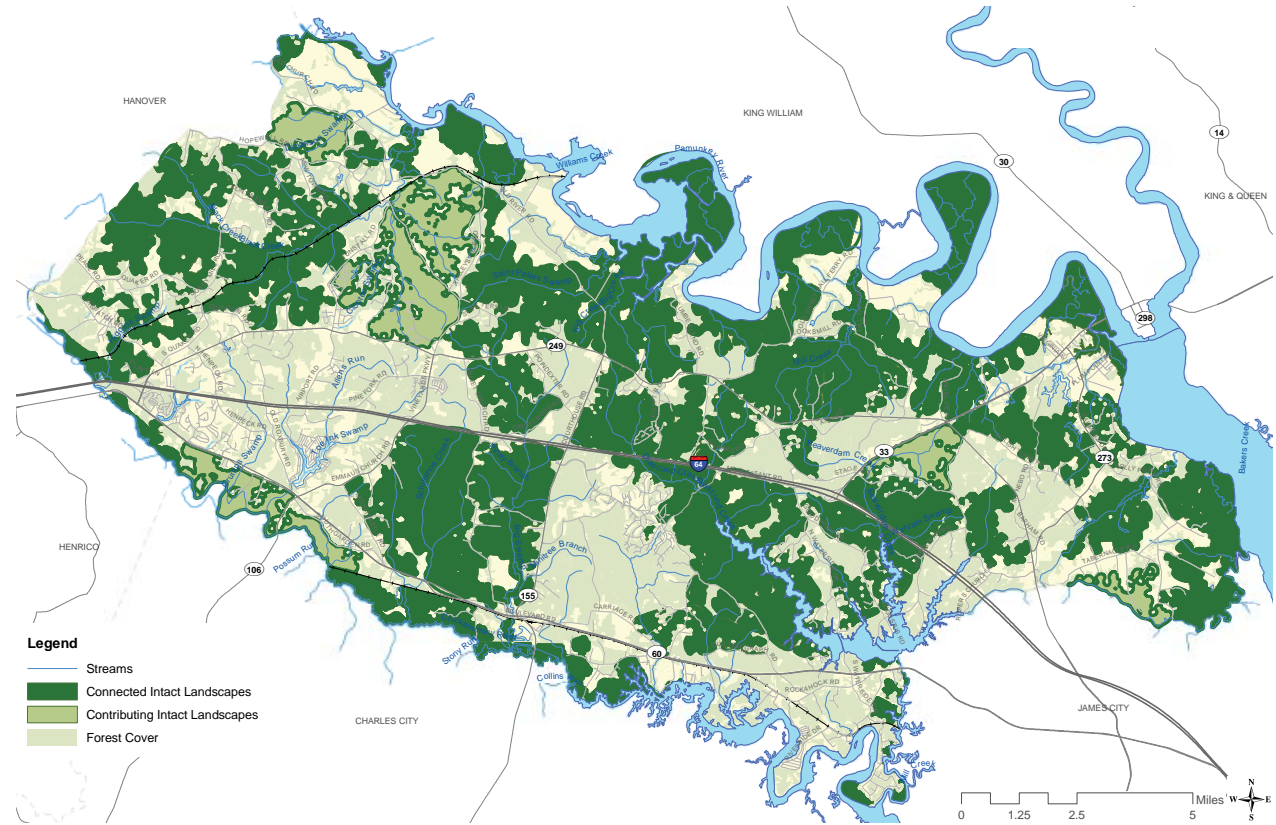


NEW KENT COUNTY'S GREEN INFRASTRUCTURE ASSETS: *PLANNING FOR THE FUTURE*



NEW KENT COUNTY GREEN INFRASTRUCTURE PROJECT

July 2009

ACKNOWLEDGEMENTS

The New Kent County Green Infrastructure Project has been made possible by the hard work, creativity and generosity of many individuals and organizations. New Kent County and the Green Infrastructure Center would like to thank the project's partners and participants, as well as the project's sponsors who have made the project possible. We wish to extend our thanks to the state agencies that have provided important data, models and technical support. Without the work of these dedicated organizations, our work would not be possible.

Additional digital copies of this project report may be obtained from the Green Infrastructure Center's web site, at: www.gicinc.org/resources. For more information on the project, please contact New Kent County Planner Kelli Le Duc at klleduc@co.newkent.state.va.us or GIC Executive Director Karen Firehock at firehock@gicinc.org.

Project Partners

New Kent County
Richmond Regional Planning District Commission
Capital Region Land Conservancy

Virginia Department of Conservation and Recreation, Division of Natural Heritage
Virginia Department of Forestry
Virginia Department of Historic Resources

Project Sponsors

Altria Family of Companies
Robins Foundation
Virginia Coastal Zone Management Program
Virginia Environmental Endowment



Robins Foundation



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* E² Inc. provided technical analysis, mapping, research, and report development services for this project.



Staff from the New Kent County Department of Community Development and GIC project team facilitate a community meeting



View of Rockahock along the banks of the Chickahominy River

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PROJECT OVERVIEW

In spring 2008, the Richmond Regional Planning District Commission and the Green Infrastructure Center (GIC) contacted local governments in the Richmond Region to assess their interest in participating in one of the GIC's field test projects, which are located across Virginia. The projects are part of a three-year effort undertaken by the GIC in 2007 to field-test green infrastructure planning methods. These field tests are designed to help localities evaluate and plan for the management of their green infrastructure assets. Findings from this project will help to inform a green infrastructure planning guide that will be available from the GIC in 2010, following completion of the final field test project, which is located in Accomack County.

New Kent County was selected as the GIC's fourth field-test project based on several criteria:

- The project directly related to overarching goals in New Kent County's Comprehensive Plan and project findings would be available for the county's 2010 comprehensive plan update.
- Project outcomes could inform a variety of county planning activities and initiatives.
- County representatives, including department staff and elected officials, expressed significant interest in the project.
- New Kent County has a proven track record as an innovative locality. For example, the county is one of the 11 Virginia localities that are part of the Cool Counties initiative, a national effort to reduce emissions that contribute to climate change.
- New Kent County is home to some of the Richmond Region's high-value green infrastructure assets and the location, abundance, and status of these resources are changing rapidly due to land development pressures and other factors.

Following the selection process, New Kent County and the GIC undertook this cooperative, community-based project from summer 2008 through summer 2009.

PROJECT PURPOSE

The purpose of the project was to develop a series of maps that identify and provide information for the county's key green infrastructure assets, such as critical forests, watersheds and wetlands, working lands (good agricultural soils and forests suitable for timber management), and areas important for wildlife conservation. This information can be used to:

- guide the 2010 update of the county's comprehensive plan.
- inform planning initiatives such as purchase of development or transfer of development rights programs and zoning-related decisions.
- highlight locations for future county parks and trails.
- identify areas where landowners and developers could work with the county to conserve land using tools such as easements or proffer land as part of rezoning requests.

These maps provide an opportunity for the county to plan for and protect its high-value green infrastructure assets and guide development patterns that are compatible with maximizing ecological, economic and cultural returns from these assets over the long-term.

This report presents the outcomes from the New Kent County Green Infrastructure Project. The report provides an overview of the project's asset maps and focuses on key findings and potential opportunities and next steps for New Kent County and other interested parties. The project's findings are intended to inform ongoing county activities and initiatives as well as the county's 2010 comprehensive plan update.

What Is Green Infrastructure?

Green infrastructure consists of the natural resources and working lands that provide the county's clean water and air, ensure residents' quality of life and sustain the county's economy.

These areas are often considered independently from homes, shopping centers and schools in zoning ordinances and comprehensive plans. In reality, green infrastructure is woven throughout our towns, cities and subdivisions as well as across our mountains, valleys and shores. Planning for grey and green infrastructure needs and priorities must be coordinated. Ideally, green infrastructure is considered first; knowing the location of key green infrastructure assets allows for better decisions regarding the location and design of grey infrastructure. In cases where development is located close to key natural resources, extra care and creative development designs are needed to ensure that resources are conserved.

New Kent County's green infrastructure includes the connected natural systems and ecological processes that provide critical functions, such as rich soils for farming, habitat for wildlife, drinking water storage and filtration, and clean air. The county's green infrastructure also links to and supports historic and cultural resources, such as battlefields, and recreation lands, which provide opportunities for hunting, hiking, horseback riding and bird watching.

Green infrastructure planning connects intact habitat areas (also known as intact landscapes or cores) through a network of corridors to allow people, wildlife and plants to move across the landscape (see illustration, top right).



When a core is removed, connectivity is lost resulting in local species extinction (see illustration, bottom right). A connected landscape makes species less susceptible to extinction while allowing for both conservation and recreation.

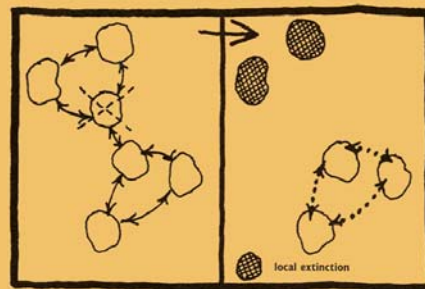


Image credit: Dramstad, Wenche E., et al.

The results: better land use planning, protected green infrastructure and healthier communities.

COMMUNITY ENGAGEMENT

New Kent County initiated its green infrastructure project as a community-based effort built on a foundation of stakeholder engagement, partnership and comprehensive information gathering. Community input and input from county staff and elected officials shaped the project from its outset through to the development of the final asset maps in this report.

The GIC conducted several field visits in the county and conducted detailed interviews with residents, business owners, community organizations, county staff and elected officials, and other resource users throughout the project. The county worked with the GIC to convene a twenty-member focus group that met three times and provided feedback throughout the project.

Draft findings from the project were shared with the Board of Supervisors and Planning Commission, and with the community at a June 2009 Open House held at the New Kent County Visitors and Commerce Center. Appendix C provides a detailed summary of community feedback received during the project.



Community Open House, June 23, 2009

NEW KENT COUNTY'S NATURAL ASSETS

New Kent County is located between Richmond and Hampton Roads and serves as the gateway to the Virginia Peninsula. Part of the rapidly developing Richmond Region, the county has become a popular destination for commuters, retirees and other populations attracted by the county's high quality of life and proximity to employment opportunities and regional amenities. Since 1970, the county's population growth rate has been higher than growth within the Richmond Regional Planning District, the Richmond-Petersburg region and Virginia as a whole. The largest development projects in the county's history have been completed in the past 10 years. The maps on the adjacent page highlight the recent growth in the region, as reflected by changes in the region's green infrastructure assets.

The county has long recognized the importance of its green infrastructure assets. According to the county, the first element considered in the development of the comprehensive plan was the protection of the county's natural resources. Two of the county comprehensive plan's overarching goals are to:

- (1) Preserve the county's existing rural character; and
- (2) Protect the natural environment.

New Kent County includes high-quality agricultural lands, forests, wetlands and rivers. The county's land area encompasses 212 square miles, or 135,680 acres, of land. The county is located in the Coastal Plain physiographic region, which runs north to south along Virginia's eastern seaboard. In general, the county has a gently rolling topography. Overall, elevations average between 50 and 100 feet above sea level. The highest elevations are around 170 feet and the lowest are at sea level along the Chickahominy and Pamunkey Rivers.



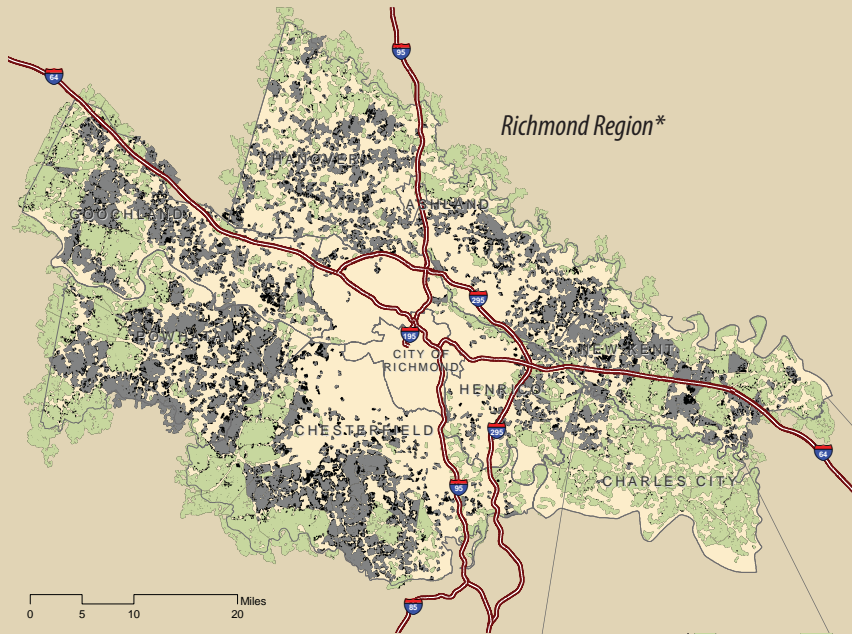
New Kent County's economy has relied on **agriculture and forestry** as its mainstays for centuries, with many farms remaining in the same family for generations. The county's farms and forests form an essential part of the county's rural character. These farms and forests also provide habitat for animals as well as opportunities for scenic views, tourism and recreation.

The county's **water resources** include the Pamunkey, York and Chickahominy rivers along the county's northern, eastern and southern boundaries. In addition to providing ecological benefits, the rivers provide recreation opportunities for fishing, hunting and boating. The county's extensive tidal and non-tidal wetlands help to filter land runoff and provide wildlife habitat. Much of the county's surface waters are located in Resource Protection Areas designated under the Chesapeake Bay Protection Act.

New Kent County also enjoys an extensive cultural history and abundant recreation resources. Much of the county's **heritage and recreation** are closely tied to the county's natural resources. New Kent County's cultural history includes a rich Native American heritage; the county is also one of Virginia's earliest settlements, founded in 1654. The county's extensive historic resources include Crumps Mill, St. Peters Church and the old jail in the Village of New Kent Courthouse, plantation homes such as Poplar Grove on the Pamunkey River, historic towns such as Providence Forge, and historic roadways that are among the oldest in the country. Other historic resources, such as colonial-era building foundations and grave sites, are located across the county.

The resources described above, the county's working landscapes and waterways, cultural history and recreational opportunities, make New Kent County a wonderful place to live, work and play. The field test project for New Kent County was designed to identify and map the county's high-quality green infrastructure assets to help the county ensure that these resources are well-utilized and maintained over time.

THEN AND NOW: SEVEN YEARS IN A CHANGING LANDSCAPE



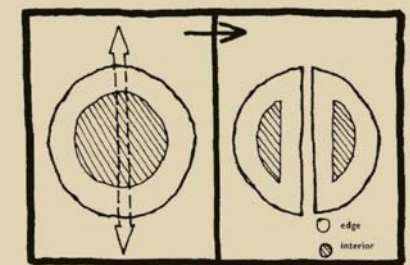
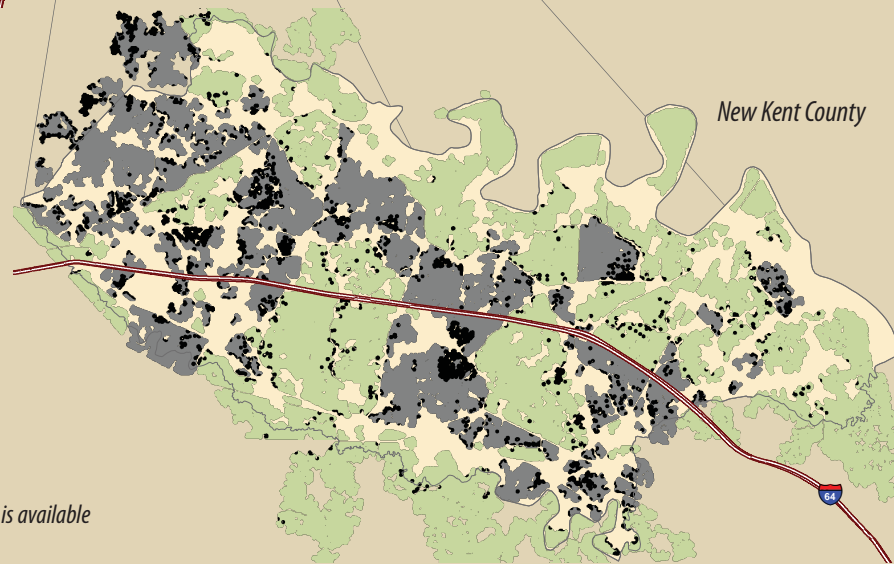
As of 2009, New Kent County and the Richmond Region continue to benefit from significant green infrastructure assets. However, as the maps on this page illustrate, the location, abundance and status of these resources are changing rapidly, due to population growth, new development and other factors.

The map to the left shows the significant change in and loss of intact landscapes in the Richmond Region between 2000 and 2007. Intact landscapes, also known as cores, are land areas 100 acres or greater in size that are needed to provide adequate space for key ecological functions.

The map below shows the significant change in and loss of intact landscapes in New Kent County between 2000 and 2007. The map below is a resource that supports the county's efforts to think strategically about its green infrastructure assets and planning activities over the short- and long-term. Both maps illustrate the need to conserve, protect and restore the area's green infrastructure assets before more landscapes are fragmented or degraded.

Summary of Change, 2000-2007

- Minimal Change (<20%)
- Significant Change (>20%)
- Loss of interior habitat



Forest fragmentation – the creation of smaller tracts of land through road building and property subdivisions – results in the loss of intact landscapes and related habitats.

Image credit: Dramstad, Wenche E., et al.

* A copy of the Richmond Region Green Infrastructure Report is available on the GIC web site at www.gicinc.org/RichReg.htm

PROJECT DATA AND ANALYSIS

The project team worked through four phases of information gathering and analysis in order to develop asset maps and key findings for the county's consideration. The project team coordinated closely with county staff and elected officials during each phase.

In the project's opening phase, the project team focused on data collection and research. Data were gathered from field visits and interviews, county sources, state and federal agencies, and other organizations. Primary data resources included the New Kent County Comprehensive Plan and the Virginia Conservation Lands Needs Assessment, developed by the Virginia Department of Conservation and Recreation. The table in Appendix A provides a detailed summary of the project's spatial data resources.

In the project's second phase, the project team combined the spatial data into visual layers, or "themes," that could be mapped using geographic information systems (GIS). These GIS layers provide a way to visualize, analyze, and display spatial information, enabling the project team to identify and map New Kent County's green infrastructure assets. The asset map themes are listed below and discussed in detail in the Mapping New Kent County's Assets section of the report.

- forested lands and agricultural soils
- water resources and riparian habitat
- intact natural lands (ecological cores)
- natural resource-based recreation
- heritage resources and rural character

In the project's third phase, the project team used the New Kent County asset maps to conduct a risk assessment. The risk assessment identified green infrastructure assets in the county that might be at risk due to changing land uses, development pressures, or other factors.

In the project's fourth and final phase, the project team analyzed the project's asset maps and risk assessment to identify potential opportunities and next steps that the county could take to conserve, enhance and restore its green infrastructure assets and maximize ecological, economic and cultural returns from these assets over the long-term.

New Kent County Comprehensive Plan Goals Relating to Green Infrastructure

- "Conserve, protect and preserve the quality of the county's air, water, soil, wildlife habitat and scenic views through responsible stewardship of the land."
- "New Kent County's water resources should be of the highest possible quality."
- "Promote environmentally responsible waterfront development in the county."
- "Protect and enhance the county's historic and cultural resources."
- "Promote the development of greenways and blueways throughout the county to enhance recreational opportunities and to promote public health and fitness."
- "Increase and enhance the county's recreational opportunities."

Vision 2020: New Kent County Comprehensive Plan, 2003

MAPPING NEW KENT COUNTY'S ASSETS

This section of the report presents the green infrastructure asset maps created for the New Kent County Green Infrastructure Project. These maps provide a comprehensive overview of the county's network of high-value green infrastructure assets.

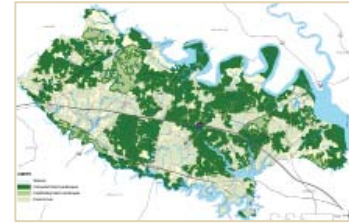
These maps are designed to inform current county activities and initiatives, as well as the county's existing comprehensive plan and upcoming comprehensive plan update in 2010. New Kent County's Comprehensive Plan recognizes the importance of the county's green infrastructure assets, with two of the plan's four overarching goals being to:

- (1) Preserve the county's existing rural character; and
- (2) Protect the natural environment.

The plan states that "the first element considered in the development of the Comprehensive Plan was the protection of the county's natural resources," with Goal #1 being to "conserve, protect and preserve the quality of the county's air, water, soil, wildlife habitat and scenic views through responsible stewardship of the land."

By inventorying its assets, New Kent County can plan for economic development alongside social and environmental priorities in a way that provides the community with the greatest possible return now and in the future. The county's assets are the natural, cultural and historic landscapes that make it such a special place to live and work. Managing and enhancing these assets can help ensure that the county retains its remarkable character over time.

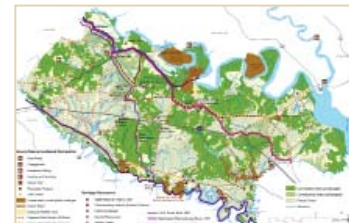
Maps that are discussed in this section include:



Green Infrastructure Network
(connected, large, intact natural lands)



Water Resources



Heritage & Natural Resource-Based Recreation



Working Lands - Farms



Working Lands - Forests

NEW KENT COUNTY'S GREEN INFRASTRUCTURE NETWORK (connected, large, intact natural lands)

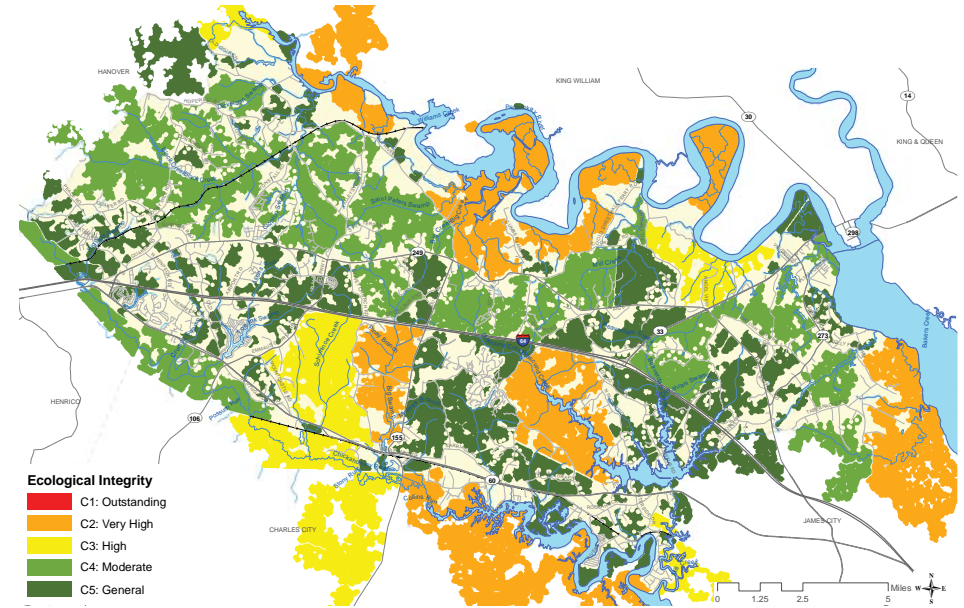
Overview

The map on this page presents the distribution of natural lands by ecological integrity in New Kent County; the map on the following page presents New Kent County's green infrastructure network – the connected, large intact landscapes with the highest ecological value. Across both maps, this natural asset network consists of the intact landscapes and corridors that provide critical functions, such as rich soils for farming, habitat for wildlife, drinking water storage and filtration, and clean air. Intact landscapes, also known as cores, are land areas 100 acres or greater in size that are needed to provide adequate space for key ecological functions. Corridors are land and water resources of sufficient width – typically about 1,000 feet – that maintain connections between key habitat areas, allowing species to travel safely across the landscape.

Maintaining intact natural landscapes is essential for ensuring basic ecosystem services in New Kent County and the Richmond Region. Fragmentation of these areas not only results in the loss of habitat and natural corridors, but also the degradation of important ecosystem functions that provide the county with ecosystem services such as clean air and water, assistance with climate regulation and buffers to the impacts of natural disasters.

Observations

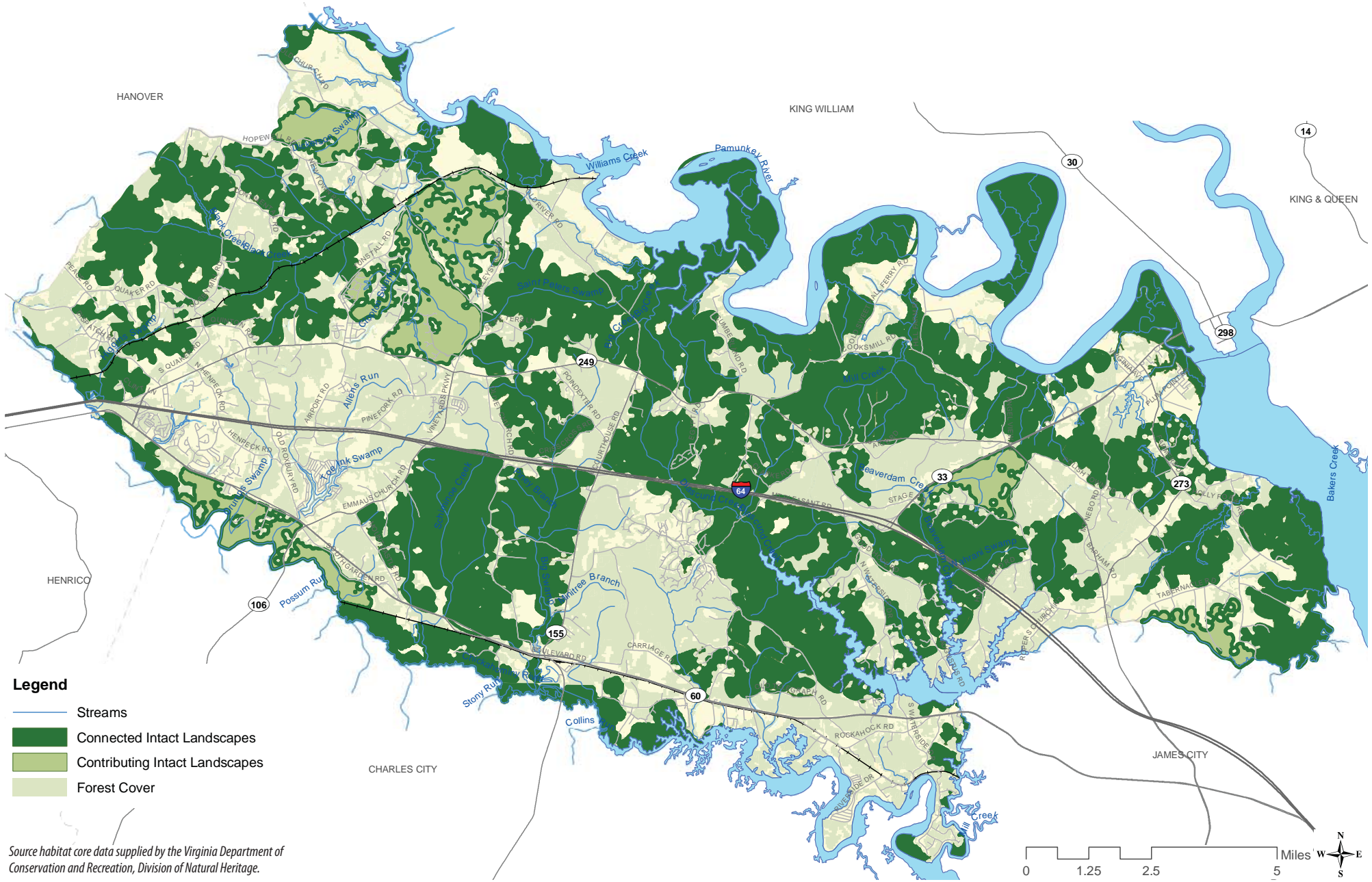
- These maps illustrate that New Kent County has a rich, extensive green infrastructure network.
- High-value ecological assets are linked across the county, extending from east to west and north to south, and connect the county's land area with major waterways, including the Chickahominy and Pamunkey Rivers.
- Fragmentation is one of the biggest threats to the county's high-value assets.
- New Kent County has significant intact natural resources that provide significant economic, environmental and ecological benefits.



Distribution of natural lands by ecological integrity. Source habitat core data supplied by the Virginia Department of Conservation and Recreation, Division of Natural Heritage.

Background Information

Within the Virginia Department of Conservation and Recreation (DCR), the Division of Natural Heritage (DNH) has developed the Virginia Natural Landscape Assessment (VaNLA) for identifying, prioritizing and linking natural lands in Virginia. These natural lands, or cores, are assigned an Ecological Integrity Score. In general, higher scores are given to areas that are more biologically diverse, part of a larger complex of natural lands, and that contribute to water quality enhancement. The VaNLA was developed using 2000 land cover data. Working with DCR DNH and the Richmond Regional Planning District, the GIC project team incorporated 2007 buildings to update the model. The data was further refined for New Kent County by removing approved planned-unit developments that were under development as of 2008.



Green Infrastructure Network: New Kent County's green infrastructure network consists of the connected, large intact landscapes that have the highest ecological value.

WATER RESOURCES

Overview

The Water Resources Map highlights New Kent County's extensive water resources, which include intermittent and perennial streams, wetlands, and the Chickahominy, Pamunkey and York Rivers, as well as drinking water intakes and community wells located in the county. The county's water resources provide drinking water supplies for residents and wildlife habitat for fish, amphibians, birds and insects, enable water-based recreation opportunities and are an important part of the county's history and heritage.

The map shows the county's forest cover, which helps protect water quality and quantity, in pale green. The boundaries of the county's watersheds, which include the Pamunkey, a tributary of the York River watershed to the north, and the Chickahominy, a tributary of the James River watershed to the south, respectively, are indicated by dark blue lines. A watershed is an area of land that drains to a particular body of water. The names of each watershed drainage area in the county are presented on the map. Existing riparian buffers – wide vegetated areas located along major waterways that filter runoff and mitigate erosion – are also highlighted. Wider riparian buffers provide additional habitat for wildlife and pathways for animals to move across the landscape.

Observations

- The Water Resources Map illustrates that the majority of the county's watersheds are forested. The map also indirectly highlights areas of development in the county – areas with the least amount of forest cover also have the most community wells (wells that serve 20 or more people).
- New Kent County also has significant riparian buffers located along most streams. While the county mandates that 100-foot-wide riparian buffers must be maintained along major waterways in the county under the Chesapeake Bay Preservation Areas Ordinance, many streams in the county have existing 1,000-foot-wide riparian buffers.
- Impacts to the riparian areas are evident in the southwestern portion of the county, especially in the Toe Ink and Higgins Swamp areas, where development has occurred close to streams.

Virginia's Water Quality

In Virginia, the Department of Environmental Quality (DEQ) is responsible for monitoring and reporting on the water quality of the Commonwealth's streams. DEQ's annual 305(b) report provides the status of streams across the Commonwealth, as required under the Clean Water Act. DEQ monitors and evaluates streams within each major watershed in Virginia to ensure that each stream meets its assigned standard, such as for drinking water use, contact recreation, or supporting aquatic life.

Streams that fail to meet the assigned standards are placed on the state's 303(d) Impaired Waters list. It is important to note that a waterway may be impaired and not named on the list. Impaired streams may not be detected because DEQ is not able to monitor every stream reach. Over the past several years, DEQ has expanded its monitoring program, which has resulted in the identification of more impaired waters in the Commonwealth.

In New Kent County, most of the impairments are for fecal coliform, generally measured as *Escherichia coli* (often abbreviated as *E. coli*).* Once streams are placed on the state's 303(d) Impaired Waters list, they require preparation of a Total Maximum Daily Load (TMDL) plan, which is an analysis of the maximum amount of pollution a stream can receive and still meet the assigned standard (including a margin of safety), as well as a plan for allocating that load to various sources to ensure the maximum is not exceeded. A TMDL plan is required for all streams listed as impaired. Appendix B provides additional TMDL information.

* Fecal coliforms such as *E. coli* indicate that there are human or animal feces in a body of water. High levels of fecal coliform can cause illness and disease in humans and wildlife. The organic matter containing fecal coliform can also pose a threat to natural systems by removing oxygen from the water during decomposition.



Water Resources Map: New Kent County's water resources include forested watersheds, an extensive river and wetland network, and drinking water supplies.

HERITAGE AND NATURAL RESOURCE-BASED RECREATION

Overview

The Heritage and Natural Resource-Based Recreation Map identifies historical and recreational resources that are closely linked with the county's natural resources. The county's heritage resources are an integral part of the county's rural character and scenic beauty; many also sustain the local economy through heritage tourism and related industries. The county's recreational resources provide multiple benefits to residents and visitors, including promoting exercise and improved health, and increasing understanding of land stewardship, restoration and conservation. Through activities such as hunting, recreational resources also help to sustain the local economy.

Heritage resources identified on the map include sites listed on the National or State Register of Historic Places, sites of historic or cultural significance to the county, as well as historical markers and historic routes such as the Washington-Rochambeau Route. Recreation resources identified on the map include natural resource-based recreation areas (county, state and federally held lands), birding and wildlife trails, Virginia scenic byways and proposed bicycle routes.

Observations

- New Kent County's rural character is supported by heritage resources and natural and working landscapes (forests and farms).
- Clusters of historic resources are located in close proximity to intact natural landscapes (land areas 100 acres or greater in size). Historic routes and scenic byways are surrounded by natural lands, which help provide an appropriate historical context and scenic views.
- A viewshed is a distinct view of an area of land, water or other landscape feature that is valued by the community. These views, such as along Routes 249, 60, 106 and 155 and secondary roads such as Routes 606, 623 and 608, are an important part of the county's identity and can be protected. The size of land parcels along roadways can also impact viewsheds. While large tracts of land are located adjacent to many county roads, parcels along Route 60 to the west are becoming fragmented.

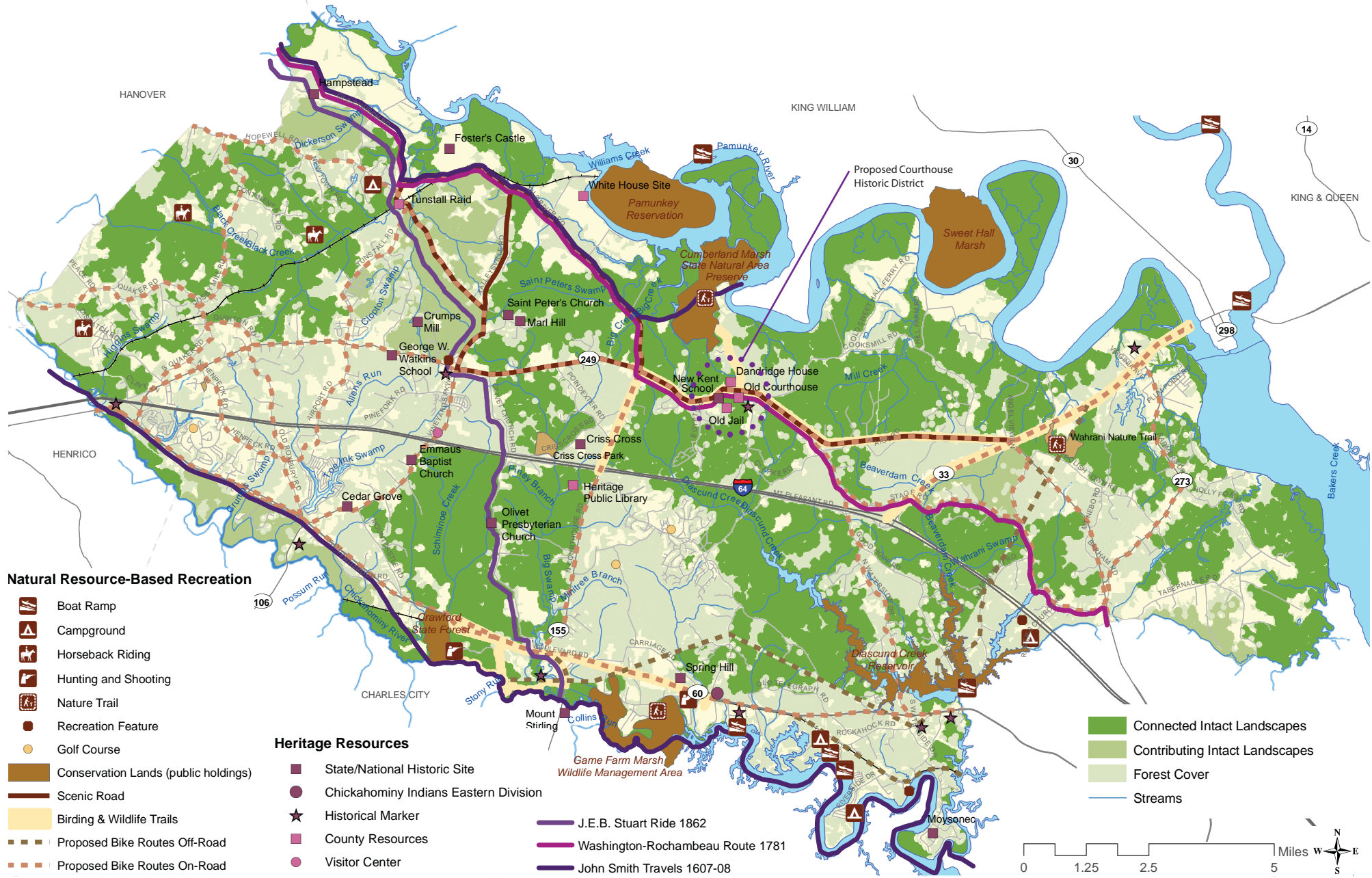
- An historic district has been proposed for the Village of New Kent Courthouse.
- While there are multiple public access points along the Chickahominy River, there are no public access points to the Pamunkey River from within New Kent County.
- The Cumberland Marsh Preserve is a large natural asset. Public access to the resource may need to be addressed in the future.



Long Bridge Civil War Battlefield interpretive sign



Wahrani Nature Trail



Heritage and Natural Resource-Based Recreation: Heritage and recreation resources that are closely linked with the county's natural resources.

WORKING LANDS - FARMS

Overview

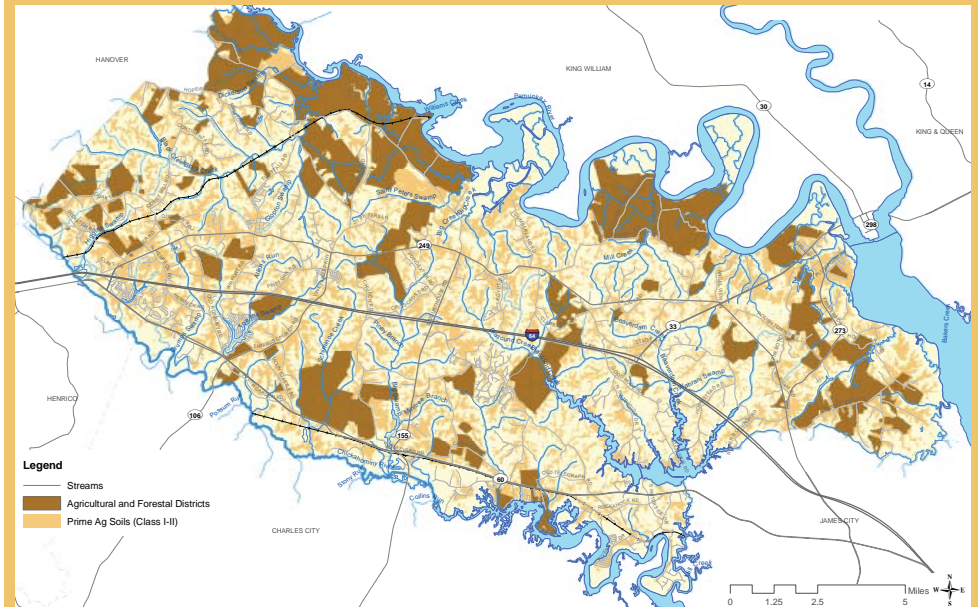
The Working Lands – Farms Map on the adjacent page highlights the distribution and abundance of prime agricultural soils in New Kent County, as well as those land areas participating in USDA farm programs in 2008. The county's farms are an integral part of the local landscape, economy and natural environment and the region's cultural heritage. The county's farms support the local agricultural economy and, by sustaining rural livelihoods, help to maintain the county's rural character.

Observations

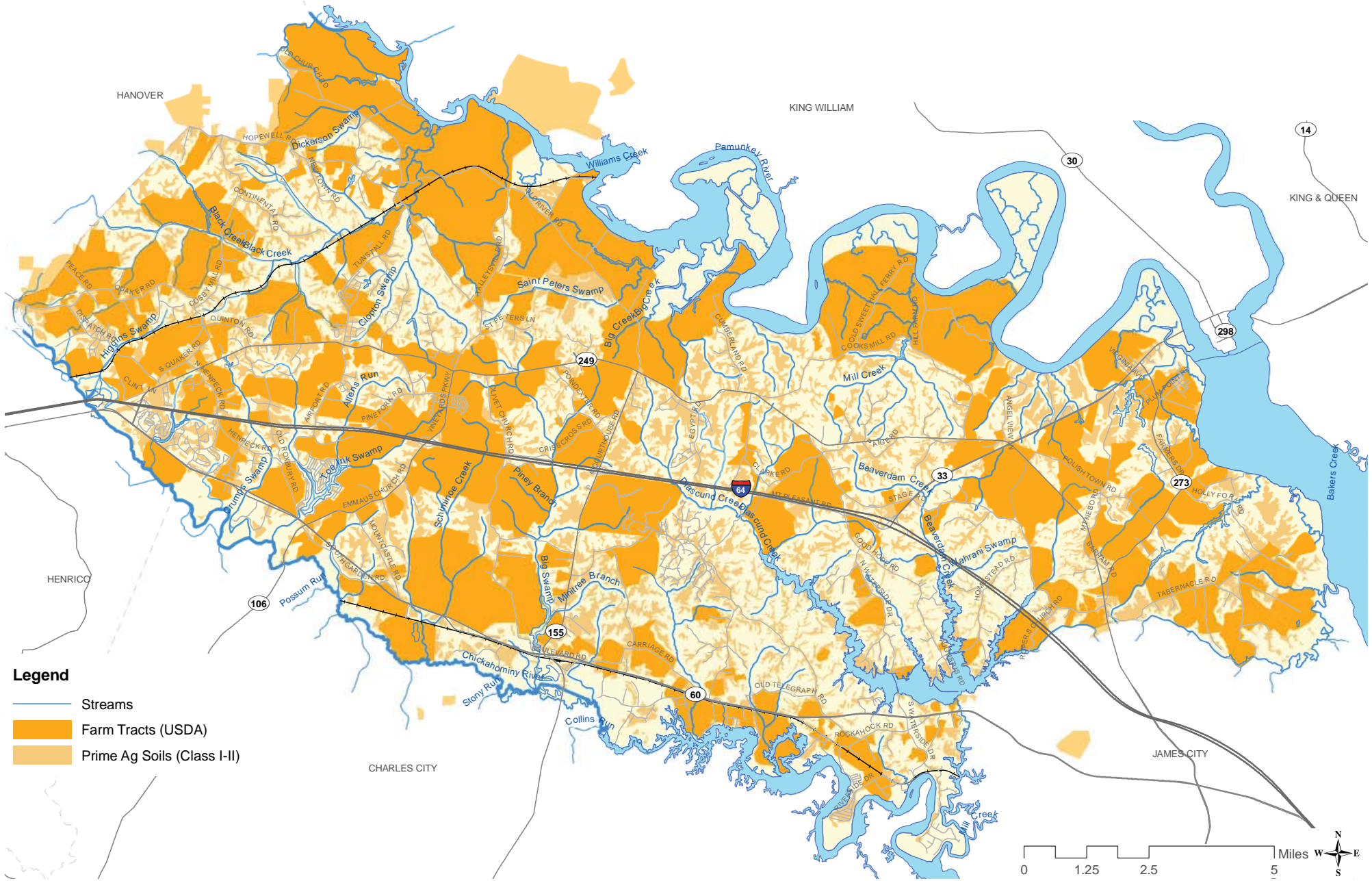
- The map illustrates that prime agricultural soils are located county-wide.
- The map does not show the location of development in the county. Based on a review of county planning and zoning information, agricultural areas in the western and south-central portions of the county appear to have experienced the highest rates of conversion of farmland into non-farm land uses.
- The farm tract data presented in the map represents a snapshot in time. Accordingly, the map will need to be updated regularly to accurately reflect current farming and other operations that actively contribute to the county's agricultural economy.

Agricultural and Forestal Districts

New Kent County protects much of its forest and farm lands in Agricultural and Forestal Districts (AFDs). AFDs are rural zones reserved for the production of agricultural products and timber and the maintenance of open space land as an important economic and environmental resource. The county's AFDs are designated for 10-year terms.



Distribution of prime agricultural soils and working lands within A&F Districts



Working Lands - Farms: While prime agricultural soils are located county-wide, not all of these areas are in agricultural use. Agricultural areas in the western and south-central portions of the county appear to have experienced the highest rates of conversion of farmland into non-farm land uses.

WORKING LANDS - FORESTS

Overview

The Working Lands – Forests maps shows that New Kent County is heavily forested (72 percent of the county's land area). The county's forests provide multiple economic and environmental benefits. A forest absorbs and cleans pollutants from land runoff while also reducing flooding that damages homes and property. A forest performs this work more cost-effectively than an engineered stormwater pond and provides additional services, such as recreation, natural beauty and sequestration of carbon and other pollutants that contribute to climate change. A national study of urban tree cover's capacity to reduce stormwater problems and improve air quality concluded that trees in cities provide more than \$400 billion in cost savings from not having to build facilities to clean our air and water. According to the Trust for Public Land, studies have documented that the larger the forest cover in a watershed, the lower the cost to treat drinking water. Finally, the county's forests are an important component of the county's working lands, with timber products helping to sustain the local and regional economy.

The map on this page illustrates forested land parcels that are greater than 100 acres in size, between 25 and 100 acres in size, and less than 25 acres in size. Forests greater than 25 acres can be sustainably managed for timber, while forests 100 acres and greater in size can be managed for both timber and wildlife diversity (see diagrams). The map on the adjacent page overlays the distribution of forested land parcels that are at least 25 acres in size over the county's green infrastructure network. Forest fragmentation – the creation of smaller tracts of land through road building and property subdivisions – is the primary threat to managed forestlands in the southern United States.

Observations

- Most parcels of land that can be managed for both timber and wildlife diversity are located within the county's green infrastructure network.
- Sustainable timber management is one of the tools that can help sustain a local working lands economy while also protecting natural resources over the long term.

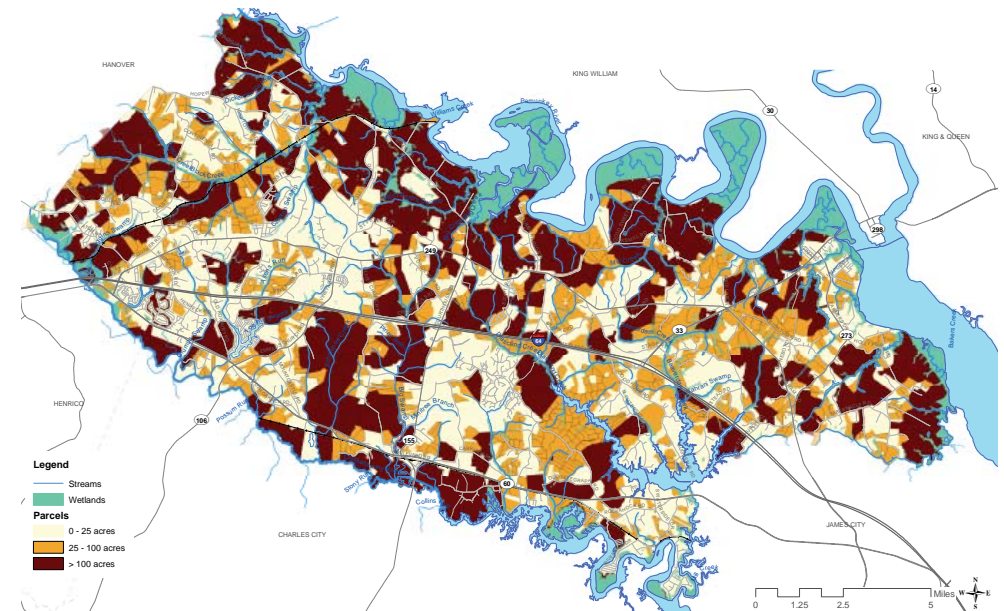
Forest Fragmentation



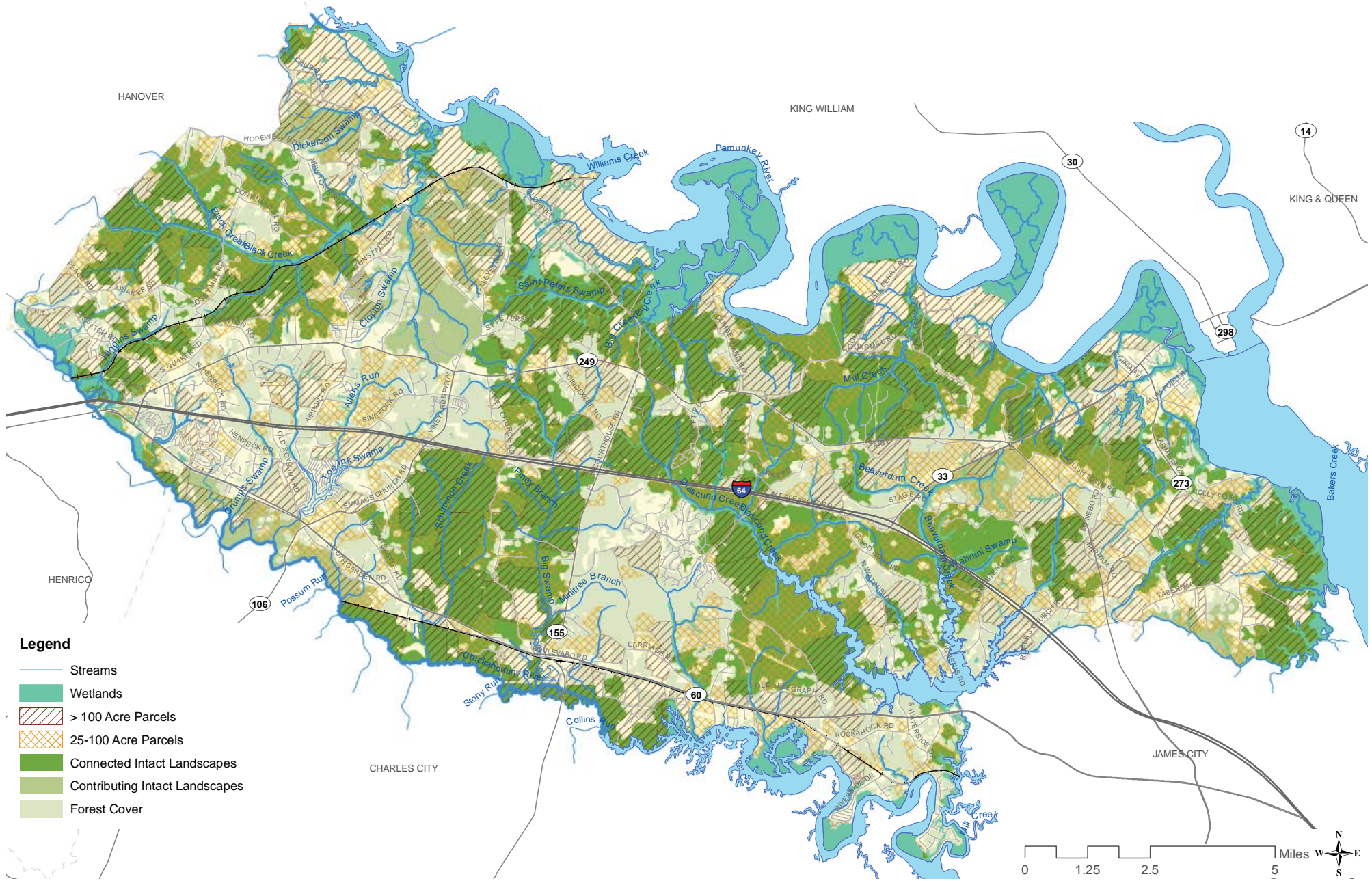
Small parcels fragment forest into many owners



Large parcels create contiguous forest blocks



Parcel Distribution for Sustainable Timber Management



Working Lands - Forests: New Kent County is heavily forested. Most parcels of land that can be managed for both timber and wildlife diversity are located within the county's green infrastructure network.

PLANNING FOR THE FUTURE: OPPORTUNITIES AND NEXT STEPS

A primary goal of the New Kent County Green Infrastructure Project has been to develop asset maps that the county can use to inform current county activities and initiatives and the county's comprehensive plan, which will be updated in 2010. This report has illustrated that New Kent County retains significant high-value green infrastructure assets and that green infrastructure planning meshes well with the county's central comprehensive plan goal to "maintain the county's attractive, rural character while providing opportunities for the creation of income and wealth in the community."

As New Kent County plans for the future and updates the comprehensive plan, the project's asset maps, GIS analyses, and overall findings can be used to guide these activities and continue to inform the county's efforts to:

- (1) Preserve the county's existing rural character; and
- (2) Protect the natural environment, as outlined in the comprehensive plan.

This section of the report highlights potential planning applications of the project's green infrastructure asset data.



Members of the focus group review and comment on asset maps

The Comprehensive Planning Process in Virginia

In Virginia, communities use the comprehensive planning process to identify community goals and priorities, identify local land assets, and provide guidance for the use and management of all lands within a local government's boundaries. The Code of Virginia requires localities to prepare a comprehensive plan every five years. According to §15.2-2223:

The local planning commission shall prepare and recommend a comprehensive plan for the physical development of the territory within its jurisdiction and every governing body shall adopt a comprehensive plan for the territory under its jurisdiction.

In the preparation of a comprehensive plan, the commission shall make careful and comprehensive surveys and studies of the existing conditions and trends of growth, and of the probable future requirements of its territory and inhabitants. The comprehensive plan shall be made with the purpose of guiding and accomplishing a coordinated, adjusted and harmonious development of the territory which will, in accordance with present and probable future needs and resources, best promote the health, safety, morals, order, convenience, prosperity and general welfare of the inhabitants, including the elderly and persons with disabilities.

Comprehensive plans guide all local government programs and planning activities, including zoning. For example, any zoning changes must be made in accordance with a locality's comprehensive plan goals. New Kent County's Comprehensive Plan was last updated in 2003. The next update of the county's comprehensive plan is scheduled for 2010.

Comprehensive Planning and Zoning

At the broadest level, the project's green infrastructure asset maps will be able to inform the county's comprehensive planning, mapping and zoning activities and updates on an ongoing basis. All data gathered during the project and translated into visual layers, or "themes," that could be mapped using geographic information systems (GIS) have been transferred to the county and are now part of the county's GIS. The asset maps directly support the comprehensive plan's emphasis that the first element considered in the development of the plan was the protection of the county's natural resources," with Goal #1 being to "conserve, protect and preserve the quality of the county's air, water, soil, wildlife habitat and scenic views through responsible stewardship of the land."

Specific applications of the project's green infrastructure asset maps could include updates to the county's comprehensive plan and zoning maps to help guide new development in appropriate locations and prioritize high-value asset areas for protection or restoration. At the site scale, knowledge of the location and value of the county's green infrastructure assets can inform developers' site plans and the planning approvals process, ensuring that these assets are retained across parcel boundaries (see illustration) within the context of the county's green infrastructure network of connected, large, intact natural landscapes. The asset maps can also help New Kent County work with private landowners in high-value asset areas to develop conservation and land management approaches.

Examples of these applications include:

- During a property rezoning request, the county could encourage the landowner to explore voluntary options to conserve land areas that have high-value green infrastructure assets. The landowner could "proffer" to set these land areas aside as open space easements.
- A developer may be interested in linking recreational trails within a proposed development to the county's green infrastructure network and could proffer an easement that would connect the trails with the network.

- Landowners could work with county staff to identify opportunities to ensure that changes in a property's land use do not "disconnect" intact natural landscapes that extend across the property. When setting aside green space as part of a planned unit development or other planning activity, these areas could be selected based on their connectivity with adjacent green infrastructure assets.
- Organizations interested in conservation easements could prioritize land areas located within the county's green infrastructure network.

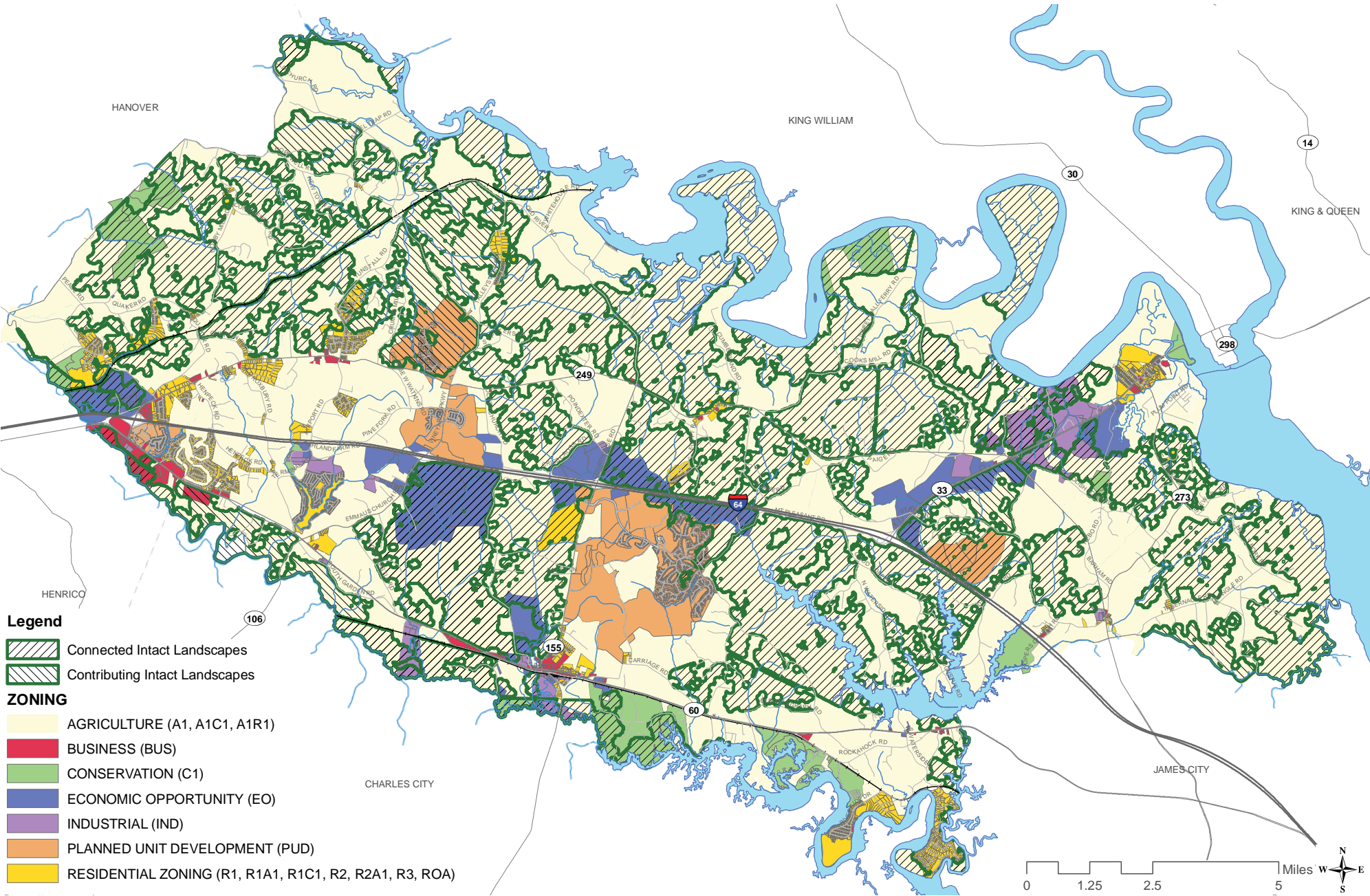
INFORMING LAND USE DECISION MAKING



FRAGMENTED - Even well-intentioned land use planning approaches can result in the fragmentation of the county's high-value natural assets.



CONNECTED - A green infrastructure planning approach allows for development and growth at the same scale, while also ensuring that the county's natural assets remain intact and well-connected.



Zoning: This map highlights the relationship between the county's zoning and the high-value assets the make up the county's green infrastructure network.

Water Supply Planning

New Kent County enjoys access to high-quality water supplies. The county's comprehensive plan emphasizes the importance of maintaining local water supplies, stating that the county's water resources "should be of the highest quality possible." Current county strategies include protecting environmentally sensitive areas from loss or degradation, protecting the natural resources of the Chesapeake Bay and its tributary streams, and protecting the county's groundwater supply from pollution from above-ground activities.

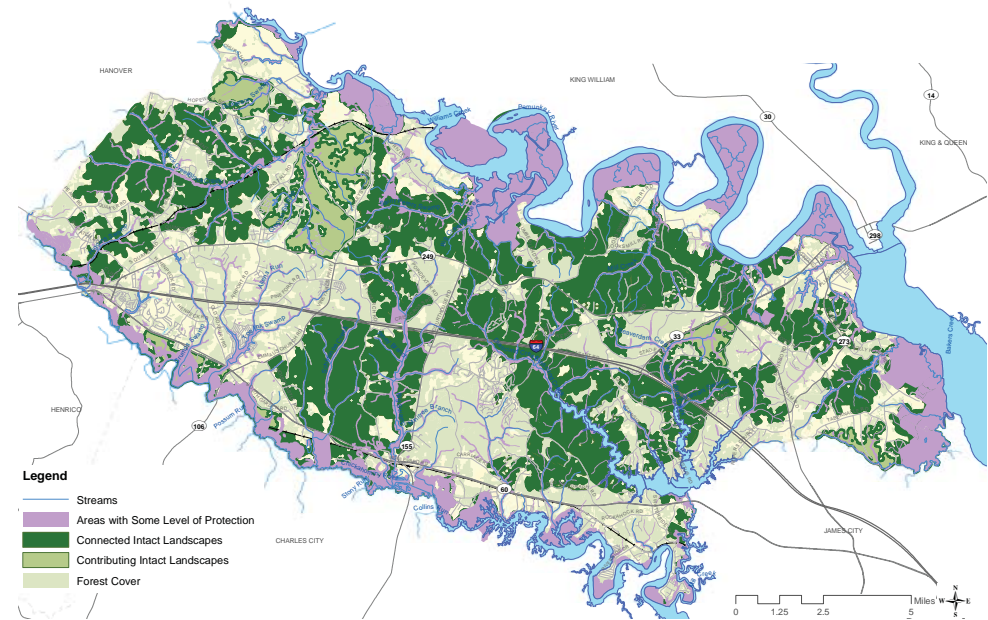
From a green infrastructure planning perspective, the project's asset maps provide a significant opportunity to inform the management and conservation of the county's water supplies. The maps can help the county prioritize environmentally sensitive areas contributing to local water quality for protection and restoration. The maps can help guide development in appropriate locations that minimize negative impacts to local water resources. Finally, the maps can inform management approaches, such as new or expanded riparian buffer areas along waterways, for land areas adjacent to impaired waterways through Total Maximum Daily Load (TMDL) plans and other tools.

Appendix B provides links to additional information and resources regarding water supply planning in Virginia.

Climate Change Planning

In 2007, New Kent County joined the Cool Counties initiative, a national effort to reduce emissions that contribute to climate change. The project's green infrastructure data can help the county develop and refine its goals and track its progress over time. The county's green infrastructure can be an integral part of planning approaches that address climate change. These approaches can then track the climate change benefits provided by the county's green infrastructure. For example, analysis of the county's forest cover using the *CITYgreen* software model indicates that the county's forests store more than 33,000 tons of carbon every year. Accordingly, maintaining the county's forest cover provides a long-term climate change benefit for the county, in addition to the other benefits provided by its forests, like removing pollutants, reducing stream nutrient loads, protecting biodiversity, fostering pollination and improving air quality.

Appendix D provides a detailed summary of the *CITYgreen* analysis findings.



Existing resource protection includes Chesapeake Bay Act Resource Protection Areas, wetlands, conservation lands (public holdings), county parks, and private easements.

Park and Recreation Planning

The mission of the county's Department of Parks and Recreation is to "enhance the quality of life in New Kent County by promoting, providing, and maintaining a comprehensive system of quality recreational facilities and services." From a green infrastructure planning perspective, the management of valued community resources such as the Wahrani Nature Park and the management of additional parks and recreation resources in the future provides a significant opportunity. These resources can be linked together and located within the context of the county's green infrastructure network of connected, large, intact natural landscapes. Each of these resources can also be individually managed to provide multiple benefits and address multiple county priorities, such as the conservation of wildlife habitat and the protection of water quality, as well as recreation. For example, the project's asset maps can help identify priority lands that host rare or important species of plants and animals.

County History and Cultural Heritage

New Kent County has one of the richest community histories in the Commonwealth of Virginia. The New Kent County Comprehensive Plan outlines that to “protect and enhance the county’s historic and cultural resources” is one of the community’s top priorities. From a green infrastructure planning perspective, the protection and enhancement of these resources also presents a significant opportunity. The county’s historical and cultural resources can be linked together and located within the county’s green infrastructure network of connected, large, intact natural landscapes. The visual appeal and context of the county’s historic resources – the county’s rural landscape and scenic views – is the same land area that provides multiple green infrastructure benefits.

The project’s asset maps can help identify potential locations for future historic districts that recognize and celebrate an area’s ecological importance as part of its history. Under §15.2-2306 of the Code of Virginia, local governments can pursue historic district and entrance corridor designations.

The Village of New Kent Courthouse has been proposed as a potential historic district. While this may seem controversial to some residents, historic districts provide a way to recognize and raise the profile of the community’s history for residents and visitors while respecting the property rights of landowners. Historic entrance corridor designations can provide a way for local governments to manage the landscapes surrounding important historical sites and architectural areas.

Finally, the project’s asset maps can inform efforts to expand and locate heritage tourism opportunities in New Kent County. As defined by the National Trust for Historic Preservation, heritage tourism is “traveling to experience the places, artifacts and activities that authentically represent the stories and people of the past and present.” Heritage tourism is the third largest sector of spending and employment in Virginia. Larger tracts of land can also help ensure that county viewsheds are retained, which matter both for preserving the historical integrity of sites and attracting heritage tourists. The book *Better Models for Development in Virginia* (The Conservation Fund, 2001) identifies how development can take place in the context of community goals to conserve an area’s rural character and working landscapes.

Appendix B provides links to additional information and resources regarding historic preservation and heritage tourism in Virginia.

New Kent County: Historical Background

- New Kent County has a rich Native American history and is one of Virginia’s earliest settlements, founded in 1654.
- In 1607, the Chickahominy Indians were one of the first 30 tribes to first receive the English colonists. The famous capture of Captain John Smith also occurred at the headwaters of the Chickahominy River.
- Four hundred years later, the tribal seat of the 130-member Chickahominy Indians Eastern Division Tribe is located in the county and Captain John Smith’s voyage is commemorated by the Captain John Smith Water Trail. The Tribe has recently built a new meeting house located off of Route 60. Also known as the “coarse-ground corn people” – derived from the word “Chickahominy” – the Tribe owns 41 acres of land in the county. The Tribe is one of eight state-recognized tribes and is awaiting recognition from the federal government.
- The county’s extensive historic resources include structures such as Crumps Mill, St. Peters Church, and the old jail in the Village of New Kent Courthouse, plantation homes such as Poplar Grove on the Pamunkey River, historic towns such as Providence Forge where General Lafayette camped with his troops in 1781, and historic roadways that are among the oldest in the country. Other historic resources, such as colonial-era building foundations and grave sites, are located on public and private lands across the county.
- The county has remained at the center of historic events and decisions over the course of time, from Bacon’s Rebellion in 1676 through to the Green vs. County School Board of New Kent County Supreme Court case in 1968. The court’s decision in favor of Mr. Calvin Green, a New Kent resident and Richmond teacher, required New Kent County schools, and subsequently all schools in the United States, to be desegregated through zoning, busing students and other measures.

Working Landscapes: Forestry and Agriculture

The retention of the county's forests and farms is an important economic goal for New Kent County. While the county's economy has long relied on forestry and agriculture as its mainstays, the comprehensive plan notes that "economic changes in those industries have produced immense pressure on their continued economic viability." From a green infrastructure planning perspective, efforts to sustain and retain the county's working landscapes presents a significant opportunity. The larger parcel size and county-wide location of the county's forests and farms mean that these areas are well-suited to serving as part of the county's green infrastructure network. The county's working landscapes also provide a host of green infrastructure benefits, including water filtration, soil retention, hazard mitigation and wildlife habitat, as well as providing opportunities for scenic views, agritourism and recreation.

The project's green infrastructure asset maps provide a way to analyze opportunities to maximize the economic and environmental benefits provided by the county's working lands. The maps can help identify optimal green infrastructure locations for farms and forests, and enable the targeting of appropriate tools, such as Agricultural and Forestal Districts, to ensure their effectiveness over the long-term. Two other planning tools – purchase of development rights (PDR) and transfer of development rights programs – could also help to sustain the county's working lands. Within the county's PDR program, the addition of green infrastructure benefits as a program criterion could support the county's efforts to prioritize lands for conservation.

New Kent County can use the project's asset maps to help develop a transfer of development rights (TDR) program. TDR programs provide a way to transfer or sell development rights from working lands or conservation areas (a "sending zone") to areas prioritized for growth and development (a "receiving zone"). Receiving zones are typically already served by roads, utilities and services such as schools and stores. In a TDR program, development rights are sold from a sending zone to a receiving zone, allowing landowners in the sending zone to receive value for their development rights without developing their properties. New Kent County can use the project's asset maps to help identify potential sending and receiving zones for a TDR program, with sending zones established for areas where the county's high-value green infrastructure assets are located.

Appendix B provides links to additional information and resources regarding working landscapes in Virginia.

Transportation Planning

New Kent County's transportation plan recognizes that a "sustainable mobility" system requires managing the capacity of the county's road infrastructure, managing travel demands, and managing land use development in appropriate locations. From a green infrastructure planning perspective, the management of the county's transportation infrastructure also provides a significant opportunity.

The project's asset maps can help inform the management, location, and expansion of the county's roadways, bicycle lanes, and recreational trails. Bicycle lanes and recreational trails, for example, can link together parts of the county's green infrastructure network as well as supporting sustainable economic development and tourism initiatives. Similarly, the county's roadways can be managed to avoid unnecessary divisions within the network, as well as to mitigate environmental impacts such as stormwater runoff. Together, these approaches can help achieve the county's stated goal to "promote the development of greenways and blueways throughout the county to enhance recreational opportunities and to promote public health and fitness."



View across Diascund Reservoir

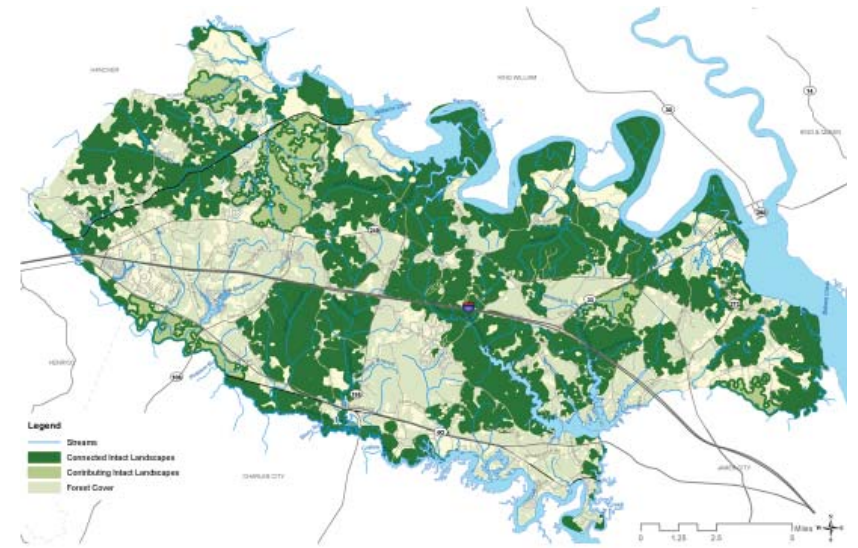
LOOKING FORWARD

The completion of the New Kent County Green Infrastructure Project represents a significant milestone for the county and the project team. The project has built the community's capacity to conserve its key land and water resources while ensuring the high quality of life expected by county residents. The project has identified New Kent County's green infrastructure assets, linking ecological, economic and cultural considerations together across the county's rural, historic landscapes. The project has illustrated how local governments can take the lead in green infrastructure planning and develop a community-based approach that reflects local needs and priorities.

At the same time, the project's conclusion also represents a new beginning. This report, the project's asset maps, and the project's data and GIS resources provide New Kent County with a powerful set of new tools to plan for and protect the county's high-value green infrastructure assets and guide development patterns that are compatible with maximizing ecological, economic and cultural returns from these assets over the long-term.

This report summarizes only some of the ideas that can be derived from the project's asset maps and data and GIS resources. County staff and local officials can request printed maps of key features, zoom into specific areas of interest and even model land use changes over time. Residents can use the county's online mapping tool to inform their own plans and goals. New applications for these tools will be identified over time as well.

Looking forward, there is no one right answer for how New Kent County should grow. The key is to ensure that planning, policy and development decisions are informed by the best information possible, so that outcomes reflect the county's goals and priorities. The tools from the New Kent County Green Infrastructure Project will help New Kent County pursue and achieve its vision for the future, in its 2010 comprehensive plan update and beyond: "to remain a distinctive community for our citizens, celebrating our heritage, preserving our rural character and quality of life, but welcoming to visitors, business and industry."



The project's asset maps and working relationships will be key to the county's future green infrastructure planning activities.



APPENDIX A – PROJECT DATA INVENTORY

The following table is an inventory of the spatial data used to develop New Kent County's asset maps.

<i>Data related to the built environment</i>		
Dataset	Source	Description
Transportation	Available county data and VA Department of Transportation	Primary and secondary roads, bridges, driveways, and intersections
Parcels	Available county data	Parcel boundary and associated tax assessment information for each parcel
Buildings and Structures	Available county data	Building and structure polygons and 911 address location points
Zoning	Available county data	New Kent County zoning
Land Cover	VA Department of Forestry	2006 grid (raster image) showing land uses in Virginia
Places	US Geological Survey	Populated and non-populated locations (towns, mountain peaks, schools, etc.)

Data related to the non-built environment		
Dataset	Source	Description
Water	Available county data, National Hydrography Dataset, National Wetlands Inventory	Rivers, streams, open water (ponds, reservoirs), wetlands, and watershed basins
Floodplain	FEMA	FEMA designated floodplains
Soils	U.S. Dept. of Agriculture, Natural Resources Conservation Service	Soil productivity derived from the Soil Survey Geographic (SSURGO) database
Forest Cover	Virginia Department of Forestry	2006 grid (raster image) showing forested, non-forested and water areas in Virginia
Elevation	USGS National Elevation Dataset	Topography, elevation, slope, landform can be derived from NED
Impaired Streams	VA Department of Environmental Quality	2008 303(d) impaired rivers and streams
Species	VA Department of Conservation and Recreation Division of Natural Heritage and Department of Game and Inland Fisheries	Rare, threatened, and endangered species information is available

APPENDIX A – PROJECT DATA INVENTORY (continued)

Data related to cultural resources		
Dataset	Source	Description
Historic Resources	VA Department of Historic Resources	Sites on the National Register of Historic Places and/or Virginia Landmarks Register, potentially eligible architectural and archeological features, historic districts, and identified civil war sites
Recreation and Conservation Lands	VA Department of Conservation and Recreation	Federal, state, and local recreation and conservation lands (including national and state parks, wildlife management areas, and local parks)
VA Scenic Byways	VA Department of Conservation and Recreation	Designated scenic byways
Historic Routes	Available county data	Significant routes including John Smith travels (1607-08), Washington-Rochambeau Route (1781), and J.E.B. Stuart Ride (1862)
County Parks	Available county data	Existing county parks
Proposed Bike Routes	Available county data	Bike routes (on- and off-road) proposed in the 2003 New Kent County Comprehensive Plan

Models		
Virginia Conservation Lands Needs Assessment	VA Department of Conservation and Recreation	The VCLNA uses GIS to model and map land conservation priorities and actions in Virginia. Models include: cultural resources, ecological resources, forest economics, agricultural, watershed integrity

APPENDIX B – RESOURCES

This appendix provides links to state, federal and non-governmental resources that county government, residents and business owners can access to support local efforts focused on the management and enhancement of New Kent County's green infrastructure assets.

Forestry

The Virginia Department of Forestry (DOF) offers several programs as well as technical assistance for parties interested in protecting and restoring the county's forests. For example, the Forestland Enhancement Program (FLEP) provides funding to help landowners develop forestry management plans and certain other stewardship activities.

- Forestland Conservation Programs: www.dof.virginia.gov/land/index.shtml
- Forestland Enhancement Program (FLEP): www.dof.virginia.gov/mgt/cip-fact-flep.shtml
- New Kent County Forester: Will Shoup, Virginia Department of Forestry, (804) 966-2209
- Reforestation of Timberlands Conservation Incentive Program: www.dof.virginia.gov/mgt/cip-fact-rt.shtml
- Virginia Department of Forestry Publications: www.dof.virginia.gov/info/index-forms-docs.shtml

Agriculture

Available agricultural resources include several programs as well as technical assistance. For example, the Virginia Farm Link program connects experienced farmers with new farmers, providing a way to share expertise and help new farmers locate farming opportunities.

- Colonial Soil and Water Conservation District: colonialswcd.vaswcd.org
- Natural Resource Conservation Service (NRCS) Soils Data: soildatamart.nrcs.usda.gov/
- New Kent County Agricultural Extension: (804) 966-9645 / offices.ext.vt.edu/new-kent/
- Virginia Cooperative Extension Publications: pubs.ext.vt.edu/index.html
- Virginia Farm Link Program: www.savefarms.com/farmlink_about.htm

Water Resources

Funding, technical assistance and information resources are available for parties interested in ensuring the quality and availability of New Kent County's water resources.

The Virginia Department of Environmental Quality (DEQ) monitors and reports on the water quality of streams in Virginia. DEQ also develops Total Maximum Daily Load (TMDL) analyses for impaired streams. In New Kent County, most of the impairments are for fecal coliform, generally measured as escherichia coli (or E. coli as an abbreviation). Resources (see below) are available to help localities work with DEQ to develop a TMDL plan that can best meet local needs and priorities as well as ensuring that localities remain in compliance with the Clean Water Act.

- Center for Watershed Protection: www.cwp.org
- National Association of Counties TMDL Watershed Planning Tool: www.naco.org/Template.cfm?Section=New_Technical_Assistance&template=/ContentManagement/ContentDisplay.cfm&ContentID=21026

APPENDIX C – COMMUNITY INPUT

Community input and input from county staff and elected officials shaped the project from its outset through to the development of the final asset maps in this report. This appendix provides a summary of project-related comments received from the project's focus group, project interviews and the project's June 2009 Community Open House.

Focus Group Comment Summary

Representatives of various stakeholder groups such as agencies, land trusts, developers and farmers were invited to participate in three focus group meetings for the project. These meetings were also open to the public. The purpose of the focus group meetings was to provide opportunities for community review and feedback on the project's draft asset maps prior to presenting revised maps to county officials and the public. The focus group meetings also provided an educational opportunity for the project team to discuss the project and green infrastructure planning with the community. Feedback from the focus group meetings allowed the project team to gauge community perceptions, to explore community values and priorities, and to ensure the accuracy of the project's asset maps.

Examples of feedback from the focus group meetings included:

- Comments on how to ensure that the project's maps included key assets such as Class I and II agricultural soils important for farming.
- The need for project maps to show all forest cover in the county, as well as the large forested land areas that provided the highest quality lands for timber, wildlife habitat and water quality.
- Interest in limiting additional motorized boating access to the Pamunkey River. Participants preferred quieter forms of recreation on the river, such as canoeing.
- Clarification of project graphics and map symbols.
- Recommending additional local and regional contacts for project interviews to ensure that the project included as diverse a range of perspectives as possible.

Project Interviews and June 2009 Community Open House Comment Summary (continued)

- Working lands are an important part of the county and provide scenery, wildlife habitat, rural character, riparian buffers, economic opportunity and a sense of home. Several respondents were concerned about the loss of working lands to development and were interested in tools for maintaining these working lands.
- Most long-term landowners interviewed indicated that maintaining the county's strong agrarian heritage requires that farmland not be lost to non-farm uses. Others expressed concern that the county's location within commuting distance of Richmond and adjacent to several rapidly growing counties was accelerating land use pressures to convert farms and forests into new development projects. However, one farmer noted that the value of the rural scenery and water views allowed him to maintain and expand his farm by carving out several lots along the Pamunkey River. In short, this demand for new non-farm uses enabled the farmer to stay in farming. In addition, farmers often have secondary jobs, some of which, such as siting septic fields or digging new wells, are driven primarily by the increase in new development. These jobs are an important income source that can subsidize farm incomes.
- Several respondents were concerned about shallow wells and the future of the county's water supply, given increasing development and higher water demand potentially drawing down (lowering) the water table. Several respondents were surprised by the number of community wells (public wells serving 20 or more users) in the county. Respondents suggested that the county should be proactive about protection of wetlands and water quality. One resident noted the importance of preserving existing wooded corridors along streams and rivers to help maintain the functionality of ecosystems and provide for wildlife habitat and wildlife movement.
- The county should be proactive about protection of wetlands and water quality as these are keys to good health for ecosystems and county residents.

APPENDIX C – COMMUNITY INPUT (continued)

- Respondents emphasized that the County’s recreational resources are important to them and expressed interest in opportunities to provide additional nature-based recreation opportunities.
- Several respondents expressed an interest in having more nature-based recreation areas located closer to their homes. Other respondents stated that New Kent County should not focus on providing new recreation opportunities, but rather should work to keep the county rural so that there would not be a need to buy land simply to let residents experience nature. As one resident put it, “My backyard is my nature and I can continue to enjoy that if the county does not develop too much.” Specific suggestions for new nature-based recreation opportunities included an equestrian trail from New Kent Vineyards to estates in the northern part of the county, a park and river trail along the Chickahominy River in the western part of the county, and additional hiking trails similar to the Wahrani Nature Trail.
- New Kent County’s rural landscape is appreciated by many who rely on connected, unbroken land uses to enjoy pastimes such as hunting and horseback riding. Horse owners often need the cooperation of multiple landowners to provide opportunities for extended riding experiences. Hunters also benefit from a connected landscape, which ensures that diverse, abundant wildlife populations can be sustained. Much of the forested landscape in the county is leased by hunting groups. A meeting with hunting groups indicated that significant land areas county-wide are used by hunting clubs, which own little or no land and depend mostly on leasing arrangements for hunting opportunities.
- Several respondents noted their enjoyment of bicycle riding opportunities through the county’s winding and scenic landscape. Several residents expressed support for proposed bicycle lanes in the county, but cautioned that the lanes should only be created on routes that are safe for cyclists and where trails will not impede the flow of traffic.
- Some of New Kent County’s abundant historic resources are not easily accessible. Several respondents expressed concern regarding how historic resources located on private land may not be adequately protected over time.
- Respondents noted that New Kent County’s historic resources are abundant and scattered across the county, with the majority of historic structures located on private land. Historic resources located on private land include historic homes, colonial-era building foundations and ice houses, gravestones and old roadways.
- Most residents indicated that more people would likely want to move to the county in the future. They expressed interest in keeping new development located along Route 64 and closer to already-developed infrastructure (crossroads, gas stations, commercial areas) and away from the northern and southern portions of the county. Residents suggested that development should be limited closer to the Chickahominy and Pamunkey Rivers.
- Many respondents stated that the county’s forests, streams and rural landscape are key reasons why they stayed, moved to or returned to New Kent County. Open house attendees were especially interested in the project’s land parcel map. Respondents identified a need to retain larger land parcels in the county for farms and forest land, with a need to avoid property subdivisions that could negatively impact the county’s farms and forest land.

APPENDIX D – CITYGREEN ANALYSIS FOR NEW KENT COUNTY

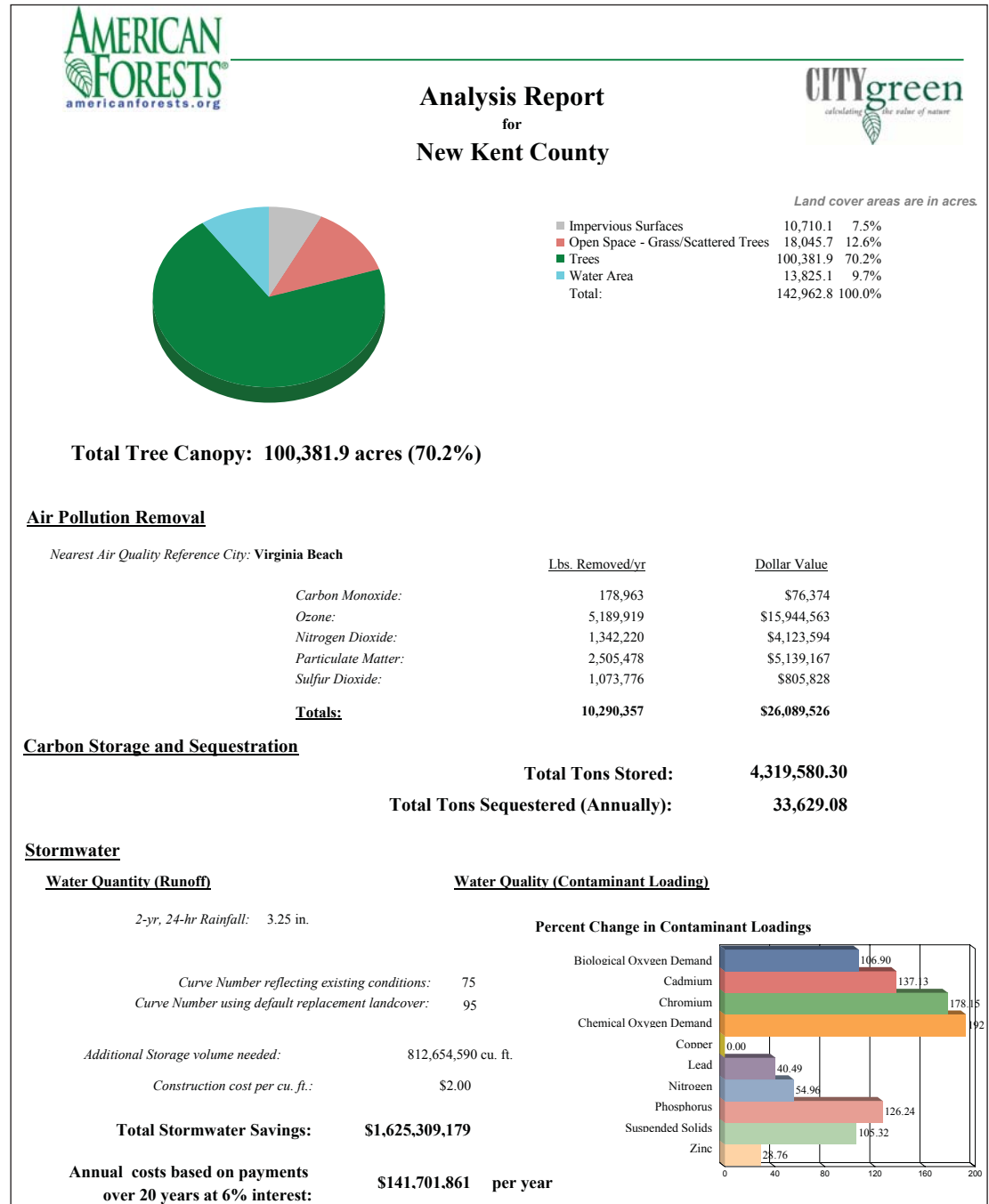
CITYgreen is a software tool developed by American Forests. The tool helps planners, engineers, developers, community groups and regulatory agencies make the economic case for green infrastructure by quantifying the important role that trees play in improving water quality, sequestering carbon, removing pollutants from the air and capturing and filtering runoff.

The report to the right quantifies the different types of services that trees provide in New Kent County, including:

- how many pollutants are being removed from the air;
- how much carbon is being stored; and
- how much stormwater is being intercepted and how this service translates into stormwater management savings.

In New Kent County, trees cover 70.2 percent of the county’s land area. It is estimated that these trees remove over 10 million pounds of pollutants each year. The value of this pollution removal is estimated at \$26 million annually. To calculate these costs, CITYgreen relies on the indirect costs borne by society, such as rising health care costs and reduced tourism revenue.

CITYgreen also calculates the benefits provided by trees in decreasing stormwater volumes. In New Kent County, this value is approximately \$1.6 billion annually, which is based on the cost of stormwater facilities that would be needed if the trees were removed. Trees also reduce stormwater runoff, prevent erosion and encourage rainfall to soak into the ground to recharge underground water supplies. The value of stormwater control is equated to the cost of building retention facilities that provide equivalent services.



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