

## Table of Contents

1.0	INTRODUCTION .....	1
2.0	PURPOSE AND NEED.....	2
3.0	THE PROPOSED PROJECT AND ALTERNATIVES CONSIDERED .....	8
3.1	Proposed Action.....	8
3.2	Alternatives Considered and Eliminated from Further Consideration .....	11
3.3	Alternatives .....	12
3.4	Comparison of Alternatives .....	13
4.0	AFFECTED ENVIRONMENT .....	16
4.1	Location and Jurisdictions .....	16
4.2	Airport History.....	16
4.3	Existing Airport Facilities.....	17
4.4	Geography And Physiography Characteristics .....	18
4.5	Existing Land Use.....	18
4.6	Zoning.....	19
4.7	Planned Land Use .....	20
4.8	Planned Land Use - Transportation .....	21
4.9	Social Characteristics.....	22
4.10	Economic Characteristics.....	22
4.11	Historic, Architectural, Archeological, and Cultural Resources.....	24
4.12	Publicly Owned Lands.....	25
4.13	Farmlands.....	25
4.14	Air Quality .....	25
4.15	Floodplains.....	25
4.16	Wild and Scenic Rivers.....	25
4.17	Coastal Barriers.....	26
4.18	Coastal Zone Management Programs .....	26
4.19	Surface Water.....	28
4.20	Ground Water.....	29
4.21	Wetlands .....	29
4.22	Biotic Communities .....	30
4.23	Essential Fish Habitat .....	32
4.24	Endangered and Threatened Species .....	34
4.25	Public Services.....	39
4.26	Contemplated Future Actions .....	40
5.0	ENVIRONMENTAL CONSEQUENCES .....	42
5.1	Noise .....	42
5.2	Compatible Land Use .....	42
5.3	Social Impacts.....	43
5.4	Induced Socioeconomic Impacts .....	43
5.5	Historic, Architectural, Archeological, and Cultural Resources.....	44
5.6	Section 303(c) Lands .....	44
5.7	Farmlands.....	44
5.8	Air Quality .....	45
5.9	Floodplains.....	45

Table of Contents (continued)

5.10 Wild and Scenic Rivers.....46  
5.11 Coastal Barriers.....46  
5.12 Coastal Zone Management Programs .....46  
5.13 Water Quality.....46  
5.14 Wetlands .....47  
5.15 Biotic Communities .....49  
5.16 Essential Fish Habitat .....50  
5.17 Endangered and Threatened Species .....50  
5.18 Energy Supply/Natural Resources .....51  
5.19 Light Emissions .....51  
5.20 Solid Waste Impacts .....52  
5.21 Construction Impacts .....52  
5.22 Environmental Justice Impacts .....53  
5.23 Other Considerations – Public Water Supply Wells.....54  
6.0 AGENCY COORDINATION .....55  
7.0 LIST OF PREPARERS.....56

**List of Tables**

Table 1: Facilities at Publicly-Owned General Aviation Airports Serving the North Carolina Outer Banks ..... 3  
Table 2: Comparison of Currituck County Airport to Publicly-Owned General Aviation Airports Within 25 Air Miles..... 3  
Table 3: Currituck County Airport Based Aircraft .....4  
Table 4: Currituck County Airport Annual Aircraft Operations .....5  
Table 5: Summary of Environmental Impacts Compared to the No-Action Alternative ..... 15  
Table 6: 2000 Income Characteristics For Currituck County and North Carolina (from U.S. Census Bureau Data)..... 23  
Table 7: Largest Employers in Currituck County.....23  
Table 8: Currituck County National Register Sites .....24  
Table 9. Protected Species Reported from Currituck County, North Carolina .....35

## 1.0 INTRODUCTION

The Currituck County Airport is a publicly owned General Aviation airport located in the northeastern region of North Carolina, approximately 46 miles south of the South Hampton Roads area of Virginia and 25 miles northeast of Elizabeth City, North Carolina. An update of Airport Layout Plan, which is the official planning document for the airport, was approved in December 2000. The *Airport Layout Plan Update, Final Report* identified a 20-year Airport Improvement Program with four development phases: 0-5 years (Phase I), 6-10 years (Phase II), 11-20 years (Phase III), and +20 year (Ultimate) development. This environmental assessment (EA) addresses the environmental impacts of the projects in the Phase I planning period, including extending the current runway from 4000' to 5500', constructing a parallel taxiway, constructing a terminal building, and performing additional capital improvements identified in the *Airport Layout Plan Update*.

This NEPA Environmental Assessment is required for the proposed expansion projects. This document has been prepared in accordance with Order 5050.4A, *Airport Environmental Handbook*, Federal Aviation Administration, Department of Transportation, October 8, 1985. This document describes the purpose and need for the expansion (Section 2), and the alternatives considered, including the “no-build” alternative (Section 3). The affected environment is described in Section 4, and environmental consequences of the alternatives are described in detail in Section 5. Comments from Federal, State and local agencies were solicited early in the evaluation process, and have been incorporated into this report. Agency coordination is discussed in detail in Section 6. The list of preparers is shown in Section 7.

The **EA study area** comprises a 285-acre area that includes the existing airport and surrounding land that encompasses the airport development for all of the alternatives (including the “no build” alternative). Specific features of the study area (as well as more general features of the surrounding area) are discussed in detail in the “Affected Environment” section of this report. The term **project area** refers to the area that would be directly affected by construction and land acquisition for a particular alternative. Impacts to project areas are discussed for each alternative in the “Environmental Consequences” section of this report.

As described in Section 3, the “No Action” alternative includes updating the current runway designation from 4-22 to 5-23 to reflect the correct magnetic bearing of the runway. For the sake of clarity, all proposed actions reference the runway as Runway 5-23.

## 2.0 PURPOSE AND NEED

Currituck County is experiencing tremendous growth due to its close proximity to the Hampton Roads, Virginia metropolitan area and the North Carolina Outer Banks. However, the county is struggling economically, and is considered an economically “distressed” Tier 3 county by the N.C. Department of Commerce.<sup>1</sup> From 1990 to 2000, the population of Currituck County grew by 32.4%, the 11<sup>th</sup> fastest growth rate in North Carolina, and the fastest in northeastern North Carolina. The rapid growth has strained county finances. Because the tax base has remained largely residential, the county has had difficulty paying for services new residents demand.<sup>2</sup>

Employment figures for Currituck County analyzed by the N.C. Department of Transportation indicated that in 1990, over 60% of the county’s residents commuted to jobs outside Currituck County each day.<sup>3</sup> The University of North Carolina found that **the county provides homes and services for residents who commute to jobs in Virginia and neighboring counties, but the surrounding areas, not Currituck County, receive the benefits of the business taxes.**<sup>4</sup> According to the N.C. Department of Transportation, almost three-fifths of these out-commuters were employed just north of Currituck County in the Hampton Roads area of Virginia. In 1999, Currituck County was ranked *last* among all North Carolina counties in new plants and expansions of existing plants.<sup>5</sup>

Providing the infrastructure to support economic development and increase the business tax base in the county is a high priority for local government. **The County recognizes that providing up-to-date airport facilities that can accommodate business jet aircraft is vital to attracting new and expanded industry to the county.** Updating the airport will include extending the runway, constructing a parallel taxiway, providing a terminal building, providing more sophisticated navigational aids, and performing numerous additional safety and capacity improvements. These improvements were recommended in the December 2000 *Airport Layout Plan*, the official approved planning document for the airport. **The expansion of the airport will enable Currituck County to compete with nearby inland counties with superior airport facilities, and will also provide the only airport serving the North Carolina Outer Banks that supports business jet aircraft.**

There are five public general aviation airports that serve the Outer Banks, including the Currituck County Airport. Because of the area’s relative isolation from the interstate highway network, these airports serve as vital links in the region’s transportation system. For example, the nearest interstate highways to Currituck County, I-64 in Norfolk Virginia and I-95 in North Carolina, are over 40 miles and 120 miles, respectively, from the county. Table 1 shows the major facilities available at the five Outer Banks airports. Three of the five airports (Bill Mitchell, First Flight, and Ocracoke Island) prohibit nighttime operations due to site conditions. These three airports are also highly constrained from any expansion due to

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<sup>1</sup> N.C. Department of Commerce.

<sup>2</sup> University of North Carolina Environmental Resource Program, *Evaluating Change: Applying Sustainable Development Principles*, <http://www.sph.unc.edu/erp/eval/pages/curr.html>, April, 2002.

<sup>3</sup> *Thoroughfare Plan Technical Report*, N.C. Dept. of Transportation, Statewide Planning Branch, March, 1999.

<sup>4</sup> University of North Carolina Environmental Resource Program, *Evaluating Change: Applying Sustainable Development Principles*.

<sup>5</sup> *Ibid.*

their location in the Cape Hattaras National Seashore. The Dare County Regional Airport, which is located immediately adjacent to the Croatan Sound, also faces numerous difficulties with extension of its runways. No major highway capacity improvements are planned for Currituck County for the 2002-2008 TIP period, which will place a greater emphasis on the airport to meet the county's transportation needs.

Table 1: Facilities at Publicly-Owned General Aviation Airports Serving the North Carolina Outer Banks

Airport	Runway Dimensions	Other Airport Facilities
Currituck County Airport Maple Currituck County mainland	1 Runway: 4000' x 150'	No terminal building, no parallel taxiway, no localizer or other sophisticated navigational aids (NAVAIDS)
Dare County Airport Manteo Roanoke Island	2 Runways: 4300' x 100' 3303' x 75'	Terminal building, single parallel taxiway, no localizer or other sophisticated NAVAIDS
First Flight Airport Kill Devil Hills Cape Hattaras National Seashore	1 Runway: 3000' x 60'	No terminal building, no parallel taxiway, no localizer or other sophisticated NAVAIDS; nighttime operations prohibited
Billy Mitchell Airport Hatteras Island Cape Hattaras National Seashore	1 Runway: 3000' x 75'	No terminal building, no parallel taxiway, no localizer or other sophisticated NAVAIDS; nighttime operations prohibited
Ocracoke Island Airport Ocracoke Island Cape Hattaras National Seashore	1 Runway: 3000' x 60'	No terminal building, no parallel taxiway, no localizer or other sophisticated NAVAIDS; nighttime operations prohibited

As can be seen from Table 2, **none of the five airports serving the Outer Banks region have the runway lengths capable of supporting business jet aircraft.** The prevailing use of general aviation airports (rather than commercial service airports) by business jets is the basis for the FAA's consideration of a 5500' minimum runway length for airports serving business jets<sup>6</sup>. (Business jets in this case refers to turbojets weighing less than 100,000 pounds.) In addition to the FAA guidance, the N.C. Division of Aviation has a goal to bring all publicly owned and operated general aviation airport runways up to a minimum 5000' length. This runway length goal was established as a result of current industry business aircraft trends, aircraft insurance requirements, and guidance from the FAA. Runways shorter than 5000' have difficulty accommodating even some smaller-cabin jet aircraft, particularly during less than optimum weather conditions (e.g., during wet conditions, or hotter than normal temperatures).

With its current configuration, Currituck County's airport does not provide services comparable to the two publicly-owned general aviation airports in nearby inland counties, both of which have superior facilities. Table 2 shows the Currituck County Airport's facilities compared to Chesapeake, Virginia and Elizabeth City, both of which have runways at least 5500' long and additional facilities that support business class jet operations.

Table 2: Comparison of Currituck County Airport to Publicly-Owned General Aviation

<sup>6</sup> FAA Regional Guidance Letter RGL 00-1, *Standard Development for "Business Jet Aircraft"*, January 28, 2000 (Updated March 1, 2001).

Airports Within 25 Air Miles

<b>Airport</b>	<b>Air Distance from Currituck County Airport</b>	<b>Runway Dimensions</b>	<b>Other Airport Facilities</b>
<b>Currituck County Airport</b>	--	<b>1 Runway: 4000' x 150'</b>	<b>No terminal building, no parallel taxiway, no localizer or other sophisticated NAVAIDS</b>
Elizabeth City Airport Elizabeth City, NC	18 miles southwest	2 Runways: 7219' x 150' 4519' x 150'	Terminal building, parallel taxiway, instrument landing system (localizer and glide slope) under development
Chesapeake Regional Airport Chesapeake, VA	24 miles northwest	5500' x 100'	Terminal building, parallel taxiway, localizer

The proposed expansion of the Currituck County Airport is supported by the growth experienced in operations and based aircraft. In concert with the County's rapid growth in population, based aircraft and operations at the airport have increased in the last decade. Based aircraft have increased from 3 in 1990 to 26 today (a 20% annual increase). When the 1988 Currituck County Airport Master Plan was written, there were no based aircraft at the airport; today, there are 26. Operations at the Currituck County Airport have also increased significantly, from an estimated 4,000 annual operations in 1990<sup>7</sup> to 16,100 operations in 1999 (a 400% increase).

Only four of the based aircraft owners reside in Currituck County, which indicates the regional use of the airport. Five based aircraft are owned by residents from nearby counties (Camden, Dare, and Pasquotank). One aircraft is owned by a Durham, NC resident, and the remainder have out-of-state ownership (Virginia, Pennsylvania, Massachusetts, Missouri, and Florida). Table 3 shows the existing and projected based aircraft from the 2000 Airport Layout Plan Update.

Table 3: Currituck County Airport Based Aircraft

<b>1988</b>	<b>1990</b>	<b>1999</b>	<b>2004</b>	<b>2009</b>	<b>2019</b>
0	3	26	30	35	47

The Airport is heavily used by tourists and part-time beach residents traveling to the Outer Banks. The Navy, Army and Coast Guard, and N.C. Division of Emergency Management are also itinerant users of the airport. Navy users include the Naval Special Warfare Group Two (NSWG-2); and Seal Teams Two, Four and Eight. The Navy conducts training missions with CH53 helicopters, Sherpa fixed wings, and other fixed wing aircraft. The airport is also used by Navy T-34 fixed wing aircraft that make simulated approaches into the facility, as well as touch and go landings. The Navy utilizes the facility approximately 25 times a year for an extended duration and accounts for approximately 500 rotor operations a year. Fixed wing military training accounts for approximately 150 operations a year.

<sup>7</sup> North Carolina Airport Systems Plan Technical Report, Proctor/Davis/Ray Engineers, Inc., March, 1992.

Annual aircraft operations are projected to increase to 30,850 by 2019, a 190% increase over 1999 levels. Table 4 shows the projected operations at the airport based on forecast operations data from the Airport Layout Plan Update.

Table 4: Currituck County Airport Annual Aircraft Operations

Aircraft Type	Year			
	1999	2004	2009	2019
Single Piston	9,980	11,840	14,500	19,740
<b>Multi-Engine Piston</b>	2,260	3,060	4,080	5,550
<b>Multi-Engine Turbo Prop</b>	160	380	1,360	2,170
Business Jet	0	190	680	1,540
<b>Rotorcraft</b>	160	190	220	620
<b>Other (Ultralight)</b>	3,540	3,440	1,810	1,230
Total	<b>16,100</b>	<b>19,100</b>	<b>22,650</b>	<b>30,850</b>

To improve the safety of aircraft operations and the ability of the airport to accommodate and attract business aircraft, the County proposes to extend the runway to 5500', rehabilitate the existing World War II era runway, construct a 5500' parallel taxiway, clear obstructions (trees) from the approaches, install a localizer antenna and establish a non-precision instrument approach, construct a terminal building, and install runway and taxiway lighting. Capacity improvements planned by the County include expansion of the existing aircraft parking area (apron), construction of new hangars and an auto parking area (with new access road). The County also plans to install perimeter fencing to comply with FAA security recommendations. Privately-owned land will be acquired in the runway approaches (in fee-simple title or easement) to clear trees from the runway protection zones and runway approaches as needed to remove obstructions to existing and future approaches. The purpose and need for each of these improvements were identified in the December 2000 *Airport Layout Plan* and are briefly described below.

As described previously in this section, the existing runway length of 4000' does not meet NC DOA standards. A 1500' runway extension will enable the airport to meet NC DOA minimum runway length standards and accommodate most corporate aircraft. For example, the owners of the two corporate-type aircraft based at the airport (Mitsubishi MU-2 turboprops with capacity of up to 9 passengers) have requested additional runway length to meet insurance requirements and for additional safety margins.<sup>8</sup> The concrete runway pavement was constructed in World War II and has not been rehabilitated since its construction. The pavement is beginning to deteriorate and would be overlaid and/or repaired to prevent further deterioration.

<sup>8</sup> Wayne Leary, Director, Currituck County Economic Development Dept.

Along with the runway extension, the airport would construct a 5500' parallel taxiway system. To increase safety, it is highly desirable to separate aircraft taxiing movements from aircraft landing and takeoff movements. Constructing the parallel taxiway to the full runway length will achieve this goal. The airport currently lacks navigational aids to assist pilots landing during inclement weather or low-visibility conditions. Safety at the airport would be greatly improved through installation of a localizer antenna to significantly enhance non-precision instrument approach capabilities. Numerous trees penetrate the existing FAR Part 77 surfaces established around the airport as well as the proposed non-precision approach surfaces. The County proposes to remove these obstructions to meet FAA safety requirements. To further increase safety, the airport would also install runway end identifier lights (REILs) for Runway 23 and taxiway edge lights.

In order to keep pace with the existing and project demands of airport users, the airport proposes to expand the apron (aircraft parking ramp), hangars and hangar taxiways. The existing aircraft apron, at 7100 s.y., has capacity for up to 18 aircraft. The apron is undersized for peak weekend and seasonal use. To meet demand, the airport proposes to increase the available apron area by approximately 15,000 s.y. The airport has historically had a waiting list for hangar space. Currently, there are 20 occupied hangars and an additional 20 people waiting for space. The County proposes to construct additional hangars and associated hangar taxiways (taxiways from the apron to hangars). The long-term storage of based aircraft on the apron (rather than in hangars) is not feasible due to the need to protect the aircraft from harsh climatic conditions and salt air. The photo below shows the apron and hangar buildings viewed from the runway.



Currently, auto parking is scattered around the aircraft apron in grassy areas. The airport proposes to provide a paved parking lot with approximately 20 spaces to 40 spaces. A new access road (approximately 900' long) will be provided to the parking area and hangar buildings.

The airport does not have a terminal building, and the only facility available for visitors is an open-air kiosk (see photo below) with a telephone and area map. The airport proposes to

construct a terminal building that provides space for pilots and visitors including restrooms and conference rooms for business and community use.



**Currituck County considers the proposed improvements essential in order for the airport to support the economic development of the county.**

### **3.0 THE PROPOSED PROJECT AND ALTERNATIVES CONSIDERED**

#### **3.1 Proposed Action**

The December 2000 *Airport Layout Plan Update*, which is the official planning document for the Currituck County Airport, identified a 20-year Airport Improvement Program with four development phases: 0-5 year, 6-10 year, 11-20 year, and ultimate (+20 year) development. This environmental assessment (EA) addresses the environmental impacts of the projects in the first 5-year planning period. It should be noted that all estimated costs are preliminary and approximate, and are intended to be used only for comparison of alternatives.

The proposed action for the 0-5 year planning period is defined as the following:

- construct a 1500' extension of Runway 5-23;
- extend the existing runway edge lighting system to the full runway length;
- install runway end identifier lights (REILs) and relocate existing runway threshold lights;
- rehabilitate the existing World War II-era runway pavement;
- construct a 5500' parallel taxiway, bypass taxiways on both runway ends, and widen the existing taxiway;
- install taxiway edge lights;
- install a localizer antenna navigational aid at the Runway 23 end;
- clear obstructions (trees) from runway approaches and transitional surfaces for a 34:1 non-precision instrument approach slope;
- construct a new terminal building;
- expand the existing aircraft apron;
- construct additional hangars and hangar taxiways;
- clear and grub for terminal, hangar, hangar taxiway and apron development;
- construct an auto parking area and access road; and,
- install perimeter security fencing

The location and/or geometry of many of the elements of the proposed action are set by FAA regulations. The FAA sets standards for airport and airspace geometry in several sets of regulations including: *Advisory Circular 150/5300-13, Airport Design (Airport Design AC)*; *Federal Aviation Regulations (FAR) Part 77, Objects Affecting Navigable Airspaces*; and *United States Standards for Terminal Instrument Procedures (TERPS)*.

Each of the elements of the proposed action is described in detail below.

Extend runway 1500' - the single runway would be extended from 4000' to 5500' to accommodate business aircraft as described in Section 2. Extension of the runway will require grading and construction of a pavement section consisting of a gravel base course and bituminous (asphalt) or concrete surface course.

Extend runway edge lights - The existing runway edge lighting system would be extended 1500' to accommodate the runway extension. The runway edge lights outline operational areas of airports at night and during low-visibility weather conditions. Runway edge lights are typically about 14" high and emit white or yellow light, depending on their location. The edge lights are located in a line approximately ten feet from the edges of the runway pavements.

Install REILs and relocate existing runway threshold lights – To improve safety, runway end identifier lights (REILs) will be installed at each end of the runway. The REILs, which aid landing aircraft in the early identification of the runway, consist of two flashing white lights aimed upward at a 3- to 10-degree angle. REILs are particularly beneficial in areas like the Currituck County Airport where the surrounding terrain can be featureless at night. REILs are located a minimum distance of 40 feet from the end of a runway, and are no more than 3' above the runway elevation. The existing runway threshold lights will be relocated as needed to accommodate the runway extension. Threshold lights emit green light outward from the runway and emit red light toward the runway to mark the ends of the runway. The green lights indicate the landing threshold to landing aircraft and the red lights indicate the end of the runway to a departing aircraft.

Rehabilitate existing runway - As discussed in Section 2, the concrete runway pavement was constructed in World War II and has not been rehabilitated since its construction. The pavement is beginning to deteriorate and would be overlaid and/or repaired to prevent further deterioration. An engineering study will be required to determine the most effective method for rehabilitating the runway pavement.

Construct taxiways – To increase safety, it is highly desirable to separate aircraft taxiing movements from aircraft landing and takeoff movements. For safe and efficient movement of aircraft, a 5500' long x 35' wide parallel taxiway would be constructed 300' east of the runway centerline. Construction of the parallel taxiway will require the relocation of the wind cone. Entrance and bypass taxiways would be constructed to connect the parallel taxiway to the runway at each end. The existing taxiway between the runway and apron would be widened from 30' to 35' to meet FAA design standards and increase safety for taxiing aircraft.

Installation of taxiway lights – To improve safety, new taxiway edge lights will be installed along existing and new taxiway edges. The light location and configuration is similar to the runway edge lights described above; however, taxiway edge lights emit blue light.

Install localizer antenna – A localizer antenna is a ground-based navigational aid that provides pilots with lateral electronic guidance to the opposite end of the runway while landing. Based on FAA requirements, the localizer will be installed a minimum distance of 1000' north of the end of Runway 23, along the extended runway centerline. The localizer critical area is required to be free of non-aeronautical objects (including trees) so that the signal from the antenna is not blocked. An access road to enable FAA personnel to service

the localizer will be required, and a sheltered electrical vault will be constructed adjacent to the localizer antenna.

Clear approach obstructions and establish non-precision instrument approach – Upon installation of the localizer antenna and clearance of tree obstructions from the approach surfaces, the airport would establish non-precision instrument approach procedures for Runway 5 with visibility minimums not less than ¾ mile. There are a number of trees that penetrate existing (20:1) and planned (34:1) approach surfaces (see “No Action” alternative) that must be cleared before the approach can be established. Clearing the tree obstructions will require acquisition of avigation easement and/or fee-simple purchase of undeveloped land off airport property.

Construct new terminal building - The airport does not have a terminal building, and the only facility available for visitors is an open-air kiosk with a telephone and area map. The airport proposes to construct a 2,500 s.f. terminal building southeast of the existing hangar buildings.

Expand aircraft apron- The existing aircraft apron, at 7,100 s.y., has capacity for up to 18 aircraft. The apron is undersized for peak weekend and seasonal use, and for larger general aviation aircraft. Based on a detailed analysis of forecast demand, the *Airport Layout Plan* recommended increasing the available apron area by approximately 15,000 s.y. in the Phase I planning period. The apron is expected to include at least one dedicated helicopter parking position for the use of Medivac and other General Aviation helicopter operations.

Construct hangars and hangar taxiways - As described in Section 2, the airport has a waiting list for hangar space. The airport proposes to add approximately 26,000 square feet in additional hangar space. The configuration of hangar space will be based on the market demand during the 5-year planning period. Possible configurations for the hangar space would be one 12-unit T-hangar building (to accommodate smaller aircraft), two 60’x60’ hangars for larger corporate-type aircraft, and a 75’x80’ common maintenance/office hangar. Taxilanes to the hangars would be constructed as needed.

Clear and grub – constructing the terminal, hangars, apron development, auto parking, and parking access road will require the clearing and grubbing of approximately 7 acres. An additional 10 acres will be cleared and grubbed for future airport development (see Section 4.26, Contemplated Future Actions)

Construct auto parking areas and access road - Currently, auto parking is scattered around the aircraft apron in grassy areas. The airport proposes to provide a paved parking lot with approximately 20 spaces adjacent to the proposed terminal, and an additional 15-20 spaces near the new hangar buildings. A planned access road (approximately 900’ long) will be provided to the parking area and hangar buildings.

Install perimeter security fence – The airport currently has security fence along only 1540’ of its boundary. The fence is located in the vicinity of the apron and hangars, and along a portion of Airport Road. The majority of the airport is unfenced, and vehicles and people

have easy access to the airfield from Airport Road, U.S. 158, Maple Road, and adjacent properties. Animals from nearby wooded areas can also enter the airfield, which poses a potential hazard to aircraft. Approximately 24,000 linear feet of security fence would be installed around the perimeter of the airport to prevent incursions onto the airfield.

### *Funding*

Except for the terminal building and hangars, ninety percent of the cost of the projects would be funded by FAA block grants administered by the N.C. Division of Aviation. The remaining 10% of the project funds will be provided by Currituck County. FAA block grant funds are derived from the Airport Improvement Program, which is funded by a tax on airline tickets. Terminal building construction is eligible for up to \$125,000 in funding from the state of North Carolina. Hangar construction would be locally funded.

### **3.2 *Alternatives Considered and Eliminated from Further Consideration***

Many of the locations of the proposed actions are fixed by function and/or by FAA design and safety regulations, and there are no alternative locations. For example, the localizer antenna must be located along the extended runway centerline in order to provide the desired electronic guidance, and FAA design criteria require it to be located a minimum of 1000' beyond the runway threshold. Other examples are taxiway and runway edge lights, runway end identifier lights, and runway threshold lights, which must be located within certain distances of the pavement edges specified by the FAA in order to fulfill their desired function. For aircraft safety, the FAA requires minimum separation distances between the runway and parallel taxiway; the parallel taxiway should also be located on the same side of the runway as the apron and hangars in order to avoid aircraft taxiing across the runway. To enhance safety, FAA design standards require that hangar and terminal buildings be located certain minimum distances from runways and taxiways. In addition, the FAA has established numerous safety zones around runways and taxiways (e.g., runway and taxiway safety areas, runway protection zones, runway and taxiway object free areas, obstacle free zones) which limit or prevent the placement of objects and/or the presence of aircraft in these zones. Alternative locations that did not meet FAA design and safety requirements were not considered.

The following specific alternatives were considered and eliminated from further consideration.

*Construct terminal area development (apron, hangars, auto parking, and terminal) on west side of runway* - To minimize impacts to adjacent property owners and avoid impacts to the public water supply wells located west of the runway, construction of these elements to the west of the runway was eliminated from further consideration.

*Construct the parallel taxiway to the west of the runway* - To avoid impacts to the public water supply wells located west of the runway, construction of the parallel taxiway to the west of the runway was eliminated from further consideration.

*Extend Runway 5 to the south more than 300'* – The December 2000 *Airport Layout Plan Update* identified a number of planned airport actions that are incompatible with extending

the runway more than 300' to the south towards U.S. 158. Extending the runway more than 300' to the south would result in a penetration of the proposed 34:1 non-precision instrument approach surface by the existing 115 kV transmission line located along the highway. In addition, FAA approach clearance requirements over U.S. 158 could not be met for the 50:1 inner-approach obstacle free zone associated with the approach lighting system planned for Phase III development. Relocating U.S. 158 or the high-voltage transmission lines to accommodate an extension of Runway 5 beyond 300' would be expected to have substantial environmental impacts. Therefore, extending the Runway 5 end some distance greater than 300' was eliminated from further consideration.

*Install localizer on southern end of runway and establish instrument approach to Runway 23, rather than Runway 5* – Meteorological conditions play an important role in the siting of navigational aids. The orientation of the runway to the prevailing wind directions is critical to the safe operation of aircraft, especially small single engine aircraft which are more susceptible to crosswinds. A detailed evaluation of the wind coverage for each runway end was provided in the *Airport Layout Plan Update*. Runway 5 provides approximately 30% greater wind coverage than Runway 23 during instrument flight rule (IFR), or poor weather conditions. Aircraft operations at Currituck reflect the greater wind coverage of Runway 5 in IFR conditions. The County estimates that 60% of aircraft approaches take place on Runway 5. Since Runway 5 has significantly better wind coverage during IFR conditions than Runway 23, it will be the favored runway for the establishment of instrument approaches. The localizer antenna is a critical component of an instrument landing system, and its location at the opposite end of the approach runway is fixed by function.

### **3.3 Alternatives**

In addition to the no-action alternative, two development alternatives were considered: extending the runway 300' to the south and 1200' to the north (Alternative 1), and extending the runway 1500' to the north (Alternative 2). All three alternatives are discussed below.

#### *No Action Alternative*

The “No-Action” alternative would leave the airport in its current configuration with a 4000' runway. The No-Action alternative includes:

- Clearing obstructions (trees) that penetrate the existing airport approach and transitional surfaces, as required by the FAA in Federal Air Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*. These penetrations pose a potential safety hazard to aircraft and should be removed.
- Changing the runway designation from 4-22 to 5-23 to reflect the actual magnetic bearing of the runway. The existing painted designation markings on the runway would be removed and replaced.
- Installing an Automated Weather Observation System (AWOS). This item is currently being approved by the FAA and N.C. Division of Aviation, and will require clearing of trees within a 500' radius of the AWOS.

Clearing the existing tree obstructions will require acquisition of avigation easement and/or fee-simple purchase of undeveloped land outside the County-controlled Maple Complex

(which includes the airport). Isolated trees and groups of trees tall enough to penetrate protected surfaces will be removed as needed from approximately 35 acres of land located along both sides of the airport and in the approach to Runway 23. The estimated cost for the No Action alternative is \$3,200,000.

*Alternative 1 – Extend Runway 23 End 300’ and Extend Runway 5 End 1200’*

Alternative 1 includes all of the proposed actions identified in Section 3.1. Proposed actions outside the County-controlled Maple Complex (which includes the airport) consist of the installation of the localizer antenna and access road, clearing of trees in the Runway 23 Runway Protection Zone (RPZ), and clearing of trees that penetrate the runway approach and transitional slopes. This alternative will require the fee-simple acquisition and clearing of approximately 6 acres in the Runway 5 Runway Protection Zone (RPZ). Isolated trees and groups of trees that penetrate the Runway 23 and Runway 5 approach surfaces will be removed from an estimated additional 31 acres beyond the No Action alternative. Avigation easement and/or fee simple purchase of land will be required to remove trees outside the Maple Complex property. Installation of the localizer antenna (which is located within the Runway 5 RPZ) will require the construction of a gravel access road for use by FAA personnel in maintaining the localizer. Installation of the localizer, localizer pad, and access road are expected to result in placement of up to 0.45 acres of fill in the non-tidal wetlands north of Runway 23. The estimated cost for Alternative 1 is \$11,300,000. This cost includes a 150’ wide by 1500’ concrete runway extension.

*Alternative 2 – Extend Runway 5 End 1500’*

Like Alternative 1, Alternative 2 includes all of the proposed actions identified in Section 3.1. Like Alternative 1, proposed actions outside the County-controlled Maple Complex consist of the installation of the localizer antenna and access road, clearing of trees in the Runway 23 Runway Protection Zone (RPZ), and clearing of trees that penetrate the runway approach and transitional slopes. This alternative will require the fee-simple acquisition and clearing of approximately 10 acres in the Runway 5 Runway Protection Zone (RPZ). Isolated trees and groups of trees that penetrate the Runway 23 and Runway 5 approach surfaces will be removed from an estimated additional 45 acres beyond the No Action alternative. Avigation easement and/or fee simple purchase of land will be required to remove trees outside the Maple Complex property. Installation of the localizer antenna (which is located within the Runway 5 RPZ) will require the construction of a gravel access road for use by FAA personnel in maintaining the localizer. Installation of the localizer, localizer pad, and access road are expected to result in placement of up to 0.75 acres of fill in the non-tidal wetlands north of Runway 23. The estimated cost for Alternative 2 is \$11,800,000. This cost includes a 150’ wide by 1500’ concrete runway extension.

**3.4 Comparison of Alternatives**

Table 5 show a matrix comparison of the impacts of each build alternative to the no build alternative. As can be seen from the table, the environmental impacts from all of the alternatives are minor. None of the alternatives impact the public water supply wells located on and near the airport. Both Alternative 1 and Alternative 2 meet the purpose and need for the project. Compared to Alternative 2 (constructing the entire 1500’ runway extension to

the north), Alternative 1 minimizes the amount of fill placement in wetlands, tree clearing, and land acquisition required. Alternative 1 is the alternative preferred by Currituck County.

**Table 5: Summary of Environmental Impacts Compared to the No-Action Alternative**

<b>Benefit/Impact Type</b>	<b>Alternative 1 – Extend Runway 23 300’, Extend Runway 5 1200’</b>	<b>Alternative 2 – Extend Runway 5 1500’</b>	<b>No Action Alternative</b>
<b><i>Environmental Impact</i></b>			
- Noise (Section 5.1)	NI	NI	NI
- Compatible Land Use (Sec. 5.2)	NI	NI	NI
- Social Impacts – Surface Transportation (Sec. 5.3)	NI	NI	NI
- Social Impacts – Relocations (Sec. 5.4)	NI	NI	NI
- Induced Socioeconomic Impacts (Sec. 5.5)	SI+	SI+	SI-
- Historic, Architectural, Archeological, and Cultural Resources (Sec. 5.6)	NI	NI	NI
- Sec. 303(c) Lands (Sec. 5.7)	NI	NI	NI
- Farmland (Sec. 5.8)	NI	NI	NI
- Air Quality (Sec. 5.9)	NI	NI	NI
- Floodplains (Sec. 5.10)	NI	NI	NI
- Wild and Scenic Rivers (Sec. 5.11)	NI	NI	NI
- Coastal Zone Management (Sec. 5.12)	NI	NI	NI
- Coastal Barriers (Sec. 5.13)	NI	NI	NI
- Water Quality (Sec. 5.14)	NI	NI	NI
- Wetlands (Sec. 5.15)	MI- ≤0.45 acres	MI- ≤0.75 acres	NI
- Biotic Communities (Sec. 5.16)	MI-	MI-	MI-
- Endangered and Threatened Species (Sec. 5.17)	NI	NI	NI
- Energy Supply and Natural Resources (Sec. 5.18)	NI	NI	NI
- Light Emissions (Sec. 5.19)	NI	NI	NI
- Solid Waste Impact (Sec. 5.20)	NI	NI	NI
- Construction Impacts (Sec. 5.21)	NI	NI	NI
- Environmental Justice (Sec. 5.22)	NI	NI	NI

Notes: NI = No Impact; SI+ = Significant Positive Impact; SI- = Significant Negative Impact; MI- = Minor Negative Impact

## **4.0 AFFECTED ENVIRONMENT**

### **4.1 *Location and Jurisdictions***

Currituck County, established in 1668, is the most northeastern county in North Carolina. Shawboro is Currituck County's largest town and Currituck is the county seat. There are no incorporated towns within the county, but the county is divided into four townships: Poplar Branch, Crawford, Fruitville, and Moyock. The Currituck County Airport is located in the Crawford township in the jurisdiction of Currituck County. Currituck County is governed by a board of five county commissioners, four representing their own districts and one elected at large. Each serves four year staggered terms of office. The Chairman is elected by the commissioners for a one year term.

The Currituck County Airport is located on the north side of U.S. 158, which is the major transportation corridor through the county. An airport access road connects the airport to U.S. 158. The airport is an approximately 50 minute drive to the Hampton Roads region in Virginia, and a 40 minute drive west to Elizabeth City, N.C. Norfolk, Virginia, located 54 miles to the north, is the closest major city to the county. The communities closest to the airport are Maple, which is approximately a mile northeast of the airport, and Barco, two miles to the east. The property on which the airport is situated is owned by the State of North Carolina, and Currituck County has a lease agreement for the use of the approximately 400 acres. The lease allows the County developmental control over the property.

The airport is a publicly owned General Aviation facility. The seven member Currituck County Airport Advisory Authority makes recommendations to the Currituck County Board of Commissioners regarding the operation and development of the airport. The Airport Authority does not have statutory powers and serves in an advisory capacity only. It advises the Board of Commissioners on the construction, enlargement, improvement, maintenance, equipment, operation, and regulation of the Currituck County Airport. The County Manager is the designated administrator of the Airport, but the County Economic Development Director oversees the daily operations at the airport. Currituck Aviation, the airport's Fixed Base Operator (FBO), provides maintenance at the facility.

### **4.2 *Airport History***

The Federal Bureau of Public Roads developed the Currituck County Airport during World War II. The exact year of the airport's completion is uncertain. The airstrip constructed at that time, which remains in use today, consists of a concrete runway 4,000 feet long by 150 feet wide. The facility was used for military purposes during World War II, but was abandoned by the military after the war. The Federal Government then offered to sell the facility and the surrounding  $\pm 400$  acres of land to Currituck County for \$1.00, provided the County paid the cost of maintaining the airfield and adjacent property. The County decided at that time that it could not afford the cost of the facility's upkeep. Consequently, the State of North Carolina bought the airstrip and adjoining  $\pm 400$  acres from the Federal Government and used some of the acreage to develop a prison facility and a highway department maintenance facility. These facilities exist today, and are located on parcels adjacent to and

west of the airport (see Section 4.5, Existing Land Use). The state also developed a borrow pit for highway department projects on property east of the airport.

In the late 1960s, the County actively sought to gain control over the airport and its surrounding lands. By means of a 1972 agreement with the State of North Carolina, Currituck County obtained a 25-year lease of the entire airport and adjacent state-owned land (a total of approximately 530 acres) for the sum of \$1.00 per year. The lease agreement with the State allowed the County developmental control over the property, provided that proceeds from the sale of any subdivided tracts of land be given to the state. Two other provisions of the agreement were that no permanent building could be constructed within 300 feet of the prison facility and that the highway department could continue to extract material from the borrow pit until either the County had use for it or the site was sold. (Based on aerial photography this borrow pit has since been filled.)

In 1988, Currituck County obtained an amendment to its lease with the State. The new lease agreement provides Currituck County use of the airport and adjacent land through 2028. In 1991, the Currituck County Airport Advisory Authority was established to make airport development recommendations to the Currituck County Board of Commissioners. Since the Authority was established, the airport has continued to improve both its landside and airside facilities.

### **4.3 Existing Airport Facilities**

The Currituck County Airport (identifier 9W7) is classified by the N.C. Division of Aviation as a General Aviation (GA) airport. The closest commercial service airport is located in Norfolk, Virginia, 40 miles from Currituck County. The Currituck County Airport is approximately 151 acres. Aviation services offered at the airport include flight training, glider and skydiving operations, and banner towing.

The single runway (Runway 4-22) is 4000' long by 150' wide and is in fair to poor condition. The runway pavement consists of concrete approximately eight inches thick constructed during World War II. The runway is oriented northeast to southwest. Medium-intensity runway lights (MIRLs) are located along both runway edges. Navigational aids consist of a precision-approach path indicator (PAPI), and a rotating beacon, both of which provide visual guidance to pilots. The airport has one taxiway leading from the runway to the asphalt-paved aircraft parking apron. This 290' long by 30' wide asphalt taxiway was constructed in 1980 and is in good condition. The aircraft parking apron is located east of the runway and has 18 aircraft tie-downs. The initial 120' by 180' apron was constructed in 1980. In 1993 the apron was expanded to its current dimensions of approximately 490' by 130'. The apron pavement is in good to fair condition.

The Currituck County Airport does not have a terminal building. In 1991, the airport installed a welcome kiosk where the access road meets the apron. The kiosk has a sheltered public telephone, as well as a bulletin board with County information. The airport has two T-Hangar buildings: the 11-unit building was built in 1995 and the 9-unit T-hangar building was completed in 2001. The 11-unit building includes an office with limited pilot services and 2 restrooms. Auto parking is scattered around the aircraft apron in grassy areas. The

airport has a fuel farm that dispenses Jet A, MoGAS and 100LL fuel. The MoGAS and 100LL for piston aircraft are dispensed from a 2,000 gallon and 10,000 gallon above-ground tank, respectively. The 10,000 gallon above-ground Jet A fuel tank is used by jet aircraft and the Navy turbo helicopters that use the airport. The fueling area is located approximately 20 feet east of the apron.

#### ***4.4 Geography And Physiography Characteristics***

Currituck County has a total area of 443.63 square miles, with 261.4 square miles of land area. The County's climate is mild, with average temperatures ranging from 41° F in January to 79° F in July. Rainfall is fairly evenly distributed throughout the year, and averages 48 inches each year. The mean elevation of Currituck County is 8 feet above sea level. The county consists of a mainland part and an offshore strand (part of the Outer Banks). The airport is located on the mainland part of the county.

Currituck County is located in the Coastal Plain geologic region. The Coastal Plain is a wedge of mostly marine sedimentary rocks that gradually thickens to the east. The most common sediment types in the Coastal Plain are sand and clay, although a significant amount of limestone occurs in the southern part of the Coastal Plain. Currituck County geology is characterized by Quarternary surficial deposits consisting of sand, clay, gravel, and peat deposited in marine, fluvial, eolian, and lacustrine environments<sup>9</sup>. From the *Soil Survey of Currituck County*, the general soil types in the vicinity of the airport consist of Conetoe- Dragston-Munden soils and Roanoke-Tomotley soils. The Conetoe-Dragston-Munden soils are nearly level and gently sloping, well-drained to somewhat poorly drained soils that have a sandy surface layer and a loamy subsoil. The Roanoke-Tomotley soils are characterized as nearly level, poorly drained soils that have a loamy surface layer and a loamy or clayey subsoil.

The topography of the airport itself is very flat, with elevations ranging from 1' to 18' MSL. The official airport elevation is 18' MSL. Except for a few trees south of the hangars and near the intersection of Airport Road and U.S. 158, the airport property has been cleared of trees, and grassy areas are regularly maintained by mowing. The majority of the soils in the EA study area, including the soils underlying the runway, are Newhan fine sands (NeC). This soil type, which is described by the *Soil Survey* as an excessively drained soil found on the Outer Banks, is not characteristic of soils found on the mainland. It is likely that the NeC soils were imported to the site for the original construction of the runway during World War II. Soils at the north end of airport property are Dragston loamy fine sands (Ds). Portsmouth fine sandy loams (Pt) are the predominant soils located beyond the north end of airport property. The existing and proposed landside development area east of the runway is on Altavista fine sandy loams (AaA) and Conetoe loamy sands (CnA).

#### ***4.5 Existing Land Use***

The property surrounding the airport is a mix of public and private uses. **It should be noted that no residences, businesses, or places of public assembly are located in the EA study area itself.** The approximate 530-acre property leased by the state to the county is known as

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<sup>9</sup> North Carolina Geological Survey, <http://www.geology.enr.state.nc.us/usgs/coastalp.htm>, April 18, 2002.

the “Maple Complex”. The Maple Complex includes the airport (150 acres), a covered waste-transfer station, a 19-acre public park (Maple Park), a N.C. Forestry office, the Humane Society animal shelter, and a former sanitary landfill site. Use of the 2-cell landfill has been discontinued, and the landfill has been capped. The site also contains two manmade ponds totaling 13 acres created when material was excavated to cap the landfill cells. Approximately 300 acres of the Maple Complex site is undeveloped and forested. Fifty acres of the Maple Complex site northeast of the hangar area has been designated by the County as a future business park (see Section 4.7, Planned Land Use).

The northern end of the airport is bordered by a large undeveloped forested area. The airport is bordered along its northwest and west edge by Maple Road (SR 1246), the Currituck County Water Treatment Plant, a former N.C. Department of Corrections prison facility, agricultural uses, forested land, and scattered residences. The state prison facility has been closed and transferred to the County, which is currently developing plans to renovate the facility for use as a county jail, sheriff offices, and County emergency management functions. Maple Road extends approximately 2.5 miles from U.S. 158 to S.R. 168, and there are approximately 40 residences scattered along both sides of the road. The residence nearest to the airport is approximately 800 feet from the northeast property line. The southwest edge of the airport is bordered by a portion of the Great Swamp, a heavily forested area under private ownership.

The airport is bordered along its southern edge by U.S. 158. Land uses on the southern side of U.S. 158 include agricultural uses and the 120-unit Ponderosa Mobile Home Park (approximately 1100 feet southeast of the southern end of the airport). Central Elementary School is located one mile east of the airport on U.S. 158.

U.S. 158 has a 2000 average daily traffic (ADT) of 6000<sup>10</sup> and a projected 2025 ADT of 16,200<sup>11</sup>. In the vicinity of the airport, U.S. 158 is a 2-lane highway classified as a minor arterial. U.S. 158 runs from U.S. 17 at Elizabeth City, east across the Currituck County mainland, then south to the Wright Memorial Bridge (the northernmost highway access to the Outer Banks). This highway is a designated hurricane evacuation route for the Outer Banks. Airport Road (SR 1379), the entry to the airport and Maple Complex, is a 2-lane road constructed for heavy truck traffic. The N.C. Dept. of Transportation has no information on the ADT of Airport Road. The 2-lane Maple Road, which borders the airport to the northwest, has a 1999 ADT of 1,200 and a projected 2025 ADT of 2,600.

#### **4.6 Zoning**

Information in this section was obtained from Currituck County’s *Unified Development Ordinance* (UDO), adopted November 16, 1992 and as amended. The UDO identifies 11 zoning districts: Agricultural (A), Mixed Residential (RA), Basic Residential (R), Residential/Recreational (RR), General Business (GB), Heavy Manufacturing (HM), Light Manufacturing (LM), Limited Business (LB-H), Outer Banks Standard Residential (RO1),

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<sup>10</sup> Personal communication, N.C. Department of Transportation, Statewide Planning, Traffic Survey Unit, May 2, 2002.

<sup>11</sup> *Thoroughfare Plan Technical Report for Currituck County*, N.C. Department of Transportation, March, 1999.

Outer Banks Limited Access Residential (RO2), and Commercial (C). County owned or operated airports are permitted in all of the zoning districts with a special use permit.

The land in the general vicinity of the airport is made up of four zoning classifications: Agricultural, Mixed Residential, Heavy Manufacturing, and General Business. The airport itself and the Maple Complex are zoned Heavy Manufacturing. The UDO describes the HM district as follows:

“The LM (Light Manufacturing) and HM (Heavy Manufacturing) districts are hereby established primarily to accommodate enterprises engaged in the manufacturing, processing, creating, repairing, renovating, painting, cleaning, or assembling of goods, merchandise, or equipment. The two districts are distinguished in that certain types of manufacturing uses that tend to have significant adverse impacts on surrounding properties are excluded from the LM district and are made permissible only within the HM district.”

With the exception of a parcel zoned General Business southeast of the airport, the remainder of the adjacent land north of U.S. 158 is zoned Agricultural. The land south of the airport across U.S. 158 includes parcels zoned for Heavy Manufacturing, Agricultural, and Residential-Agricultural uses.

In 1998, the Currituck County zoning ordinance was amended to include guidelines for property to be zoned for Residential Airpark Development (RAD). One or more property owners with forty or more contiguous acres of land that is adjacent to the airport may request that their property be rezoned RAD. Property zoned RAD is not allowed more than two points of entry onto airport property, and such entry points are subject to the approval of the Airport Authority. The right of ways that will accommodate air traffic between the RAD property and the airport must be at least sixty feet wide and may be used by county emergency and maintenance vehicles and aircraft.

In May, 2001 the County implemented a height restriction zoning ordinance to protect the airport's airspace. The ordinance restricts the height of any new construction within certain defined zones around the airport. The ordinance contains provisions which would prevent the construction of towers or other obstructions to the airport's airspace and imaginary surfaces as adopted from findings contained in the 2000 *Airport Layout Plan Update*.

#### **4.7 Planned Land Use**

The current land use plan, *Currituck County 1990 Land Use Plan*, “is an official public document adopted by the Currituck County Board of Commissioners that contains information about the physical development of the county as it exists today, what directions the county should take in the future, and what steps need to be taken to achieve desired goals.” The plan was certified by the N.C. Coastal Resources Commission (CRC) in 1991. As a coastal community, Currituck County must update its land use plan every five years. Based on conversations with the Currituck County Director of Planning, the draft update of the plan was developed in 1996 but was put on hold as a result of on-going evaluation of alternative corridors for the Mid-County Bridge (see Section 4.8). The 1996 draft plan was

never adopted by the County or CRC. The county is currently updating the plan, and expects to complete the update in 2004.

The 1990 Land Use Plan explicitly encourages “greater utilization of airport facilities” and states that the County “is fortunate to have such a facility available and wishes to promote its usage.” The Land Use Plan recommended that an Airport Authority be appointed to oversee the airport and that the County carry out the recommendations established in the Airport Master Plan. Since the Land Use Plan was written, the Currituck County Airport Advisory Authority was established to make recommendations to the Currituck County Board of Commissioners regarding the operation and development of the airport.

The County currently has plans in the conceptual stage to develop a 50-acre business park on the Maple Complex property east of the airport. The County is planning to construct a building for its agricultural extension service at the planned business park site. A wastewater treatment plant is planned to be constructed to serve the business park and the airport.

The state prison facility west of the airport has been closed and transferred to the County, which is currently developing plans to renovate the 54-acre facility for use as a county jail, sheriff offices, and offices for county emergency management functions.

Plans have also been developed by a private property owner for a 42-acre residential airpark located adjacent to the airport property along its northwest side (see Section 4.6, Zoning for description of Residential Airpark Development zoning ordinance). Fully developed, the residential airpark would have 18 residences, each with individual hangar spaces and a shared taxiway to the airport. This development has received sketch plan approval by the County at the time of this report<sup>12</sup>.

#### **4.8 Planned Land Use - Transportation**

Two N.C. DOT documents were reviewed for this report section: the *2002-2008 Transportation Improvement Program* (TIP), and the March, 1999 *Thoroughfare Plan Technical Report for Currituck County*. Neither of these documents address the Currituck County Airport.

The 1999 *Thoroughfare Plan Technical Report for Currituck County* includes two projects planned in the vicinity of the airport: the widening of U.S. 158 and the widening of Maple Road (SR 1246). The widening of U.S. 158 from 2 lanes to 4 lanes recommended from the Camden County line to NC 168, including the highway section adjacent to the airport. The U.S. 158 widening project (TIP project R-2574) is described in the *2002-2008 TIP* as an unfunded project scheduled for post-2008. The *Thoroughfare Plan Technical Report* describes the widening as a “future need” for the estimated 21,400 vehicles per summer weekday projected for the year 2025. The *Thoroughfare Plan Technical Report* also recommends the widening of Maple Road west of the airport from 18’ to up to 24’ wide to accommodate future projected 2025 traffic volumes of 2,600 ADT.

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<sup>12</sup> Currituck County Planning Dept., 5/21/2002.

The N.C. DOT is also planning construction of a bridge across the Currituck Sound between the towns of Coinjock on the county mainland, and Corolla, on the Currituck Outer Banks. This project is known as the Mid-County Bridge. The final location of the bridge has not been determined. Based on the *2002-2008 TIP*, the study area for the bridge is located southeast of the airport, and is bordered by U.S. 158 to the west, Waterlily Road (SR 1142) to the north, and the Currituck Outer Banks to the east. The western boundary of the study area runs approximately from the town of Coinjock south to the town of Poplar Branch. The northernmost point of the Mid-Currituck Bridge study area is located approximately 5 miles southeast of the airport. The *2002-2008 TIP* describes the project planning as in-progress, with construction anticipated in FY 06. The *Thoroughfare Plan Technical Report* says that the Mid-County Bridge will “provide an additional access for tourists and residents to the rapidly developing Northern Outer Banks area, a more direct access to the rapidly developing area, and provide a much needed additional emergency evacuation route.”

#### **4.9 Social Characteristics**

Currituck County is one of the fastest growing areas of the state. The proximity of Hampton Roads, Virginia and Dare County, North Carolina, as well as the county’s low housing costs have attracted an influx of new residents. Based on U.S. Census Bureau data, from 1990 to 2000, the population of Currituck County grew by 32.4% from 13,736 to 18,190, the 11<sup>th</sup> fastest growth rate in North Carolina, and the fastest in northeastern North Carolina. Since 1970 the county’s population has grown 161%. The natural beauty of Currituck County and the high quality of life make it a highly desirable place to live. The N.C. Office of State Budget and Management estimates that the county’s population will grow to 22,599 people by 2010, a 24.2% increase over current levels. The majority (92%) of the population growth is expected to be from migration into the county, and Currituck County’s level of in-migration is expected to be the 8<sup>th</sup> highest in the state.<sup>13</sup>

The summer season marks a dramatic increase in population due to the number of vacationers visiting the Outer Banks. The estimated peak summer population was 25,465 in July 1995. The seasonal population is projected to increase to 40,246 persons by 2005<sup>14</sup>.

#### **4.10 Economic Characteristics**

As provided in the William S. Lee Quality Jobs and Business Expansion Act, the N.C. Department of Commerce annually evaluates North Carolina's 100 counties and assigns each county a tier designation ranking from one to five. Designations are based on each county's ranking in unemployment, per capita income and population growth. Currituck County is designated as a Tier 3 county. Counties in tiers 1, 2, and 3 are considered "distressed" and are eligible for business incentive programs offered through the N.C. Department of Commerce. As described in previous sections, while Currituck County’s population growth from 1990 to 2000 was the 11th fastest in the state, its per capita income during the same period ranked 33rd among the 100 North Carolina counties. In 1999, Currituck County was

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<sup>13</sup> North Carolina State Demographics Unit, *County Population Growth 2000 – 2010*, <http://demog.state.nc.us/>, April 18, 2002

<sup>14</sup> Talbert & Bright, Inc., *Airport Layout Plan Update, Currituck County Airport*, December 2000.

ranked *last* by the N.C. Dept. of Commerce among all North Carolina counties in new plants and expansions of existing plants. Currituck County's income characteristics compared to North Carolina are shown on Table 6.

Table 6: 2000 Income Characteristics For Currituck County and North Carolina (from U.S. Census Bureau Data)

<b>Income Distribution</b>	<b>Currituck County</b>	<b>North Carolina</b>
Under \$15,000	9.7%	10.5%
\$15,000 - \$24,999	11.6%	11.8%
\$25,000 - \$34,999	11.7%	13.1%
\$35,000 - \$49,999	21.3%	18.7%
\$50,000 - \$74,999	25.8%	22.9%
\$75,000 - \$99,999	11.8%	11.1%
\$100,000 +	8.1%	11.9%
Total Households	100.0%	100.0%
Families in Poverty	8.9%	9.0%
Persons in Poverty	10.7%	12.3%
Median Family Income	\$46,382	\$46,335

From 2000 census data, the largest employers in the County are construction (17%), educational/health/social services (15%), and retail trade (14%). Remaining employment is in arts/entertainment/recreation/accommodation/food services (9%), public administration (8%), manufacturing (7%), professional/scientific/management/administrative/waste management services (6%), finance/insurance/real estate (6%), , agriculture (3%), wholesale trade (4%), transportation/communication/public utilities (5%), and information (2%). Currituck County's largest employers are shown in Table 7.

Table 7: Largest Employers in Currituck County

<b>Employer</b>	<b>DESCRIPTION</b>	<b>No. of Employees</b>
B & B on the Beach Inc	Financial, Insurance & Real Estate	250 – 499
Food Lion LLC	Retail Trade	100 – 249
Griggs Lumber & Produce Co Inc.	Retail Trade	100 – 249
Sentara Nursing Center	Services	100 – 249
Southland Trade Corp	Retail Trade	50 – 99
Twiddy & Co of Duck Inc.	Financial, Insurance & Real Estate	50 – 99
Olds Auto Supply & Service Inc	Retail Trade	20 – 49
Border Station Inc	Retail Trade	20 – 49
Sun Realty Nags Head Inc	Financial, Insurance & Real Estate	20 – 49
Currituck Crab Co Inc	Manufacturing	20 – 49

Source: N.C. Department of Commerce, Economic Development Information Services, 2<sup>nd</sup> Quarter, 2001.

As described in Section 2, employment figures for Currituck County analyzed by the N.C. Department of Transportation indicated that in 1990, over 60% of the county’s residents commuted to jobs outside Currituck County each day. The University of North Carolina found that the county provides homes and services for residents who commute to jobs in neighboring counties and Virginia, but the surrounding areas, not Currituck County, receive the benefits of the business taxes. According to the N.C. Department of Transportation, almost three-fifths of these out-commuters were employed just north of Currituck County in the Hampton Roads area of Virginia. The imbalance between in-commuters and out-commuters indicates that the county serves as a “bedroom” community to nearby larger employment centers.

Currituck County’s economy is heavily dependent on tourism to the Outer Banks. The main attractions visited by tourists in Currituck County are the Currituck Beach Lighthouse in Corolla, Mackay Island National Wildlife Refuge and vineyards on Knotts Island, and ocean beaches along the Atlantic Coast. From the N.C. Department of Commerce, domestic tourism in Currituck County generated an economic impact of \$72.6 million in 2000. This was a 90.9% increase over 1995. In 2000, more than 1,220 jobs in Currituck County were directly attributable to travel and tourism, and travel generated a \$17.24 million payroll. 2000 state and local tax revenues from travel to Currituck County amounted to \$7.09 million.

**4.11 Historic, Architectural, Archeological, and Cultural Resources**

No historic, architectural, archeological, or cultural resources are known to exist in the EA study area. There are no frame-built structures in the study area except for the two hangar buildings, which were constructed in 1995 and 2001. There are ten sites in Currituck County listed on the National Register of Historic Places. These sites are shown on Table 8. The closest sites (in Shawboro) are over four miles west of the airport.

Table 8: Currituck County National Register Sites

Site	Address	Town
Baum Site (pre-historic site)	Address Restricted	Poplar Branch
Culong	South of Shawboro on SR 1147	Shawboro
Currituck Beach Lighthouse	Northern NC Outer Banks	Corolla
Currituck Beach Lighthouse Complex (Boundary Increase)	NC 12, north of NC 1185 (Outer Banks)	Corolla
Currituck County Courthouse and Jail	SR 1242	Currituck
Currituck Shooting Club	South of Corolla (Outer Banks)	Corolla
Grandy School (Former)	Junction of US 158 and Poplar Branch Road	Grandy
Shaw House	NC 34 and SR 1203	Shawboro
Twin Houses	On NC 168 at junction of SR 1203 and 1147	Shawboro
Whalehead Club	Currituck Banks (Outer Banks)	Corolla

Source: National Park Service, <http://www.cr.nps.gov/nr/>

#### **4.12 Publicly Owned Lands**

No recreation areas or historic sites are located in the EA study area. As described in Section 4.5, a 19-acre public park (Maple Park) is located in the 530-acre Maple Complex property, which includes the airport. The park is located along the east side of the airport, across Airport Road. Due to its location in the Federal Air Regulation (FAR) Part 77 transitional surface for the existing airport, a small portion of the western edge of the park is located in the study area.

#### **4.13 Farmlands**

Of the 285 acre study area, approximately 9 acres along the northwest edge are currently used for agriculture. As described in Section 4.4, the majority of the soils in the EA study area, including the soils underlying the runway, are Newhan fine sands (NeC), which are *not* classified as prime, unique or statewide importance farmland. The Altavista fine sandy loam (AaA) soil type, which is located in the northeast portion of the study area (north of the existing airport hangars), is classified as a prime farmland by the USDA Soil Conservation Service. The Conetoe loamy sand (CnA) soil type, located just south of the AaA soils in the location of the existing apron and hangar buildings, is considered state- and locally-important farmland. The Dragston loamy fine sands (Ds) located at the north end of the airport and along the northwestern edge of the study area, and the Portsmouth fine sandy loam (Pt) located at the north end of the study area, are also considered state- and locally-important farmland. With the exception of the Ds soils on farmland along the northwest edge of the study area, and the Pt soils, all of the prime and important farmland soils in the study area are located on state-owned property in the Maple Complex. The Ds soils along the northwest edge of the study area are the only soils currently in agricultural use.

#### **4.14 Air Quality**

Currituck County is currently in attainment of all of the National Ambient Air Quality Standards.

#### **4.15 Floodplains**

Based on examination of the applicable Flood Insurance Rate Map (FIRM 370078-0170C), the current airport is not located in the 100 year flood boundary. The northernmost end of the EA study area is located in “Zone A3” within the 100 year flood boundary, with a base flood elevation of 5 feet. The southwestern corner of the study area is also located in “Zone A3”, with a base flood elevation of 6 feet.

#### **4.16 Wild and Scenic Rivers**

The “Wild and Scenic River Act” describes those river areas eligible to be included in a system afforded protection under the Act as free flowing and possessing “...outstandingly remarkable scenic, recreational, geologic, fish and wild life, historic, cultural, and other similar values.” In North Carolina, portions of four rivers - the New River (South Fork), the Lumber River, Wilson Creek, and the Horsepasture River - are federally designated as wild and scenic. Wilson Creek and the New and Horsepasture Rivers are in the western part of the state. The reaches of the Lumber River that have been designated as wild and scenic are located in Scotland and Robeson Counties, located south of Fayetteville. There are no

federally designated wild and scenic rivers in Currituck County, northeastern North Carolina, or the state of Virginia.

#### **4.17 Coastal Barriers**

In 1982, Congress passed the Coastal Barrier Resources Act (CBRA) to address problems caused by coastal barrier development. The CBRA restricted Federal expenditures in the Coastal Barrier Resources System, a defined set of undeveloped coastal areas along the Atlantic and Gulf of Mexico coasts. Congress explicitly decided what areas would be included in the system. In 1990, the CBRA was amended by the Coastal Barriers Improvement Act (CBIA) which broadened the definition of a coastal barrier and expanded the system.

From the U.S. Fish & Wildlife Service<sup>15</sup>, “the CBIA defines an ‘undeveloped coastal barrier’ to mean:

- a) a depositional geologic feature (such as a bay barrier, tombolos, barrier spit, or barrier island) that:
  - (i) is subject to wave, tidal, and wind energies, and
  - (ii) protects landward aquatic habitats from direct wave attack; and
- b) all associated aquatic habitats, including the adjacent wetlands, marshes, estuaries, inlets, and nearshore waters; but only if such feature and associated habitats contain few human-made structures and these structures, and human activities on such feature and within such habitats, do not significantly impede geomorphic and ecological processes.”

In Currituck County, the Coastal Barrier Resources System units are located on the Currituck Banks and Pine Island Bay<sup>16</sup>. The nearest unit, Pine Island Bay, is over 4.5 miles east of the airport. The Currituck County Airport and EA study area are not located in the Coastal Barriers Resource System (CBRS) or an Otherwise Protected Area (OPA).

#### **4.18 Coastal Zone Management Programs**

Development activities in North Carolina's twenty coastal counties are regulated by the Coastal Resources Commission (CRC) to ensure consistency with the State's Coastal Area Management Act (CAMA). The CRC has identified Areas of Environmental Concern (AECs) within which development is closely regulated to ensure that there is no irreversible damage to North Carolina's coastal environment. The CRC has designated four categories of AECs: the estuarine system, the ocean hazard system, public water supplies, and natural and cultural resource areas. Descriptions of these AEC's are included below, and are excerpted from the *CAMA Handbook for Development in Coastal North Carolina*, published by the N.C. Division of Coastal Management. **No AEC's are known to exist in the EA study area, as described below.**

The **estuarine and ocean system** AEC's consist of *public trust areas, estuarine waters, coastal shorelines, and coastal wetlands.*

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<sup>15</sup> U.S. Fish & Wildlife Service, <http://www.fws.gov/cep/undevbar.html>, May 2, 2002.

<sup>16</sup> U.S. Fish & Wildlife Service, <http://www.fws.gov/cep/cbrtable.html>, May 2, 2002.

*Public trust areas* are the coastal waters and submerged lands that every North Carolinian has the right to use for activities such as boating, swimming or fishing. These areas often overlap with estuarine waters, but they also include many inland fishing waters. The following lands and waters are considered public trust areas:

- All waters of the Atlantic Ocean and the lands underneath, from the normal high water mark on shore to the state's official boundary three miles offshore. *None of these waters occur in or near the EA study area.*
- All navigable natural water bodies and the lands underneath, to the normal high watermark on shore (a body of water is considered navigable if you can float a canoe in it). This does not include privately owned lakes where the public doesn't have access rights. *There are no natural water bodies in the EA study area.*
- All water in artificially created water bodies that have significant public fishing resources and are accessible to the public from other waters. *The two artificial lakes located in Maple Park (and created when soil was excavated to cap the adjacent landfill) are not significant public fishing resources and are not accessible to the public from other waters. These lakes are also outside the EA study area.*
- All waters in artificially created water bodies where the public has acquired rights by prescription, custom, usage, dedication or any other means. *The two artificial lakes located in Maple Park may fit this definition, but are located outside the EA study area.*

*Estuarine waters* are the state's oceans, sounds, tidal rivers and their tributaries. The closest water bodies fitting these definitions are Coinjock Bay and Coinjock Creek. Coinjock Bay is over 1.2 miles east of the airport, and is separated from the airport by the 400 acre Maple Complex and State Route 168. Coinjock Creek, a tributary to Coinjock Bay, is approximately 1800 feet northeast of the airport outside the EA study area.

*Coastal shorelines* include all lands within 75 feet of the normal high water level of estuarine waters. This definition also includes lands within 30 feet of the normal high water level of public trust waters located inland of the dividing line between coastal fishing waters and inland fishing waters. Along Outstanding Resource Waters, this definition includes lands within 575 feet of the normal high water level. None of these waters occur in the EA study area.

The Coastal Resources Commission's rules define *coastal wetlands* as any marsh in the 20 coastal counties that regularly or occasionally floods by lunar or wind tides, *and* that includes one or more of the following plant species:

*Spartina alterniflora*: Salt Marsh (Smooth) Cord Grass  
*Juncus roemerianus*: Black Needlerush  
*Salicornia spp.*: Glasswort  
*Distichlis spicata*: Salt (or Spike) Grass  
*Limonium spp.*: Sea Lavender  
*Scirpus spp.*: Bulrush

*Cladium jamaicense*: Saw Grass  
*Typha spp.*: Cattail  
*Spartina patens*: Salt Meadow Grass  
*Spartina cynosuroides*: Salt Reed or Giant Cord Grass

Based on the Biotic Communities evaluation (see Section 4.22) and wetlands information (see Section 4.21), no coastal wetlands exist in or near the EA study area.

The **Ocean Hazard System** is made up of oceanfront lands and the inlets that connect the ocean to the sounds. No such oceanfront lands or inlets exist in or near the EA study area.

The CRC has designated two **Public Water Supplies** that protect certain coastal public water supplies as AEC's:

1. The *Small Surface Water Supply Watershed AEC* protects coastal drainage basins that contain a public water supply classified as A-II by the N.C. Environmental Management Commission. This classification means that the best use of the water is for public drinking water, and this use must be protected by state regulations. Two such watersheds have been designated as AECs: the Fresh Pond at the Nags Head and Kill Devil Hills border; and Toomer's Creek near Wilmington.
2. *Public Water Supply Wellfields* are areas of rapidly draining sands extending from the earth's surface to a shallow groundwater table that supplies public drinking water. Currently, one wellfield is designated as an AEC, on Hatteras Island at Buxton.

**Natural and Cultural Resource AEC's** are specific sites (such as Jockey's Ridge in Dare County and Permuda Island in Onslow County) that have been designated to receive protection because they contain environmental or cultural resources that are important to the entire state. No designated sites exist in the EA study area.

#### **4.19 Surface Water**

Currituck County is located in the Pasquotank River Basin. The Pasquotank River basin encompasses 3,635 square miles of low-lying lands and vast open waters, including Albemarle Sound, in the state's northeast outer coastal plain. In addition to the entirety of Currituck County, the basin includes all or portions of Camden, Chowan, Dare, Gates, Hyde, Pasquotank, Perquimans, Tyrrell and Washington counties. The basin also contains numerous small watersheds that drain into Albemarle, Currituck, Croatan, Roanoke and Pamlico Sounds.

The Currituck County Airport is located on the mainland part of the county. The Currituck County mainland is drained by the North, Northwest, and North Landing Rivers and by Currituck Sound. The mainland is bordered on the east by Currituck Sound, which is a shallow, fresh to brackish estuary influenced greatly by wind movement. Inputs to the Currituck Sound come from the Northwest River and numerous canals originating in the Great Dismal Swamp. The Intracoastal Waterway (ICCW) travels down the North River across the Virginia border and through Coinjock Bay. At Coinjock, the ICCW cuts through the Maple Swamp and Great Swamp to the North River.

According to the *Pasquotank River Basinwide Water Quality Plan* (Final Draft, May 2002) prepared by the N.C. Division of Water Quality (NCDWQ), water quality in the entire river basin is generally good. Currituck County (including the EA study area) is located in Subbasin 03-01-54 of the River Basin. The 1997 *Pasquotank River Basinwide Plan* did not identify any segments in this subbasin as having impaired water quality. The Final Draft 2002 Basinwide Plan indicated that there are 22.6 Atlantic coastal miles which are “partially supporting” that were monitored for fish consumption because of a statewide fish consumption advisory for bowfin and king mackerel. These partially supporting coastal areas are located well outside the mainland EA study area.

The nearest named stream to the airport is Coinjock Creek, which, at its closest point, is located 1800’ east of the airport. The creek flows southwest to northeast, and then under Highway 168 to Coinjock Bay. Coinjock Bay, which is located approximately 1.2 miles east of the airport, is classified as an SC Tidal Salt Water. Class SC has a best use of aquatic life propagation and secondary recreation, including recreational fishing, boating, and water related activities involving minimal skin contact. Coinjock Creek is not classified by the NCDWQ.

Maple Park, adjacent to the airport, contains two manmade ponds totaling 13 acres created when material was excavated to cap the nearby landfill cells. Within the EA study area itself, the single water body is a manmade pond located on agricultural property just off the northwest corner of the airport. No other water bodies are located in the study area. Stormwater from the airport is generally conveyed by grass-lined ditches to ditches along Airport Road and U.S. 158. The Currituck County Water Treatment Plant adjacent to the airport is one of two permitted NPDES dischargers in the subbasin, and holds a minor permit.

#### **4.20 Ground Water**

In Currituck County the depth to fresh groundwater, which is the county’s source of drinking water, is typically less than 100 feet. The freshwater is contained in sands and clays of the upper sandy aquifer.<sup>17</sup> A series of production wells on the Maple Complex property (including the airport) provide the raw water to the Currituck Water Plant located just west of the airport. The wells are discussed in detail in Section 4.25, and range in depth from 60’ to 250’. Groundwater quality in the vicinity of the closed landfill cells in the Maple Complex is monitored by eight wells located west of the landfills and east of the airport. An additional ten wells are used to monitor potable water quality in the drinking water wellfield.

#### **4.21 Wetlands**

Wetlands are defined by the U. S. Army Corps of Engineers (ACOE) as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3). In accordance with this definition, wetlands must possess the following three diagnostic characters: a predominance of hydrophytic vegetation, hydric soils, and wetland hydrology. The ACOE is charged with regulating the discharge of dredge or fill material into jurisdictional wetlands and open waters under Section 404 of the Clean Water Act of 1977, as amended.

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<sup>17</sup> *Soil Survey of Currituck County, North Carolina*. USDA, Soil Conservation Service, 1982.

A jurisdictional wetlands delineation for the 530(±) acre Maple Complex (including the existing airport) was certified by the ACOE on March 6, 1997. A small area of wetlands (0.7 acres) was identified in the northeast corner of the airport, located in the EA study area. No other wetlands were identified within the current airport boundary. The delineation expired on March 6, 2002, and is currently being updated by the County. The EA study area includes private property located outside the Maple Complex, and wetlands delineations have not been performed for these privately-owned areas. However, National Wetlands Inventory Maps in combination with the biotic communities information developed for this EA (Section 4.22) were reviewed to identify approximate boundaries of wetlands on private property in the EA study area. Wetlands in the study area off airport property are associated with the nonriverine swamp forest and nonriverine wet hardwood forest biotic communities, described in detail in the following section. The EA study area does not include any tidal, estuarine, or riverine wetlands.

Approximately 50 acres of wetlands associated with the nonriverine swamp forest biotic community are located at the north end of the study area, north of the existing runway threshold. An additional 10 acres of wetlands associated with the nonriverine swamp forest are located along the southwest edge of the study area off airport property. A small portion (<0.1 acre) of a 12-acre delineated wetland is located east of Airport Road in the study area. This wetland is associated with the nonriverine wet hardwood forest biotic community.

#### **4.22 Biotic Communities**

Dial-Cordy and Associates Inc. performed a field investigation and mapped the biotic communities in the 285 acre study area in April-May 2002. The North Carolina Natural Heritage Program (NCNHP) defines a natural community as “a distinct and reoccurring assemblage of populations of plants, animals, bacteria, and fungi naturally associated with each other and their physical environment” (Schafale and Weakley 1990). Biotic communities, as defined in this document, include a combination of natural communities whose composition is primarily determined by natural ecological processes, as well as disturbed communities whose composition has been substantially altered by human activities. The occurrence and distribution of biotic communities within the study area is influenced by numerous interrelated environmental factors such as climate, soils, topography, hydrological regime, natural disturbance, and human activities. Natural communities occurring within the study area include nonriverine swamp forest, nonriverine wet hardwood forest, and mixed mesic hardwood forest. Disturbed communities include pine-hardwood forest, scrub-shrub, and man-dominated areas. The biotic communities in the study area are described in detail below.

##### Nonriverine Swamp Forest

The nonriverine swamp forest community occurs on seasonally flooded flats at the north and southwestern ends of the study area off airport property. In contrast to river swamps, which receive overbank flooding from the river channel, nonriverine swamps are not associated with rivers, and instead are flooded and/or saturated by a high water table. The nonriverine swamp forest at the north end of the runway is part of a large forested area (approximately 400 acres) in private ownership. The nonriverine swamp forest community at the

southwestern end of the study area (also in private ownership) is part of the Buckskin Creek/Great Swamp Natural Area, a 4700-acre unprotected natural area identified by the NCNHP as being of State significance. (A detailed description of the Buckskin Creek/Great Swamp Natural Area is included in this section following the biotic communities descriptions.)

The vegetation of the nonriverine swamp forest community type is characterized by a canopy of swamp tupelo (*Nyssa biflora*), ash (*Fraxinus* sp.), red maple (*Acer rubrum*), sweet gum (*Liquidambar styraciflua*), tuliptree (*Liriodendron tulipifera*), swamp chestnut oak (*Quercus michauxii*), water oak (*Q. nigra*), swamp laurel oak (*Q. laurifolia*), and sweetbay (*Magnolia virginiana*); and a subcanopy of American holly (*Ilex opaca*), ironwood (*Carpinus caroliniana*), swamp red bay (*Persea palustris*) and sweetbay. The sparse to moderately dense shrub stratum is dominated by sweetbay, swamp red bay, gallberry (*Ilex coriacea*), inkberry (*I. glabra*), highbush blueberry (*Vaccinium corymbosum*), fetterbush (*Lyonia lucida*), cane (*Arundinaria tecta*), southern wild raisin (*Viburnum nudum*), wax-myrtle (*Myrica cerifera*), maleberry (*Lyonia ligustrina*), coastal doghobble (*Leucothoe axillaris*), and swamp-loosestrife (*Decodon verticillatus*). The sparse to moderately dense herbaceous stratum includes lizard's-tail (*Saururus cernuus*), Virginia chainfern (*Woodwardia virginica*), netted chainfern (*W. areolata*), cinnamon fern (*Osmunda cinnamomea*), royal fern (*O. regalis* var. *spectabilis*), Jack-in-the-pulpit (*Arisaema triphyllum*), southern twayblade (*Listera australis*), sedges (*Carex* spp.), and peatmoss (*Sphagnum* sp.).

The areas mapped as nonriverine swamp forest are actually a mosaic of this community type and the nonriverine wet hardwood forest community described below. Small islands of nonriverine wet hardwood forest are interspersed throughout the swamp forests on areas of slightly higher elevation. The nonriverine wet hardwood forest is differentiated by a predominance of oaks over hardwoods such as swamp tupelo and ash.

#### Nonriverine Wet Hardwood Forest

The nonriverine wet hardwood forest community occurs on seasonally saturated flats immediately east of the southern end of the existing paved runway (across Airport Road) and on numerous small islands within the nonriverine swamp forest community. As with the nonriverine swamp forest community, this community is not associated with rivers, and instead is flooded and/or saturated by a high water table. The vegetation is characterized by a canopy of tuliptree, red maple, water oak, swamp laurel oak, swamp chestnut oak, and swamp tupelo; and a subcanopy of American holly, pawpaw (*Asimina triloba*) and sweetbay. The moderately dense shrub stratum is dominated by coastal sweet-pepperbush (*Clethra alnifolia*), horsesugar (*Symplocos tinctoria*), sweetbay, swamp red bay, highbush blueberry, and coastal doghobble. The sparse herbaceous stratum includes netted chainfern, cinnamon fern, and southern lady fern (*Athyrium filix-femina* var. *asplenioides*).

#### Mesic Mixed Hardwood Forest

The mesic mixed hardwood community occurs on mesic upland flats at various locations throughout the study area. The vegetation is characterized by a canopy of southern red oak (*Quercus falcata*), white oak (*Q. alba*), black oak (*Q. velutina*), water oak, sweet gum, red maple, tuliptree, and loblolly pine (*Pinus taeda*); and a sparse subcanopy of flowering

dogwood (*Cornus florida*), sourwood (*Oxydendrum arboreum*), American holly, and swamp red bay. The sparse shrub stratum includes horsesugar, coastal sweet-pepperbush, swamp red bay, gale-leaf blueberry (*Vaccinium tenellum*), inkberry, cane, sweetbay, highbush blueberry, wax-myrtle, fetterbush, and coastal doghobble. The very sparse herbaceous stratum includes Carolina jessamine (*Gelsemium sempervirens*), muscadine (*Vitis rotundifolia*), arrowleaf heartleaf (*Hexastylis arifolia*), partridgeberry (*Mitchella repens*), and slender spikegrass (*Chasmanthium laxum*).

#### Pine-Mixed Hardwood Forest

The pine-mixed hardwood community, located east of the aircraft apron and in the extreme southwest corner of the study area, represents disturbed examples of the mesic mixed hardwood community that are dominated by loblolly pine. The vegetation is characterized by a canopy of loblolly pine, and a dense to moderately dense understory of mixed mesic hardwoods. The hardwood component includes various combinations of sweet gum, red maple, water oak, white oak, southern red oak, and American holly. The sparse to moderate shrub stratum is dominated by horsesugar, inkberry, swamp red bay, sweetbay, coastal sweet-pepperbush, wax-myrtle, and highbush blueberry. The sparse herbaceous stratum typically includes Carolina jessamine, muscadine, arrowleaf heartleaf, and partridgeberry.

#### Scrub-Shrub

This community occurs on cleared areas where the vegetation is recovering from recent disturbance. A small scrub-shrub community is located in the study area on private property west of the airport. The vegetation is dominated by tree saplings, shrubs, and opportunistic species. Typical saplings and shrubs include loblolly pine, sweet gum, water oak, black cherry (*Prunus serotina*), red maple, tuliptree, flowering dogwood, devil's walkingstick (*Aralia spinosa*), horsesugar, swamp red bay, and wax-myrtle. The herbaceous stratum is dominated by Japanese honeysuckle (*Lonicera japonica*) and poison ivy (*Toxicodendron radicans*).

#### Man-Dominated

This community includes urbanized areas occupied by airport facilities, agricultural fields, and residential development.

#### Buckskin Creek/Great Swamp Natural Area

As described earlier in this section, the nonriverine swamp forest community located at the southwest corner of the study area is located in the southeastern-most corner of the Buckskin Creek/Great Swamp Natural Area. This 4700-acre natural area is one of the largest swamps remaining in North Carolina. Based on information from the N.C. Natural Heritage Program (NCNHP), the site is apparently not protected from development, but is considered a State significant site. The southern boundary of the Great Swamp natural area is formed by U.S. 158, and the swamp extends approximately 13.5 miles to the north.

### **4.23 Essential Fish Habitat**

In accordance with provisions of the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act, Federal agencies that fund, authorize, or undertake any action that may adversely affect Essential Fish Habitat (EFH) are required to consult with the

National Marine Fisheries Service. The National Marine Fisheries Service and the North Carolina Division of Marine Fisheries were consulted in development of the EFH analysis in this report.

The South Atlantic Fishery Management Council (SAFMC) has identified EFH designations for individual federally-managed species and has also designated 13 general estuarine and marine habitats as EFH in the South Atlantic Region, which includes Currituck County<sup>18</sup>. The EA study area does not contain any of the identified habitats, as described in detail below.

The general marine areas identified as EFH are live/hard bottoms, coral and coral reefs, artificial/ manmade reefs, sargassum, and the water column. None of these marine areas occur in or near the EA study area. The general estuarine areas identified by the SAFMC as EFH are estuarine emergent wetlands, estuarine scrub/shrub mangroves, submerged aquatic vegetation, oyster reefs and shell banks, intertidal flats, palustrine emergent and forested wetlands, aquatic beds, and the estuarine water column. The Final EFH Plan for the south Atlantic region describes palustrine forested wetlands as estuarine river swamps and tidal swamps (SAFMC 1998). None of these estuarine areas occur in or near the EA study area. Coinjock Bay, which has the nearest potential occurrences of intertidal flats, palustrine emergent wetlands, the estuarine water column, and submerged aquatic vegetation, is located approximately 1.2 miles east of the airport.

The SAFMC has also identified 14 specific geographic areas as Habitat Areas of Particular Concern in North Carolina. Seven of these are area-wide throughout the south Atlantic region, and seven are specific to North Carolina. The area-wide habitats are: council-designated artificial reef special management zones, hermatypic coral habitat and reefs, hard bottoms, Hoyt Hills, *Sargassum* habitat, state-designated areas of importance to managed species, and submerged aquatic vegetation. State-designated areas of importance to managed species include Primary and Secondary Nursery Areas as defined in 15A NCAC 3R .0103/.0104. The specific North Carolina habitats include Big Rock; Bogue Sound; Pamlico Sound at Hatteras/Okracoke Islands; sandy shoals of Cape Hatteras, Cape Fear, and Cape Lookout; New River; the Ten Fathom Ledge; and The Point. None of these habitats are located in or near the study area. Submerged aquatic vegetation does occur in Currituck Sound and could potentially occur in Coinjock Bay; however, Coinjock Bay is located approximately 1.2 miles east of the airport well outside the EA study area. Coinjock Bay does not contain any Primary or Secondary Nursery Areas<sup>19</sup>.

Potential EFH for individual federally-managed species in the general vicinity of the airport includes estuarine habitats in Coinjock Bay for species such as shrimp (*Penaeus* spp.), red

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<sup>18</sup> South Atlantic Fishery Management Council, *Final Habitat Plan for the South Atlantic Region: Essential Fish Habitat Requirements for Fishery Management Plans of the South Atlantic Fishery Management Council*. October 1998.

<sup>19</sup> Dial-Cordy personal communication, Sara Winslow, Northern District Manager, North Carolina Division of Marine Fisheries, Elizabeth City, NC, April 26 2002.

drum (*Sciaenops ocellatus*), and summer flounder (*Paralichthys dentatus*)<sup>20</sup>. Coinjock Bay supports resident species such as yellow perch (*Perca flavescens*), white perch (*Morone americana*), and catfish (*Ictalurus* spp.); as well as estuarine dependent species that include spot (*Leiostomus xanthurus*), Atlantic croaker (*Micropogonias undulatus*), summer flounder, weakfish (*Cynoscion regalis*), red drum, blueback herring (*Alosa aestivalis*), alewife (*Alosa pseudoharengus*), shrimp, and blue crab (*Callinectes sapidus*)<sup>21</sup>. Potential specific EFH habitats for federally-managed species such as summer flounder, red drum and shrimp that may occur in Coinjock Bay include the water column; mud, silt, sand, and/or shell substrate; submerged aquatic vegetation; marsh/water interface; and inner marsh. Coinjock Bay is located approximately 1.2 miles east of the airport well outside the EA study area.

As described in Section 4.21, the EA study area does not include any tidal, estuarine, or riverine wetlands. Wetlands occurring in the study area include nonriverine swamp forest and nonriverine wet hardwood forest. These communities occur on seasonally flooded, interstream flats. In contrast to river swamps, which receive overbank flooding from the river channel, nonriverine swamps are not associated with rivers, and instead are flooded and/or saturated by a high water table. These wetlands do not represent EFH for any federally-managed species.

#### **4.24 Endangered and Threatened Species**

In conjunction with the biotic communities assessment described in the previous section, Dial-Cordy and Associates Inc. performed an evaluation of the suitability of habitat for federally- and state-listed species for the study area. A list of all federally- and state-listed species for Currituck County is shown in Table 9.

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<sup>20</sup> Dial-Cordy personal communication, Ronald Sechler, Fishery Biologist, NMFS, Habitat Conservation Division, Beaufort, NC, April 3 2002.

<sup>21</sup> Winslow, NC Division of Marine Fisheries, April 26 2002.

Table 9. Protected Species Reported from Currituck County, North Carolina

Common name	Scientific name	Status	
		Federal*	State**
<b>Vertebrates</b>			
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	E	E
Leatherback sea turtle	<i>Dermochelys coraicea</i>	E	E
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	E
West Indian manatee	<i>Trichechus manatus</i>	E	E
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	E
Loggerhead sea turtle	<i>Caretta caretta</i>	T	T
Piping plover	<i>Charadrius melodus</i>	T	T
Black rail	<i>Laterallus jamaicensis</i>	FSC	SR
Star-nosed mole	<i>Condylura cristata</i> pop. 1	-	SC
Little blue heron	<i>Egretta caerulea</i>	-	SC
Snowy egret	<i>Egretta thula</i>	-	SC
Tricolored heron	<i>Egretta tricolor</i>	-	SC
Outer banks kingsnake	<i>Lampropeltis getula sticticeps</i>	-	SC
Carolina watersnake	<i>Nerodia sipedon williamengelsi</i>	-	SC
<b>Vascular Plants</b>			
Seabeach amaranth	<i>Amaranthus pumilus</i>	T	T
Virginia least trillium	<i>Trillium pusillum</i> var. <i>virginianum</i>	FSC	E
Carolina grasswort	<i>Lilaeopsis carolinensis</i>	-	T

Source: North Carolina Natural Heritage Program Element Occurrence Database 4/2/2002.

\* Federal Status: E (Endangered), T (Threatened), S/A (Similarity of Appearance), FSC (Federal Species of Concern).

\*\* North Carolina Status: E (Endangered), T (Threatened), SC (Special Concern), SR (Significantly Rare), C (Candidate), P (Proposed). Significantly Rare, Candidate, and Proposed species are not included in this table unless also having a Federal status of Threatened, Endangered, or Federal Species of Concern.

Federally-listed species are protected under the Endangered Species Act of 1973, as amended (16 U. S. C. 1531-1543), which requires Federal agencies to ensure that any actions they authorize, fund, or carry out do not jeopardize the “continued existence” of listed species or result in the destruction or adverse modification of habitat designated as critical to their existence. The U. S. Fish and Wildlife Service (USFWS) reviews Federal actions that may result in a negative impact on federally-listed plants or animals. **The NCNHP has no records of any federally-listed species within a one-mile radius of the study area.**<sup>22</sup> A total of eight federally-listed endangered and threatened species have been reported from Currituck County. Each is discussed in detail below. The following paragraphs evaluate potential project impacts on each of the federally-listed species reported from Currituck County. Unless otherwise cited, all background information was derived from the *USFWS Endangered Species Homepage* (April 29, 2002) and the *National Marine Fisheries Service Office of Protected Resources Homepage* (April 29, 2002).

<sup>22</sup> Dial Cordy Personal communication with Harry LeGrand, Zoologist, NCNHP, April 10, 2002.

West Indian Manatee (*Trichechus manatus*): Endangered. In the United States, the manatee occurs primarily in Florida, although occasional occurrences during the summer have been documented as far north as coastal Virginia. The manatee inhabits oceans, canals, rivers, estuarine habitats, and saltwater bays. Declines in manatee populations are attributed to habitat loss associated with coastal development and heavy mortality as a result of collisions with watercraft. Although rarely encountered in North Carolina, the manatee could potentially occur in Coinjock Bay, which is located over 1.2 miles east of the airport. **The EA study area does not contain any suitable habitat for the manatee.**

Bald Eagle (*Haliaeetus leucocephalus*): Threatened. The bald eagle is found throughout North America from northern Alaska and Canada, south to southern California and Florida. Nesting in the southeast occurs primarily in peninsular Florida, coastal South Carolina, and coastal Louisiana, with sporadic breeding in the remaining southeastern states. Otherwise, bald eagles occur throughout the southeast as migrating or over-wintering birds. The bald eagle was originally listed as endangered by the USFWS in 1978. Following successful restoration efforts in the southeastern United States, bald eagles in the lower 48 states were downgraded in 1995 from endangered to threatened. The bald eagle is associated with large water bodies where it forages for fish. Nesting typically occurs in forested areas within one-half mile of a permanent water body. The decline of the bald eagle is primarily attributed to the use of the pesticide DDT, which was suspended in 1972. Currently, the most substantial factors affecting the bald eagle's recovery are habitat loss and human disturbance. **The study area does not contain any suitable habitat for the bald eagle.**

Red-cockaded Woodpecker (*Picoides borealis*): Endangered. Historically, the red-cockaded woodpecker (RCW) occurred from east Texas and Oklahoma to Florida and north to New Jersey. The present distribution is similar, except that the species has been eliminated from Missouri, Maryland, and New Jersey. The RCW is closely tied to the distribution of southern pines. The remaining populations are fragmented and isolated. In North Carolina, the RCW is a very local, common to rare permanent resident of open pine forests within the Coastal Plain and eastern Piedmont. Suitable habitat for the RCW consists of open, fire-maintained pine and pine-hardwood stands with a minimum age of 80 to 120 years. Cavity tree ages range from 63 to 300 plus years for longleaf and 62 to 200 plus years for other southern pine species. Foraging habitat is provided in pine and pine-hardwood stands with a minimum age of 30 years. Sufficient foraging habitat can be provided in an area of approximately 80 to 125 acres of optimum habitat. USFWS guidelines describe available foraging habitat as pine or pine-hardwood stands over 30 years of age contiguous with and within one-half mile of the center of the cluster<sup>23</sup>. Potential foraging habitat that is separated from the cluster site or other foraging habitat by more than 330 feet is considered non-contiguous. The RCW excavates nesting and roosting cavities in living pine trees, preferably older trees with heart rot. The RCW prefers pine forests with an open understory for nesting sites and may abandon cavities in areas where the midstory approaches cavity height. The main threat to the RCW is habitat loss and degradation as a result of development, fire suppression, and silvicultural practices that do not allow for development of mature open pine stands. The

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<sup>23</sup> V.G. Henry *Guidelines for the Preparation of Biological Assessments and Evaluations for the Red-cockaded Woodpecker*. USFWS, Southeast Region. Atlanta, Georgia. 1989.

Currituck County RCW record is historic, indicating that the RCW has not been observed in the County for at least 20 years. **No suitable habitat for the RCW occurs in the EA study area.** The pine-hardwood communities that occur in the study area are small, isolated fragments less than one acre in size. These communities are also closed canopy forests with a well developed hardwood understory.

Piping Plover (*Charadrius melodus*): Threatened. The piping plover is a small shorebird with a length of approximately 7 inches and a wingspan of approximately 15 inches. Its breeding grounds consist of three regions: the Atlantic Coast from New Foundland to North Carolina, the Great Lakes, and the Northern Great Plains. The plover's wintering range includes the Atlantic and Gulf Coasts from North Carolina to Mexico, the Bahamas, and the West Indies. In North Carolina, the piping plover inhabits open sandy areas and mud flats along the beaches and inlets of barrier islands. The primary threats to its continued existence include habitat loss resulting from shoreline development and beach stabilization projects, and disturbance of nesting plovers. **The study area does not contain suitable foraging or nesting habitat for the piping plover.**

Loggerhead Sea Turtle (*Caretta caretta*): Threatened. The loggerhead sea turtle is recognized by a very large triangular head and heart-shaped carapace, which tapers posteriorly. The typical coloration is reddish-brown above and yellow or tan below. The loggerhead occurs worldwide in temperate and subtropical coastal waters and nests on isolated beaches in the United States from North Carolina to Florida. The loggerhead sea turtle may be found hundreds of miles out at sea, as well as in bays, lagoons, salt marshes, creeks, and mouths of large rivers. It feeds on mollusks, crustaceans, fish, and other marine animals. Threats to this species include loss of nesting habitat, drownings in fishing and shrimp trawls, and marine pollution. In North Carolina, the loggerhead is found in the ocean and sounds and could potentially occur in Coinjock Bay, approximately 1.2 miles east of the airport outside the study area. **The study area does not contain suitable habitat for the loggerhead sea turtle.**

Leatherback Sea Turtle (*Dermochelys coraicea*): Endangered. The leatherback is the largest extant turtle with an average carapace length of 155 inches. The leatherback is distinguished by its thick leathery shell comprised primarily of connective tissue. In adults, the carapace is black and scaleless and the plastron is mottled pinkish-white and black. It is found in tropical and temperate seas and oceans worldwide, and occurs along the eastern North American coast from Nova Scotia to the U.S. Virgin Islands. Nesting in the United States is restricted to Florida. Leatherback sea turtles generally occur in the open ocean, but may occasionally enter sounds and other estuarine environments. Threats to this turtle include loss of nesting habitat, poaching of nests, and inadvertent drownings in fishing and shrimping trawls. Although rarely found in sounds, the leatherback could potentially occur in Coinjock Bay, approximately 1.2 miles east of the airport. **The study area does not contain suitable habitat for the leatherback sea turtle.**

Shortnose Sturgeon (*Acipenser brevirostrum*): Endangered. The shortnose sturgeon is found in coastal rivers along the Atlantic coast from southern Canada to northeastern Florida. The shortnose sturgeon is an anadromous species that inhabits slow-moving rivers or near-shore

marine waters and migrates into faster moving freshwater areas to spawn. The decline of shortnose sturgeon populations is attributed to dam construction, pollution of rivers, habitat alteration, and past exploitation by commercial fisheries. Potential feeding habitat typically consists of deep-water areas with muddy, sandy substrate. **The study area does not contain any suitable habitat for the shortnose sturgeon.**

Seabeach Amaranth (*Amaranthus pumilus*): Threatened. Seabeach amaranth is an annual plant found on Atlantic coast beaches. It has pink-red or reddish, fleshy stems with small, rounded, spinach-colored leaves clustered at the tip of the stem. The flowers and fruits are borne in clusters along the stem. The current distribution of this species includes locations in New York, North Carolina, and South Carolina. Threats to this species include the construction of beach stabilizing structures, beach erosion and tidal inundation, beach grooming, herbivory, insects and feral animals, and off-road vehicles. **No suitable habitat for the seabeach amaranth occurs within the study area.**

In addition to the eight federally-listed species mentioned above, two Federal Species of Concern (FSC) are known to occur in Currituck County: the black rail and the Virginia least trillium. FSC are under consideration for Federal listing, but are not legally protected under the Endangered Species Act of 1973 or subject to any of its provisions until they are formally proposed for listing as Threatened or Endangered. **The NCNHP has no records of any FSC within a one-mile radius of the study area**<sup>24</sup>. The black rail (*Laterallus jamaicensis*) is found in brackish marshes, which do not occur in the study area. Virginia least trillium (*Trillium pusillum* var. *virginianum*) is found in nonriverine wet hardwood forests and nonriverine swamp forests, habitats that are present in the study area. Although no plants were observed during fieldwork, their presence within the study area cannot be ruled out without more intensive surveys.

Animal and plant species listed by the State of North Carolina as Endangered, Threatened, or of Special Concern are afforded protection under the State Endangered Species Act (G.S. 113-331 to 113-337) and the State of North Carolina Plant Protection Act of 1979 (G.S. 196-106-202.12 to 106-202.19). These laws are administered by the N.C. Wildlife Resources Commission and the N.C. Department of Agriculture, respectively. State-listed endangered and threatened species may not be removed from the wild except when a permit is obtained for research, propagation, or rescue which will enhance the survival of the species. Special Concern species which are not also listed as Endangered or Threatened may be collected from the wild and sold under specific regulations. All of the federally-listed species and FSC in Currituck County are also listed by the State of North Carolina; however, the State lists an additional seven species for Currituck County which are absent from the Federal list. **The NCNHP has no records of any state-listed species within a one-mile radius of the study area.**

Nonriverine wet hardwood forests and nonriverine swamp forests, which are found in the study area, represent potential habitat for one of the state-listed species, the star-nosed mole (*Condylura cristata* pop. 1). The record for this species in Currituck County is historic, indicating that the star-nosed mole has not been observed in the County for at least 20 years.

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<sup>24</sup> Dial Cordy Personal communication with Harry LeGrand, Zoologist, NCNHP, April 10, 2002.

The star-nosed mole is a state special-concern (SC) species. An additional NCNHP Watch List species, southern twayblade (*Listera australis*), was observed throughout the nonriverine swamp forests of the study area. The NCNHP Watch List includes species that are rare or otherwise threatened with decline, but for which current information does not justify placement on the main rare species list. Southern twayblade is a Watch Category 1 species, indicating that it is rare, but relatively secure in North Carolina. Watch List species are not officially listed by the state and are not protected under the state laws.

#### **4.25 Public Services**

Mainland Currituck County residents obtain water from one of two sources: the county water system which supplies water to residents from Moyock to the Wright Memorial Bridge, and private wells. The Currituck County Water Treatment Plant (WTP), located across Maple Road to the west of the Airport, has a total treatment and storage capacity of one million gallons per day. The treatment plant obtains raw water from 26 production wells, all but four of which are located within the Maple Complex. The wells range in depth from 75' to 200' and are 6" to 8" in diameter.<sup>25</sup> The wells were installed from 1993 through 1995. Currituck County does not have a well protection plan.<sup>26</sup> The Airport receives water from the county water system.

Fifteen of the 26 production wells are located in the EA study area. Thirteen are located on the airfield west of the runway, approximately 250' from the runway centerline and 180' from the paved edge of the runway. These well heads lie just outside of the Runway Object Free Area (ROFA) for the existing Runway 4-22.<sup>27</sup> Another two of the wells are located in the southeast corner of the airfield, 250' east of the extended runway centerline and over 1520' from the end of Runway 4, outside the ROFA and beyond the Runway Safety Area (RSA). The well heads typically extend 2.5' above the ground level, and are protected by a 3' x 5' box on a concrete foundation.<sup>28</sup> Based on information from the Currituck County Water Superintendent, each well is surrounded by a 200' diameter protection zone. Currituck County WTP personnel typically access the wells once a month. Wells on the airport are accessed by driving across the grassy areas of the airfield.

Ten wells are used to monitor the potable water quality in the drinking water wellfield. Five of these monitoring wells are located in the EA study area: one 2000' south of the south end of the runway, one 1900' north of the north end of the runway, one approximately 350' east of the runway, and one located on the existing apron, and one located southeast of the apron. The monitor wells typically extend 3' above ground, and the 2" PVC wellhead is protected by a 4" steel casing.<sup>29</sup> All of the monitoring wells lie outside the existing ROFA and RSA.

All of the facilities in the Maple Complex, including the airport, Maple Park restrooms, N.C. Forestry office, and Currituck County Animal Control office, utilize septic tanks for sewage disposal. The airport's sole generator of sewage is a restroom in one of the hangar buildings.

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<sup>25</sup> N.C. Division of Water Resources, *1997 Local Water Supply Plan for Currituck County (Mainland)*

<sup>26</sup> Personal Communication, Leland Gibbs, Water Supply Superintendent, Currituck County, 5/8/2002.

<sup>27</sup> Talbert & Bright, Inc. *Airport Layout Plan Update, Final Report, Currituck County Airport*, December 2000.

<sup>28</sup> Personal Communication, Leland Gibbs, Water Supply Superintendent, Currituck County, 5/8/2002.

<sup>29</sup> Ibid.

The former state prison facility west of the airport, which is being renovated by the county for use as a jail, has a package sewage treatment plant with a spray field. This treatment system will not accommodate any new flows from the airport or the Maple Complex.<sup>30</sup> As discussed in Section 4.7, the County currently has plans to develop a 50-acre business park on the Maple Complex property. The development will include a wastewater treatment plant to serve the business park and the airport.<sup>31</sup>

Electrical power is supplied to the airport by North Carolina Power. Currituck County provides the airport's sanitary sewer utilities. Currituck Aviation and Currituck County provide solid waste disposal for the minimal solid waste generated by airport users. Currituck Aviation takes the airport trash to the county transfer station located on the property behind the airport. The transfer station is a covered facility and is not a bird hazard to the airport.<sup>32</sup> The County has a contract with Waste Management to haul trash from the transfer station to the Bertie County landfill located approximately fifty miles away. Currituck County has one construction and demolition debris (C&D) landfill (Soundside Recycling and Materials) located in Powells Point, 20 miles southeast of the airport.

#### **4.26 Contemplated Future Actions**

The December 2000 *Airport Layout Plan Update* is the official planning document for the Currituck County Airport. Based on an extensive analysis of the existing and projected operations and based aircraft, the plan recommended projects for a 20-year planning period in accordance with N.C. Division of Aviation planning guidelines. This EA addresses the projects recommended for the first five years of the planning period. Phase II and III projects will be constructed based on demonstrated need and the availability of funding. As the need for the future projects is demonstrated, evaluations of the environmental impacts will be performed as required by the FAA and N.C. Division of Aviation.

Recommended development projects for the Phase II (6-10 year) planning period are as follows:

- Installation of a Precision Approach Path Indicator (PAPI- visual navigational aid) for Runway 23
- Expansion of the apron and auto parking
- Construction of additional hangar buildings
- Extension of perimeter fencing around additional hangar buildings and aircraft apron
- Relocation of the fuel tanks and electrical vault to accommodate the proposed apron expansion

The estimated cost for the Phase II development projects is \$2,120,000.

Recommended development projects for the Phase III (11-20 year) planning period are as follows:

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<sup>30</sup> Personal communication, Wayne Leary, Economic Development Director, Currituck County, May 7, 2002.

<sup>31</sup> Ibid.

<sup>32</sup> Talbert & Bright, Inc. *Airport Layout Plan Update, Final Report, Currituck County Airport*, December 2000.

- Construction of a paved runway blast pad (150'x95') at both runway ends
- Upgrade existing Medium Intensity Runway Lights to High Intensity Runway Lights (HIRLs)
- Installation of an Omni-Directional Approach Lighting (ODALs) for Runway 5
- Expansion of the apron and auto parking
- Construction of additional hangar buildings
- Extension of perimeter fencing around additional hangar buildings and aircraft apron

The estimated cost for the Phase III development projects is \$1,905,000.

## 5.0 ENVIRONMENTAL CONSEQUENCES

### 5.1 Noise

The FAA Integrated Noise Model (INM) version 6.0 was used in the 2000 *Airport Master Plan* to evaluate noise levels for the Currituck County Airport both with and without the proposed runway extension. The noise analysis was performed using 1999 operations with the current runway length (the “No Build” alternative), as well as for the projected 2019 operations if the runway is extended. Inputs to the INM included runway and taxiway geometry, aircraft mix, runway use, flight tracks, approach and departure profiles, and day/evening/ night arrivals and departures. The output of the model is the production of sound exposure contours measured in Day/Night Average Sound Levels (DNL) around the airport. These levels are depicted as contours of equal noise levels, similar to topographic contours. The currently accepted level of excessive noise is defined by the 65 DNL noise contour boundary, which is determined from a cumulative exposure of sound measured in decibels, and averaged over the span of one year.

#### *No Build Alternative:*

The results of the noise model indicate that the 65 DNL contour for current airport operational levels (16,100 annual operations) do not extend beyond the current airport property. Therefore, **there are no existing incompatible land uses from existing aircraft noise.**

#### *Build Alternatives*

The noise model results for projected airport operations (30,850 annual operations) at the end of the *Airport Master Plan Update* planning period (2019) for both Alternative 1 and Alternative 2 show the 65 DNL contour extends beyond the Maple Complex property by approximately 12 acres and 16 acres, respectively. For both alternatives, lands uses located within the 65 DNL include agricultural fields, undeveloped land, a small portion of Maple Park, and buildings associated with the Humane Society and Forestry Service offices east of Airport Road. All of the privately owned areas within the 65 DNL contour are anticipated to be acquired in fee-simple or easement for removal of trees from the Part 77 approach and transitional surfaces and Runway 23 Runway Protection Zone, which will prevent the establishment of future incompatible land uses. **Based on FAA guidelines, for Alternatives 1 and 2 all of the land uses within the 65 DNL contour are compatible with this noise level.**

### 5.2 Compatible Land Use

The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with two factors: a) the extent of noise impacts related to the airport and related development and, b) consistency with local land use plans and development policies. There are no incompatible land uses from noise impacts from any of the alternatives, as described in Section 5.1. This section describes the compatibility of the proposed project with local land use plans and development policies.

The policies of the Currituck County Land Use Plan are described in Section 4.7. The 1990 Land Use Plan explicitly encourages “greater utilization of airport facilities” and states that the County “is fortunate to have such a facility available and wishes to promote its usage.” In addition, Currituck County has adopted an Airport Height Control Ordinance for the airport to restrict the height of any new construction within certain defined zones around the airport. **Because the development policies and zoning ordinances of Currituck County support the airport, none of the alternatives are expected to be in conflict with land use policies.** As discussed in Section 4.7, planned land use in the vicinity of the airport includes a 50-acre business park on the Maple Complex property east of the airport and a 42-acre residential airpark located adjacent to the airport property along its northwest side. Fully developed, the residential airpark would have 18 residences, each with individual hangar spaces. Both of these developments are planned to occur independent of the proposed actions in Alternatives 1 and 2, therefore, **neither Alternative 1 or Alternative 2 are anticipated to result in changes to planned communities.**

### **5.3 Social Impacts**

None of the alternatives involve the need to relocate any residence or business. None of the alternatives will divide or disrupt established communities, or disrupt orderly, planned development. **No social impacts are anticipated for any of the alternatives.**

None of the alternatives will result in the alteration of surface transportation patterns. Based on existing and projected aircraft operations (see Table 4), equivalent automobile trips were estimated. Each aircraft operation consists of a takeoff or a landing. Based on the assumption that there are approximately 1.5 automobile trips per aircraft operation, existing aircraft operational levels (the “No Action” alternative) result in 66 daily vehicle trips on U.S. 158. The build alternatives (Alternatives 1 and 2) would result in a projected 2019 addition of 127 vehicle trips to U.S. 158. As discussed in Section 4.5, U.S. 158 has a 2000 average daily traffic (ADT) of 6,000 and a projected 2025 ADT of 16,200. The additional traffic generated by the airport is negligible compared to the existing and projected automobile traffic on U.S. 158. As described in Section 4.8, the N.C. DOT 2002-2008 TIP includes the widening of U.S. 158 from 2 lanes to 4 lanes. The U.S. 158 widening project (TIP project R-2574) is described in the TIP as an unfunded project scheduled for post-2008. **When the planning for the U.S. 158 widening project is initiated, Currituck County will coordinate with the N.C. DOT to confirm that the Runway 23 approach clearances over the road are not reduced below 15’ (the clearance required by the FAA).**

### **5.4 Induced Socioeconomic Impacts**

**Both Alternatives 1 and 2 would be expected to have positive direct and secondary socioeconomic impacts.** The expansion of the Airport to enable it to better accommodate corporate jet aircraft would likely substantially increase fuel sale revenues and tax collections, and contribute additional opportunities for employment from increased airport facilities and short-term construction employment.

As there are no relocations of residences or businesses (see Section 5.3), **no impacts on individual neighborhoods are expected. None of the alternatives are expected to result**

**in shifts in patterns of population movement and growth, or substantial increases in the needs for public services.**

### ***5.5 Historic, Architectural, Archeological, and Cultural Resources***

As discussed in Section 4.11, **no historic, architectural, archeological, or cultural resources are known to exist in the EA study area.** The N.C. Division of Cultural Resources was given an opportunity to review the scope of the project through the State Clearinghouse, and no comments were provided. There are no structures in the study area except for the two hangar buildings, which were constructed in 1995 and 2001.

For all of the alternatives, the impacts off current airport property are limited to clearing of trees and placement of a limited amount of fill in wetlands (see Section 5.14), and therefore, no impacts to archeological resources (if existing) would be anticipated. However, in the event that archeological sites are uncovered during construction of the project, the following FAA standard specification section (which would be included as part of the project specifications) addresses mitigation as follows:

“ARCHAEOLOGICAL AND HISTORICAL FINDINGS. Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during his/her operations, any building, part of a building, structure, or object which is incongruous with its surroundings, he shall immediately cease operations in that location and notify the ENGINEER. The ENGINEER will immediately investigate the Contractor's finding and will direct the Contractor to either resume his/her operations or to suspend operations as directed.”

### ***5.6 Section 303(c) Lands***

Section 303(c), Title 49 USC, formerly known as Section 4(f) of the Department of Transportation Act, states that a project requiring the use of any publicly owned land from a public park, recreation area, or from a historic site of national, state, or local significance shall not be approved unless there is no feasible alternative to the use of such land. No historic sites are located in the study area, as described in Section 4.11. To enhance the safety of aircraft, any of the alternatives, including the No Action alternative, may require the removal of isolated trees from Maple Park that penetrate the airport's FAR Part 77 surfaces. However, **for all of the alternatives, none of the land located in Maple Park will be removed from recreational use.**

### ***5.7 Farmlands***

The Farmland Protection Policy Act (FPPA) authorizes the USDA to develop criteria for identifying the effects of Federal programs on the conversion of farmland to nonagricultural use. The USDA Natural Resources Conservation Service (NRCS) was contacted early in the environmental assessment process and had no comments on the proposed projects at that

time. As discussed in Section 4.4, with the exception of the Ds soils on farmland along the northwest edge of the study area, and the Portsmouth fine sandy loam (Pt) soils north of the airport, all of the soil types classified as prime and important farmland in the study area are located on state-owned property in the Maple Complex. However, land already in or committed to urban development (such as the airport and Maple Complex) cannot be considered prime farmland. (Sections 4.5 and 4.7 provide descriptions of existing and planned land use for the Maple Complex). **None of the land currently in agricultural use (approximately 9 acres) in the 285 acre study area will be impacted by any of the alternatives.**

Alternative 1 will require the fee-simple acquisition of approximately 6 acres of wetlands located in a soil type classified by the USDA Soil Conservation Service *Soil Survey of Currituck County* as important farmland (Pt soils). This land is not currently in agricultural use. The land acquisition is required to protect the Runway 5 Runway Protection Zone (RPZ) from incompatible land uses. Alternative 2 will require the fee-simple acquisition of approximately 10 acres of Pt soils for the Runway 5 RPZ. **Based on the limited acreages of important farmland soils impacted (6 acres for Alternative 1 and 10 acres for Alternative 2), their location in wetlands, and their current non-agricultural use, it is anticipated that there will be no significant impact caused by the taking of farmland for either of the runway extension alternatives.**

To appropriately mitigate approach obstructions, all of the alternatives (including the No Action alternative) will require the removal (clearing) of isolated trees and groups of trees from the area of Pt soils located at the north end of the study area in the Runway 5 approach. While this wetland area is not in agricultural use, this soil type is considered state- and locally-important farmland. The clearing of trees will not directly or indirectly convert this area from future agricultural use.

### **5.8 Air Quality**

**Currituck County is currently in attainment of all of the National Ambient Air Quality Standards, therefore, the requirements of general and transportation conformity under the Clean Air Act do not apply to the project and no further analysis is required for any of the alternatives.** North Carolina requires an air quality permit for the construction and modification of airport facilities designed to have at least 100,000 annual aircraft operations. The Currituck County Airport is well below this threshold for existing and projected operations (see Table 4).

### **5.9 Floodplains**

The location of the 100-year (base) floodplain was discussed in Section 4.15. **For the No Action alternative, no construction will take place within the 100-year floodplain.**

**Both Alternative 1 and Alternative 2 will require construction in the 100-year floodplain at the north end of Runway 5 to install the localizer equipment and its service road. Alternative 1 will require the placement of approximately 0.45 acres of fill within the 100-year floodplain. Alternative 2 will require the placement of approximately 0.75 acres of fill within the 100-year floodplain. For both alternatives,**

**the localizer equipment and service road will be elevated above the base flood level of 5 feet to the approximate elevation of the runway threshold.** A “significant encroachment” on a base floodplain is defined by DOT Order 5650.2 if it involves a considerable probability of loss of life, likely future damage that could be substantial in cost or extent, or a notable adverse impact on natural and beneficial floodplain values. **Based on the limited area of fill to be placed in the floodplain, and the elevation of the localizer equipment above the base flood elevation, it is anticipated that neither Alternative 1 nor 2 will result in a significant encroachment on the floodplain.**

#### *5.10 Wild and Scenic Rivers*

As discussed in Section 4.16, no wild and scenic rivers are located in Currituck County, northeastern North Carolina or Virginia. Therefore, **there are no anticipated impacts from any alternatives to any federally designated wild and scenic rivers.**

#### *5.11 Coastal Barriers*

As discussed in Section 4.17, **none of the alternatives are located in the Coastal Barriers Resource System (CBRS) or an Otherwise Protected Area (OPA).**

#### *5.12 Coastal Zone Management Programs*

**No CAMA AEC’s are located in the project areas for any of the alternatives** (see Section 4.18). **A CAMA consistency determination from the Division of Coastal Management will be required for any of the build alternatives due to the Airport’s location in a coastal county, the federal funding source, and the need for federal permits for the project** (i.e., a 404 wetlands permit from the Army Corps of Engineers). This determination will be made prior to construction of any of the projects.

#### *5.13 Water Quality*

Surface water quality and classifications in the vicinity of the airport are discussed in detail in Section 4.19. **No streams are located within the project areas for any of the alternatives.** The N.C. Division of Water Quality requires special stormwater and water quality controls for projects draining to Outstanding Resource Waters (ORW) or High Quality Waters (HQW), or within ½ mile of SA tidal waters. **No SA, HQW or ORW waters are located within ½ mile of the airport or in Currituck County<sup>33</sup>.**

Section 401 of the Clean Water Act delegates authority to the states to issue a 401 Water Quality Certification for all projects that require a Federal Permit (such as a Section 404 Permit for wetlands impacts – see Section 5.14). The 401 certification is essentially a verification by the state that a given project will not degrade Waters of the State or otherwise violate water quality standards. **Because both Alternatives 1 and 2 require a U.S. Army Corps of Engineers 404 Permit due to wetlands impacts** (0.45 acres and 0.75 acres, respectively), **a 401 Water Quality Certification from the N.C. Division of Water Quality will be required.**

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<sup>33</sup> N.C. Division of Water Quality, Basin Information Management System, *North Carolina Waterbodies Listed by County*, <http://h2o.enr.state.nc.us/bims/reports/basinsandwaterbodies/Currituck.pdf>

Because the airport is located in a coastal county, a Stormwater Management Permit will be required from the N.C. Division of Water Quality for any projects that require a Sediment and Erosion Control Permit. **Sediment and Erosion Control Permits (see Section 5.21) and Stormwater Management Permits are anticipated to be required for all of the alternatives, including the No Action alternative.** For the No Action alternative, clearing and grubbing associated with the AWOS installation may require a Sediment and Erosion Control Permit. For Alternatives 1 and 2 the majority of the proposed actions will require a Sediment and Erosion Control Permit. The development of Alternative 1 and Alternative 2 would result in total built-upon area of approximately 24% of the ultimate airport boundary. **All of the alternatives will be permitted under the “low density development” option, which is defined as a built-upon area of 30% or less with stormwater runoff transported primarily by vegetated conveyances.**

#### *5.14 Wetlands*

The location of wetlands is discussed in detail in Section 4.21. **In order to remove obstructions to the runway approaches and/or transitional surfaces, all of the alternatives will require the clearing of isolated trees and groups of trees from wetland areas. All of the tree removal in wetlands will be performed using best management practices recommended by the Army Corps of Engineers for clearing in wetlands. Coordination will be conducted with the Army Corps of Engineers, N.C. Division of Water Quality, and N.C. Division of Coastal Management prior to clearing in wetlands to confirm that no permit is required for these activities. No grubbing of stumps associated with the clearing will be performed in wetlands.**

**No fill will be placed in wetlands for the No Action alternative.**

**Both Alternative 1 and Alternative 2 will require placement of fill in the nonriverine swamp forest wetlands at the north end of Runway 5 to install the localizer and its service road.** Impacts of less than 0.5 acres to non-tidal wetlands from linear transportation projects require a Section 404 Nationwide Permit (NWP 14) from the Army Corps of Engineers. **Alternative 1 will require the placement of approximately 0.45 acres of fill, which will require a Section 404 Nationwide Permit if the project is considered eligible by the Army of Corps of Engineers for NWP 14.**

**Alternative 2 will require the placement of approximately 0.75 acres of fill in the nonriverine swamp forest wetlands at the north end of Runway 5 to install the localizer and its service road.** Impacts exceeding 0.5 acres from linear transportation projects require an Individual Permit from the ACOE. **Alternative 2 would be anticipated to require a Section 404 Individual Permit for wetland impacts.**

Section 404 permits require compensatory mitigation for wetland impacts that exceed 0.10 acre. Wetland mitigation may include restoration, creation, enhancement, and preservation of wetlands. Restoration is the mitigation method generally preferred by regulatory agencies. On-site (at or near the project area) is generally preferable to off-site mitigation, and in-kind (wetlands of the same type as those being impacted) mitigation is generally required.

**Permit requirements under both alternatives would be expected to include compensatory wetland mitigation for wetland impacts.** Any wetlands mitigation conducted by Currituck County will require a mitigation plan, hydrological analyses, construction, planting, installation of monitoring wells, a minimum of five years of monitoring, long-term management, and remedial actions in the event of failure.

**Because of the danger from wildlife attractants, the FAA promotes the use of wetland mitigation banks that meet FAA siting criteria as offering an ecologically sound approach to mitigation<sup>34</sup>.** In order to avoid creating wildlife attractants and avoid the need for long-term management of an on-site wetlands mitigation project, **Currituck County would prefer to mitigate wetlands impacts for Alternatives 1 and 2 through payment of in-lieu fees to the North Carolina Wetlands Restoration Program (NCWRP) or participation in a private wetlands mitigation bank, if available.** The NCWRP is a non-regulatory government program that restores wetlands throughout the State. A Memorandum of Understanding (MOU) between the N.C. Department of Environment and Natural Resources and the ACOE allows payments of in-lieu fees to the NCWRP to satisfy compensatory mitigation requirements in some cases. Project eligibility for this program is considered by the ACOE on a case-by-case basis. The NCWRP evaluates each request for payment of in-lieu fees and determines if they have a current or planned restoration project that would be suitable for use as mitigation for the proposed wetland impacts. Upon acceptance of the request and receipt of the appropriate fees, the NCWRP accepts all responsibility for mitigation planning, implementation, and long-term maintenance and management. In-lieu fees are \$12,000 per acre for non-riparian mitigation and \$24,000 per acre for riparian mitigation. All of the wetlands in the study area are non-riparian. Upon acceptance of the fee, the NCWRP would be solely responsible for satisfying the requirements of the Section 404 permit. Project eligibility for this program is considered by the ACOE on a case-by-case basis.

There are three state-approved private mitigation banks in the Pasquotank River Basin: the Scuppernon River Corridor Mitigation Bank, the Great Dismal Swamp Restoration Bank, and the Hidden Lake Mitigation Bank. All are located within the same USGS hydrologic cataloging unit (03010205 – Albemarle Sound) as the Currituck County Airport, and all are used for non-riparian wetlands restoration.

For the Scuppernon River Corridor Mitigation Project, the N.C. DOT has contracted and purchased all of the credits for use as compensatory mitigation for highway projects within the Bank Service Area, and therefore, mitigation using this project is not available.

The Hidden Lake Wetland Mitigation Bank was established in 1996 for offsetting unavoidable wet flat, Atlantic white cedar, and nonriverine swamp wetland losses associated with projects requiring Clean Water Act, Section 404 dredge and fill permits within the Albemarle Sound hydrologic unit. The Hidden Lake Wetland Mitigation Bank is located north of SR 1209 approximately 5 miles east of Columbia in Tyrrell County, NC.<sup>35</sup> If

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<sup>34</sup> FAA, *A Wetlands Mitigation Banking Strategy for FAA*, July, 1996.

<sup>35</sup> GreenVest, <http://www.greenveste2.com>

participation in the NCWRP is not available at the time of permitting, this bank will be contacted to determine if credits are available.

Preservation of a portion of the nonriverine swamp forest wetlands adjacent to the airport through fee-simple purchase and establishment of a conservation easement may also be an option for mitigation, as would preservation of existing wetlands within the Maple Complex. **If on-site mitigation is considered, on-site mitigation plans must be reviewed by the FAA to determine compatibility with safe airport operations. The FAA requires that wetland mitigation projects that are needed to protect unique wetland functions, and that are located within 5 miles of the approach/departure airspace or 10,000 feet of the airport should be identified and evaluated by a wildlife damage management biologist before implementing the mitigation<sup>36</sup>. In the event an on-site mitigation site is selected, a wildlife damage management plan will be developed to reduce the wildlife hazards.**

### *5.15 Biotic Communities*

Biotic communities in the study area were discussed in detail in Section 4.22. **None of the alternatives will take or impact any publicly owned wildlife or waterfowl refuges.** As described in Section 5.17, **no impacts to endangered or threatened species are anticipated from any of the alternatives.** All of the alternatives will impact natural communities by the clearing of trees. Natural communities occurring within the study area include nonriverine swamp forest, nonriverine wet hardwood forest, and mixed mesic hardwood forest.

To eliminate penetrations of the existing FAR Part 77 approach and transitional surfaces which pose a safety hazard to aircraft, the No Action alternative will require the clearing of isolated trees and groups of trees from a total of approximately 35 acres of the nonriverine swamp forest, nonriverine wet hardwood forest, and mixed mesic hardwood forest communities. As discussed in Section 5.14, no grubbing of stumps will be performed in the wetlands associated with the nonriverine swamp forest or the nonriverine wet hardwood forest.

Alternative 1 will include 20 acres of clearing and grubbing of mixed mesic hardwood forest for hangar and apron construction and 6 acres of clearing from the nonriverine swamp forest located in the Runway 23 Runway Protection Zone (RPZ). An additional 31 acres of approach clearing of isolated trees and groups of trees (beyond that required in the No Action alternative) to remove aviation safety hazards from the FAR Part 77 approach surfaces will be conducted in the nonriverine swamp forest, nonriverine wet hardwood forest, and mixed mesic hardwood forest. No grubbing of stumps will be performed in the wetlands associated with the nonriverine swamp forest or the nonriverine wet hardwood forest.

Alternative 2 will include 20 acres of clearing and grubbing of mixed mesic hardwood forest for hangar and apron construction and 10 acres of clearing only from the nonriverine swamp forest located in the Runway 23 Runway Protection Zone (RPZ). An additional 45 acres of approach clearing of isolated trees and groups of trees (beyond that required in the No Action alternative) to remove aviation safety hazards from the FAR Part 77 approach surfaces will be conducted in the nonriverine swamp forest, nonriverine wet hardwood forest, and mixed

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<sup>36</sup> FAA Advisory Circular 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports*, May 1, 1997.

mesic hardwood forest. No grubbing of stumps will be performed in the wetlands associated with the nonriverine swamp forest or the nonriverine wet hardwood forest.

**While all of the alternatives (including the No Action alternative) will impact natural biotic communities by the clearing of trees, the accompanying loss of plant communities is not anticipated to result in an appreciable total or long-term loss to the area due to the contiguous proximity of the affected communities to large undeveloped areas with like characteristics and biotic community associations.**

#### *5.16 Essential Fish Habitat*

As described in detail in Section 4.23, **the EA study area does not contain any aquatic habitats; riverine, estuarine, or tidal wetlands; or designated Essential Fish Habitat (EFH) for federally-managed species. Due to the absence of EFH in the study area, the distance of construction from Coinjock Bay (1.2 miles), the minimal wetland impacts (Section 5.14), and the proposed stormwater management practices (Section 5.13) none of the alternatives are likely to adversely affect EFH. Consequently, it is determined that no further EFH consultation with the NMFS is required.**

#### *5.17 Endangered and Threatened Species*

As discussed in Section 4.24, there are eight federally-listed endangered species in Currituck County. Section 4.24 describes the habitat of these species in detail. **There are no records of any federally-listed endangered or threatened species in the project area for any of the alternatives, and no suitable habitat for any of these species was found in the EA study area; consequently, there is no suitable habitat for any of these species in the project area for any of the alternatives.**

Habitat for the West Indian manatee, bald eagle, loggerhead sea turtle, and leatherback sea turtle could potentially occur in Coinjock Bay. However, the bay is located over 1.2 miles east of the airport, and is separated from the airport by the 400 acre Maple Complex and State Route 168. The proposed projects for any of the alternatives will not have any effect on the waters of Coinjock Bay, and consequently, these species are not likely to be adversely affected by the project.

No suitable habitat for the red cockaded woodpecker (RCW) occurs in the project area for any of the alternatives. The pine-hardwood communities that occur in the study area are small, isolated fragments less than one acre in size. These communities are also closed canopy forests with a well developed hardwood understory. Due to the fact that the RCW has apparently been extirpated from the County, and the lack of suitable habitat, the RCW is not likely to be adversely affected by construction of any of the alternatives.

The study area does not contain suitable foraging or nesting habitat for the piping plover, and consequently, the piping plover is not likely to be adversely affected by any of the alternatives.

The study area does not contain any suitable habitat for the shortnose sturgeon, and consequently, this species is not likely to be adversely affected by any of the alternatives.

No suitable habitat for seabeach amaranth occurs within the study area, and consequently, this species is not likely to be adversely affected by any of the alternatives.

Of the two Federal Species of Concern known to occur in Currituck County, potential habitat occurs only for the virginia least trillium (*Trillium pusillum* var. *virginianum*). This species is found in nonriverine wet hardwood forests and nonriverine swamp forests, habitats that are present in the project areas for the all of alternatives. No plants were observed during the biotic communities fieldwork. **Although no action is required by federal or state law for federal species of concern, the North Carolina Plant Conservation Service will be given the opportunity to survey for and relocate any occurrences of the Virginia least trillium prior to any tree clearing in the nonriverine wet hardwood forests and nonriverine swamp forests for any of the alternatives.**

As discussed in Section 4.24, the NCNHP has no records of any State-listed species within a one-mile radius of the project area. The nonriverine wet hardwood forests and nonriverine swamp forests represent potential habitat for the star-nosed mole (*Condylura cristata* pop. 1), a State-listed Special Concern species. Special Concern species which are not also listed as Endangered or Threatened may be collected from the wild and sold under specific regulations. **The record for the star-nose mole in Currituck County is historic, indicating that the star-nosed mole has not been observed in the County for at least 20 years.** This species is also associated with a wide variety of habitat types. **Given that the tree clearing for all of the alternatives will take place along the margins of the communities with potential habitat for this species, and given the abundance of adjacent suitable habitat, impacts, if any, to the star-nose mole are expected to be negligible.**

#### **5.18 Energy Supply/Natural Resources**

Energy consumption at an airport generally falls into two categories:

- 1) Energy demands for fixed facilities such as airfield lighting and airport buildings (including heating and lighting); and
- 2) Fuel consumption by aircraft and ground vehicles.

Construction of any of the build alternatives will have a minor impact on energy supply by increasing energy demands through use of navigational aids, airfield lighting, new hangar buildings and the terminal. This increased use will not measurably impact the area's electrical supply. A short-term increase in fuel consumption may occur during construction periods, as construction equipment and vehicles required for site work will create a temporary increase in fuel demands. However, the equipment used for this work would be in use elsewhere due to the transient nature of the construction industry. **Therefore, none of the alternatives will result in any long-term additions to fuel demands or consumption.**

#### **5.19 Light Emissions**

The FAA requires the airport sponsor to consider the extent to which any lighting associated with an airport action will create an annoyance among people in surrounding areas. There no

residences near the airport. Construction of Alternatives 1 and 2 will include installation of runway end identifier lights (REILs), security lighting at new hangars and the terminal building, parking lot lights, and runway and taxiway edge lights. Among the proposed lighting projects, only the REILs have the potential for light emissions off airport property. The REILs consist of two flashing white lights aimed upward and away from the runway threshold at a 3- to 10-degree angle. For Alternative 1, the closest residential property along the extended runway centerline will be over 2600' north of the airport. Given the topography of the site, a 3 degree REIL aiming angle would result in the light from the REILs being 135' above the ground at the nearest residential property. For Alternative 2, the closest residential property along the extended runway centerline will be over 2300' from the airport. Given the topography of the site, a 3 degree REIL aiming angle would result in the light from the REILs being 120' above the ground at the nearest residential property. For both alternatives, the REILs will be aimed perpendicular to US 158 and would not be expected to impact users of the road. Based on this analysis and the land uses around the airport, **no light emissions from any of the alternatives are expected to create an annoyance among people in the area surrounding the airport.**

#### ***5.20 Solid Waste Impacts***

Other than for terminal area development, none of the alternatives have a direct relationship to solid waste collection, control or disposal other than minimal issues associated with the actual construction itself. **For the terminal area development (terminal and hangar construction) associated with Alternatives 1 and 2, there are no appreciable changes in solid waste generation anticipated compared to the No Action alternative.** Concrete and asphalt debris, as well as organic debris generated from construction of any of the alternatives can be accommodated by Soundside Recycling and Materials located 20 miles southeast of the airport.

#### ***5.21 Construction Impacts***

Specific effects during construction which may create adverse environmental impacts include noise from construction equipment, noise and dust from delivery of materials, creation of borrow pits and disposal of spoil, air pollution from burning debris, and water pollution from erosion. In addition, occasional problems arise from increased vehicular traffic around the actual construction site. Construction impacts are typically of short duration, associated with actual construction activities, and can be mitigated during the construction period with careful planning and proper controls. **To mitigate construction impacts, contractors will be required to locate staging areas, haul routes, and waste areas to minimize dust and noise exposure. Contractors will be required to dispose of construction debris in an established and legally permitted landfill or disposal area.**

Air pollutants most noticeable during construction are dust particles generated from earth moving activities, aggregate handling, and travel on non-paved haul routes. **This dust will be controlled by methods including: use of water to keep exposed areas damp, seeding and mulching as soon as construction is complete, the use of covered haul trucks, and the use of dust palliatives on temporary roads. Dust control measures shall be used throughout any construction activities.** Other air pollutants are exhaust fumes from construction equipment and smoke from open burning. Effects from exhaust fumes are

generally considered to be negligible due to the large area in which the vehicles are operating. **All construction equipment shall be maintained and kept in proper operating conditions at all times. Burning, when necessary, shall be held to a minimum, and the contractor(s) shall adhere to all applicable state and local regulations regarding open air burning. Open burning, if any, associated with the project will be in compliance with N.C. Department of Environment and Natural Resources (DENR) rules and regulations.**

Water pollution can arise during project construction primarily from erosion of exposed land surfaces. **To minimize erosion, temporary stormwater and erosion control procedures, such as berms, diversion ditches, sediment traps, outlet structures, filter cloths, and temporary seeding, shall be used. No sediment and erosion control measures will be placed in wetlands, and borrow and waste areas shall avoid wetlands to the maximum extent practicable. An erosion and sediment control plan will be required for any construction projects, filed 30 days before construction with the DENR regional office's land quality section. Precautions shall also be taken during the maintenance and fueling of equipment so that no hazardous materials are dumped onto the ground and allowed to penetrate into the groundwater system. All used oils shall be collected and disposed of in accordance with Federal, State and local laws. Construction debris shall be disposed of at an approved upland site to reduce the risk of contamination to any wetlands and streams in the vicinity of the work.**

Increases in noise levels created by construction equipment can be a source of irritation to nearby residents. Restrictions governing the time of day in which construction activities can take place may be necessary to minimize disruptions to nearby residences. **Any construction work performed at night (if needed) will be in compliance with Currituck County noise ordinances.**

The construction of the proposed projects may cause a slight increase in vehicular traffic in the airport area. This rise will likely occur from material deliveries and workers traveling to and from the job site. The traffic will be most noticeable during any paving operations, when numerous deliveries of materials from outside sources will be necessary. **Where possible, haul routes will be established and deliveries scheduled to minimize disruptions to any nearby residents. Staging areas and haul routes will be restored to approximately original conditions by regrading and reseeded, where needed.**

### ***5.22 Environmental Justice Impacts***

On February 11, 1994, President Clinton signed the Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." A Presidential Memorandum directed to the heads of all Departments and Agencies accompanied the Executive Order 12898. The Memorandum states "each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by NEPA." **No relocations of residences or businesses are required for any of the alternatives, and there are no environmental justice impacts anticipated for any of the alternatives.**

### **5.23 Other Considerations – Public Water Supply Wells**

Section 4.25 provides a detailed description of the water supply wells located on and near the airport. **None of the alternatives will impact the public water supply production wells on or near the airport. All of the proposed actions will be located outside the 200’ diameter well protection zone established for each well.** North Carolina law requires public water supply wells to be located a minimum distance of 100’ from any sanitary sewage disposal system, and 200’ from a subsurface sanitary sewage treatment and disposal system designed for 3000 gpm or more of daily wastewater flows. Septic systems for the terminal building and hangars will be located over 800’ from the nearest production well, which is well beyond the required limits.

**Monitoring wells near construction areas will be marked and protected from damage during construction by the placement of barricades or other suitable methods.**

## **6.0 AGENCY COORDINATION**

Project scoping letters were sent to several Federal and State agencies in July 2001 requesting comments for inclusion in this Environmental Assessment. Federal agencies contacted were the U.S. Fish & Wildlife Service, U.S. Army Corps of Engineers (Regulatory and Flood Plain Management branches), U.S. Department of Agriculture, U.S. Environmental Protection Agency, National Marine Fisheries Service, and the National Parks Service.

North Carolina government departments contacted directly or through the N.C. State Clearinghouse Intergovernmental Review Process included the N.C. Department of Environment and Natural Resources (DENR), the N.C. Department of Cultural Resources, the N.C. Wildlife Resources Commission, the N.C. Department of Administration, and the N.C. Department of Agriculture, and the N.C. Council of Governments. Divisions within the N.C. DENR contacted were the Division of Environmental Management, Division of Land Resources, Division of Forest Resources, Division of Environmental Health, Division of Parks and Recreation, Division of Planning and Assessment, Division of Water Quality, Division of Coastal Management and Division of Soil and Water Conservation.

## **7.0 LIST OF PREPARERS**

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