Seashore generally do not nest as early as April. However, if staff notices earlier shorebird breeding activity during resources surveys, prenesting closures would be established. Therefore, an additional two weeks of ORV use in April would be expected to have negligible impacts on breeding, non-listed shorebirds. Overall, seasonal ORV route extensions would have negligible to minor, adverse impacts on non-listed shorebirds because impacts would be detectable but would not have population-level effects.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 1 would be identical to those described for the no-action alternative. When combined with the long-term, negligible to minor, adverse impacts of alternative 1, overall cumulative impacts on non-listed shorebirds would be short and long term, negligible to minor, and adverse. Alternative 1 would contribute minimal impacts to the overall cumulative impacts because the additional time or area opened to ORV use would only slightly increase the disturbance from noise or human presence from ORVs on the beach.

Conclusion

There would be long-term, negligible to minor, adverse impacts on non-listed shorebirds from seasonal ORV route usage, changes in VFAs, and access improvements. Additionally, there could be short-term, minor, adverse impacts on shorebirds from access improvements as a result of construction noise. Negligible, adverse impacts from a change in morning beach openings and no impacts from a change in ORV permit lengths are anticipated. Overall cumulative impacts on non-listed shorebirds would be short and long term, negligible to minor, and adverse. Actions under alternative 1 would contribute minimal impacts to the overall cumulative impacts.

ALTERNATIVE 2

Analysis

Seasonal Off-Road Vehicle Routes. Proposed actions relating to seasonal ORV routes and associated impacts under alternative 2 would be the same as those described under alternative 1.

Vehicle-Free Areas. Under alternative 2, extending the year-round ORV routes at Ramp 2 and 59 would be the same as described under "Impacts Common to all Action Alternatives." In addition to the extension of the year-round ORV routes at Ramp 2 and 59, described under "Impacts Common to All Action Alternatives," alternative 2 would redesignate existing VFAs to seasonal ORV routes at Ramp 23 by 1.5 miles to the south and at Ramp 34 by 1 mile to the north. Additional ORV access would result in an increase in disturbance to shorebirds from human and vehicle presence and noise and would have long-term, minor, adverse impacts on shorebirds that may be using this area. Opening these existing VFAs to seasonal ORV use would bring ORVs closer to birds and possibly cause disturbance during resting and/or foraging behavior, although any resource closures in place for listed species in these areas would provide some protection for non-listed shorebirds present during that time as well. Designating Ramp 45 as a park road would have long-term, negligible, adverse impacts on shorebirds because most of the ramp is behind the primary dune line where these species do not occur; no noticeable increase in visitation is expected from this designation.

Access Improvements. In addition to the impacts from the soundside access improvements under alternative 2, the additional access improvement of extending the ORV bypass road on Cape Point 0.4 mile north to Ramp 44 would have long-term, negligible, adverse impacts on shorebirds; there would be no measurable effects because of the relatively small area impacted and its location behind the main dune line. The construction of the parking area at Ramp 45 would not occur in habitat used by shorebirds, so there would be no impacts. More visitors may park and access Cape Point from this parking area, but with only 15 to 20 spaces, this would result in only a small number of pedestrians accessing the beach at different times, and any additional disturbance due to noise or physical presence would result in negligible, adverse impacts on shorebirds in the area.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 2 would be identical to those described for the no-action alternative. When combined with the long-term, negligible to minor, adverse impacts of alternative 2, overall cumulative impacts on non-listed shorebirds would be short and long term, negligible to minor, and adverse. Actions under alternative 2 would contribute minimal impacts to overall cumulative impacts because the additional time or area opened to ORV use would only slightly increase the disturbance from noise or human presence from ORVs on the beach.

Conclusion

Long-term, negligible to minor, adverse impacts on non-listed shorebirds would occur from seasonal ORV route usage, changes in VFAs, and access improvements. Additionally, there could be short-term, minor, adverse impacts on birds using the nearby soundside shoreline from access improvements as a result of construction noise. No or negligible impacts from a change in morning beach openings or ORV permit lengths are anticipated. Cumulative impacts on non-listed shorebirds would be short and long term, negligible to minor, and adverse. Actions under alternative 2 would contribute minimal impacts to overall cumulative impacts.

ALTERNATIVE 3

Analysis

Seasonal Off-Road Vehicle Routes. Adding four weeks of seasonal ORV access in the fall and spring in areas in front of the villages and Ocracoke campground would result in an increase in disturbance to shorebirds in the area from the presence of vehicles and their occupants during that additional time, resulting in long-term, adverse impacts on shorebirds that may be present on the beaches during October or April. Up to minor impacts on shorebirds could occur because there likely would be occasional response and small changes to local numbers due to disturbance of foraging or resting migratory and wintering birds that are present on the beach. As noted under alternative 1, non-listed shorebirds that breed at the Seashore would be expected to nest later than April, and surveys would serve to protect any that show breeding activity sooner, so little impact on breeding non-listed shorebirds would occur from this extension of time. Establishing buffers around any listed species that may be using these areas would also protect non-listed species that may nest in or near these areas prior to April 30. Overall, seasonal ORV routes extensions would have negligible to minor, adverse impacts on non-listed shorebirds, although slightly greater than under alternative 1 because of the additional weeks of potential exposure to ORV use.

Vehicle-Free Areas. Under alternative 2, extending the year-round ORV routes at Ramp 2 and 59 would be the same as described under "Impacts Common to all Action Alternatives." Under alternative 3, approximately 3.5 miles of seasonal ORV routes would be added to the Seashore. Impacts would be the same as those described for alternatives 1 and 2; additional ORV access would result in an increase in disturbance to shorebirds from human and vehicle presence. Impacts would be long term and minor because disturbance of any non-listed species on beaches in these areas would be infrequent and would result in only small changes in local populations that may be displaced to other nearby beaches. However, given the larger area impacted, the overall impacts would be slightly greater than those occurring under alternatives 1 and 2. Similar to alternative 2, designating Ramp 45 as a park road would have long-term, negligible, adverse impacts on shorebirds because most of the ramp is behind the primary dune line where these species do not occur, and no increase in ORV use is expected based on this designation.

Access Improvements. Under alternative 3, access improvements would be the same as those described under alternative 2, resulting in long-term, negligible, adverse impacts on shorebirds.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 3 would be identical to those described for the no-action alternative. When combined with the long-term, negligible to minor, adverse effects under alternative 3, overall cumulative impacts on non-listed shorebirds would be short and long term, minor, and adverse. Actions under alternative 3 would contribute a small but noticeable impact to overall cumulative impacts because the additional time or area opened to ORV use would add a small increase to the disturbance from noise or human presence from ORVs on the beach over a larger area than the other alternatives considered.

Conclusion

There would be long-term, negligible to minor, adverse impacts on non-listed shorebirds from seasonal ORV route usage, changes in VFAs, and access improvements, with slightly greater impacts than under alternative 2 because of the additional time and area of ORV access proposed. Additionally, there could be short-term, negligible, adverse impacts on birds using the nearby soundside shoreline from access improvements as a result of construction noise. No impacts from a change in morning beach openings are expected, and no or negligible impacts from a change in ORV permit lengths are anticipated. Cumulative

impacts on non-listed shorebirds would be short and long term, minor, and adverse. Actions under alternative 3 would contribute a small but noticeable impact to overall cumulative impacts.

VISITOR USE AND EXPERIENCE

ASSUMPTIONS, METHODOLOGY, AND INTENSITY DEFINITIONS

Methodology and Assumptions. The potential for change in visitor experience was evaluated by assessing the limitations and assumed changes to visitor access and associated visitor uses, including ORV use, related to the proposed alternatives, and determining whether these projected changes would affect the visitor experience.

Intensity Definitions. The following intensity definitions for evaluating impacts on visitor use and experience were defined.

Negligible: Visitors likely would be unaware of impacts associated with proposed changes. There would be no noticeable change in visitor use and experience or in any defined indicators of visitor satisfaction or behavior.

Minor: Changes in visitor use or experience would be slight and detectable, but would not appreciably limit any critical characteristics of the visitor experience. Visitor satisfaction would remain stable.

Moderate: A few critical characteristics of the existing visitor experience would change, and the number of visitors engaging in a specified activity would be altered. Some visitors participating in that activity or visitor experience might be required to pursue their choices in other available local or regional areas. Visitor satisfaction at the Seashore would begin to either decline or increase.

Major: Many critical characteristics of the existing visitor experience would change, and visitor satisfaction would be substantially decreased. The number of visitors engaging in a specified activity would be substantially altered. Many visitors participating in an activity or visitor experience would not be able to pursue their choices in other local or regional areas.

Duration: Short-term impacts would occur sporadically throughout a year, but would generally last no more than three weeks per year.

Long-term impacts would occur more than three weeks per year and likely for consecutive years.

Study Area. The geographic study area for the visitor use and experience analysis as well as cumulative impacts includes the entire area within the Seashore boundary.

NO-ACTION ALTERNATIVE

Analysis

Morning Beach Openings. Under the no-action alternative, the current nighttime driving restrictions, including the time beaches are opened for ORV use in the morning, would not change. As discussed in the ORV FEIS, not allowing ORV use on beaches until 7:00 a.m. would continue to result in long-term,

minor, adverse impacts on ORV users because these visitors' experience would be limited by not being able to access the surf fishing areas at night or early morning. Visitors desiring a vehicle-free beach experience would continue to experience long-term, beneficial impacts as a result of fewer vehicles on the beach, enhancing their experience during that time.

Seasonal Off-Road Vehicle Routes. Under the no-action alternative, seasonal ORV routes in front of the villages and Ocracoke campground would continue to be in place from November 1 through March 31. As discussed in the ORV FEIS, these seasonal ORV routes would continue to provide pedestrian-only access during the high visitation periods, resulting in a continued beneficial impact on visitors desiring a vehicle-free experience. Seasonal ORV routes would continue to prevent ORV users from accessing the beaches in front of the villages and Ocracoke campground during peak visitor use periods, limiting their ability to engage in ORV use in these areas, resulting in continued long term, minor, adverse impacts.

Vehicle-Free Areas. Under the no-action alternative, both visitors desiring a vehicle-free experience and ORV users would continue to have access to the Seashore in the same locations that have been in place since 2012. As discussed in the ORV FEIS, 28 miles of beach would continue to be designated for ORV use year-round, 13 miles would be designated for seasonal ORV use, and 26 miles would be designated as vehicle free year-round. The restriction of ORV access to only the designated ORV routes would continue to have long-term, minor to moderate, adverse impacts on ORV users because they may not be able to access their preferred beaches and may choose to recreate in locations outside of the Seashore. The availability of 26 miles of VFAs would continue to have long-term, beneficial impacts on visitors desiring a vehicle-free beach experience.

Access Improvements. Under the no-action alternative, there would be no additional access improvements constructed within the Seashore. On Ocracoke Island, visitors and residents would continue to have no soundside access without an ORV permit, resulting in a long-term, minor, adverse impact on all visitors from the restricted ability to access the soundside of the island without purchasing an ORV permit.

ORV Permit Lengths. The no-action alternative would not alter the existing permit structure. While the 7-day permit has been beneficial for visitors to the Seashore, ORV users have voiced concern that the annual permit, issued by calendar year, does not make financial sense for longer-term visitors or those who buy a permit mid-year instead of at the beginning of the calendar year. The continued use of the existing permit structure does not meet the needs of some ORV users and would continue to result in long-term, negligible to minor, adverse impacts on visitor use and experience. There would be no impact on visitors desiring a vehicle-free experience because no permit is required for those areas.

Cumulative Impacts

Past, present, and future planned actions within the Seashore would have potential to impact visitor use and experience. Implementation of all of the elements included in the selected alternative in the ORV FEIS, including implementation of restrictions on ORV use such as nighttime driving restrictions, limitations on camping and beach fires, as well as the designation of VFAs and ORV routes, would continue to impact visitor use and experience. These elements would continue to result in long-term, negligible to moderate impacts as well as long-term, beneficial impacts on visitor experience. The Seashore has not experienced a decline in visitor use since implementation of the selected alternative under the ORV FEIS. Additional ongoing projects include modified wildlife buffers and the construction of 29 public beach access projects. Both of these projects have improved both pedestrian and ORV access along the Seashore, resulting in long-term, beneficial impacts. The Bonner Bridge replacement project and the beach nourishment projects may result in short-term, minor, adverse impacts on visitor experience during construction, but would improve Seashore access and beach quality in the long term, resulting in

beneficial impacts on visitor use and experience. Overall, the cumulative impact of these past, current, and future actions on visitor use and experience would be long term, negligible to moderate, adverse; long-term, beneficial; and short term, minor, and adverse.

When combined with the continued long-term, beneficial and long-term, negligible to moderate, adverse impacts under the no-action alternative, overall cumulative impacts on visitor use and experience would be long term, minor to moderate, adverse as well as long term, beneficial, depending on the visitor group. The no-action alternative would continue to contribute noticeable, beneficial and adverse, incremental impacts to overall cumulative impacts as part of the entire selected alternative under the ORV FEIS.

Conclusion

Impacts on visitor use and experience from continued 7:00 a.m. morning beach openings, seasonal ORV route periods, and the existing VFA locations would continue to result in long-term, beneficial impacts for visitors desiring a vehicle-free experience and long-term, minor to moderate, adverse impacts on ORV users. The continuation of the existing ORV permit system also would result in long-term, negligible to minor, adverse impacts on ORV users. No additional access improvements would continue to restrict soundside access on Ocracoke Island to only visitors with an ORV permit, resulting in continued long-term, minor, adverse impacts. Overall impacts on visitor use and experience under the no-action alternative would be continue to be long term, beneficial and long term, and negligible to moderate. Overall cumulative impacts on visitor use and experience would be long term, minor to moderate, adverse as well as long term, beneficial, depending on the visitor group. The no-action alternative would contribute noticeable, beneficial and adverse, incremental impacts to overall cumulative impacts as part of the entire selected alternative under the ORV FEIS.

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Vehicle-Free Areas – Ramp 2 and 59. Under all action alternatives, approximately 1 mile of existing VFA would be designated as year-round ORV routes. At Ramp 2, ORV users would experience a long-term, beneficial impact on visitor experience as a result of the additional year-round ORV route mileage and creation of a dual access point to the existing ORV route, improving access to the ORV route. Visitors desiring a vehicle-free experience at Ramp 2 may experience long-term, negligible to minor impacts on visitor experience as a result of the loss of a half mile of vehicle-free beach. However, there is an existing parking area at Ramp 2, and the VFA north of Ramp 2 is designated as a VFA for its ease of pedestrian access and visitor amenities, and it is not one of the VFAs aimed at providing a wilderness-like experience at the Seashore. Therefore, while pedestrians and ORVs may be closer together, visitor conflicts are not anticipated. The realignment of Ramp 2 would provide a separation of space between the start of the ORV route and the VFA and would ensure ORVs enter the beach with a clear sightline of pedestrians and travel the correct way down the shoreline.

At Ramp 59, the existing VFA would be shortened by approximately half a mile to allow the existing ORV route to extend to Ramp 59. There would be long-term, negligible to minor impacts on visitors desiring a vehicle-free experience; however, pedestrians would continue to have access to the northern tip of the island. From that location, no vehicles would be visible, and the VFA would continue to provide a wilderness-like experience. ORV users would experience long-term, beneficial impacts from the additional half mile of designated ORV route.

Access Improvements – Ocracoke Island. Access improvements under all action alternatives would include two projects aimed at improving visitor access to the soundside on Ocracoke Island. The existing ORV route at Devil Shoals Road (also known as Dump Station Road) would be improved to include a small parking area and an expanded roadway. Additionally, a small ORV route, parking area, and

pedestrian pathway would be constructed at Bitter Wash Creek, providing improved vehicle and pedestrian access to the soundside. At both locations, both areas would be designated as park roads, and an ORV permit would not be required. The parking areas, access road, pedestrian pathway, and the removal of an ORV permit requirement to access the soundside would provide long-term, beneficial impacts for both ORV and pedestrian visitors on Ocracoke Island who would like soundside access without the cost of an ORV permit. Visitor use would not be expected to increase Seashore-wide but likely would increase in these two locations.

ORV Permit Lengths – Annual Permit. Visitors have voiced concern that the annual permit, issued by calendar year, does not make financial sense for longer-term visitors or those who buy a permit mid-year instead of at the beginning of the calendar year. The implementation of the annual permit by date of issue under all action alternatives would resolve the public concerns and result in a long-term, beneficial impact on visitor use and experience. There would be no impact on visitors desiring a vehicle-free experience because no permit is required for those areas.

ALTERNATIVE 1

Analysis

Morning Beach Openings. Under alternative 1, ORV users would have access to priority routes at 6:30 a.m., which would allow for earlier morning fishing or sunrise viewing during the periods when nighttime driving is restricted. Earlier access would provide a long-term, beneficial impact for visitor experience for ORV users because it would increase time available for fishing and beach access, but would not be expected to alter visitor use. Pedestrian visitors would not be impacted by the morning beach openings because all priority routes would be located within existing designated ORV routes.

Seasonal Off-Road Vehicle Routes. Expansion of the seasonal ORV routes in front of the villages and Ocracoke campground could potentially result in long-term, beneficial impacts for ORV users; however, the beneficial impact would be small. Expansion of the seasonal ORV routes by two weeks in the fall and two weeks in the spring would provide approximately an additional 12 miles of shoreline available for ORV use for four weeks each year. Visitors wanting a vehicle-free experience within a short walking distance from their home or vacation rental may experience long-term, negligible, adverse impacts during those two two-week periods because they would be unable to do so within those 12 miles. Some visitors may choose to vacation in September or early October or later in the spring to avoid ORV use on village and campground beaches. Similarly, ORV users may choose to visit later in October or earlier in the spring to allow for ORV use closer to their home or vacation rental; however, overall visitation would not be expected to change.

Vehicle-Free Areas. No additional changes to VFAs than those described under "Impacts Common to All Action Alternatives" would be made under alternative 1. ORV users would benefit from the increase in 1 mile of year-round ORV routes to 28.9 total miles. Visitors desiring a vehicle-free experience would experience long-term, negligible to minor, adverse impacts from the reduction of 1 mile of VFAs but would still have 25.4 miles of beach available; therefore, critical characteristics of the vehicle-free experience would still be widely available. There would be no expected changes to visitor use.

ORV Permit Lengths. Under alternative 1, the Seashore would add a 14-day permit and retain the existing 7-day permit in addition to the annual permit by date of issue. A 14-day permit would allow for visitors staying for two weeks to purchase one permit for their entire stay. The 14-day permit option would allow visitors to arrive at the beginning of a weekend and keep the same permit through the next weekend, which would have a beneficial impact on the visitor experience for ORV users. Overall, the impact of permits under alternative 1 would be long term and beneficial. Although alternative 1 would

improve the existing permit system, it is not expected that it would result in increased visitor use. Although visitors staying for two weeks may use their ORVs for both weeks instead of only one, the current 7-day permit would require the purchase of two permits and may be cost prohibitive. There would be no impact on visitors desiring a vehicle-free experience because no permit is required for those areas.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 1 would be the same as those described under the no-action alternative. When combined with the long-term, beneficial and long-term, negligible to minor, adverse impacts under alternative 1, overall cumulative impacts on visitor use and experience would be long term, minor, and adverse as well as long term and beneficial. Alternative 1 would contribute noticeable, beneficial, incremental impacts for ORV users from expanded access and small, adverse, incremental impacts for visitors desiring a vehicle-free experience as a result of the reduction of VFA areas.

Conclusion

Impacts on visitor use and experience from earlier morning beach openings, additional access improvements on Ocracoke Island, and altering the existing permit system would be long term and beneficial. The redesignation of 1 mile of VFAs to ORV routes as well as the extension of the seasonal ORV route period in front of villages and Ocracoke campground by two weeks in the fall and spring would result in long-term, beneficial impacts on ORV users and long-term, negligible to minor, adverse impacts on visitors desiring a vehicle-free experience. Overall impacts on visitor use and experience from alternative 1 would be long term, beneficial and long term, negligible to minor, and adverse. Overall cumulative impacts on visitor use and experience would be long term, minor, adverse as well as long term and beneficial, depending on the visitor group. Alternative 1 would contribute noticeable, beneficial, incremental impacts for ORV users and small, adverse, incremental impacts for visitors desiring a vehicle-free experience.

ALTERNATIVE 2

Analysis

Morning Beach Openings. Under alternative 2, ORV users would have access to priority routes based on the sunrise each month. Priority routes would open at 6:00 a.m. in May, June, and July, 6:30 a.m. in August and September, and at 7:00 a.m. from October through November, when nighttime driving restrictions end. Alternative 2 would result in long-term, beneficial impacts on ORV users, similar to alternative 1, by allowing earlier morning fishing or sunrise viewing during the periods when nighttime driving is restricted. Earlier access would provide a long-term, beneficial impact on visitor experience for ORV users because there would be more time for fishing and beach access, but this change would not be expected to alter visitor use. Pedestrian visitors would not be impacted by the morning beach openings because all priority routes would be located within existing designated ORV routes. Unlike alternatives 1 and 3, the beneficial impacts under alternative 2 would be slightly less because beaches would not open earlier during all months when nighttime beach driving is restricted. Priority routes would continue to open at 7:00 a.m. in October and November because of the sunrise times during those months and would not allow for earlier beach access at those times.

Seasonal Off-Road Vehicle Routes. Impacts on visitor use and experience under alternative 2 would be the same as those described under alternative 1. There would be long-term, beneficial impacts on ORV users and recreational anglers as a result of expanded use of seasonal ORV routes and long-term, negligible, adverse impacts on visitors desiring a vehicle-free experience because their ability to walk to

VFAs from their home or vacation rental in the fall and spring would be limited. Overall visitation would not be expected to change.

Vehicle-Free Areas. In addition to the expansion of 1 mile of ORV routes and reduction of existing VFAs at Ramps 2 and 59, alternative 2 would designate portions of VFAs south of Ramp 23 (1.5 miles) and north of Ramp 34 (1 mile) as seasonal ORV routes. The seasonal ORV routes would provide additional seasonal ORV access close to villages, resulting in long-term, beneficial impacts on ORV users. Visitors desiring a vehicle-free experience would lose 2.5 miles of designated vehicle-free beach outside of peak visitation periods but would retain vehicle-free access during the summer visitation season, resulting in long-term, minor, adverse impacts on pedestrian visitors. These changes would not be expected to alter the existing overall Seashore visitor use.

Alternative 2 also would designate Ramp 45 as a park road, which would improve pedestrian access to Cape Point when resource closures limit ORV access. When designated as a park road, Ramp 45 would not require an ORV permit, improving access for all visitors to the Seashore. The improved access would result in long-term, beneficial impacts on all Seashore visitors.

Access Improvements. In addition to access improvements on Ocracoke Island, alternative 2 would extend the existing bypass road north towards Ramp 44 by approximately 0.4 mile. The existing bypass road allows ORV users to have continued access to the areas around Cape Point when resource closures close portions of the beach. Extending the bypass road to Ramp 44 would provide for additional access, resulting in long-term, beneficial impacts for ORV users. The bypass road is not located near a VFA and would not impact pedestrian visitors. While the bypass road would improve visitor experience, it would not be expected to impact visitor use because Cape Point is already a highly desired visitor use area. Alternative 2 also would provide for additional parking in the vicinity of Ramp 45. The Seashore would construct a 15 to 20-car parking area at Ramp 45 that would improve pedestrian access to Cape Point. The current ORV routes leading to the location of the proposed parking area would be redesignated as park roads and would not require a permit, improving access for all visitors and resulting in long-term, beneficial impacts on visitors.

While both visitor groups would experience long-term, beneficial impacts on visitor experience, there likely would be no increase in visitor use. Improved visitor access to Cape Point may increase visitation slightly at that location but would not noticeably increase visitation throughout the Seashore.

ORV Permit Lengths. Under alternative 2, the Seashore would replace the 7-day permit with a 10-day permit. A 10-day permit would allow for two weekends plus a week-long stay under one permit and would address some of the concerns raised by the public since the permit system was implemented. The 10-day permit option would allow visitors to arrive at the beginning of a weekend and keep the same permit throughout the next weekend, which would have a beneficial impact on the visitor experience for ORV users. As described under "Impacts Common to All Action Alternatives," the existing calendar year annual permit would be replaced by an annual permit by date of issue. Overall, the impact of changes to permit lengths under alternative 2 would be long term and beneficial.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 2 would be the same as those described under the no-action alternative. When combined with the long-term, beneficial and long-term, negligible to minor, adverse impacts under alternative 2, overall cumulative impacts on visitor use and experience would be long term, minor, and adverse as well as long term and beneficial, depending on visitor group. Alternative 2 would contribute noticeable, beneficial, incremental impacts for ORV users from improved access and small, adverse, incremental

impacts for visitors desiring a vehicle-free experience as a result of a reduction in VFAs and improved access at Cape Point and Ocracoke soundside.

Conclusion

Impacts on visitor use and experience from earlier morning beach openings, additional access improvements, and altering the existing permit system would be long term and beneficial. The redesignation of 2.5 miles of VFAs to seasonal ORV routes and the extension of the seasonal ORV route period in front of villages and Ocracoke campground by two weeks in the fall and spring would result in long-term, beneficial impacts for ORV users and long-term, negligible to minor, adverse impacts for pedestrian visitors. Overall impacts on visitor use and experience from alternative 2 would be long term, beneficial and long term, negligible to minor, and adverse. Overall cumulative impacts on visitor use and experience would be long term, minor, adverse as well as long term and beneficial, depending on the visitor group. Alternative 2 would contribute noticeable, beneficial, incremental impacts for ORV users and small, adverse, incremental impacts for visitors desiring a vehicle-free experience.

ALTERNATIVE 3

Analysis

Morning Beach Openings. Under alternative 3, ORV users would have access to priority routes at 6:00 a.m. each morning during the months when nighttime restrictions are in place. Alternative 3 would result in long-term, beneficial impacts to ORV users, similar to alternative 1, by allowing earlier morning fishing or sunrise viewing during the periods when nighttime driving is restricted. Earlier access would provide a long-term, beneficial impact on visitor experience for ORV users because it would increase the time available for fishing and beach access, but would not be expected to alter visitor use. Pedestrian visitors would not be impacted by the morning beach openings because all priority routes would be located within existing designated ORV routes.

Seasonal Off-Road Vehicle Routes. Expansion of the seasonal ORV routes in front of the villages and Ocracoke campground would result in long-term, beneficial impacts for ORV users. Expanding the seasonal ORV routes by four weeks in the fall and four weeks in the spring would provide approximately an additional 14 miles of shoreline available for ORV use for eight weeks each year. Visitors wanting a vehicle-free experience within a short walking distance from their home or vacation rental may experience long-term, negligible to minor, adverse impacts during those two four-week periods. Some visitors may choose to vacation earlier in the fall or later in the spring to avoid ORV use on village and campground beaches. Similarly, ORV users may choose to visit earlier in October or slightly later in the spring to allow for ORV use closer to their home or vacation rental. Recreational anglers who access fishing areas by ORV would experience long-term, beneficial impacts on visitor experience as a result of the increased access to ORV routes during the fall fishing season. Overall visitation may shift slightly during these periods but would not be expected to noticeably increase or decrease.

Vehicle-Free Areas. In addition to the expansion of 1 mile of ORV routes and reduction of existing VFAs at Ramps 2 and 59, alternative 3 would designate the entire length of the VFAs south of Ramp 23 and north of Ramp 34 as seasonal ORV routes. The seasonal ORV routes would provide additional seasonal ORV access close to villages, resulting in long-term, beneficial impacts on ORV users. Visitors desiring a vehicle-free experience would lose 3.5 miles of designated vehicle-free beach outside of peak visitation periods, but would retain vehicle-free access during the summer visitation season, resulting in long-term, minor, adverse impacts on pedestrian visitors. These changes would not be expected to alter the existing overall Seashore visitor use.

Similar to alternative 2, alternative 3 also would designate Ramp 45 as a park road. The improved access would result in long-term, beneficial impacts on all Seashore visitors because no ORV permit would be required.

Access Improvements. Access improvements under alternative 3 would include the same projects and associated impacts described under alternative 2.

ORV Permit Lengths. Under alternative 3, the Seashore would retain the existing 7-day permit and add both a 3-day and 14-day permit. With the addition of a 3-day permit period, visitors staying only for a weekend would have a lower-cost permit option instead of purchasing the existing 7-day permit. Currently ORV users staying only for a weekend may choose to visit the northern Outer Banks beaches outside of the Seashore boundary, which do not require an ORV permit. By providing a 3-day permit, Seashore visitation may increase. The 14-day permit period would allow visitors to arrive at the beginning of a weekend and keep the same permit throughout the next weekend, similar to the 10-day permit period option, but also would allow visitors staying for two weeks to purchase one permit for their entire stay, as described under alternative 1. As described under "Impacts Common to All Action Alternatives," the existing calendar year annual permit would be replaced by an annual permit by date of issue. Overall, the impact of changes to permit lengths under alternative 3 would be long term and beneficial.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 3 would be the same as those described under the no-action alternative. When combined with the long-term, beneficial and long-term, negligible to minor, adverse impacts under alternative 3, overall cumulative impacts on visitor use and experience would be long term, minor, and adverse as well as long term and beneficial, depending on the visitor group. Alternative 3 would contribute noticeable, beneficial, incremental impacts for all users through improved access and small, adverse, incremental impacts for visitors desiring a vehicle-free experience from a reduction in VFAs.

Conclusion

Impacts on visitor use and experience from earlier morning beach openings, additional access improvements, and altering the existing permit system would be long term and beneficial. The redesignation of two VFAs to seasonal ORV routes, addition of 1 mile of year-round ORV routes, as well as the extension of the seasonal ORV route period in front of villages and Ocracoke campground by four weeks in the fall and spring would result in long-term, beneficial impacts on ORV users and long-term, negligible to minor, adverse impacts on pedestrian visitors. The addition of a 3-day permit period has the potential to increase visitation to the Seashore. Overall impacts on visitor use and experience from alternative 3 would be long term, beneficial and long term, negligible to minor, adverse. Overall cumulative impacts on visitor use and experience would be long term, minor, adverse as well as long term, beneficial, depending on the visitor group. Alternative 3 would contribute noticeable, beneficial, incremental impacts for all users and small, adverse, incremental impacts for visitors desiring a vehicle-free experience.

SOCIOECONOMICS

The alternatives were evaluated for their potential impacts on the local economy and businesses. Impacts on the economy and on businesses were assessed using a qualitative estimate of change in revenue from any change in visitation that might result from the alternative. Impacts on the local economy, including impacts on population, jobs, income, and sales resulting from spending on construction impacts are also assessed qualitatively.

The total impact of the proposed alternatives would depend in part on the response of the affected individuals and businesses to the changes brought about by the selected alternative. The effect of the alternatives would depend on the willingness and ability of individuals to visit other substitute beaches for recreation, either within or outside of the Seashore and of businesses to adapt to the available opportunities and changes in visitor use patterns under whichever alternative is selected. If individuals visit other sites outside the ROI, then these regions would experience an increase in business while businesses in the ROI would experience a decrease.

ASSUMPTIONS, METHODOLOGY, AND INTENSITY DEFINITIONS

Tourism business revenue within the ROI could be influenced by the Seashore management decisions, in addition to a number of other unpredictable factors. A range of impacts on business revenue was forecast for each alternative to address uncertainty. Important unpredictable factors beyond the control of the Seashore contributing to the uncertainty of future business revenue include national and regional economic trends, national and regional demographic trends, meteorological and geological events such as storms and erosion, nesting patterns of birds and turtles, transportation costs, and visitor and business responses to these changes. Considering the dramatic changes in fuel prices, the housing market, and the national economy since 2006, projections based on recent short-term trends are unlikely to yield precise estimates.

Methodology and Assumptions. Socioeconomic impacts are considered in the context of the local economy within the ROI. Impacts on businesses that provide services to visitors, such as retail establishments, food facilities, and others are evaluated qualitatively. Impacts that construction projects may have are evaluated qualitatively based on their potential impacts on jobs, income, and sales within the ROI.

Intensity Definitions. The following definitions for evaluating impacts on socioeconomic resources were defined.

Negligible: The effect would not be detectable and would not change the socioeconomic environment, including individuals, businesses, and communities with economic linkages to the Seashore.

Minor: At the county level, the effects would be considered minor if there could be an overall change in employment, sales, and personal income of between 1% to less than 6%. There would be a very small impact on businesses, and no business closures or disproportionate impacts on small businesses would result.

Moderate: At the county level, the effects would be considered moderate if there could be an overall change in employment, sales, and personal income greater than or equal to 6% but less than 10%. There would be a noticeable impact on small businesses, and no business closures or disproportionate impacts on small businesses would result.

Major: The effect would be a substantial, highly noticeable, potentially permanent influence on the socioeconomic environment. At the county level, the effects would be considered major if there could be an overall change in employment, sales, and personal income of greater than 10%. There would be a significant impact on substantial number of small businesses, and business closures or disproportionate impacts on small businesses are possible.

Duration: Short term: Temporary and typically transitional impacts associated with implementation of an action.

Long term: Permanent impacts on the social and economic environments.

Study Area. The study area is defined in the affected environment as the ROI, which is defined as Dare and Hyde Counties in North Carolina.

NO-ACTION ALTERNATIVE

Analysis

Morning Beach Openings. Under the no-action alternative, the current nighttime driving restrictions, including the time beaches are opened for ORV use in the morning, would not change. As discussed in the ORV FEIS, opening the beaches at 7:00 a.m. could impact commercial and recreational anglers who otherwise would fish for longer hours. The time beaches open in the morning may also continue to deter potential recreational anglers from visiting the Seashore resulting in a direct loss of their spending on regional businesses and the subsequent indirect and induced impacts on the regional economy.

As illustrated by data presented in the "Visitor Use and Experience" section in chapter 3, total visitation at the Seashore has not increased or decreased as a result of the implementation of the selected alternative from the ORV FEIS. Therefore, continued management of Seashore under the no-action alternative would not be expected to impact total visitation or total visitor spending; however, there may be continued long-term, negligible, adverse impacts from nighttime driving restrictions.

Seasonal Off-Road Vehicle Routes. Under the no-action alternative, seasonal ORV routes in front of the villages and Ocracoke campground would continue to be in place from November 1 through March 31. As discussed in the ORV FEIS, these seasonal ORV routes would continue to provide pedestrian-only access during the high visitation periods, resulting in a continued beneficial impact on pedestrian visitors, and would prevent ORV users from accessing the beaches, resulting in continued long-term, minor, adverse impacts. Impacts on visitation under this action are unknown at this time. Total visitation at the Seashore has not increased or decreased as a result of the implementation of the selected alternative from the ORV FEIS. It is likely that continued management of seasonal ORV routes as described under the ORV FEIS would not result in changes in visitor spending, resulting in continued negligible to minor, adverse socioeconomic impacts on the ROI.

Vehicle-Free Areas. As described in the ORV FEIS, the restriction of ORV access to only the designated ORV routes would continue to have long-term, minor to moderate, adverse impacts on ORV users, while the 26 miles of VFAs would have long-term, beneficial impacts on visitors desiring a vehicle-free beach experience. Visitation has not decreased or increased, so overall visitor spending would not be expected to change under the no-action alternative. Overall, long-term, negligible to minor, adverse impacts on the ROI would be expected to continue, with villages and businesses that cater directly to ORV users experiencing greater impacts. There would be no new impacts from the no-action alternative.

Access Improvements. Under the no-action alternative, there would be no additional access improvements constructed within the Seashore. There would be no impacts on socioeconomics.

ORV Permit Lengths. The no-action alternative would not alter the existing permit structure. The ORV FEIS found that the introduction of a permit system for ORV users would potentially reduce visitation by ORV users relative to the no-action alternative because of the introduction of a new cost associated with ORV use in the Seashore. However, the number of permits issued to ORV users has increased since

implementation of the permit system in 2012. While it is unknown if the same number of ORV users are visiting since before the permit program, the overall number of visitors to the Seashore has not changed substantially since the introduction of permit system. Therefore, continued management of permits under the no-action alternative is not anticipated to result in any socioeconomic impacts on the ROI.

Cumulative Impacts

The Bonner Bridge replacement project may result in a short-term increase in the local population as a result of construction workers who would temporarily relocate to the ROI to work on the project. Any construction workers who relocate from outside the ROI to inside the ROI to work on this project would impact the ROI as a result of their spending, which would benefit the ROI in the short term by providing additional income and sales to the ROI. While the exact cost of this project is unknown, its impacts on the economy of the ROI likely would be negligible in the short term, given the relative size of the economy of the ROI and the likely relatively small funding allocated to this project. Improvement to beach access as a result of the 2013 Proposal to Facilitate Additional Public Beach Access EA may result in increased visitation to the ROI in the long term. The improved access would have a beneficial economic impact on the ROI as a result of increased visitor spending that would support local jobs, income, and sales within the ROI. However, the extent of increased visitation that has resulted from this additional beach access is unclear so the exact economic impacts of this project are unknown at this time. The beach nourishment projects and modified wildlife buffers are not expected to impact socioeconomics in the ROI. Impacts from the additional elements under the ORV FEIS and 2012 Final Rule would continue to depend on how current and new visitors adjust their trips and spending in response to management changes. The impact of individual businesses would continue to vary more than the impacts of the regional economy as a whole, resulting in long-term, negligible to minor, adverse impacts.

Overall, the cumulative impact of these past, current, and future actions on socioeconomics would be short-term, beneficial from increased visitation and long term, negligible to minor, adverse because of the potential for a reduction in ORV visitors and related impacts on ORV-related businesses. When combined with the continued long-term, negligible to minor, adverse impacts under the no-action alternative, overall cumulative impacts on socioeconomics would be long term, negligible to minor, and adverse. The no-action alternative would contribute a noticeable incremental impact to overall cumulative impacts as part of the entire selected alternative under the ORV FEIS.

Conclusion

Overall, the no-action alternative would continue to have long-term, negligible to minor, adverse impacts within the ROI from restrictions to ORV access across the Seashore. Overall cumulative impacts on visitor use and experience would long term, negligible to minor, and adverse. The no-action alternative would contribute a noticeable incremental impact to overall level as part of the entire selected alternative under the ORV FEIS.

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Morning Beach Openings. The timing of morning beach openings would not impact socioeconomics under any of the action alternatives. The time beaches are opened each morning would provide a benefit for ORV users but would not increase overall visitation, as described in "Visitor Use and Experience." Because no change in visitation is anticipated under any of the alternatives as a result of the morning beach openings, there are no anticipated socioeconomic impacts.

Vehicle-Free Areas. The addition of 1 mile of year-round ORV routes at Ramps 2 and 59 under all action alternatives would not be expected to increase overall visitation to the Seashore. Construction

associated with the realignment of Ramp 2 would be completed by NPS staff, and there would be no short-term impact on the local economy from construction spending associated with this action. As described in the impacts section for "Visitor Use and Experience," no expected changes to visitor use are expected.

Similarly, the addition of 2.5 or 3.5 miles of seasonal ORV routes under alternatives 2 and 3 would have impacts similar to those described above for the additional mile of year-round ORV routes. While there may be a benefit to visitor experience for ORV users and an adverse impact on the visitor experience of pedestrian visitors as described under "Visitor Use and Experience," there would be no expected changes to visitor use. Therefore, there would be no long-term socioeconomic impacts under any of the action alternatives from any changes to the VFAs.

Access Improvements. While the number and location of access improvements differ between the three action alternatives, construction of all access improvements would be completed by NPS staff. Therefore, no short-term socioeconomic impacts associated with construction of these improvements are anticipated. Furthermore, as described in the impact section for "Visitor Use and Experience," there would be no expected overall increase in total visitation as a result of the access improvements. Therefore, there would be no long-term socioeconomic impacts as a result of access improvements under any of the action alternatives.

ALTERNATIVE 1

Analysis

Seasonal Off-Road Vehicle Routes. As described in "Visitor Use and Experience," some visitors may change the timing of their visits to accommodate either avoiding or taking advantage of the expansion of seasonal ORV routes periods. However, similar to the conditions described for morning beach openings above, it is estimated that there would be no noticeable change in visitation at the Seashore. Therefore, there would be no impacts on socioeconomics.

ORV Permit Lengths. Providing a 14-day permit as well as 7-day and an annual by date of issue permit may improve the experience of existing visitors, but the change would not be expected to increase overall visitation to the Seashore. ORV permit purchases continue to increase each year while visitation remains steady. It is anticipated that that trend would continue under alternative 1, resulting in no change to overall impacts on socioeconomics in the ROI.

Cumulative Impacts

Because there would be no impacts on socioeconomics under alternative 1, there would be no cumulative impacts.

Conclusion

There would be no socioeconomic impacts on the ROI from earlier morning beach openings, an extension of the seasonal ORV route period by two weeks in the spring and fall, redesignation of 1 mile of VFAs to ORV routes, additional access improvements on Ocracoke Island, and alterations to the existing permit system. Because there would be no impacts on socioeconomics under alternative 1, there would be no cumulative impacts.

ALTERNATIVE 2

Analysis

Seasonal Off-Road Vehicle Routes. Impacts would be the same as those described for alternative 1, resulting in no noticeable change in visitation at the Seashore. Therefore, there would be no impacts on socioeconomics.

ORV Permit Lengths. Providing a 10-day permit as well as an annual by date of issue permit may improve the experience of existing visitors, but the change would not be expected to increase overall visitation to the Seashore. ORV permit purchases continue to increase each year while visitation remains steady. It is anticipated that that trend would continue under alternative 2, resulting in no change to overall impacts on socioeconomics in the ROI.

Cumulative Impacts

Because there would be no impacts on socioeconomics under alternative 2, there would be no cumulative impacts.

Conclusion

There would be no socioeconomic impacts on the ROI from earlier morning beach openings, extending the seasonal ORV route period in front of villages and Ocracoke campground by two weeks in the fall and spring, adding seasonal ORV route miles, constructing access improvements, or altering the existing permit system. Because there would be no impacts on socioeconomics under alternative 2, there would be no cumulative impacts.

ALTERNATIVE 3

Analysis

Seasonal Off-Road Vehicle Routes. Impacts would be similar to those described under alternative 1, but with more potential for beneficial impacts. If visitation increases or decreases as a result of this action, these impacts would be increased by the additional eight weeks that these seasonal ORV routes would be available under this alternative. Visitation may increase for the additional weeks in October, which are desirable for fall fishing. While the impacts on overall visitation likely would not be noticeable, there could be a potential beneficial impact on socioeconomics, most notably for village businesses that cater to ORV users.

ORV Permit Lengths. Impacts would be the same as those described for alternative 2, resulting in long-term, beneficial socioeconomic impacts on the ROI. The availability of an annual by date of issue and 14-day permit may not increase visitation but the addition of a 3-day permit has the potential to increase weekend visitation from ORV users. As described in "Visitor Use and Experience," with the addition of a 3-day permit, total visitation may increase with the potential increase in weekend ORV users shifting visitation from northern Outer Banks beaches. If visitation increases, this could have a long-term, beneficial impact on the economy of the ROI as a result of increased visitor spending, which supports local jobs, income, and sales in the ROI. Overall, there would be the potential for long-term, beneficial impacts on socioeconomics in the ROI.

Cumulative Impacts

Cumulative impacts as a result of construction projects are described in the cumulative impact analysis under the no-action alternative. When combined with the long-term, beneficial impacts from alternative 3, overall cumulative impacts on socioeconomics would be long term, negligible, and adverse. Alternative 3 would contribute a small incremental impact on overall cumulative impacts, potentially offsetting some of the adverse impacts on ORV-related businesses within the ROI.

Conclusion

There would be no socioeconomic impacts on the ROI from earlier morning beach openings, the addition of year-round ORV route miles, and construction of access improvements. The extension of the seasonal ORV route period in front of villages and Ocracoke campground by four weeks in the fall and spring would result in local, long-term, beneficial socioeconomic impacts. The addition of a 3-day permit period has the potential to increase visitation to the Seashore, which could result in long-term, beneficial impacts on the ROI as a result of increased visitor spending. Overall impacts on socioeconomics in the ROI from alternative 3 would be long term and beneficial. Cumulative impacts on socioeconomics in the ROI would be long term and negligible. Alternative 3 would contribute a small incremental impact to overall cumulative impacts, potentially offsetting some of the adverse impacts on ORV-related businesses within the ROI from cumulative projects.

SEASHORE OPERATIONS AND MANAGEMENT

ASSUMPTIONS, METHODOLOGY, AND INTENSITY DEFINITIONS

Methodology and Assumptions. Seashore management and operations, for the purpose of this EA, refer to the quality and effectiveness of Seashore staff to maintain and administer Seashore resources and provide for an appropriate visitor experience. This includes an analysis of the projected need for staff time and materials in relationship to the consideration of changes to ORV management under each of the alternatives. Seashore staff from each of the management divisions were members of the interdisciplinary team and were consulted regarding expected staffing under each alternative.

Intensity Definitions. The following thresholds for evaluating impacts on Seashore management and operations were defined and applied to adverse impacts.

Negligible: Seashore or agency operations would not be impacted or the impact would not have a noticeable or measurable impact on Seashore operations.

Minor: Impacts would be noticeable and would result in a measurable but small change in Seashore operations. Any required changes in Seashore staffing could be accommodated without appreciably affecting other operations within the Seashore. Current levels of staffing would not be reduced or increased, but priorities may need to be changed.

Moderate: Impacts would be readily apparent and would result in a substantial change in Seashore or agency operations that would be noticeable to staff and the public. Required changes in Seashore staffing and/or funding could not be accommodated within expected annual funding and would measurably affect other operations within the Seashore by shifting staff and funding levels between operational divisions. Increases or decreases in staff and funding would be needed or other Seashore operations would have to be reduced and/or priorities changed.

Major: Impacts would be readily apparent and would result in a substantial change in Seashore operations that would be noticeable to staff and the public and would be markedly different from existing operations. These changes in Seashore staffing and/or funding could not be accommodated by expected annual funding and would require the Seashore to readdress its ability to sustain current Seashore operations. Increases or decreases in staff and funding would be needed and/or other Seashore programs would have to be substantially changed or eliminated.

Duration: Short-term effects would be one fiscal year.

Long-term effects would continue beyond one fiscal year indefinitely into the future.

Study Area. The study area for Seashore management and operations is the units of the Outer Banks Group: Cape Hatteras National Seashore, Wright Brothers National Memorial, and Fort Raleigh National Historic Site. All units were considered because of shared staff and funding sources. The study area for cumulative impacts is the same.

NO-ACTION ALTERNATIVE

Analysis

Morning Beach Openings. Under the no-action alternative, the current nighttime driving restrictions, including the time beaches are opened for ORV use in the morning, would not change; all Seashore beaches would continue to open at 7:00 a.m. Prior to beaches being opened for ORV use, resource management staff would continue to work in teams on each island to survey for new turtle nests, install nest protections, and manage existing closures and buffers. Adverse impacts of continuing the beach opening clearances on park staff and operations would be continue to be long term and negligible. Law enforcement, interpretation, facility management, and administrative staff would not be impacted.

Seasonal Off-Road Vehicle Routes. Under the no-action alternative, seasonal ORV routes in front of the villages and Ocracoke campground would continue to be in place from November 1 through March 31. The resource-based seasonal ORV route on Bodie Island would continue to restrict ORV use during nesting and fledging activities, and resource management staff would monitor this location to determine when it can open each year for ORV use. Impacts on current park staff and operations of continuing existing management of the seasonal ORV routes would continue to be long term, negligible, and adverse.

Vehicle-Free Areas. Under the no-action alternative, the existing VFAs would remain in the same locations as regulated by the 2012 Final Rule. As discussed in the chapter 2 of the ORV FEIS, 28 miles of beach would be designated for ORV use year-round, 13 miles would be designated for seasonal ORV use, and 26 miles would be designated as vehicle free year-round. No changes in VFA and ORV designations would occur; therefore, there would be a continuation of the long term, minor, adverse impacts from the increased workload to actively manage VFAs and ORV routes, as described in the ORV FEIS.

Access Improvements. Under the no-action alternative, there would be no additional access improvements constructed within the Seashore. No impacts on Seashore operations and management would occur.

ORV Permits Lengths. The no-action alternative would not alter the existing permit structure. The visitor and resource protection division would continue to issue weekly and annual by calendar year permits in multiple locations throughout the Seashore. Law enforcement staff would continue to use the existing color permit system to determine if an annual or weekly permit is valid. Continued operation of the existing permit system would result in continued long-term, negligible, adverse impacts on park staff and operations.

Cumulative Impacts

Past, present, and future planned actions within the Seashore would have potential to impact seashore operations and management. Implementation of all of the elements included in the selected alternative in the ORV FEIS continue to require Seashore staff in all five management divisions listed in chapter 3. Revenue from the permit system has allowed the Seashore to hire additional staff to implement the selected alternative, which mitigates the adverse impacts from moderate to long term, minor, and adverse. The Bonner Bridge replacement project and the NC-12 beach nourishment project may require some law enforcement staff during the construction period, but are otherwise being managed by Dare County and the North Carolina Department of Transportation, resulting in long-term, negligible, adverse impacts during construction. Administrative staff for the Seashore assisted in the NEPA analysis for the project, which resulted in long-term, minor, adverse impacts. The 2015 Review and Adjustment of Wildlife Buffers EA/FONSI modified the buffer distances for species and required additional staffing needs at the Seashore, resulting in long-term, minor to moderate, adverse impacts. The Proposal to Facilitate Additional Public Beach Access EA allowed the Seashore to construct additional projects to improve public access along the Seashore. Maintenance staff are completing the construction projects, resulting in long-term, negligible to minor impacts on Seashore operations as the projects are constructed. Overall, the cumulative impact of these past, current, and future actions on seashore operations and management would be long term, negligible to moderate, and adverse as a result of an increase in staff duties related to ORV management and wildlife buffer management.

When combined with the continued long-term, negligible to minor, adverse impacts under the no-action alternative, overall cumulative impacts on Seashore operations and management would be long term, minor, and adverse. The no-action alternative would contribute a noticeable incremental impact to overall cumulative impacts in conjunction with the other management requirements under the ORV FEIS selected alternative and 2012 Rule.

Conclusion

Adverse impacts of continuing the beach opening surveys, management of seasonal ORV routes, and the existing permit system on park staff and operations would be continue to be long term and negligible. There would be a continuation of the long-term, minor, adverse impacts from management of the ORV route and VFA designations. Overall cumulative impacts on Seashore operations and management would be long term, minor, and adverse. The no-action alternative would contribute a noticeable incremental impact to overall cumulative impacts in conjunction with the other management requirements under the ORV FEIS selected alternative and 2012 Rule.

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Seasonal Off-Road Vehicle Routes. Expanding seasonal ORV routes in front of the villages and Ocracoke campground for an additional two weeks in the spring and fall under alternatives 1 and 2 would have a long-term, negligible impact on Seashore operations and management because of the additional beach that law enforcement staff would need to patrol for ORV permits during the expanded periods. Law enforcement staff already patrol these beaches, so the additional responsibility of confirming ORV permits are valid would not substantially alter job responsibilities during the two two-week time periods, and current levels of staffing could accommodate the expanded seasonal ORV periods.

Similarly, the expansion of the seasonal ORV route period in these locations also would increase the need for management of existing nests and buffers in an area that otherwise would not be open to ORVs during those time periods, adding a slight increase to the workload of natural resource staff. Resource management staff also would have to install and maintain a corridor for turtle nests where ORV passage could not otherwise occur; however, fewer nests are active during this period (compared to during peak nesting season), resulting in a long-term, negligible, adverse impact from the increased workload.

The difference between expanding seasonal ORV routes for two weeks (alternatives 1 and 2) and four weeks (alternative 3) would be slight. Any closures or buffers would need to be managed on these beaches for a longer period of time, and more nests may still be active under alternative 3. While there would be a slightly more adverse impact under alternative 3, the overall impacts on seashore operations and management under all three action alternatives would be negligible. Interpretation, facility management, and administrative staff would not be impacted, with the exception of updating the ORV access map on the park's website.

Vehicle-Free Areas – Ramp 2 and 59. Under all action alternatives, approximately 1 mile of ORV routes would be added to the Seashore. Short-term, minor, adverse impacts on Seashore operations and management would occur from increased management needs associated with Seashore visitors learning the new VFA/ORV designations. There would be an increase in the amount of shoreline managed for ORV use, including installation of ORV corridors as described under seasonal ORV routes, above. Reconstruction of Ramp 2 could be completed by Seashore maintenance staff, which would add a short-term, minor, adverse impact for that division from increased workload; however, the current levels of staffing could accommodate the construction task. Overall impacts would be short term, minor, and adverse with negligible, long-term impacts from the increased responsibilities for natural resource staff.

Access Improvements. Under all action alternatives, construction of a road, parking area, and pedestrian pathway at Bitter Wash Creek and construction of a parking area and road expansion at Devil Shoals Road would be completed by Seashore maintenance staff, resulting in short-term, minor, adverse impacts during construction from increased staff workload. Long-term, negligible, adverse impacts would be anticipated from the continued maintenance needs of these new access areas. The ORV routes in these two locations would not require an ORV permit and therefore would not increase law enforcement responsibilities.

Alternatives 2 and 3 would also extend the existing bypass road north of Ramp 44 for 0.4 mile. Maintenance staff would formalize the primitive bypass road expansion using existing sand. Vegetation clearing and minimal long-term maintenance would be required. Maintenance staff also would construct a parking area at Ramp 45, which would require vegetation clearing and using permeable surface materials.

Overall impacts on seashore operations and management from access improvements under all action alternatives would be short term, minor, and adverse during construction and long term and negligible

from ongoing maintenance requirements. Law enforcement staff would continue to patrol all areas of the Seashore and their duties would not increase as a result of the access improvements.

ALTERNATIVE 1

Analysis

Morning Beach Openings. Under alternative 1, park staff would open access to priority routes at 6:30 a.m. and open all remaining beaches by 7:00 a.m. To open priority routes for ORV use by 6:30 am, resource management staff may need to start work earlier in the morning to survey for and protect any new nests and document additional nesting activity. During May, June, and July, when the sunrise occurs earlier, completing these activities would not present a safety hazard for Seashore staff. From August through November, when sunrise occurs later, Seashore staff may need to be operating before daylight to open beaches at 6:30 a.m., which may increase the potential for accident or injury. The need for staff to start earlier may be reduced if additional seasonal staff were hired to help with resource management during this time period to clear all priority routes by 6:30 a.m. and all other beaches by 7:00 a.m. Law enforcement staff also would need to patrol the priority routes starting earlier in the day. While Seashore staff could reasonably accomplish the required changes without affecting other operations, overall long-term, minor, adverse impacts on Seashore operations and management would occur from the increased workload and potential to have staff operating before sunrise.

ORV Permit Lengths. Issuing an annual permit, valid from date of issue would alleviate the common rush of park visitors buying annual tickets during December and January and would reduce the current staff workload, which would provide a long-term, beneficial impact. Issuing a 14-day permit in addition to a 7-day permit would not noticeably impact Seashore operations and maintenance. Staff may issue one 14-day permit in place of two 7-day permits, but the workload required to issue permits would not increase. There would be a short-term, minor, adverse impact for law enforcement staff who check that all ORV permits are valid as a result of a change in the existing permit management system. Currently, permits for each year are a different color, allowing law enforcement to quickly see the permit is valid. Checking a permit that is valid by date of issue may require law enforcement staff to look at the permit from a shorter distance than is currently required and may slow the enforcement process while staff adapt to the new permit system. Similar impacts would be expected from the addition of a third permit period option, with the addition of a 14-day permit. In the long term, however, no adverse impacts on law enforcement staff would be anticipated as current staff levels would be adequate to monitor the ORV permit system. Overall impacts on seashore operations and management from changes to the permit system would be long term beneficial, and short term, minor, and adverse.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 1 would be the same as those described under the no-action alternative. When combined with the long-term, beneficial; long-term, negligible to minor, adverse; and short-term, minor, adverse impacts under alternative 1, overall cumulative impacts on Seashore operations and management would be long term, minor, and adverse. Alternative 1 would contribute a noticeable incremental impact to overall cumulative impacts as a result of staff safety issues.

Conclusion

Impacts on Seashore operations and maintenance from earlier morning beach openings would result in long-term, minor impacts from staff potentially operating before sunrise. Expanded seasonal ORV routes and access improvements would result in long-term, negligible impacts as a result of additional law enforcement patrols and new infrastructure requiring on-going maintenance. Reconstruction of Ramp 2

and other access improvements would result in short-term, minor, adverse impacts on maintenance staff during construction activities. Altering the existing permit system would result in long-term, beneficial impacts for staff issuing permits and short-term, minor impacts on law enforcement staff as they adjust to a new enforcement system for ensuring ORV permits are valid. Overall impacts on seashore operations and management under alternative 1 would be long term and beneficial; long term, negligible to minor, and adverse; and short term, minor, and adverse. Overall cumulative impacts on Seashore operations and management would be long term, minor, and adverse. Alternative 1 would contribute a noticeable incremental impact to overall cumulative impacts as a result of staff safety issues.

ALTERNATIVE 2

Analysis

Morning Beach Openings. Under alternative 2, park staff would open access to priority routes to ORV use between 6:00 and 7:00 a.m. from May 1 through November 15, based on the sunrise for each month, and open all non-priority routes by 7:00 a.m. By setting the morning beach opening time based on the sunrise, alternative 2 avoids the potential safety issue of having resource management staff working with heavy equipment for an extended time before sunrise. Resource management staff would need to adjust their current beach clearing process to focus on priority routes first, but long-term impacts under alternative 2 would be negligible. Hiring additional seasonal resource management staff also would help supplement the existing staff open priority routes first.

Vehicle-Free Areas. Under alternative 2, approximately 1 mile of ORV routes would be added to the Seashore at Ramps 2 and 59, as described under "Impacts Common to all Action Alternatives." Approximately 2.5 miles of seasonal ORV routes would also be designated at the Seashore. Short-term, minor, adverse impacts on Seashore operations and management would occur from increased management needs associated with Seashore visitors learning the new VFA/ORV designations. Similar to the expanded seasonal ORV routes, law enforcement staff already patrol these beaches, so the additional responsibility of confirming ORV permits are valid would not substantially alter job responsibilities along the additional 2.5 miles of beach, resulting in a long-term, negligible, adverse impact on seashore operations and management. Under alternative 2, Ramp 45 would be designated as a park road. This park road would not require an ORV permit and therefore would not increase enforcement responsibilities of law enforcement staff.

ORV Permit Lengths. Issuing an annual permit would have the same impacts as described under alternative 1, resulting in a long-term, beneficial impact for park staff who issue permits by alleviating the beginning of the year rush to purchase an annual permit by calendar year. Issuing a 10-day permit in place of a 7-day permit would not impact Seashore operations and maintenance. Similar to alternative 1, there would be a short-term, minor, adverse impact for law enforcement staff who check that all ORV permits are valid due to a change in the existing permit management system. In the long term, however, no adverse impacts on law enforcement staff would be anticipated. Overall impacts on seashore operations and management from changes to the permit system would be long term, negligible, and adverse; long term, beneficial; and short term, minor, and adverse.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 2 would be the same as those described under the no-action alternative. When combined with the long-term, negligible, adverse; long-term, beneficial; and short-term, minor, adverse impacts under alternative 2, overall cumulative impacts on seashore operations and management would be long term, minor, and adverse. Alternative 2 would contribute a small incremental impact to overall

cumulative impacts as a result of the small additional area that must be managed for ORV use and increased natural resource and maintenance staff workloads.

Conclusion

Impacts on Seashore operations and management from changes to existing ORV management, including earlier morning beach openings, expansion of seasonal ORV routes by two weeks, designating 2.5 miles of VFAs as seasonal ORV routes, and maintenance of additional access improvements would be long term, negligible, and adverse as a result of additions to the workload of existing staff. Projects, including extending the bypass road, constructing a parking area at Ramp 45 and access improvements on Ocracoke Island, would result in short-term, minor, adverse impacts while maintenance staff complete construction work. Altering the existing permit system would result in long-term, beneficial impacts for staff issuing permits and short-term, minor impacts on law enforcement staff as they adjust to a new enforcement system for ensuring ORV permits are valid. Overall impacts on seashore operations and management from alternative 2 would be long term, beneficial; long term, negligible; and short term, minor, and adverse. Overall cumulative impacts on Seashore operations and management would be long term, minor, and adverse. Alternative 2 would contribute a small incremental impact to overall cumulative impacts.

ALTERNATIVE 3

Analysis

Morning Beach Openings. Under alternative 3, park staff would open access to priority routes at 6:00 a.m. and open all remaining beaches by 7:00 a.m. To open priority routes for ORV use by 6:00 a.m., resource management staff would need to start work earlier in the morning to flag new nests and document additional nesting activity. During May, June, and July, when the sunrise occurs earlier, completing these activities would not present a safety hazard for Seashore staff. From August through November, when sunrise occurs later, Seashore staff would need to be operating before daylight to open beaches by 6:00 a.m., which may increase the potential for accident or injury. The need for staff to start earlier may be reduced if additional seasonal staff were hired to help with resource management during this time period to clear all priority routes by 6:00 a.m. and all other beaches by 7:00 a.m.; however, staff would still be operating heavy equipment before daylight during the majority of the period when nighttime driving is restricted. Overall, long-term, moderate, adverse impacts on Seashore operations and management would occur from the increased workload and staff operating before sunrise.

Vehicle-Free Areas. Under alternative 3, approximately 1 mile of ORV routes would be added to the Seashore at Ramps 2 and 59, as described under "Impacts Common to All Action Alternatives." As described under alternative 2, Ramp 45 would be designated as a park road that would not require an ORV permit and therefore would not increase enforcement responsibilities for law enforcement staff.

Alternative 3 also would designate the entire VFAs south of Ramp 23 and north of Ramp 34 as seasonal ORV routes. Similar to alternative 2, short-term, minor, adverse impacts on Seashore operations and management would occur from increased management needs associated with Seashore visitors learning the new VFA/ORV designations as well as the increased area of shoreline managed for ORV use. Similar to the expanded seasonal ORV routes, law enforcement staff already patrol these beaches, so the additional responsibility of confirming ORV permits are valid would not substantially alter job responsibilities along the additional 3.5 miles of beach during the seasonal ORV period, resulting in a long-term, negligible, adverse impact on seashore operations and management. There also would not be as many natural resource closures or buffers in place during this period, so while the additional beaches would be surveyed and managed for ORV use, not many natural resource closures would be expected to be in place during this period.

ORV Permit Lengths. Issuing an annual permit would have the same impacts as described under alternative 1, resulting in a long-term, beneficial impact for park staff who issue permits by alleviating the beginning of year rush to purchase an annual permit by calendar year. The addition of a 3-day and 14-day permit to the existing 7-day permit period may increase the workload of staff issuing permits if the availability of a 3-day permit increases weekend visitation. This increase would be expected to be long term, negligible, and adverse and may be reduced if the Seashore were to provide permits entirely online. Similar to alternative 1, there would be a minor, adverse impact for law enforcement staff who check that all ORV permits are valid due to a change in the existing permit management system, including the addition of 3-day and 14-day permit periods. However, this impact may be long term as a result of the multiple permit options. Checking a permit that is valid by date of issue as well as the multiple short-term permit options may require additional effort from law enforcement staff to look at each permit to ensure it is currently valid and may slow the enforcement process in the long term. Overall impacts on seashore operations and management from changes to the permit system would be long term, negligible to minor, adverse and long term, beneficial.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative 3 would be the same as those described under the no-action alternative. When combined with the long-term, negligible to moderate, adverse; long-term, beneficial; and short-term, minor, adverse impacts under alternative 3, overall cumulative impacts on seashore operations and management would be long term, minor, and adverse. Alternative 3 would contribute a noticeable incremental impact to overall cumulative impacts as a result of staff safety issues and increased workload.

Conclusion

Impacts on Seashore operations and management from changes to existing ORV management, including expansion of seasonal ORV routes by four weeks, designating two VFAs as seasonal ORV routes, maintenance of additional access improvements, and the addition of a 3-day and 14-day ORV permit would be long term, negligible, and adverse as a result of the staff workload. Opening priority routes by 6:00 a.m. would result in long-term, moderate, adverse impacts on resource management staff because they would need to work with heavy equipment before daylight. Construction projects, including extending the bypass road and Ramp 45 parking area and access improvements on Ocracoke Island would result in short-term, minor, adverse impacts while maintenance staff complete construction work. Altering the existing permit system would result in long-term, beneficial impacts for staff issuing permits and long-term, minor impacts on law enforcement staff as they adjust to a new enforcement system for ensuring the multiple ORV permits are valid. Overall impacts on seashore operations and management from alternative 3 would be long term, beneficial; long term, negligible to moderate; and short term, minor, and adverse. Overall cumulative impacts on Seashore operations and management would be long term, minor, and adverse. Alternative 3 would contribute a noticeable incremental impact to overall cumulative impacts as a result of staff safety issues.

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CHAPTER 5: CONSULTATION AND COORDINATION

This "Consultation and Coordination" chapter describes the public involvement and agency consultation used during the preparation of the EA. A combination of activities, including internal and public scoping, helped guide NPS in developing this EA. This chapter provides a detailed list of the various consultations initiated during the development of the EA.

PLANNING AND PUBLIC INVOLVEMENT

This document has been prepared in accordance with NEPA, as amended; regulations of the CEQ (40 CFR 1500–1508); and Director's Order 12 (NPS 2011a) and its accompanying NEPA handbook (NPS 2015a). Additionally, the 2014 Act required that the Secretary of the Interior undertake a public process to consider changes to ORV management at the Seashore, which has been completed through the NEPA public review process. Pursuant to Director's Order 12, NPS has made a diligent effort to involve the interested and affected public in this NEPA process. This process, known as scoping, is initiated at the beginning of a NEPA project to identify the range of issues, resources, and alternatives to address in the EA. Typically, both internal and public scoping is conducted to address these elements. State and federal agencies were contacted to identify any additional planning issues and to fulfill statutory requirements, as described in the following sections. The planning process for the proposed action was initiated during the internal scoping efforts in July 2015.

INTERNAL SCOPING

The internal scoping process for the project began on July 20, 2015, when representatives from the Seashore, NPS Environmental Quality Division, and the NPS Southeast Regional Office and their consultants met to discuss the purpose and need of the project, potential alternatives that could meet these needs, and resource conditions and issues within the project area. The group also initiated plans for public scoping activities. Throughout the development of this EA, the group coordinated regularly to review relevant issues, discuss the development of alternatives and impact analysis, and further develop means of including agencies and the public in the planning process.

PUBLIC SCOPING

In August 2015, NPS held five public scoping meetings for the EA at the following locations:

- August 5, 2015, at the Ocracoke School, Ocracoke Island, North Carolina
- August 6, 2015, at the McKimmon Center in Raleigh, North Carolina
- August 10, 2015, at the Cape Hatteras Secondary School, Buxton, North Carolina
- August 11, 2015, at the Hilton Garden Inn, Kitty Hawk, North Carolina
- August 12, 2015, at the Embassy Suites Hampton Inn, Hampton, Virginia

These meetings were held to obtain public feedback on the initial purpose, need, objectives, issues and concerns, and preliminary alternative concepts and elements for consideration for changes to the Final Rule for ORVs at the Seashore.

NPS staff began each meeting began with a formal presentation that was followed by an open discussion or breakout group with NPS staff. During the open discussion/breakouts, attendees were invited to walk

around the meeting room, view display boards, and offer comments that were captured on flipcharts. The display boards included the project background; study area, including existing ORV routes and pedestrian-only areas; purpose and need; preliminary alternative elements; project schedule; and instructions on how to comment.

The meetings offered a variety of methods for the public to provide comments. NPS personnel and consultant staff were present at flip charts to answer questions from attendees and record attendees' comments and ideas. The comments on the flip charts from the meetings were summarized for consideration along with comments that were submitted into the NPS Planning, Environment, and Public Comment (PEPC) website for the EA.

Individuals attending the meetings were also given a newsletter that provided additional opportunities for comment, including directions for entering comments in to the NPS PEPC website at http://parkplanning.nps.gov/caha-orv-ea. In addition, the Seashore posted the newsletter on the PEPC project website; e-mailed individuals, businesses, agencies, and organizations on the Seashore's e-mail mailing list; and issued a news release inviting the public to comment. The public comment period was open from July 30 through August 21, 2015, and 1,777 individual correspondences were received.

AGENCY CONSULTATION

In accordance with section 7 of the ESA, NPS coordinated with USFWS and North Carolina Wildlife Resources Commission early in the planning process. On July 22, 2015, NPS invited USFWS and the North Carolina Wildlife Resources Commission to an agency scoping meeting to discuss the proposed action and to solicit feedback on the preliminary alternative elements. Once alternatives were developed, NPS held a call with USFWS on November 16, 2015, to discuss the progression of the EA. USFWS did not have any questions on the alternatives at that time. Consultation with both USFWS and the North Carolina Wildlife Resources Commission is ongoing. Both agencies will receive copies of this document, and consultation will be completed after review of the document. The North Carolina State Historic Preservation Office will also receive a copy of this document.

CHAPTER 6: LIST OF PREPARERS

US DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE

Outer Banks Group

David Hallac, Superintendent
Mark Dowdle, Deputy Superintendent
Michelle Havens, Chief of Resource Management
Cyndy Holda, Public Affairs Specialist
John Kowlok, Chief of Maintenance
Britta Muiznieks, Biologist
Randy Swilling, Natural Resource Program Manager

Environmental Quality Division

Doug Wetmore, Project Manager
Kelly Daigle, Environmental Protection Specialist

Southeast Region

Jami Hammond, Planning and Compliance

LOUIS BERGER

Rebecca (Rudi) Byron, Project Manager
Megan Blue-Sky, GIS
Joseph Dalrymple, Threatened and Endangered Species
Chris Dixon, Socioeconomics
Dana Flynn, Threatened and Endangered Species
Amy Hunter, Wetlands and Floodplains
Deborah Mandell, Editor
Brandon Marette, Threatened and Endangered Species
Derrick Rosenbach, Wildlife and Wildlife Habitat
Tyler Rychener, GIS
Spence Smith, Threatened and Endangered Species
Nancy Van Dyke, QA/QC
Susan Van Dyke, Wetlands and Floodplains

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CHAPTER 7: ACRONYMS AND ABBREVIATIONS

2014 Act	National Defense Authorization Act for Fiscal Year 2015
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
EA	environmental assessment
EO	Executive Order
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
GIS	Geographic Information System
NC-12	North Carolina State Highway 12
NCAC	North Carolina Administrative Code
NEPA	National Environmental Policy Act of 1969, as amended
NPS	National Park Service
ORV	off-road vehicle
ORV FEIS	2010 ORV Management Plan and Final Environmental Impact Statement
PEPC	NPS' Planning, Environment, and Public Comment website
ROI	Region of Influence
Seashore	Cape Hatteras National Seashore
SECN	NPS Southeast Coast Network
USC	United States Code
USFWS	US Fish and Wildlife Service
VFA	vehicle-free area

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CHAPTER 8: REFERENCES

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As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historic places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

February 2016

United States Department of the Interior – National Park Service