



Currituck County Moyock Mega-Site Market Feasibility Study

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Introduction

Currituck County has initiated a market feasibility study to facilitate the assessment of the market potential and feasibility for a large scale, phased, mixed-use development located on a contiguous land area of approximately 3,000 acres in the Village of Moyock, Currituck County, North Carolina — “The Moyock Mega-Site” (See **Figure ES-1**).

The County has decided to proactively get a better handle on potential economic development opportunities that will allow them to capitalize on the increased market demand, specifically in Moyock, for light industrial, office, multi-family residential, single family residential, and commercial/retail developments that have risen over the past two years as the region continues to rebound from the 2007–2009 recession.

A challenge to taking advantage of these opportunities, is Moyock’s lack of planned, “shovel ready” development sites or existing buildings to satisfy potential demand. The local private development sector has not yet effectively been able to deliver this product to the marketplace. In addition to being in a position to better meet current demand, several regional, national, and international trends and events are indicating increased demand and opportunity to grow the County’s non-residential tax base.

With a site of this scale, the approach must be a long-term development strategy that will result in a focused area of community and private investment that will foster a strong employment center capable of meeting the County’s existing and anticipated future demand. The findings from the market feasibility study and related engineering and environmental due diligence is the first step to determining the best approach for developing the Moyock Mega-Site over the next 30 years.

Market Feasibility

Future market feasibility for the Moyock Mega-Site is projected based on a comprehensive review of:

- Relevant demographic and economic data relating to the Virginia Beach-Norfolk-Newport News MSA and Currituck County, including population, household characteristics, employment, wage growth, commuting patterns, and real estate market trends
- Detailed profiles of six (6) competitive developments in North Carolina and Virginia, investigating mixture of uses for similarly sized properties, development cost, and level of public investment

Demand forecasts by product type for the Moyock Mega-Site consider the site’s geographic location in the region, transportation access, demographic and economic trends, tourism, and real estate market performance. Residential and retail demand forecasts are based on population projections. Office and industrial forecasts are based on potential future employment in the Virginia Beach-Norfolk-Newport News MSA (further referred to in this report as the Virginia Beach MSA).

Stakeholder Participation

To better understand market potential on a regional-scale, stakeholder interviews were conducted with several real estate professionals from the Hampton Roads region. Offering a mixture of local and regional perspectives, participants were interviewed regarding market potential at the Moyock Mega-Site. Although opinions of the site’s feasibility varied, common themes were used to inform the real estate demand forecasts presented in this analysis.

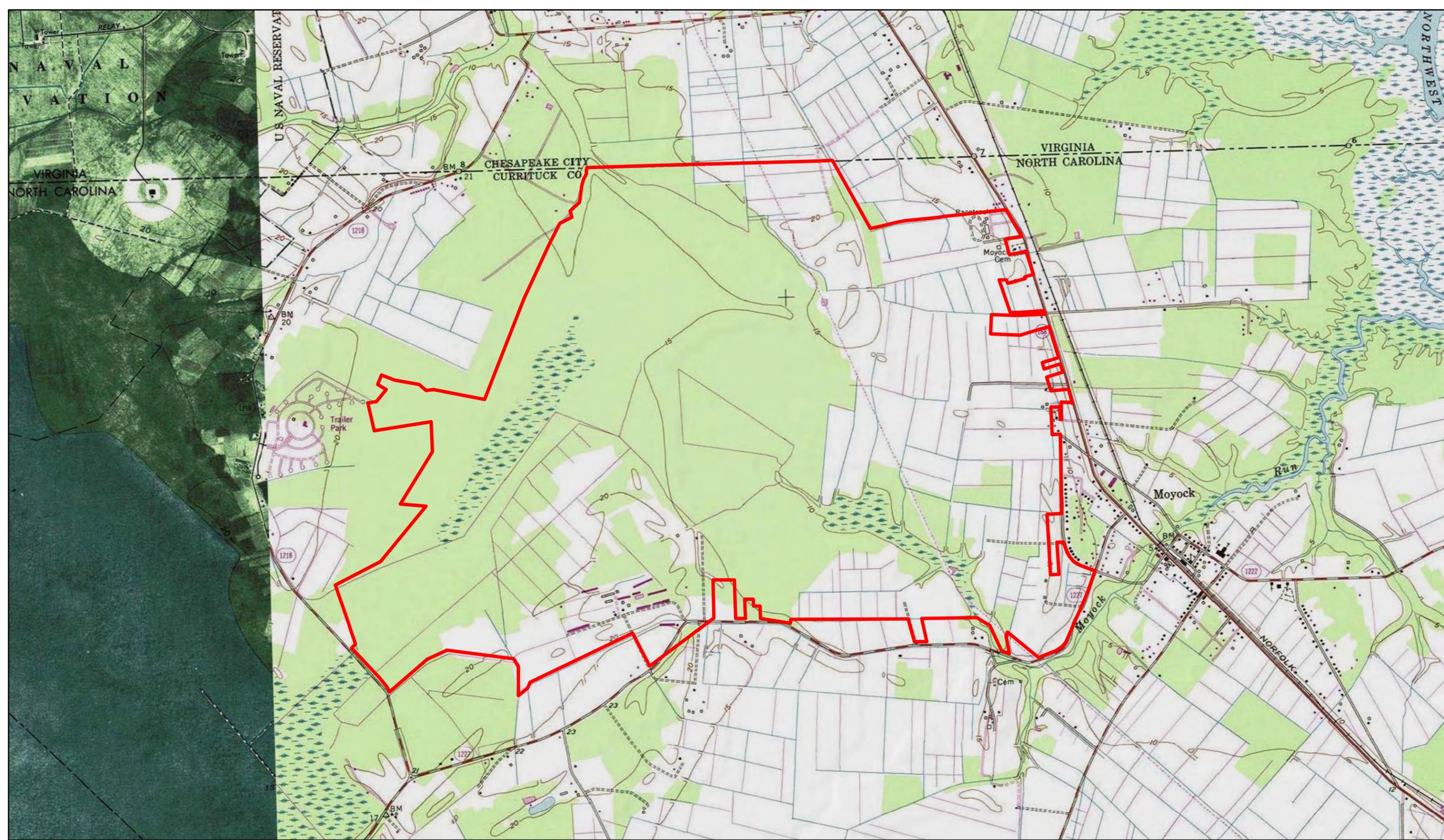
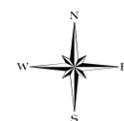
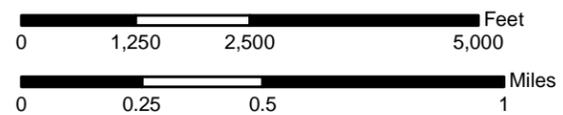


Figure ES-1
Topographic of Moyock Mega-Site
Currituck County, NC

 Project Area



Kimley»Horn

Data: Copyright © 2013 National Geographic Society, I-cubed, Currituck County



Real Estate Sector Overview and Demand Projections

RESIDENTIAL

Based on data obtained through the U.S. Census, more than 80 percent of the housing stock in Currituck County is comprised of single-family detached units. Including mobile homes, the share increases to approximately 96.5 percent. On average, Currituck County has reported between 150 and 200 for-sale closings annually over the last three years. Average closing prices have remained stable at approximately \$250,000. Given the Mega-Site's proximity and access to job centers in Chesapeake and Norfolk as well as availability of developable land, future capture of Currituck County residential demand is expected to be high.

Currently, multi-family product makes up only 2.2 percent of the housing stock in Currituck County. Feedback from stakeholders indicates that there is perceived demand in Moyock for market-rate multi-family residential product. However, "outsider" input highlighted that barriers to development are assumed to be high, including density regulations and difficulty in obtaining development approval. Nationally, nearly all age groups have experienced an increase in renter occupancy.

Widespread increases in residents seeking to rent has resulted in the strongest decade of growth in renter households over the past half-century. More than 30 percent of the total Currituck County population is over the age of 55, with the share increasing to nearly 35 percent in the next five years. This age group typically seeks a maintenance-free lifestyle close to friends, family, shopping, dining, church, and cultural or recreational amenities.

Currituck County is forecasted to add an estimated 17,800 new residents through 2045, representing an increase of 71.1 percent. On average, this forecast equates to the addition of approximately 5,900 new people every 10 years. As a point of comparison, population in Currituck between 2000 and 2010 increased by 5,400 people. Based on average household sizes and housing unit vacancy rates, Currituck County could add over 7,400 new residential units through 2045. Capturing between 30 percent and 40 percent of the forecasted demand, the Moyock Mega-Site could support between 2,500 and 3,000 new housing units for the next 30 years.

Future residential demand should be accommodated in a variety of product types. Projected increases in population over the age of 55 will drive demand for product that offers reduced maintenance. Because of continued national issues related to financing and liability for condominium construction and shifting preferences toward rental housing among all age cohorts, many active lifestyle households are gravitating toward apartments. Providing opportunities for residents to age in place—including housing that offers a continuum of care from independent to assisted living—should be an important consideration for the next 30 years.

RETAIL

From 2010 to 2014, the vacancy rate in the Virginia Beach market decreased slightly from 9.2 percent to 8.7 percent. New completions were limited to only 2010 and 2012, totaling 320,000 square feet for five years. During the most recent 5-year period, new retail supply slightly outpaced demand for space. Regional shopping destinations include Greenbrier Mall and Tanger Nags Head. Edinburgh represents one of the largest retail concentrations in close proximity to the Moyock Mega-Site.



The development is less than ten miles north of the Mega-Site, and includes a Walmart Supercenter, The Home Depot, Target, and a variety of small shop and free-standing retailers and restaurants.

Future demand for neighborhood-serving retail is likely to be attracted to the NC-168 (Carotoke Highway) corridor, attracting both local customers and drive-through tourist traffic. Demand for additional retail space will be driven by concentrations of new residential development. Development of regional-focused retail on or near the Moyock Mega-Site, including outlet mall facilities, are unlikely given proximity to large attractors in Chesapeake and Norfolk, including the Norfolk Premium Outlets that are currently under construction.

Retail demand for the Moyock Mega-Site was forecasted based on population and household forecasts, and consider expenditure potential, to include “leaking” resulting from commuting patterns, and sales inflow from non-Currituck residents including those who work there, commuters, and seasonal tourism. The 30-year demand projection for retail space at the Moyock Mega-Site would be estimated at 350,000 to 500,000 square feet. Completion of the I-44 Connector would be important to open additional retail acreage offering proximity and visibility to a transportation thoroughfare. Without the connector, the majority of the retail space at the Moyock Mega-Site would gravitate to the NC-168 corridor.

OFFICE

Approximately 648,000 square feet of new office space completed in the Virginia Beach market between 2010 and 2014. Overall, the Virginia Beach market had a 5-year office over supply of approximately 692,000 square feet. As a result, the market-wide vacancy rate increased steadily from 14.5 percent in 2010 to 16.8 percent in 2014.

Feedback from stakeholders indicated that demand for office space is likely to be focused on smaller-scale and locally-focused professional services. Larger-scale corporate relocations will likely be attracted to more urbanized areas offering employees direct access to retail goods and services, restaurants, and a variety of housing product and price points.

Office demand for the Moyock Mega-Site was based on office-occupying growth, as reported for the Virginia Beach MSA by Woods & Poole. The region is forecasted to have an increase of approximately 110,000 office-occupying jobs for the next 30 years. At an average space per employee of between 200 and 225 square feet, this equates to demand of approximately 24.5 million square feet of net new single- and multi-tenant office space through 2045. Considering the Currituck County’s geographic location in the region, as well as current captures of office space, approximately 150,000 to 300,000 square feet of demand is projected for the Moyock Mega-Site.

INDUSTRIAL

Industrial market performance in the Virginia Beach MSA continues to be slow to recover from the impacts of the 2007–2009 recession. Vacancy rates are dropping incrementally, but leasing activity and gross absorption have not returned to pre-recession levels. Noting this, significant demand for industrial development will likely be constrained in the short-term.



Port-related warehouse space has experienced an increase in demand recently. Other notable growth sectors include distribution and light manufacturing (largely focused recently in Suffolk), food-related warehousing, manufacturing, and distribution (coffee, sweet potatoes, etc.), defense, and home improvement related companies. Proximity and accessibility to the port will remain critical in site selection attributes.

Industrial-occupying employment projections are based on Woods & Poole forecasts through 2045. New industrial jobs for the Virginia Beach MSA are based on shares of industrial-occupying employees by industry. Estimates for industrial demand are based on an average of 750 square feet per employee. The Virginia Beach MSA is forecasted to have demand for approximately 19.8 million square feet of industrial demand between 2015 and 2045. The Moyock Mega-Site could accommodate approximately 750,000 to 1.0 million square feet of the region's forecasted industrial demand. It is important to note that this forecast is based on organic job growth, and excludes large "drop-in" manufacturing and distribution relocations.

The most common acknowledgement from local and regional stakeholders highlighted the importance of shovel-ready sites. Companies looking at the Virginia Beach region are requiring occupancy within six months to one year of lease execution. According to Bill Throne with Thalhimer, key hurdles for the NC-168 corridor and the Moyock Mega-Site are likely to be:

1. Financing for site improvements and required infrastructure
2. Time to delivery for a development site
3. Availability of power to the site for manufacturing
4. Distance and access from/to the Moyock Mega-Site to/from I-85 and I-95

The region as a whole has an extremely limited supply of properties that could deliver a build-to-suit user needing a facility of more than 1.0 million square feet. As an example, Thalhimer was recently approached by a potential user needing 1.3 million square feet for purchase, and they could not be accommodated anywhere in the region. This could be an advantage for the Moyock Mega-Site. Although forecasted job growth equates to demand of up to 1.0 million square feet for the Mega-Site, additional acreage during the land planning process should be preserved for a potential drop-in mega-user.

Preliminary Environmental Review

Based on our limited environmental database review, a summary of our findings divided by subject area are as follows:

WETLANDS AND WATERS RELIMINARY ENVIRONMENTAL REVIEW

Areas of lower elevation in the southeastern portion of the project area correspond to a wetland system associated with Moyock Run. Wetlands are within the southeastern and western portions of the project area. In addition, agricultural ditches are shown throughout the eastern and southern project areas. A large wetland system is located within the western portion of the project. Moyock Run is depicted as a stream/river located along the southern border of the project area. An unnamed tributary (UT) to Moyock Run was identified in the National Hydrography Dataset (NHD) within the northwestern portions of the project area, and an additional UT to Guinea Mill Run Canal was identified in the southwestern portion of the project area. Field observations confirm that this feature is a ditch.



Pattern drainage ditches were also observed throughout the Mega-Site and boundary ditches were observed along the agricultural fields. The boundary ditches were deep, contained hydrophytic vegetation, and may be considered jurisdictional waters by the (United States Army Corps of Engineers (USACE). The pattern drainage ditches and boundary ditches appear to be effectively draining the agricultural fields.

COASTAL AREA MANAGEMENT ACT (CAMA)

Currituck County is one of 20 coastal counties of North Carolina regulated under the Coastal Area Management Act (CAMA). Based on the desktop analysis, it does not appear that there are any Areas of Environmental Concern (AEC), public trust waters, or their associated buffers regulated under CAMA located within the site. Should the Mega-Site require a federal permit however, the project will require a federal consistency review by the North Carolina Division of Coastal Management (NCDCM) to determine if a requested permit is consistent with NCDCM requirements. In addition, since the site is in a coastal county, the Mega-Site will be subject to NC coastal stormwater regulations. Coastal stormwater requirements may limit the amount of impervious development with a property based on the type of development proposed. Development within the Mega-Site will likely be considered “Other Coastal Development, High Density Option” per NC Administrative Code (NCAC) 15A NCAC 02H .1005. This regulation allows the permitting of development with greater than 24 percent built upon area in one of the 20 coastal counties that does not drain to high quality water or class SA waters. The primary constraint resulting from coastal stormwater regulations is the requirement of stormwater treatment facilities for the developed area, meaning all stormwater from the site will have to be collected and treated as necessary to meet North Carolina Division of Water Resources (NCDWR)/NCDCM requirements

PROTECTED SPECIES

Based on the habitat requirements and the proposed project, suitable habitat is not likely present for any of the listed species with the exception of red-cockaded woodpecker (RCW) and northern long-eared bat (NLEB). Suitable habitat for RCW and NLEB may be present within the managed pine plantations and forested areas of the Mega-Site. Additional field investigations and/or surveys are necessary to determine the potential impacts to any threatened or endangered species. Coordination with the United States Fish and Wildlife Service (USFWS) may be required concerning potential impacts to RCW and NLEB.

CULTURAL RESOURCES

It is not anticipated that the proposed project would have a direct impact to identified cultural resources. However, depending upon the potential design or development of a project on the Mega-Site, additional coordination with the North Carolina State Historic Preservation Office (SHPO) may be required.

FLOOD ZONES AND FLOODWAYS

The majority of the subject Mega-Site is depicted as unshaded Zone X, which are areas determined to be outside of the 500-year floodplain. Zone A, areas subject to inundation by the 100-year flood, is depicted along the western side of the project area associated with the UT to Guinea Mill Run Canal. In addition, Zone AE, areas corresponding to the 100-year floodplain with a base flood elevation determined, is depicted in the southeast corner of the project area along Moyock Run. This area has a mapped FEMA-regulated floodway within the project area.



The FEMA flood hazard areas and regulated floodway end approximately 1,600 feet west of the Thrasher mine pit. Note that this limit is defined in FEMA FIRM 3721802200J as Limit of Study. Areas in or adjacent to the flood hazard zone and regulated floodway may be subject to additional modeling or study as required by local development ordinances.

HAZARDOUS MATERIALS

Three locations were identified as sites with potential hazardous materials concerns within the Mega-Site. They are the Thrasher Mine, Moyock Farm Associates, Inc., and the H.T. Winslow Property. For any property acquisition, it is recommended that the County have a Phase I Environmental Site Assessment (ESA) conducted in accordance with the American Society for Testing and Materials (ASTM) 1527-13 standards to address the "innocent landowner defense" provision of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, and meet the "All Appropriate Inquiry" (AAI) rule into the ownership and uses of the property in preparation of due diligence investigations under the Brownfields Revitalization Act of 2002. The Phase I ESA can help identify known or suspected areas of subsurface contamination and potential locations of unknown underground storage tanks in or immediately adjacent to the anticipated limits of construction which may be encountered and would require special handling or disposal of soil or groundwater during construction.

DEVELOPABLE ACREAGE

The Mega-Site consists of approximately 3,392 total acres. Based on the evaluation of land use and associated results from the market analysis, as well as the environmental and infrastructure improvements that will be necessary to support the property, the total developable area of the site was derived as shown in **Table ES-1** below.

Table ES-1: Summary of Developable Acreage for the Moyock Mega-Site

Total Site Area	3,392 acres
Wetlands/Buffers	770–1,279 acres
FEMA Floodplains	483 acres
Combined Wetlands/Floodplains*	1,005 – 1,521 acres
Net Developable Acreage	1,871 – 2,387 acres
Road rights-of-way/Utility Easements (10% of Net Developable Acreage)	187 – 239 acres
Stormwater (10% of Net Developable Acreage)	187 – 239 acres
Total Developable Area	1,497 – 1,909 acres

**Combined area accounts for overlap of wetland and floodplain features which occupy much of the same geographic space.*



The market analysis yielded the following development potential of the site.

Table ES-2: Summary of Development Potential for the Moyock Mega-Site

Land Use	Measure	Low	High
Residential	Units	2,500	3,000
Retail	Square Feet	250,000	500,000
Office	Square Feet	150,000	300,000
Industrial	Square Feet	750,000	1,000,000

Utilities Infrastructure

WASTEWATER

Using the high end of the development yield from the market analysis, approximately 1.3 million gallons per day (gpd) of wastewater will be generated at full build-out. The existing Moyock Regional Wastewater Treatment Plant (WWTP) has a current capacity of 99,000 gpd and is planned for expansion for up to 600,000 gpd. The WWTP, with its current and planned capacity, can serve a significant level of build-out of the site after which additional treatment and disposal capacity will be required. A portion of the project site also lies outside of the service area limits of the WWTP. Long-range planning should consider inclusion of the total project site in the WWTP service area as well as options for future expansion of the WWTP beyond what is currently planned. At a minimum, that should consider additional land acquisition for an eventual and future expansion of the WWTP. An on-site collection system “backbone” will be needed for development sites to connect to. This will be comprised of sanitary sewer systems and likely wastewater lift stations to collect and discharge wastewater to the existing WWTP and is consistent with typical infrastructure required for a development of this scale and nature.

WATER

Similar to wastewater generation rates, using the high end of the development yield from the market analysis and assuming domestic water demand will equal wastewater generation rates, approximately 1.3 mgd of domestic water demand will be required at full build-out. The existing Mainland Water Treatment Plant (WTP) has a current capacity of 2.9 million gallons per day (mgd) and is expandable to 6 mgd. Given that most of future development in the County will likely occur within Moyock and on the Mega-Site, it is anticipated that water supply will be adequate to serve the site when the WTP expandability is considered. It is expected that additional water storage will be required on the project site in one or more elevated tanks. The additional water storage will ensure that pressure requirements are met for water supply to support build-out as well as water flows for external firefighting needs and fire suppression systems specific to the office, retail, and industrial land uses.

Upsizing of the existing 12-inch water main in NC-168 or installation of a parallel water main may be required to minimize the amount of on-site storage required. An on-site water distribution system “backbone” will be needed for development sites to connect to.



This will be comprised of water mains and appurtenances to supply water to development and is consistent with typical infrastructure required for a development of this scale and nature. Additionally, new water mains will likely be required along adjacent roadway corridors such as South Mills Road creating a looped system back to the water main in NC-168.

STORMWATER

Preliminary analysis was performed to determine potential stormwater management requirements for the site to address stormwater quality requirements as well as attenuation requirements for stormwater discharge. Approximately 350 acres of the site will be required for stormwater management. It is expected that stormwater management measures will predominantly be comprised of retention basins. Other low-impact stormwater management measures should be considered; however, the relatively poor soils and relatively high groundwater table may inhibit other types of stormwater management measures such as infiltration systems. From a land planning standpoint, retention basins should be planned and designed as regional facilities to maximize overall land use efficiency and to create opportunities for large ponds and lakes that can become significant amenities within the overall development.

Stormwater discharge capacity is limited from some of the main existing outfalls from the site, mostly due to relatively small culverts that exist under public and private roadways south and east of the project site. Some of these outfall systems and culverts may require upsizing to increase discharge capacity and possibly reduce the amount of stormwater attenuation required on the site.

PRIVATE UTILITIES

Dominion North Carolina Power, Piedmont Natural Gas, and Century Link are the primary private utility service providers in the Moyock area. Each have existing utility infrastructure at and adjacent to the project site. "Will serve" letters have been obtained from each of the private utility service providers indicating that they have the capacity to serve the proposed development or can and will expand their infrastructure to supply the required capacity.

Transportation Infrastructure

An inventory of existing transportation infrastructure as well as a cursory determination of future transportation needs was conducted for the Moyock Mega-Site to assess the attractiveness and feasibility of future development. The primary transportation infrastructure components evaluated consisted of the roadway network, railroad, and aviation. Although ferry service is provided and the Currituck Sound provides a means of access to the Intracoastal Waterway, deep water access via the existing Currituck County coast line was not considered as a part of the transportation facilities assessment.

Currently there is no significant internal roadway network in place to support the scale of development envisioned for the Mega-Site. There are the several gravel/dirt roads that provide a means of access to/from the water treatment facility located on the site as well as routes for trucks and equipment to use when accessing the mines or borrow pits located internal to the Mega-Site.



LAND USES AND POTENTIAL TRAFFIC GENERATION

The acreage, land uses, densities, and land bay/area designations shown in **Table ES-1** have been identified for the Mega-Site based on the market analysis and demand projections.

Table ES-3: Developable Acreage, Land Use, and Density

Acreage	Land Use Description	Density
750	Residential (Low Density-2units/acre)	1,500 du*
150	Residential (Medium Density-8 units/acre)	1,200 du
20	Residential (High Density-15 units/acre)	300 du
25	Retail (10k sf/acre)	250K sf**
25	Office (12k sf/acre)	300K sf
200	Industrial (5k sf/acre)	1M sf
1,170	Net Developable Acreage	
1,440	Open Space/Wetlands/"Opportunity Land Bank"	N/A
240	Right-of-Way/Utilities	N/A
240	Stormwater	N/A

*Dwelling Units (du), **Square Feet (sf)

Based on the anticipated market demand, net developable acreage, and potential land uses, **Table ES-2** reflects the trip generation potential of the Mega-Site as build-out of development occurs during the next 30 years. The trip generation estimates indicate that more than approximately 50,000 daily trips could be added to the local roadway network with the development of the Mega-Site.

Table ES-4: Trip Generation – Total of New Trips

ITE Code	Land Use Description	Density	Daily Trips	AM Trips	PM Trips
110	General Light Industrial	250K sf	1,766	206	200
130	Industrial Park	750K sf	5,124	615	638
210	Single Family Detached	1,500 du	12,560	1,060	1,202
230	Residential Townhouse/Condo	1,200 du	5,588	377	461
220	Apartments	300 du	1,942	151	183
820	Shopping Center	250K sf	12,320	273	1,107
826	Specialty Retail Center	250K sf	10,734	N/A	621
750	Office Park	300K sf	3,536	535	462
TOTAL			53,570*	3,217	4,874

*Assumes no pass-by traffic from existing adjacent streets or internal capture for complimentary and co-located land uses.



TRANSPORTATION CONSIDERATIONS

Designation of land uses and land bays to specific areas of the Mega-Site through the development of a site master plan should be established. This will allow the County in coordination with the NCDOT to define a roadway network infrastructure (e.g., four-lane divided boulevards vs. two-lane collectors) capable of supporting the proposed land uses and their associated trip generation characteristics. Based on the promotion of the Mega-Site and the ability to attract potential development(s) operational analyses of roadway and intersections should be conducted to right-size the new roadway infrastructure as well as identify improvements that will be necessary for the adjacent/existing roadway network.

In addition to roadway network infrastructure improvements, if the County is truly considering the ability to offer/market rail access to Mega-Site, this must be taken into consideration with the eventual development of a Mega-Site Master Plan. Rail location will influence land bay layout as well as location of certain types of land uses in proximity to one another (i.e., Industrial Park near Retail or Residential development).

Although aviation assets/infrastructure were not considered vital to the development or attractiveness of the Moyock Mega-Site they are an important component for the continued economic development vitality of the County. However, efficient, reliable, and modernized aviation assets are an important resource and factor in quality of life for current residents and business owners as well as potential new residents or new businesses considering locating in Currituck County.

The County should continue to enhance safety, services, and accommodations at the airport as outlined in the *Airport Layout Plan Update*. The Currituck County Regional Airport will continue to grow in value with its ability to accommodate corporate aircraft and attracting/serving new and expanded industries.

Based on the anticipated scale and composition of Mega-Site land uses, it is important that with the development of the Master Plan, accommodations for bicyclists and pedestrians be considered. This is of particular importance for the residential, community commercial/retail, and office designated areas of the Mega-Site. Sidewalks, multi-use paths, bike lane signage as well as dedicated bike lanes in the roadways not only promote and accommodate bike and pedestrian mobility, studies have shown such amenities also enhance property values further promoting the attractiveness and development potential of the Mega-Site.

With an anticipated increase in residential development and associated trip generation and commuter traffic to/from Moyock, transportation demand management (TDM) strategies should be considered. Strategies may consist of establishing agreements with Hampton Roads Transit (HRT) for the provision of express bus serves between Moyock and major employment centers in the Hampton Roads region, as well as park and ride, carpooling, and even vanpooling incentives.



TRANSPORTATION NETWORK IMPROVEMENTS

- Develop and adopt a transportation corridor overlay district for the NC-168
 - This is of strategic importance where the Mega-Site abuts/controls the property along NC-168
 - Establish signalized, unsignalized, full-movement, and partial movement intersection spacing standards consistent with NCDOT Policy On Street And Driveway Access to North Carolina Highways
 - Identify, recommend, and implement preferred access management strategies to enhance operational safety and efficiency on the surrounding area network
- Establish a main entrance/roadway to serve the Mega-Site off of NC-168 in the vicinity of Winslow Road/Moyock Landing Drive or the Baxter Lane intersection
 - Anticipate/designate right-of-way (ROW) necessary to accommodate a four-lane divided boulevard
- Establish a primary entrance/roadway to serve the Mega-Site off of South Mills Road
 - Anticipate/designate right-of-way (ROW) necessary to accommodate a four-lane divided boulevard
- Plan for the improvement of South Mills Road from a two-lane undivided facility to a four-lane divided facility in the immediate vicinity of the Mega-Site as development and growth occur
 - Adequate capacity is available to absorb initial levels of development related traffic demand (e.g., approximately 10,000 vpd). However, it is expected that with continued development and direct access to/from NC-168, South Mills Road will become a primary route serving the site.
 - Maintain as a local priority (per the Currituck County CTP) the improvement of South Mills Road from a two-lane to a four-lane roadway from the Camden County Line to the proposed NC-168 Bypass, Local ID: CURR0006-H
- Plan for safety and general design standard improvements to Backwoods Road
 - Currently there is adequate available capacity to absorb development related traffic demand (e.g., approximately 10,000 vpd)
 - However, with increased traffic volumes on this roadway, combined with currently narrow travel lanes, and a posted speed limit of 55 miles per hour (mph), efforts should be made in future to enhance the typical section of the roadway focusing on safety and efficiency
- Integrate necessary existing local roadway improvements with the phasing and development of the Mega-Site as well as those regionally significant roadway improvements identified in this section and the current Currituck County Comprehensive Transportation Plan
- Work collaboratively with NCDOT and Camden County on the development and ultimate construction of the I-44 Connector Road. The proposed connector between NC-168 and the proposed new I-44 Corridor could prove extremely valuable in the future development of the Mega-Site



- Interchanges for the proposed I-44 Connector Road should be considered at the following locations:
 - Existing Route 168 (Virginia Segment) north of Moyock
 - Internal Arterial Roadway serving the Mega-Site
 - Proposed NC 168 “Moyock Bypass”
 - U.S. Route 17 in Camden County
- Coordinate with the railroad, identify key points of contact, and fully understand the railroad spur/extension process (since not already available to serve the site) so the County and confidently entertain potential users who are requesting or possibly demanding rail access as a part of site development.
- If the County is truly considering the option of offering rail access to serve the Mega-Site, this must be taken into consideration with the eventual development of a Mega-Site Master Plan. Rail location will influence land bay layout as well as location of certain types of land uses in proximity to one another (i.e., Industrial Park near Retail or Residential development).
- Continue to enhance safety, services, and accommodations at the airport as outlined in the *Airport Layout Plan Update*. The Currituck County Regional Airport will continue to grow in value with its ability to accommodate corporate aircraft and attracting/serving new and expanded industries.
- As development of the Mega-Site occurs alternative Transportation Demand Management (TDM) strategies should be considered and implemented to mitigate or reduce future peak period traffic congestion. TDM strategies may consist of:
 - Public transit: express or bus rapid transit services between regional activity/employment centers
 - Park and ride incentives
 - Carpooling: two or more people traveling in a car
 - Vanpooling: eight to 15 people traveling in a van
 - Bicycle and pedestrian accommodations that enhance local mobility
 - Multi-use paths
 - Sidewalks
 - Dedicated bicycle lanes
- With the proposed development of the Moyock Mega-Site Master Plan, Currituck County should consider the development a “Complete Streets” policy for roadways anticipated to serve neighborhoods and mixed-use areas of the site that are envisioned to be more pedestrian and bicyclist friendly.

The key next step in the Moyock Mega-Site development process is the establishment of a Master Plan. The Master Plan will define and better characterize the conceptual layout of the site as well as provide an improved understanding of where initial infrastructure investments should be concentrated to best meet near term as well as account for future market demand.



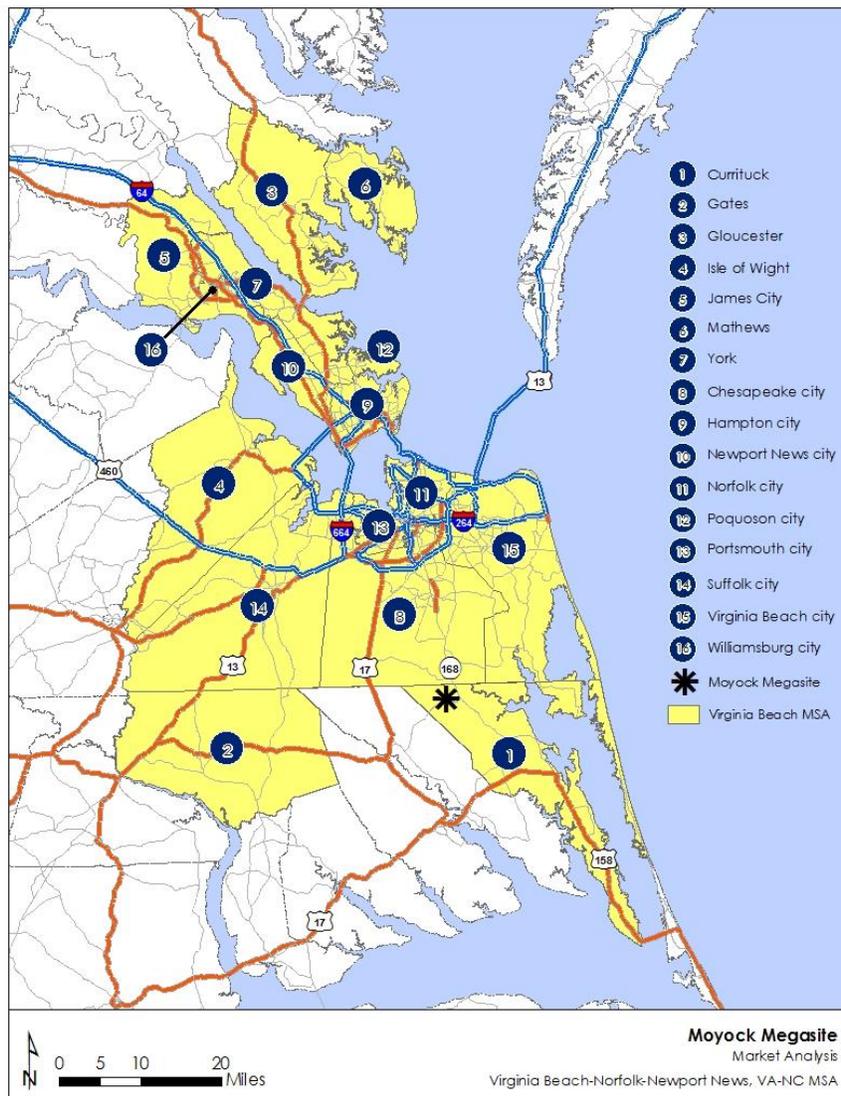
Chapter Overview

This chapter represents a comprehensive review of relevant demographic and economic data relating to the Virginia Beach MSA, and specifically Southside Hampton Roads and closely clustered areas of North Carolina. Topics highlighted in this chapter include a demographic overview, employment and wages by industry, workforce characteristics, commuting patterns, and real estate market trends for Hampton Roads. Real estate market trends include residential, retail, office, and industrial uses.

Area Overview and Economic Anchors

The Virginia Beach MSA has a population of over 1.7 million, making it the 37th largest metropolitan area in the United States. The Virginia Beach MSA includes seven counties and nine independent cities: two entities are in North Carolina, and the remaining 14 are in Virginia (Figure 2-1). This section discusses the major economic drivers that influence the Virginia Beach MSA and could impact future demand at the Moyock Mega-Site.

Figure 2-1: Virginia Beach MSA, 2015





PORT OF VIRGINIA

Figure 2-2: Port of Virginia facilities in Hampton Roads



The Port of Virginia is located in the heart of the Virginia Beach MSA in the Mid-Atlantic and is the world's largest deep-water harbor. It boasts the only US East Coast port authorization for 55-foot channels. The Port of Virginia includes the following facilities:

- Newport News Marine Terminal
- Virginia Intermodal Gateway (VIG)
- Norfolk International Terminals
- Portsmouth Marine Terminal

The port serves the largest vessels in the Atlantic trade network and has attracted many corporate distribution centers to the region. Once in port, goods travel efficiently via major rail networks or major highway systems. The port had 2.22 million twenty-foot-equivalent-units (TEUs) throughput in 2013, and is a 2-day drive from 70 percent of the U.S. population and over 307,000 manufacturing facilities. According to the U.S. Bureau of Labor Statistics, 40,000 people in the region work in the supply chain and transportation industry, with a vast majority of employees in the "Laborers and material movers" occupation.

The future Craney Island Terminal is planned to be completed in two phases, and when complete, will have the capacity of approximately 2.5-million TEUs, and an on-terminal intermodal rail loading facility. A TEU is a common unit of cargo capacity often used to describe the capacity of container ships and container terminals. It is based on the volume of a 20-foot-long (6.1 meters) intermodal container, a standard-sized metal box which can be easily transferred between different modes of transportation, such as ships, trains and trucks. The 300-acre Phase I will include 2 berths and 6 cranes. The second phase will add another 600 acres and include 8 additional berths and 15 Suez Class cranes. The Craney Island expansion is scheduled to be completed in 2028.



SHIPBUILDING

The Virginia Beach MSA has a strong historical presence of shipbuilding. It is home to Huntington Ingalls' Newport News Shipyard and Norfolk Naval Shipyard, both specializing in U.S. Naval ship and submarine projects. The two shipbuilding entities employ a total of 44,000 people. Additionally, more than 26,000 private-industry jobs in Virginia, at companies like Colonna's Shipyard, were directly linked to shipbuilding and ship repair in 2011.



The Huntington Ingalls shipyard is the sole U.S. manufacturer of nuclear-powered aircraft carriers and one of two yards that builds nuclear submarines. Recently, Newport News Shipbuilding broke ground on a new assembly area facility which will add a quarter of a million square feet with the first phase ready in 2017. Close to the same number of those employed in the transportation industry are employed through the ship and boat building occupation, 37,632 people, as of June 2015.

MANUFACTURING



Manufacturing also has a strong presence in the Virginia Beach MSA, largely due to the Port of Virginia. The Virginia Beach MSA has a lower percentage of union-workers than the state and the nation, in part because Virginia is a “right to work” state, which allows individuals the right to work regardless of membership in a labor union or organization, and an “at will” state. Virginia has eliminated its tax on machinery and tool equipment and manufacturers' purchases of goods used in production are exempt from sales tax. In addition, a manufacturers' inventory is exempt from tax.

More than 36,000 people have production occupations in the Virginia Beach MSA. Excluding shipbuilding companies, the largest manufacturing employers in the Virginia Beach MSA include:

Smithfield Packaging Company (2,500 employees)

STIHL, Inc. (2,067 employees)

Canon Virginia (1,820 employees)

Centennial Automotive Group (900 employees)

Alcoa-Howmet, Hampton (725 employees)



DEFENSE

United States Military

The Department of Defense spends an estimated \$14.9 billion annually in the Virginia Beach MSA. Approximately 75 percent of that spending is on payroll and goods and services.

More than a quarter of a million active duty military, dependents, retirees, and civilian military employees reside in the region. Major installations include the Naval Station Norfolk in Norfolk, VA; Oceana in Virginia Beach, Virginia; Langley Air Force Base in Hampton, VA; the U.S. Coast Guard Training Center in Yorktown, VA; and Fort Eustis in Newport News, VA.



Naval Station Norfolk is the world’s largest naval station, supporting 75 ships and 134 aircraft alongside 14 piers and 11 aircraft hangars. The base houses the largest concentration of U.S. Navy forces. It is the hub for Navy logistics going to the European and Central Command theaters of operations, and to the Caribbean.

As shown in **Table 2-1**, there are more than 140,000 employees at the nine military installations in the region. Active duty personnel make up 102,222 of the employees, or 71.6 percent. Civilian employment represents 40,527 additional employees.

Table 2-1: Military Installation Employment, 2015

Installation	Employees		
	Active Duty	Civilian	Total
Naval Station Norfolk	45,051	12,328	57,379
Joint Base Langley-Eustis	16,988	6,102	23,090
Joint Base Little Creek-Fort Story	16,174	3,667	19,841
Naval Support Activity	5,997	3,728	9,725
Norfolk Naval Shipyard	1,609	10,877	12,486
Oceana Naval Air Station	13,155	2,392	15,547
US Coast Guard Yorktown	555	269	824
Yorktown Naval Weapons Station	1,243	914	2,157
US Coast Guard Base Portsmouth	1,450	250	1,700
Total	102,222	40,527	142,749

Source: Hampton Roads Economic Development Alliance



Private Defense Contractors

The concentration of military installations in the Virginia Beach MSA, as well as proximity to the Pentagon, make it an appealing location for companies associated with defense or homeland security. In fact, most of the top ten largest defense contractors in the United States have a presence in the Virginia Beach MSA.

It is estimated that each year approximately 12,000 active-duty personnel leave the military in the region. According to the Hampton Roads Economic Development Alliance, more than half of the retirees seek opportunities to stay locally and find employment with private defense contractors, bringing a diverse set of skills to the local labor force. Occupations that attract the highest shares of retired military include police and sheriff patrol officers, maintenance and repair workers, network and computer systems administrators, medical assistants, and aircraft mechanics.

TOURISM

Currituck County represents the northernmost segment of North Carolina's Outer Banks region, a major tourist attraction in the state. The Outer Banks is a recognizable destination brand across the eastern United States. Recognized for secluded, family-friendly beaches, Currituck ranked 33 in travel expenditures among North Carolina's 100 counties. In 2013, domestic tourism in Currituck County generated an economic impact of approximately \$137.7 million, continuing to demonstrate recovery following declines in travel and tourism as a result of the 2007–2009 recession.

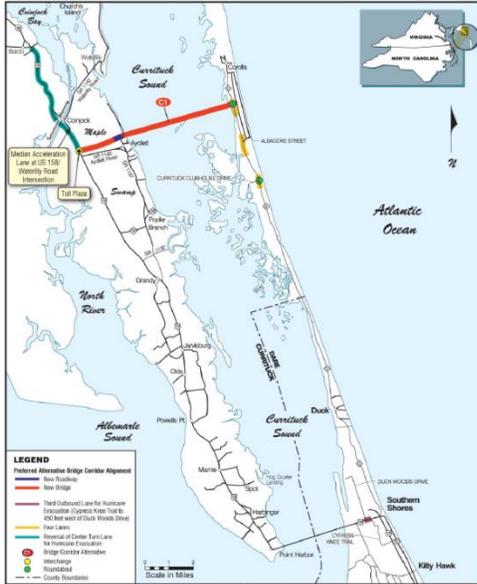
Area attractions include Currituck Beach Lighthouse in Corolla, Mackay Island National Wildlife Refuge, and vineyards on Knotts Island, and the Atlantic beaches. State and local tax revenues from travel to Currituck County amounted to \$12.1 million in 2013. The VA/NC-168 corridor represents a major route for visitors from the north to access the Outer Banks.





TRANSPORTATION INVESTMENTS

There are three major transportation investments proposed for Currituck County that could impact future development potential, especially in the Moyock area.



Source: NCDOT

Mid-Currituck Bridge

Currently, the only highway crossing of the Currituck Sound is the Wright Memorial Bridge on US-158 at the southern end of Currituck County. With only one crossing, heavy congestion—especially during high tourism months in the summer—has resulted in increased travel times between the mainland and the Outer Banks. The Mid-Currituck Bridge project would create a second crossing of the Currituck Sound, north of the Wright Memorial Bridge to help alleviate congestion and improve the flow of evacuation traffic in the event of a severe storm or hurricane.

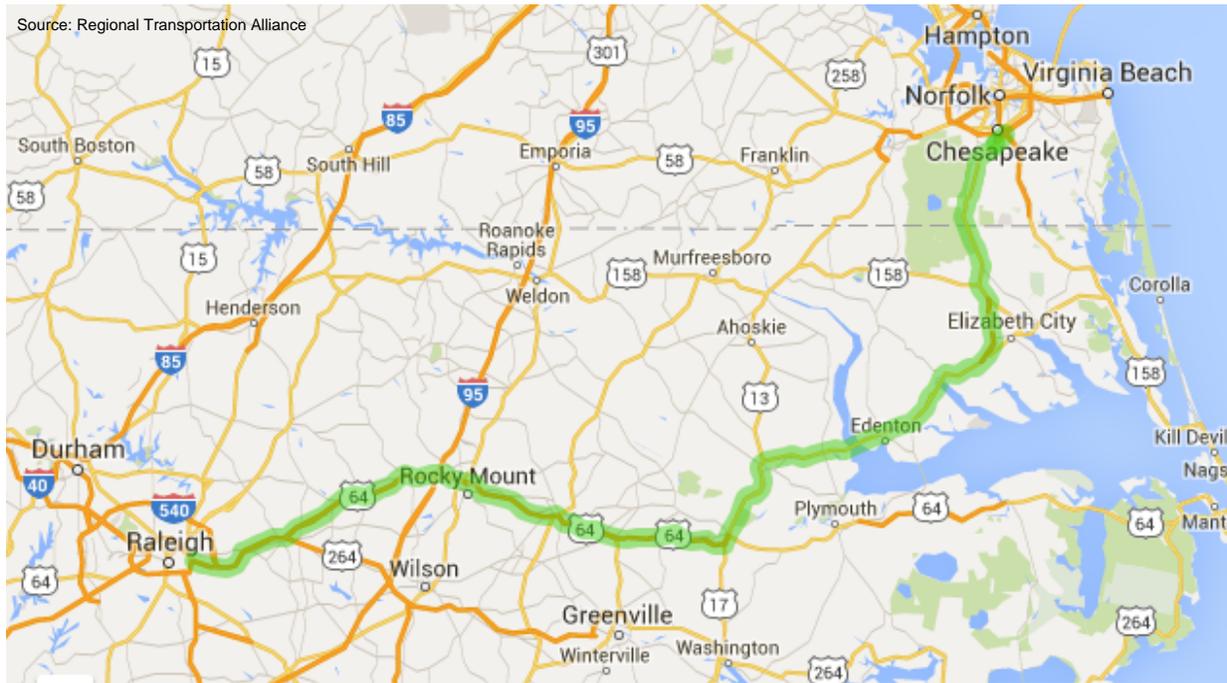
The project is designed as a seven-mile toll route, including a two-lane bridge. It also includes a second two-lane bridge that spans Maple Swamp on the Currituck County mainland, connecting Aydlett to US-158. The project has an overall estimated cost of \$440 million. A portion of the funding is expected to come from bonds that will be paid back with toll revenue. The remainder of the funding is expected to come from a combination of state and federal tax revenues. The total estimated cost to NCDOT is approximately \$173 million. The Mid-Currituck Bridge has been approved for inclusion in the 2016-2025 State Transportation Improvement Program. Construction of the bridge could begin in 2019, with completion estimated in 2023.

Future I-44 Corridor

State and regional leaders have long identified the need for an interstate connection between the Triangle region of North Carolina, anchored by Raleigh, to the Virginia Beach MSA. The corridor would follow along routes currently designated as U.S. Route 64 and U.S. Route 17, and would pass through Rocky Mount, Williamston, and Elizabeth City, all in North Carolina. Access to the Virginia Beach MSA would be from the U.S. Route 17 corridor, west of Moyock.



Figure 2-3: Future I-44 Corridor (Raleigh to Norfolk)



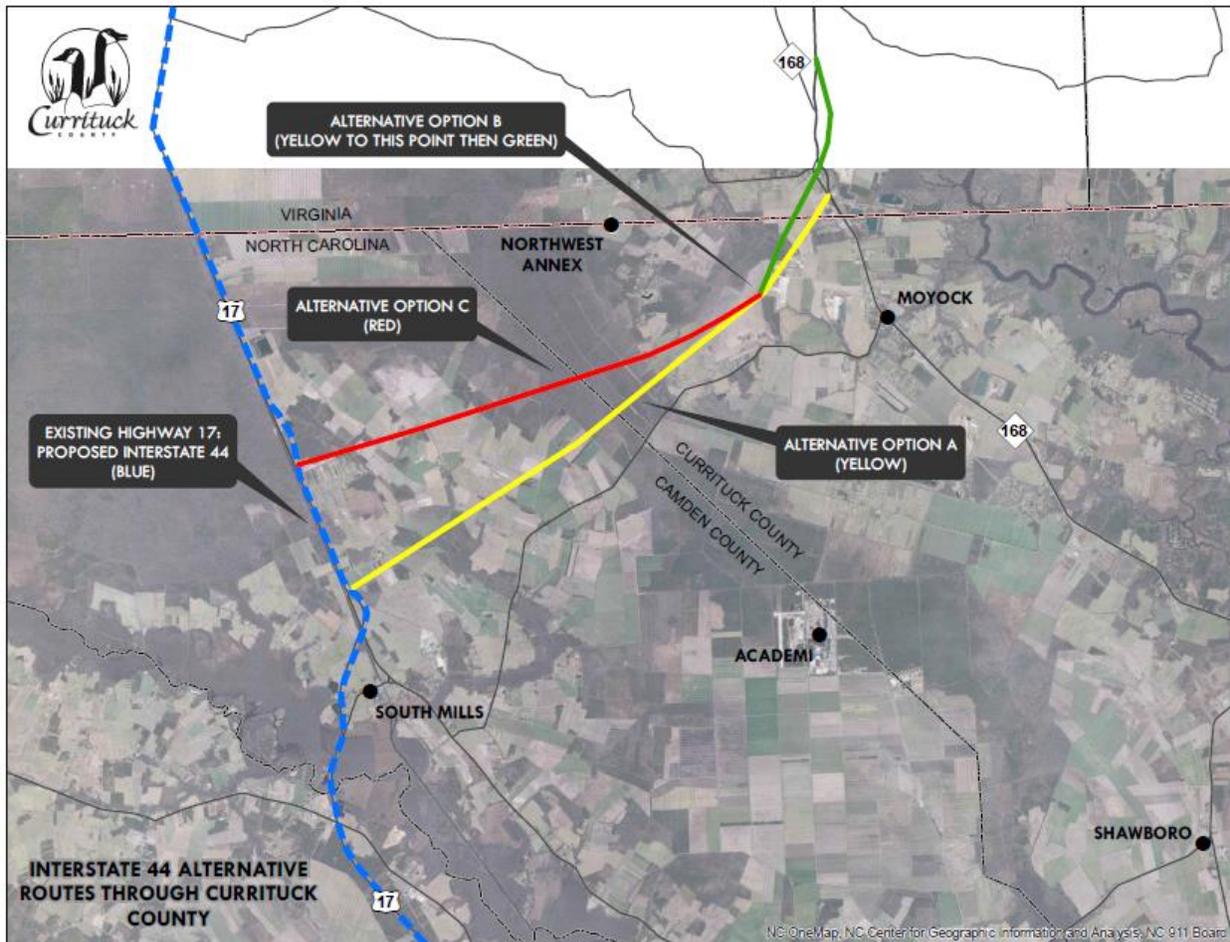
The I-44 Corridor initiative was bolstered when North Carolina announced that the portion of US-64 between I-440 at Raleigh and I-95 in Rocky Mount to be designated as Interstate/future Interstate-495. This designation has the potential to jumpstart additional advances along the corridor extending towards the Virginia Beach region. In 2015, both the North Carolina and Virginia houses of Congress passed federal transportation legislation authorizing a future interstate designation for the full corridor.



I-44 Connector

Creating a more direct connection from VA/NC-168 to US-17 (part of the designated future I-44 corridor) is a priority for Currituck County. Although no defined route has been selected for study, the Currituck County and Camden County Comprehensive Transportation Plans (CTPs) were recently amended to express the need for a limited access facility between U.S. Route 17 and NC 168 to mitigate traffic congestion and safety concerns associated with anticipated traffic volume growth in this area of northeast North Carolina.

Figure 2-4: Proposed Route, Future I-44 Connector, 2015



The CTP amendments also reflect alternative alignment options for the proposed connector road. Based on the proposed alignments the connector would cross through a portion of the Moyock Mega-Site. Currently, this project is not included in the State Transportation Improvement Program; however, through a state bonus allocation process Currituck County is expected to have access to additional funds. The County can elect which priority projects could receive this additional funding, including their portion of the Currituck-Camden Connector project. This route would offer enhanced connectivity between the Virginia Beach MSA and, eventually, to Raleigh.



Employment Profile

This section analyzes annual employment and wage trends by industry during the last ten years for the 16 city/county Virginia Beach MSA, and more specifically for Currituck County. It also describes overall growth and shifts between economic sectors and presents a profile of the local workforce and area commuting patterns.

MAJOR EMPLOYERS

The employers with the largest number of employees in the Virginia Beach MSA are Huntington Ingalls, Sentara Healthcare, Virginia Beach City Public Schools, and Norfolk Naval Shipyard. Of those employers in the MSA with more than 1,000 employees, approximately 43 percent of the companies are government or military related. As shown in **Table 2-2**, employers classified under the government/military industry sector make up seven of the top ten largest employers in the Virginia Beach MSA.

Table 2-2: Major Employers, Virginia Beach MSA, 2015

Rank	Employer Name	City	Total Employees	Industry Sector	Product/Service
1	Huntington Ingalls Industries, Inc.	Newport News	24,000	Manufacturing	Shipbuilding and repair
2	Sentara Healthcare	Norfolk	20,000	Services	Full-service health care network
3	Virginia Beach City Public Schools	Virginia Beach	10,000	Government/Military	Public schools
4	Norfolk Naval Shipyard	Portsmouth	9,000	Government/Military	Shipbuilding and repair
5	Riverside Health	Newport News	7,050	Services	Full-service health care network
6	Norfolk City Public Schools	Norfolk	6,527	Government/Military	Public schools
7	Chesapeake City Public Schools	Chesapeake	6,000	Government/Military	Public schools
8	Virginia Beach City	Virginia Beach	6,000	Government/Military	Municipal government
9	Newport News City Public Schools	Newport News	5,550	Government/Military	Public schools
10	Naval Medical Center Portsmouth	Portsmouth	5,400	Government/Military	Hospital; medical practice management; healthcare

Source: Hampton Roads Economic Development Alliance; Hoovers, 2015

The two largest employers in Currituck County are the Board of Education and the Academi Training Center (see **Table 2-3**), located on 6,000 acres approximately 4 miles south of the Moyock Mega-Site. Formerly known as Blackwater, the Academi Training Center provides surety services and training to the United States federal government on a contractual basis. Other key sectors in the local economy include services and real estate to support summer rentals and the second home beach market.

Table 2-3: Major Employers, Currituck County, 2015

Rank	Employer Name	Industry Sector	Total Employees
1	Currituck County Board of Education	Government/Military	500-999
2	Academi Training Center LLC	Services	500-999
3	Currituck County Government	Government/Military	250-499
4	Sentara Internal Medicaine Physician	Services	100-249
5	Coastal Staffing	Services	100-249
6	Food Lion	Retail Trade	100-249
7	Twiddy & Co of Duck Inc	FIRE	100-249
8	Corolla Classic Vacations	FIRE	50-99
9	Southland Trade Corp	D/T/LP	50-99
10	Bank of Hampton Roads	FIRE	50-99

Note: FIRE = Finance, Insurance and Real Estate

Note: D/T/LP = Distribution/Transportation/Logistics/Utility

Source: NC Commerce, Labor and Economic Analysis Division



ANNUALIZED EMPLOYMENT GROWTH TRENDS

Virginia Beach MSA—Overall Employment Trends

Employment trends were obtained from Virginia Labor Market Information and the North Carolina Department of Commerce. Since 2004, annualized employment in the 16-city/county Virginia Beach MSA decreased by 0.4 percent, reaching approximately 716,500 jobs in 2014 (**Table 2-4**). Although the overall trend since 2004 has noted a slight decline, the regional economy has stabilized since the 2007–2009 recession, adding over 5,000 jobs between 2009 and 2014.

Table 2-4: Annualized Employment by Industry, Virginia Beach MSA, 2004-2014

Industry	2004	2009	2014	2004-2014 Δ	
				#	%
Health Care and Social Assistance	77,189	88,788	98,388	21,199	27.5%
Accommodation and Food Services	67,819	72,442	74,065	6,246	9.2%
Professional and Technical Services	46,240	50,648	50,070	3,830	8.3%
Public Administration	44,604	48,228	47,320	2,716	6.1%
Educational Services	67,856	72,570	70,418	2,562	3.8%
Arts, Entertainment, and Recreation	16,825	16,762	17,349	524	3.1%
Other Services, Ex. Public Admin	22,728	22,958	23,131	403	1.8%
Management of Companies and Enterprises	9,471	8,668	9,775	304	3.2%
Mining	71	111	112	41	57.7%
Agriculture, Forestry, Fishing & Hunting	1,328	1,032	1,007	-321	-24.2%
Finance and Insurance	23,306	21,564	21,208	-2,098	-9.0%
Real Estate and Rental and Leasing	15,926	14,943	13,676	-2,250	-14.1%
Transportation, Warehousing, and Utilities	30,619	28,307	27,756	-2,863	-9.4%
Administrative and Waste Services	47,340	42,866	44,266	-3,074	-6.5%
Wholesale Trade	21,299	19,805	18,143	-3,156	-14.8%
Manufacturing	67,533	61,591	64,085	-3,448	-5.1%
Information	16,173	14,060	11,619	-4,554	-28.2%
Retail Trade	94,431	87,881	89,660	-4,771	-5.1%
Construction	48,833	38,308	34,535	-14,298	-29.3%
Total	719,591	711,532	716,583	-3,008	-0.4%

Source: Virginia LMI; NCESC; Kimley-Horn

Approximately ½ of the industry sectors in the Virginia Beach MSA posted employment gains over the ten-year period. Generally, growth in the Virginia Beach economy was focused on service-sector and government jobs, including healthcare, accommodation and food services, and professional services. The following sectors showed the strongest growth:

- Healthcare and Social Assistance (+21,199)
- Accommodation and Food Services (+6,246)
- Professional and Technical Services (+3,830)
- Public Administration (+2,716)
- Educational Services (+2,562)

Consistent with national and Mid-Atlantic trends during and subsequent to the 2007–2009 recession, the construction sector experienced the greatest decline in the Virginia Beach MSA, losing more than 14,000 jobs since 2004 (**Graph 2-1**).

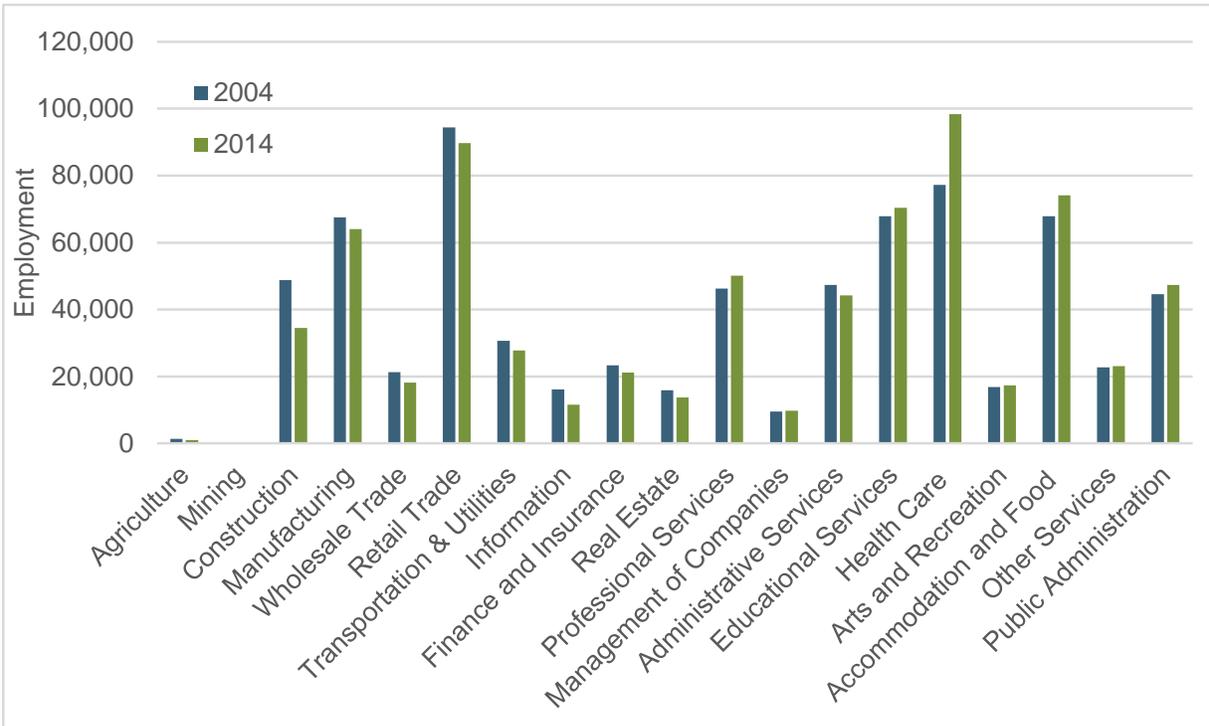


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Retail Trade, Information, Manufacturing, Wholesale Trade, and Administrative and Waste Services also experienced notable declines over the ten-year period. Growth in service-based sectors was not enough to offset the job losses.

Graph 2-1: Annualized Employment by Industry, Virginia Beach MSA, 2004-2014



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Virginia Beach MSA—Regional Comparison

As shown in **Figure 2-5**, seven of the 16 counties in the Virginia Beach MSA experienced net increases in total employment in the last five years. Virginia Beach posted the largest increase of nearly 5,200 jobs, followed by the City of Suffolk and the City of Portsmouth at 2,300 and 1,600 net new jobs, respectively.

Notable in the thematic map, absolute net new job growth in the region has been focused in the area south of Norfolk, and along the I-64 corridor to the northeast. Currituck County, representing one of the southern-most counties in the region, posted positive new job growth since 2009, adding approximately 1,250 new jobs over the five-year period.

Due to Currituck County's location on the southern-most edge of the Virginia Beach MSA, this analysis provides additional comparative information for the Peninsula and Southside areas of the MSA. The Southside portion of the MSA includes Suffolk City, VA; Chesapeake City, VA; Portsmouth City, VA; Currituck County, NC; Gates County, NC; Virginia Beach City, VA; Isle of Wight County, VA; and Norfolk City, VA. See **Figure 2-6**.

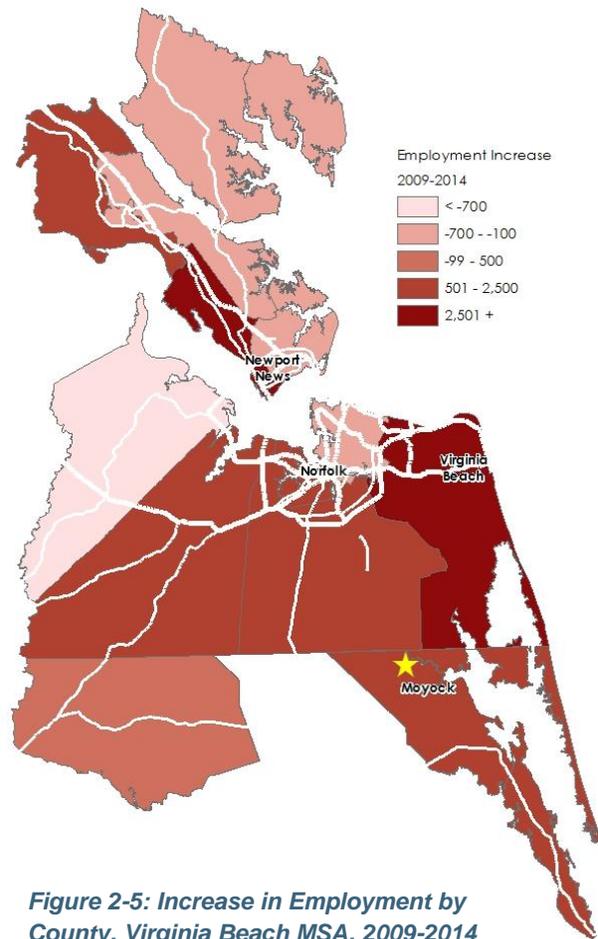
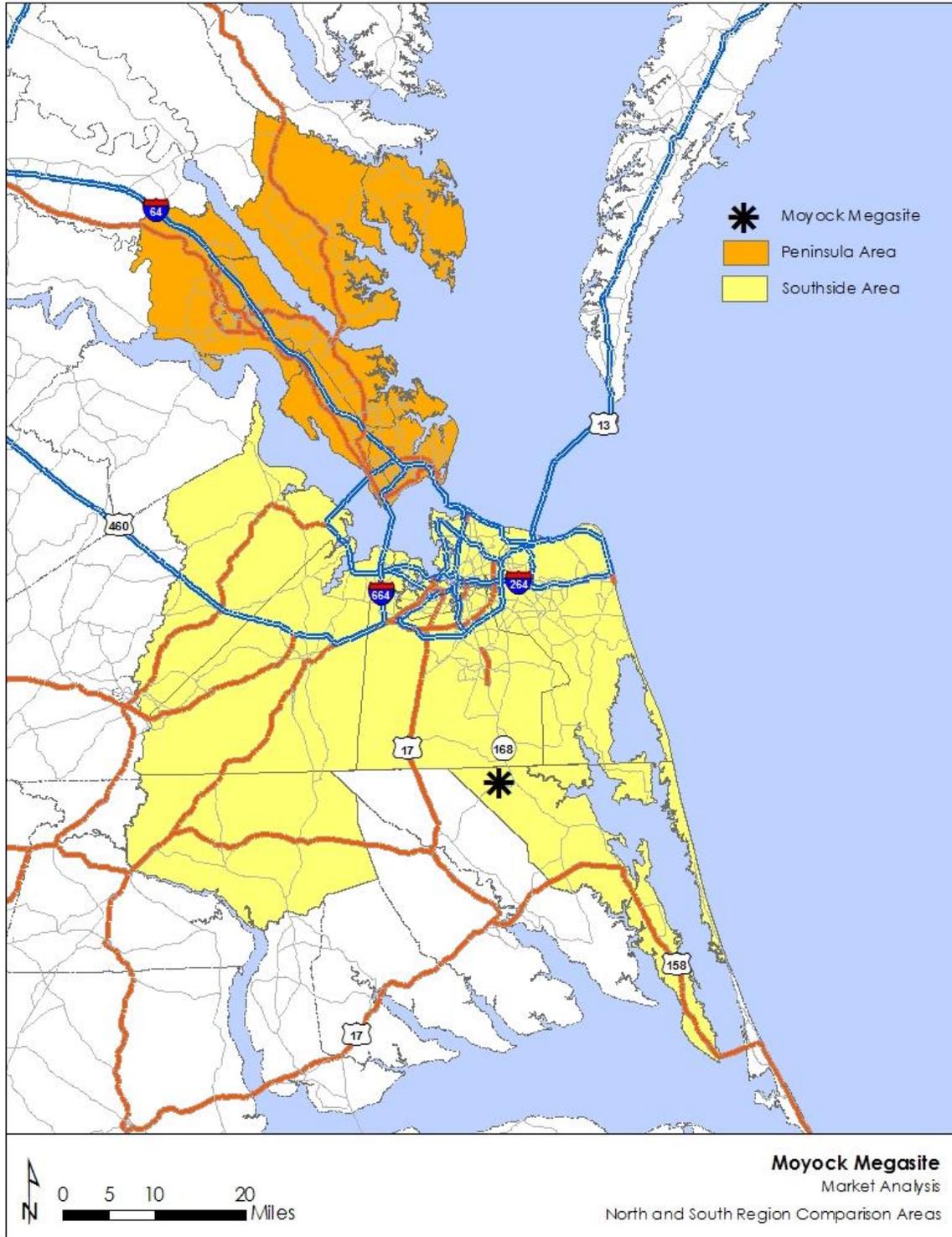


Figure 2-5: Increase in Employment by County, Virginia Beach MSA, 2009-2014

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Figure 2-6: Peninsula and Southside Area Designations, Virginia Beach MSA, 2015



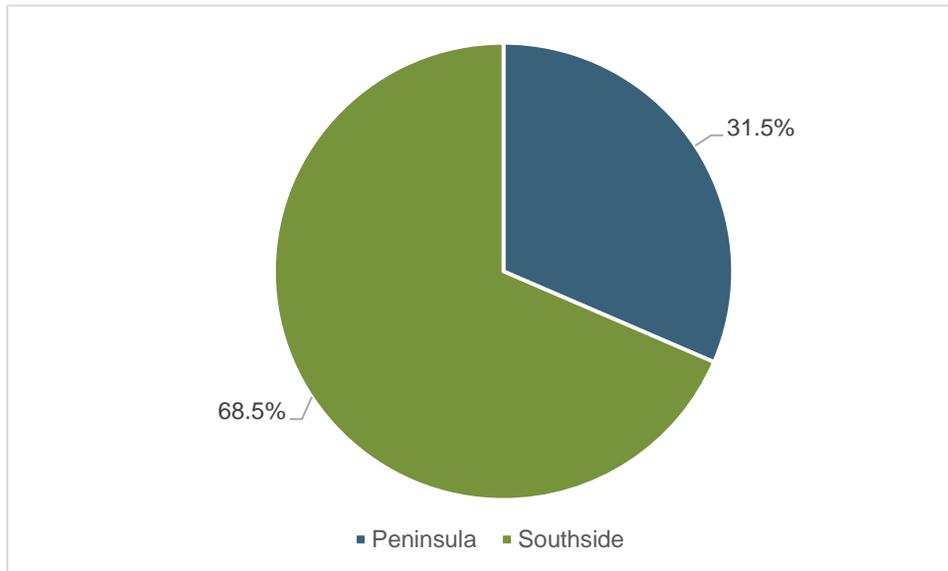


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As shown in **Graph 2-2**, the Southside portion of the Virginia Beach MSA, including Currituck County, comprises approximately two-thirds of the jobs in the region. It should be noted that the increased share in the Southside area is bolstered by the large job centers in the City of Virginia Beach and the City of Norfolk, comprising 62.2 percent of the Southside total. With nearly 6,500 jobs in 2014, Currituck County currently makes up only 1.3 percent of the total jobs in the Southside.

Graph 2-2: Share of Total Employment by Area, Virginia Beach MSA, 2014



Currituck County—Overall Employment Trends

In contrast to the job loss for the larger region, Currituck County experienced a 21.7 percent increase in jobs between 2004 and 2009, reaching nearly 6,500 in 2014 (**Table 2-5**). Educational Services, including jobs at Currituck County Board of Education representing the largest employer, and Retail Services are the largest sectors, representing 35.8 percent of the total County employment.

The top growth sectors in Currituck County between 2004 and 2014 included:

- Educational Services (+528)
- Administrative and Waste Services (+470)
- Accommodation and Food Services (+178)
- Healthcare and Social Assistance (+177)
- Finance and Insurance (+115)

Similar to the larger region, and in direct response to the 2007–2009 recession, the most notable declines were in the construction and real estate sectors. It should be noted that both of these sectors have experienced recent stabilization and growth, which may not be accounted for in the 2014 annualized numbers. As the economy continues to improve, markets heavily influenced by tourism and second homes have seen increased activity in the last 12 to 18 months. The 500 percent increase in Administrative and Waste Services is likely due to former data suppression or reclassification of jobs in Currituck.



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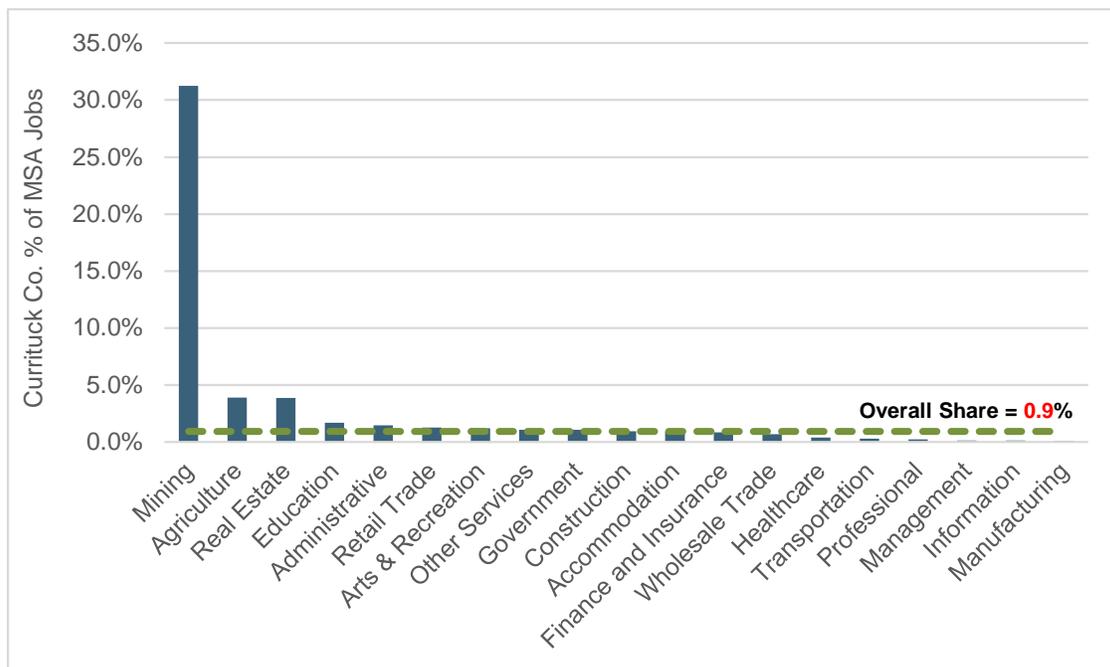
Table 2-5: Annualized Employment by Industry, Currituck County, 2004-2014

Industry	2004	2009	2014	2004-2014 Δ	
				#	%
Educational Services	662	736	1,190	528	96.5%
Administrative and Waste Services	171	289	641	470	500.0%
Accommodation and Food Services	494	590	672	178	41.4%
Health Care and Social Assistance	202	213	379	177	75.3%
Finance and Insurance	65	84	180	115	273.8%
Public Administration	405	470	502	97	25.7%
Other Services, Ex. Public Admin	171	213	247	76	81.7%
Retail Trade	1,090	1,013	1,134	44	5.4%
Mining	0	27	35	35	-
Professional and Technical Services	94	98	116	22	18.6%
Wholesale Trade	109	81	122	13	11.2%
Management of Companies and Enterprises	0	7	12	12	-
Information	29	20	13	-16	-177.8%
Agriculture, Forestry, Fishing & Hunting	77	46	39	-38	-42.2%
Transportation, Warehousing, and Utilities	117	300	76	-41	-56.2%
Arts, Entertainment, and Recreation	258	211	207	-51	-38.1%
Manufacturing	119	53	66	-53	-45.7%
Real Estate and Rental and Leasing	697	448	525	-172	-57.1%
Construction	561	327	321	-240	-57.8%
Total	5,321	5,226	6,477	1,156	21.7%

Source: NCESC; Kimley-Horn and Associates

The nearly 6,500 jobs in Currituck County in 2014 made up less than one percent of the total employment in the Virginia Beach MSA (**Graph 2-3**). As a share of the regional total, mining, agriculture, and real estate make up higher than average percentages. With only 111 mining jobs in the region, Currituck County's 35 jobs in that sector make up nearly one-third of the total.

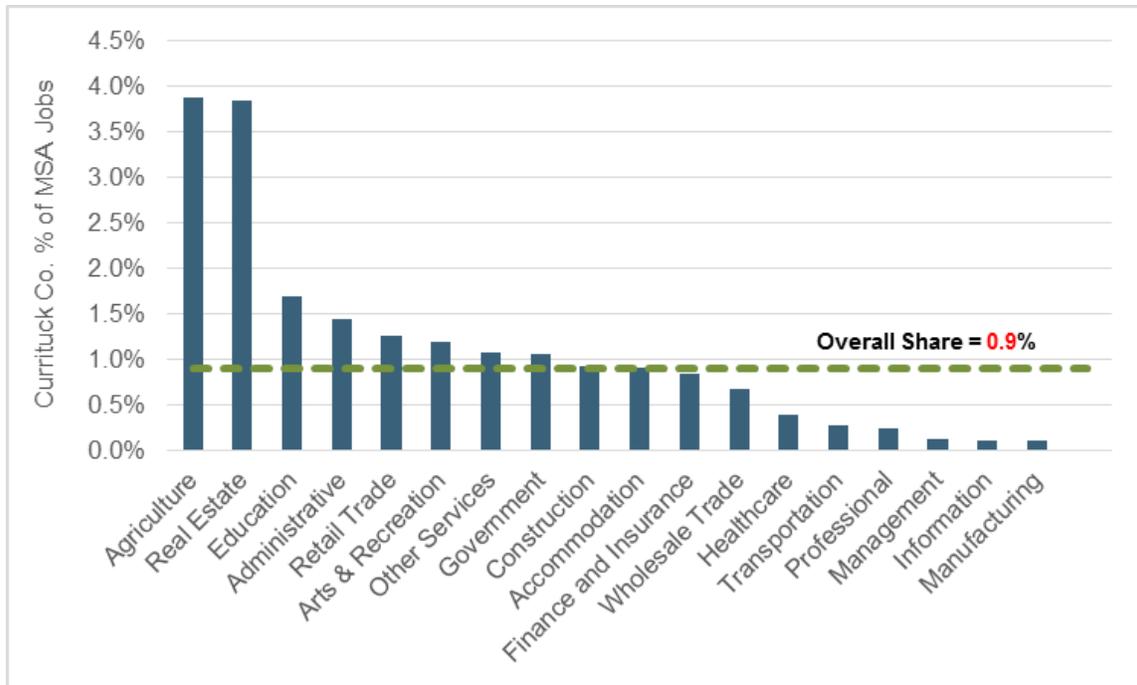
Graph 2-3: Currituck County Jobs as Share of MSA Total, 2014





Removing Mining from the chart (which has a comparatively high share) reveals a clearer view of other sectors that have higher-than-average percentages of the regional total. As shown in **Graph 2-4**, Agriculture jobs in Currituck County make up nearly 4.0 percent of the regional total, largely due to large tracts of available land and fertile soils. The tourism and second-home markets have traditionally helped support a higher than average share of real estate jobs in the County. Other sectors that represent higher-than-average shares include Education, Administrative and Waste Services, Retail Trade, and Arts and Recreation.

Graph 2-4: Currituck County Jobs (Less Mining employment) as Share of MSA Total, 2014



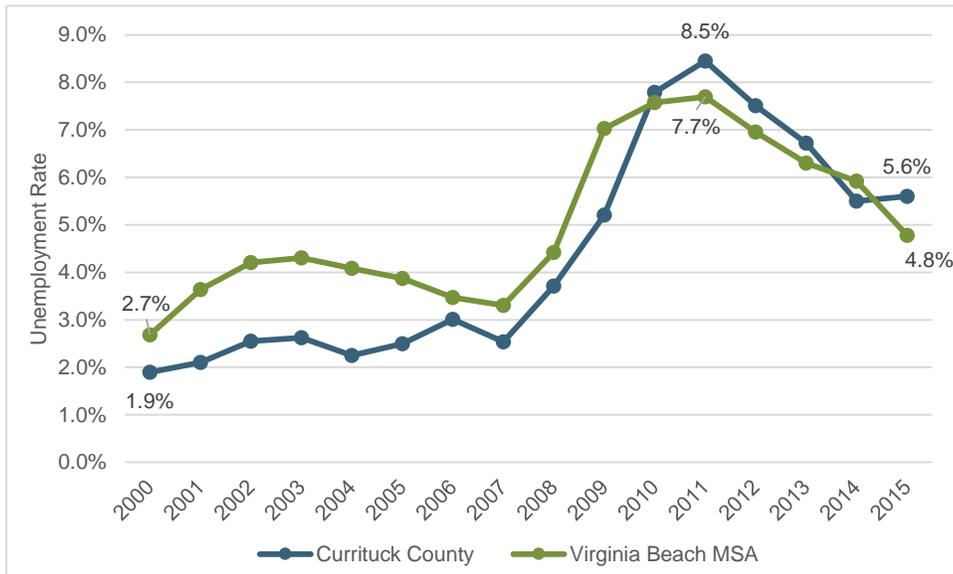
LABOR FORCE AND UNEMPLOYMENT RATE

As of August 2015, Currituck County had a total of 12,434 residents in the labor force, regardless of where they worked. The Currituck County labor force represented approximately 1.5 percent of the MSAs 845,377 residents that are either working or seeking employment.

As shown in **Graph 2-5**, Currituck has generally reported a lower unemployment rate than the larger Virginia Beach MSA. In fact, Currituck has had a higher unemployment rate than the larger region in only five of the 15 years. As of August 2015, Currituck's unemployment rate was 5.6 percent, slightly higher than 4.8 percent for the Virginia Beach MSA.



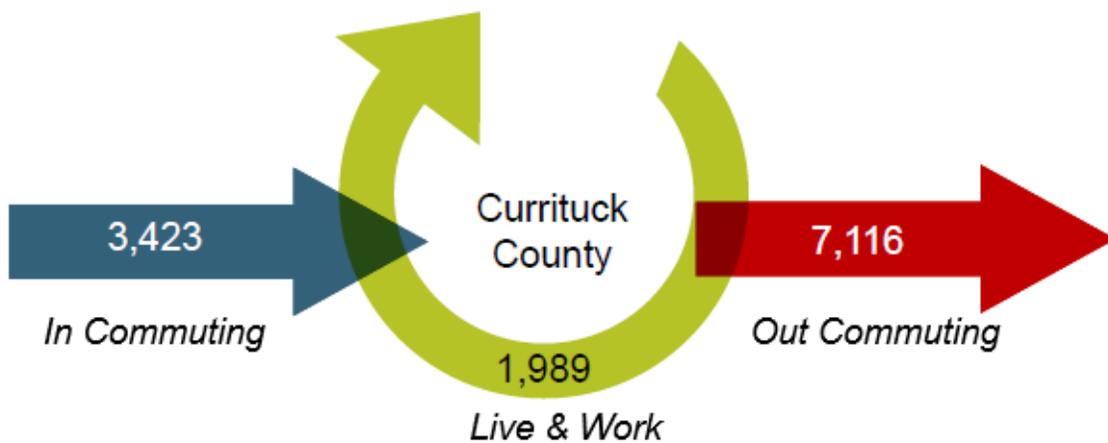
Graph 2-5: Comparison of Unemployment Rate, 2000-2015 (August 2015 data)



COMMUTING PATTERNS

A study from Old Dominion University revealed the true regional interdependence of the Virginia Beach MSA. Approximately 65 percent of the residents of the MSA are living in one community and working in another. This means that economic developments in one city or county have significant spillover effects that benefit every other city or county in the region.

Currituck is not immune from the interdependency of the region. As shown in the graphic below, approximately 3,423 people commute into Currituck County on a daily basis for employment, while more than 7,000 residents commute to work outside of Currituck County. An estimated 2,000 people live and work in the County.





Where Currituck County Residents Work

According to the US Census' Work Destination Analysis, as of 2013 Currituck County had an estimated 9,105 employed residents (see **Table 2-6**). Of that total, the 1,989 residents that live and work in Currituck made up the highest concentration of employment destination at 21.8 percent. Combining locations to the north, largely accessed by the VA/NC-168 corridor, approximately one-third of the employed residents in Currituck commute to the City of Chesapeake, the City of Virginia Beach, and the City of Norfolk. Residents traveling south to Dare County—many for other tourism based jobs along the Outer Banks—make up another 13.6 percent of the total.

Table 2-6: Out-Commuting Patterns, Currituck County, 2013

Rank	County	Employed Currituck Residents	Share of Total
1	Currituck	1,989	21.8%
2	Dare	1,255	13.8%
3	Chesapeake City	1,247	13.7%
4	Virginia Beach City	1,157	12.7%
5	Norfolk City	672	7.4%
Top 5 Subtotal		6,320	69.4%
All Other Desitinations		2,785	30.6%
Total		9,105	100.0%

Source: US Census; LEHD On the Map

Where Currituck County Employees Live

Based on 2013 data, there were an estimated 5,400 jobs located in Currituck County. Currituck residents made up the highest share of those employed locally at 21.8 percent. While more than a third of Currituck's working residents travel into Virginia to work, the largest concentrations of in-commuting to fill local jobs come from Dare, Pasquotank, and Camden counties in North Carolina (**Table 2-7**). Residents of Chesapeake traveling south along the VA/NC-168 corridor to Currituck make up 2.5 percent of the total jobs.

Table 2-7: In-Commuting Patterns, Currituck County, 2013

Rank	County	Currituck Jobs	Share of Total
1	Currituck	1,989	21.8%
2	Dare	826	9.1%
3	Pasquotank	534	5.9%
4	Camden	280	3.1%
5	Chesapeake City	232	2.5%
Top 5 Subtotal		3,861	42.4%
All Other Desitinations		1,551	57.6%
Total		5,412	100.0%

Source: US Census; LEHD On the Map



The higher share of in-commuting from North Carolina counties is a reflection of a concentration of service-sector jobs in Currituck that tend to have lower wages. Many of the surrounding North Carolina counties, especially those immediately to the west, offer more affordably priced housing options for service workers.

Demographic Profile

POPULATION TRENDS

As shown in **Table 2-8**, there are an estimated 25,000 residents in Currituck County, a 37.5 percent increase from 18,190 people in 2000. In fact, it is important to note that between 2000 and 2010, Currituck was the tenth fastest growing county in North Carolina based on percent increase. More than one-half of the growth in Currituck County has been focused in the Moyock area, demonstrating growth pressures from its proximity and accessibility to the core of the Virginia Beach MSA.

Table 2-8: Comparison of Population Trends, 2000-2015

Geography	2000	2010	2015	2000-2015 Δ		
				#	%	CAGR
Currituck County	18,190	23,547	25,012	6,822	37.5%	2.1%
Virginia Beach MSA	1,580,057	1,676,822	1,726,131	146,074	9.2%	0.6%
County % of MSA	1.2%	1.4%	1.4%	4.7%		

Source: ESRI; US Census; Kimley-Horn

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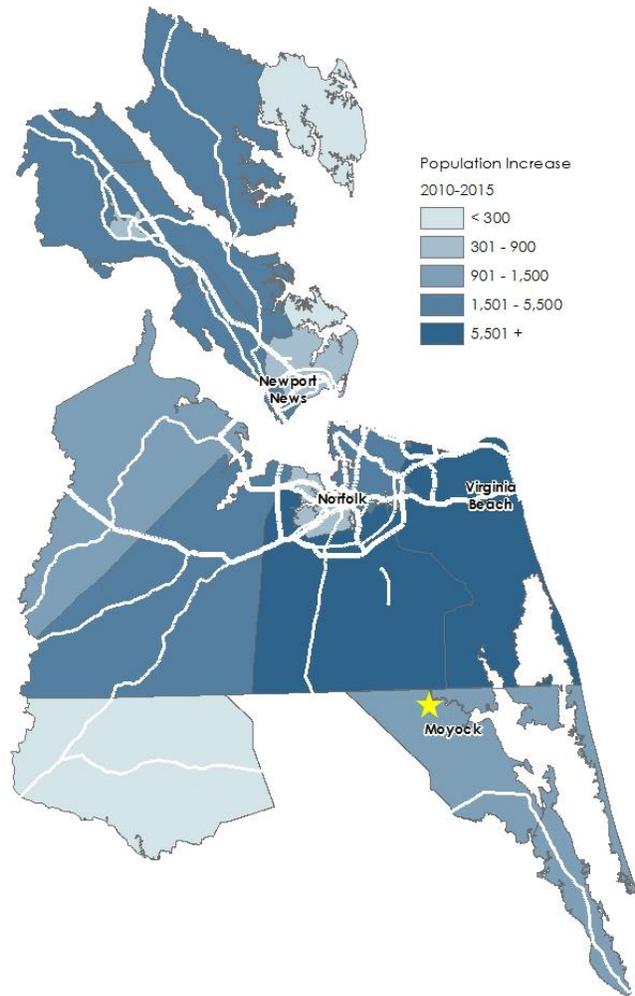
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The Virginia Beach MSA exceeds 1.7 million residents as of 2015, representing an increase of 9.2 percent since 2000. Although Currituck comprised only 1.4 percent of the total population in 2015, the County represented nearly 5.0 percent of the total regional growth over the 15-year period.

Figure 2-7 demonstrates absolute growth/increase in population by City/County in the Virginia Beach MSA between 2010 and 2015. Strong growth was noted to the south of Norfolk, driven by development in Chesapeake, and further south in Edinburg along the VA/NC-168 corridor. Currituck County, which added nearly 1,500 people in the last five years, ranked ninth in the region in terms of new population. Growth was also demonstrated along the I-64 corridor, northwest of Newport News.

Figure 2-7: Increase in Population by City/County, Virginia Beach MSA, 2010-2015



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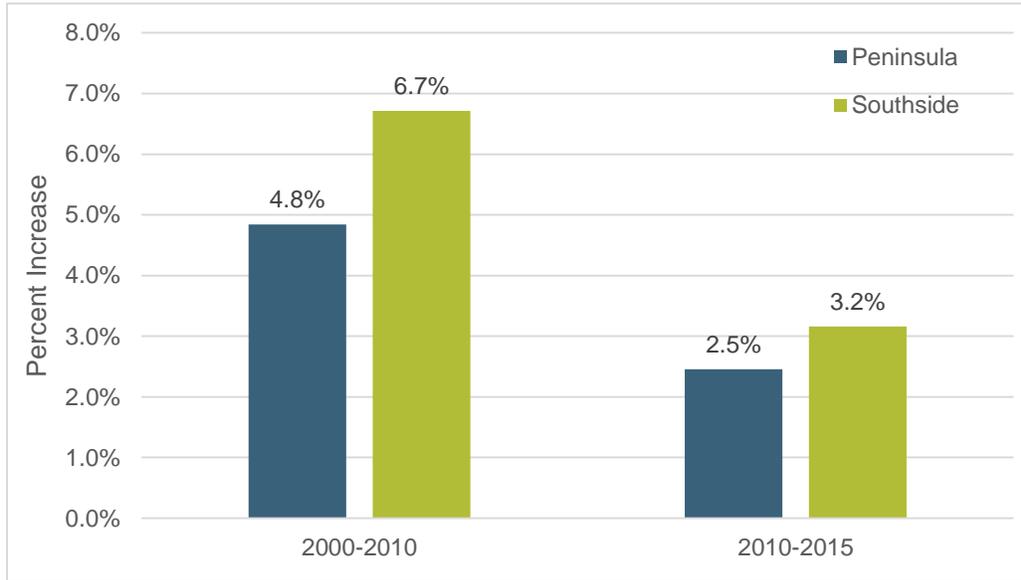


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As demonstrated in **Graph 2-6**, the Southside portion of the Virginia Beach MSA has grown at faster rates than the Peninsula. This portion of the region includes the VA/NC-168 corridor that connects Currituck County with major employment centers in Norfolk, Virginia Beach, and Chesapeake.

Graph 2-6: Comparison of Population Growth Rates, 2000-2015



Population by Age Cohort

Currituck County experienced strong growth in most age cohorts between 2000 and 2012 (**Table 2-9**). The strongest absolute growth was in residents aged 45 to 64, representing the Baby Boomer generation. Strong growth was also exhibited among residents aged 65 to 74. Nationally, population aged roughly 15 to 34, referred to as the Millennials, has overtaken the Baby Boomers as the largest cohort, and is expected to continue to grow- due to immigration. In Currituck County, Millennials make up roughly 22.5 percent of the total population as compared to 31.9 percent for Baby Boomers.

Table 2-9: Population by Age Cohort, Currituck County, 2000-2015

Cohort	2000	2010	2015	2000-2015 Δ	
				#	%
0-14	3,802	4,497	4,452	650	17.1%
15-24	2,037	2,779	2,851	814	40.0%
25-34	2,237	2,449	2,776	539	24.1%
35-44	3,329	3,414	3,202	-127	-3.8%
45-54	2,619	4,286	4,127	1,508	57.6%
55-64	2,019	3,085	3,852	1,833	90.8%
65-74	1,310	1,907	2,426	1,116	85.2%
75-84	673	848	975	302	44.9%
85+	200	283	325	125	62.5%
Total	18,190	23,547	25,012	6,822	37.5%

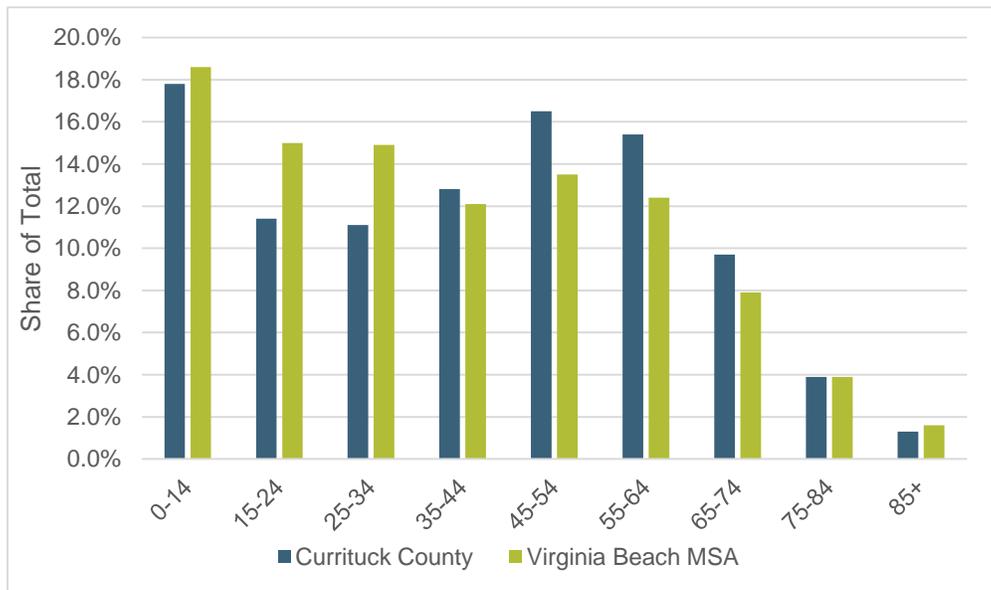
Source: ESRI; US Census; Kimley-Horn



Strong growth in population over age 45 demonstrates the high quality of life offered in Currituck County, including low property taxes, superior school performance, and proximity to a major metropolitan area. These residents are either in the prime or end of their working careers, and typically have high spending potential which drives demand for retail uses. While many of these residents will seek to live in a single-family detached house, some—especially those who no longer have children living at home—will opt for a maintenance-free lifestyle more commonly offered in higher-density housing.

Graph 2-7 compares the shares of population by age cohort in Currituck County and the Virginia Beach MSA. The Virginia Beach MSA has notably higher shares of younger millennial residents, while Currituck County has higher concentrations of Baby Boomers. The strong military presence and urban cores located elsewhere in the region typically attract higher shares of younger residents.

Graph 2-7: Comparison of Shares of Population by Age Cohort, 2015



HOUSEHOLD TRENDS

According to information provided by Environmental Systems Research Institute (ESRI), there are an estimated 9,365 households in Currituck County. The County has added nearly 2,500 new households since 2000 equating to a 35.7 percent growth rate (**Table 2-10**). Comparatively, the larger Hampton Roads MSA increased to approximately 653,198 households in 2015, a 12.3 percent increase since 2000.

Table 2-10: Comparison of Household Trends, 2000-2015

Geography	2000	2010	2015	2000-2015 Δ		
				#	%	CAGR
Currituck County	6,902	8,880	9,365	2,463	35.7%	2.1%
Virginia Beach MSA	581,560	630,411	653,198	71,638	12.3%	0.8%
% MSA	1.2%	1.4%	1.4%	3.4%		

Source: ESRI; US Census; Kimley-Horn



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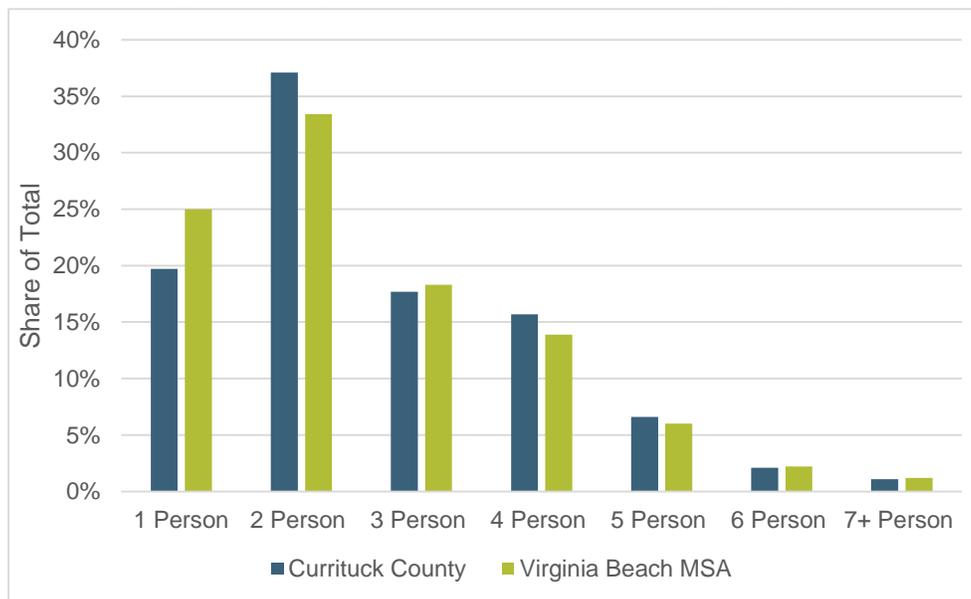
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It should be noted that the growth rate of households was lower than population, indicating a slight increase household size. The average household size is currently estimated at 2.64, a slight increase from 2.61 in 2000.

The Virginia Beach MSA has an average household size of 2.53. Much of this is driven by the large military presence consisting of many young and single residents as well as the MSA consisting of higher concentrations of urban areas which typically attract smaller household sizes. Between 2000 and 2015 the average household size in the Virginia Beach MSA declined from 2.60 to 2.53.

As shown in **Graph 2-8**, two-person households make up more than one-third of the total in Currituck County. Resulting in a smaller average household size, the Virginia Beach MSA has a higher share of single-person households than Currituck County. However, combining one- and two-person households, the Virginia Beach MSA and Currituck County have similar household size compositions.

Graph 2-8: Comparison of Shares of Households by Size, 2010



Households by Income Cohort

There are more than 9,300 households in Currituck County in 2015, an increase of 35.7 percent from 6,902 households in 2000. As shown in **Table 2-11**, households earning less than \$25,000 annually have decreased since 2000, largely due to nominal wage inflation. Strong growth was recorded for all cohorts earning over \$50,000. It should be noted that those households earning between \$100,000 and \$149,999 annually comprised 42.9 percent of the total increase in Currituck.



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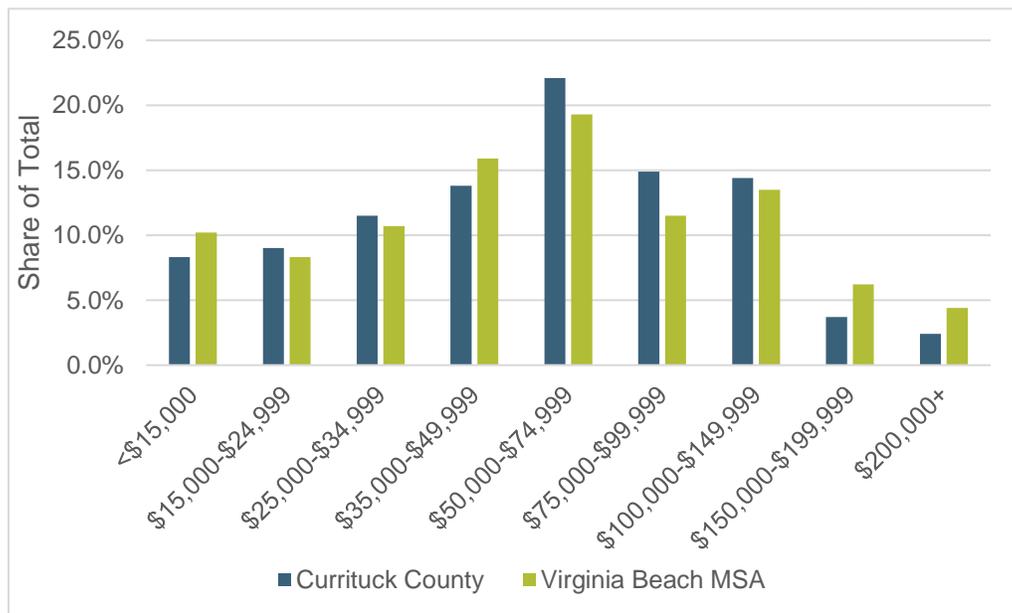
Table 2-11: Households by Income Cohort, Currituck County, 2000-2015

Cohort	2000	2010	2015	2000-2015 Δ	
				#	%
<\$15,000	946	817	777	-168	-17.8%
\$15,000-\$24,999	1,021	852	843	-179	-17.5%
\$25,000-\$34,999	939	1,181	1,077	138	14.7%
\$35,000-\$49,999	1,332	995	1,292	-40	-3.0%
\$50,000-\$74,999	1,518	2,007	2,070	551	36.3%
\$75,000-\$99,999	663	1,359	1,395	733	110.6%
\$100,000-\$149,999	290	1,146	1,349	1,059	365.2%
\$150,000-\$199,999	83	284	347	264	318.4%
\$200,000+	110	231	225	114	103.5%
Total	6,902	8,880	9,365	2,463	35.7%

Source: ESRI; US Census; Kimley-Horn

When compared to the Virginia Beach MSA, Currituck County has higher shares of households earning between \$50,000 and \$149,999 annually. As shown in **Graph 2-9**, the larger MSA has higher shares of low income households (earning less than \$15,000) and high income households (earning more than \$150,000).

Graph 2-9: Comparison of Shares of Households by Income Cohort, 2015

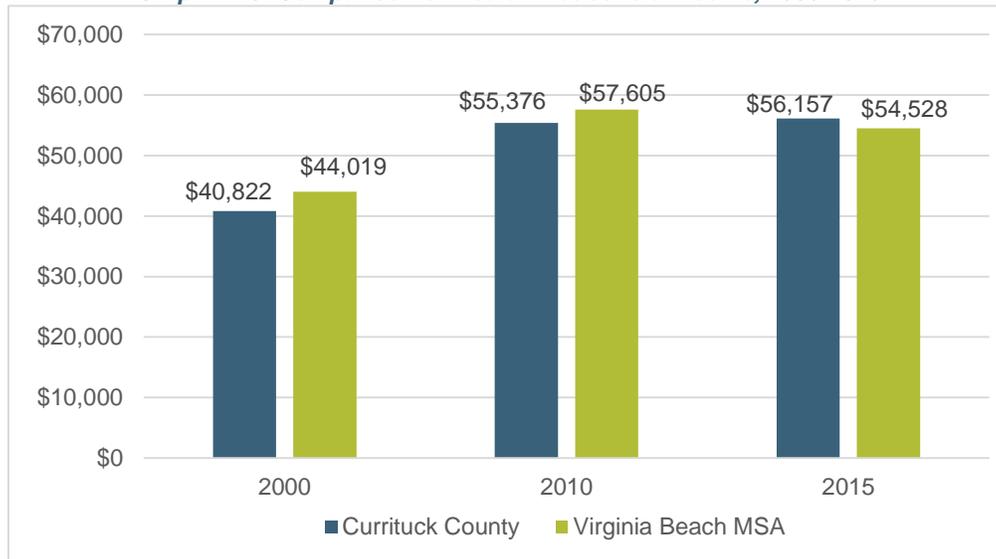


Median Household Income

The estimated median household income in Currituck County in 2015 is \$56,157, slightly higher than \$54,528 for the larger Virginia Beach MSA (**Graph 2-10**). Household incomes in Currituck have experienced a strong 37.6 percent increase from \$40,822 in 2000. In fact, median incomes in Currituck were lower than the regional average in 2000, but now demonstrate a slight premium.



Graph 2-10: Comparison of Median Household Income, 2000-2015



TAPESTRY SEGMENTATION

Tapestry segmentation divides households into 67 groups based on consumer spending patterns and lifestyle attributes. It reveals predominate socioeconomic and demographic characteristics of residents in the Virginia Beach MSA and Currituck County. Each tapestry segment has been compared to its relative representation in the United States. This type of analysis provides insight into the purchasing preferences for housing and other goods, and is being used increasingly by developers, builders, and retail tenants in the site selection and the due diligence process.

Virginia Beach MSA

The top five segments have been briefly described in **Table 2-12**. These segments represent over one-third of the total population in the Virginia Beach MSA. The most prominent tapestry group within the Virginia Beach MSA is Bright Young Professionals (BYP), representing 9.1 percent of the population. The median age of this group is 32.2 and average household size is 2.4. Bright Young Professionals are an educated group; 30 percent of them have a bachelor’s degree or higher. Households are primarily comprised of couples, married or unmarried, with above average concentrations of single-parents. While their median household income, \$50,000, is close to the United States average, the average net worth of this group is much lower. An estimated 55.9 percent rent their housing and 44.1 percent own.

Table 2-12: Tapestry Segmentation, Virginia Beach MSA, 2015

Rank	Tapestry Segment	Virginia Beach MSA	United States
1	Bright Young Professionals	9.1%	2.2%
2	Parks and Rec	8.4%	2.0%
3	Soccer Moms	6.7%	2.8%
4	Young and Restless	5.8%	1.7%
5	Sawey Suburbanites	5.7%	3.0%
Total		35.7%	11.7%

Source: Kimley-Horn, ESRI BAO



Young and Restless represent 5.8 percent of the MSA population with similar characteristics to that of BYP. They are a younger group with a lower median income and net worth. A vast majority of Young and Restless rent, 86.3 percent. Similar to BYP, there is a high percentage of labor force participation as well as college education, and many are still in the process of completing their education. The three remaining segments are similar in age, household size, and the majority own their homes, but vary in other household characteristics. The Parks and Rec segment has a much higher net worth than the Young and Restless and BYP and a similar income, \$55,000, to BYP. Soccer Moms is an affluent and family-oriented tapestry segment. They have a much higher median income of \$84,000 and a net worth of \$252,000. Similar to the affluent Soccer Moms, Savvy Suburbanites are well educated and well capitalized. These families are highly educated, married couples with no children or older children. Their median income is \$104,000 and have an average net worth of \$502,000.

Currituck County

The top five tapestry segments in Currituck County represent 99 percent of the total population, demonstrating a much more homogeneous pattern than the larger region (**Table 2-13**). The Southern Satellites tapestry group comprises 42.9 percent of the Currituck market. The median income of this group is \$44,000, and the average household size is 2.65. 78.6 percent of this group owns their home and the median home value is \$119,000. Full profile sheets for the top five tapestry segments in Currituck County have been included in **Appendix A** of this document.

Table 2-13: Tapestry Segmentation, Currituck County, 2015

Rank	Tapestry Segment	Currituck County	United States
1	Sothern Satellites	42.9%	3.2%
2	Great Outdoors	25.7%	1.6%
3	Soccer Moms	17.7%	2.8%
4	Savvy Suburbanites	10.6%	3.0%
5	Rural Resort Dwellers	2.1%	1.0%
Total		99.0%	11.6%

Source: Kimley-Horn, ESRI BAO

The Great Outdoors group has similar household size and housing ownership, but a slightly higher median income. The median home value is much greater at \$189,000. As discussed in the previous section, Soccer Moms have a high median income and net worth. In addition, they primarily own their home, and their median home value is \$226,000. Savvy Suburbanites is another tapestry that Currituck and the MSA have in common. Their median home value is \$311,000 and 91 percent of these residents own their home. The Rural Resort Dweller tapestry segmentation refers to the number of expatriates that Currituck has attracted to the area. This group has a low median household income, but they have a strong median home value of \$163,000, with a vast majority of this group owning their home.

Residential Profile

This section provides an overview of the residential market in Currituck County, including both housing units by type, for-sale closing data and price points, and a brief review of the rental multi-family market. Trends are compared, where possible, to the larger Virginia Beach MSA.



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As shown in **Table 2-14**, Currituck County has an estimated 15,734 housing units in 2015, an increase of 47.2 percent from 2000. The increase in housing units over the last 15 years was largely concentrated in Moyock Township, representing an area with ample available land with good access to Chesapeake, Virginia Beach, and Norfolk via VA/NC-168.

Table 2-14: Comparison of Housing Unit Trends, 2000-2015

Geography	2000	2010	2015	2000-2015 Δ		
				#	%	CAGR
Currituck County	10,687	14,453	15,734	5,047	47.2%	2.6%
Virginia Beach MSA	623,724	688,061	714,939	91,215	14.6%	0.9%
County % MSA	1.7%	2.1%	2.2%	5.5%		

Source: ESRI; US Census; Kimley-Horn

During the same time period, the Virginia Beach MSA added over 91,000 new residential units, reaching approximately 715,000 in 2015. This equates to a 14.6 percent growth rate over the last 15 years. Overall, Currituck County captured 5.5 percent of the total increase in housing units in the MSA.

Age of Housing Stock

The median year of completion for housing stock in Currituck County was 1992, compared to 1979 for the larger Virginia Beach MSA (**Table 2-15**). More than half of the housing units in Currituck have been completed since 1990, with 24.6 percent built in the 2000s.

Housing completion in Currituck County has slowed following the 2007–2009 recession; only 0.2 percent of the inventory has been completed since 2010. Comparatively, the decade with the highest concentration of completions in the larger region was 1980 to 1989.

Table 2-15: Comparison of Housing Stock by Age, 2013

Year Built	Currituck County	Virginia Beach MSA
1939 or earlier	3.7%	5.8%
1940-1949	2.0%	5.3%
1950-1959	5.1%	10.5%
1960-1969	3.9%	13.1%
1970-1979	11.4%	16.8%
1980-1989	18.2%	19.8%
1990-1999	30.9%	14.6%
2000-2009	24.6%	13.4%
2010 or later	0.2%	0.7%
Total	100.0%	100.0%
Median Year	1992	1979

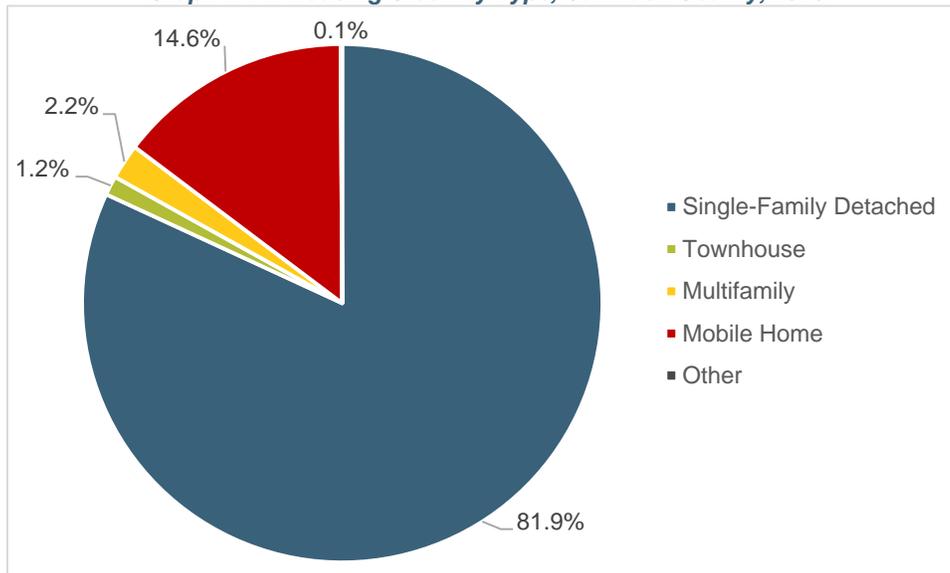
Source: ESRI; US Census; Kimley-Horn

Housing Units by Type

Based on data provided by the 2009-2013 American Community Survey, nearly 82 percent of the housing stock in Currituck County was single-family detached product (**Graph 2-11**). Mobile homes made up another 14.6 percent of the total, with the remainder representing multi-family product, both townhouse and apartments.

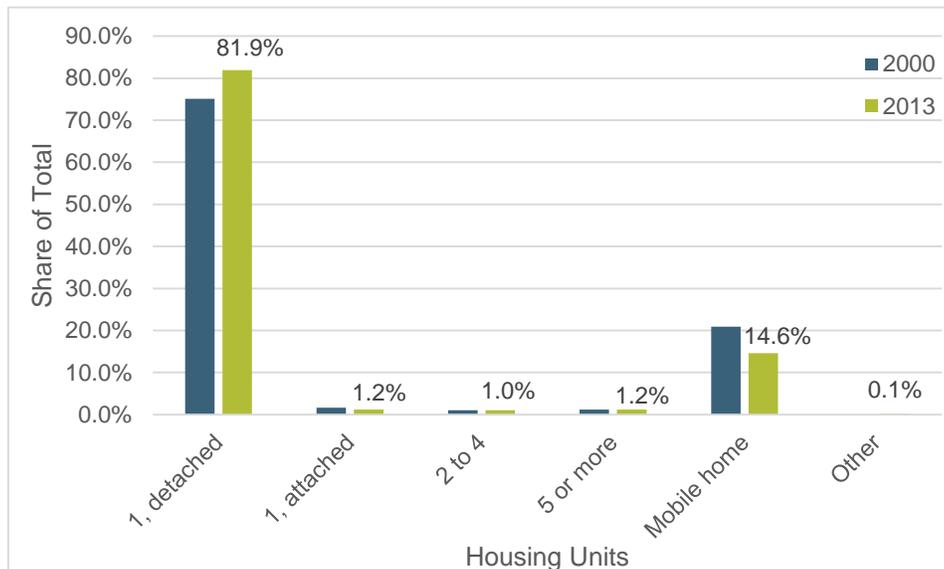


Graph 2-11: Housing Stock by Type, Currituck County, 2013



As shown in **Graph 2-12**, the share of single-family detached housing in Currituck County has increased between 2000 and 2010, from 75.1 percent to 81.8 percent. The increase is largely attributable to the decline in mobile homes. Other residential product types, including townhouses (1, attached), and multi-family (2 to 4 units and 5 or more units) have remained at a constant share over the 13-year period.

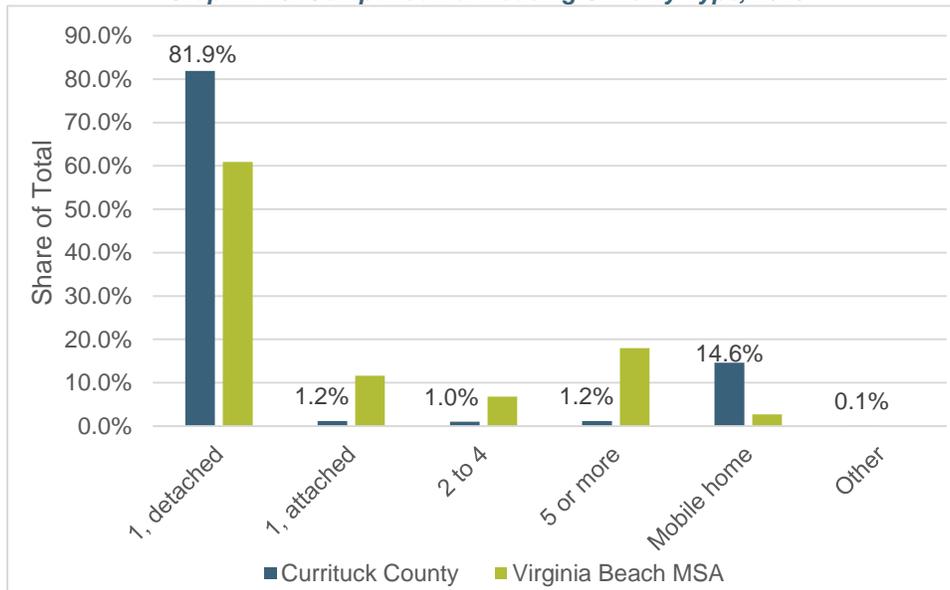
Graph 2-12: Trends in Housing Stock by Type, Currituck County, 2000-2013



Currituck County has a more homogeneous mix of housing types when compared to the larger Virginia Beach MSA. Currituck's 81.9 percent share of single-family detached housing units is notably higher than the larger region at 60.9 percent (**Graph 2-13**). Conversely, the region has higher shares of townhouses and multi-family product. The higher concentration of urban areas elsewhere in the region also leads to fewer mobile homes as a share of the total.



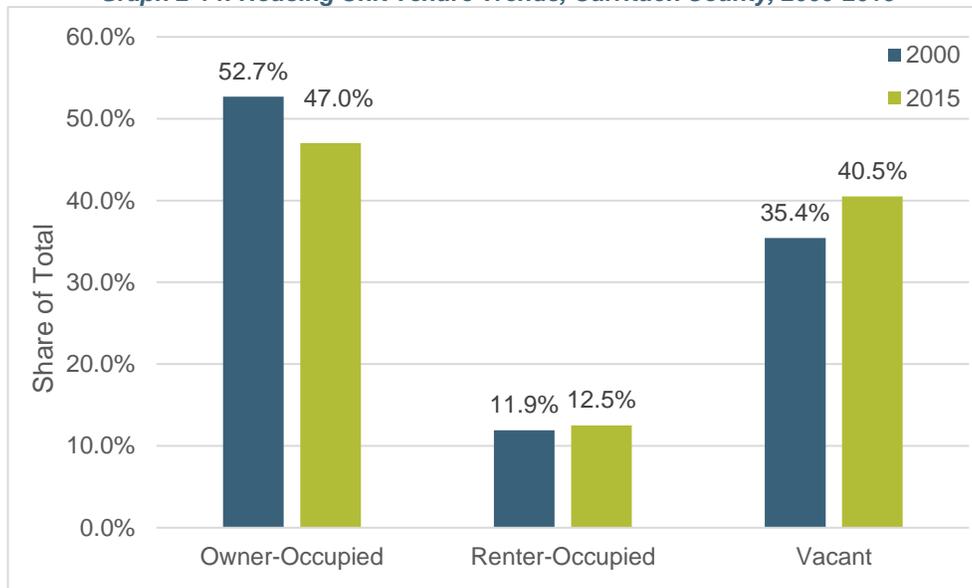
Graph 2-13: Comparison of Housing Units by Type, 2013



Housing Unit Tenure

Housing tenure investigates the share of units based on whether occupied or unoccupied, and if the occupant owns or rents. This data does not consider unit type; for example, a single-family detached unit could be owner-occupied, renter-occupied, or vacant. The share of owner-occupied units in Currituck County declined significantly, from 52.7 percent in 2000 to 47.0 percent in 2015 (Graph 2-14). This is largely a result of the 2007–2009 recession, which heavily impacted the second-home market. While the greatest movement was in owner-occupied and vacant units, the share of renter-occupied housing remained almost unchanged.

Graph 2-14: Housing Unit Tenure Trends, Currituck County, 2000-2015





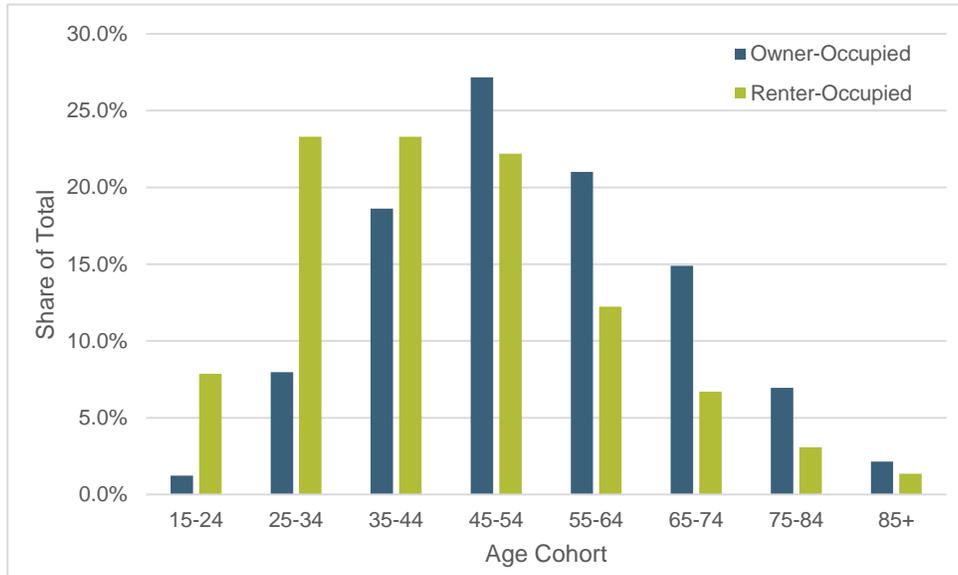
Currituck County Moyock Mega-Site Market Feasibility Study

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As shown in **Graph 2-15**, Currituck County residents aged less than 35 years have a higher propensity towards rental than the older segments. Nationally, the homeownership rate dropped to 64.5percent in 2014, the lowest it has measured in 20 years.

The rate remains at its current measure particularly due to preferences demonstrated by the Baby Boomer generation. Currituck follows a similar pattern to the national trend with residents over age 45 demonstrating preferences towards ownership.

Graph 2-15: Tenure by Age of Householder, Currituck County, 2010

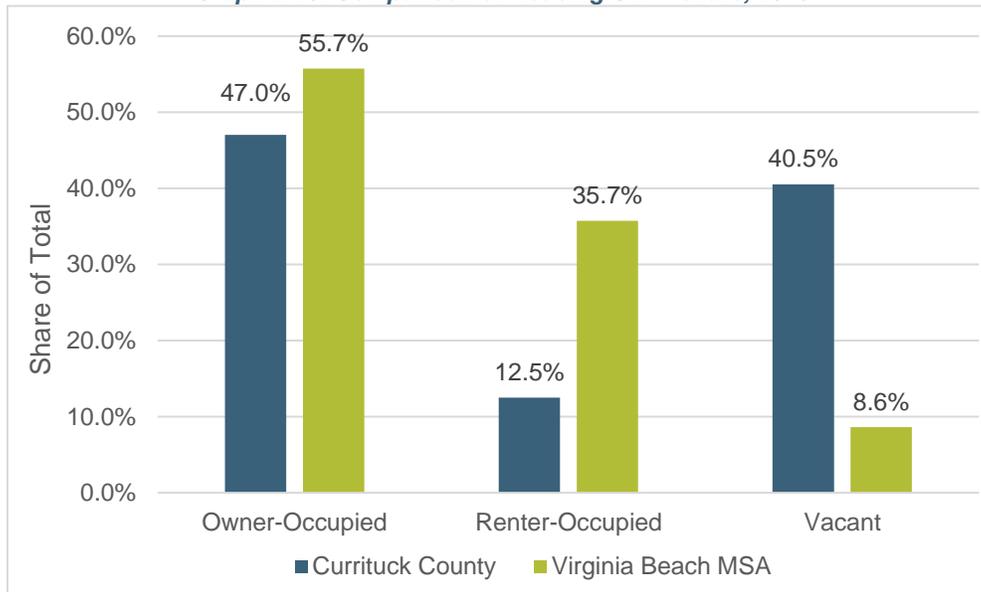


However, it should be noted that nearly all age cohorts (with the exception of those over age 75) have experienced an increase in renter occupancy nationally. Widespread increases in residents seeking to rent has resulted in the strongest decade of growth in renter households over the past half-century.

As shown in **Graph 2-16**, Currituck County has a significantly higher share of vacant housing stock than the larger region, driven by the concentration of second, or vacation, homes in the Outer Banks. Alternatively, the Virginia Beach MSA has a higher share of renter-occupied units.



Graph 2-16: Comparison of Housing Unit Tenure, 2015



A more finite review of Currituck County shows that Moyock Township has a significantly lower share of vacant units, making up an estimated 13.7 percent of the inventory. Moyock is far less influenced by the second home market than the coastal areas of Currituck, attracting a population seeking a high quality of life with easy access to Chesapeake, Virginia Beach, and Norfolk. Owner-occupied units in Moyock Township make up nearly three-quarters of the total, with rental units accounting for 13.7 percent.

FOR-SALE RESIDENTIAL

Owner-occupied housing units comprise approximately half of the inventory, however, this number is heavily impacted by vacation rentals along the coast. In the more immediate Moyock Township, owner-occupied units account for nearly 75 percent of the total.

As shown in **Table 2-16**, the median housing value in Currituck County according to the US Census is approximately \$223,800. More than two-thirds of the total housing inventory has a median value of less than \$300,000, with the highest concentration valued between \$100,000 and \$200,000. Higher value housing units likely focused along coastal properties in Corolla.

Table 2-16: Comparison of Owner-Occupied Housing Values, 2013

Owner-Occupied Housing Value	Currituck County	Virginia Beach MSA
<\$100,000	15.2%	7.4%
\$100,000-\$200,000	28.6%	28.1%
\$200,000-\$300,000	25.0%	32.5%
\$300,000-\$400,000	17.2%	16.4%
\$400,000-\$500,000	6.8%	7.0%
\$500,000+	7.2%	8.6%
Total	100.0%	100.0%
Median Value	\$223,800	\$239,951

Source: ESRI; US Census; Kimley-Horn



Currituck County Moyock Mega-Site Market Feasibility Study

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Currituck County has a relatively comparable distribution of median home values when compared to the larger Virginia Beach MSA (**Graph 2-17**). The most notable variation is Currituck's higher share of owner-occupied housing units valued less than \$100,000 and lower share of units between \$200,000 and \$300,000. The higher share of units valued less than \$100,000 is likely a result of Currituck's 14.6 percent share of mobile homes, higher than 2.7 percent for the larger region.

Graph 2-17: Comparison of Owner-Occupied Housing Values, 2013



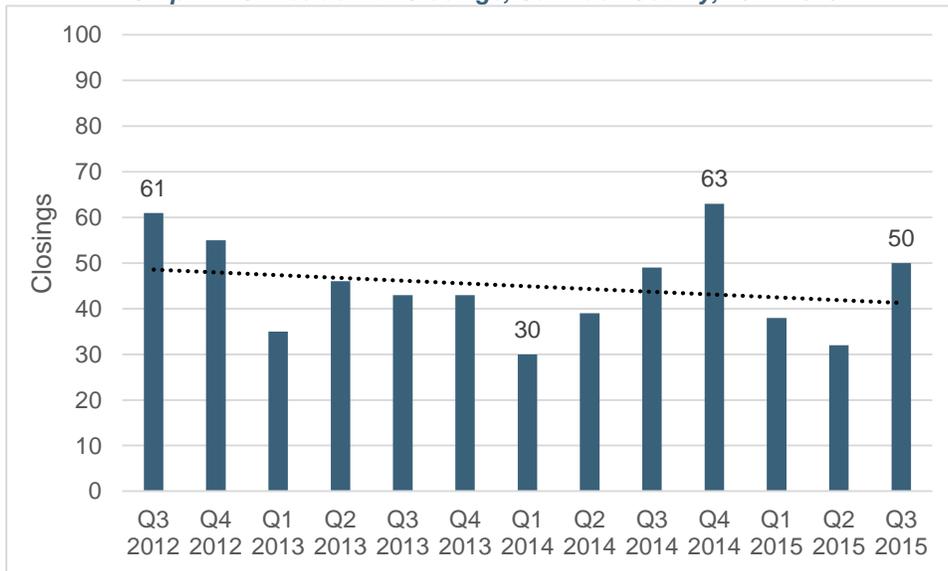
Residential Closing Trends

Information was gathered for recent closing and sale price trends in Currituck County. Data for this analysis was provided by Denise Roddy, a Realtor with Howard Hannah, and was pulled from the local Multiple Listing Service (MLS). It should be noted that MLS data typically only includes properties that are listed by Realtors, not ones sold directly by developers. As shown in **Graph 2-18**, quarterly residential closings have ranged from 30 units in 1Q 2014 to 63 units in Q4 2014. On an annualized basis, there were 167 closings in 2013 and 181 units in 2014, demonstrating a slight increase. In the first three quarters of 2015 there were 120 closings in Currituck County, on pace to demonstrate a consistent pattern.

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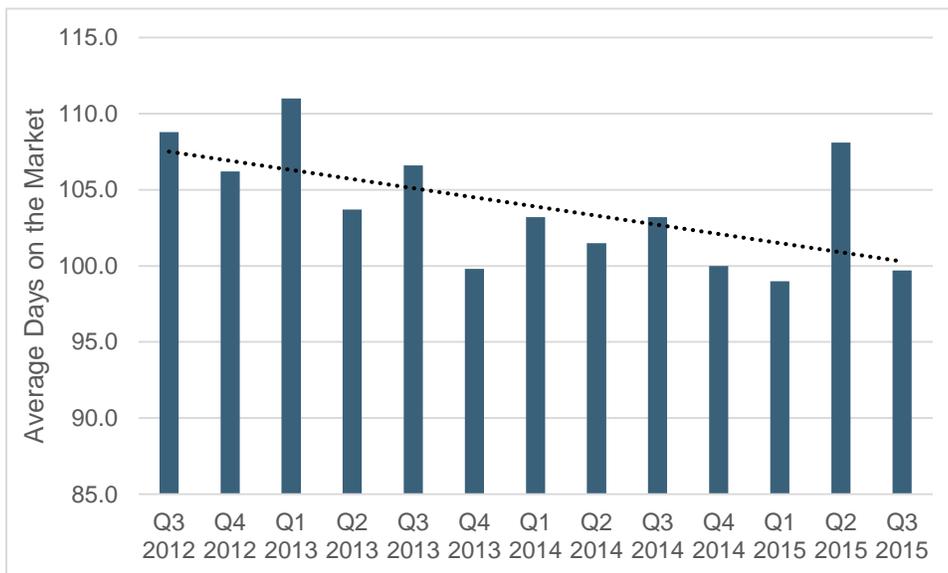


Graph 2-18: Residential Closings, Currituck County, 2012-2015



Graph 2-19 demonstrates the average number of days residential units stay on the market from listing to closing. The average number of days on the market has declined, averaging approximately 100 in the last year. This indicates tightening in the market, with demand exceeding supply.

Graph 2-19: Average Days on the Market, Currituck County, 2012-2015

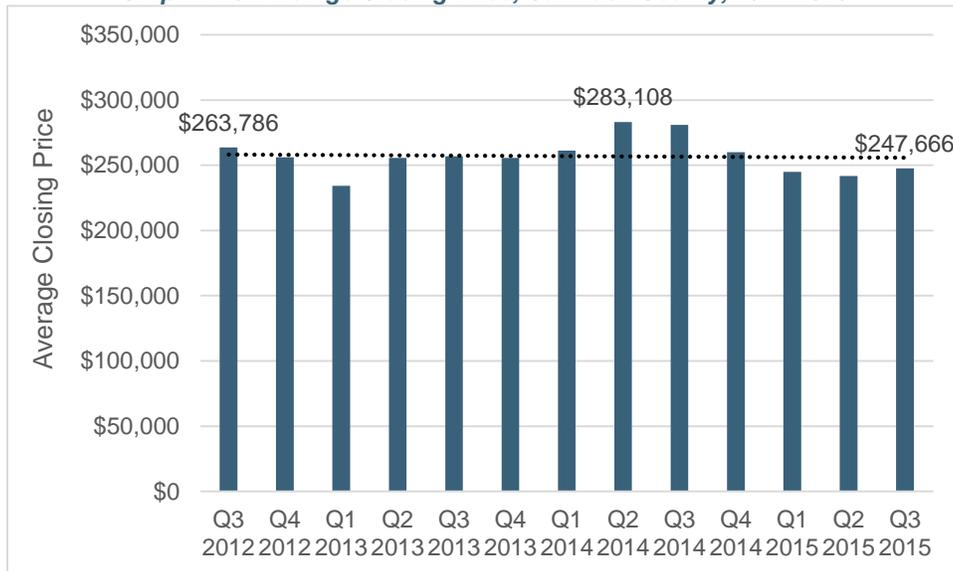


Residential Closing Price Trends

As shown in **Graph 2-20**, the average closing price in Currituck County has remained largely unchanged since the third-quarter 2012. The most recent data shows an average closing price of \$247,666, a slight 6.5 percent decline from \$263,786 in 2012. Closing prices peaked in mid-2013, exceeding an average of \$280,000.



Graph 2-20: Average Closing Price, Currituck County, 2012-2015



RENTAL RESIDENTIAL

Making up an estimated 2.2 percent of the total housing stock, multi-family residential development has been very limited in Currituck County. Rental opportunities are likely accommodated in single-family detached and townhouse units that are leased by individual investors.

There is no third-party market data available for multi-family performance in Currituck County. To provide a bigger picture review of performance, data for the Virginia Beach market prepared by Old Dominion University and Real Data has been compiled. A snapshot of performance in the Chesapeake area has also been provided in order to demonstrate momentum in the area closest to Currituck. Additionally, Red Knot at Edinburg, a recently completed apartment community near Moyock, has been profiled in order to supplement Chesapeake-area performance measures with product details closer to the Mega-Site.

Virginia Beach Market Trends

The Virginia Beach had more than 95,000 multi-family units within conventional apartment communities of 50 or more units each. The cities with the highest concentration of units are Virginia Beach and Newport News, which account for nearly one-half of the regional total. Historically, the market has typically absorbed 1,500 apartment units annually, however a surge in demand pushed the rate to nearly 2,200 units in 2014. The region experienced record levels of demand in 2013 and 2014.

Increased demand for multi-family units has largely matched the influx of new supply, causing the vacancy rate to remain stable over the last five years at approximately 7.0 percent. Future supply increases in the region are forecasted to continue to meet the current level of demand, limiting impact on vacancy rates and rent growth for apartments.



Chesapeake Submarket Snapshot

At the end of 2014, Chesapeake accounted for approximately 12 percent of the total inventory in the region, equating to roughly 11,500 units. Demand for apartments in 2014 was strongest in Virginia Beach and Chesapeake, which accounted for one-half of the region's absorption. Vacancy rates in Chesapeake increased by 150 basis points between 2013 and 2014, largely due to deliveries of new supply. At year-end 2014, the vacancy rate in Chesapeake was approximately 7.5 percent, still within a reasonable measure representing a healthy market. When compared to other submarkets in the region, Chesapeake had the highest average monthly rent at more than \$1,100, higher than the regional average of \$976.

Comparable Development

The most recently completed Class-A apartment community with proximity to the site is Red Knot at Edinburgh, less than ten miles north on VA/NC-168. This 336-unit community was completed in 2015, and offers high-end finishes and upgraded community amenities. The one-, two-, and three-bedroom unit range in size from 685 square feet to 1,556 square feet. Average monthly rents generally range from \$1,000 to \$1,750. The community offers on-site amenities, as well as proximity to a major thoroughfare and shopping near the interchange. The community is still in lease-up; no vacancy information was available at the time of this analysis.



Retail Profile

Retail performance trends are based on regional and submarket information provided by Real Estate Information Services (REIS), a third-party commercial real estate data source. REIS divides the Virginia Beach market into six separate submarkets:

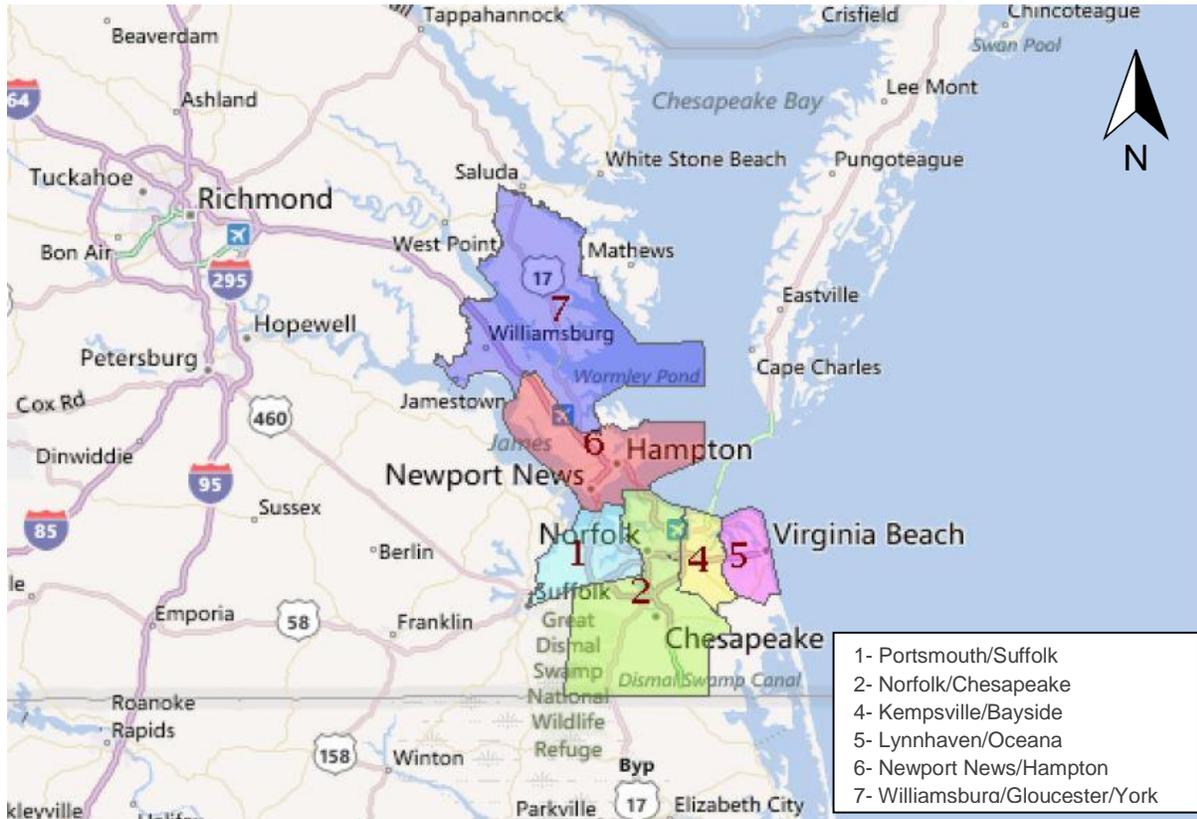
- Portsmouth/Suffolk
- Norfolk/Chesapeake
- Kempsville/Bayside
- Lynnhaven/Oceana
- Newport News/Hampton
- Williamsburg/Gloucester/York

It should be noted that there is no third-party retail performance data available specifically for Currituck County. This analysis focuses on the Norfolk/Chesapeake Submarket (demonstrated in **Figure 2-8** below). The Norfolk/Chesapeake Submarket is generally bounded by the North Carolina-Virginia state line to the south, US-58 and the Chesapeake city limits to the west, Chesapeake Bay to the north, and I-64 and the Chesapeake city limits to the east. This Submarket was selected because it most closely aligns with the Moyock area of Currituck County. Additionally, VA/NC-168 bisects the submarket, connecting Moyock to Chesapeake, Norfolk, and Virginia Beach.

This section presents retail performance measure trends including completions, net absorption, vacancy and average rent per square foot. The Norfolk/Chesapeake Submarket has been compared to the larger region. Additionally, a brief overview of regional retail nodes, including malls and outlet facilities, has been provided.



Figure 2-8: REIS Retail Submarkets, Virginia Beach Market, 2015



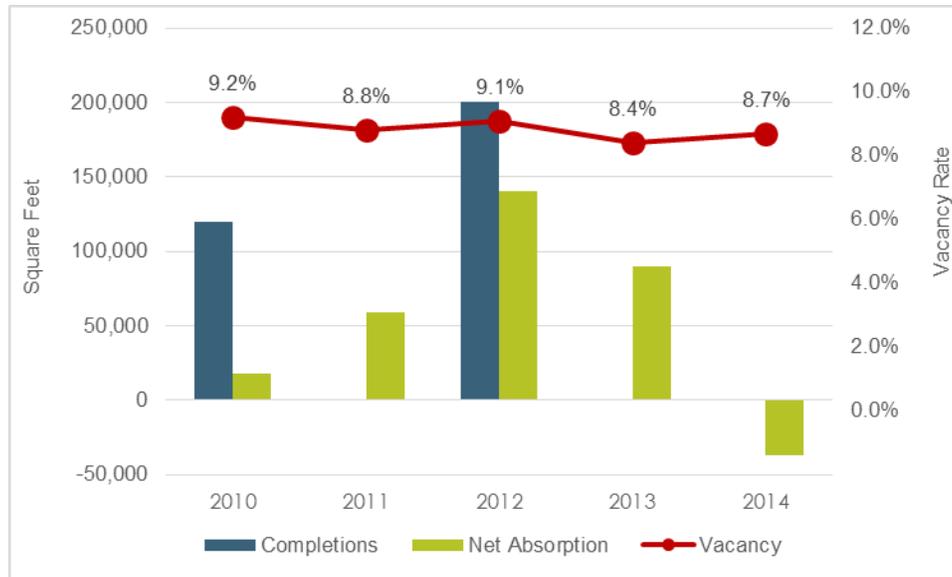
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VIRGINIA BEACH MARKET TRENDS

As shown in **Graph 2-21**, from 2010 to 2014 the vacancy rate in the Virginia Beach market decreased slightly from 9.2 percent to 8.7 percent. New completions were limited to only 2010 and 2012, totaling 320,000 square feet over five years. Net absorption totaled 270,000 square feet between 2010 and 2014. Following one year of negative absorption in 2014, the vacancy rate increased slightly from 8.4 percent in 2013 to 8.7 percent. Over the five-year period, new retail supply slightly outpaced demand for space by 50,000 square feet.

Graph 2-21: Retail Market Performance, Virginia Beach Market, 2010-2014



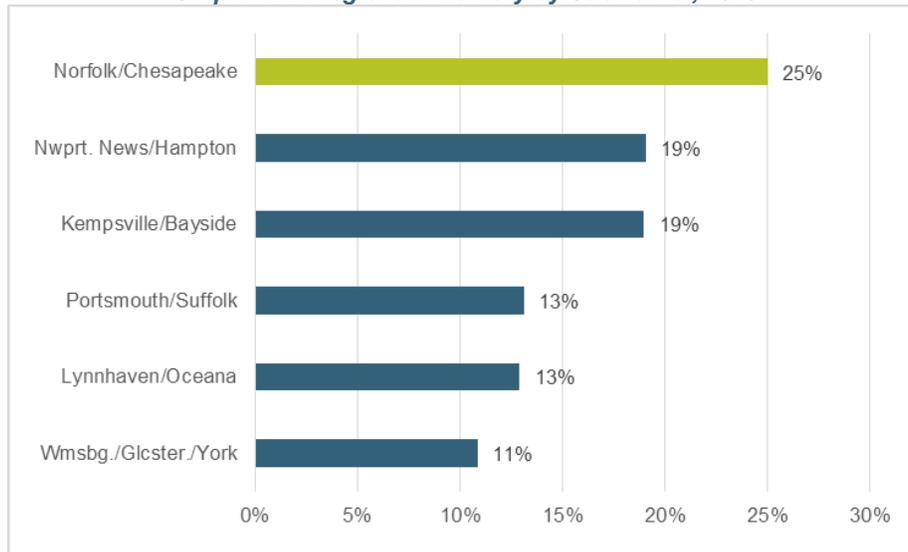
SUBMARKET COMPARISONS

With more than 6.6 million square feet, the Norfolk/Chesapeake Submarket comprises approximately one-quarter of the total retail inventory in the Virginia Beach market (**Graph 2-22**). The total inventory in the market was estimated at 26.4 million square feet in 2015.

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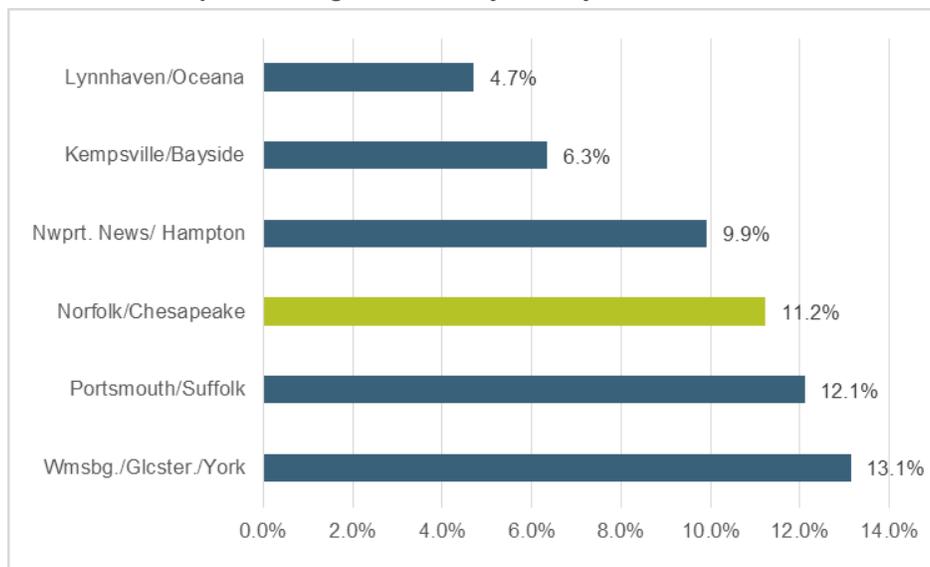


Graph 2-22: Regional Inventory by Submarket, 2015



The overall annual average retail vacancy rate in the Virginia Beach market was 8.7 percent in 2014. As shown in **Graph 2-23**, submarket vacancy rates range from 4.7 percent in Lynnhaven/Oceana to 13.1 percent Williamsburg/ Gloucester/York. The Norfolk/Chesapeake Submarket reported an 11.2 percent vacancy rate in 2015.

Graph 2-23: Regional Vacancy Rate by Submarket, 2015



NORFOLK/CHESAPEAKE TRENDS

There was only 71,000 square feet of retail space added to the Norfolk/Chesapeake Submarket between 2010 and 2014. Five-year net absorption totaled 17,000 square feet, including two years of negative absorption in 2010 and 2011. However, it should be noted that the absorption of retail space in the submarket gained momentum in the last three years, creating gross demand for 161,000 square feet. Overall, supply exceeded demand by 54,000 square feet. Refer to **Table 2-17**.



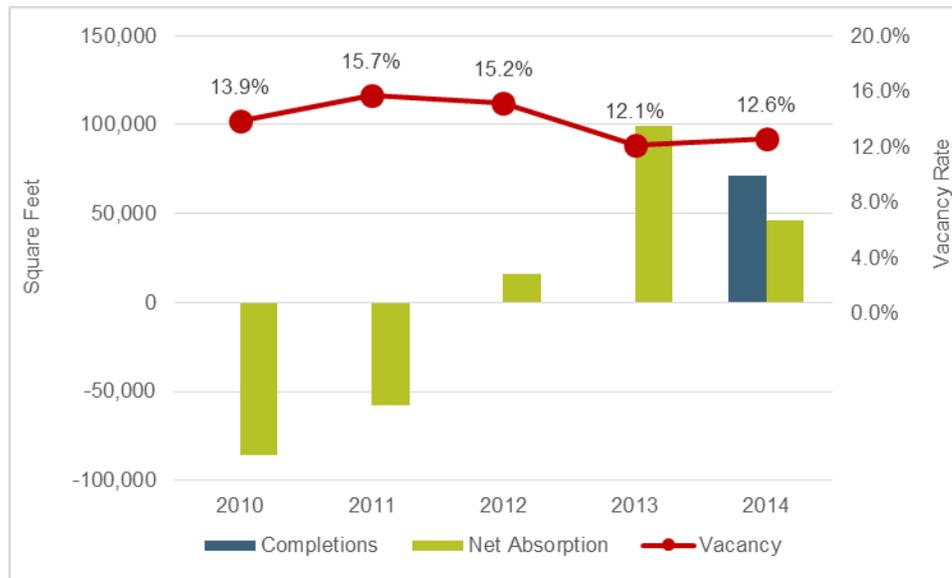
Table 2-17: Completion and Net Absorption Trends, Norfolk/Chesapeake Submarket, 2010-2014

Year	Completions	Net Absorption	(Over)/Under Supply	Vacancy Rate
2010	0	-86,000	(86,000)	13.9%
2011	0	-58,000	(58,000)	15.7%
2012	0	16,000	16,000	15.2%
2013	0	99,000	99,000	12.1%
2014	71,000	46,000	(25,000)	12.6%
Total	71,000	17,000	(54,000)	
Ann. Avg.	14,200	3,400	(10,800)	

Source: REIS; Kimley-Horn & Associates

The annual average vacancy rate for retail space in the Norfolk/Chesapeake Submarket was 12.6 percent in 2014. As shown in **Graph 2-24**, with no new deliveries and a return of demand in 2012 and 2013, the submarket vacancy rate improved from a peak of 15.7 percent in 2011 to 12.1 percent in 2013, a reduction of 360 basis points in two years. The delivery of 71,000 square feet in 2014 caused a slight 50 basis point increase to the vacancy rate.

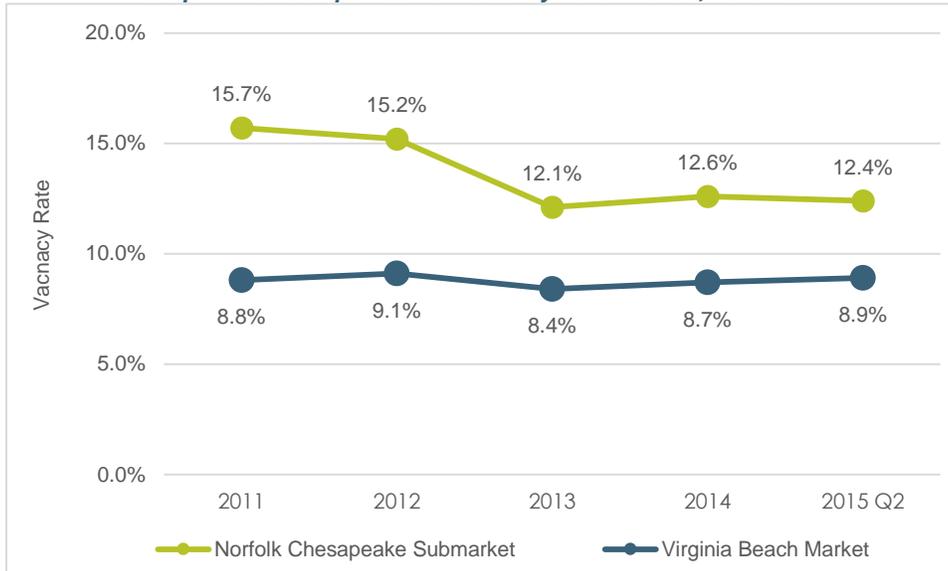
Graph 2-24: Retail Market Performance, Norfolk/Chesapeake Submarket, 2010-2014



As shown in **Graph 2-25**, the Norfolk/Chesapeake Submarket has consistently had a higher retail vacancy rate than the larger market. However, momentum in retail leasing in the submarket has reduced the vacancy rate to an estimated 12.4 percent in second-quarter 2015, 3.5 percent higher than 8.9 percent for the region. This is a much smaller variance between the submarket and the larger region than 6.9 percent in 2011.



Graph 2-25: Comparison of Vacancy Rate Trends, 2010-2014



The most recently reported average rent per square foot measure for retail space in the Norfolk/Chesapeake Submarket was \$15.53 in second-quarter 2015, comparable to \$15.67 for the larger market. Average lease rates for anchored and unanchored retail spaces increased 3.3 percent from \$15.03 in 2011. Historically, lease rates in the Submarket have closely mirrored performance in the larger Virginia Beach retail market (Graph 2-26).

Graph 2-26: Comparison of Rent/Per Sq. Ft. Trends, 2010-2014





REGIONAL SHOPPING ATTRACTIONS

This section of the analysis profiles four existing and planned regional shopping concentrations that serve residents of Moyock. Outlet facilities, including the Premium Outlet Mall in Norfolk which will soon begin construction, have also been included.

Greenbrier Mall, located in Chesapeake, offers 900,000 square feet of shopping and dining space, located at 1401 Greenbrier Parkway, approximately 20 miles north of the Moyock Mega-Site. The mall opened in 1981 and has approximately 110 retailers, anchored by Macy's, Dillard's, Sears, and JCPenney.



In addition to department stores, the mall and surrounding area hosts several restaurants, Olive Garden, Panera Bread,

Chipotle, Cracker Barrel, and Chick-fil-A. On the west side of Greenbrier Parkway, opposite of Greenbrier Mall is Crossways Shopping Center, which is anchored by Marshalls, TJ Maxx, DSW Warehouse, Ross, Ulta, and Michael's. CBL & Associates currently owns, manages, and leases the Mall.

Simon Property Group is currently constructing a \$75 million **Premium Outlet** mall in Norfolk. The mall is a redevelopment of the Lake Wright Golf Course property at Northampton Boulevard off I-64, 30 miles north of the Mega-Site. The 351,000-square-foot facility is currently underway, with opening slated for mid-2017. None of the 90 outlets have been announced to date. The regional facility is expected to serve residents and visitors from Virginia and North Carolina.





Tanger operates a small outlet mall on South Croatan Highway in Nags Head, 60 miles southeast of the Moyock Mega Site. **Tanger Nags Head** offers 23 in-line shops, anchored by Banana Republic, Ralph Lauren, and Gap factory stores.

Edinburgh represents one of the largest retail concentrations in close proximity to the Moyock Mega Site. The development is less than ten miles north of the Mega-Site, and includes a Walmart Supercenter, The Home Depot, Target, and a variety of small shop and free-standing retailers and restaurants.

Office Profile

Similar to retail, office performance trends are based on regional and submarket information provided by REIS. REIS divides the Virginia Beach market into five separate office submarkets:

- Newport News/Hampton
- Portsmouth/Suffolk/Chesapeake
- Norfolk
- Kempsville/Bayside/Little Neck
- Lynnhaven/Oceana

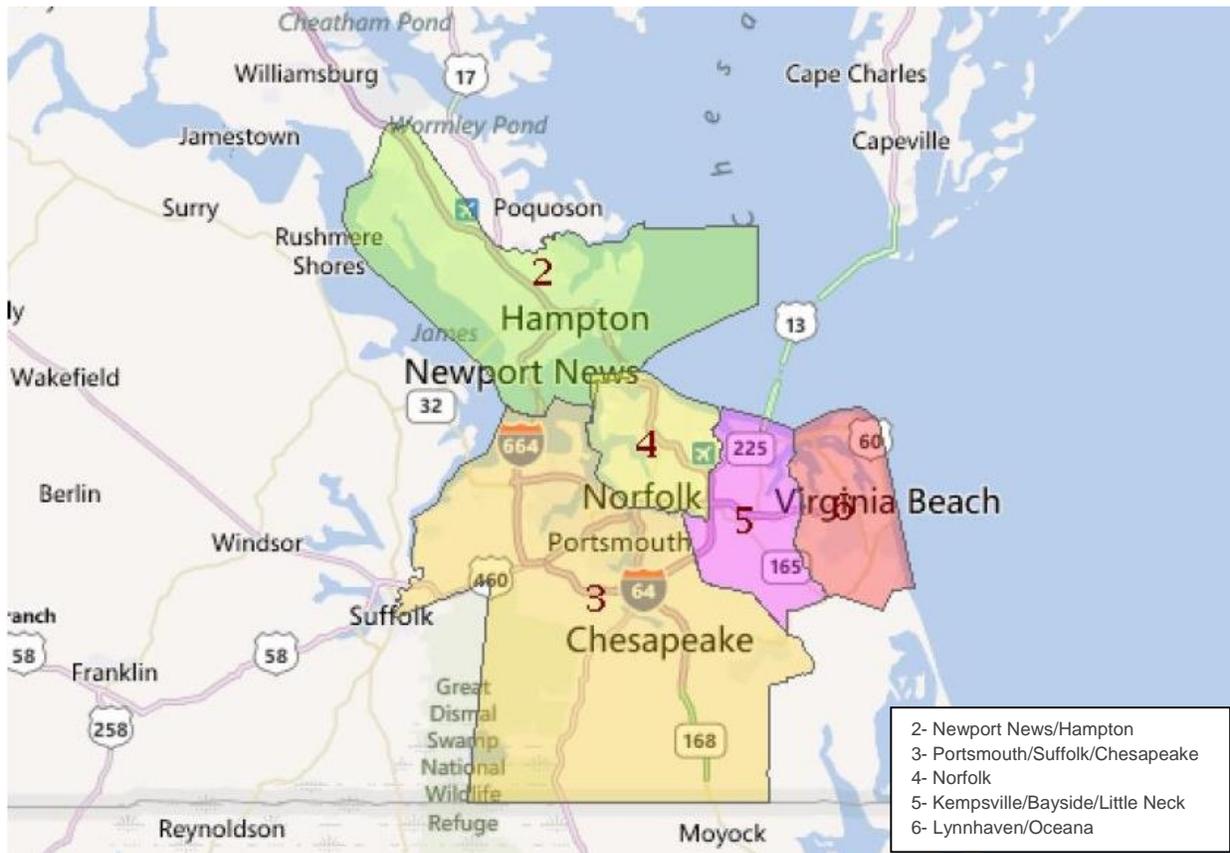
With limited multi-tenant office development in Currituck, there is no office performance data available. This analysis focuses on the Portsmouth/Suffolk/Chesapeake Submarket (demonstrated in **Figure 2-9** below). The Portsmouth/Suffolk/Chesapeake Submarket is generally bounded by the North Carolina-Virginia state line to the south, VA-10 and the Suffolk city limits to the west, the Elizabeth River to the north, and the Chesapeake city limits to the east. This submarket was selected because it most closely aligns with the Moyock area of Currituck County.

This section presents office performance measure trends including completions, net absorption, vacancy, and average rent per square foot. The Portsmouth/Suffolk/Chesapeake Submarket has been compared to the larger region.

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Figure 2-9: REIS Office Submarkets, Virginia Beach Market, 2015



VIRGINIA BEACH MARKET TRENDS

There was 648,000 square feet of new office space completed in the Virginia Beach market between 2010 and 2014, 56 percent of the new product came online in 2010 (**Graph 2-27**). Five-year absorption was negative (-44,000 square feet), with the biggest losses in 2011 and 2013. Overall the Virginia Beach market had a five-year office over supply of approximately 692,000 square feet. As a result, the market-wide vacancy rate increased steadily from 14.5 percent in 2010 to 16.8 percent in 2014.

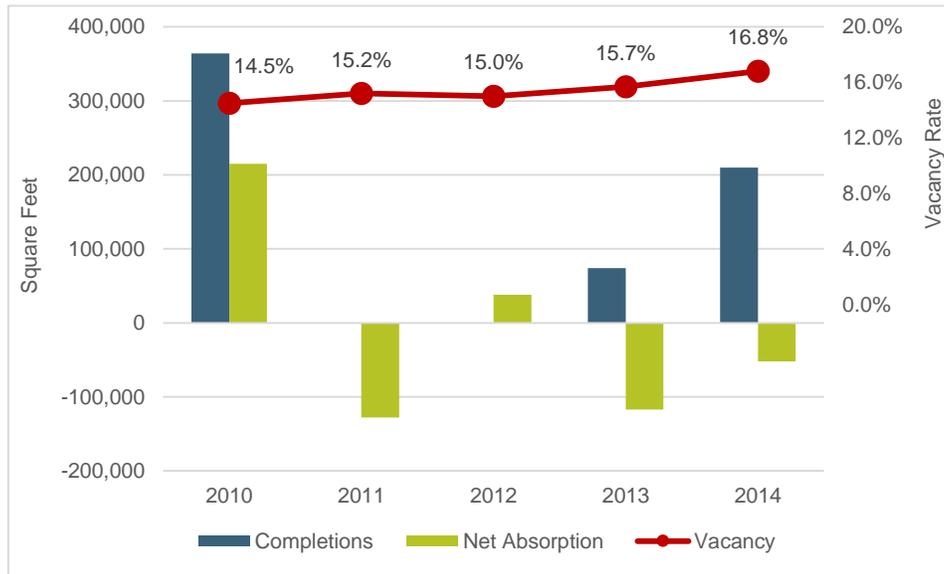
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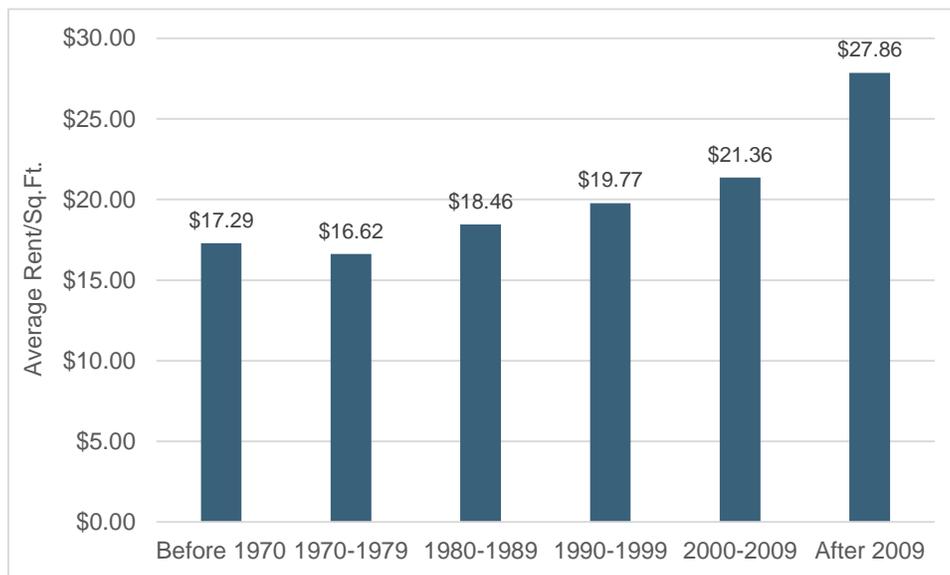
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Graph 2-27: Office Market Performance, Virginia Beach Market, 2010-2014



The average rent per square foot in the Virginia Beach market was \$19.44 in the second-quarter 2015. Generally rents have been stable, increasing slightly from \$18.99 in 2010. As shown in **Graph 2-28**, office product constructed since 2009 achieves a noticeable premium at \$27.86 per square foot. Office space completed between 2000 and 2009 achieves the second highest average rates at \$21.36 per square foot.

Graph 2-28: Average Rent/Per Sq. Ft. by Decade Completed, Virginia Beach Market, 2015





PORTSMOUTH/SUFFOLK/CHESAPEAKE TRENDS

As shown in **Table 2-18**, there has been no new office space completed in the Portsmouth/Suffolk/Chesapeake Submarket since 2010. Five-year net absorption totaled 19,000 square feet, ranging from -39,000 square feet in 2012 to 30,000 square feet of demand in 2010. Driven by the lack of new product, the Submarket had a slight undersupply of 19,000 square feet between 2010 and 2014.

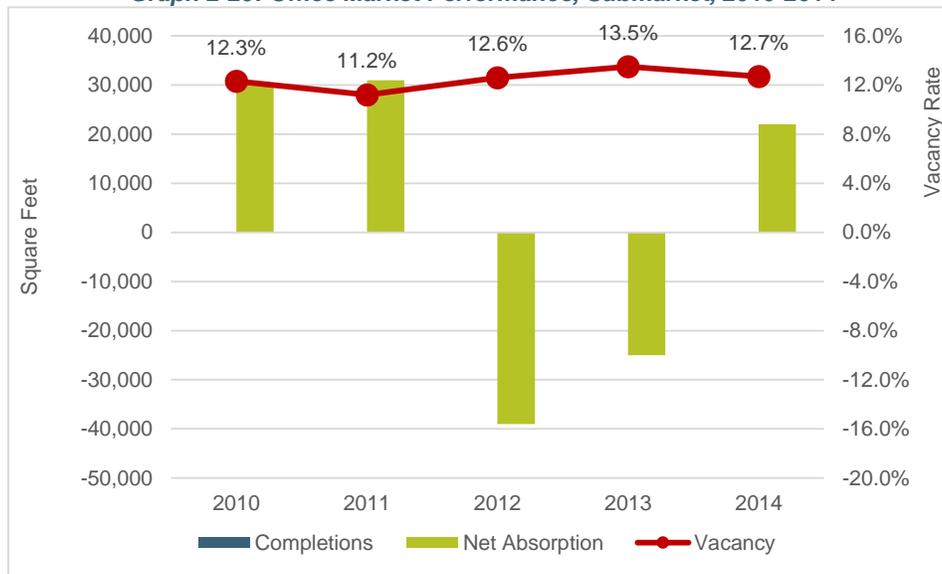
Table 2-18: Completion and Net Absorption Trends, Submarket, 2010-2014

Year	Completions	Net Absorption	(Over)/Under Supply	Vacancy Rate
2010	0	30,000	30,000	12.3%
2011	0	31,000	31,000	11.2%
2012	0	-39,000	(39,000)	12.6%
2013	0	-25,000	(25,000)	13.5%
2014	0	22,000	22,000	12.7%
Total	0	19,000	19,000	
Ann. Avg.	0	3,800	3,800	

Source: REIS; Kimley-Horn & Associates

The vacancy rate in the Portsmouth/Suffolk/Chesapeake Submarket increased slightly over the five-year period, from 12.3 percent in 2010 to 12.7 percent in 2014 (**Graph 2-29**). Vacancy peaked at 13.5 percent in 2013 following two years of negative net absorption. Following absorption of over 20,000 square feet in 2014, the vacancy fell by 80 basis points to 12.7 percent in 2014.

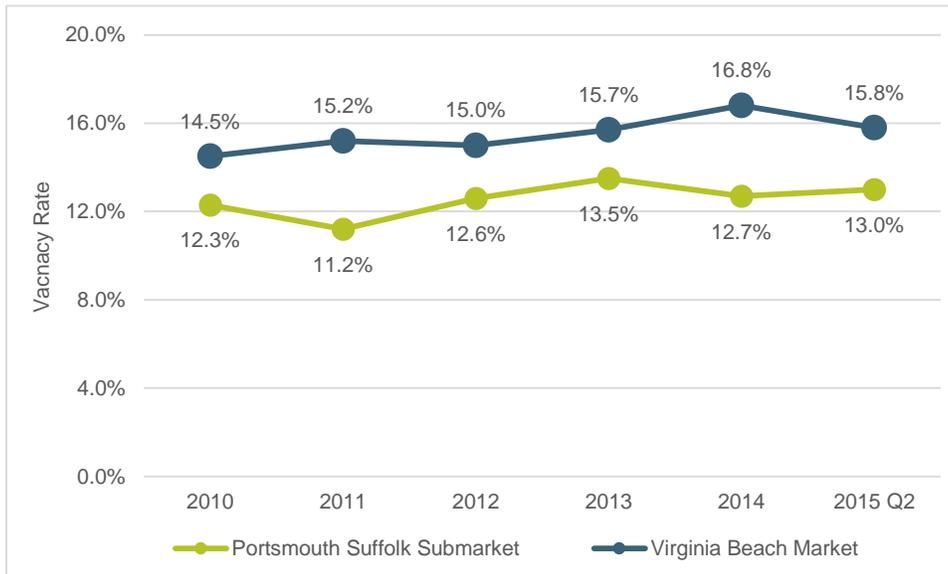
Graph 2-29: Office Market Performance, Submarket, 2010-2014



Graph 2-30 compares the vacancy rate of the Portsmouth/Suffolk/Chesapeake Submarket to the larger Virginia Beach market. With limited new activity, the submarket has historically had a lower vacancy rate than the market. In second-quarter 2015, the Virginia Beach market reported a 15.8 percent vacancy rate, 2.8 percent higher than 13.0 percent for the Portsmouth/Suffolk/Chesapeake Submarket.

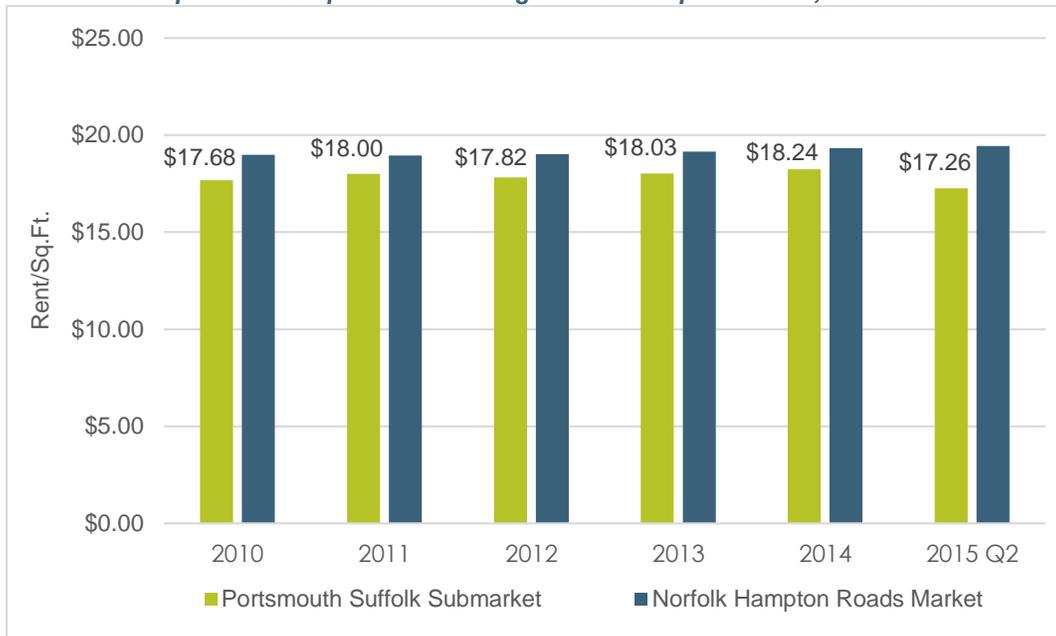


Graph 2-30: Comparison of Vacancy Rate Trends, 2010-2015



The average rent per square foot in the Portsmouth/Suffolk/Chesapeake Submarket was \$17.26 in second-quarter 2015, 12.6 percent lower than \$19.44 for the larger market (**Graph 2-31**). Historically, the market has maintained premiums over the submarket ranging from 5 percent to 12 percent.

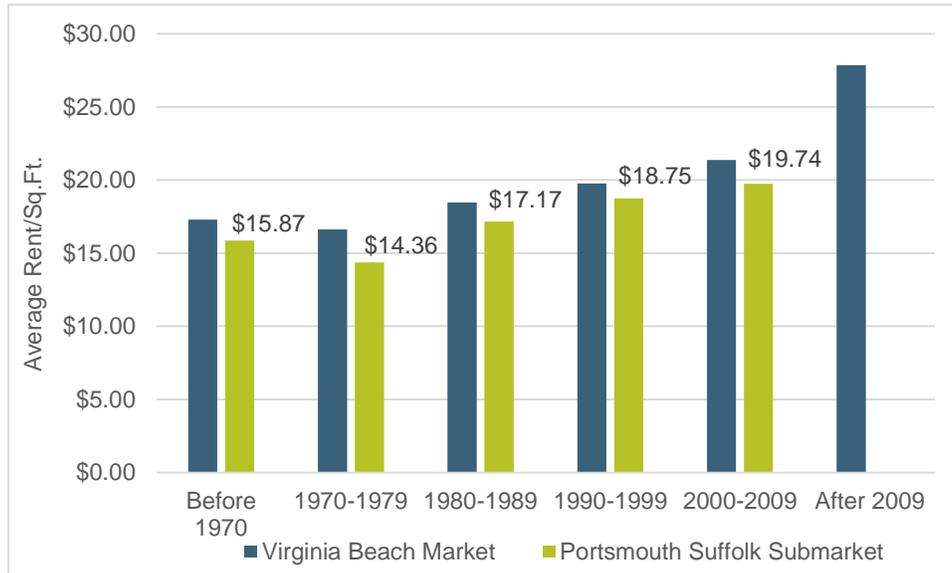
Graph 2-31: Comparison of Average Rent/Per Sq. Ft. Trends, 2010-2015





Similar to the larger Virginia Beach market, the newest product in the Portsmouth/Suffolk/Chesapeake Submarket achieves the highest average rent at \$19.47 per square foot (**Graph 2-32**). There has been no new product delivered in the Submarket since before 2009.

Graph 2-32: Comparison of Average Rent/Per Sq. Ft by Decade Completed, 2015



Industrial Profile

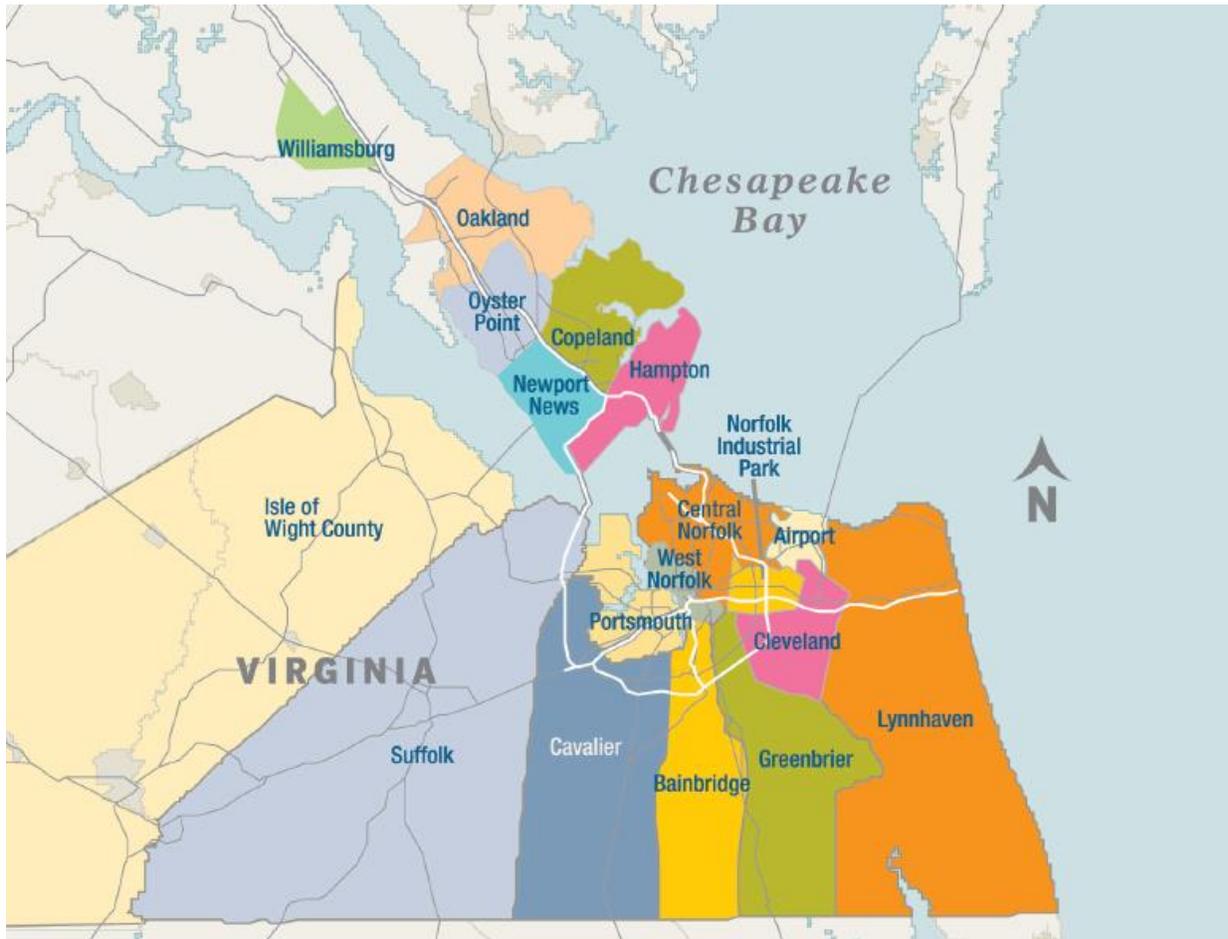
Industrial data was provided by the 2015 Hampton Roads Real Estate Market Review, distributed by Old Dominion University. The data was compiled based on a survey of office and warehouse facilities 5,000 square feet or larger. Both owner-occupied and leased properties are included. The data set divides the Virginia Beach market into 16 separate industrial submarkets.

There is no industrial performance data available specifically for Currituck County. This analysis focuses on the Greenbrier Submarket (demonstrated in **Figure 2-10**). This Submarket was selected because it most closely aligns with the Moyock area of Currituck County. It includes the VA/NC-168 corridor, which connects Moyock to the Port of Virginia, Norfolk, and Chesapeake.

This section presents industrial performance measure trends including net absorption, vacancy and average rent per square foot. The Greenbrier Submarket has been compared to the larger region. Additionally, a brief overview of the CenterPoint Intermodal Center has been included, representing one of the most competitive and active industrial developments in the region.



Figure 2-10: Old Dominion University Industrial Submarkets, 2015



VIRGINIA BEACH MARKET

More than 2,700 industrial buildings were surveyed, totaling 108.7 million square feet of space in the Virginia Beach market area. As shown in **Graph 2-33**, the market absorbed 3.9 million square feet of industrial space over the last five years. Strong net absorption, particularly in 2013, resulted in a declining vacancy rate which reached 9.3 percent in 2014. It should be noted that between 2013 and 2014, the vacancy rate only declined by 0.6 percent, representing weak leasing activity and limited new development.

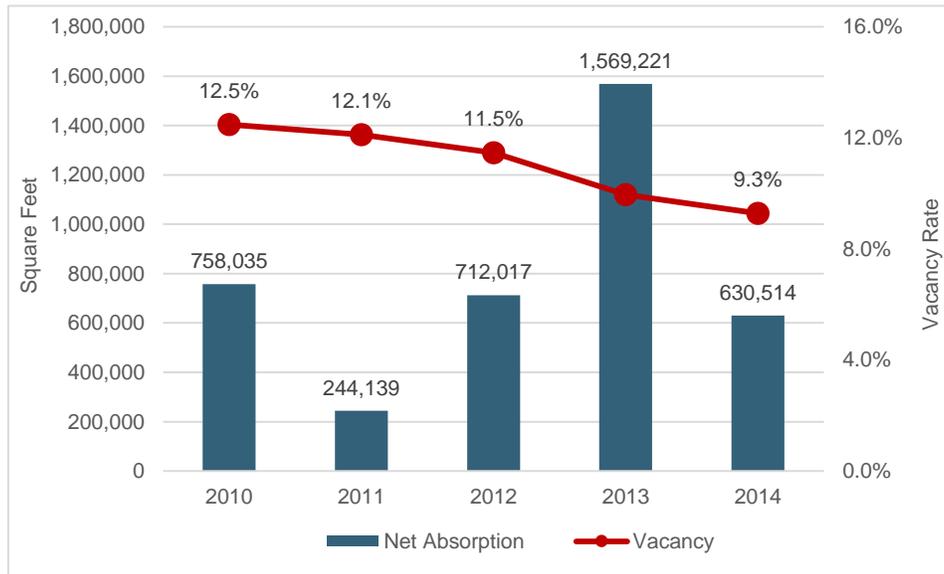
The Virginia Beach market has had six new building constructions since 2010, totaling almost 1.7 million square feet. Three of the more recent announcements in the market that are well underway include a 357,000-square-foot space for Friant Furniture in Suffolk, the 190,000-square-foot Federal Express building on the Peninsula, and Oceaneering International's 150,000-square-foot building in Greenbrier.



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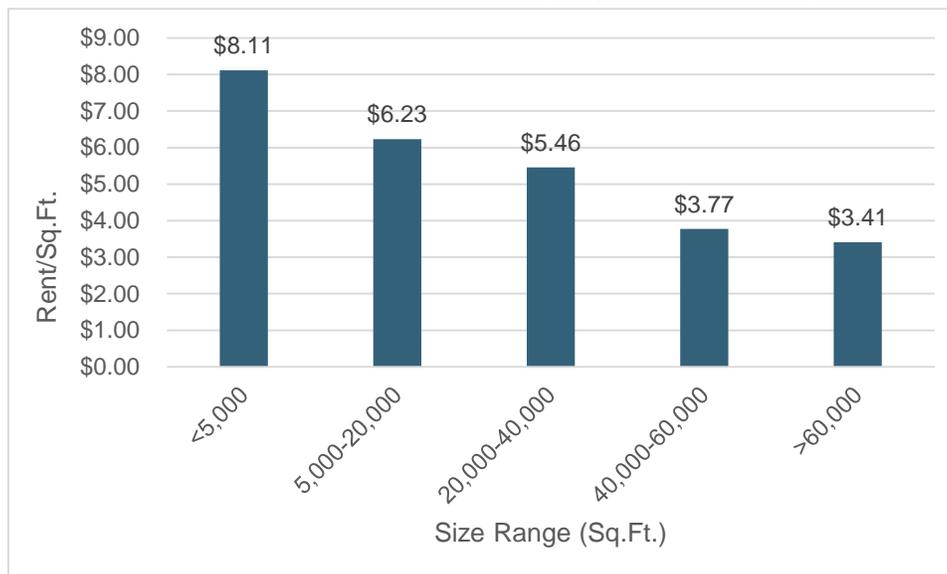
Chapter 2: Demographic and Economic Data Review

Graph 2-33: Industrial Market Performance, Virginia Beach Market, 2010-2014



Average lease rates for industrial buildings vary significantly based on the size of the space. According to the Old Dominion study, many submarkets are experiencing shortages in quality small space. The majority of the industrial companies in the market are looking for 10,000 to 30,000 square feet. As shown in **Graph 2-34**, industrial spaces less than 5,000 square feet in size have an average lease rate of \$8.11 per square foot. Larger spaces with more than 40,000 square feet, typically lease for less than \$4.00.

Graph 2-34: Rent/Per Sq. Ft. by Size of Space, Virginia Beach Market, 2010-2014



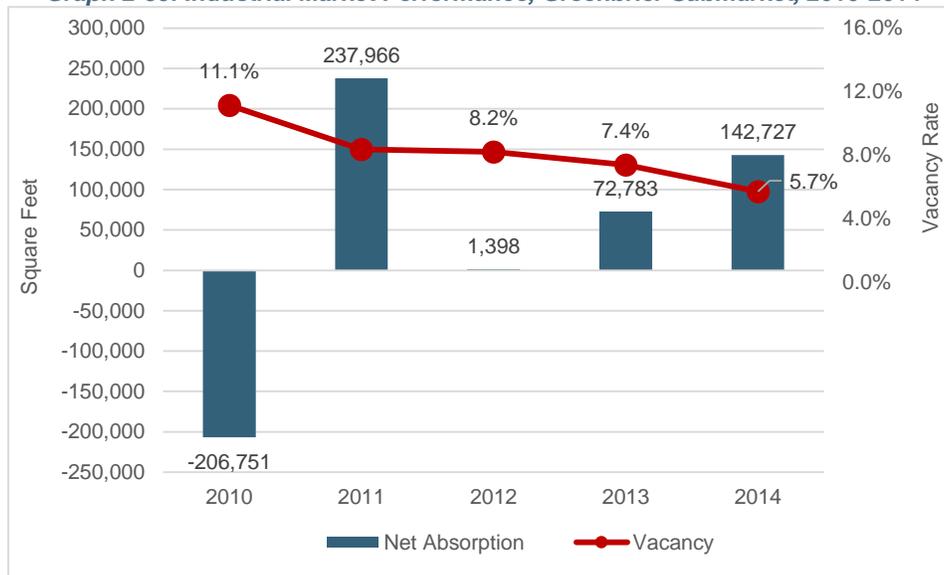
Typically Flex, Sales, and Service spaces achieve the highest lease rates at \$8.00 to \$10.00 per square foot on average. General industrial space typically falls between \$5.00 and \$7.00 per square foot, while warehouse and distribution spaces achieve \$2.00 to \$4.00 on average.



GREENBRIER SUBMARKET

The Greenbrier Submarket has over 8.8 million square feet of industrial space, the fourth largest inventory in the region. As shown in **Graph 2-35**, the submarket has a five year net absorption total of nearly 250,000 square feet, including one year of negative net absorption in 2010 (-206,751 square feet). Increased net absorption in the last two years has resulted in a declining vacancy rate. The industrial vacancy rate fell by 170 basis points in one year, from 7.4 percent in 2013 to 5.7 percent in 2014. Comparatively, the Greenbrier Submarket has one of the lowest vacancy rates in the region, falling just behind Oyster Point (2.69 percent vacancy) and the City of Suffolk (5.44 percent vacancy).

Graph 2-35: Industrial Market Performance, Greenbrier Submarket, 2010-2014



According to the Old Dominion study, the Greenbrier Submarket represents a well-balanced supply, coupled with a nearby mixture of uses, including housing, office, and retail development. Measured growth and stability is expected to continue in this Submarket through 2015.

CENTERPOINT INTERMODAL CENTER

The Centerpoint Intermodal Center in Suffolk (**Figure 2-11**) represents one of the most active industrial parks in the region, attracting three new tenants in build-to-suit buildings since 2011. CenterPoint has multiple sites and building pads available. The property is zoned with a mixture of M-1 Light Industrial and M-2 Heavy Industrial. CenterPoint currently has three tenants, all operating distribution centers.

When complete, the park could contain approximately five million square feet of industrial and distribution space. CenterPoint is home to a 336,000-square-foot distribution center for Ace Hardware and NEXCOM's 350,000-square-foot center, both built in 2012. A third building for Friant Furniture is currently under construction, containing 357,000 square feet. Friant's building is expected to be complete by June 2016.

Figure 2-11: Centerpoint Intermodal Center, Suffolk, VA



OTHER INDUSTRIAL CONSIDERATIONS

The City of Chesapeake has started construction on a new industrial park on 100 acres north of I-64 at Greenbrier. The **Greenbrier Industrial Park** was formerly owned by the State, and hosts a new 154,000-square-foot build-to-suite facility for Oceaneering. The Oceaneering facility, built by Armada Hoffer Properties was estimated to cost \$25 million, and will create approximately 70 new jobs. The 70 new employees would join the current Chesapeake Oceaneering workforce of approximately 460 people. The Virginia Economic Development Partnership and the Chesapeake Department of Economic Development authorized \$2.2 million in state and city grants, beating out North Carolina for the project.

In addition to the Greenbrier Industrial park, the City of Chesapeake is considering the creation of a mega-site on 4,000 acres known as the **Frank T. Williams property**. The City of Chesapeake is seeking to get the property designated as a mega-site. For this designation, the property must have the potential to bring in more than 400 jobs and a capital investment of at least \$250 million. The site must be undeveloped, have no environmental hurdles, and infrastructure in place. Virginia has less than five certified mega-sites. The Williams property would have to be rezoned, and it lacks utility infrastructure.

Determining the potential impact of the Frank T. Williams property on the Moyock Mega-Site is challenging considering the uncertainty of the development. Certainly, if the vision for the property as a mega-site is realized, it would create additional competition in the region. However, the issue of provision of utilities is a major barrier to the ability to market this property as a mega-site. Given access to already existing utility infrastructure, the Moyock Mega-Site is currently in a better position to be market ready before the Frank T. Williams site.



Chapter Overview

Due to the unique nature of the Moyock site, six competitive developments were profiled to investigate mixture of uses for similarly sized properties, development cost, and level of public investment. A mixture of mixed-use, single-use, and under development projects have been profiled in Virginia and North Carolina. As available, the competitive analysis highlights:

- Location and size
- Transportation access
- Current occupancy and tenant mix
- Absorption patterns for similar properties
- Total employment at the site
- Total cost of the development
- Analysis of public participation of the site

Comparable Mixed-Use Developments

GREENBRIER, CHESAPEAKE, VA

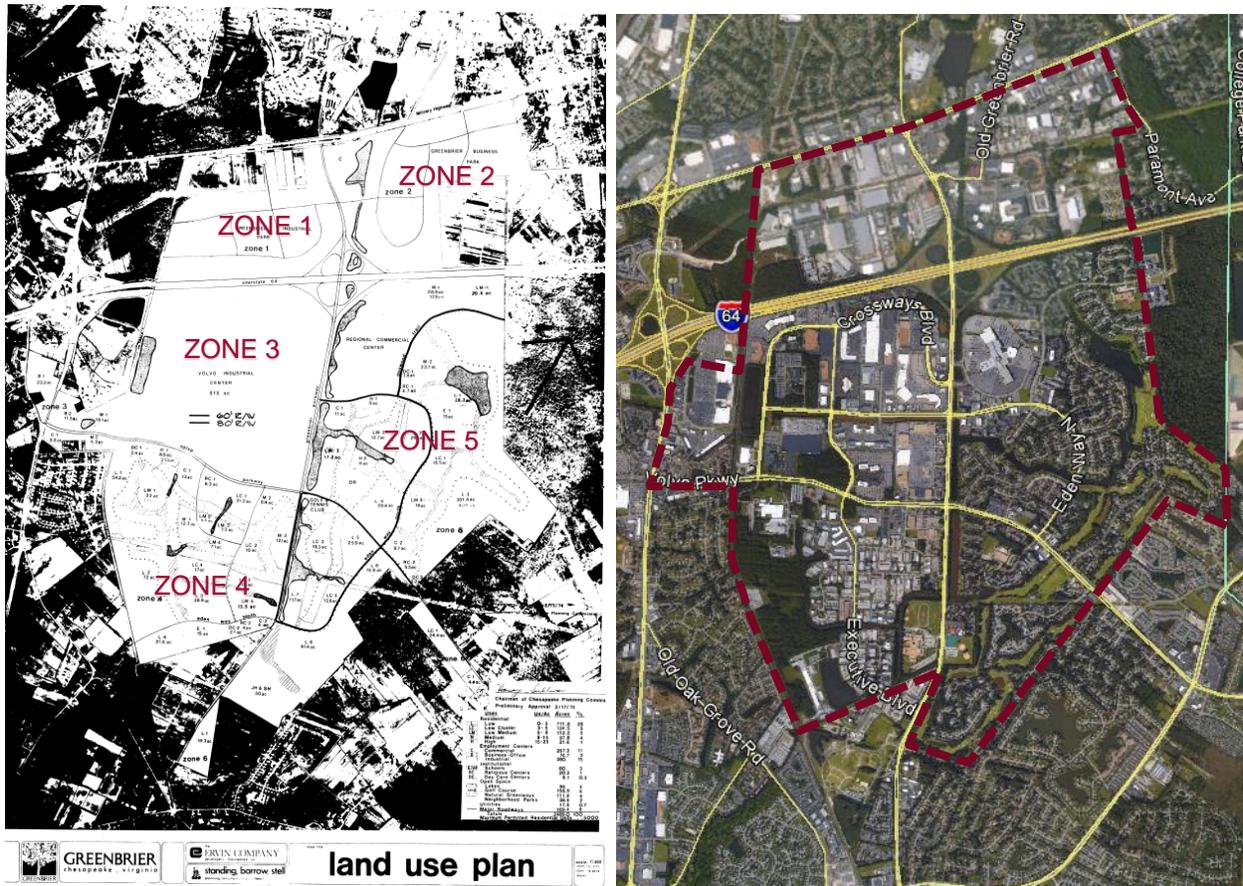
Greenbrier is located approximately 30 minutes north of the Moyock Mega-Site in the City of Chesapeake, VA. The property is in close proximity to I-64, I-264, and I-464. Today, it is the largest business district and mixed-use development in the Virginia Beach MSA, with more than 19 million square feet of commercial space and 58,000 daytime employees. The Greenbrier area of Chesapeake is home to several corporate headquarters including Cox Communications, QVC, HSBC, MCI, EDS, Canon, Mitsubishi, and Dollar Trees Stores.

When conceived, the Greenbrier development was planned to contain approximately 2,500 acres with a mix of employment, retail, institutional, and residential uses. The Greenbrier property was owned by a single owner, and prior to development, was being utilized as an agricultural nursery. All sewer, water drainage, and other infrastructure improvements were installed privately; no public incentives were initially involved in the development. The property mix for the development of Greenbrier, based on the original land use plan, was as follows:

- 1,068 acres of residential (up to 6,000 units)
- 721 acres of non-residential
 - Commercial – 267 acres
 - Business/Office – 75 acres
 - Industrial – 380 acres
- 108 acres of Institutional
 - Schools – 80 acres
 - Religious Centers – 20 acres
 - Day Care Centers – 8 acres
- 591 acres of open space

The initial boundary of the Greenbrier area was Highway 13, or the Northern Military Highway, to the north, the Greenbrier Country Club to the east, the Norfolk Southern railroad to the west, and the Chesapeake City Park to the south. As shown on **Figure 3-1**, approximately 515 acres of Zone 3 was the planned for the Volvo Industrial Center. Zone 4 was planned exclusively for residential land uses. Zone 5 was anchored by a planned regional commercial center (today represented by the Greenbrier Mall).

Figure 3-1: Greenbrier Land Use Plan and Current Aerial Photograph, 2015



In 2004, the Chesapeake City Council approved the formation of a Tax Increment Financing (TIF) District in the Greenbrier area. The Greenbrier TIF District was created to improve road and pedestrian connections, increase pedestrian safety, assist with the construction of public parking structures, improve the Chesapeake City Park, and create a public transportation system. In addition, the TIF is intended to support significant renovations to the Chesapeake Conference Center. During the 2015-2016 fiscal year, the City will share approximately \$2 million in TIF revenue with Chesapeake Public Schools, with one-half designated to operations. To date, revenue generated through the TIF District has been used to extend multi-use pathways, improve lighting in and around Chesapeake City Park, enhance the amphitheater, and construct roadway improvements.



Greenbrier Industrial Overview

According to Old Dominion University's Hampton Roads Real Estate Market Review, the 8.8 million square feet of industrial space in the Greenbrier area had an annual average vacancy rate of 5.7 percent in 2014. Vacancy declined from a peak of 11.1 percent in 2010, representing an improvement of 540 basis points over four years. The Greenbrier area had the third lowest vacancy rate in the Virginia Beach market and has demonstrated positive annual net absorption since 2011.

Greenbrier Office Overview

The Greenbrier area had 3.2 million square feet of Class A and Class B office space at year-end 2014, making it the second largest submarket in the region, behind downtown Norfolk. Class A office space in Greenbrier averaged \$19.29 per square foot, approximately 10 percent lower than \$21.36 for the larger Virginia Beach market. Class A office space in Greenbrier had a reported vacancy rate of 13.2 percent, while Class B space was 11.2 percent vacant.

Greenbrier Retail Overview

The 4.1 million square feet of multi-tenant retail space in the Greenbrier area had a vacancy rate of 5.7 percent and rent averaged \$20.00 per square foot in 2014. Average lease rates for retail space in Greenbrier were 18.2 percent higher than the aggregate market average. Greenbrier Mall has a total square footage of 900,000 square feet and is located at 1401 Greenbrier Parkway. CBL & Associates currently owns, manages, and leases the Mall, which is anchored by Macy's, Dillard's, Sears, and JC Penny. In addition to department stores, the mall and surrounding area hosts several restaurants, Olive Garden, Panera Bread, Chipotle, Cracker Barrel, and Chick-fil-A. On the west side of Greenbrier Parkway, opposite of Greenbrier Mall, is Crossways Shopping Center, which is anchored by Marshalls, TJ Maxx, DSW Warehouse, Ross, Ulta, and Michael's.

HARBOUR VIEW, SUFFOLK, VA

The Harbour View development is located in the northwest quadrant of the I-664/U.S. Route 17/Western Freeway interchange approximately 15 miles northeast of downtown Suffolk. The development is bounded on the north and west by the Nansemond River. I-664, which runs along more than 1.5 miles of the development's eastern edge provides access between Suffolk, VA and points south to Chesapeake, VA and north to Hampton, VA and Newport News, VA. Primary access points for the development include the College Drive interchange on I-664, Hampton Roads Parkway, and Harbour View Boulevard off of U.S. Route 17 (Bridge Road). Prior to development, the area was mostly farmland.

Harbour View represents a mixture of uses, including single- and multi-family residential, retail, office, light industrial, and institutional. The development was initiated in 2000 by the Riverfront at Harbour View, a waterfront residential development including the Riverfront Golf Club. The highly-amenitized community was developed by East-West Communities, and was the catalyst for completion of Harbour View Boulevard. The development offers a mixture of residential product types, including apartments, condominiums, townhouses, and executive housing. Largely complete, Riverfront offers more than 1,000 residential units.

Although residential uses were the leading development sector for Harbour View, employment-based uses were quickly attracted to the area. Office and industrial uses are concentrated in the northern portion of the site, capitalizing on access to I-664 from College Drive. Office and industrial parks on the property include:



Bridgeway Business Center currently contains one 700,000-square-foot building, with expansion room for another 400,000 square feet. This employment concentration has frontage on the Nansemond River. The anchor tenant is American Systems Engineering Corporation, a full-servicer supplier to the Navy.

Bridgeway Commerce Park includes three buildings on the east side of Harbour View Boulevard with a combined 424,000 square feet of light industrial and flex space completed between 2005 and 2012. Additional office and flex industrial space is located on the west side of Harbour View Boulevard, across from Lockheed Martin.

The Lockheed Martin Center for Innovation is located in the southwest quadrant of the I-664 and College Drive interchange. This 50,000-square-foot laboratory focuses on research and development programs and infrastructure for the security and aerospace company.

Although only partially developed, Harbour View was envisioned to have a highly integrated, mixed-use town center component between U.S. Route 17 (Bridge Road) and Hampton Roads Parkway. Just south of Hampton Roads Parkway a Harris Teeter shopping center and a Regal Cinema has been developed, as well as supplemental in-line and out parcel retail spaces. Prior to the Recession, plans for the town center component included 1,200 residential units, 500,000 square feet of office, 300,000 square feet of retail, and 364 hotel rooms. Plans have been recently downscaled to 320 apartments, 280,000 square feet of office, 100,000 square feet of retail, and 120 hotel rooms. The Meridian Harbourview apartments were recently completed and represent luxury produce with pedestrian access to nearby retail services and jobs.

In 2011, Suffolk commissioned an Urban Land Institute (ULI) Study for the northern-most portion of the development, in the northwest quadrant of I-644 and College Drive. Nearly 90 percent of the 450 acres at the base of the Monitor-Merrimac Memorial Bridge-Tunnel is owned by Tidewater Community College.

Tidewater Community College originally had plans for expansion on the property, but after opening a new facility in Portsmouth, VA, development of the property became a top priority. The remaining land is owned by the City of Suffolk.

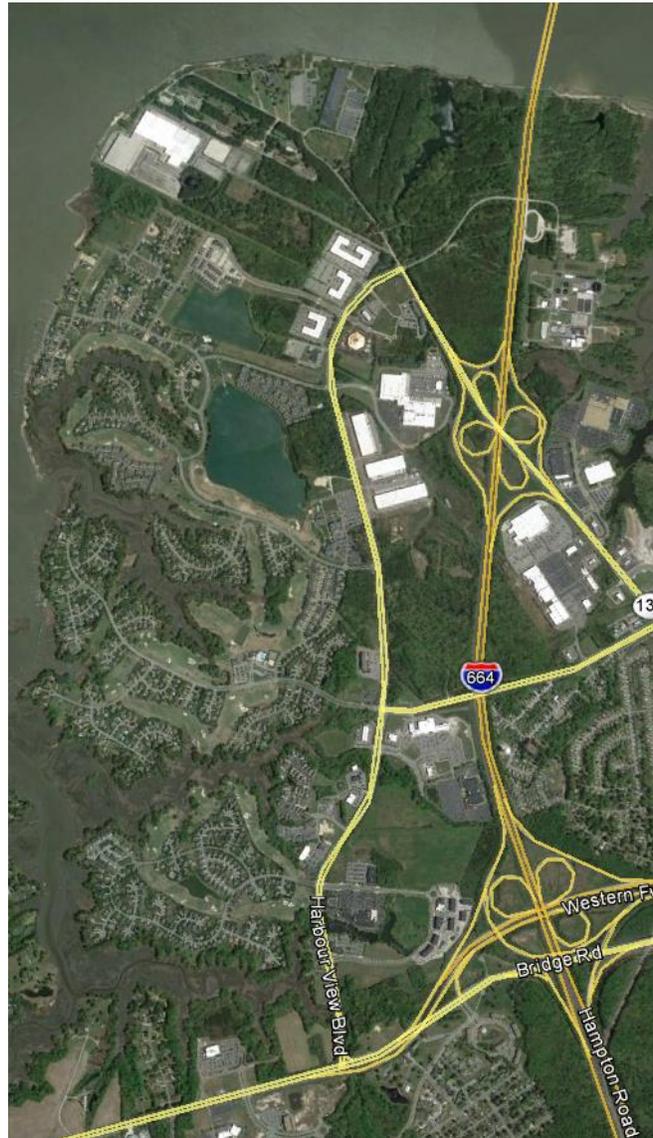


Figure 3-2: Harbour View Aerial Photograph, 2015

The vision laid out for the property focuses on a flexible mixture of uses that would be compatible with the key attributes of the site (central location, gateway to Norfolk and Suffolk, prominent river access). Flexibility in the development program is key, as the property would likely build-out over a number of years. Targeted uses include housing, retail, employment, civic entities, and recreation and greenspace. Key recommendations for the mixed-use vision, including the following action items:

- Brand the site
- Create a large-scale, mixed-use redevelopment program that offers flexibility
- Identify and prioritize improvements that would fall within the ‘public realm’
- Prepare the City of Suffolk’s land as a shovel-ready development site
- Draft an operating agreement, allowing the sites to be developed as if under one ownership
- Be patient

Figure 3-3: Harbour View Mixed-Use Development Site Alternative #2, 2011





ROCK CREEK CENTER, GUILFORD COUNTY, NC

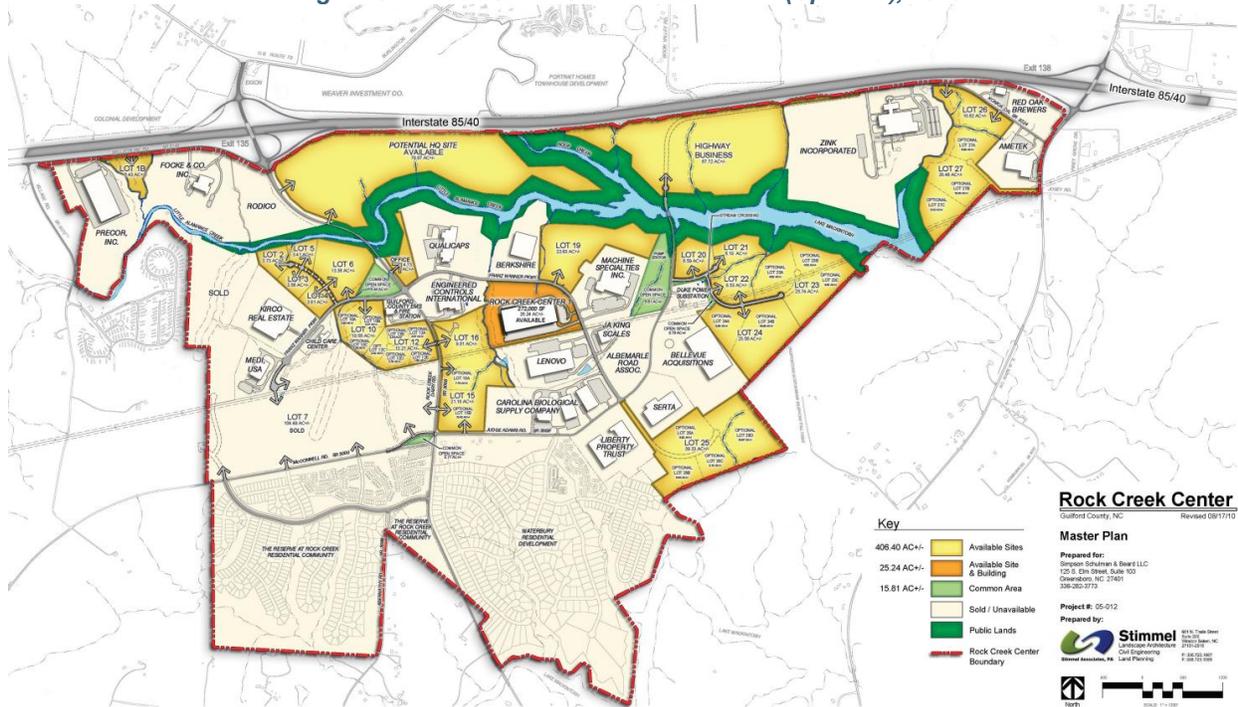
Rock Creek Center is a 1,400-acre mixed-use industrial park in the Piedmont-Triad region of North Carolina. Located in Guilford County, Rock Creek is strategically situated 25 minutes from the City of Greensboro with direct access to I-40 via exits 135 and 138. The development has 2.5 miles of interstate frontage, with the main entrance located at the intersection of I-40 and Rock Creek Dairy Road. It is just 20 miles from two international airports, the Piedmont Triad International Airport (GSO in Greensboro) and the Raleigh Durham International Airport.

Rock Creek was initially conceptualized in 1982 by the City Pension Fund for Firefighters and Police Officers of Tampa, Florida. The 1,400-acre property was a former dairy farm. Approximately 400 acres to the north of the Interstate was set aside for residential and retail development. To date two residential subdivisions (Stoney Creek Golf Community and Waterbury) with a mixture of single-family detached, townhouses, and apartments have been completed, as well as a variety of highway-oriented retail uses. Additional development capacity remains on the northern side of I-40 with a focus on retail and higher-density residential uses.

In 2005, Rock Creek was purchased by Schulman & Beard Commercial Real Estate and underwent revised comprehensive master planning to develop 680 acres south of I-40 into an industrial park. Since then, Schulman & Beard have sold or developed 250 of the 680 acres. Available sites total over 400 acres, ranging in size from four to 80 acres. Two sites targeting corporate headquarters are located with visibility from I-40.

According to the City of Greensboro, no public funding was utilized in the development of Rock Creek Center; however, economic development incentives have been provided to several companies to locate in the park.

Figure 3-4: Rock Creek Center Master Plan (Updated), 2015



Rock Creek Center offers flexible land ownership. Schulman & Beard, the developer, has sold much of the land to existing tenants or other investors. Anchor tenants include American Express, Lenovo, MSI, Qualicaps, DelMonte, Serta, Carolina Biological Supply, and medi USA. Schulman & Beard developed a speculative building and graded site, which they eventually sold to Lenovo to operate a distribution center and assembly facility for computer tablets. With an estimated 150 employees, American Express Data Center operates on 107 acres of Rock Creek out of a 600,000-square-foot building. MSI, a manufacturer of aviation parts, purchased a speculative building constructed by the original owner. Del Monte, distribution of processed foods, and other tenants operate out of warehouse owned by Liberty Property Trust.

Comparable Single-Use Development

LINCOLN COUNTY INDUSTRIAL PARK, LINCOLN COUNTY, NC

Lincoln County Industrial Park is located on Finger Mill Road in Lincoln County, North Carolina. The master-planned industrial park is 650 acres, approximately one-half mile east of US-321. The park is approximately 17 miles north of I-485; 16 miles south of I-40; 18 miles north of I-85; and 25 miles west of I-77. The project is a certified North Carolina Industrial Site and is located approximately 30 miles northeast of the Charlotte-Douglas International Airport.

In the mid-1990s, the textile industry in Lincoln County was declining, and County leaders identified the development of an industrial park as a major economic development opportunity. The developer of the \$5.8 million industrial park is The Keith Corporation. In 1999, the Keith Corporation negotiated purchase options with three landowners; Lincoln County invested in water and sewer infrastructure for the project.

Comparable Planned Developments

CHATHAM PARK, PITTSBORO, NC

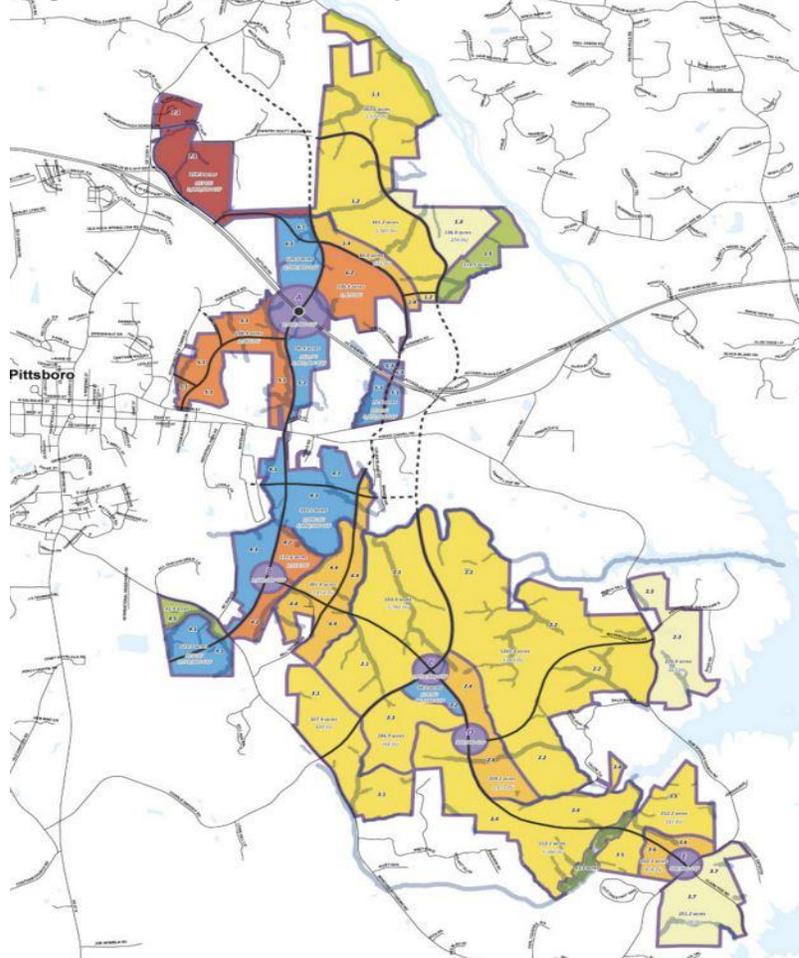
Chatham Park is a 7,022-acre planned mixed-use development at the US-64 Bypass and US-15-501. It is within a 30-minute drive from Chapel Hill, Raleigh, Durham, and the Raleigh-Durham International Airport. In a study prepared by NC State University, it was estimated that Chatham Park could generate \$154 billion in statewide spending and create 115,000 new jobs at build-out. Based on the current plan, the development could contain more than 22,000 new housing units at build-out.

Developed by Preston Development, the community is envisioned to preserve open space, create parks, and establish village centers as focal points for work, entertainment, shopping, dining and recreation. Prior to the conception of Chatham Park, the area was largely used for agriculture purposes, incorporating multiple land owners.

In 2004, Chatham Park Investors was formed. Key parcels required for the development of Chatham Park land were acquired in several segments from 2006-2008. In June 2014, Chatham Park's master plan was approved by the Town of Pittsboro. Preston Development broke ground on a 25,000-square-foot medical office building for UNC Health Care Specialists in August 2014. Preston Development is currently working with the Town of Pittsboro to prepare more detailed, small area plans over the next six to 12 months to guide future development.

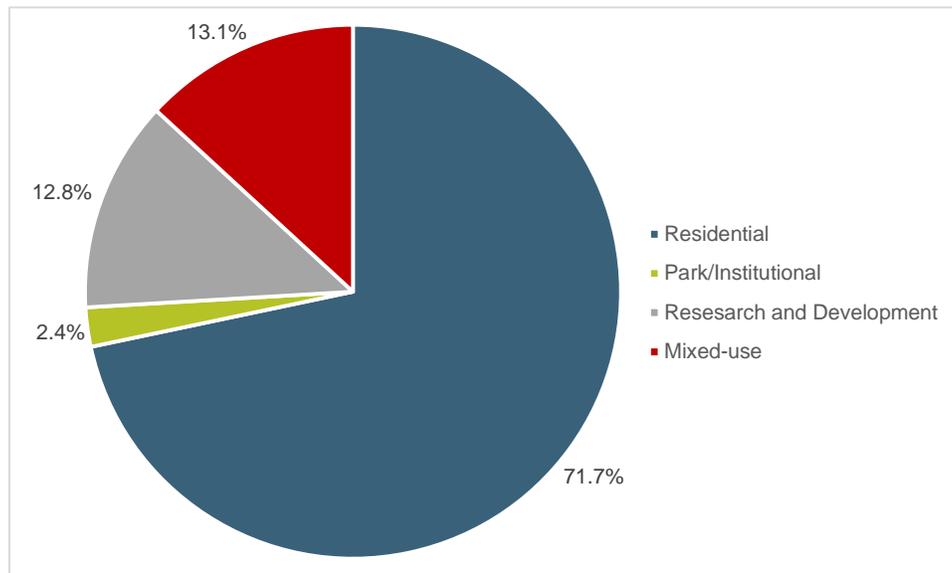
The overall development phasing is divided into 27 Sections and five Activity Centers. Chatham Park is planned for 22,000 dwelling units and 22 million square feet of commercial space. Build-out of phased development could last 35 years. Public amenities at Chatham Park include 50 miles of walking and biking trails, open space, and public activity centers. The land use mix at Chatham Park, as shown in **Graph 3-1**, is envisioned to be 71.7 percent residential, 2.4 percent park and institutional, 12.8 percent research and development, and 13.1 percent mixed-use at full build-out.

Figure 3-6: Chatham Park Conceptual Master Plan, 2015





Graph 3-1: Planned Land Use Mix, Chatham Park, 2015



Located on the north side of US-64, Phase I or the “North Village,” is expected to be completed in the next 10-15 years. Phase II on the south side of US-64 could take 15-20 years after the completion of Phase I. Phase I has a truly mixed-use focus, including the 25,000-square-foot UNC hospital medical office building. Residential lots in this phase are being sold to builders with expected completion of single-family and multi-family lots in 2018. Retail is also expected to develop within the next two years. Chatham Park’s North Village area has attracted a private school, which is scheduled to open in fall 2017.

One of the most recent development announcements within Chatham Park is The Chatham Park Solar Farm, planned by Strata Solar, LLC. This facility is approved for 178 acres, making it one of the largest solar farms in North Carolina.

KINGSLEY PARK NORTH, FORT MILL, SC

Clear Springs Development Company owns approximately 630 acres in the northeast quadrant of I-77 and SC-160 in Fort Mill, SC, within close proximity to the 2,300 acre Anne Springs Close Greenway. The site, known as Kingsley Park North, is master planned to contain a mix of office, retail, hotel, and residential uses. Kingsley Park North is part of the Close family’s long-term plan to direct the development and use of 7,000 acres of family land in Fort Mill. According to the plan, Kingsley could contain up to 1.2 million square feet of office space, 120,000 square feet of restaurants and retail, 2 hotels (100–120 rooms each), 1,025 single- and multi-family residential units.

Two major tenants have committed to locating in Kingsley: LPL Financial and The Lash Group. Combined, it is estimated that these two companies will bring 5,400 jobs to Kingsley.

The Lash Group, a healthcare consulting firm, is investing approximately \$90 million to construct a new headquarters in Kingsley Park North. The group will initially employ about 1,200 in Fort Mill, with potential to expand to 2,400 jobs. Clear Springs and Childress Klein will develop 16-acres for a 250,000 square foot five-story building for The Lash Group, with an expected completion date of March 2016.

LPL Financial Carolinas is investing at least \$150 million in Kingsley Park North for its regional headquarter site. The project is a 450,000 square foot regional headquarters, with room for an additional 150,000 square feet. The company plans to relocate 1,000 jobs to Fort Mill from its Charlotte facility, with potential to expand to 3,000 employees. Childress and Klein will develop the 25 acre site and broke ground on the new facility in February 2015, with expected completion before year-end 2016.

In addition to LPL and The Lash Group developments, a 125-room Courtyard by Marriott was recently announced, with an estimated opening date in third-quarter 2016. The hotel will include a 4,000-square-foot ballroom. Concord Hospitality Enterprises Co. and Clear Springs will team up to develop the hotel site.

York County and South Carolina have offered incentives that range from site preparation to rebates of employees' state income tax withholdings to Lash and LPL, which could amount to approximately \$107 million, \$65 million for LPL Financial and \$42 million for The Lash Group.



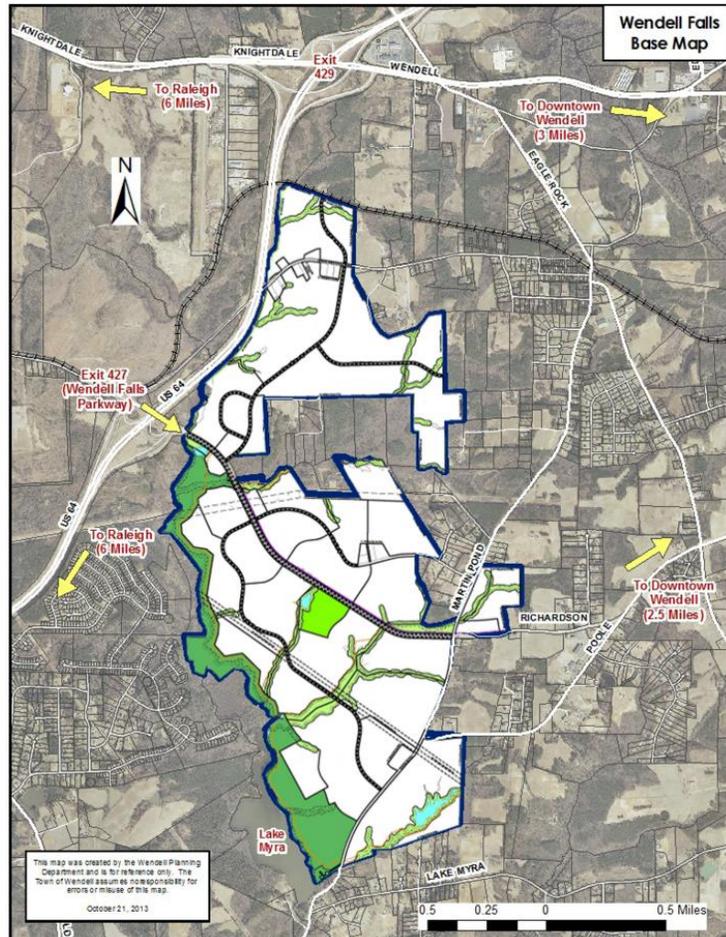
Figure 3-7: Kingsley - Conceptual Master Plan

WENDELL FALLS, WAKE COUNTY, NC

Wendell Falls is a 1,100 acre project located at US-64 (recently designated Future I-495) and Wendell Falls Parkway. It is approximately a 20-minute drive from Raleigh along US-64, with direct access to I-540, I-440, and I-40. The development is planned to include a mix of residential, retail, and employment uses. At full build-out it will have 4,000 residential units and approximately 2.0 million square feet of commercial space, along with open space and other public amenities.

The development was originally under Mercury Development in 2006. After the development fell through, due in part to timing from the 2007–2009 recession, a portion of the land was sold to Wake County for an elementary school facility and nature parks and greenways; Wells Fargo Bank acquired the rest through foreclosure proceedings. In 2013, Newland bought the property for \$34 million and broke ground on Wendell Falls. Wendell Falls received no economic development incentives from the town of Wendell. The development is zoned under a Planned Unit Development (PUD). Newland revised the original PUD agreement to increase the density. Newland expects the total build-out of the development could take more than ten years. The 1,400 multi-family units approved for the site is 35 percent of the total residential units. There are five zones identified as part of the Wendell Falls development:

Figure 3-8: Wendell Falls Base Map



1. Residential

- Approximately 400 single-family lots are currently in development priced between \$190,000 and \$400,000. An amenity center, called The Farmhouse, a sales center, and café have all been completed. Wendell Falls Parkway, a thoroughfare with an interchange that bisects the development located on the western boundary directly off of I-495, was completed in 2013. Seven builders have been selected to build the single-family units. To date, 80 homes are complete; 43 of those homes have been sold.

2. Industrial

- The industrial zone of the site is planned for the land parcels neighboring the railroad tracks on the northern portion of the property with direct access to US-64.



3. Highway and Neighborhood Commercial

- Newland is exploring a variety of retail options, specifically a convenience store and grocery store. In other master-planned developments led by Newland, retail has taken more than seven years to come to fruition following the completion of the first home. However, given the potential to draw from surrounding towns, it is anticipated that retail development could come to fruition sooner in Wendell Falls. The company is fielding calls from retailers interested in the property.

4. Mixed-Use

- With approximately 2.0 million square feet of commercial space planned and 35 percent of the residential designated as multi-family, Newland plans several mixed-use nodes throughout the property. Additionally, they are considering the viability of age-restricted senior product (aged +55) for the property.

In this phase of development, Newland intends to build another 2,500 units, which will involve a variety of residential uses, townhomes, apartments, condos, and mixed-use. The project involves heavy residential in the first phase of the development and will follow with commercial and industrial uses.

COMPARABLE DEVELOPMENT KEY TAKEAWAYS

The comparable developments represent a wide array of mixed-use formats in varying geographies across Virginia and North Carolina. While each development offers unique opportunities and challenges, the following summary points are important to consider when planning the Moyock Mega-Site:

Access and proximity to **major highway infrastructure** was common in all of the comparable developments. In fact, the single-use Lincoln County Industrial Park, located off US-321, is the only profiled development that does not offer direct access to a major US interstate. The Moyock Mega-Site has proximity to an improved state route highway (VA-NC-168). Additionally connectivity via the I-44 Connector would enhance the marketability of the site and increase accessibility to other markets to the west.

Many of the developments, both existing and proposed, offer a **flexible mixture of uses** attracting a variety of market segments. Existing developments that have built-out over longer periods of time, particularly Greenbrier, Harbour View, and Rock Creek, have experienced reinvention when the market dictated changes. Wendell Falls, initiated prior to the Recession, has been reimagined to capitalize on post-Recession market forces. Flexibility to respond to ever-changing market forces is vital.

For most of the comparable mixed-use developments, **residential housing** was the leading sector, creating momentum and density to drive demand for commercial real estate product. Most of the developments have a wide range of product types and tenures. Single-family detached residential at Harbour View was the first product delivered, followed by multi-family and townhouse units. Wendell Falls has been reimagined to use residential development to drive other sectors in the future.

The use of **public incentives and funding** to drive development varied widely among the comparable developments. While many of the developments relied on private investment to fund major infrastructure needs, Lincoln County Industrial Park used public money to provide utility infrastructure while the developer funded internal roadway investments.



Chapter Overview

This section provides demand forecasts by product type for the Moyock Mega-Site. It considers the site's geographic location in the region, demographic and economic trends, tourism, and real estate market performance. Residential and retail demand forecasts are based on projected new resident population, and office and industrial forecasts are based on potential future employment.

Stakeholder Feedback

In order to better understand market potential on a regional-scale, Kimley-Horn participated in stakeholder interviews with local real estate professionals. The following people were interviewed about market potential at the Moyock Mega-Site in fourth-quarter 2015:

- Ed Brooks, First Commercial
- Kathy Howard, NCEast Alliance
- Denise Roddy, Howard Hanna
- Tim Ivy, Economic Development Partnership of North Carolina
- Sam Miller, Miller Development
- CBRE
 - Lang Williams, Senior Vice President
 - Charlie Richards, Vice President
- S.L. Nusbaum
 - Tim Finn, Senior Vice President
 - Stephanie Sanker, Vice President
 - Bill Overman
 - Christopher Zarpas, Vice President
 - Tom Drew, Vice President
- Thalhimer
 - Bill Throne, First Vice President

Stakeholder feedback varied from interview to interview, even when the same industry sector or topic was addressed. A high-level review of stakeholder feedback is provided below, broken down by industry sector.

Residential. Residential feedback was largely provided by Denise Roddy, Sam Miller, and multi-family representatives of S.L. Nusbaum. From a single-family perspective, closings and price points have improved, nearing pre-Recession levels. Given the Moyock area's proximity, access to job centers in Chesapeake and Norfolk, and quality schools in Currituck County, future capture of residential demand is expected to be high. Feedback from stakeholders indicate that there is perceived demand in Moyock for multi-family residential, although barriers to development are high including density policy and difficulty in getting projects approved. Ultimately, residential is expected to be a leading real estate sector in the future.

With a growing Baby Boomer population, senior-focused residential product offering a maintenance-free lifestyle would be highly attractive in Currituck County, especially in Moyock. Senior-focused product could include market-rate, but age-restricted, multi-family, low-maintenance detached or attached single-family, or independent or assisted living facilities. Larger mixed-residential communities, such as the Sun City brand, can offer all of these product types under one braded development.



Retail. Future demand for neighborhood-serving retail is likely to be attracted to the VA/NC-168 corridor, attracting both local customers and drive-through tourist traffic. Demand for additional retail space will be positively impacted by new residential development. For example, many of the comparable developments profiled in Chapter 3 used residential as the leading sector, with non-residential uses following after momentum and residential density was established. Development of regional-focused retail, including outlet mall facilities, are unlikely given proximity to large attractors in Chesapeake and Norfolk, including the Norfolk Premium Outlets that are currently under construction.

Office. Feedback from stakeholders indicated that demand for office space is likely to be focused on smaller-scale and locally-focused professional services. Larger-scale corporate relocations will likely be focused in more urbanized areas offering employees more immediate access to retail goods and services, restaurants, and a variety of housing product and price points.

Industrial. Industrial market performance in the Virginia Beach MSA continues to be slow to recover from the impacts of the Recession. Vacancy rates are dropping incrementally, but leasing activity and gross absorption have not returned to pre-Recession levels. Noting this, significant demand for industrial development will likely be constrained in the short-term.

Port-related warehouse space has experienced an increase in demand recently. Other notable growth sectors include distribution and light manufacturing (largely focused recently in Suffolk), food-related warehousing, manufacturing, and distribution (coffee, sweet potatoes, etc.), defense, and home improvement related companies. Proximity and accessibility to the Port will remain critical in site selection attributes.

The most common theme throughout all of the stakeholder interviews highlighted the importance of shovel-ready sites. Companies looking at the Virginia Beach region are requiring occupancy within six month to one year of lease execution. Key hurdles for the VA/NC-168 corridor are likely to be:

1. Financing for site improvements and required infrastructure
2. Time to delivery for a development site
3. Availability of power to the site for manufacturing
4. Distance and access to I-85 and I-95

The region as a whole has an extremely limited supply of properties that could deliver a build-to-suit user needing a facility more than 1.0 million square feet. According to Bill Throne with Thalhimer, they were recently approached by a potential user needing 1.3 million square feet for purchase, and they could not be accommodated anywhere in the region. This could be an advantage for the Moyock Mega-Site.

Population Forecast

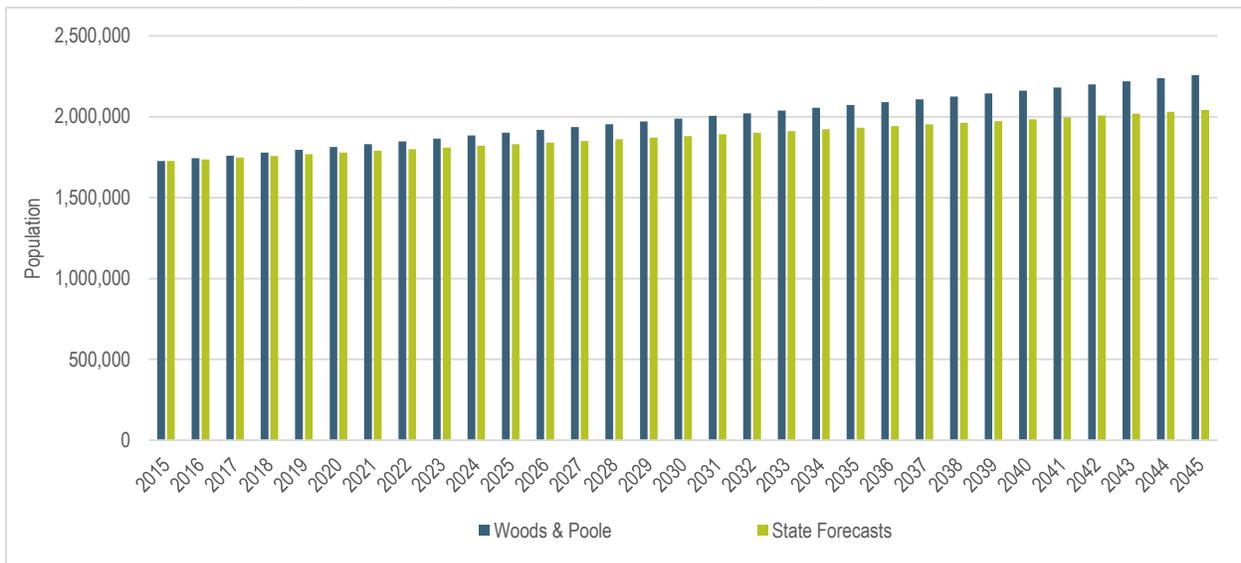
Two population growth scenarios were considered for the Virginia Beach MSA based on data provided by Woods & Poole and Virginia/North Carolina state demographers. Woods & Poole is a third-party company that provides economic and demographic databases for every county, state, and region in the United States. The starting point for the population forecasts are 2015 population estimates, provided by ESRI. The forecast horizon represents a 30-year period, ending in 2045.



VIRGINIA BEACH-NORFOLK-NEWPORT NEWS MSA

Based on data obtained by ESRI, the Virginia Beach MSA had over 1.7 million residents in 2015 (**Graph 4-1**). The scenario based on the Virginia/North Carolina state demographers represented a more conservative projection, reaching a total population of approximately 2.0 million people by 2045. This equates to the addition of 316,000 people during the 30-year period. Demonstrating a more aggressive growth projection, the scenario based on Woods & Poole data forecasts a total population of more than 2.2 million by 2045, an increase of 531,300 people.

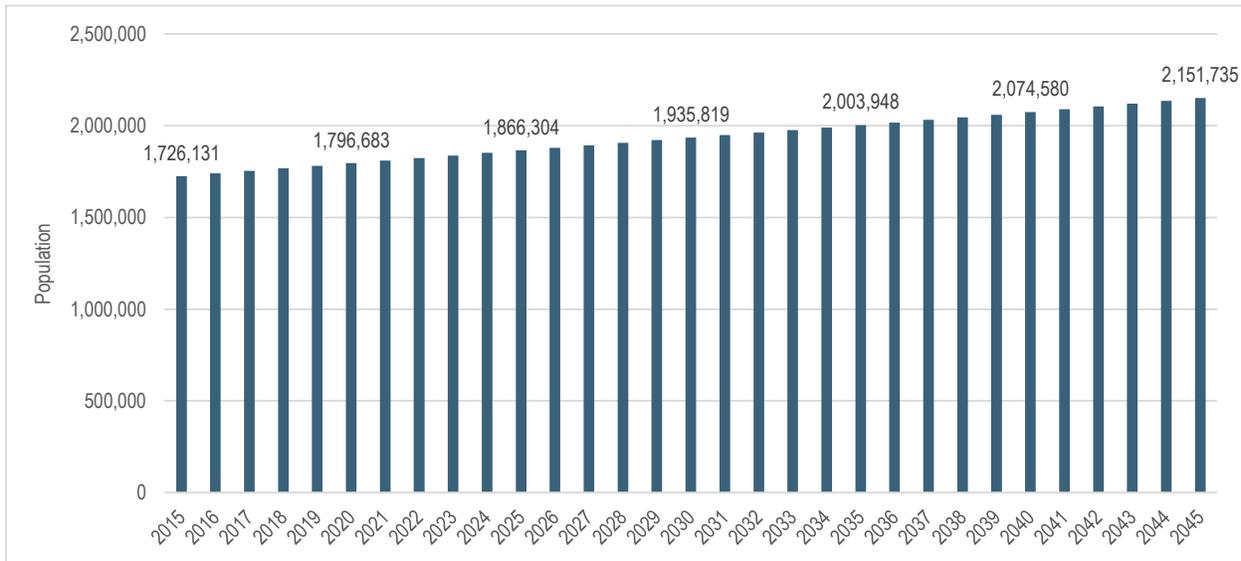
Graph 4-1: Comparison of Population Forecast Scenarios, Virginia Beach MSA, 2015-2045



The forecasts from Woods & Poole and the Virginia/North Carolina were averaged in order to prepare a final population projection for the Virginia Beach MSA. The reliance on third-party sources, Woods & Poole and the state demographers, is helpful in longer-term forecasts; the level of reliability diminishes the longer the population period. As shown in **Graph 4-2**, population in the Virginia Beach MSA is forecasted to increase from 1.7 million in 2015 to more than 2.1 million in 2045, a 24.7 percent increase over 30 years.



Graph 4-2: Population Forecast, Virginia Beach MSA, 2015-2045



James City County is expected to have the highest percentage growth between 2015 and 2045, nearly doubling in size over the 30-year period (Table 4-1). Currituck County (71.1 percent), York County (61.8 percent), and Chesapeake City (53.3 percent) are all expected to increase by more than 50 percent during the same time period. On an absolute basis, Chesapeake City, James City County, and Virginia Beach City are each expected to add more than 50,000 new residents over the next 30 years.

Table 4-1: Population Forecast by City/County, Virginia Beach MSA, 2015-2045

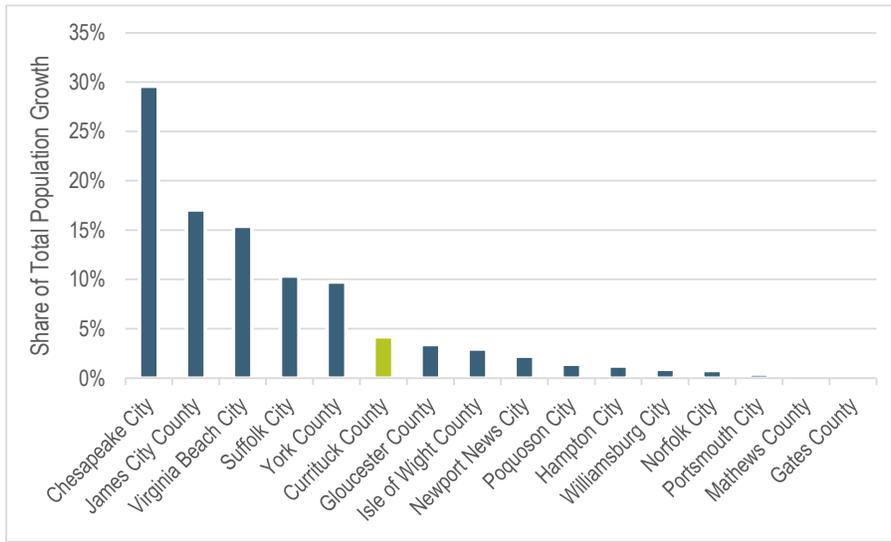
County	State	2015	2025	2035	2045	2015-2045 Δ	
						#	%
Chesapeake City	VA	236,285	278,068	318,495	362,260	125,975	53.3%
James City County	VA	72,450	95,190	118,180	145,079	72,629	100.2%
Virginia Beach City	VA	448,653	469,034	491,266	514,154	65,501	14.6%
Suffolk City	VA	88,821	103,629	117,547	132,819	43,998	49.5%
York County	VA	67,033	81,593	94,404	108,456	41,423	61.8%
Currituck County	NC	25,012	30,954	36,713	42,803	17,791	71.1%
Gloucester County	VA	38,390	43,167	47,861	52,808	14,418	37.6%
Isle of Wight County	VA	36,664	41,042	45,022	49,162	12,498	34.1%
Newport News City	VA	183,821	186,662	190,050	193,318	9,497	5.2%
Poquoson City	VA	12,230	14,511	16,416	18,265	6,035	49.3%
Hampton City	VA	137,741	138,567	140,686	142,948	5,207	3.8%
Williamsburg City	VA	14,762	16,670	17,717	18,509	3,747	25.4%
Norfolk City	VA	246,717	249,206	250,007	249,953	3,236	1.3%
Portsmouth City	VA	96,397	96,280	97,180	98,117	1,720	1.8%
Mathews County	VA	9,075	9,418	9,769	10,117	1,042	11.5%
Gates County	NC	12,080	12,312	12,636	12,969	889	7.4%
Total		1,726,131	1,866,304	2,003,948	2,151,735	425,604	24.7%

Source: Weldon Cooper Center for Public Service; North Carolina Office of State Budget and Management; ESRI; Woods & Poole; Kimley-Horn



Adding nearly 126,000 new residents through 2045, Chesapeake City is expected to capture approximately 30 percent of the total regional growth over the next 30 years (**Graph 4-3**). James City County and Virginia Beach are expected to account for 17.1 percent and 15.4 percent of the regional growth, respectively. With an estimated 17,800 new residents, Currituck County would comprise approximately 4.2 percent of the total growth through 2045.

Graph 4-3: Comparison of Share of Total Population Growth by City/County, 2015-2045

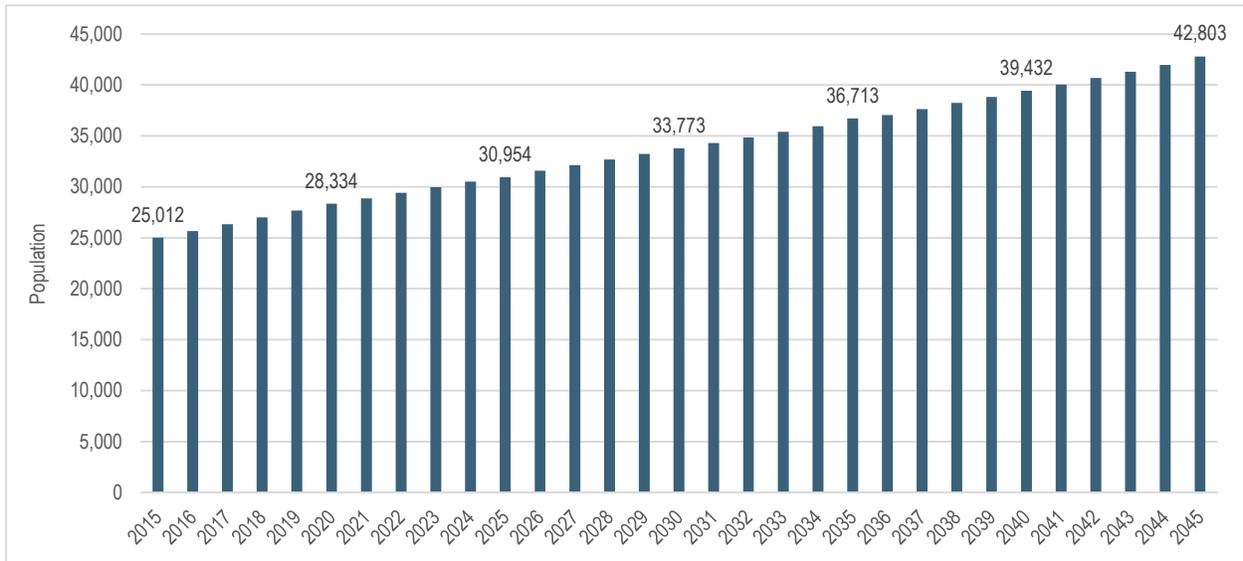


CURRITUCK COUNTY

Residents in Currituck County made up an estimated 1.4 percent of the total regional population in 2015. Currituck County forecasts are based on the overall regional forecasts presented previously. As shown in **Graph 4-4**, Currituck County is projected to have a total population of approximately 42,800 by 2045, a 71.1 percent increase from 25,000 in 2015. This forecast is reflective of recent growth trends in Currituck, making it one of the top ten fastest growing counties in the State of North Carolina. On average, this forecast equates to the addition of approximately 5,900 new people every decade. Population in Currituck between 2000 and 2010 increased by 5,400 people, consistent with the future forecast.

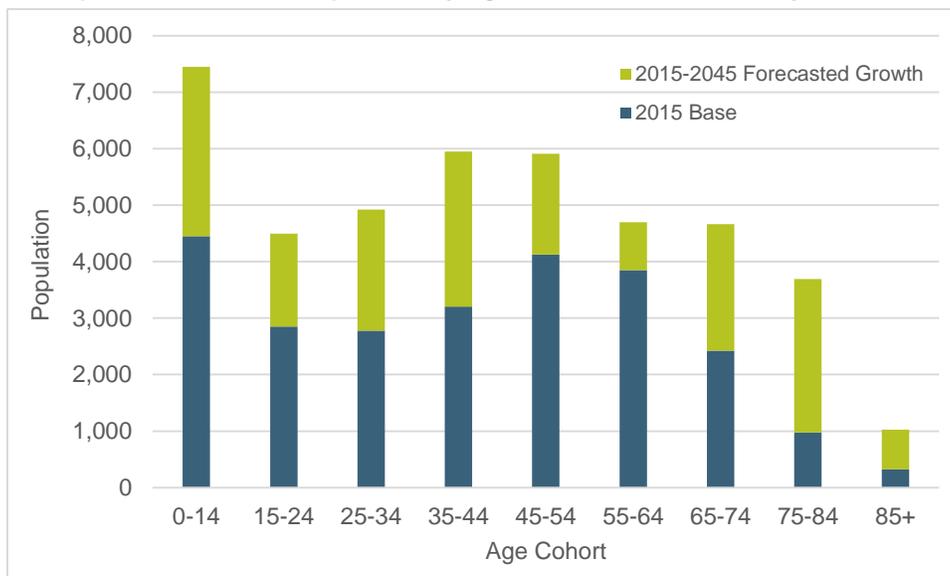


Graph 4-4: Population Forecasts, Currituck County, 2015-2045



Graph 4-5 demonstrates potential future population growth in Currituck County by age cohort. Population projections for a 30-year period are highly speculative; these breakdowns by age cohort provide a potential growth pattern and are based on data provided by Woods & Poole. Over the next 30 years, the cohorts that are expected to experience the strongest growth include school-aged children, their parents (aged roughly 35 to 44), and active adults aged 65 and older. Growth is also expected in residents between the age 25 and 34. These faster growing cohorts would demand a wide variety of housing types, including opportunities to age in place for older residents.

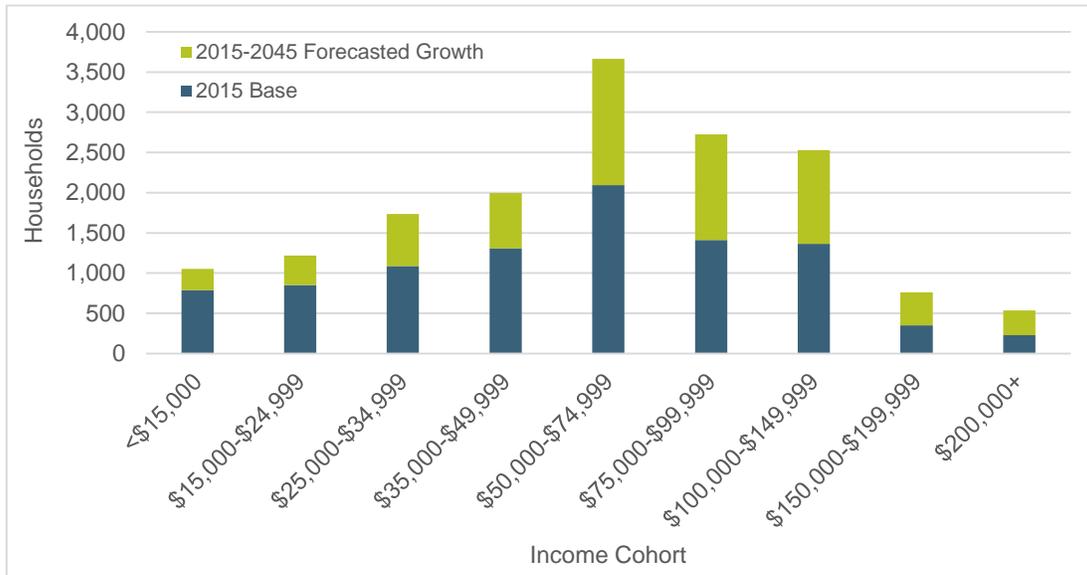
Graph 4-5: Forecast of Population by Age Cohort, Currituck County, 2015-2045





Based on forecasted population growth, the increase in households over the next 30 years was also calculated by income cohort. As shown in **Graph 4-6**, households earning between \$50,000 and \$150,000 annually are expected to experience the strongest growth over the next 30 years. While all cohorts are anticipated to increase, slower growth in low income households is largely due to nominal wage inflation.

Graph 4-6: Forecast of Households by Income Cohort, Currituck County, 2015-2045



Employment Forecast

Job growth in the Virginia Beach MSA is based on forecasts prepared Woods & Poole for each member county. Woods & Poole provides third-party employment forecasting at the county-level by industry sector.

Unlike the population forecast, separate projections are not included for Currituck County. The feasibility of future demand for office and industrial space are based on captures of the regional total. Standard forecasting sources, which rely heavily on previous trends, are unlikely to accurately reflect Currituck County’s future potential for employment growth. The captures utilized in this analysis demonstrate future potential for employment growth due to the direct connection to Chesapeake and Norfolk via VA/NC-168, as well as adjustments for the future I-44 Connector which could be completed within the 30-year forecast period.

Based on data provided by Woods & Poole, the Virginia Beach MSA could exceed 1.0 million total jobs by 2045, a 42.7 percent increase from 726,000 estimated jobs in 2015 (**Table 4-2**). With more than 162,000 total jobs, Healthcare and Social Assistance remain the largest industry sector in 2045. With the exception of the Information sector, nearly all industries in the Virginia Beach MSA are expected to experience growth over the 30-year period.



The strongest growth sectors through 2026 are forecasted to be:

- Healthcare and Social Assistance (+62,073 jobs)
- Educational Services (+52,016 jobs)
- Professional and Technical Services (+39,289 jobs)
- Retail Trade (+38,430 jobs)
- Accommodation and Food Services (+29,781 jobs)

Table 4-2: Employment Forecast, Virginia Beach MSA, 2015-2045

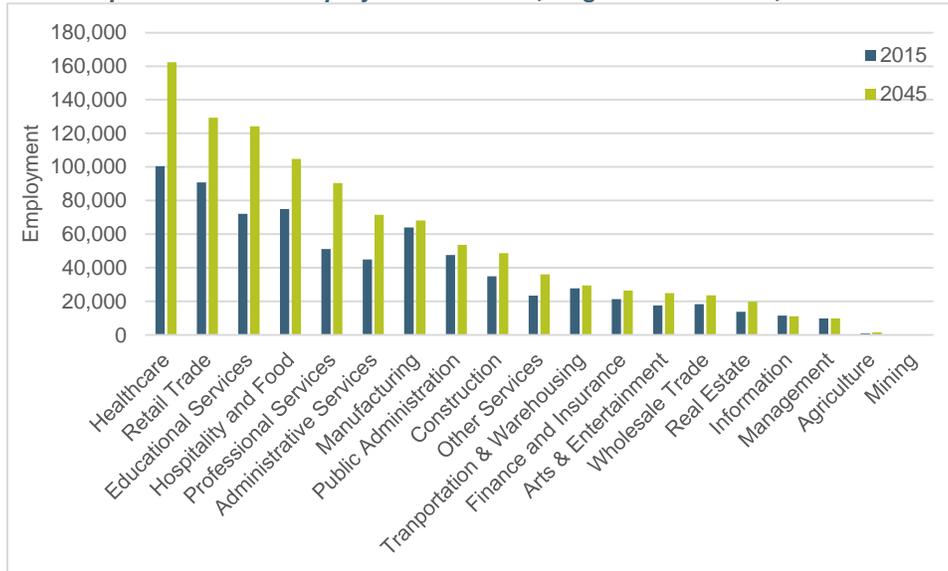
Industry	2015	2025	2035	2045	2015-2045 Δ	
					#	%
Health Care and Social Assistance	100,383	118,732	137,451	162,456	62,073	61.8%
Educational Services	72,175	82,175	101,514	124,191	52,016	72.1%
Professional and Technical Services	51,140	63,154	76,007	90,429	39,289	76.8%
Retail Trade	90,839	103,676	115,505	129,269	38,430	42.3%
Accommodation and Food Services	74,989	84,703	94,533	104,769	29,781	39.7%
Administrative and Waste Services	44,956	52,519	61,469	71,495	26,539	59.0%
Construction	34,948	39,343	43,687	48,707	13,759	39.4%
Other Services, Ex. Public Admin	23,501	27,526	31,483	36,021	12,520	53.3%
Arts, Entertainment, and Recreation	17,552	19,718	22,075	24,892	7,340	41.8%
Real Estate and Rental and Leasing	13,838	15,592	17,714	19,882	6,044	43.7%
Public Administration	47,536	49,785	51,836	53,580	6,044	12.7%
Wholesale Trade	18,283	20,023	21,861	23,733	5,450	29.8%
Finance and Insurance	21,398	23,217	24,889	26,481	5,083	23.8%
Manufacturing	64,085	65,870	67,199	68,214	4,129	6.4%
Transportation, Warehousing, and Utilities	27,855	28,740	29,211	29,459	1,604	5.8%
Agriculture, Forestry, Fishing & Hunting	1,022	1,169	1,352	1,527	504	49.3%
Management of Companies and Enterprises	9,785	9,897	9,875	9,902	116	1.2%
Mining	113	123	135	154	42	36.9%
Information	11,621	11,628	11,442	11,219	-402	-3.5%
Total	726,018	817,591	919,239	1,036,379	310,360	42.7%

Source: Virginia LMI; NCEC; Woods & Poole; Kimley-Horn

As shown in **Graph 4-7**, the strongest increases during the next 30 years in the Virginia Beach MSA are expected to be in Healthcare, Retail Trade, Educational Services, and Hospitality and Food Services. Forecasts do not include active duty military, as this industry is not captured under civilian annualized at-place of employment datasets. While some sectors are forecasted to grow slower than others, none of the industries are anticipated to demonstrate a decline during the next 30 years.



Graph 4-7: 30-Year Employment Forecast, Virginia Beach MSA, 2015-2045



Residential Demand

CURRITUCK COUNTY

Residential housing unit demand is based on the population projections presented previously in this section. As previously demonstrated, the population growth scenario forecasts approximately 17,790 new residents between 2015 and 2045, representing a 71.1 percent growth rate (Table 4-3). Based on this growth, total population in the County could increase from 25,011 people in 2015 to 42,801 people in 2045.

Table 4-3: Residential Forecast, Currituck County, 2015-2045

Measure	2015	2025	2035	2045	2015-2045 Δ	
					#	%
Population	25,010	30,950	36,710	42,800	17,790	71.1%
Households	9,470	11,680	13,850	16,210	6,740	71.2%
Housing Units	10,420	12,850	15,240	17,830	7,410	71.1%

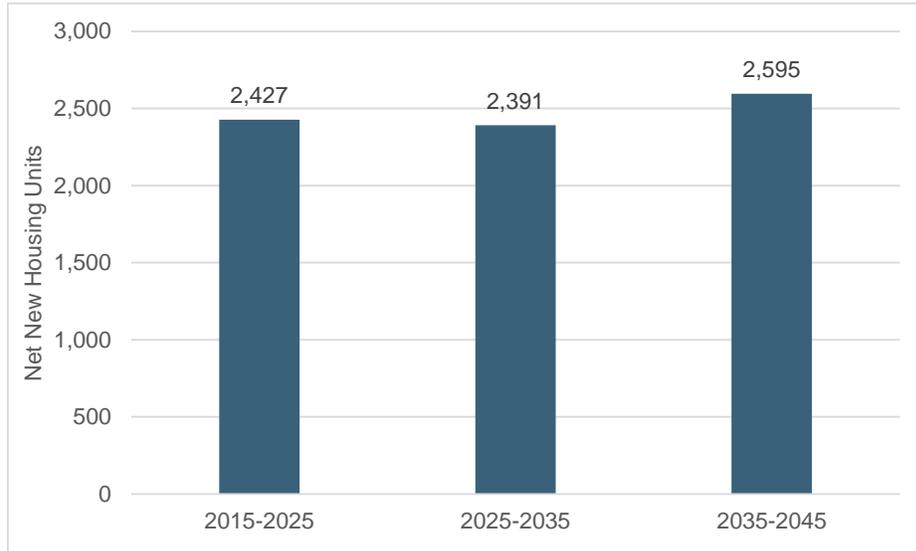
Source: Weldon Cooper Center for Public Service; North Carolina Office of State Budget and Management; ESRI; Woods & Poole; Kimley-Horn

Housing unit forecasts are based on average household sizes and a 10 percent vacancy rate. This analysis assumes that the average household size will remain relatively constant over the next thirty years at approximately 2.65 people per household. Housing unit vacancy was estimated at 10 percent, notably lower than the overall community average of 40.5 percent, driven up by seasonal households along the coast. A more finite review of Currituck County shows that Moyock Township has a significantly lower share of vacant units, making up an estimated 13.7 percent of the inventory. Moyock is far less influenced by the second home market than the coastal areas of Currituck; the forecasted vacancy rate acknowledges this trend. Based on these assumptions, Currituck County is expected to add more than 7,400 new housing units in the next 30 years.



Housing in Currituck County could increase by 71.1 percent, or 7,410 units, between 2015 and 2045. Housing unit delivery is expected to equate to between approximately 2,400 and 2,600 new units in every ten-year period through 2045 (**Graph 4-8**).

Graph 4-8: 30-Year Net New Residential Demand, Currituck County, 2015-2045



MOYOCK MEGA-SITE CAPTURE

Capture rates were applied to the housing unit delivery forecast for Currituck County in order to determine potential future demand for the Moyock Mega-Site in ten-year increments between 2015 and 2045. As shown in **Table 4-4**, the Moyock Mega-Site is expected to capture between 35 percent and 40 percent of the total Currituck County demand, largely driven by its accessibility to VA/NC-168, connecting Currituck County with jobs and retail services in Chesapeake, Norfolk, and Virginia Beach. Moyock Township, as a whole, is expected to capture a majority of the total county demand given the availability of developable land and superior quality of life measures.

Table 4-4: Residential Forecast, Moyock Mega-Site, 2015-2045

Measure	Housing Unit Growth			Total
	2015-2025	2025-2035	2035-2045	
Currituck County	2,430	2,390	2,590	7,410
Capture Rate	35%	35%	40%	
Moyock Mega-Site	851	837	1,036	2,723

Source: Kimley-Horn

Future residential demand will likely be accommodated in a variety of product types. Based on 2010-2014 American Community Survey data, more than 80 percent of the total housing stock in Currituck County is single-family detached, townhouses represent 1.2 percent, and multi-family units comprise 2.2 percent of the total. Feedback from local stakeholders indicate that there is demand in Moyock for townhouse and multi-family product. However, land-use regulatory policy would have to be reviewed in order to allow for high densities to make project financials more feasible.



Based on demographic trends and recent market performance the following break-out of the forecasted net new residential demand could be assumed for the Moyock Mega-Site:

- Single-family detached, including smaller lot cluster developments: 70-75 percent of total demand
- Single-family attached (townhouse): 10-15 percent of total demand
- Multi-family: 15-20 percent of total demand

Continued increase in population over the age of 55 will drive demand for a housing product that offers reduced cost and reduced maintenance. This age group typically seeks a maintenance-free lifestyle close to friends, family, shopping, dining, church, and cultural or recreational amenities. Senior-focused product could include market-rate, but age restricted, multi-family, low-maintenance detached or attached single-family, or independent or assisted living facilities. Because of continued national issues related to financing and liability for condominium construction, and shifting preferences toward rental housing among all age cohorts, many active lifestyle households are gravitating to apartments. Providing opportunities for residents to age in place, including housing that offers a continuum of care from independent to assisted living will be important over the next 30 years.

Retail Demand

The 2015–2045 retail demand for Currituck County was forecasted using the following method:

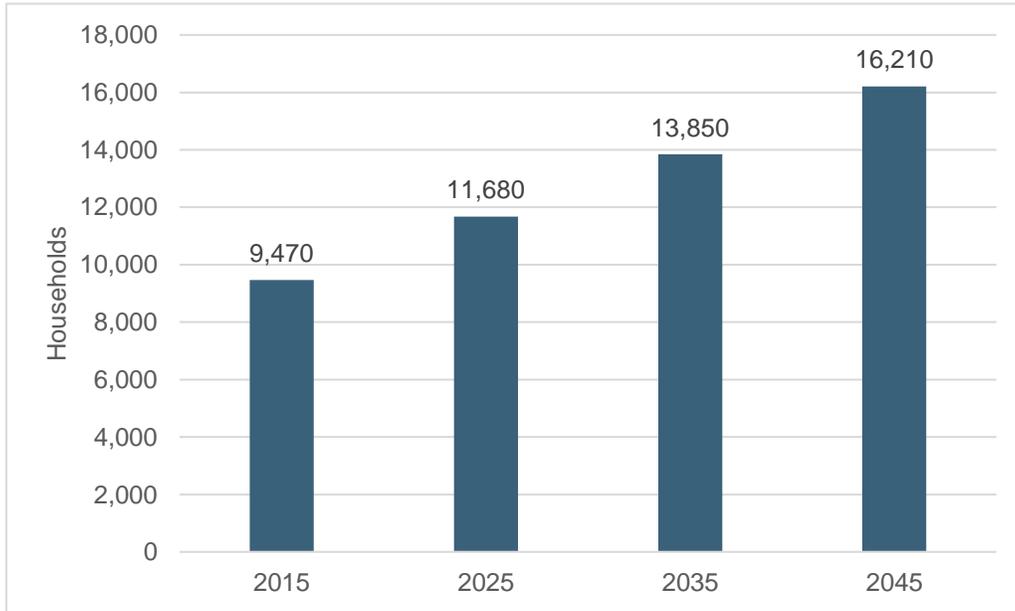
1. Calculating the County's total household income in 2015, 2025, 2035, and 2045 by applying the forecasted households to average income projections derived from ESRI trends
2. Estimating the County's expenditure potential based on reported data that indicates the percentage of income spent on various retail goods and services
3. Determining Currituck County sales through 2045, taking into account leakage resulting from resident commuting patterns
4. Estimating sales inflow from non-Currituck residents, including those who work there, commuters, and seasonal sales capture
5. Converting retail sales to square feet based on sales per square feet data by type of retail

HOUSEHOLD AND INCOME FORECASTS

Household forecasts utilized in the retail demand forecasts presented in this section are based on the population projections, interpreted from data provided by state demographers and Woods & Poole. As shown in **Graph 4-9**, Currituck County is expected to have approximately 16,210 households by 2045, a 71.2 percent increase from 9,470 households in 2015.

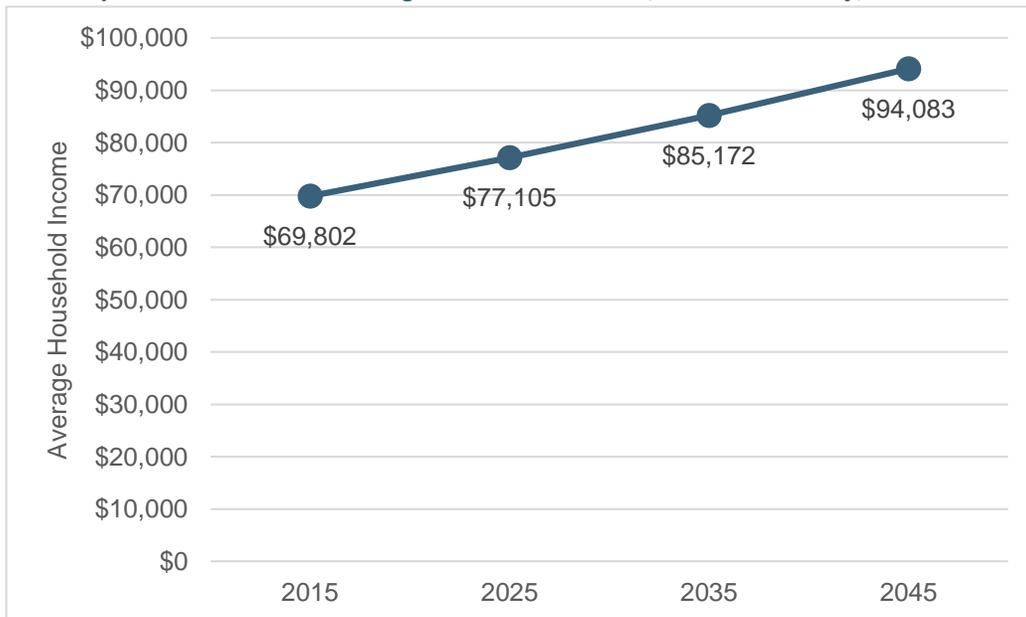


Graph 4-9: Forecasted Households, Currituck County, 2015-2045



Retail demand forecasts generally rely on average household income, which is typically higher than the median household income statistics reported in Chapter 2. According to ESRI, Currituck County had an estimated average household income of approximately \$69,802 in 2015. Based on income projections derived from ESRI trends, the area is expected to have an average household income of more than \$94,000 by 2045 (**Graph 4-10**).

Graph 4-10: Forecasted Average Household Income, Currituck County, 2015-2045





RETAIL DEMAND FORECAST

Currituck County

Based on the methodology outlined above, Currituck County has a forecasted demand of approximately 608,250 square feet of net new retail space between 2015 and 2045. Detailed retail demand forecasts are provided in **Appendix B** of this report. New retail demand could be accommodated in existing center vacancies, but also through development of new structures. It is also possible that consumers would travel outside Currituck County if supply is constrained by lack of available product. The 608,250-square-foot forecast measures demand for net new retail space. As shown in **Table 4-5**, Food Services/Restaurants (16.0 percent), Building Materials and Supply Dealers (15.5 percent), Discount Stores (15.2 percent) and Supermarkets (11.4 percent) make up the largest categories for net new demand.

Table 4-5: Net New Retail Demand, Currituck County, 2015-2045

Retail Category	Net New Retail Demand (Sq.Ft.) 2015-2045			Change	% of Total
	2015-2025	2025-2035	2035-2045		
Food Services - Restaurants	30,584	31,401	35,267	97,253	16.0%
Building Material & Supply Dealers	29,636	30,428	34,174	94,238	15.5%
Discount Stores	29,082	29,859	33,535	92,476	15.2%
Supermarkets & Other Groceries	21,899	22,484	25,252	69,634	11.4%
Other General Merchandise Stores	13,796	14,165	15,909	43,870	7.2%
Clothing Stores	10,276	10,550	11,849	32,675	5.4%
Department Stores	7,892	8,102	9,100	25,094	4.1%
Furniture Stores	6,753	6,933	7,787	21,474	3.5%
Pharmacies & Drug Stores	5,156	5,294	5,945	16,395	2.7%
Sporting Goods and Toy Stores	4,675	4,800	5,391	14,865	2.4%
All Other Categories	31,535	32,378	36,364	100,277	16.5%
Total	191,284	196,394	220,573	608,250	100.0%

Source: Kimley-Horn

It should be noted that this analysis utilizes standard sales inflow amounts for non-County residents, including those who work there, commuters, and seasonal sales capture. However, it is possible that Currituck County would have higher shares due to proximity to the beaches, especially during the summer months. For this reason, this demand forecast likely presents a conservative 30-year projection.

Demand for 70,000 square feet in the Supermarkets & Other Groceries classification would be supportive of approximately two new stores over the next 30 years given the average size of approximately 45,000 to 50,000 square feet. Additional demand for grocery could be accommodated through other categories, such as discount stores and other general merchandise stores. Groceries are likely to follow the development of new residential. Given the new growth forecasted for the Moyock area, this would represent an attractive target for future grocery development.



Moyock Mega-Site Capture

In order to forecast retail demand specifically for the Moyock Mega-Site, capture rates were applied to each ten-year period between 2015 and 2045. Given accessibility and visibility from VA/NC-168, the Moyock Mega-Site offers an attractive development location for retail. Capture rates for the Moyock Mega-Site are expected to range from 50 percent to 55 percent during the next 30 years (Table 4-6).

The increase is due to the availability of developable land with access to VA/NC-168, and potentially the future I-44 Connector. Based on these projected captures, the Moyock Mega-Site could support approximately 325,000 square feet of retail space during the next 30 years.

Table 4-6: Net New Retail Demand, Moyock Mega-Site, 2015-2045

Measure	Retail Sq.Ft. Increase			Total
	2015-2025	2025-2035	2035-2045	
Currituck County	191,284	196,394	220,573	608,250
Capture Rate	50%	55%	55%	
Moyock Mega-Site	95,642	108,016	121,315	324,973

Source: Kimley-Horn

Office Demand

OFFICE-OCCUPYING EMPLOYMENT FORECAST

To forecast the increase in office-occupying employment, office shares were applied to each industry projection (as previously demonstrated in the base employment forecast). Finance and Insurance, Professional and Technical Services, Management of Companies and Enterprises, and Real Estate and Rental and Leasing have the highest shares of office-occupying employment, ranging from 85 percent to 90 percent. The Virginia MSA is forecasted to have an increase of more than 111,000 office-occupying employees, or 45.8 percent, between 2015 and 2045 (Table 4-7).



Table 4-7: Office-Occupying Employment Forecast, Virginia Beach MSA, 2015-2045

Industry	Office Share					2015-2045 Δ	
		2015	2025	2035	2045	#	%
Health Care and Social Assistance	30.0%	30,115	35,620	41,235	48,737	18,622	61.8%
Educational Services	15.0%	10,826	12,326	15,227	18,629	7,802	72.1%
Professional and Technical Services	90.0%	46,026	56,839	68,406	81,386	35,360	76.8%
Retail Trade	10.0%	9,084	10,368	11,551	12,927	3,843	42.3%
Accommodation and Food Services	10.0%	7,499	8,470	9,453	10,477	2,978	39.7%
Administrative and Waste Services	80.0%	35,965	42,015	49,175	57,196	21,231	59.0%
Construction	10.0%	3,495	3,934	4,369	4,871	1,376	39.4%
Other Services, Ex. Public Admin	25.0%	5,875	6,881	7,871	9,005	3,130	53.3%
Arts, Entertainment, and Recreation	15.0%	2,633	2,958	3,311	3,734	1,101	41.8%
Real Estate and Rental and Leasing	85.0%	11,762	13,253	15,057	16,899	5,137	43.7%
Public Administration	70.0%	33,275	34,850	36,285	37,506	4,231	12.7%
Wholesale Trade	25.0%	4,571	5,006	5,465	5,933	1,363	29.8%
Finance and Insurance	90.0%	19,258	20,896	22,400	23,833	4,575	23.8%
Manufacturing	5.0%	3,204	3,293	3,360	3,411	206	6.4%
Transportation, Warehousing, and Utilities	25.0%	6,964	7,185	7,303	7,365	401	5.8%
Agriculture, Forestry, Fishing & Hunting	5.0%	51	58	68	76	25	49.3%
Management of Companies and Enterprises	90.0%	8,807	8,907	8,887	8,911	105	1.2%
Mining	5.0%	6	6	7	8	2	36.9%
Information	30.0%	3,486	3,488	3,433	3,366	-121	-3.5%
Total		242,901	276,354	312,863	354,269	111,368	45.8%

Source: Virginia LMI; NCESC; Woods & Poole; Kimley-Horn

OFFICE DEMAND FORECAST

Virginia Beach MSA

Forecasted office-occupying jobs have been used to estimate demand for square footage. National trends indicate a declining amount of office space per employee. Estimates for office demand are based on a 225-square-foot per employee average between 2015 and 2025, 215 square feet per employee between 2025 and 2035, and 200 square feet per employee between 2035 and 2045.

The Virginia Beach MSA is forecasted to add approximately 111,368 new office jobs between 2015 and 2045. At an average space per employee of between 200 and 225 square feet, this equates to demand of approximately 23.6 million square feet of net new single- and multi-tenant office space over the 30-year period (Table 4-8). Most of the demand would likely be driven by Professional and Technical Services, Administrative Services, and Healthcare. Including a 10 percent vacancy factor, the Virginia Beach MSA is forecasted to have demand for over 26 million square feet of additional office space through 2045.

Table 4-8: Net New Office Demand, Virginia Beach MSA, 2015-2045

Measure	New Office Demand			2015-2045
	2015-2025	2025-2035	2035-2045	Total
Office Occupying Jobs	33,453	36,509	41,405	111,368
Square Feet/Employee	225	215	200	
Net Demand (Sq.Ft.)	7,527,009	7,849,464	8,281,033	23,657,507
Net Office Space Demand (Sq.Ft.)	8,279,710	8,634,411	9,109,136	26,023,257

Source: Virginia LMI; NCESC; Woods & Poole; Kimley-Horn



Moyock Mega-Site Capture

Table 4-9 demonstrates the Moyock Mega-Site’s potential capture of the Virginia Beach MSA’s forecasted office demand. Currituck County currently contains approximately 1 percent of all jobs in the Virginia Beach MSA. This analysis uses this measure as a basis for setting the capture rate. A 1.0 percent capture of forecasted regional demand is forecasted between 2015 and 2025, increasing to 2.0 percent between 2035 and 2045. The increase could be attributable to accessibility to VA/NC-168, and the areas proximity to job centers in Chesapeake, Norfolk, and Virginia Beach. Based on these captures, Currituck County could support nearly 400,000 square feet of office space through 2045.

Table 4-9: Net New Office Demand, Moyock Mega-Site, 2015-2045

Measure	Office Sq.Ft. Increase			Total
	2015-2025	2025-2035	2035-2045	
Virginia Beach MSA	8,279,710	8,634,411	9,109,136	26,023,257
Capture Rate	1.0%	1.5%	2.0%	
Currituck County	82,797	129,516	182,183	394,496
Capture Rate	55.0%	60.0%	65.0%	
Moyock Mega-Site	45,538	77,710	118,419	241,667

Source: Kimley-Horn

The Moyock Mega-Site could reasonably capture 55 percent to 65 percent of forecasted increase in Currituck County. Capture shares are expected to increase over the 30-year period as momentum around the Mega-Site grows.

Additionally, as development continues to extend south for Norfolk and Chesapeake along VA/NC-168, Moyock will become increasingly more attractive for office development. Based on these captures, the Mega-Site has forecasted demand of 242,000 square feet over 30 years.

Feedback from stakeholders indicated that demand for office space is likely to be focused on smaller-scale and locally-focused professional services. Some of the tenants that would be attracted to the Moyock Mega-Site could co-locate in flex industrial spaces. Larger-scale corporate relocations will likely be focused in more urbanized areas offering employees more immediate access to retail goods and services, restaurants, and a variety of housing product and price points. The estimated capture rate for the Moyock Mega-Site is increased to reflect increased development in residential and retail product.

Industrial Demand

INDUSTRIAL OCCUPYING EMPLOYMENT FORECAST

Industrial-occupying employment projections are based on Woods & Poole forecasts demonstrated previously. New industrial jobs in the Virginia Beach MSA are based on shares of industrial-occupying employees by industry. These shares range from 0 percent for Financial Activities and Professional-focused Services to 90 percent for Manufacturing and Wholesale Trade.

The Virginia Beach MSA is expected to have an increase of over 28,000 new industrial-occupying jobs in the 30-year period between 2015 and 2045, a 20.6 percent increase (**Table 4-10**). Notable increases are expected in the Wholesale Trade, Administrative and Waste Services, and Manufacturing sectors.



Table 4-10: Industrial-Occupying Employment Forecast, Virginia Beach MSA, 2015-2045

Industry	Industrial Share	Industrial				2015-2045 Δ	
		2015	2025	2035	2045	#	%
Health Care and Social Assistance	5.0%	5,019	5,937	6,873	8,123	3,104	61.8%
Educational Services	5.0%	3,609	4,109	5,076	6,210	2,601	72.1%
Professional and Technical Services	0.0%	0	0	0	0	0	0.0%
Retail Trade	10.0%	9,084	10,368	11,551	12,927	3,843	42.3%
Accommodation and Food Services	5.0%	3,749	4,235	4,727	5,238	1,489	39.7%
Administrative and Waste Services	15.0%	6,743	7,878	9,220	10,724	3,981	59.0%
Construction	15.0%	5,242	5,901	6,553	7,306	2,064	39.4%
Other Services, Ex. Public Admin	10.0%	2,350	2,753	3,148	3,602	1,252	53.3%
Arts, Entertainment, and Recreation	5.0%	878	986	1,104	1,245	367	41.8%
Real Estate and Rental and Leasing	0.0%	0	0	0	0	0	0.0%
Public Administration	5.0%	2,377	2,489	2,592	2,679	302	12.7%
Wholesale Trade	90.0%	16,455	18,020	19,675	21,360	4,905	29.8%
Finance and Insurance	0.0%	0	0	0	0	0	0.0%
Manufacturing	90.0%	57,677	59,283	60,479	61,392	3,716	6.4%
Transportation, Warehousing, and Utilities	60.0%	16,713	17,244	17,527	17,675	962	5.8%
Agriculture, Forestry, Fishing & Hunting	5.0%	51	58	68	76	25	49.3%
Management of Companies and Enterprises	0.0%	0	0	0	0	0	0.0%
Mining	5.0%	6	6	7	8	2	36.9%
Information	65.0%	7,553	7,558	7,438	7,292	-261	-3.5%
Total		137,506	146,825	156,035	165,858	28,352	20.6%

Source: Virginia LMI; NCEC; Woods & Poole; Kimley-Horn

INDUSTRIAL DEMAND FORECAST

Virginia Beach MSA

Industrial market performance in the Virginia Beach MSA continues to be slow to recover from the impacts of the Recession. Vacancy rates are dropping incrementally, but leasing activity and gross absorption have not returned to pre-Recession levels. Noting this, significant demand for industrial development will likely be constrained in the short-term. Forecasted industrial-occupying jobs have been used to estimate square footage demand. Estimates for industrial demand are based on an average of 750 square feet per employee. Square feet per employee estimates vary from 300 square feet to 1,000 square feet, depending on use. Typically, manufacturing and wholesale trade sectors require the most industrial space per employee.

Table 4-11 demonstrates the expected increase in new industrial-occupying employees and required square footage through 2045. The Virginia Beach MSA is forecasted to have demand for approximately 19.8 million square feet of industrial demand between 2015 and 2045. Including a 10 percent vacancy rate, the region is forecasted to have industrial space requirements for nearly 21.8 million square feet of between 2015 and 2045. It is important to note that this forecast is based on organic job growth, and excludes large “drop-in” manufacturing and distribution relocations which are difficult to forecast.



Table 4-11: Net New Industrial Demand, Virginia Beach MSA, 2015-2045

Measure	New Industrial Demand			2015-2045
	2015-2025	2025-2035	2035-2045	Total
Office Occupying Jobs	9,319	9,211	9,822	28,352
Square Feet/Employee	700	700	700	
Net Demand (Sq.Ft.)	6,523,073	6,447,463	6,875,563	19,846,099
Net Office Space Demand (Sq.Ft.)	7,175,380	7,092,209	7,563,119	21,830,709

Source: Virginia LMI; NCEC; Woods & Poole; Kimley-Horn

Moyock Mega-Site Capture

Captures of regional industrial demand consider proximity to the VA/NC-168 corridor, offering access to the Port of Virginia, a critical location selection attribute. Port-related warehouse space in the region has recently experienced an increase in demand. Land affordability is also an important aspect for industrial developments. Capture rates for industrial space in Currituck County are expected to be 4.5 percent between 2015 and 2025, increasing to 6.5 percent between 2035 and 2045. As shown in **Table 4-12**, the County could support approximately 1.2 million square feet of industrial space through 2045. As previously noted, the forecasts provided in this section are based on organic job growth, and excludes large “drop-in” manufacturing and distribution relocations.

Table 4-12: Net New Industrial Demand, Moyock Mega-Site, 2015-2045

Measure	Industrial Sq.Ft. Increase			Total
	2015-2025	2025-2035	2035-2045	
Virginia Beach MSA	7,175,380	7,092,209	7,563,119	21,830,709
Capture Rate	4.5%	6.0%	6.5%	
Currituck County	322,892	425,533	491,603	1,240,027
Capture Rate	65.0%	70.0%	75.0%	
Moyock Mega-Site	209,880	297,873	368,702	876,455

Source: Kimley-Horn

The Moyock Mega-Site offers the closest proximity to the Port of Virginia in Currituck County. As such, capture rates of the total Currituck County forecasted industrial demand are expected to range from 65 percent to 75 percent. Based on these captures, the Moyock Mega-Site could support over 876,000 square feet of industrial space over the next 30 years.

Key target users for the Moyock Mega-Site would likely include port-related warehouse space, distribution and light manufacturing (largely focused recently in Suffolk), food-related warehousing, manufacturing, and distribution (coffee, sweet potatoes, etc.), defense, and home improvement related companies.

As previously highlighted in the overview of stakeholder feedback, the importance of having shovel-ready sites cannot be understated. Companies looking at the Virginia Beach region are requiring occupancy within six month to one year of lease execution. This includes site improvements, transportation and utility infrastructure, and availability of power.

The Virginia Beach MSA has an extremely limited supply of properties that could deliver a build-to-suit user needing a facility more than 1.0 million square feet. This could be an advantage for the Moyock Mega-Site.



Demand Summary

Table 4-13 presents a summary of the demand forecasts by land use for the Moyock Mega-Site for a 30-year period between 2015 and 2045. Ranges are provided to provide for flexibility in land use planning based on shifting market forces and demand over the forecast period. Low- and high-scenario demand forecasts are based on an approximate mid-point as demonstrated previously in this chapter.

Table 4-13: Demand Summary of Land Uses for the Moyock Mega-Site, 2015-2045

Type	Measure	30-Year Demand	
		Low	High
Residential	Units	2,500	3,000
Retail	Sq.Ft.	350,000	500,000
Office	Sq.Ft.	150,000	300,000
Industrial	Sq.Ft.	750,000	1,000,000

Source: Kimley-Horn

Based on the forecasts presented above, Currituck County is advised to undertake a land planning effort for the Moyock Mega-Site. Land planning will provide detailed acreage requirements and layout for the site. Given the 30-year forecast period, it is vital that the County protect prime acreage within the site for non-residential development.

As previously noted, the Virginia Beach MSA has an extremely limited supply of properties that could support an industrial, warehouse, or manufacturing facility more than 1.0 million square feet. In addition to the acreage required to support between 750,000 and 1.0 million square feet of industrial demand, Currituck County should set aside additional acreage to allow for potential mega drop-in users. The amount of additional acreage should be based on environmental constraints, land availability with access to transportation and utilities (existing or planned), and power/electricity provision. Ultimately, the site should be master planned to accommodate flexibility of land uses as the market evolves over the course of the forecast horizon.



Chapter Overview

Kimley-Horn conducted a preliminary environmental review of the Moyock Mega-Site project study area (**Figure 5-1**). Specifically, desktop and database information related to wetlands, threatened and endangered species, historic resources, flood hazard areas, hazardous materials, non-government organizations and local environmental regulations were reviewed.

Wetland Evaluation

Kimley-Horn performed a preliminary wetland evaluation based on a desktop data review and a site visit to verify the background data. The background data review consisted of the following sources: United States Geological Survey (USGS) topographic mapping, aerial photography, United States Fish and Wildlife Service's (USFWS), National Wetland Inventory (NWI), and North Carolina Division of Coastal Management (NCDCM) wetland mapping, Natural Resources Conservation Survey (NRCS) Web Soil Survey (WSS), USGS NHD, and North Carolina Division of Water Resources (NC DWR) Surface Water Classifications.

The USGS Moyock, Virginia-North Carolina 7.5 Minute Quadrangle Topographic Map shows the project area ranging in elevation between 10 and 20 feet above the National Geodetic Vertical Datum of 1929, as shown on **Figure 5-1**. Areas of lower elevation in the southeastern portion of the project area correspond to a wetland system associated with Moyock Run. The topographic mapping depicts wetlands within the southeastern and western portions of the project area. In addition, agricultural ditches are shown throughout the eastern and southern portions of project area.

The 2014 aerial photograph depicts the project area as primarily in agricultural use. An area of excavation (sand and gravel mine) is shown within the central portion and wooded areas are located within the southeastern and western portions of the Moyock Mega-Site project area.

The USFWS, NWI, and NCDCM wetland mapping also depict the wetland system associated with Moyock Run in the central and southeastern portions of the project area. This system is primarily identified by the NCDCM mapping as managed pinelands, cutover headwater swamp and headwater swamp. A large wetland system located within the western portion of the project is also mapped as managed pinelands and cutover hardwood flats.

Based on a review of the NRCS WSS the predominant soil series within the project area consist of Cape Fear loam, Roanoke fine sandy loam, Tomotley fine sandy loam and State fine sandy loam. The Cape Fear soils series is found on marine terraces, drains very poorly and has been assigned a hydrologic soil group of C/D. Hydrologic soil group C are soils that have a slow infiltration rate when thoroughly wet and hydrologic soils group D are soils with a very slow infiltration rate. For soils assigned a dual hydrologic group, the first letter is for drained areas and the second is for undrained areas. The Roanoke soils' series is found on terraces and drainage ways of the piedmont and the upper and middle coastal plain, is poorly drained and has been assigned a hydrologic soil group of C/D. The Tomotley soils series is found in the Coastal Plain, is poorly drained and has been assigned a hydrologic soil group of B/D which are soils having moderate infiltration rate when thoroughly wet and soils having very slow infiltration when thoroughly wet. The state soils series is well-drained and has been assigned a hydrologic soil group of B. Referenced USGS maps, a NRCS soil map, and soil survey information can be found in **Appendix C** of this report.

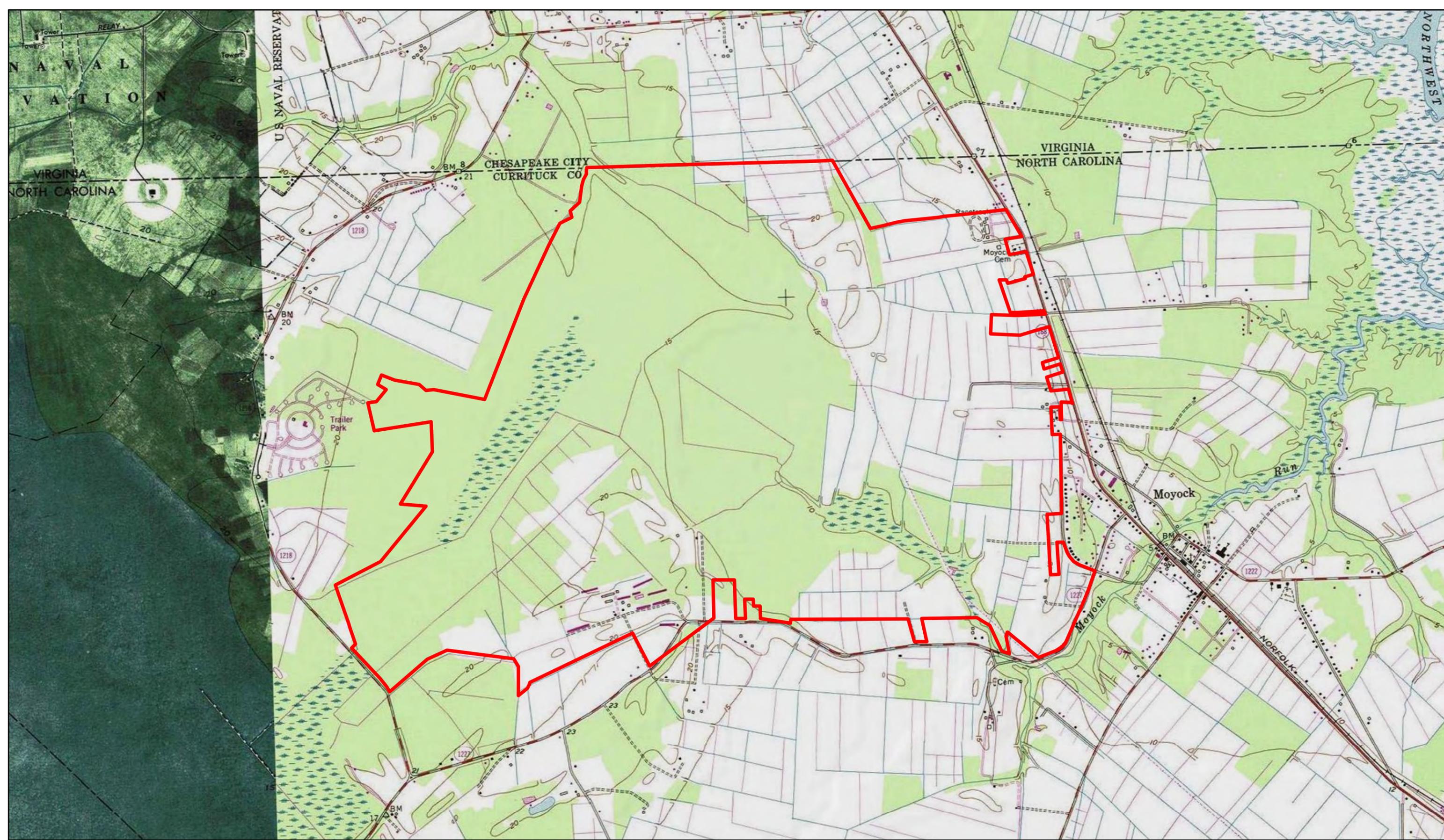
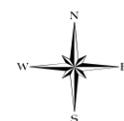
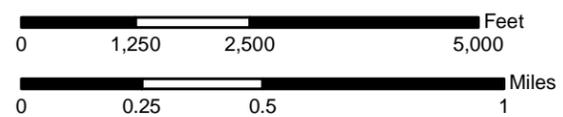


Figure 5-1
Topographic of Moyock Mega-Site
Currituck County, NC

 Project Area



Kimley»Horn

Data: Copyright © 2013 National Geographic Society, I-cubed, Currituck County



The USGS NHD shows a network of agricultural drainage ditches throughout the project area. Moyock Run is depicted as a stream/river located along the southern border of the project area. This system is classified by NC DWR as Class C (fishable/swimmable) waters and has a supplemental classification of swamp waters (Sw). An unnamed tributary to Moyock Run was identified in the NHD within the northwestern portions of the project area, and an additional unnamed tributary to Guinea Mill Run Canal was identified in the southwestern portion of the project area. These unnamed tributaries are not specifically classified by NCDWR, but will take on the classification of their receiving waters and should be considered as Class C;Sw waters accordingly. The wetland mapping is provided in **Figure 5-2**.

As noted a site visit was conducted to validate some of the findings in the desktop background database review. Site observations generally appear to be consistent with the information found during the background data review. However, tree clearing within the western portion of the site had occurred since the 2014 aerial photograph. Wetland hydrology and hydric soils were observed within areas investigated within the logged/cleared areas and these areas will likely still be considered wetlands by the US Army Corps of Engineers (USACE). Pattern drainage ditches were also observed throughout the Mega-Site and boundary ditches were observed along the agricultural fields. The boundary ditches were deep, contained hydrophytic vegetation and may be considered jurisdictional waters by the USACE. The pattern drainage ditches and boundary ditches appear to be effectively draining the agricultural fields.

Property owners were contacted as part of the site visit coordination for access. Access was not permitted to areas within the north and the mine (Thrasher mine). The property representative for the Thrasher mine indicated that the property has a valid wetland delineation. This has been requested and will be forwarded upon receipt.

A full wetland delineation of the project area and confirmation with the USACE should be conducted to determine the exact extent, location and limits of wetlands and waters within the Mega-Site footprint. Permits from the USACE and NCDWR would likely be required for any encroachment within wetlands and/or waters. During site plan development, efforts should be made to avoid and minimize impacts to wetlands and waters to the maximum extent practicable. Justification for unavoidable impacts will need to be developed for inclusion in the permit application submittal. It is recommended that the agencies be engaged as part of a pre-application process.

NC COASTAL AREA MANAGEMENT ACT REVIEW

The project area is located within Currituck County, one of the 20 coastal counties of North Carolina regulated under the Coastal Area Management Act (CAMA). Based on the desktop analysis, it does not appear that there are any Areas of Environmental Concern (AEC), public trust waters, or their associated buffers regulated under CAMA located within the site. Should the site require a federal permit however, the project will require a federal consistency review by the NCDCM to determine if a requested permit is consistent with NCDCM requirements. In addition, since the site is in a coastal county, development of the Mega-Site will be subject to NC coastal stormwater regulations. Coastal stormwater requirements may limit the amount of impervious development with a property based on the type of development proposed. Development within the Mega-Site boundaries will likely be considered “Other Coastal Development, High Density Option” per NC Administrative Code (NCAC) 15A NCAC 02H .1005. This regulation allows the permitting of development with greater than 24 percent built upon area in one of the 20 coastal counties that does not drain to high quality water or class SA waters.

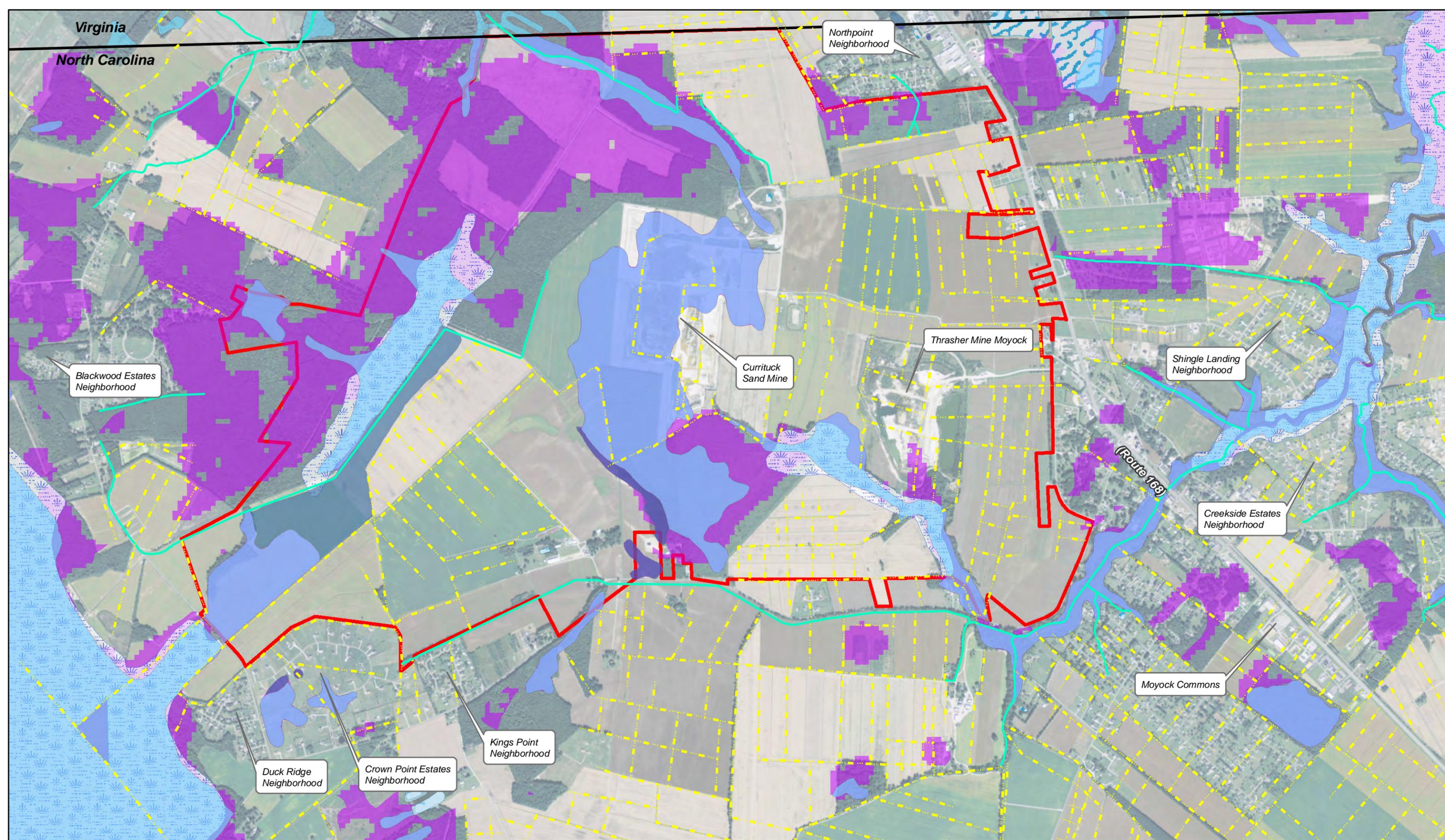


Figure 5-2
Wetlands & Waters
Background Information

- | | | |
|--------------|----------------|-----------------------------------|
| Project Area | NCDWM Wetlands | USFWS NWI |
| NHDFlowline | NHDWaterbody | Freshwater Emergent Wetland |
| Canal/Ditch | Lake/Pond | Freshwater Forested/Shrub Wetland |
| Stream/River | Swamp/Marsh | Freshwater Pond |



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Data: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Currituck County



The primary constraint resulting from coastal stormwater regulations is the requirement of stormwater treatment facilities for the developed area, meaning all stormwater from the Site will have to be collected and treated as necessary to meet NCDWR/NCDCM requirements.

Threatened and Endangered Species Database

The North Carolina Natural Heritage Program (NHP) database was reviewed for the occurrence of federal and state listed threatened and endangered species and critical habitats within the vicinity of the project area. Element Occurrence 35026 is depicted within the southwestern portion of the project site. This occurrence is associated with the rainbow snake (*Farancia erythrogramma*) which is a significantly rare species (SR) but is not state or federally listed as threatened or endangered. This occurrence is also described as historical therefore it is uncertain that the species still exists within that area. Element Occurrence 8913 is depicted ± 1.25 miles east of the project site. This occurrence is associated with the winged seedbox (*Ludwigia alata*) which is also a significantly rare species and a historical occurrence. The identified occurrences are shown on **Figure 5-3**.

As of November 30, 2015, the USFWS listed eleven threatened or endangered species protected under the Endangered Species Act, and one species protected by the Bald and Golden Eagle Protection Act known to occur in Currituck County. A summary of the species, their status, and typical associated habitat is included in **Table 5-1**.

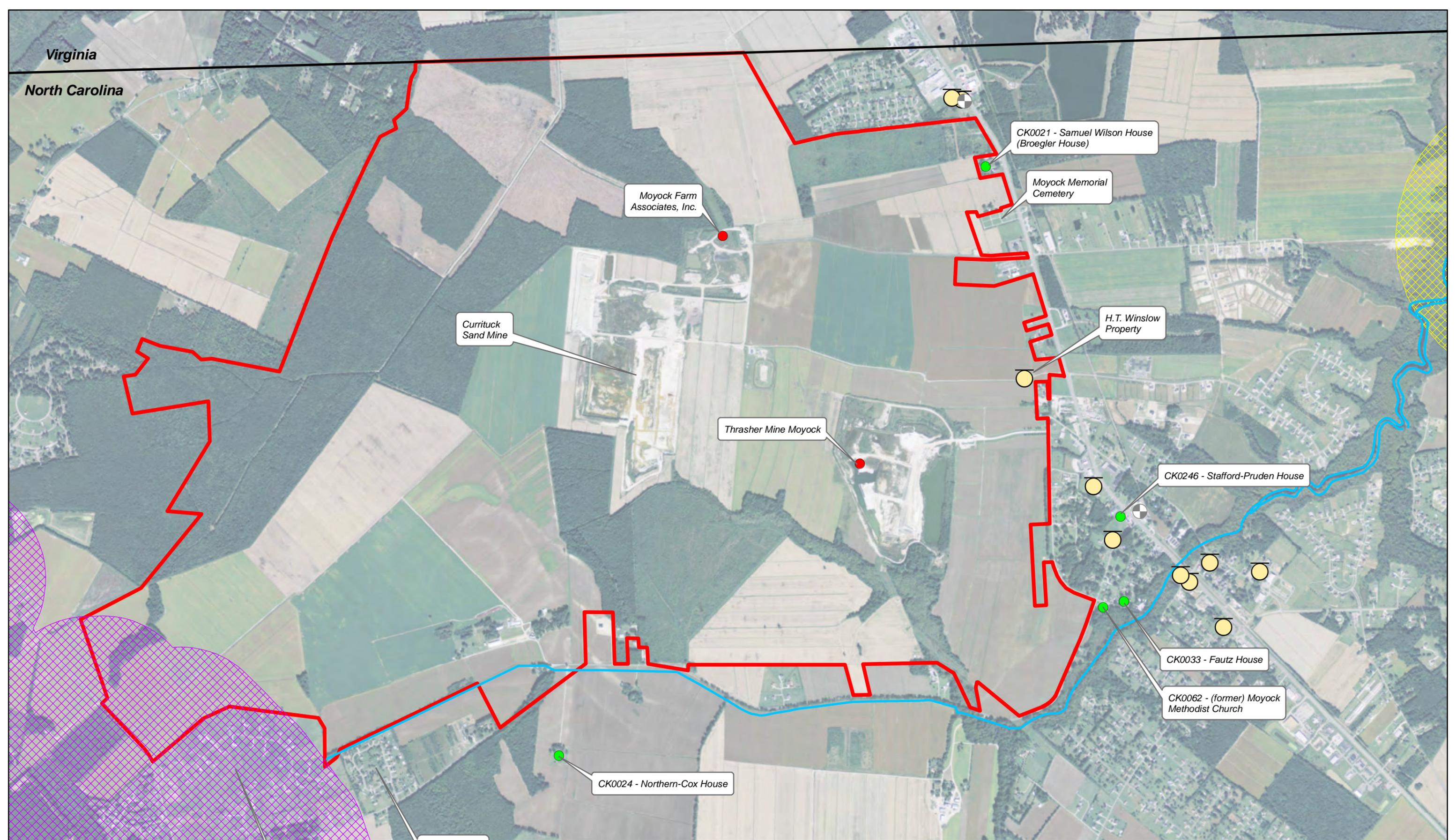
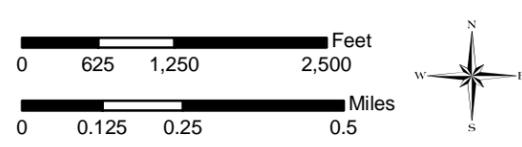


Figure 5-3
Environmental Constraints
Currituck County, NC

- SHPO Resource
- EPA FRS
- Inactive Hazardous Site
- Regional Underground Storage Tank
- Project Area
- Shingle Landing Creek / Moyock Run
- NC NHP Species / Habitat Area**
- 35026 - Rainbow Snake
- 8913 - Winged Seedbox





Data: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community - Currituck County





Currituck County Moyock Mega-Site Market Feasibility Study

Chapter 5: Preliminary Environmental Review

Table 5-1: USFWS Threatened and Endangered Species Known to Occur in Currituck County

Category	Species	Status	Typical Associated Habitat
Bird	Piping Plover (<i>Charadrius melodus</i>)	Threatened	Ocean beaches and island-end flats
Bird	Red Knot (<i>Calidris canutus rufa</i>)	Threatened	Beaches and sandflats
Bird	Red-Cockaded woodpecker (<i>Picoides borealis</i>)	Endangered	Mature open pine forests, mainly in longleaf pine
Bird	Bald eagle (<i>Haliaeetus leucocephalus</i>)	BGPA*	Mature forests near large open water bodies
Flowering Plant	Seabeach amaranth (<i>Amaranthus pumilus</i>)	Threatened	Ocean beaches and island-end flats
Mammal	Northern long-eared Bat (<i>Myotis septentrionalis</i>)	Threatened	Roosts in hollow trees and buildings (warmer months), in caves and mines (winter); mainly in the mountains
Mammal	West Indian Manatee (<i>Trichechus manatus</i>)	Endangered	Warm waters of estuaries and river mouths
Reptile	Green sea turtle	Threatened	Nests on beaches, forages in ocean and sounds
Reptile	Hawksbill sea turtle	Endangered	Ocean and sounds
Reptile	Kemp's ridley sea turtle (<i>Lepidochelys kempii</i>)	Endangered	Ocean and sounds
Reptile	Leatherback sea turtle (<i>Dermochelys coriacea</i>)	Endangered	Oceans, rarely in sounds
Reptile	Loggerhead sea turtle (<i>Caretta caretta</i>)	Threatened	Nests on beaches; forages in ocean and sounds

*BGPA – Bald and Golden Eagle Protection Act



Based on the habitat requirements and the proposed project, suitable habitat is not likely present for any of the listed species with the exception of red-cockaded woodpecker (RCW) and northern long-eared bat (NLEB). Suitable habitat for RCW and NLEB may be present within the managed pine plantations and forested areas of the study area. Additional field investigations and/or surveys are necessary to determine the potential impacts to any threatened or endangered species. Coordination with the USFWS may be required concerning potential impacts to RCW and NLEB.

Mapping was reviewed for North Carolina Marine Fisheries Anadromous Fish Spawning Areas (AFSA) and Striped Bass Management Areas. None of these areas were identified within the Site on the reviewed mapping. Threatened and endangered species data references can be found in **Appendix D**.

Historic Resources Database

The North Carolina State Historic Preservation Office (SHPO) HPOWeb GIS tool was searched on December 4, 2015. No resources were identified within the project area. Resources identified within a quarter mile of the project area are shown on **Figure 5-3** and listed in **Table 5-2**.

Table 5-2: North Carolina State Historic Preservation Office (SHPO) Identified Sites

HPO Site ID	Description	Status	Distance from
CK0021	Samuel Wilson House (Broegler House): 1852 Greek Revival	DOE – Determination of Eligibility (eligible for listing on the National Register)	140 feet
CK0246	Stafford-Pruden House	SO – Surveyed Only (surveyed not associated with a recommendation)	1240 feet
CK0062	(former) Moyock Methodist Church	SO – Surveyed Only (surveyed not associated with a recommendation)	200 feet
CK0033	Fautz House	SO – Surveyed Only (surveyed not associated with a recommendation)	525 feet
CK0024	Northern-Cox House	SL – Study List (Advanced to be accept for listing on the National Register)	1000 feet

It is not anticipated that the proposed project would have a direct impact to these resources. However, depending upon the design of the proposed project additional coordination with SHPO may be required. Information on these sites is located in **Appendix E** of the report.



Although not identified as a historic site, Moyock Memorial Cemetery is located immediately outside of the project area on the west side of Route 168 as shown on **Figure 5-3**.

FEMA Flood Hazard Areas

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) for Currituck County, Map Numbers 3721801100J, 3721801200J, 3721802100J, and 3721802200J dated December 16, 2005 (included in **Appendix F**), the majority of the project site is depicted as unshaded Zone X, which are areas determined to be outside of the 500-year floodplain. Zone A, areas subject to inundation by the 100-year flood, is depicted along the western side of the project area associated with the UT to Guinea Mill Run Canal. In addition, Zone AE, areas corresponding to the 100-year floodplain with a base flood elevation determined, is depicted in the southeast corner of the project area along Moyock Run.

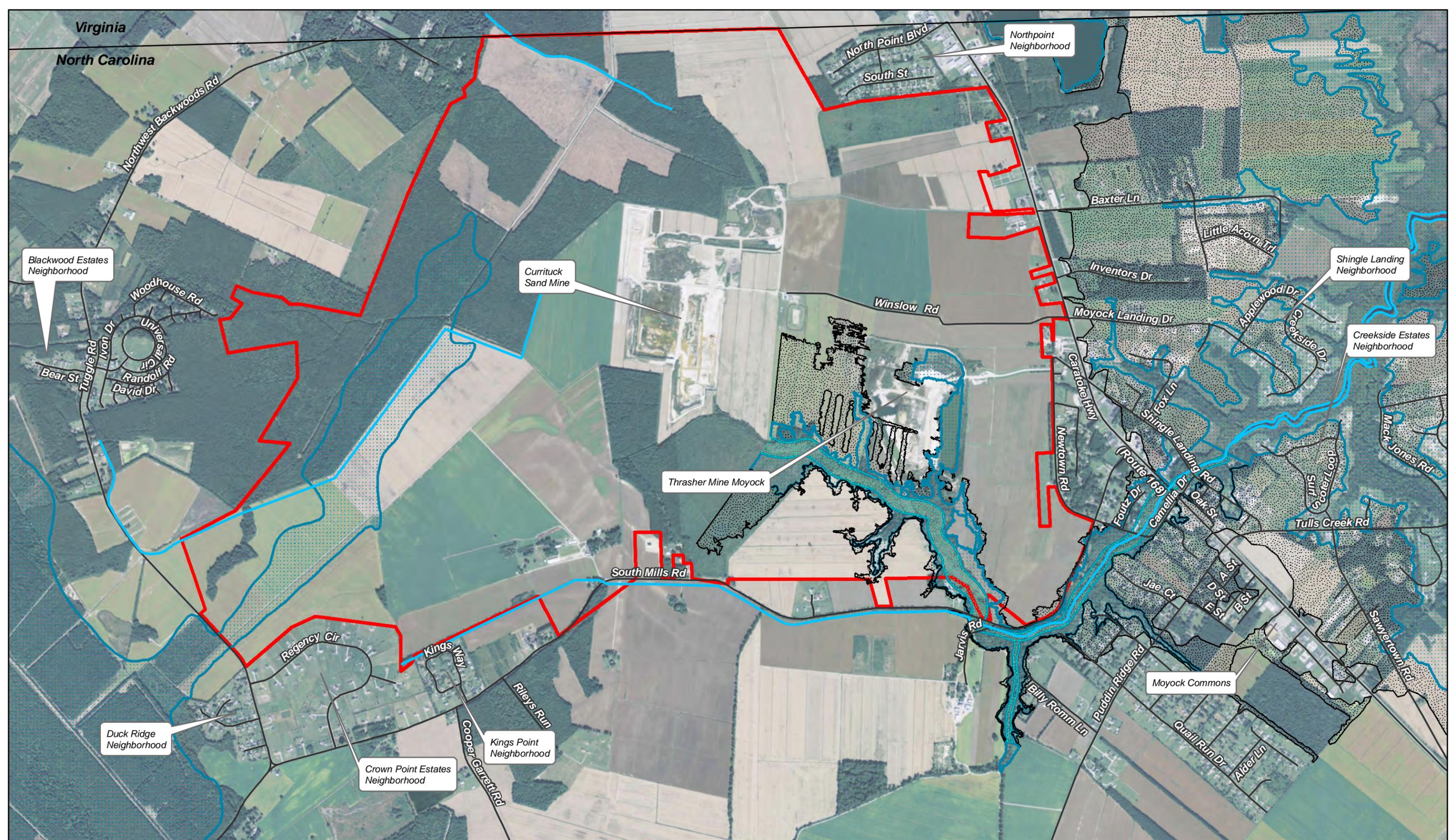
This area has a mapped FEMA-regulated floodway within the project area. As shown in **Figure 5-4**, the FEMA flood hazard areas and regulated floodway end approximately 1,600 feet west of the Thrasher mine pit. Note that this limit is defined in FEMA FIRM 3721802200J as Limit of Study. Areas in or adjacent to the flood hazard zone and regulated floodway may be subject to additional modeling or study as required by local development ordinances. Any development within the FEMA Special Flood Hazard Areas (SFHA), including Zones A, AE, and regulated floodways, may require a floodplain development permit.

Additionally, development within a regulated floodway will require a No Impact Certification. If a project development cannot meet the No Impact requirement, then a Conditional Letter of Map Revision (CLOMR) will be required. Coordination with FEMA and/or the local floodplain manager should be conducted to confirm applicable permitting and any additional modeling requirements that may be required due to the presence of the Limit of Study boundary within the project area. Currituck County also outlines in their Unified Development Ordinance that development within SFHA shall require floodplain development permits, including elevation and/or floodproofing certificates. Flood hazard area mapping is provided as **Figure 5-4**.

Hazardous Materials Databases

The United States Environmental Protection Agency (EPA) Facility Registry System (FRS) database was reviewed via the Enviromapper on December 7, 2015 to identify sites associated with hazardous material generation within the project area. The FRS identifies facilities, sites or places subject to environmental regulations or of environmental interest and includes records from the following programs: National Pollution Discharge Elimination System (NPDES), Toxic Release Inventory submitters; Resource Conservation and Recovery Act Information (RCRAInfo); Risk Management Plans; Permit Compliance System; Biennial Reporting System; Aerometric Information Retrieval System (AIRS); and Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS).

Two sites were identified by the FRS within the project area. Information on these facilities is summarized in **Table 5-3** and their locations are shown on **Figure 5-3**.

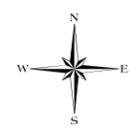


**Figure 5-4
Floodplains
Currituck County, NC**

Project Area	Floodzone/Floodway
Road	Zones A; AE; VE
NHD Stream/River	Floodway
	X (Shaded)

0 750 1,500 3,000 Feet

0 0.125 0.25 0.5 Miles



Kimley»Horn

Data: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Currituck County



Table 5-3: Summary of FRS Database Results

EPA FRS Registry ID	Facility Name	Facility Address	Environmental Interest Type	Compliance Status
110009860070	Moyock Farm Associates, Inc.	RT 168 1 MILE S OF VA ST	Integrated Compliance Information System (ICIS)ok-NPDES	No Violation
110009715451	Thrasher Mine Moyock	SR 1222	ICIS-NPDES	No Violation

The EPA FRS results are included in **Appendix G** of this report.

GIS data was downloaded from NC OneMap and NC DENR for Brownfields Agreement (BFA) sites, Dry-Cleaning Solvent Clean-Up Act (DSCA) Program sites, Hazardous Waste (HW) sites, Inactive Hazardous (IH) sites, Active Permitted Landfills, Pre-Regulatory Landfill sites, Manufactured Gas Plant (MGP) sites, and Regional Underground Storage Tanks (RUST) incidents and releases. Within the project area, a RUST site was identified at the H.T. Winslow Property on NC-168. Based on the GIS data, the site is associated with tank number WA-501 and was closed in December 2002. No additional sites were identified within the project limits.

For any property acquisition, Kimley-Horn recommends conducting a Phase I Environmental Site Assessment (ESA) in accordance with the American Society for Testing and Materials (ASTM) 1527-13 standards to address the "innocent landowner defense" provision of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, and meet the "All Appropriate Inquiry" (AAI) rule into the ownership and uses of the property in preparation of due diligence investigations under the Brownfields Revitalization Act of 2002. The Phase I ESA can help identify known or suspected areas of subsurface contamination and potential locations of unknown underground storage tanks in or immediately adjacent to the anticipated limits of construction which may be encountered and would require special handling or disposal of soil or groundwater during construction.

NON-GOVERNMENT ORGANIZATIONS REVIEW

Readily available mapping and data from non-government agencies (Audobon Society, Nature Conservancy, and Coastal Land Trust, as well as the North Carolina Marine Fisheries Anadromous Fish Spawning Areas (AFSA) and Striped Bass Management Areas) were reviewed. No managed and conservation lands, easements, and important bird areas on or within close proximity to the project site were identified. See **Appendix H** for additional information.

REGULATORY REVIEW

Effective October 1, 2015 the following bullets should no longer apply due to the enactment of the General Assembly of North Carolina’s Session Law 2015-246 (House Bill 44) Section 13. However, local governments have been slow to enact revised ordinances, so coordination with Currituck County should be conducted to verify permitting requirements within the Site due to any potential impacts to riparian areas.



Chapter 7 of the Currituck County, NC Unified Development Ordinance outlines “Environmental Protection” (see **Appendix I**) requirements of development within the county. The code indicates a riparian buffer requirement: “All surface waters (e.g., streams), estuarine waters, wetlands, and canals shall maintain a 50-foot-wide riparian buffer directly adjacent to the shoreline, average annual water edge, impoundment edge, or wetland boundary.” This buffer is divided into two zones:

“Zone 1 is located within the first 30 feet of the bank, impoundment, water edge, or boundary and shall prohibit all development and land disturbing activity except as” described below.

“Zone 2 is located 20 feet landward of the edge of Zone 1, and allows grading and replacement of removed vegetation, but prohibits development except as” described below.

Allowed development within the riparian buffer includes but is not limited to: functionally-dependent facilities, walkways and boardwalks, utilities, when no practical alternative exists and street crossings.

SITE SUMMARY

Based on the information noted above, estimates of anticipated on site hydrologic features can be estimated, and are listed in **Table 5-4** below:

Table 5-4: Summary of Site Hydrologic Features for the Moyock Mega-Site

Total Site Area	3,392 acres
Wetlands/Buffers	770–1,279 acres
FEMA Floodplains	483 acres
Combined Wetlands/Floodplains*	1,005 – 1,521 acres
Net Developable Area	1,871 – 2,387 acres

**Combined area accounts for overlap of wetland and floodplain features which occupy much of the same geographic space.*



Chapter Overview

This chapter provides an assessment of the existing infrastructure within and in the vicinity of the Mega-Site in an effort to determine if the existing infrastructure appears to have the capacity to serve the site based on the anticipated land uses and densities identified as a result of the market analysis and feasibility assessment. Findings, recommendations, and potential upgrades to the existing infrastructure have been identified as a part of this task. The infrastructure systems reviewed consist of the following:

- Wastewater treatment and collection infrastructure
- Water supply and distribution infrastructure
- Stormwater management and storm drainage infrastructure
- Electrical power, communications, and natural gas
- Transportation infrastructure modes – roads, rail, transit, pedestrian/bike

Wastewater Treatment and Collection – Existing Conditions

OVERVIEW

Most of the wastewater generated in Moyock is currently treated with private on-site septic treatment systems. There are two existing sewer systems in Moyock - the Moyock Regional Wastewater Treatment Plant (WWTP) and the Eagle Creek Subdivision WWTP. The Moyock Regional WWTP is owned and operated by Currituck County and the Eagle Creek Subdivision WWTP is a privately owned and operated plant that serves the 400-home Eagle Creek subdivision off of Survey Road approximately two miles south of the project site.

SERVICE AREA

Moyock has its own sewer district and is served by the Moyock Regional WWTP. The Moyock Sewer District is comprised of approximately 8,300 acres (13 square miles) and is located in the north central portion of Moyock and generally encompasses the predominantly rural areas immediately east and west of Route 168 and north of Ranchland Drive. The western portion of the project site, approximately 2/3 of the total land area, lies outside of the limits of the Moyock Sewer District. Refer to **Figure 6-1** for the location of the Moyock Sewer District.

COLLECTION AND TREATMENT

The Moyock Regional WWTP is centrally located in the Moyock Sewer District service area. It is located on a 68-acre County-owned parcel off Winslow Road just east of the Currituck Sand Mine and is also generally centrally located within the limits of the project site. The Moyock Regional WWTP became operational in 2013, has a design capacity of 99,000 gpd, and is a non-discharge, high rate infiltration system. Based on flow data from December 2015, WWTP flows averaged approximately 17,500 gpd with a peak daily flow of approximately 33,000 gpd. Wastewater is conveyed to the Moyock Regional WWTP through 4" and 6" parallel force mains located along Route 168. Refer to **Figure 6-2** for the location of the Moyock Regional WWTP.

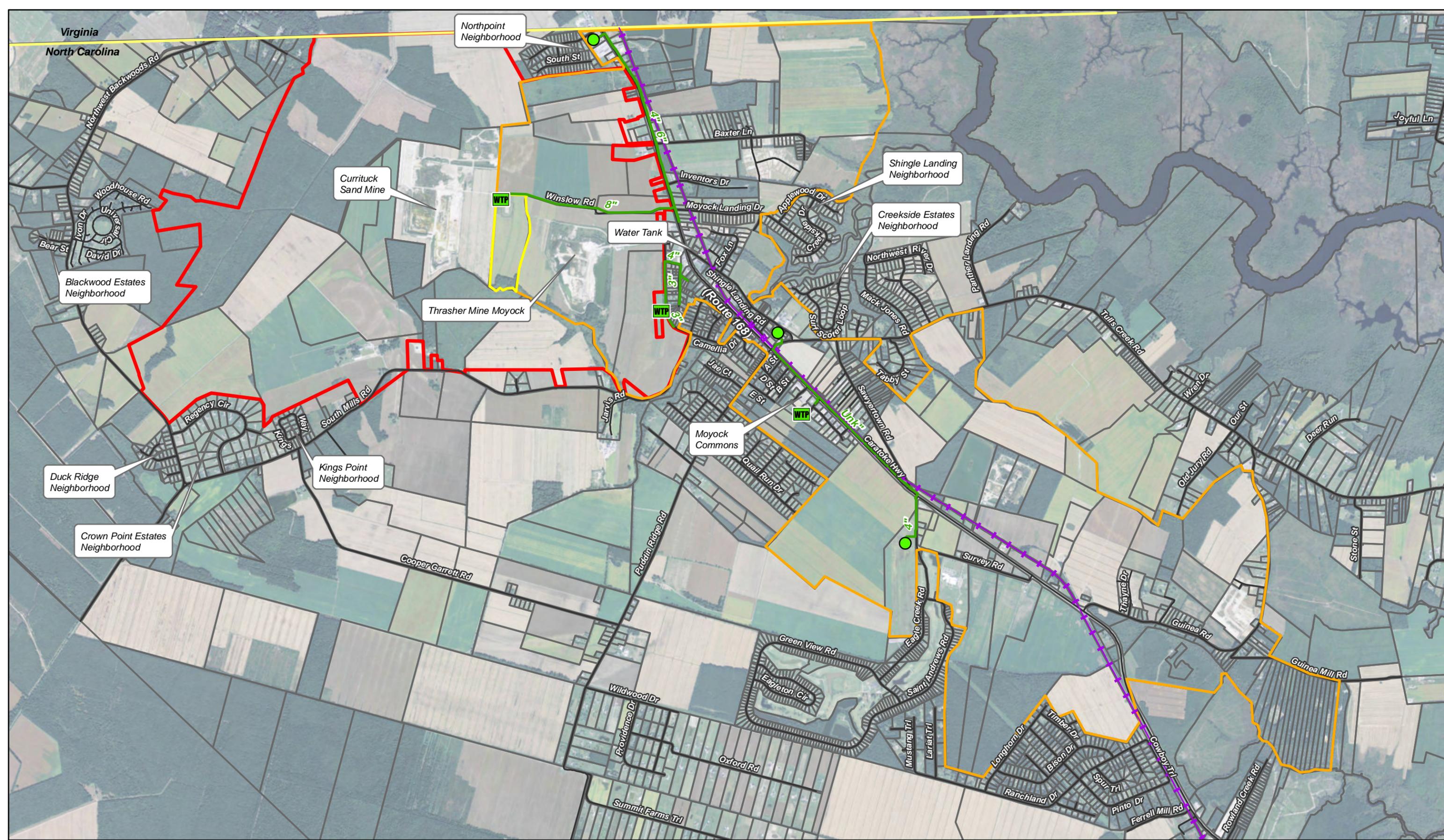
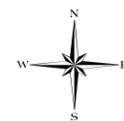


Figure 6-1
Moyock Sewer District Boundary
Currituck County, NC

- Sanitary Sewer Pump Station
- WTP Wastewater Treatment Plant
- Sanitary Sewer Main & Size
- Wastewater Treatment Plant Site
- Moyock Sewer District Boundary
- Railroad
- Virginia/North Carolina State Line
- Road
- Project Area
- Parcel Boundary



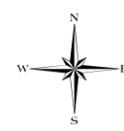
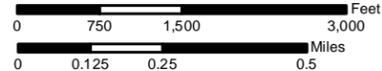
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Data: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Currituck County



Figure 6-2
Existing Wastewater Infrastructure
Currituck County, NC

- Sanitary Sewer Pump Station
- WTP Wastewater Treatment Plant
- Sanitary Sewer Main & Size
- WTP Wastewater Treatment Plant Site
- WTP Moyock Sewer District Boundary
- Railroad
- Virginia/North Carolina State Line
- Road
- WTP Project Area
- WTP Parcel Boundary



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Data Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Currituck County



The Moyock Regional WWTP is planned for expansion in a phased approach over time to achieve an ultimate capacity of 600,000 gpd as follows:

- Phase 1 – 100,000 gpd expansion
- Phase 2 – 200,000 gpd expansion
- Phase 3 – 200,000 gpd expansion

There is no known specific timeframe for these planned expansions and it is expected that the WWTP expansion will be driven by demand as development within Moyock continues.

Wastewater Generation

The project totals approximately 3,392 acres. For the purposes of the evaluation of land use and associated wastewater generation and based on the land use results from the market analysis, the total developable area of the site was derived as shown in **Table 6-1** below. Note that there are two different sources for potential wetland areas (NWI and NC DCM). Therefore, potential wetlands areas are shown as a range given these two data sources. Wetlands buffers were assumed to be 50 square feet consistent with County code requirements.

Table 6-1: Summary of Developable Acreage for the Moyock Mega-Site

Total Site Area	3,392 acres
Wetlands/Buffers	770–1,279 acres
FEMA Floodplains	483 acres
Combined Wetlands/Floodplains*	1,005 – 1,521 acres
Net Developable Acreage	1,871 – 2,387 acres
Road rights-of-way/Utility Easements (10% of Net Developable Acreage)	187 – 239 acres
Stormwater (10% of Net Developable Acreage)	187 – 239 acres
Total Developable Area	1,497 – 1,909 acres

**Combined area accounts for overlap of wetland and floodplain features which occupy much of the same geographic space.*

The market analysis yielded the following development potential of the site.

Table 6-2: Summary of Development Potential for the Moyock Mega-Site

Land Use	Measure	Low	High
Residential	Units	2,500	3,000
Retail	Square Feet	250,000	500,000
Office	Square Feet	150,000	300,000
Industrial	Square Feet	750,000	1,000,000



The development potential yield was reviewed to determine if there was enough developable land to “fit” the development potential. The high end of the development range was utilized and certain assumptions were made regarding residential product type and densities as illustrated in **Table 6-3** below.

Table 6-3: Summary of Land Use Type and Density Development Yield

Land Use	Yield	Area (acres)
Residential (Low Density-2units/acre)	1,500 units	750
Residential (Medium Density-8 units/acre)	1,200 units	150
Residential (High Density-15 units/acre)	300 units	20
Retail (10k sf/acre)	500,000 sf	50
Office (12k sf/acre)	300,000 sf	25
Industrial (10k sf/acre)	1,000,000 sf	100
Total		1,095

*Square Feet (sf)

Based on above, there are approximately 1,497 to 1,909 acres of land available for development and approximately 1,095 acres of land required for full build-out. Therefore, there is enough land to “fit” the high end of the development potential and the high end of the development potential was utilized to evaluate wastewater generation rates.

Based on the wastewater flow rate guidelines in NCAC 2T Rules (15A NCAC 02T.0114), the wastewater generation rates for the high end of the development yield are based on the following assumptions:

- Residential flow is based on 120 gallons per day per bedroom and three bedrooms per unit
- Retail flow is assumed to include food service at a rate of 130 gallons/ 1,000 square feet
- Office and industrial space flow is assumed to be the minimum of 880 gallons/acre



Based on the stated guidelines and the above assumptions, the following wastewater generation rates were determined for the full build-out of the site.

Table 6-4: Summary of Potential Development and Wastewater Generation Rates

Type of Development	Quantity	Flow Rate	Total (gpd)
Residential (Assume 3 bedrooms/unit)	3,000 units	360 gpd/unit	1,080,000
Retail	500,000 sf*	130 gpd/1,000 sf*	65,000
Office	25 acres	880 gpd/ac	22,000
Industrial	100 acres	880 gpd/ac	88,000
Total			1,255,000

*Square Feet (sf)

Wastewater Considerations

COLLECTION AND TREATMENT

Using the high end of the development yield from the market analysis, nearly 1.3 mgd of wastewater will be generated at full build-out. The WWTP, with its current and planned capacity, can serve a significant level of build-out of the site as well as within the existing service area after which additional treatment and disposal capacity will be required. Future expansion of the WWTP beyond what is currently planned is recommended. At a minimum, that should consider additional land acquisition for an eventual and future expansion of the WWTP to allow for the full build-out of the site, especially the portion of the site that lies outside of the service area.

An on-site collection system “backbone” will be needed for development sites to connect to. This should be comprised of sanitary sewer systems and likely wastewater lift stations to collect and discharge wastewater to the existing WWTP and is consistent with typical infrastructure required for a development of this scale and nature. This infrastructure should be planned and phased with other public infrastructure improvements for the site such as roadway networks and water distribution system improvements. Subsequent to the development of a Master Land Use Plan, it is recommended that a Master Wastewater Collection System Plan be prepared.

SERVICE AREA

A portion of the project site also lies outside of the service area limits of the WWTP. Long range planning should consider inclusion of the total project site in the WWTP service area and the associated planning of the future WWTP expansions noted above.



Water Supply and Distribution — Existing Conditions

SUPPLY

Currituck County public water service has been available in Moyock since 1989 and the County services approximately 5,300 accounts. Water supply for the County is provided through groundwater wells from the Middle Yorktown aquifer. See **Figure 6-3**.

TREATMENT

Water treatment is provided through the Mainland Water Treatment Plant (WTP) located along Maple Road near the southern end of the Currituck County Regional Airport runway. The Mainland WTP was expanded in 2009 and has a current capacity of 2.9 mgd and is expandable to 6 mgd.

STORAGE

Finished water is stored in five elevated storage tanks totaling 1.3 million gallons (mg) and two reservoirs totaling 1.9 mg. One of the elevated storage tanks, the North Moyock Tank totaling 100,000 gallons, is located off Shingle Landing Road near the southeast corner of the project site on the east side of Route 168. Refer to **Figure 6-3** for the location of the elevated storage tank near the site.

DISTRIBUTION

A 12-inch water main is located along Route 168 that loops into another 12-inch water main located in Tulls Creek Road. The 12-inch water main extends along project site’s entire frontage with Route 168. A 6” water main exists along the project site’s frontage with Newtown Road. There are no other public water mains in the vicinity of the project site. Refer to **Figure 6-2** for locations of the aforementioned water main infrastructure.

Water Demands

Domestic water demands are assumed to be the same as the generation rates for wastewater as noted above and shown in **Table 6-5** below.

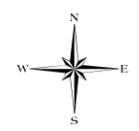
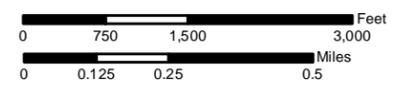
Table 6-5: Summary of Potential Development and Water Generation Rates

Type of Development	Quantity	Flow Rate	Total (gpd)
Residential (assume 3 bedrooms/unit)	3,000 units	360 gpd/unit	1,080,000
Retail	500,000 sf	130 gpd/1,000 sf	65,000
Office	25 acres	880 gpd/ac	22,000
Industrial	100 acres	880 gpd/ac	88,000
Total			1,255,000



Figure 6-3
Existing Water Infrastructure
Currituck County, NC

 Water Tank	 Railroad
 Water Distribution Main & Size	 Virginia/North Carolina State Line
 Road	 Project Area
	 Parcel Boundary



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Data: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Currituck County



Fire suppression demands—generally associated with the commercial land uses—would be in addition to the domestic water demands noted in **Table 6-5** above; however, from a planning level, these demands would have little to no impact on water supply requirements but would likely affect the requirements for on-site water mains and on-site water storage. From a planning standpoint, fire suppression demands would be highly dependent on a number of factors including the following:

- The actual yield and mix (retail, office, industrial) of commercial land uses
- The location of commercial land uses within the site
- Whether or not the commercial buildings will require fire sprinkler systems
- Building materials for the commercial buildings
- Local, state, and federal codes

Generally, fire flow requirements for industrial land uses tend to be higher than office and retail land uses, often since those buildings are typically much larger in size. Fire flow requirements for an industrial land use on the order of one million square feet could range from 2,000 to 4,000 gpm for a warehouse or distribution center type facility. This fire flow would need to be delivered with a typical 20 pounds per square inch (psi) residual pressure in the water distribution system.

Water Supply and Distribution Considerations

Similar to wastewater generation rates, using the high end of the development yield from the market analysis and assuming domestic water demand will equal wastewater generation rates, nearly 1.3 mgd of domestic water demand will be required at full build-out.

SUPPLY AND TREATMENT

The existing Mainland Water Treatment Plant (WTP) has a current capacity of 2.9 mgd and is expandable to 6 mgd. Given that most of future development in the County will likely occur within Moyock and on the Mega-Site, it is anticipated that water supply will be adequate to serve the site when the WTP expandability is considered, including the ability to deliver the required flows for fire suppression for the commercial development of the site.

STORAGE

In addition to the existing water storage throughout the County, it is expected that additional water storage will be required on the project site in one or more elevated tanks. The additional water storage will ensure that pressure requirements are met for domestic water supply to support build-out as well as water flows for external firefighting needs and fire suppression systems specific to the office, retail, and industrial land uses.

DISTRIBUTION

Upsizing of the existing 12-inch water main located along NC-168 or the installation of a parallel water main may be required to minimize the amount of on-site storage required. An on-site water distribution system “backbone” will be needed for development sites to connect to. This should be comprised of water mains and fire hydrants and is consistent with typical infrastructure required for a development of this scale and nature. This infrastructure should be planned and phased with other public infrastructure improvements for the site such as roadway networks and water distribution system improvements. Subsequent to the development of a Master Land Use Plan, it is recommended that a Master Water Distribution System Plan be prepared.



Stormwater Management and Storm Drainage – Existing Conditions

OVERVIEW

The project site is located within the Northwest River watershed. The site drains towards two wetland features that discharge through existing culverts into Tulls Creek which ultimately outfalls into the Northwest River. The site is comprised of mostly agricultural land and two borrow pits are located centrally on site. The agricultural land and borrow pits suggest that the soils are well drained. Review of previously performed geotechnical investigations indicates that there is a clay layer several feet below existing grade underlain by well-draining sandy soils. Refer to **Figure 5-1** for information regarding site topography and drainage features on the site.

STORMWATER MANAGEMENT REQUIREMENTS

The North Carolina stormwater management policy, managed by the Department of Environmental Quality, regulates pollutant discharges associated with development. An increase impervious are due to development requires a stormwater management plan that is able to treat and control stormwater runoff from the site. Since the site being located within Currituck County, it is considered a coastal county by DEQ; therefore, the requirements for stormwater management can be more stringent depending on the outfall water classification.

In order to satisfy the stormwater management requirements, the stormwater management systems must remove pollutants as well as detain the peak flow from the site during specific storm events. During the one-year, 24-hour storm event, the post-development peak flow must be less than or equal to the pre-development peak flow. Traditional wet pond systems can be used to detain the flow as well as treat pollutant runoff from the site. Low impact development measures are preferred and should be evaluated during design.

Stormwater Considerations

Preliminary analysis was performed to determine potential stormwater management requirements for the site to address stormwater quality as well as attenuation for stormwater discharge. Based on the projected land uses for the site, **Table 6-6** summarizes the impervious areas typically generated from these land uses:

Table 6-6: Summary of Impervious Area Created by Proposed Development

Type of Development	Area (acres)	Typical Percent Impervious	Total Impervious Area (acres)
Residential (High Density)	20	90%	18
Residential (Medium Density)	150	65%	98
Residential (Low Density)	750	40%	300
Retail	50	90%	45
Office	25	85%	21
Industrial	100	90%	180
Road Rights-of-Way/Utility Easements	350	75%	263
Total	1,345		925



In order to treat and attenuate the stormwater runoff from the site, approximately 350 acres of the site will be required for stormwater management. It is expected that stormwater management measures will predominately be comprised of retention basins. The coastal location of the site and the potentially poor soils may inhibit the use of other types of low impact stormwater management, such as infiltration. From a land planning standpoint, retention basins should be planned and designed as regional facilities to maximize overall land use efficiency and to create opportunities for large ponds and lakes that can become attractive amenities within the overall development.

From a land planning standpoint and depending on the timing of the mining operations on site, the existing mines on the site should be considered when siting retention basins on the project site to take advantage of the already excavated areas associated with the mines. Furthermore, geotechnical considerations should factor into the planning of retention basin locations to maximize the ability to excavate in areas of sandy soils given that the sandy soils could have a high value for reuse on the site as structural fill.

Stormwater discharge capacity is limited from some of the main existing outfalls from the site, mostly due to relatively small culverts that exist under public and private roadways south and east of the project site. Some of these outfall systems and culverts may require upsizing to increase discharge capacity and possibly reduce the amount of stormwater attenuation required on the site.

Electrical Power, Communications, and Natural Gas — Existing Conditions

OVERVIEW

The site's close proximity to NC-168 allows access to the existing private utility service providers within the region which include Dominion North Carolina Power, Piedmont Natural Gas and Century Link. There are existing overhead power lines located on the east, along NC-168, and west, along Northwest Backwoods Roads, of the site as well as an underground power line that serves the existing waste water treatment plant located on the site. This infrastructure is owned by Dominion NC Power. Piedmont Natural Gas infrastructure is located along NC-168 to the east of the site. Century Link, which provides communication services, has existing fiber networks located to the east, south and west of the site along NC-168, South Mills Road, and Northwest Backwoods Road, respectively.

SERVICE AVAILABILITY

The existing power, natural gas and communications lines surrounding the site, are able to be extended internally and provide service to the proposed development. Dominion NC Power confirmed the overhead and underground lines are three-phase power and can be extended to serve the site. The existing natural gas lines owned by Piedmont Natural Gas are 2 -inch lines which can be extended to serve the site for proposed development. Also, Century Link communications can provide fiber to the development via their existing fiber network that is located around the site.

Utilities Considerations

Due to the location of existing utilities around the development site, the future extension of the utilities will provide the necessary service for development. Coordination with the utility owners as development occurs will verify the existing demands and any necessary upgrades needed.



Transportation – Existing Conditions

OVERVIEW

An inventory of existing transportation infrastructure as well as a cursory determination of future transportation needs was conducted for the Moyock Mega-Site property. The primary transportation infrastructure components evaluated consisted of the roadway network, railroad, and aviation (see **Figure 6-4**). Although ferry service is provided and the Currituck Sound provides a means of access to the Intracoastal Waterway deep water access via the existing Currituck County coast line was not considered as a part of the transportation facilities assessment.

ROADWAY NETWORK

Currently there is no significant roadway network in place to support the scale of development envisioned for the Mega-Site. There are the several gravel/dirt roads that provide a means of access to/from the water treatment facility located on the site as well as routes for trucks and equipment to use when accessing the mines or borrow pits located internal to the site.

Highways

North/South Corridor

North Carolina (NC) 168 (Caratoke Highway) is a five lane highway that serves as the major north-south corridor from the Virginia line to the intersection of U.S. Route 158 at Barco. From this point, NC-168 joins U.S. Route 158 and continues south to Outer Banks into Dare County via the 4 lane divided span Wright Memorial Bridge. In the vicinity of the Mega-Site, annual average daily traffic (AADT) counts collected by the North Carolina Department of Transportation (NCDOT) indicate that the facility carries approximately 24,000 vehicles per day (vpd) under normal non-seasonal peak conditions. The posted speed limit varies from 45 mph to 55 mph and the functional classification for the roadway is minor arterial.

East/West Corridors

U.S. Route 158 is the major east-west intrastate corridor from the Outer Banks to the interior of the State (e.g., a means of direct access to Elizabeth City or U.S. Route 17). Access to this facility is located approximately 17 miles to the south of the Mega-Site via NC-168 or NC-34 in Sligo. Within Currituck County, U.S. Route 158 is primarily a two-lane undivided facility. The AADT count data collected and compiled by the NCDOT indicate that the facility carries approximately 5,500 vpd near NC-168 and up to 10,000 vpd near its intersection with NC-34 under normal non-seasonal peak conditions. The posted speed limit is 55 mph and the functional classification for the roadway is minor arterial.

Existing/Local Roadway Network/Infrastructure

- **South Mills Road** (SR 1227) is a two-lane, undivided local roadway that bounds the Mega-Site to the south running in an approximate east-west direction. South Mills Road intersects NC-168 to the east, provides access to and from a variety of residential land uses within the Mega-Site study area and is a primary route of travel to South Mills, NC located to the west. Traffic counts collected by the NCDOT in 2014 indicate that the facility carries approximately 2,500 vpd within the study area. The posted speed limit varies from 35 mph to 55 mph and the functional classification for the roadway is minor collector.

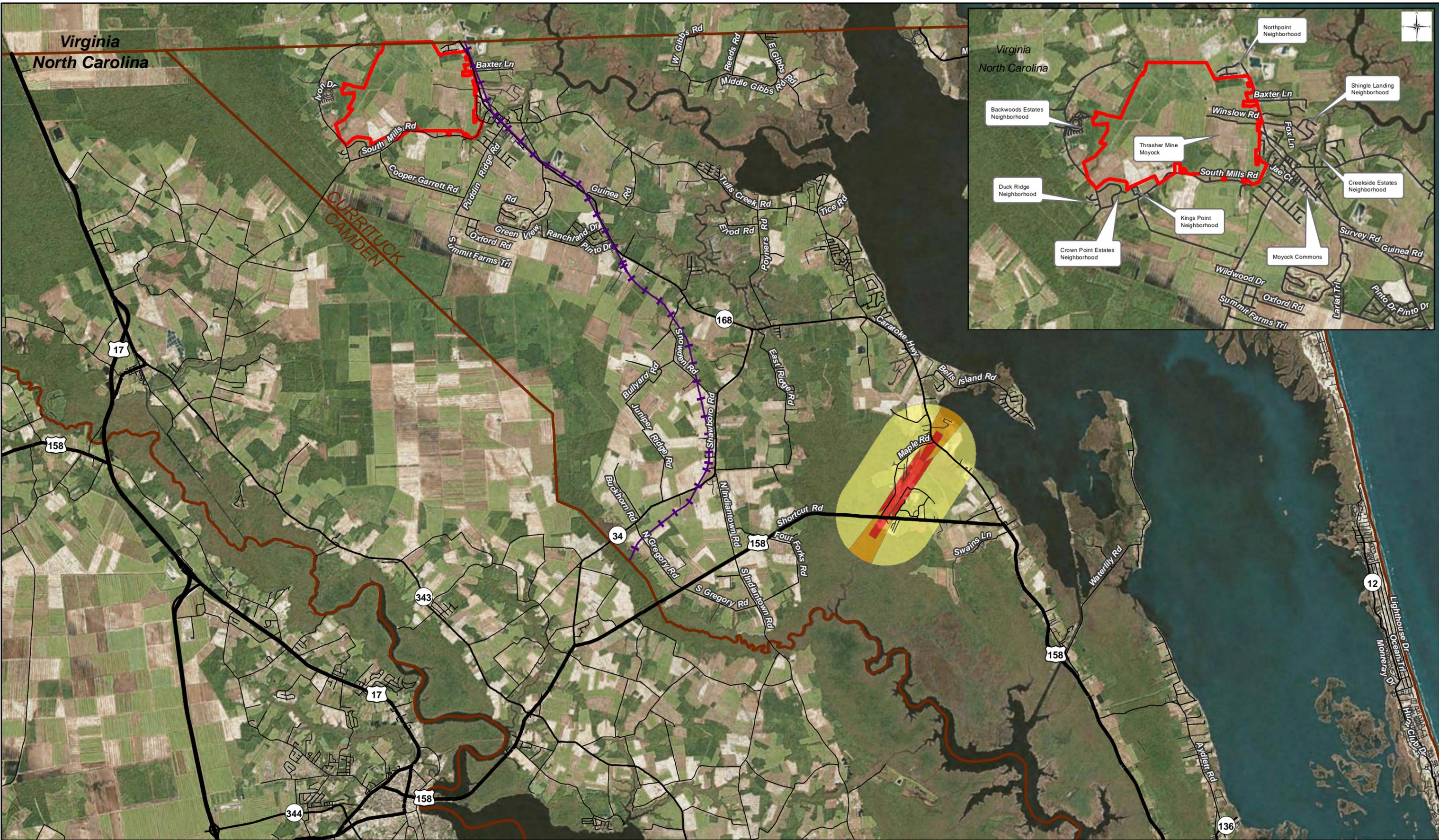


Figure 6-4
Transportation Infrastructure
Currituck County, NC

- | | | | |
|-----------------|------------|----------------|--------|
| Project Area | Interstate | Secondary Road | AICUZ1 |
| County Boundary | US Route | Other | AICUZ2 |
| Railroad | NC Route | Ramp | AICUZ3 |



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Data Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Currituck County



- **Newtown Road** (SR 1228) is a two-lane, local roadway that bounds a portion of the Mega-Site to the south/southeast running in an approximate north-south direction. Newtown intersects South Mills Road to the south, provides access to and from a variety of residential land uses adjacent to the Mega-Site, and provides a means of access to NC-168 via South Mills Road to the south or Lazy Corner Road to the north.

Traffic counts collected by the NCDOT in 2014 indicate that the facility carries approximately 1,500 vpd. The posted speed limit 25 mph and the functional classification for the roadway is local road.

- **Backwoods Road** (SR 1218) is a two-lane undivided roadway that located to the west of Mega-Site. The roadway is oriented in an approximate north-south direction, turning toward the east and north toward Virginia and southern Chesapeake. Backwoods Road intersects South Mills Road to the south, provides access to and from a variety of residential land uses adjacent to the Mega-Site. Traffic counts collected by the NCDOT in 2014 indicate that the facility carries approximately 1,500 vpd. The posted statewide/statutory speed limit on the roadway is 55 mph and the functional classification of the roadway is minor collector.

Aviation

Currituck County Regional Airport

The Currituck Regional Airport is a publicly owned General Aviation Airport that is open to the public 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.

The growth rate of the Airport is anticipated to increase dramatically over the next several years, and the County has planned for the increase demands in its [Airport Layout Plan Update](#), a 20-year Airport Improvement Program. This plan has four development phases:

1. 0–5 years (Phase I) — A NEPA Environmental Assessment has been completed for [Phase I projects](#).
2. 6–10 years (Phase II)
3. 11–20 years (Phase III), and;
4. +20 year (Ultimate) development

To improve the safety of aircraft operations and the ability of the airport to accommodate and attract business aircraft, the County has extended the runway to 5,500 feet and constructed a terminal building. Providing airport infrastructure to support economic development and increase the business tax base in the County is a high priority. The County recognizes that providing up-to-date airport facilities that can accommodate corporate aircraft is vital to attracting new and expanded industry.

Railroad Network/Infrastructure

Rail service in Currituck is provided by the [Chesapeake & Albemarle Railroad](#), an operating unit of Rail America, the world's largest short line and regional freight railroad operator. Albemarle & Chesapeake has interconnections with CSX and Norfolk Southern lines.



SIGNIFICANT PROPOSED/PLANNED ROADWAY IMPROVEMENT PROJECTS

The Currituck County Comprehensive Transportation Plan (CTP) has been developed to ensure that the existing transportation system will continue to be improved and enhanced in order to meet the needs of the region today and into the future. The CTP is intended to be utilized by local officials to confirm that planned transportation facilities reflect the needs of the public, while minimizing the disruption to local residents, businesses and environmental resources. Several significant roadway improvement projects have already been identified in the current CTP that will benefit accessibility to/from the Mega-Site as well as the attractiveness of the site for future development. Descriptions for these key projects consists of the following:

1. Mid-Currituck Bridge, 2016–2025 State Transportation Improvement Program (STIP): No. R-2576

U.S. Route 158 is the only highway corridor providing access to and from the Currituck County Outer Banks. Due to high existing and future travel demand, there is a substantial need to improve traffic flow on the project area's thoroughfares (U.S. Route 158 and NC-12) and reduce travel time between the Currituck County mainland and the Currituck County Outer Banks. Evacuation times from the Outer Banks along U.S. Route 158 and NC-168 must also be reduced. The Mid-Currituck Bridge will improve mobility and road capacity within the project study area by providing an alternative route to and from the Currituck County Outer Banks. The travel time across the bridge is estimated to be from 10 to 14 minutes.

The planned Mid-Currituck Bridge project (STIP) No. R-2576) will cross the Currituck Sound providing a key connection between the mainland of Currituck County and Corolla. The project will consist of constructing a new 2-lane bridge with 12-foot travel lanes and 10-foot shoulders. An interchange is proposed for the connection at U.S. Route 158, while a roundabout is planned for the bridge landing/tie in point with NC-12 south of Corolla.

2. Proposed East-West I-44 Connector, Local ID: CURR0010-H

Northern Camden and Currituck Counties have experienced rapid residential subdivision growth in the past 10 years as the Hampton Roads development in Virginia expands and grows southward. Both Counties are actively working with the Port of Virginia to expand port-related and maritime distribution and value-added opportunities by expanding the Port's Foreign Trade Zone program into Northeast North Carolina. Additionally, recent direction from the Governor's NCDOT 25 year vision plan includes the State's push to designate and improve the current U.S. Route 17/U.S. Route 64 corridor from Hampton Roads to Raleigh for a future interstate route. This plan would further enhance Camden and Currituck's potential role in a mid-Atlantic distribution network connecting North Carolina and Virginia's economic centers and ports of entry.

Currituck and Camden Counties are limited in their east-west highway connections, especially in the northern portions of each closest to Hampton Roads. Only one major thoroughfare, South Mills Road/SR 1227, is available for traffic covering a nearly 30- mile stretch from U.S. Route 158 to the Virginia border. The lack of a dedicated, limited-access road to provide a vital connection between the already busy NC-168 highway corridor and the U.S. Route 17 highway corridor has been identified as a likely restriction commerce and economic development opportunities.



NC-168 is currently a 5-lane boulevard from the Virginia line to U.S. Route 158. NC-168 is a major north-south corridor in Currituck County, connecting the City of Chesapeake and the Hampton Roads area of Virginia with Currituck County. The proposed connector road has been identified as a vital artery in moving people and goods through northeast North Carolina as well as connecting Virginia and other points north with the coastal region of North Carolina.

The proposed East-West I-44 Connector project (Local ID: CURR0010-H) is expected to consist of constructing a 4-lane divided boulevard on a new location in Moyock from NC-168 near the Virginia line to U.S. 17 in northern Camden County. The proposed connector road will alleviate traffic congestion and potentially unsafe conditions on SR 1227/South Mills Road and provide excellent regional mobility for commercial traffic access points to/from the west of the NC-168 corridor.

3. **NC-168 Proposed Bypass from NC-168 to U.S. Route 158, Local ID: CURR0003-H**

Findings in the Currituck County CTP indicate that traffic volumes on NC-168 are projected to exceed capacity by 2035 from the Virginia line to Survey Road (SR 1215) and to approach capacity by 2035 from Survey Road (SR 1215) to NC-34. There are significant periods of congestion on this facility during the summer tourist season. The primary purpose of improving NC-168 is to relieve congestion on the existing facility in an effort to improve the mobility of people and goods using the facility through Currituck County during normal travel periods throughout the year as well as during peak tourist season.

NC-168 is currently a 5-lane boulevard from the Virginia line to U.S. Route 158. NC-168 is a major north-south corridor in Currituck County, connecting City of Chesapeake and the Hampton Roads area of Virginia with Currituck County. The proposed NC-168 Bypass around Moyock will help to reduce congestion along NC-168 between Virginia and the proposed Mid-Currituck Bridge.

The proposed NC-168 Moyock Bypass project (Local ID: CURR0003-H) will consist of constructing a four-lane freeway (limited access) on new location bypassing the Village of Moyock from NC-168 near the Virginia line to U.S. Route 158, with interchanges tentatively proposed at NC-168, South Mills Road (SR 1227/1218), NC-34 and U.S. Route 158.

4. **NC-168 Proposed Improvements from Virginia to U.S. Route 158, Local ID: CURR0002-H**

NC-168 is currently a 5-lane boulevard from the Virginia line to U.S. Route 158. According to the Currituck County CTP, this facility is projected to exceed capacity by 2035 from the Virginia line to Survey Road (SR 1215) and to approach capacity by 2035 from Survey Road (SR 1215) to NC-34. As noted previously, the NC-168 corridor experiences significant periods during the summer tourist season with traffic traveling to/from the Outer Banks. The primary purpose of improving NC-168 is to relieve congestion on the existing facility in an effort to improve the mobility of people and goods using the facility through Currituck County during normal travel periods throughout the year as well as during peak tourist season.

NC-168 is a major north-south corridor in Currituck County, connecting the City of Chesapeake and the Hampton Roads area of Virginia with Currituck County. The facility is a vital artery in moving people and goods through North Carolina, connecting Virginia and other points north with the coastal region of North Carolina.



The NC-168 Improvements project (Local ID: CURR0002-H) will consist of improving the existing 5-lane major thoroughfare to a 4-lane divided boulevard from the Virginia line to U.S. 158. The proposed introduction of a median to the corridor will implement necessary access management strategies that will preserve and extend roadway capacity, improve operational efficiency, and enhance overall corridor safety.

5. **U.S. Route 158 Proposed Improvements from Camden County to Proposed Mid-Currituck Bridge, STIP No. R-2574**

Findings in the Currituck County CTP indicate that traffic volumes along U.S. Route 158 are projected to exceed available capacity by 2035 from Camden County to NC-168. U.S. Route 158 is a major corridor in Currituck County, connecting the western part of the county, near Camden County and Elizabeth City with the southern region of the county as well as Dare County. U.S. Route 158 is a vital artery in moving people and goods through North Carolina, connecting northern North Carolina and Virginia with the northern outer banks region of North Carolina.

Existing U.S. Route 158 is a 2-lane thoroughfare from the Camden County line to NC-168. However, due to its critical function in the transportation network serving this area of northeast North Carolina, the NCDOT Strategic Highway Corridor (SHC) Vision Plan has designated U.S. Route 158 as an Expressway from Camden County to NC-168 in order to improve regional and statewide mobility and connectivity.

The proposed U.S. Route 158 Improvements project (STIP No. R-2574), will consist of widening U.S. Route 158 to a 4-lane expressway from the Camden County line to the proposed Mid-Currituck Bridge. Interchanges are recommended at proposed NC-168 Bypass, Maple Community Center, and NC-168. The proposed improvements to U.S. Route 158 will help reduce congestion between Elizabeth City and other points west, as well as to/from the Outer Banks.

6. **U.S. Route 158 Proposed Improvements from Proposed Mid-Currituck Bridge to Dare County, Local ID, CURR0001-H**

Findings in the Currituck County CTP indicate that traffic volumes along U.S. Route 158 are projected to be near or above the capacity of the existing facility by 2035 from Fisher Landing Road (SR 1124) to Snow Lane (SR 1115) and from Church Road (SR 1107) to Dare County. There are significant periods of congestion on this facility during the summer tourist season. The primary purpose for improving U.S. Route 158 is to relieve congestion on the existing facility in an effort to improve the mobility of people and goods using the facility through Currituck County during normal travel periods throughout the year as well as during peak tourist season. This intent is consistent with the North Carolina SHC Vision Plan.

U.S. Route 158 is a major corridor through Currituck County, connecting the western part of the county, near Camden County and Elizabeth City with the southern portion of the county as well as Dare County. South of the proposed Mid-Currituck Bridge interchange/tie in point, this facility is the primary north-south connector. U.S. Route 158 is currently a 5-lane boulevard from the proposed Mid-Currituck Bridge to the Dare County line. The NCDOT SHC Vision Plan has designated U.S. Route 158 as a boulevard from NC-168 to Dare County, in order to improve regional and statewide mobility and connectivity.



The proposed U.S. Route 158 Improvements project (Local ID: CURR-0001-H) is expected to consist of improving the existing 5-lane boulevard to a 4-lane divided boulevard from the proposed Mid-Currituck Bridge to the Dare County line. The proposed improvements to U.S. Route 158 will help to reduce congestion between Virginia and Dare County. The introduction of a median to the corridor will result in the implementation of necessary access management strategies that will preserve and extend roadway capacity, improve operational efficiency, and enhance overall corridor safety.

7. **South Mills Road (SR 1227) Proposed Improvements from the Camden County Line to Proposed NC-168 Bypass, Local ID: CURR0006-H**

This two-lane road currently serves as a connection between NC 168 in Currituck County and U.S. Route 17 in Camden County. The findings in the Currituck County CTP recommend that South Mills Road (SR 1227) be widened to a four lane major thoroughfare, with paved shoulders and turn lanes where necessary from the Camden County line to the location of the proposed NC-168 Bypass. The facility should be realigned on new location wherever necessary.

The need to improve and widen South Mills Road from a two-lane facility to a four-lane facility is in response recent growth and development patterns and future plans in both Camden County and Currituck County. There is currently a large-scale commercial and residential development being planned along the eastern side of U.S. Route 17 in northern Camden County, just south of the Virginia border. The need to improve South Mills Road (SR 1227) is further magnified based on the additional development, growth, and anticipated traffic demand associated with the proposed Mega-Site development in northern Currituck County along the west side of NC-168.

The improvements associated with the South Mills Road (SR 1227) project (Local ID: CURR0006-H) would consist of widening the existing facility from two to four lanes and/or constructing where necessary a four-lane roadway on new alignment. The improved roadway would help create a better connection between the two new developments for Currituck County residents as well as traffic travelling to/from other destinations north or south of Currituck County. This connection was identified as a local priority.

The above referenced projects are all regionally significant in scale and would not only result in improved accessibility to the Outer Banks and economic development opportunities in Currituck County, Camden County and Dare County, but would also further enhance the development potential of the Mega-Site. East-west connectivity between Moyock/the Mega-Site and NC 168 to points west as well as an efficient and safe means of access to/from a north-south corridor such as U.S. Route 17 or NC 168 into Virginia and the Hampton Roads market are key components to the regional roadway infrastructure necessary for the Mega-Site. **Figure 6-5** and **Figure 6-6** reflect the location and extent of the planned or proposed significant roadway improvement projects.

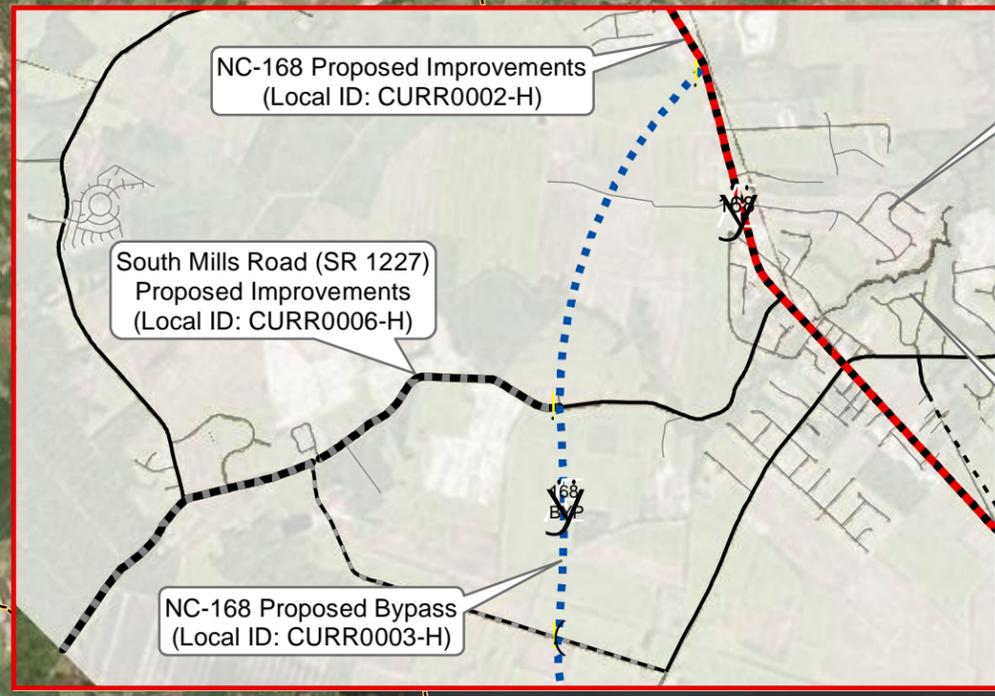
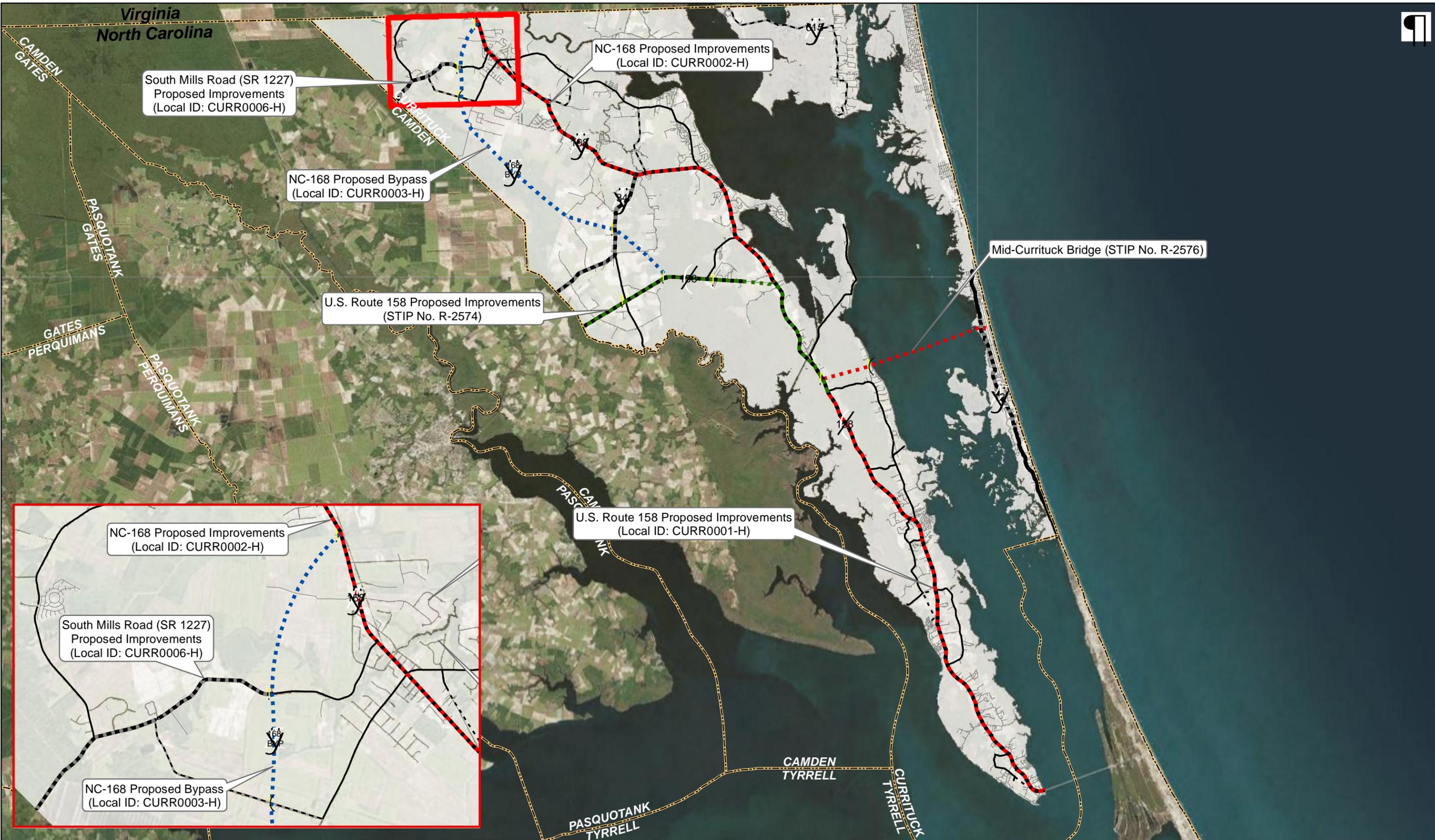


Figure 6-5
Proposed/Planned Roadway Improvement Projects
Currituck County, NC

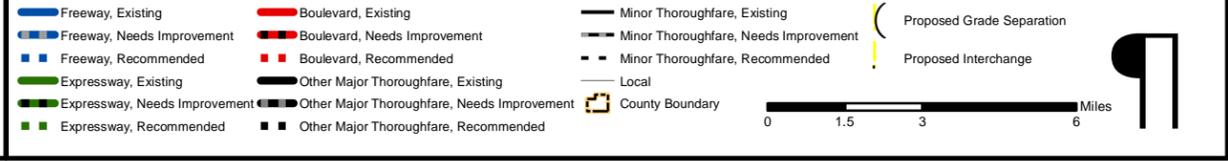
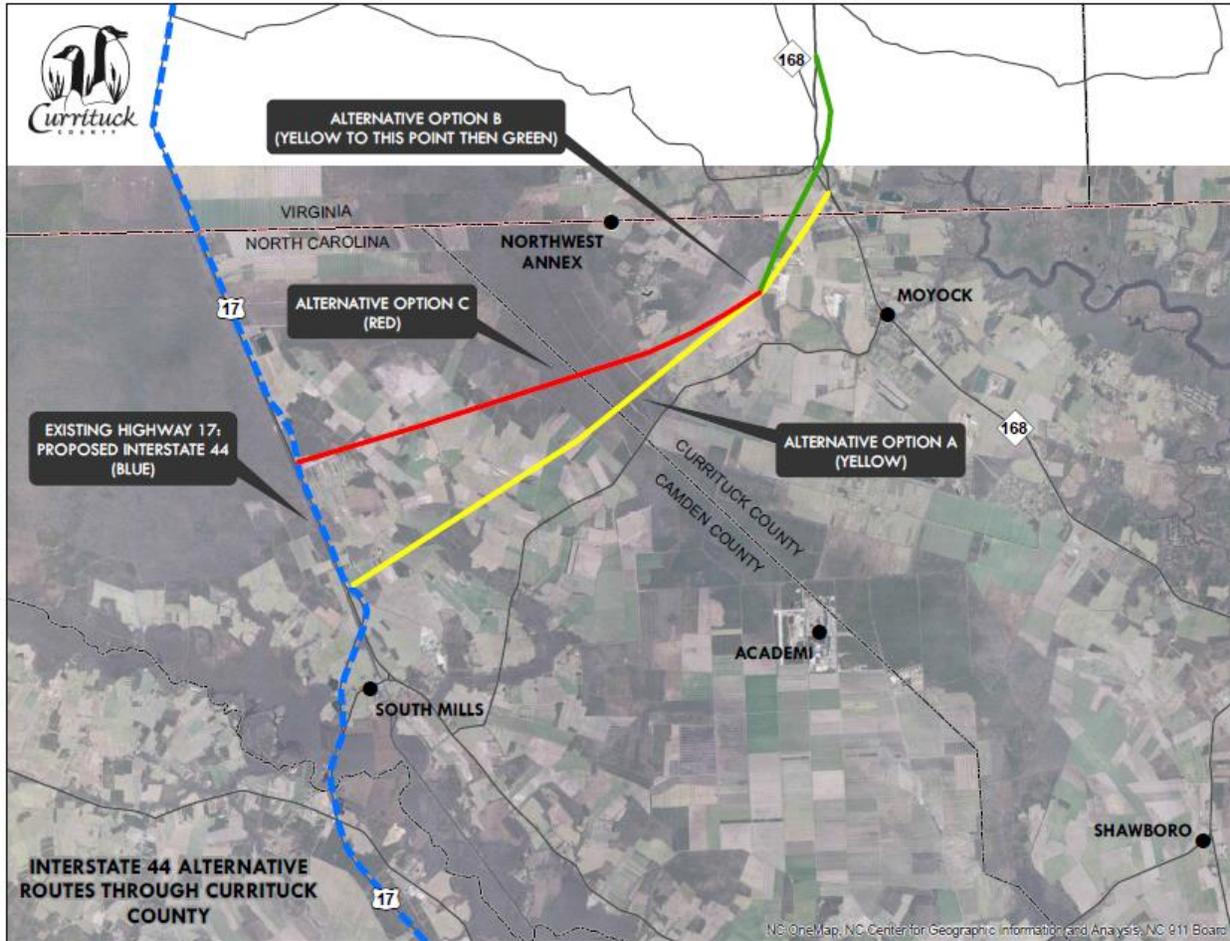


Figure 6-6: Proposed Future I-44 Connector Alternative Alignment Options



Source: Amended Currituck County Comprehensive Transportation Plan, NCDOT, Adopted November 2015



The acreage, land uses, densities, and land bay/area designations shown in **Table 6-7** have been identified for the Mega-Site based on the market analysis and land use demand projections.

Table 6-7: Developable Acreage, Land Use and Density

Acreage	Land Use Description	Density
750	Residential (Low Density-2units/acre)	1,500 du*
150	Residential (Medium Density-8 units/acre)	1,200 du
20	Residential (High Density-15 units/acre)	300 du
25	Retail (10k sf/acre)	250K sf**
25	Office (12k sf/acre)	300K sf
200	Industrial (5k sf/acre)	1M sf
1,170	Net Developable Acreage	
1,440	Open Space/Wetlands/Opportunity Land Bank	N/A
240	Right-of-Way/Utilities	N/A
240	Stormwater	N/A

*Dwelling Units (du) **Square Feet (sf)

Based on the anticipated market demand, net developable acreage, and potential land uses, **Table 6-8** reflects the trip generation potential of the Mega-Site as the various areas of the site develop over the next 30 years. The trip generation estimates indicate that approximately 50,000 daily trips could be added to the local roadway network with the development of the Mega-Site.

Table 6-8: Trip Generation – Total of New Trips

ITE Code	Land Use Description	Density	Daily Trips	AM Trips	PM Trips
110	General Light Industrial	250K sf	1,766	206	200
130	Industrial Park	750K sf	5,124	615	638
210	Single Family Detached	1,500 du	12,560	1,060	1,202
230	Residential Townhouse/Condo	1,200 du	5,588	377	461
220	Apartments	300 du	1,942	151	183
820	Shopping Center	250K sf	12,320	273	1,107
826	Specialty Retail Center	250K sf	10,734	N/A	621
750	Office Park	300K sf	3,536	535	462
TOTAL			53,570*	3,217	4,874

*Assumes no pass-by traffic from existing adjacent streets or internal capture for complimentary and co-located land uses.



Transportation Considerations

Designation of land uses and land bays to specific areas of the Mega-Site through the development of a site Master Plan should be established. This will allow the County in coordination with the NCDOT to define a roadway network infrastructure (e.g., four-lane divided boulevards vs. two-lane collectors) capable of supporting the proposed land uses and their associated traffic generation characteristics. Based on the promotion of the Mega-Site and the ability to attract potential development(s) operational analyses of roadway and intersections should be conducted to right-size the new roadway infrastructure as well as identify improvements that will be necessary for the adjacent/existing roadway network.

In addition to roadway network infrastructure improvements, if the County is truly considering the ability to offer/market rail access to Mega-Site, this must be taken into consideration with the eventual development of a Mega-Site Master Plan. Rail location will influence land bay layout as well as location of certain types of land uses in proximity to one another (i.e., Industrial Park near Retail or Residential development).

Although aviation assets/infrastructure were not considered vital to the development or attractiveness of the Moyock Mega-Site they are an important component for the continued economic development vitality of the County. However, efficient, reliable, and modernized aviation assets are an important resource and factor in quality of life for current residents and business owners as well as potential new residents or new businesses considering locating in Currituck County. The County should continue to enhance safety, services, and accommodations at the airport as outlined in the *Airport Layout Plan Update*. The Currituck County Regional Airport will continue to grow in value with its ability to accommodate corporate aircraft and attracting/serving new and expanded industries.

Based on the anticipated scale and composition of Mega-Site land uses, it is important that with the development of the Master Plan, accommodations for bicyclists and pedestrians be considered. This is of particular significance for the residential, community commercial/retail, and office designated areas of the Mega-Site. Sidewalks, multi-use paths, bike lane signage as well as dedicated bike lanes in the roadways not only promote and accommodate bike and pedestrian mobility, studies have shown such amenities also enhance property values further promoting the attractiveness and development potential of the Mega-Site.

With an anticipated increase in residential development and associated trip generation and commuter traffic to/from Moyock, transportation demand management (TDM) strategies should be considered. Strategies may consist of establishing agreements with Hampton Roads Transit (HRT) for the provision of express bus serves between Moyock and major employment centers in the Hampton Roads region, as well as park and ride, carpooling, and even vanpooling incentives.



Conclusions and Recommendations

Currituck County initiated a market feasibility study to facilitate the assessment of the market potential and feasibility for a large scale, phased, mixed-use development located on a contiguous land area of approximately 3,000 acres in the Village of Moyock, Currituck County, North Carolina—“The Moyock Mega-Site”.

The primary intent of this study was to proactively gauge the economic development opportunities that would allow the County to capitalize on the increased market demand, specifically in Moyock, for light industrial, office, multi-family residential, single family residential, and commercial/retail developments that have risen over the past two years as the region continues to rebound from the 2007–2009 recession.

The results from market analysis and feasibility assessment indicate notable potential economic development opportunities for the County founded on a variety of land uses for the Moyock Mega-Site. A summary of projected demand potential by land use type is presented in **Table 7-1**.

Table 7-1: Demand Summary of Land Uses for the Moyock Mega-Site, (2015-2045)

Type	Measure	30-Year Demand	
		Low	High
Residential	Units	2,500	3,000
Retail	Square Feet	350,000	500,000
Office	Square Feet	150,000	300,000
Industrial	Square Feet	750,000	1,000,000

Source: Kimley-Horn

The development potential yield was reviewed to determine if there was enough developable land to “fit” the development potential. The high end of the development range was utilized and certain assumptions were made regarding residential product type and densities as illustrated in **Table 7-2** below.

Table 7-2: Summary of Land Use Type and Density Development Yield

Land Use	Yield	Area (acres)
Residential (Low Density-2units/acre)	1,500 units	750
Residential (Medium Density-8 units/acre)	1,200 units	150
Residential (High Density-15 units/acre)	300 units	20
Retail (10k sf/acre)	500,000 sf	50
Office (12k sf/acre)	300,000 sf	25
Industrial (10k sf/acre)	1,000,000 sf	100
Total		1,095

Source: Kimley-Horn

Based on the market analysis and projected development demand forecasts, environmental screening findings, and our assessment of the County’s existing utilities and transportation infrastructure we offer the following recommendations to facilitate the intended development of the Moyock Mega-Site.



MARKET FEASIBILITY

- Currituck County is advised to undertake a land planning/master planning effort for the Moyock Mega-Site.
 - The land planning effort should result in the development of a Master Land Use Plan that will provide detailed acreage requirements and a conceptual layout for the Mega-Site
 - These efforts need to incorporate flexibility for the development to react to changing market conditions over the build-out of the property.
 - Given the 30-year forecast period, and the intent of the County to attract industrial, office, and commercial/retail land uses it is vital that the County intentionally protect prime acreage within the site for non-residential development.
- Given the lack of diversity in residential product currently offered in Currituck County, a review of density and approval policies should be undertaken to allow more variation in the future.
- Work with existing property owners to establish common land prices and cooperative development agreements.
- Currituck County should establish branding for the Moyock Mega-Site, including strategies to effectively market the development to potential developer partners, tenants, and future customers. This analysis, coupled with the Master Plan, will be key tools in the marketing efforts.
- Use the land planning process to identify strategic properties in which to offer transportation, utility, and power infrastructure.
 - Identify/establish shovel-ready sites to successfully market the property.
 - Strategically invest in sites/properties that potential tenants could occupy within six months to one year of signing a lease
- Determine Currituck County's position on participating in the development of the Moyock Mega-Site, including funding extensions of public infrastructure and offering incentives to potential tenants. Consideration of the following participation levels should be considered:
 - Policy incentives. Consider offering policy incentives such as accelerated or flexible entitlement or density bonuses for the Moyock Mega-Site. This would require a new zoning classification or use of an overlay district. Accelerated or flexible entitlement could help reduce holding periods on the land, ultimately getting development on the ground faster.
 - Financial incentives. There are a number of financial incentives that could be utilized during and after the development period, including:
 - Consider actively participating in site acquisition, commissioning environmental reports, and funding site work.
 - Consider helping to fund infrastructure improvements on the Mega-Site. This could be accomplished through a variety of financial incentives such as Tax Increment Financing (TIF), Synthetic TIF, Infrastructure Grants, General Obligation Bonds, Revenue Bonds, Business Improvement Districts, and Low-Interest Loans. It is noted that TIF districts are more commonly used in Virginia; use of this incentive in North Carolina has been more limited due to the arduous and lengthy process to gain approval by the property owners, county, and state.



- Consider post-development operating subsidies. The most common of these subsidies are property tax credits. Also known as economic development grants, these credits are provided as incentives by public entities to private development. Property tax credits are based on a predefined minimum level of capital investment. Private development can be ‘credited” property tax payments over a set period of time. Many jurisdictions offer a diminishing credit over the period, with the largest credits occurring in the early years.
- Following the completion of a Master Plan, Currituck County should consider issuing a request for proposal to developers to test the marketability of the site.

WATER, UTILITIES, AND STORMWATER INFRASTRUCTURE

Wastewater

- Revise the Moyock Sewer District boundary and subsequent sewer district planning boundary to encompass the Moyock Mega-Site
- Acquire additional land near the Moyock Regional Wastewater Treatment Plant to allow for future expansion beyond what is currently planned
- Upon completion and adoption of a Master Land Use Plan for the Mega-Site, prepare a Master Wastewater Collection System Plan for the site

Water

- Upon completion and adoption of a Master Land Use Plan for the Mega-Site, prepare a Master Water Distribution System Plan for the site
- Upon completion and adoption of a Master Land Use Plan for the Mega-Site, further evaluate the adequacy of the existing water infrastructure near the site, specifically the water main near/along NC-168, and determine if upgrades or additional infrastructure is required

Private Utilities

- Upon completion and adoption of a Master Land Use Plan for the Mega-Site, share the Master Land Use Plan with the private utility service providers and confirm their ability to serve the site given the proposed land uses

Stormwater

- During development of a Master Land Use Plan, integrate expected stormwater management measures into the plan
- During development of a Master Land Use Plan, integrate the existing sand mines into the plan to the extent possible and if feasible given the time remaining on the sand mining operations, if known
- Upon completion and adoption of a Master Land Use Plan for the Mega-Site, further evaluate the adequacy of the existing downstream drainage infrastructure and determine if upgrades or additional infrastructure is required



TRANSPORTATION INFRASTRUCTURE

- Develop and adopt a transportation corridor overlay district for the NC-168
 - This is of strategic importance where the Mega-Site abuts/controls the property along NC-168
 - Establish signalized, unsignalized, full-movement, and partial movement intersection spacing standards consistent with NCDOT Policy On Street And Driveway Access to North Carolina Highways
 - Identify, recommend, and implement preferred access management strategies to enhance operational safety and efficiency on the surrounding area network
- Establish a main entrance/roadway to serve the Mega-Site off of NC-168 in the vicinity of Winslow Road/Moyock Landing Drive or the Baxter Lane intersection
 - Anticipate/designate right-of-way (ROW) necessary to accommodate a four-lane divided boulevard
- Establish a primary entrance/roadway to serve the Mega-Site off of South Mills Road
 - Anticipate/designate right-of-way (ROW) necessary to accommodate a four-lane divided boulevard
- Plan for the improvement of South Mills Road from a two-lane undivided facility to a four-lane divided facility in the immediate vicinity of the Mega-Site as development and growth occur
 - Adequate capacity is available to absorb initial levels of development related traffic demand (e.g., approximately 10,000 vpd). However, it is expected that with continued development and direct access to/from NC-168, South Mills Road will become a primary route serving the site.
 - Maintain as a local priority (per the Currituck County CTP) the improvement of South Mills Road from a two-lane to a four-lane roadway from the Camden County Line to the proposed NC-168 Bypass, Local ID: CURR0006-H
- Plan for safety and general design standard improvements to Backwoods Road
 - Adequate capacity is available to absorb initial levels of development related traffic demand (e.g., approximately 10,000 vpd). However, with increased traffic volumes on this roadway, combined with currently narrow travel lanes, and a posted speed limit of 55 mph, efforts should be made in future to enhance the typical section of the roadway focusing on safety and efficiency.
- Integrate necessary existing local roadway improvements with the phasing and development of the Mega-Site as well as those regionally significant roadway improvements referenced in Chapter 6 and outlined the current Currituck County Comprehensive Transportation Plan (**Figure 6-5 and Figure 6-6**).
- Work collaboratively with NCDOT and Camden County on the development and ultimate construction of the I-44 Connector Road (**Figure 6-6**). The proposed connector between NC-168 and the proposed new I-44 Corridor could prove extremely valuable in the future development of the Mega-Site.



Currituck County Moyock Mega-Site Market Feasibility Study

Chapter 7: Conclusions and Recommendations

- Interchanges for the proposed I-44 Connector Road should be considered at the following locations:
 - Existing Route 168 (Virginia Segment) north of Moyock
 - Internal Arterial Roadway serving the Mega-Site
 - Proposed NC-168 “Moyock Bypass”
 - U.S. Route 17 in Camden County
- Coordinate with the railroad, identify key points of contact, and fully understand the railroad spur/extension process (since not already available to serve the site) so the County and confidently entertain potential users who are requesting or possibly demanding rail access as a part of site development.
- If the County is truly considering the option of offering rail access to serve the Mega-Site, this must be taken into consideration with the eventual development of a Mega-Site Master Plan. Rail location will influence land bay layout as well as location of certain types of land uses in proximity to one another (i.e., Industrial Park near Retail or Residential development).
- The County should continue to enhance safety, services, and accommodations at the airport as outlined in the *Airport Layout Plan Update*. The Currituck County Regional Airport will continue to grow in value with its ability to accommodate corporate aircraft and attracting/serving new and expanded industries.
- As development of the Mega-Site occurs alternative Transportation Demand Management (TDM) strategies should be considered and implemented to mitigate or reduce future peak period traffic congestion. TDM Strategies may consist of but are not limited to the following:
 - Public Transit: Express or Bus Rapid Transit services between regional activity/employment centers
 - Park and Ride incentives
 - Carpooling: two or more people traveling in a car
 - Vanpooling: eight to 15 people traveling in a van
 - Bicycle and pedestrian accommodations that enhance local mobility
 - Multi-use paths
 - Sidewalks
 - Dedicated bicycle lanes
- With the proposed development of the Moyock Mega-Site Master Plan, Currituck County should consider the development a “Complete Streets” policy for roadways anticipated to serve neighborhoods and mixed-use areas of the site that are envisioned to be more pedestrian and bicyclist friendly.

The key next step in the Moyock Mega-Site development process is the establishment of a Master Plan. The Master Plan will define and better characterize the conceptual layout of the site as well as provide an improved understanding of where initial infrastructure investments should be concentrated to best meet near term as well as account for future market demand.



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Technical Appendix

Appendix A – Tapestry Segmentation Profiles

Appendix B – Retail Demand Forecast

Appendix C – USGS and Soils Maps

Appendix D – List of Rare Species

Appendix E – Historic Places Map and Reference Locations

Appendix F – FEMA Flood Insurance Rate Maps (FIRM) References

Appendix G – Facility Registry System (FRS) Database – Hazardous Materials

Appendix H – North Carolina Marine Fisheries

Appendix I – Chapter 7 – Environmental Protection