

Other 7. University of Virginia Green Lands Class Products

Item(s) included:

- Strategies for Conserving Green Infrastructure
- Accomack County Formbook: A Design Guide for Conserving Accomack County's Scenic and Historic Character
- Water Resources in Accomack County
- Trees & Forests Accomack County, Virginia
- Recreation, Tourism and Open Space in Accomack County, VA
- Photo Journal: Towns & Culture

Strategies for Conserving the Green Infrastructure of Accomack County, Virginia

Prepared by Students in the Green Lands Class at the University of Virginia



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Anyone interested in receiving the Class College Curriculum Guide used to create this report can contact the instructor Karen Firehock. Any comments about this report or other requests may be emailed to the instructor karenfirehock@virginia.edu.

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INTRODUCTION

Green infrastructure (GI) is the interconnected network of waterways, wetlands, woodlands, wildlife habitats, and other natural features that support native species, clean water and contribute to community health and quality of life. Just as localities plan for grey infrastructure, they also need to take care of their green infrastructure to create healthful places for residents and businesses. For example, forests help to filter and absorb rainfall thereby reducing flooding frequency while also protecting streams and facilitating the recharge of groundwater supplies. Green infrastructure planning is a framework for assessing and valuing these environmental assets.

This report was prepared by students in an applied planning class titled *Green Lands* at the University of Virginia (UVa). This project is a collaborative partnership between Accomack County, the Green Infrastructure Center and UVa. It was funded by the Virginia Department of Forestry and the Chesapeake Bay Program. Students proposed strategies for protecting environmental assets and landscape-influenced cultural resources. The students utilized maps created by the Green Infrastructure Center and other data sources to develop proposed policies and projects for the county to consider as well as a study of the growing area that encompasses the county and towns of Accomac, Onancock and Onley.

Students worked in teams to evaluate Forests and Corridors, Inland Water Resources, Recreation and Open Space, and Livable Towns and Cultural Assets. To create this report, student teams conducted research and utilized natural resource models and the county's spatial data sets. They also held two reviews with county staff. Students also consulted a prior study to map the county's green infrastructure created by the GIC and available at <http://www.gicinc.org/accomack.htm>

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Each section of this report contains goals, objectives, resources, and examples. Summaries of these goals are found on page 1 of this report. Students consulted the county's *Comprehensive Plan* (May 2008) and utilized existing goals whenever possible. The plan is referenced along with the corresponding page number.

If there was no relevant goal within the county's current *Comprehensive Plan*, students wrote a new or modified goal. Accomack County and the towns of Accomac, Onley and Onancock are encouraged to make use of the ideas, case studies, and references within this report to maintain their quality of life and conserve its rural and historic heritage appreciated by both long time and newer residents. Data and recommendations in this report can also be used to improve and expand the future comprehensive plan update.

GOAL SUMMARY

FORESTS AND CORRIDORS

- Conserve and restore larger existing forested areas to protect wildlife habitat and increase biodiversity in Accomack County.
- Conserve, restore, and plant trees in developed and developing areas to enhance urban forest vitality.
- Realize the full economic benefits of trees for business interests, private citizens, and the county's timber economy.

WATER RESOURCES

- Maintain high-quality stream corridors that provide habitat, economic, and recreational benefits.
- Maintain an adequate supply of clean groundwater for present and future generations.
- Ensure that future development utilizes best management practices to minimize and prevent harm and pollution of water resources.

RECREATION, TOURISM, AND OPEN SPACE

- Integrate healing landscapes into the hospital site to promote human health and reduce patient recovery time.
- Improve existing nature trails throughout the county to provide more comprehensive and connected recreational amenities, in order to enhance the county's appeal to nature-based tourists and offer greater opportunities to residents.
- Promote tourist access and visitation rates in Accomack County by those who use digital media through an online mapping tool provided by UVA, and later to be managed and updated by ESVA tourism.
- Establish a new park in Accomack County to meet the existing requirements of the Land and Water Conservation Funds previously distributed to Accomack County.
- Integrate a bicycle network into the current transportation system to provide alternative means of transportation within the Onancock-Onley-Accomac growth area, as well as recreational opportunity along the entire Eastern Shore.
- Hold a regular farmers market and implement a marketing initiative to promote the local agricultural economy, agritourism, and community-wide health.

TOWNS AND CULTURAL ASSETS

- Protect Accomack County's historic, architectural, and natural resources by ensuring new developments respect the county's architectural and natural character and are orderly and attractive.
- Improve the integrity of historic landscapes and properties, in order to protect and enhance Accomack's historic character and attract tourism.
- Implement sign ordinances and signage to improve the attractiveness of towns and to highlight the rich historic character of Accomack County.

FORESTS: POLICIES AND STRATEGIES

Written by George Foster, Charles Kline, and Qiwen Li

Some of the most influential resources in a green infrastructure network are its forests and trees. Accomack has a significant number of acres of high-quality forest. According to the USDA-Forest Service, there are about 94,507 acres of forest in the county (*Accomack Comprehensive Plan, 2008*). These forested lands help provide many services, including maintaining the quality of air and water resources, improving quality of life for county residents, providing for habitat for many native species, especially migrating songbirds, and places for residents and tourists to recreate.

Forests are important for protecting water resources. The county has already acknowledged this by stressing the importance that woody vegetation plays in improving water quality in its *County Code* (Chapter 106, Article XVI). Protecting forested land and preserving working lands can help maintain the county's recharge spine and thus maintain drinking water resources (Resource 9; see *Water: Policies and Strategies*). Additionally, protection of forest cover has been correlated with significant reductions in water treatment costs (Ernst et al., 2004).

Accomack County's trees and forests provide habitat for a large number of species. A properly connected network of forested lands helps ensure quality habitat for these species. Wildlife not only is a quality of life resource for residents and an attraction for tourists, but biodiversity helps maintain forest and ecosystem health by balancing ecological processes (Duerksen and Snyder, 2005). Protecting biodiversity with a strong system of connected, quality forested cores helps promote county goals.

Trees help to improve quality of life throughout the county. The intangible benefits of trees on quality of life can be seen in increased economic values. Commercial areas with trees are more attractive to customers and thus more profitable (Wolf, 1999). Additionally, homes values near forests and parks also increase (Benotto, 2002). Clearly, trees make communities more attractive for residents, visitors, and shoppers.

Forestry has long been an important part of the county's economic life. From 1982-2001, forestry averaged \$4.3 million in harvest value. Additionally, in 1999, the forestry sector employed a total of 202 people directly and indirectly (Resource 6). Maintaining this industry is important not only to the county's economy, but also for the additional services provided by forested tracts. While demand for lumber has decreased in recent years, forestry remains a long-term investment and can weather recessions as trees grow. According to the county forester Robbie Lewis, smaller tracts of land, as little as three acres, have been harvested recently. Before the recession, only larger tracts would have merited attention. This highlights the importance of incentivizing the preservation of smaller forested areas for timbering and for the services these areas provide such as habitat and water quality protection.

Accomack County's trees and forests provide many services for its people. With the expected growth in the county, existing resources should be protected and enhanced. The following goals and objectives can help ensure that the forests and trees remain a healthy part of the county's green infrastructure network.

GOAL SUMMARY:

- Conserve and restore larger existing forested areas to protect wildlife habitat and increase biodiversity in Accomack County.
- Conserve, restore, and plant trees in developed and developing areas to enhance urban forest vitality.
- Realize the full economic benefits of trees for business interests, private citizens, and the county's timber economy.

Goal 1: Conserve and restore larger existing forested areas to protect wildlife habitat and increase biodiversity in Accomack County.

Rationale: Forests are vital to Accomack County's landscape. They provide residents with a more vibrant, resilient, and healthy ecosystem. According to *Accomack County Planning*, residential land use makes up less than 6% of the total land area, while cropland and forest cover dominate the county landscape, at 36.8% and 42.5% respectively. A fairly large portion of the county is under conservation easements. These lands are owned and managed by the National Park Service, U.S. Fish and Wildlife Service, Virginia Department of Game and Inland Fisheries, the Virginia Department of Conservation and Recreation, The Nature Conservancy, and The Chesapeake Bay Foundation (*Accomack Comprehensive Plan, 2008*). Goal 1 provides suggestions on strategic targeting efforts to help state agencies, local governments, and conservation organizations design specific and effective programs for forest conservation.

Accomack County supports 11% (99/925) of the state's wildlife species of greatest conservation need, according to *Species of Greatest Conservation Need (Accomack Comprehensive Plan, 2008)*. Many of these species have economic or recreational importance to the county. Several are rare, threatened, or endangered, including the Delmarva fox squirrel and the black skimmer (*Accomack Comprehensive Plan, 2008*). Accomack is also located within the Atlantic Flyway, which is a rest stop for migratory birds, such as the piping plover. Thus, forests with adequate trails provide unique bird watching opportunities and pleasant hiking experiences for both residents and tourists.

Most wildlife can find suitable habitat inside large forests. Intact landscapes, or cores, are land areas 100 acres or larger in size that provide more space for biodiversity and ecological functions than smaller, fragmented forest areas. Therefore, development within larger forested tracts should be avoided whenever possible. Unfortunately, forest cover in the entire county, while extensive, is diminishing. Using the *Conservation Value and Lands Needs Assessment* developed by Virginia's Division of Natural Heritage, high-value and sensitive cores around the towns of Accomac, Onancock, and Onley were selected as a focus for recommended conservation efforts.

Fragmentation from land development is one of the biggest threats to the county's high-value forest assets, which is an important factor in the loss of viable agricultural and silvicultural lands. The diminution and fragmentation is greatest in the Terrestrial Zone, which are areas closest to town centers and the Route 13 transportation spine. When forests are isolated, species within them are at greater risk of decline, since animals and plants cannot re-colonize isolated areas. Connecting forests through wide, vegetated corridors facilitates the movement of animals, pollinators, and plants over time to ensure species can repopulate areas (*Statewide Assessment of Forest Resources, 2010*). In addition, the edges of cores are as ecologically important as the centers for enhancing the county's biodiversity and need to be protected. Edges next to developed land without appropriate buffers, as found near Onancock's Wal-Mart (Figure 3), could degrade the core's quality and make it unsuitable for both species that prefer the edge habitat and those that need intact centers of cores to thrive. The team proposes buffers around entrance corridors, forested areas that cross Route 13, and new developments to minimize human disturbance.

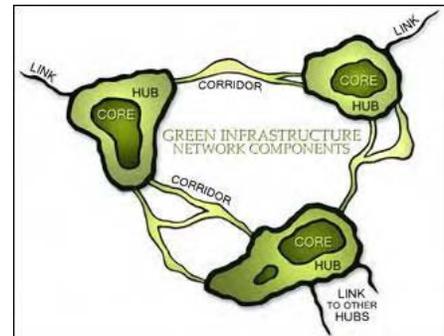


Figure1. Cores, hubs and corridors are essential elements of a complete forest network, allowing optimal biodiversity (Source: <http://www.greeninfrastructure.net/content/definition-green-infrastructure>)

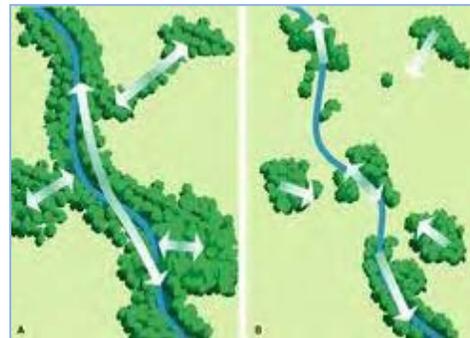


Figure2. These illustrations compare an area (A) that has wildlife corridors linking habitat with an area (B) where habitat is fragmented and has limited wildlife corridors. (Source: Federal Interagency Stream Restoration Working Group (FISRWG) <http://www.smartgrowthvermont.org/toolbox/issues/wildlifecorridorprotection/>)

Accomack’s native trees are more resistant to threats from disease, pests and invasive species than are introduced species. In order to save forest lands, private landowners and developers should be encouraged to donate conservation easements. For lands that are adjacent to or include high value intact landscapes (cores), Accomack County should encourage developers to adopt Accomack County’s clustering options within the village residential ordinance. Whenever possible, landscape choices should be comprised of local species for both existing properties and new developments. The Plant Eastern Shore Natives campaign should be promoted to residents and developers alike.



Figure 3: Constructed wetlands behind Onancock Wal-Mart

Objective 1A: Protect valuable forest cores and productive working farms identified in the GI network from human disturbance and land development.

Action 1) Designate high-value cores larger than 100 acres identified by the VCLNA (Resources 4), especially within or overlapping with projected development areas, as prioritized conservation districts and rezone them as C1. (Maps 1&2)

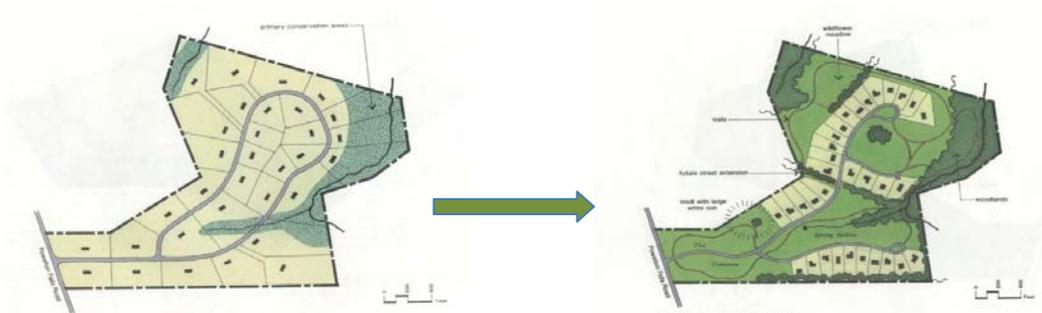


Figure 4. Cluster subdivision design: the same property designed as a cluster or conservation development yields the same number of lots but conserves more than half of the acreage as common green space and reduces infrastructure costs. (illustration credit: Randall J. Arendt, *Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks*, Island Press, 1996)

Action 2) Encourage landowners and developers to use clustered development to preserve rural resources, while still obtaining high profitability. Provide design guidelines with GI maps to reduce inappropriate clustering patterns, which can limit forest management practices, such as aerial spraying and prescribed burns. (See Figure 4 and Resource 3)

Action 3) Encourage landowners to donate conservation easements (Resource 4) to easement-holding organizations, such as the Virginia Eastern Shore Land Trust or the Nature Conservancy (See Appendix 2). Preferred lands include productive farms and forest cores identified by the Virginia Conservation Lands Database and the *Conservation Lands Needs Assessment* as unique and sensitive wildlife habitat. (Resource 2 & 5)

Action 4) Plan for a new public park that will best serve areas where infill development is occurring while also conserving key green infrastructure resources – perhaps near southwest Onley where the intact forestland, which ranked as high forest conservation value by the Virginia Department of Forestry (DOF) (Resource 8&9) and is located partly within the town area. (See Map 4, also see Goal 4 of *Recreation & Tourism*)

Objective 1B: Protect and increase natural corridors (>300m) linking high-value forests, and the seaside and bayside of Accomack County.

Action 1) Identify vulnerable small cores, which are cores smaller than 100 acres but ranked as 4 or 5 for forest conservation value and fragmented patches that should be connected to larger intact forested lands in the GI network. (Map 3, Resource 6)

Action 2) Create a land acquisition fund to purchase lands, in order to address buffer gaps along Route 13 and around identified Target Crossing Areas between forests/corridors and the transportation spine. (See Funding Resources)

Action 3) Plan for an East-West green corridor at least 300m wide, involving the proposed trail, between Onancock and Onley for wildlife movement. (See Goal 2 of *Recreation & Tourism*)

Objective 1C: Work with the Plant ES Natives Campaign, to encourage and guide landowners and developers to use native species during reforestation. Species and demonstration sites are listed in the *Native Plants of Accomack and Northampton*. This can enhance plant density and species diversity, both of which are important for maintaining a healthy ecosystem that is better at resisting disease, pests, and invasive species. (Resource 9, Appendix 3&4)

Objective 1D: Educate the public about the role of intact cores and corridors for wildlife and biodiversity, in cooperation with local and state tree-friendly organizations. (See *Partner Organizations Resources*).

Action 1) Provide the *Forest Benefits Fact Sheet* or *Tree Benefits Brochure*, along with the GI Plan on Accomack County's website and in local planning office to residents, landowners, developers, businessmen, and tourists. (See Appendix 1 Fact Sheet)

Goal 2: Conserve, restore, and plant trees in developed and developing areas to enhance urban forest vitality.

Rationale: The ecological benefits of forests can be easily measured and have been found to provide multiple benefits to counties and cities, such as reducing air pollution, reducing erosion, mitigating stormwater impacts, improving groundwater recharge, modifying the local climate, and reducing noise pollution (Maryland DNR, 1990). To maximize long-term benefits, localities need to create an urban forest management plan. This is vital to the well-being and future of Accomack County, from not just an ecological perspective, but from social and economic standpoints as well.

In a series of studies involving over 1,300 person-space observations, 400 interviews, housing authority records, and two years of police crime reports, tree and grass cover were systematically linked to a wide range of social ecosystem indicators. These indicators included stronger ties among neighbors, a greater sense of safety and adjustment, more supervision of children in outdoor spaces, healthier patterns of children's play, more use of neighborhood common spaces, fewer incivilities, fewer property crimes, and fewer violent crimes (Kuo, 2004). Actively increasing the urban forest would have major positive effects on crime and safety.

Public health is another social issue that trees in new developments can help. There are improvements that would be extremely pertinent to Accomack County, such as school improvement and hospital effectiveness. School children with ADHD show fewer symptoms and girls show more academic self-discipline if they have access to natural settings (Taylor et. al., 2001). A study by Roger Ulrich at the University of Delaware showed that hospital patients with a view of trees from their windows recover much faster, with fewer complications, and require fewer pain-killing medications than matched patients with a view of a brick wall (1984). Creating environments for children to become better students is vital to the future survival of Accomack, and with a

new hospital being built, opportunities for forest conservation and augmentation could positively affect the health of the county.

Increased tree canopy in downtown areas shows economic benefits for businesses too. In tree-lined commercial districts, shoppers report more frequent shopping, longer shopping trips, willingness to pay more for parking, and a willingness to spend 12 percent more for goods. Just having one well-placed large tree provides average savings of \$16 in air conditioning costs each year (McPherson, 2011). People are more likely to stop outside a store in the shade of a pleasant tree than when facing exposure on pavement, and that slow shopping experience shows economic benefits of creating a social atmosphere. The urban forest is the outdoor extension of a business' customer service commitment. A well-designed and maintained street landscape suggests the level of attention that a consumer can expect from a business (Wolf, 1998).

Objective 2A: Create and implement complete the *Urban Forest Management Plan* in major towns to provide examples of 'best management guidance' for landowners and developers. This will create both a natural identity for the towns, as well as set forth examples and guidelines for future urban forestry developments. Looking at the bigger picture, this concurs with Chapter Six of the *Comprehensive Plan* for Accomack, as well as the Eastern Shore motto, "You'll Love Our Nature." By updating assessments regularly, the towns of Accomack can mitigate damage from weaker or older trees, and understand which future growth needs to go where. See Appendix 9 for examples of plans.

Action 1) Seek funding to perform a public tree inventory and assess number, species, and conditions to guide future management. Repeat the assessment every five years. Actual data collection would be a good opportunity to involve students from the community college.

Action 2) Provide a list on the County Planning Office's website of preferred native species, similar to that put out by the Plant Eastern Shore Natives Campaign. Although the county does not do planning in the towns, building permits are obtained through the county, so that a large, appropriate audience will see this central resource.

Action 3) In addition to the list in Action 2, include resources to help guide which types of trees go where (specifically the *Virginia Urban Street Tree Selector*, noted in the *Forestry References Section*). As the page header, include a brief introduction stressing the importance of varied sizes appropriate to the proximity of buildings, utilities, and roads. (See Appendix 3 for a list of species preferred under overhead utility lines)

Objective 2B: Involve local residents and organizations in implementation and education about urban forests, in order to reduce costs and ensure the future of the trees.

Action 1) Have Onancock Planning Commission and the County Planning Office utilize Eastern Shore Master Gardeners and Virginia Master Naturalists in planting and the maintenance of new tree projects and parks. (See Objectives 2B and 4A of *Parks and Recreation* for park siting)

Action 2) Community college classes should partner with town planning offices and the Virginia Department of Forestry to combine educational programs with town and county forest goals. Accomack's forests can act as a living laboratory to help engage students, while improving the county's green infrastructure network. City tree inventories and InFOREST modeling can be performed as well as design and implementation of planting projects. (To access the InFOREST model, contact the Virginia Department of Forestry)

Action 3) Town planning offices can coordinate with the Plant Eastern Shore Natives Campaign and Department of Forestry to encourage residents to plant trees on private property through events on Arbor Day in town centers. Events include distribution of educational materials, tree planting and care demonstrations and access to trees through local nurseries.

Goal 3: Realize the full economic benefits of trees for business interests, private citizens, and the county's timber economy.

Rationale: Stressing the economic benefits of trees for individuals, industries, businesses, and properties helps to protect forests, as well as individual trees. Private interests can also be incentivized to properly manage trees because of the economic benefits they bestow. A well-constructed array of public ordinances and other initiatives can help make citizens aware of these benefits and make it easier to gain fiscally from trees and forests. This will encourage forest land conservation, as well as the preservation, maintenance, and propagation of trees throughout the county, in both rural and urban settings. When the public appreciates its trees and manages them wisely, county natural resource goals can be achieved hand-in-hand with the goals of businesses and private interests.

Forestry is one of Accomack County's traditional industries. Promoting it will help the county achieve its environmental goals to protect and conserve agricultural and forest land. While the county currently has an agricultural district zoning in place, and does utilize the *Local Agricultural and Forestal District Ordinance*, it could enhance this program by adding "Districts of Local Significance (see Appendix 6)" which also recognizes smaller-sized areas that contribute important forest values.

An local agricultural and forestal ordinance has the potential to accomplish two feats that promote forestry on a small scale. First, it allows an agricultural or forestal district to be as small as 20 acres. Smaller tracts of forest lands could take advantage of land-use value assessments for a long period of time. This creates a safe haven for a forester if nearby development raises the value of their land. Thus, such an ordinance would incentivize productive forest as a land use over subdivisions and development.



Figure 5. Forestry and agriculture provide economic benefits for Accomack County in a sustainable manner.

Second, this ordinance has double the penalty for opting out before the agreed-upon review time period has ended than does a traditional agricultural and forestal district. This incentivizes foresters to keep their land under productive forest use until the review date for their district. While a local agricultural and forestal district ordinance is not a permanent way to keep forest resources from being developed, it does incentivize their continued, productive use.

Currently, Accomack County has minimal landscaping requirements in its code, though it is currently in the process of updating its ordinances to include more landscaping requirements.

By improving its landscaping ordinance, the county can enhance and protect the quality of life by requiring plantings that enhance aesthetic value and provide a number of ecosystem services. These services include: reducing the urban heat island effect; improving air quality; aiding in stormwater management; lowering building energy costs; increasing property values; and much more (*American Forests*). The strategic planting of trees and other greenery should be stressed in the county's codes for the benefit of the public and independent towns can endeavor to do the same.

Perhaps the easiest way to encourage private interests to take care of forest resources is to explain just how much they can personally benefit from their trees. Providing information about the indirect, yet very real, economic benefits of trees for improving property values and filling business coffers can help communities think of trees in a strategic manner. The county needs to provide information about these benefits online or in public locations, such as the Accomack County Planning Office. Business owners and developers will hopefully use such information to promote the county's environmental goals on their own initiative. This could lessen the need for regulations and save the county money that would otherwise be spent on correcting the inadequacies of traditional development, such as water-quality issues and poor stormwater management. If developers and business people take heed of such information, increases in the sale prices of homes (Benotto, 2002) and tax revenue from extra commercial sales (Wolf, 1999) could help raise money for the county, while protecting Accomack's natural resources.

Objective 3A: The County Planning Office should enhance its current Agricultural and Forestal District (AFD) Ordinance by adding Districts of Local Significance to better protect smaller scale, significant working lands, such as forests and farmland, from development.

Action 1) The County Planning Office should consider enacting a Districts of Local Significance ordinance within its current AFD Program. (See Appendix 6)

Objective 3B: The County Planning Office should create a zoning ordinance to require landscaping practices in new developments that promote the environmental and natural resources goals outlined in the county's *Comprehensive Plan*. (See Appendix 7)

Action 1) The County Planning Office should ensure that its landscaping ordinance promotes the use of trees for aesthetics, environmental quality, and stormwater management purposes, as well as the general preservation of trees.

Objective 3C: The County Planning Office should provide permit applicants and interested parties with access to information about the economic benefits of trees for developers and business owners.

Action 1) Create a clear and succinct document explaining the economic benefits of trees to business owners and developers. (See suggested content in Appendix 8)

Action 2) Make the document from Action 1 available publicly by posting it online and having print copies available in the Accomack County Planning Office.

RESOURCES

FOREST CONSERVATION RESOURCES

1. **Species of Greatest Conservation Need (SGNC):** The distribution and abundance of wildlife species, including low and declining populations, are indicative of the diversity and health of the Commonwealth's natural resources. The SGNC list was created by the Virginia Department of Game and Inland Fisheries, using a selection matrix that brought together lists of species identified by other groups as imperiled or in decline. Within the SGNC list, species are classified into four tiers, which were developed to identify the relative importance of the conservation need for each species.

Be Wild, Virginia!: <http://bewildvirginia.org/species/>

2. **Virginia Conservation Lands Needs Assessment (VCLNA):** The VCLNA is a comprehensive green infrastructure planning tool developed by the Department of Conservation and Recreation. There are a total of six GIS (Geographic Information System) models, including the Virginia Natural Landscape Assessment and the Forest Economics Model.

Virginia Department of Conservation and Recreation:

http://www.dcr.virginia.gov/natural_heritage/vclna.shtml

3. **Guidelines for Cluster Development:** The City of Chesapeake provides these guidelines to preserve rural elements through clustered development. Specific guidelines include: locating building envelopes; design standards for public roads, driveways, landscaping and lawns; fencing; concrete engineered structures; and accessory buildings and structures; all of which can be used as good examples for Accomack County.

Design Guidelines for the City of Chesapeake: http://www.cityofchesapeake.net/Government/City-Departments/Departments/Planning-Department/Planning-Library/plans_studies/design-guidelines.htm

4. **Conservation Easement Program, VDOF:** A conservation easement is a voluntarily deeded agreement between a landowner and a qualified conservation organization. The use of conservation easements could be encouraged by allowing additional density in developments that cluster building lots and place the remainder of the land under a conservation easement. VDOF conservation easements focus on keeping forest land intact and unfragmented, protecting the ability of current and future landowners to manage their forestland for timber products, and on its environmental value.

See: <http://www.dof.virginia.gov/land/index.shtml>

5. **Virginia Conservation Lands Database, DCR:** This Commonwealth's state-wide Conservation Lands Database uses digital mapping to track Virginia's progress toward several important land conservation goals and includes state, federal, private, and locally managed lands and conservation easements. DCR is continually reviewing and updating the Conservation Lands Database. Updated data is provided on a quarterly basis in March, June, September, and December. Data can be viewed online through the Virginia Land Conservation Data Explorer (LCDE).

See: http://www.dcr.virginia.gov/natural_heritage/clinfo.shtml

6. **Forest Conservation Value:** The Virginia Department of Forestry has established a relative Forest Conservation Value (FCV) for all forest land in the state. This FCV ranking is based on the level of benefits provided by a particular area of forest, in combination with the level of threat the area faces from conversion to another land use, primarily to development. The FCV map divides the state's forest lands into five categories; the Virginia Department of Forestry (VDOF) has identified categories 4 and 5 as having high forest conservation value.

7. **InFOREST, VDOF:** This is a tool designed to provide landowners, natural resource managers, and land-use planners with state-of-the-art access to information about the natural resources they manage. It utilizes a GIS platform to integrate natural resource data with the functionality necessary to generate custom maps, reports, and information about ecosystem services for a specific tract of land. For more information, please contact VDOF.

8. **Native Plants of Accomack and Northampton:** This guide to Accomack and Northampton native plants is being provided through the "Plant ES Natives" campaign, initiated by the Virginia Coastal Zone Management Program through its Virginia Seaside Heritage Program, and developed with the assistance of a planning team representing different partners.

Plant ES Natives Campaign: <http://www.deq.state.va.us/coastal/go-native.html>

URBAN TREE RESOURCES

9. **Urban Tree Canopy Analysis of Virginia Localities:** The analyses of Virginia localities' urban tree canopy (UTC) was carried out at the request of the Virginia Department of Forestry in collaboration with the participating localities. The analysis was performed by the VDOF and the Virginia Geospatial Extension Program (VGEP) in consultation with the Center for Environmental Applications and Remote Sensing (CEARS) and the Spatial Analysis Laboratory (SAL) of the University of Vermont. The goal of the project was to apply the USDA Forest Service's UTC assessment protocols to the participating localities.

See: <http://cnre.vt.edu/gep/VA.UTC.html>

10. **Virginia Urban Street Tree Selector, Virginia Tech:** The urban street tree selector is designed to serve as a resource and forum for street trees. Trees in downtown areas are under intense pressures from pavement, buildings, and people. Many factors restrict tree choices in these sites: reduced rooting areas, extreme pHs, or clearance requirements. Finding trees that perform well in these situations can be difficult.

See: <http://dendro.cnre.vt.edu/treeselector/search.htm>

11. Rural Preservation Through Land Stewardship Tools: The fact sheet developed by the Green Infrastructure Center gives an overview of those agricultural, forestry, and conservation stewardship programs and resources in Virginia that can support partnership between private conservation efforts and local governments or non-profits.

Green Infrastructure Center: <http://www.gicinc.org/resourcesonlinelit.htm>

12. Economic and Forest Industry Data: The *Economic Impact of Agriculture and Forestry on the Commonwealth of Virginia* study describes the contribution of the agriculture and forestry industries to Virginia's economy.

Virginia Department of Forestry: <http://www.dof.virginia.gov/econ/data.shtml>

Virginia Department of Forestry Accomack County Information:

<http://www.dof.virginia.gov/regEast/acc-index.shtml>

13. Urban Forestry South: Benefits of Urban Trees Booklet: Urban Forestry South provides information and documentation on the benefits of urban trees, including example ordinances and urban forestry plans for localities to use to create a vibrant urban forest system. A short brochure briefly explains the benefits of urban trees and can be useful for developers and private property owners when they consider design choices.

Urban Forestry South: <http://www.urbanforestrysouth.org/resources/library/benefits-of-urban-trees-booklet/>

14. Louisa County, Virginia's Landscape Manual: Louisa County's guide for planting and maintaining trees in a screening buffer is a model for Virginia. While Louisa does not require developers to undertake these measures, it can improve the quality and survivability of planted trees. The Louisa guide facilitates the implementation of screening and landscaping ordinances.

Louisa County Landscaping Manual: <http://www.dof.virginia.gov/urban/landscape-manual.htm>

15. Accomack County Blue/Green Infrastructure Study: The Green Infrastructure Center's report from May 2010 highlights the state of green infrastructure resources in Accomack County and discusses areas of opportunities, as well as threats.

Green Infrastructure Center: <http://www.gicinc.org/accomack.htm>

16. Virginia Cooperative Extension: The VCE makes available the resources of Virginia's land-grant universities, Virginia Tech, and Virginia State University to the public. Specifically, it provides detailed information on silviculture and urban methods.

Virginia Cooperative Extension: <http://www.ext.vt.edu/>

PARTNER ORGANIZATIONS FOR LAND CONSERVATION & MANAGEMENT

Department of Conservation and Recreation - Virginia Natural Heritage Program: Through this program, the Department of Conservation and Recreation will manage lands that are donated as a State Natural Area Preserve.

See: http://www.dcr.virginia.gov/natural_heritage/

Plant ES Natives Campaign: This multi-partner Eastern Shore Plant Natives Team works to develop a social marketing campaign to increase the use of plants native to Accomack and Northampton Counties.

See: <http://www.deq.state.va.us/coastal/go-native.html>

The Virginia Land Conservation Foundation: The foundation makes matching grants to state agencies, local governments, public entities, and nonprofit groups for purchasing fee simple title to, and interests in, real property for land conservation purposes. Part of the VLCF's mandate is strategic conservation planning for the state.

See: http://www.dcr.virginia.gov/virginia_land_conservation_foundation/

Chesapeake Bay Foundation: The CBF is the only independent organization dedicated solely to restoring and protecting the Chesapeake Bay and its tributary rivers. Since its founding 40 years ago, the foundation's goal has been to improve water quality by reducing pollution.

See: <http://www.cbf.org/>

Virginia Eastern Shore Land Trust: A private non-profit on the Eastern Shore that seeks to promote landscape preservation for future generations through voluntary land preservation.

See: <http://www.veslt.org/>

The Nature Conservancy -Coast Reserve Program: The Conservancy's Virginia Coast Reserve (VCR) protects 14 undeveloped barrier islands that help buffer Eastern Shore communities from storms, as well as thousands of acres of pristine salt marshes, vast tidal mudflats, shallow bays, and productive forest uplands.

See: <http://www.nature.org/wherewework/northamerica/states/virginia/preserves/art15031.html>

Virginia Outdoors Foundation: The Virginia Outdoors Foundation was established to promote the preservation of open-space lands and encourage private gifts of money, securities, land, or other property to preserve the natural, scenic, historic, scientific, open-space, and recreational areas of the Commonwealth.

See: <http://www.virginiaoutdoorsfoundation.org/>

The Virginia Department of Agriculture and Consumer Services: This state agency has information on conserving working lands and will be holding two workshops in the coming year.

See: <http://www.vdacs.virginia.gov/preservation/index.shtml>

VDEQ – Office of Environmental Education: This is Virginia's clearinghouse for environmental education and information. It works with public and private organizations to deliver quality environmental education programs that meet state academic standards and engage citizens in conservation activities.

See: <http://www.deq.virginia.gov/education/homepage.html>

Virginia Master Gardeners: A state-wide association of Master Gardeners and Virginia Cooperative Extension (VCE) employees whose mission is to foster communication, education, and fellowship among Master Gardeners, and to give support and input to the state leaders about our VCE effort.

See: <http://www.vmganet.org/>

Virginia Master Naturalists: The Virginia Master Naturalist Program is a statewide corps of volunteers providing education, outreach, and service dedicated to the beneficial management of natural resources and natural areas within their communities. Interested Virginians become Master Naturalists through training and volunteer service

See: <http://www.virginiamasternaturalist.org/>

Virginia Department of Game and Inland Fisheries: The department's wildlife education program provides support to educators to meet wildlife-related Science Standards of Learning.

See: <http://www.dgif.virginia.gov/>

FUNDING OPPORTUNITIES

1. **Virginia Department of Forestry (VDOF) Cost-Share Programs:** VDOF has multiple conservation incentive programs to help landowners reap financial benefits from conserving their land. By sharing the cost of protecting land with the state government, landowners can undertake conservation measures they would not normally be able to afford. Each program has a specific objective it aims to achieve by sharing the costs of conservation. These can range from reforesting riparian areas and restoring wildlife habitat to reforesting timberlands.

See: <http://www.dof.virginia.gov/mgt/cip-summary.htm>

2. **The Conservation Fund, America's Partner in Conservation:** With support from donors, the group provides the skills, strategies, and funds that its partners need to fulfill conservation priorities swiftly and successfully. The fuel that powers their work is the Revolving Fund. They can help to conserve high-priority lands for partners such as the National Park Service or a state wildlife agency, using the fund to acquire the land and hold it until the public agency can purchase it. The group is currently working on the Chesapeake Bay Initiative.

See: <http://www.conservationfund.org/>

3. **Virginia Land Conservation Foundation Grants:** Funds are divided equally among four primary categories: (1) natural area protection; (2) open spaces and parks; (3) farmlands and forest preservation; and (4) historic area preservation. At least one third of the funds must be used to secure easements to be held or co-held by a public body, such as a state or federal agency, local government, or Soil and Water Conservation District (SWCD).

See: <http://www.deq.state.va.us/coastal/>

4. **Forest Legacy Program, the USDA Forest Service:** The Forest Legacy Program is a voluntary program of the USDA Forest Service that provides grants to states to purchase conservation easements and fees for the acquisition of environmentally-sensitive or threatened forest lands. It provides an private, voluntary conservation. alternative to selling timberland for development.

See: <http://www.dof.virginia.gov/mgt/index-flp.htm>

5. **Environmental Quality Incentive Program (EQIP):** This program encourages farmers and ranchers to participate in conservation efforts by paying a portion of the cost of installing or constructing approved conservation practices. Producers with eligible land can submit an EQIP plan that describes the conservation and environmental purposes it hopes will be achieved using one or more USDA-approved conservation practices, involving structures, vegetation, or land management. Under an EQIP contract, the USDA either pays up to 75% of the projected costs associated with planning, design, materials, equipment, installation, labor, management, maintenance, or training, or it pays up to 100% of the estimated income forgone to implement certain conservation practices.

See: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial>

6. **Virginia Land Preservation Tax Credit:** Virginia has one of the most generous tax incentive programs for conservation easements in the nation. The specific advantages can be explained on the Department of Conservation and Recreation's website.

See: http://www.dcr.virginia.gov/land_conservation/tools03.shtml

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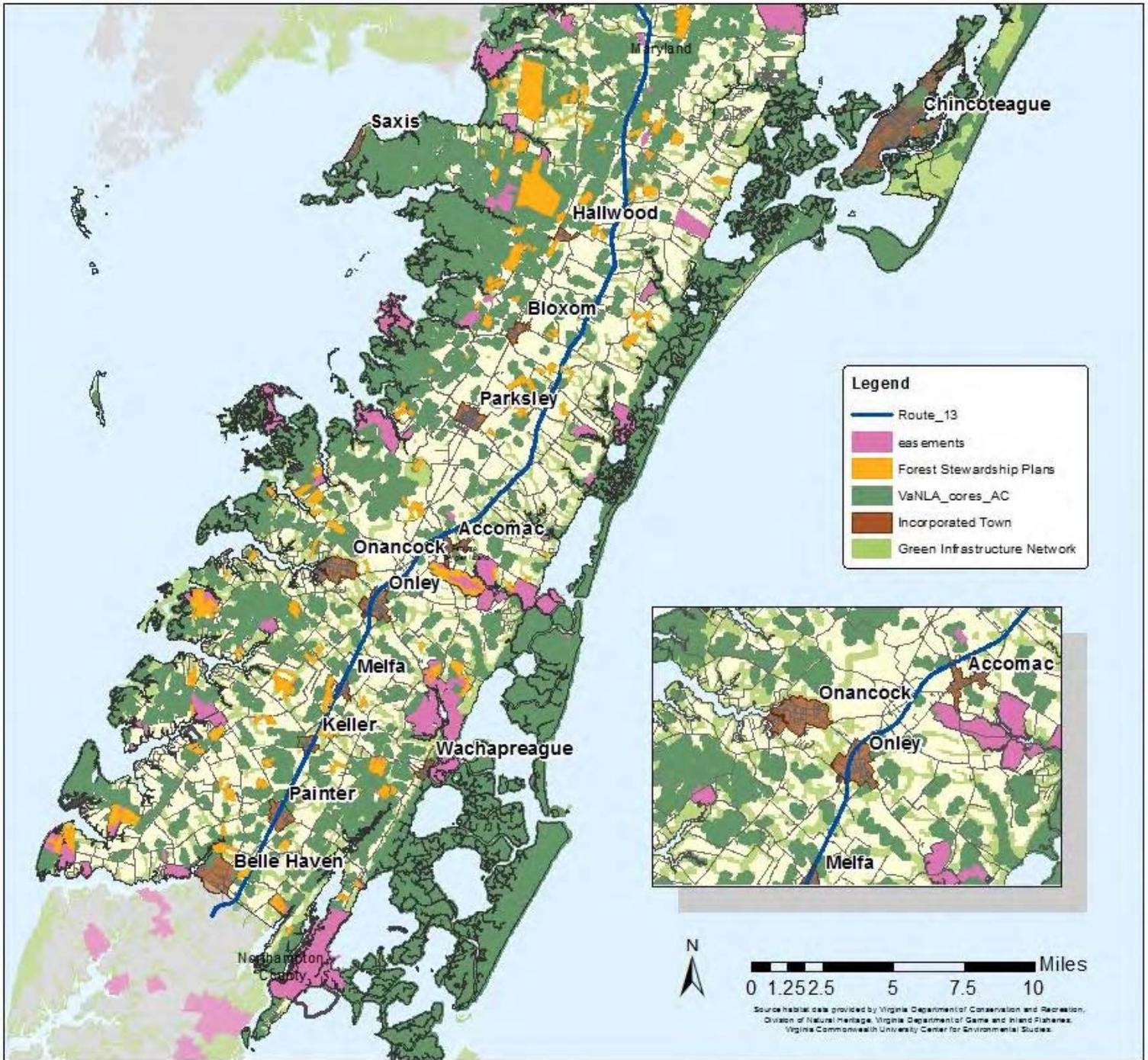
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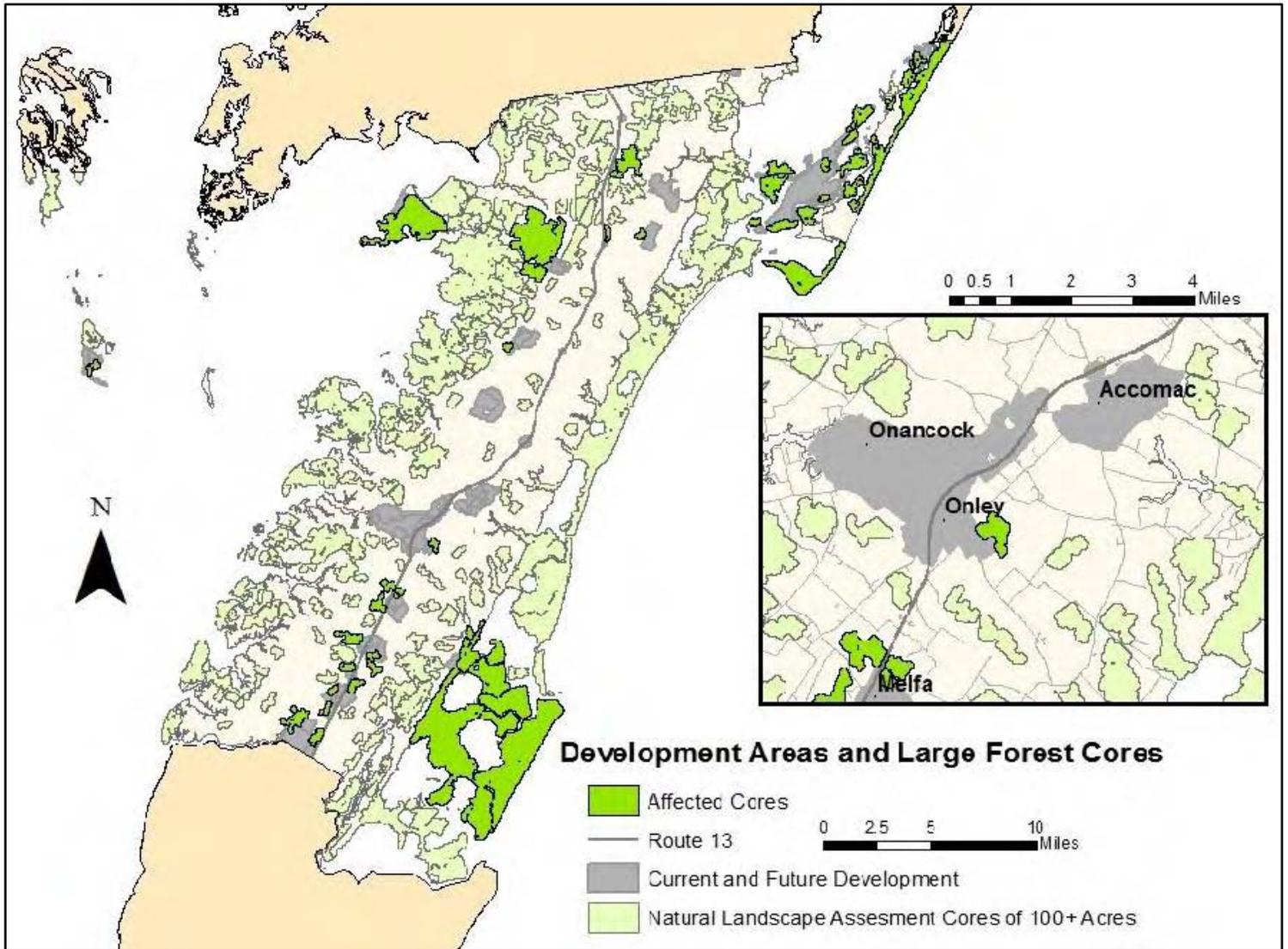
The Forest Team appreciates help from the following organizations and staff:

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- Adam Downing, Virginia Cooperative Extension – Forestry and Natural Resources, Northern District
- Robert Lewis, Virginia Department of Forestry – Accomack County Forester
- Jim McGlone, Virginia Department of Forestry – Urban Forest Conservationist
- Peter Henderson, Virginia Eastern Shore Land Trust

MAP 1: FORESTED CORES AND CONSERVATION EASEMENTS IN ACCOMACK COUNTY

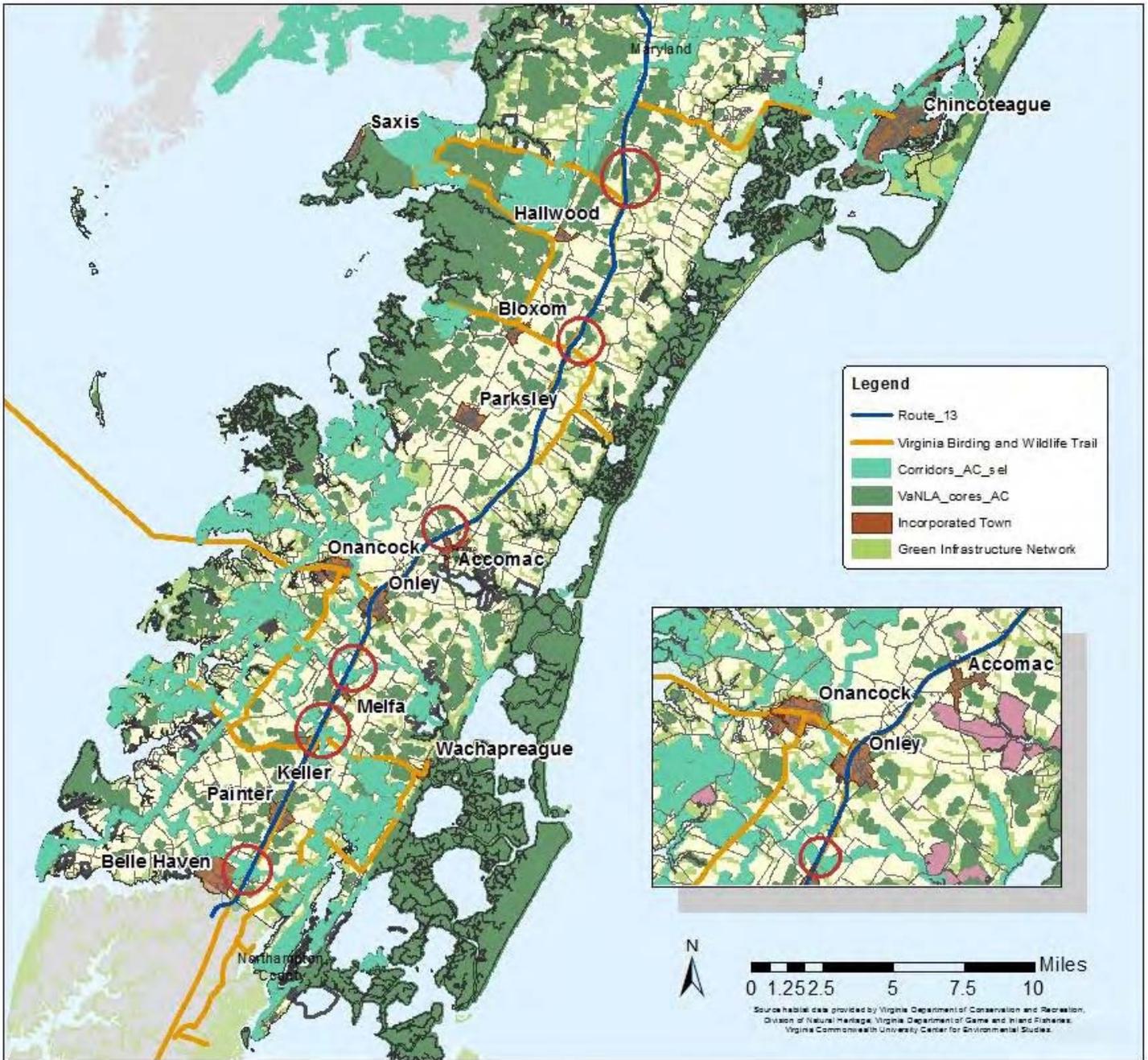


MAP 2: DEVELOPMENT AREAS AND LARGE FOREST CORES

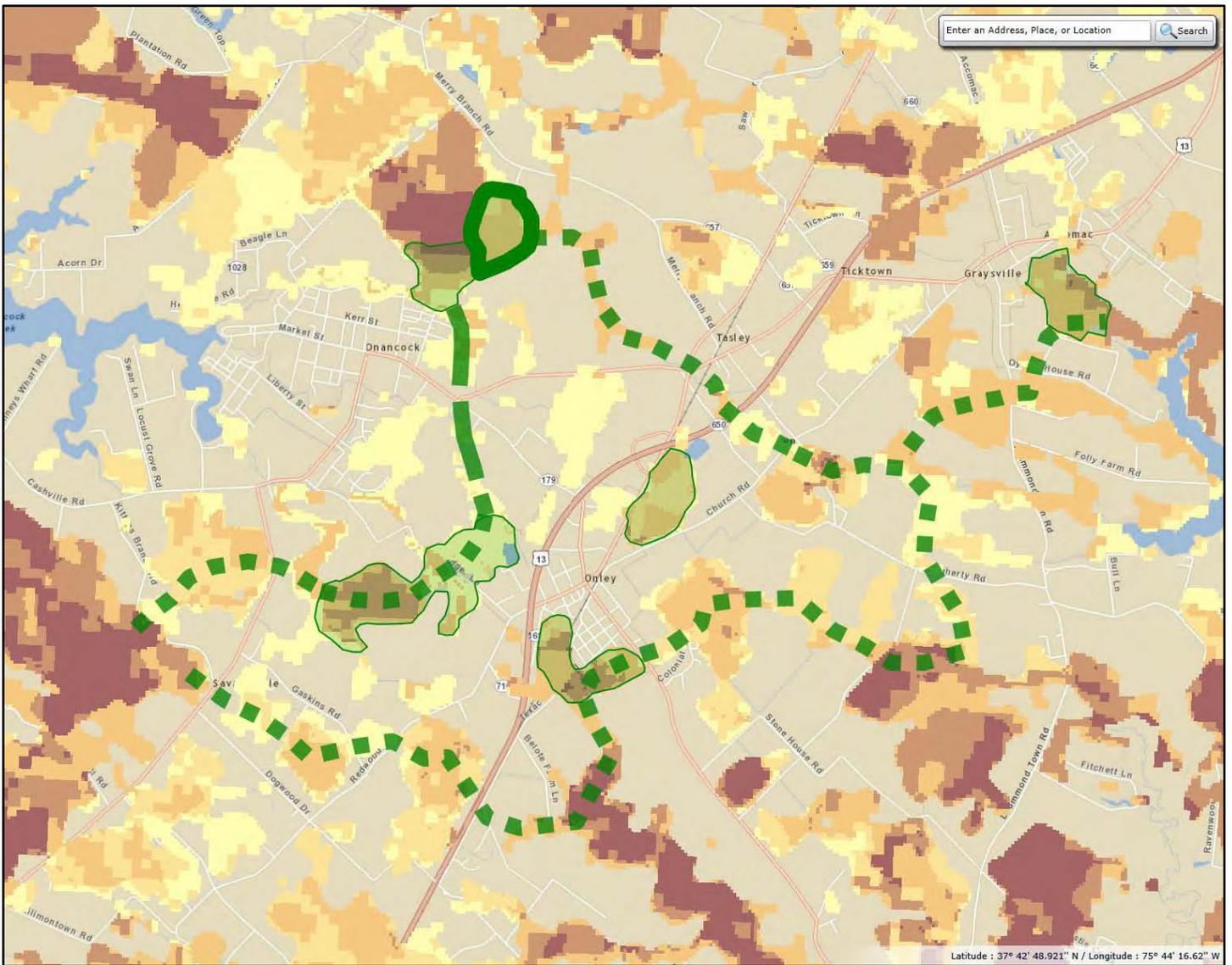


MAP 3: PROPOSED NATURAL CORRIDORS AND WILDLIFE TRAILS

Note: Areas within red circles are Target Crossing Areas (see Objective 1B, Action 2)



MAP 4: POSSIBLE PUBLIC PARK SITES USING THE INFOREST MODEL



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APPENDIX 1: FOREST BENEFITS FACT SHEET

Studies prove that trees have a positive effect on many aspects of people's lives, including their health, homes, businesses, communities, drinking water, and air quality.

Economic Contributions:

- Research shows that shoppers in well-landscaped business districts are willing to pay more for parking and up to 12% more for goods and services. ¹
- Trees reduce runoff and erosion from storms by about 7% and reduce the need for erosion control structures. In urban areas with trees, the use of smaller drainpipes can save cities money on materials, installation and maintenance.²
- A survey of desk workers with and without views of nature, found that they had 23% more incidence of illness in the prior 6 months than workers with nature views.³
- Amenity and comfort ratings were ranked 80% higher for a tree-lined sidewalk compared with those for a non-shaded street. Quality of products ratings were 30% higher in districts having trees over those with barren sidewalks. ⁴

Energy Conservation:

- The net cooling effect of a young, healthy tree is equivalent to 10 room-size air conditioners operating 20 hours a day.⁵
- Fifty million shade trees planted in strategic, energy-saving locations could eliminate the need for seven 100-megawatt power plants. ⁶
- Shade from two large trees on the west side of a house and one on the east side can save up to 30% of a typical residence's annual air conditioning costs. ⁷
- Compared with an open area, a good windbreak that does not shade the house will save about 15% of the heat energy used in a typical home. ⁸

Environmental Contributions:

- During a 100 year life span, one leafy tree can generate \$60,000 in oxygen, recycle \$70,000 worth of water, control \$62,500 worth of soil erosion and clean up \$120,000 worth of air pollution or \$250,000 total per tree without including any other values. ⁹
- Environmental studies show that a single mature leafy tree produces 260 pounds of oxygen and absorbs from 120 to 240 pounds of air pollutants (particulate matter and gases) every year. If everyone in Accomack County planted just one tree, every year they will produce enough oxygen for half the population to breathe and eliminate as much carbon dioxide from the air as is produced from driving 906 cars 26,000 miles. ¹⁰
- Leafy tree canopies catch precipitation before it reaches the ground, allowing some of it to gently drip and the rest to evaporate. Research indicates that 100 mature tree crowns intercept about 100,000 gallons of rainfall per year, reducing runoff and providing cleaner water. ¹¹

- Trees reduce noise pollution by absorbing sounds. A belt of trees 98 feet wide and 49 feet tall can reduce highway noise by 6 to 10 decibels.¹²
- A typical community forest of 10,000 trees will retain approximately 10 million gallons of rainwater per year.¹³

Social Contributions:

- Views of nature reduce the stress response of both body and mind when stressors of urban conditions are present.¹⁴
- Trees in urban parks and recreation areas are estimated to improve outdoor leisure and recreation experiences in the United States by \$2 billion per year.¹⁵
- Trees reduce crime. Apartment buildings with high levels of greenery had 52% fewer crimes than those without any trees. Buildings with medium amounts of greenery had 42% fewer crimes.¹⁶
- Hospital patients recovering from surgery who had a view of a grove of trees through their windows required fewer pain relievers, experienced fewer complications, and left the hospital sooner than similar patients who had a view of a brick wall.¹⁷
- Symptoms of Attention Deficit Hyperactivity Disorder (ADHD) in children are relieved after contact with nature. Specifically, ADHD kids are better able to concentrate, complete tasks, and follow directions after playing in natural settings.¹⁸

APPENDIX 2: VIRGINIA EASTERN SHORE LAND TRUST CONSERVATION STANDARDS

The VES Land Trust seeks to conserve rural lands that will best preserve the farms, forests, fisheries, and heritage of Virginia's Eastern Shore for the benefit of future generations.

Area Served: Northampton & Accomack Counties, Virginia.

Priority Conservation Sites:

- Property adjacent to land already in conservation easement or a preserve
- Waterfront properties
- Southern tip of the Delmarva Cape, Northampton County
- Finney Creek/Nicawampus Creek watershed, Accomack County
- Folly Creek, Accomack County
- Church Neck watershed, Northampton County
- Occohannock Creek watershed, Accomack County
- Machipongo River watershed, Northampton and Accomack Counties
- Pitts Creek watershed, northwestern edge, Accomack County
- Swann's Gut watershed, northeastern edge, Accomack County
- Property adjacent to Virginia Scenic Byways
- Properties on the state and national historic register

Minimum Conservation Standards:

Subdivision Type	Conservation Standard
< 100 acres	No subdivision allowed
100 -150 acres	No subdivision preferred, 2 parcels OK
200+ acres	Preferred density 100+ acres per parcel
Farm land	No less than 80 percent protected
Forest land	No less than 80 percent protected
Waterfront land	No less than 80 percent protected
Scenic open space	No less than 80 percent protected
Wetlands/Bottomlands	100 percent protected
Wildlife & plant habitat	100 percent protected
Historic resources	100 percent protected

Public Interests Served:

- Productive farms, forests and fisheries are maintained.
- The supply of safe drinking water is protected and retained.
- Wildlife habitat, wetlands and other natural resources maintain healthy function.
- Rural scenic values are preserved.
- Recreational opportunities on land and water are available.
- Historic resources are preserved.

APPENDIX 3: ACCOMACK COUNTY NATIVE TREE SPECIES

Recommended Uses	Minimum Light Requirements	Moisture Requirements
W =Wildlife	S =Shade	L = Low moisture
H = Horticulture & landscaping	P = Partial sun	M = Moderate moisture
C = Conservation & Restoration	F =Full sun	H = High moisture
D = Domestic livestock forage		

SMALL TREES

Latin Name	Common Name	Height(m)	Uses W H C D	Light S P F	Moisture L M H
<i>Amelanchier canadensis</i>	Canada serviceberry	6	☺ ☺ ☺	☺	☺ ☺
<i>Asimina triloba</i>	Pawpaw	3-11	☺ ☺ ☺	☺ ☺	☺
<i>Castanea pumila</i>	Chinkapin	2-8	☺ ☺ ☺	☺ ☺ ☺	☺
<i>Chionanthus virginicus</i>	Fringetree	10-11	☺	☺ ☺	☺
<i>Cornus amomum</i>	Silky dogwood	6-10	☺ ☺	☺ ☺	☺ ☺
<i>Cornus florida</i>	Flowering dogwood	9-11	☺ ☺ ☺	☺ ☺	☺ ☺
<i>Crataegus crus-galli</i>	Corkspur hawthorn	10	☺ ☺ ☺	☺ ☺	☺ ☺
<i>Prunus americana</i>	American wild plum	3-6	☺	☺	☺
<i>Quercus marilandica</i>	Blackjack oak	15	☺ ☺	☺ ☺	☺ ☺
<i>Quercus stellata</i>	Post oak	10-15	☺ ☺ ☺	☺	☺

MEDIUM TREES

Latin Name	Common Name	Height	Uses W H C D	Light S P F	Moisture L M H
<i>Acer negundo</i>	Ash-leaf maple	10-25	☺ ☺	☺	☺
<i>Acer rubrum</i>	Red maple	15	☺ ☺	☺	☺ ☺
<i>Amelanchier arborea</i>	Downy serviceberry	15-30	☺ ☺ ☺	☺ ☺	☺
<i>Cercis canadensis</i>	Redbud	15-40	☺ ☺	☺ ☺	☺
<i>Fraxinus pennsylvanica</i>	Green ash	12-25	☺ ☺ ☺	☺ ☺	☺
<i>Juniperus virginiana</i>	Eastern red cedar	5-20	☺ ☺	☺ ☺	☺ ☺
<i>Magnolia virginiana</i>	Sweet bay magnolia	12-20	☺ ☺	☺ ☺	☺ ☺
<i>Morus rubra</i>	Red mulberry	10-20	☺ ☺ ☺	☺ ☺	☺
<i>Nyssa aquatica</i>	Water tupelo	10-15	☺ ☺ ☺	☺ ☺	☺
<i>Nyssa sylvatica</i>	Black gum	15	☺ ☺ ☺	☺ ☺	☺
<i>Ostrya virginiana</i>	Eastern hop-hornbeam	18	☺	☺ ☺	☺
<i>Oxydendrum arboreum</i>	Sourwood	10-20	☺	☺	☺
<i>Salix nigra</i>	Black willow	10-30	☺	☺ ☺	☺ ☺
<i>Sassafras albidum</i>	Sassafras	15-20	☺	☺ ☺	☺ ☺

LARGE TREES

Latin Name	Common Name	Height	Uses	Light	Moisture
			W H C D	S P F	L M H
<i>Betula nigra</i>	River birch	30-75	☺ ☺ ☺	☺	☺ ☺
<i>Carya alba</i>	Mockernut hickory	20-30	☺ ☺	☺	☺ ☺
<i>Carya glabra</i>	Pignut hickory	18-27	☺ ☺ ☺	☺ ☺	☺
<i>Carya ovata</i>	Shagbark hickory	27	☺	☺ ☺	☺
<i>Celtis occidentalis</i>	Hackberry	30-100	☺ ☺	☺	☺ ☺
<i>Diospyros virginiana</i>	Persimmon	50-100	☺ ☺ ☺	☺ ☺ ☺	☺ ☺
<i>Fagus grandifolia</i>	American beech	20-35	☺ ☺	☺ ☺ ☺	☺
<i>Juglans nigra</i>	Black walnut	30-40	☺ ☺	☺ ☺	☺
<i>Liquidambar styraciflua</i>	Sweetgum	20-35	☺ ☺	☺ ☺ ☺	☺ ☺
<i>Liriodendron tulipifera</i>	Tulip-tree	21-30	☺ ☺ ☺	☺	☺
<i>Platanus occidentalis</i>	Sycamore	30-40	☺	☺ ☺	☺ ☺
<i>Prunus serotina</i>	Wild black cherry	15-30	☺ ☺	☺ ☺	☺
<i>Quercus alba</i>	White oak	20-25	☺ ☺ ☺	☺ ☺	☺
<i>Quercus coccinea</i>	Scarlet oak	20-30	☺ ☺	☺ ☺	☺
<i>Quercus falcata</i>	Southern red oak	25-30	☺ ☺ ☺	☺ ☺	☺ ☺
<i>Quercus michauxii</i>	Swamp chestnut oak	20	☺ ☺	☺ ☺	☺
<i>Quercus nigra</i>	Water oak	30	☺ ☺	☺ ☺	☺ ☺
<i>Quercus phellos</i>	Willow oak	20-30	☺ ☺ ☺	☺ ☺	☺ ☺
<i>Quercus rubra</i>	Northern red oak	30	☺ ☺ ☺	☺ ☺	☺ ☺
<i>Quercus velutina</i>	Black oak	20-25	☺ ☺	☺ ☺	☺
<i>Taxodium distichum</i>	Bald cypress	25-40	☺ ☺	☺	☺

APPENDIX 4: "PLANT EASTERN SHORE NATIVES" DEMONSTRATION SITES

Shoreline ES Native Plant Demonstration

Willis Wharf Wildlife Observation Platform



Steve Living

Eastern Shore Native Plants

Morella (Myrica) cerifera – Southern wax myrtle
Morella (Myrica) pennsylvanica – Northern bayberry
Juniperus virginiana – Eastern red cedar
Panicum amarum – Coastal panic grass
Symphotrichum (Aster) novi-belgii – New York aster
Diospyros virginiana – Persimmon
Lonicera sempervirens – Coral or Trumpet honeysuckle
Kosteletzkya virginica – Seashore mallow

(Above) Shown just after planting, the landscaping at this site has filled in beautifully.

This site exhibits plants all native to the Eastern Shore that can tolerate the Shore's bright sun and salt spray.



Virginia Wilms/VACZM

Coral honeysuckle is an evergreen that attracts hummingbirds and butterflies. See page 21.

The site was designed by Appleseed Nurseries, Inc., a local landscaper, with assistance from Eastern Shore Master Naturalists, who will help maintain the site. The observation platform and native landscaping, funded by the Virginia CZM Program, served as a backdrop for the launch of the "Plant ES Natives" campaign on April 24, 2009.

Shady ES Native Plant Demonstration

Chincoteague Island Nature Trail



Kim Owen

Winged sumac is an evergreen, understory shrub which provides food for birds and small mammals. It has greenish yellow flowers in June/July, red berries in October/November and leaves which turn a flaming red color in the fall. It forms large colonies, providing abundant winter food for wildlife.

This site exhibits a variety of plants all native to the Eastern Shore that do well in shady moist conditions. The landscape was kept as natural as possible - the plants installed along the trail are covered with pine straw and blend beautifully into the existing native vegetation.

Designed by In Full Bloom, Inc., a local landscaper, this site was funded by the Virginia CZM Program and is being maintained by Eastern Shore Master Naturalists.

Eastern Shore Native Plants

Callicarpa americana – American beautyberry
Magnolia virginiana – Sweetbay magnolia
Osmunda cinnamomea – Cinnamon fern
Clethra alnifolia – Sweet pepper bush
Amelanchier arborea – Downy serviceberry
Polystichum acrostichoides – Christmas fern
Solidago caesia – Bluestem goldenrod
Gaultheria procumbens – Wintergreen
Iris versicolor – Blue flag
Osmunda regalis – Royal fern
Itea virginica – Virginia willow
Chelone glabra – White turtlehead
Podophyllum peltatum – May apple
Ariseama triphyllum – Jack-in-the-pulpit
Lobelia cardinalis – Cardinal flower

Maritime Forest ES Native Plant Demonstration

UVA Anheuser Busch Coastal Research Center



David Boyd

Eastern Shore Native Plants

Morella (Myrica) cerifera – Southern wax myrtle
Juniperus virginiana – Eastern red cedar
Cercus canadensis – Redbud
Prunus serotina – Wild black cherry
Quercus stellata – Post oak
Sassafras albidum – Sassafras
Cornus florida – Flowering dogwood
Amelanchier arborea – Downy serviceberry
Rhus copallinum – Winged sumac
Lonicera sempervirens – Coral honeysuckle
Parthenocissus quinquefolia – Virginia creeper
Panicum virgatum – Switch grass
Schizachyrium scoparium – Little bluestem



Gary Fleming

Downy Serviceberry is the symbol of the "Plant ES Natives" campaign and featured in the campaign logo. It attracts over 40 species of bird. See page 28.

This site exhibits plants all native to the Eastern Shore that can tolerate sandy soils, low level salt spray and bright sun to partial shade. Plants were chosen to provide year-round food sources to a wide variety of birds, butterflies and small animals. The planting is in the first year, with initial emphasis on overstory species. Additional planting is planned.

The site was installed and is maintained by staff from the Anheuser Busch Coastal Research Center. Planning assistance was provided by the Eastern Shore Master Gardeners, Eastern Shore Soil and Water Conservation District, Maplewood Gardens, Bloomers Garden Center/Appleseed Nurseries, Virginia Cooperative Extension, Virginia Department of Conservation and Recreation/Eastern Shore Regional Office, Virginia Department of Environmental Quality/Office of Environmental Education, and the Virginia Department of Game and Inland Fisheries.



David Boyd

Winged Sumac is an evergreen, understory shrub which provides food for birds and small mammals. It has greenish yellow flowers in June/July, red berries in October/November and leaves which turn a flaming red color in the fall. It forms large colonies, providing abundant winter food for wildlife.

'Healing' Garden ES Native Plant Demonstration
Onley Rural Health Center



This site will highlight the therapeutic power of Eastern Shore native plants in a "healing garden" at the new Onley Rural Health Center. The garden will be installed in 2010 and will be part of a sustainable landscape surrounding the center. Signage in the "healing garden" will highlight the link between healthy landscapes and healthy people.

This demonstration site is a partnership between the Eastern Shore Rural Health System, Eastern Shore Soil and Water Conservation District, Alliance for the Chesapeake Bay, Virginia Coastal Zone Management Program (which helped fund the demonstration site design), Virginia Department of Conservation and Recreation and the Eastern Shore Resource Conservation and Development Council.

Eastern Shore Native Plants

- Chionanthus virginicus* – Fringetree
- Crataegus crus-galli* – Cockspur hawthorn
- Viburnum dentatum* – Arrowwood
- Rudbeckia hirta* – Blackeyed susan
- Itea virginica* – Virginia Sweetspire
- Panicum virgatum* – Switchgrass
- Asclepias tuberosa* – Butterflyweed
- Eupatorium fistulosum* – Joe-pye weed
- Vaccinium corymbosum* – Highbush blueberry

Living Shoreline ES Native Plant Demonstration
The Nature Conservancy



A new Living Shoreline in Oyster demonstrates how Eastern Shore Native Plants help stabilize the shoreline, filter runoff and protect water quality. The demonstration site, shown in the photo at left prior to planting in November 2009, was installed by The Nature Conservancy (TNC) with assistance from the U.S. Fish and Wildlife Service, Partners for Fish and Wildlife Program and is open to the public. TNC plans to install a walking trail and viewing platform with interpretive signs describing the Living Shoreline and the importance of coastal habitat. An existing boat ramp for kayak and canoe use will be kept in place. This demonstration site was funded by the NOAA Restoration Center, Chesapeake Bay Trust, National Fish and Wildlife Foundation, Partners for Fish and Wildlife Program and the Campbell Foundation for the Environment. Virginia CZM Program staff will assist with development of the signage.

Living Shorelines are a natural alternative to bulkheading. For more information visit <http://www.deq.virginia.gov/coastal/livingshore.html>.

Eastern Shore Native Plants

- Spartina alterniflora* – Smooth cordgrass (low marsh)
- Spartina patens* – Saltmeadow cordgrass (high marsh)
- Distichlis spicata* – Saltgrass (high marsh)
- Borrchia frutescens* – Sea ox-eye daisy (buffer)
- Panicum virgatum* – Switchgrass (buffer)
- Solidago sempervirens* – Seaside goldenrod (buffer)
- Kosteletzkya virginica* – Virginia saltmarsh mallow (buffer)
- Iva frutescens* – Marsh elder (buffer)
- Baccharis halimifolia* – Groundsel tree (buffer)

Pollinator Native Plant Demonstration
Eastern Shore of Virginia National Wildlife Refuge



A wide variety of Virginia native plants attract pollinators to two gardens at the Eastern Shore of Virginia National Wildlife Refuge (one located in front of the visitor center and the other next to the Refuge office).

Eastern Shore Native Plants Featured

- Asimina triloba* – Pawpaw
- Helianthus angustifolius* – Narrowleaf sunflower
- Chelone glabra* – White turtlehead
- Kosteletzkya virginica* – Seashore mallow
- Conoclinium coelestinum* – Mistflower
- Pycnanthemum tenuifolium* – Narrowleaf mountainmint
- Baptisia australis* – Wild blue indigo
- Vernonia noveboracensis* – New York ironweed
- Symphotrichum novi-belgii* – New York aster
- Solidago rugosa* – Wrinkleleaf goldenrod
- Asclepias tuberosa* – Butterfly weed
- Solidago sempervirens* – Seaside goldenrod
- Hibiscus moscheutos* – Rose mallow
- Lobelia cardinalis* – Cardinal flower
- Monarda fistulosa* – Bergamot

To complete this two-year project, the Refuge partnered with the Virginia CZM Program, The Nature Conservancy, Back Bay NWR Youth Conservation Corps, Virginia Field Office Partners for Fish and Wildlife, Eastern Shore SWCD, Youth Conservation Corps and Refuge volunteers. Over 550 plants, many provided locally by Bloomers Garden Center, were planted.

Butterfly Native Plant Demonstration
Northampton Free Library



This site features flowering Virginia native plants that provide nectar for butterflies. Shrubs add winter interest while annuals add season long bloom.

The white flowers of *Ilex glabra*, Inkberry, are followed by black berries that persist well into winter, making this shrub of particular high value to wildlife. See page 23.

This site was designed, planted and is maintained by the Eastern Shore Virginia Master Gardeners with assistance from The Nature Conservancy and the Alliance for the Chesapeake Bay.

Eastern Shore Native Plants Featured

- Asclepias tuberosa* – Butterflyweed
- Conoclinium coelestinum* – Mistflower
- Ilex glabra* – Inkberry
- Lobelia cardinalis* – Cardinal flower
- Phlox paniculata* – Phlox
- Rudbeckia hirta* – Black-eyed Susan
- Solidago rugosa* – Goldenrod

APPENDIX 5: NATIVE TREES APPROPRIATE UNDER UTILITY LINES

Small and Medium-sized Native (Virginia) Trees to Use Under Overhead Utility Lines:

Amelanchier spp. – Serviceberries
Cercis canadensis – Eastern Redbud
Chionanthus virginicus – Fringetree or Old Man’s Beard
Cornus florida – Flowering Dogwood
Cotinus obovatus – American Smoketree
Hamamelis virginian – Common Witchhazel
Magnolia virginian – Sweetbay or Swamp Magnolia
Oxydendrum arboretum – Sourwood

For more information on Virginia municipal trees see: <http://www.dof.virginia.gov/urban/index-mtrp.shtml>

APPENDIX 6: LOCAL AGRICULTURE AND FORESTAL DISTRICT

Legal Justification

Local Agricultural and Forestal District Act §15.2-4400 - §15.2-4407

This act allows localities to establish **Districts of Local Significance** for the preservation of agricultural and/or forest lands similar to the Agricultural and Forestal Districts in §15.2-4300 - §15.2-4314. The main differences are the minimum size and the withdrawal provisions. Districts of local significance have a minimum acreage of 20 acres instead of the 200 acres for Agricultural and Forestal Districts. A landowner may withdraw from a local district by notifying the local governing body and the withdrawal is effective upon filing the notice. In addition to the rollback taxes due under the use value taxation law, a penalty of two times the amount of taxes owed in the first year after withdrawal is assessed. As with the Agricultural and Forestal Districts, lands in a District of Local Significance qualify for use value taxation regardless of local tax ordinances.

Ordinance Example

See Fairfax County’s Ordinance (Chapter 115) located for free on municode: http://library.municode.com/HTML/10051/level2/FACOCO_CH115LOAGFODI.html

APPENDIX 7: LANDSCAPING ORDINANCE

Legal Justification

Landscaping requirements can be part of setback requirements within a subdivision ordinance or within any other zoning ordinance such as a business, residential, or other type. The County is improving its current landscaping ordinance and it is hoped that native species will be used along with adequate setbacks to ensure both aesthetic values and buffering of incompatible uses.

Ordinance Example

See the City of Charlottesville’s Ordinance (Chapter 34, Article VIII, Division 2) located for free on municode: http://library.municode.com/HTML/12078/level4/CO_CH34ZO_ARTVIIIIMREDE_DIV2LASC.html

APPENDIX 8: “ECONOMIC BENEFITS OF TREES” PRIMER

This short primer is intended to briefly summarize the economic benefits of protecting, planting, and properly maintaining trees for real estate developers, landowners and business owners.

Shopping under a canopy yields more green!

While trees cost money to maintain, they provide many economic benefits. A set of surveys conducted by the University of Washington in a variety of cities throughout the northwest found the following:

- Consumers’ value scenic areas that contain trees more highly than those without. The study found that street scenes that were landscaped were likely to be ranked as the highest quality by shoppers. Surprisingly, merchants consistently rated these scenes lower than visitors did. Remember, the customer is always right!
- Shoppers rated shops on tree lined streets 80% higher in terms of amenity and comfort than those without.
- Visitors rated the quality of products 30% higher at shops on streets with trees than those without.
- Customers even appreciated their interactions with merchants 15% more in a district with trees than in a district without.
- When asked to price a set of items of both low and high prices, the surveys revealed that respondents valued the items on average 12% higher in a well landscaped district than in a barren district. Shoppers will pay more for products in a commercial area with a healthy canopy!

Home is where the trees are!

Testimonials of developers from across the United States in the article *Greenbacks in the Greenery* show that the quality of a property is significantly influenced by the quality of the land on which it sits. Preserving mature trees and planting and maintaining new trees can substantially benefit a developer or homeowners wallet when they choose to sell.

- The National Arbor Day Foundation found that not only is a single mature tree worth a minimum of \$10,000 of a home’s resale value, but it typically can account for 15% of the property’s value.
- The total economic effect of a street lined with mature trees is greater than the sum cost of the individual trees.
- A San Diego developer found that reducing a development by 15% and preserving natural open space increased the sale price of homes by 25%.
- A park in Philadelphia was found to account for 33% of land value for lots abutting the park and the increase in property values from the park was a factor in properties up to 2,500 feet away.
- The full maturation of a tree can take more than 40 years to achieve. Think carefully about the unseen costs that removing a mature tree can have on a property or development.

Planning Your Site for Trees

- Avoid removing or damaging trees unnecessarily during construction. Areas to avoid damaging are the trunk, crown, roots, and even soil. Locate root upper horizons and drip lines before digging and trenching. Avoid compacting soils near trees (McCall).

- Take advantage of Accomack’s clustering ordinance’s for agricultural, village residential and rural residential districts. to preserve large contiguous tracts of common, forested open space.
- Avoid putting buildings too close to working lands such as forests and agriculture as this could inhibit the ability of managers to maintain them.
- Plan development within the context of the site before construction. Try to avoid building on features such as streams, even intermittent ones, and larger forest areas. Be aware of environmental features bordering the development site. Collaborate with arborists and design professionals. Erect signage and fencing around trees to be preserved, generally fence at least one foot away from tree per inch of diameter (McCall). Do not dig, trench or store materials in tree protection zones. Limiting access sites and determining work zones in advance for specific activities can help with this (McCall).
- Communication is key! Write down tree protection measures, inform subcontractors of measures, ensure arborists monitor frequently and visibly. Document work with photography (McCall)!
- Monitor site after construction for decline of trees – damage can occur during cleanup as well as landscaping and irrigation installation. Construction and cleanup can stress trees which makes them more susceptible to pests and disease. Perform maintenance if trees need it (McCall).

For more information on tree maintenance please visit: <http://www.dof.virginia.gov/urban/landscape-manual.htm>

SOURCES:

1. Catherine Benotto. “Greenbacks in the greenery.” *Landscape Northwest*, April 18, 2002.
See: <http://www.djc.com/news/en/11132516.html>
2. Kathleen Wolf. “Grow for the Gold: Trees in Business Districts.” Washington State Department of Natural Resources Community Forestry Program. *TreeLink*, no. 14, Spring 1999.
3. Luke McCall. *Management of Trees during Construction*. City of Richmond Urban Forestry Division. Date unknown.

APPENDIX 9: SAMPLE URBAN FORESTRY PLANS

Accomack County has its own unique climate and issues, so these plans are not answers, but guidelines to increase urban forestry stewardship.

Charlottesville, Virginia:

See: <http://www.cvilletomorrow.org/docs/20090615-urban-forst-plan-draft.pdf>

Leesburg, Virginia

See: <http://www.leesburgva.org/Modules/ShowDocument.aspx?documentid=1003>

Fairfax, Virginia:

A full *Natural Resource Management Plan* includes more than just urban forests.

See: <http://www.fairfaxcounty.gov/parks/NRMP090909.pdf>

WATER RESOURCES: POLICIES AND STRATEGIES

Written by Andrew Walker and Eric Gilwald

A sound water protection and conservation approach should consider the county's water resources before, during, and after the development process. By doing so, the county can maintain clean surface and groundwater for its residents. A coordinated Green Infrastructure (GI) network is crucial to achieving these water-quality benefits and, as such, can be likened to sewer lines, water treatment facilities, and other "gray infrastructure" (Benedict 2006). However, the GI approach delivers these benefits in a more cost-effective and environmentally friendly way.

Pursuing a Green Infrastructure approach to cleaning the county's water provides economic, social, and environmental benefits. For example, homeowners see increased property values, local governments see reduced costs for stormwater infrastructure and filtration costs, and developers spend less on infrastructure (MacMullan and Reich, 2007; Kloss and Calarusse, 2006). (For additional economic benefits, see the NC Cooperative Extension factsheet in the *Resources* section). In addition, residents have more opportunities to experience natural areas (also a boom to ecotourism), and wildlife habitat is preserved.

The principles of low-impact development (LID) are integrated into this chapter, with the primary goal of conserving lands crucial to preserving water quality and a secondary goal of minimizing impacts from development. The chapter focuses on cost-effective approaches that leverage community assets. Emphasis is also placed on education relating to watershed stewardship issues, inspired by successes found in other parts of the country. Wilmington, North Carolina, for example is located in a coastal zone, and was able to use stormwater LID retrofits and community development to improve the water quality in the region. (See the case study in the *Resources* chapter for programming, costs, and lessons learned).

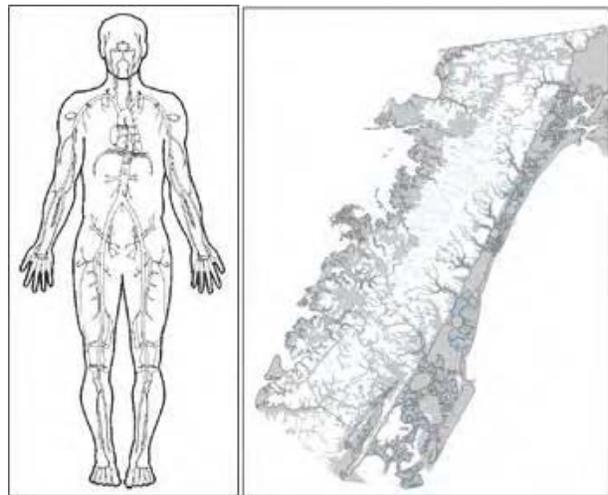


FIGURE 1 Much like the circulatory system in a human body, water resources provide vital connections that serve as natural green infrastructure corridors. (image from Prince George county)

GOAL SUMMARY

- *Maintain high-quality stream corridors that provide habitat, economic, and recreational benefits.*
- *Maintain an adequate supply of clean groundwater for present and future generations.*
- *Ensure that future development utilizes best management practices to minimize and prevent harm and pollution of water resources.*

Goal 1: Maintain high-quality stream corridors that provide habitat, economic, and recreational benefits.

Rationale: Preserving stream corridors can achieve many benefits for both people and wildlife. Well-maintained stream corridors contribute to the health of the county by providing beautiful natural areas and opportunities for active recreation. They also contribute to the economic vitality by increasing land values and providing opportunities for ecotourism. A healthy stream corridor includes a buffer of native vegetation. A vegetated buffer provides additional benefits, such as cleaning water and air and managing stormwater

runoff, which can eliminate or reduce the need for building expensive “gray infrastructure” solutions. Streams are vital for creating an integrated green infrastructure network, as they act like a “circulatory system” for the county (Firehock, 2002). Land use changes in a stream’s watershed can dramatically affect a stream (e.g. building more impervious surfaces), thus taking a more comprehensive approach to watershed planning can prevent costly restoration efforts in the future.

In Accomack County, stream corridors range from highly altered in urbanized areas to less so in more rural areas. Onancock Creek, for instance, is considered impaired by the Virginia Department of Environmental Quality, and a TMDL is in place for Fecal Coliform and *Enterococcus* (TMDL completed in 2005, revised March 2011). Goal 1 builds off of Objective 6 of the Accomack County Comprehensive Plan, which seeks to “Protect high quality surface waters and restore degraded surface waters to an excellent level of purity for aquaculture and shell fish harvesting.”

Due to the County’s unique geography, streams are relatively short, meaning that pollutants introduced into streams do not have much time to breakdown into less harmful elements before being discharged into either the Chesapeake Bay or Atlantic Ocean. Nevertheless, stream corridors can serve as vital linkages in the County, as identified by the Green Infrastructure Center’s report, *The Accomack County Blue/Green Infrastructure Study*, in 2010.

The County has taken proactive steps toward protecting its stream corridors. As part of the Chesapeake Bay Preservation Overlay District, lands adjacent to bodies of water with perennial flow are considered part of the Resource Protection Area (RPA) and require a 100 foot vegetated buffer adjacent to these waters. Previously, RPA lands included only area in the Chesapeake Bay Watershed, but the County has extended the 100 foot buffer requirement on the Chesapeake Bay side (western side) to the Atlantic side (eastern side).

However, RPA regulations only apply to perennial stream corridors (see Map 1). Intermittent stream corridors also contribute to the green infrastructure network identified by the GIC in 2010. Intermittent streams are often the most critical in terms of protecting downstream water quality and living resources. Intermittent streams with vegetated buffers assist in reducing sediments and nutrients delivered to larger streams, help prevent flooding, and provide valuable aquatic habitats. However,

applying the same regulations to intermittent streams that are in place for perennial streams would probably be inappropriate, so Objective 1A below suggests a framework that can be used to preserve intermittent stream corridors in a coordinated fashion. The principles of conservation subdivisions should be used, as they provide benefits to both the county as well as developers. Lots in conservation subdivisions carry a price premium, are less expensive to build, and sell more quickly than typical lots (Mohamed, 2006).

An ordinance to create an intermittent stream buffer would create a process that would be triggered when a proposed subdivision affects any land within a certain distance of an intermittent stream (as defined by the USGS). The county can work with the applicant to explore options for development to cluster units and parcels in order to leave land near the stream corridor unbuilt. Coordinating cluster development will prevent stream buffers fragmentation. This ordinance is not as strict as the regulations that apply to perennial streams, but would let developers know early on which areas are most important to preserve as

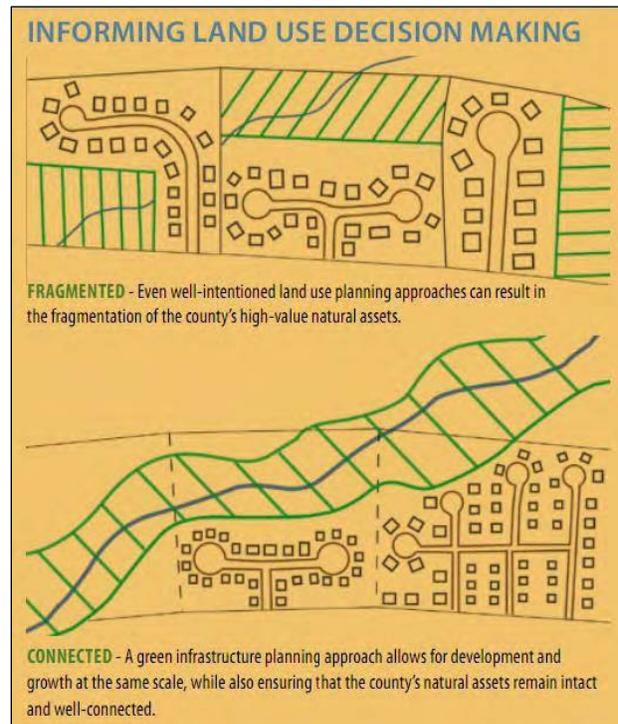


FIGURE 2 Clustering allows forested stream corridors to remain intact. Source: Green Infrastructure Center.

riparian buffers. Other counties have had success setting target pollutant levels that new development should attain and letting developers achieve the target, as they see fit. Since conserving a riparian buffer is often the most efficient method of reducing runoff into streams, riparian buffers are usually incorporated (see Thomas et al., 2001).

Objective 1A: Establish an Intermittent Stream Corridor overlay district that supports coordinated clustered development along intermittent stream corridors, as part of the subdivision review process.

Action 1) A buffer distance should be determined for intermittent streams. Fifty feet is recommended, as a minimum; the *Chesapeake Bay Riparian Handbook* finds that this is the minimum distance to achieve both habitat protection and adequate nutrient and sediment load reductions.

Action 2) The county should decide on a target pollutant loading number (pounds/tons per acre per year) that new development affecting land within the buffer should attain.

Action 3) Utilize InFOREST to predict nutrient and sediment loading. Appendix 3 provides an example of an InFOREST simulation using a case study from the county.

Action 4) Work with developers to utilize the principles of conservation subdivisions to preserve lands identified as “Green Infrastructure” and “Contributing Landscapes” by the GIC in 2010, which include vital intermittent stream corridors.

Action 5) Post county expectations and goals for conservation subdivision design, as well as the benefits that can be expected by using this approach on the county’s website.

Objective 1B: Establish a network of partners that can help the county with stream corridor enhancement projects.

Action 1) Create an educational and action program targeted toward residents with properties that border major streams and collaborate with towns that share water resources, focusing on identifying and removing invasive species, planting native vegetation along stream banks, and reducing runoff. This should involve inviting a knowledgeable expert to give a series of talks and hands-on workshops to interested citizens, and distribution of informational materials.

Topics can include:

- How planting trees can improve water quality.
- Lawn care best practices.
- How planting trees saves money
- How to identify and remove invasive species.
- Locations for getting rid of used electronics, motor oil, batteries, and other hazardous materials

See the *Funding Opportunities* section for more details about funding educational programs.

Action 2) Form a network of partners that can help the county with stream restoration efforts. These partnerships can and should be beneficial to both parties; for example, environmental science and physical geography classes at the Eastern Shore Community College can work as an educational opportunity, and Boy Scouts can work as a community service opportunity. There are several Standards of Learning (SOLs) that relate to watershed education (ES.9, LS.12), meaning that stream restoration work can supplement science curricula in Virginia. See the *Funding Opportunities* section for more details.

Goal 2: Maintain an adequate supply of clean groundwater for present and future generations.

Rationale: Land use can have a large impact on both the quality and quantity of groundwater. In Accomack County, this is even more important because the county’s only source of drinking water is groundwater. Polluting uses can degrade the quality of groundwater, while impervious surfaces, such as pavement, can prevent rainwater from absorbing into the ground and recharging aquifers.

In Accomack County, the most important area for water infiltration into the Yorktown-Eastover Aquifer is a narrow swath of land that runs north-south in the middle of the county, referred to locally as the “Recharge Spine.” The major north-south transportation corridor, Route 13, also runs along the center of the county and draws a significant amount of its development. It is here that the county has an opportunity to both beautify this important transportation corridor and provide for adequate water infiltration through low-impact development.

Primarily, LID seeks to conserve land in its natural state – and secondly to mitigate the adverse impacts of development. Thus, LID techniques produce environments that are both greener (which people find attractive) and pervious (which allows water to be more easily absorbed into the ground). Increasing demand has caused water levels in the county to decline and Goal 2 seeks to prevent barriers to the infiltration of water into the aquifer, as well as reduce groundwater withdrawals.

The need to protect water at its source has been widely recognized, and is the reason cities such as New York and Boston have bought land in their source areas in advance of population growth (i.e. in advance of greater demand). It is estimated that for every 10 percent increase in forest cover in the source area, water treatment costs decrease by about 20 percent (Ernst et al., 2004). This goal builds off of Objective 5 in the *Accomack County Comprehensive Plan*, which seeks to “Conserve groundwater quality and quantity”, and more specifically Action 5-a, which states that “Regulations, such as prohibiting the future siting of major polluting activities and requiring special permits based on performance standards . . . should be placed on land use within [the recharge spine].”

Objective 2A: Establish a groundwater protection overlay district to protect the water recharge zone and allow water infiltration through the use of low-impact development.

Action 1) Designate the recharge spine as the boundary for the Water Protection Overlay District. The Code of Virginia authorizes localities to include a “designation of areas for the implementation of reasonable ground water protection measures” in their *Comprehensive Plan*. This authority has been upheld in the 1985 Circuit Court decision that allowed Fairfax County, Virginia, to enforce its Water Supply Protection Overlay District.

Action 2) The county should decide which uses are not appropriate for the Overlay District (examples provided in Appendix 2).

Action 3) The county should decide which uses should be permitted only if they meet performance standards (examples provided in Appendix 2).

Action 4) Development that includes parking surfaces should be required to consider best practices for water infiltration. Overflow parking areas should use pervious paving methods, and lots should use swales and parking lot islands that can intercept and capture stormwater runoff.

Action 5) Provide examples on the county’s website of progressive parking design that controls stormwater runoff and allows for water infiltration (see Appendix 1).

Objective 2B: Incentivize and popularize rainwater harvesting to avoid depleting the Yorktown aquifer, as well as to provide an economical method of irrigation for home owners.

Action 1) Partner with Clean Virginia Waterways to co-sponsor a rain barrel workshop in Accomack County.

Action 2) Establish a rain barrel “portal” on the Accomack County website to provide educational materials and “do-it-yourself” guidance for making rain barrels.

Action 3) Establish a county-wide rain barrel sale that provides low cost rain barrels to residents. Marketing materials should include a brief description of the benefits of rainwater harvesting, as well as installation instructions and best practices. Appendix 4 includes an example informational mailing.

Objective 2C: Establish a demonstration rain garden or bioswale near the planning office that can serve as model LID technique and be used as an educational tool for visitors to the Planning Office.

FIGURE 1 A demonstration rain garden can be a valuable education tool . The image below shows what could be done in front of the County’s Planning Office.



Action 1) Partner with community groups/educational institutions that are interested in contributing to the work. This can include groups such as the Virginia Master Gardeners and the Eastern Shore Community College, as well as advertising the county’s desires in local news media outlets and on the county’s website.

Action 2) Apply for grant money that will be used for construction costs. A list of funding opportunities is provided at the end of the chapter.

Goal 3: Ensure future development utilizes best management practices to minimize and prevent harm and pollution of water resources.

Rationale: Our natural environment is becoming more damaged every day. The clearing of forests, poor management of waste, and high urban density all pose major threats to our planet and its health. With the expected population growth of future generations, how we treat our landscape will define the wellness of the environment and the manner in which we live along side nature.

Accomack County faces future urban development within a very precious natural environment. LID can be a key component of the county’s approach to conserving its natural resources. County codes, as well as the Planning Office and constituents should outline and promote standards that reduce the footprint of pavements, developments, and housing through LID. Accomack County’s Planning Office can provide guides and strategies to reduce grading, clearing, use of impervious surfaces and use of pipes to minimize water quality impacts.



These LID based strategies can not only save the quality of our natural environment, but also save spending on expensive piping systems and inefficient development. Stormwater sewers frequently collect and discharge untreated stormwater into surface waters, while combined sewer and stormwater systems overflow during heavy rains, discharging both untreated sewage and stormwater into nearby rivers and lakes. This contributes to impaired water quality, flooding, habitat degradation, and stream bank erosion.

The EPA estimates the costs of controlling combined sewer overflows (CSO) throughout the U.S. at approximately \$56 billion. Developing and implementing stormwater management programs and urban-runoff controls will cost an additional \$11 to \$22 billion. Any cost savings due to reducing stormwater can save millions, if not billions for developers, governments, and taxpayers.

Objective 3A: Guide future use of LID through recommended proffers outlined by the county.

Action 1) Institute a collection of standards, incentives, and guides through the county website for easy and direct use by developers. (see Appendix 1, 4, and 5 on ideal proffers for coastal environments, as well as fact sheets on the benefits of implementing LID). The *Green Values* National Stormwater Management Calculator is an online tool that determines the savings-to-cost and environmental loadings between conventional development and green infrastructure.

Action 2) Directly incorporate LID into the county’s *Comprehensive Plan* as an approach to stormwater management, to mitigate future growth of the county, securing the health of its communities, as well as the environment. Information on LID can be included in Chapter 5 on *Zoning*, and Chapter 6 on *Future Land Use*.

OBJECTIVE 3B: Establish promotions for LID within the county focused on the water recharge spine and high-development areas, based on proven techniques for coastal environments.

Action 1) Establish a “Low Impact Overlay District” for the entire Recharge Spine and immediate coastal regions of the county. This will notify developers to adjust practices, in order to reduce pollution, manage waste, and preserve a beautiful, natural aesthetic.

Action 2) Actively support and encourage the implementation of LID.

The table depicts lowered costs from changing a few design aspects. Notice changes to the use of the retention pond and paved alleys. Source: <http://www.stormh2o.com/march-april-2011/choosing-green-infrastructure.aspx>

Conventional TND Engineering				
Material	Quantity	Unit	Cost/Unit	Total
Erosion Control				
Silt Fence	8,450	LF*	\$4.00	\$33,800.00
Rip Rap	200	Tons	\$55.00	\$11,000.00
Total				\$44,800.00
Stormwater				
Inlets	101	Ea.	\$2,500.00	\$252,500.00
Pipes	9,434	LF*	\$30.93	\$291,793.62
Retention Pond	1	Lump	\$48,400.00	\$48,400.00
Total				\$592,693.62
Pavement				
Curb & Gutter	18,910	LF*	\$7.60	\$143,716.00
Sidewalk	8,276	SY*	\$25.00	\$206,900.00
Paved Road	26,705	SY*	\$18.64	\$497,781.20
Paved Alley	6,470	SY*	\$13.36	\$86,439.20
Total				\$934,836.40
Grand Total				\$1,572,330.02
Cost per Lot	176			\$8,933.69

Engineering Comparison
 Project : Light Imprint New Urbanism Study
 Date : December 06, 2006
 Details: Phase 1, 42 Acres, 176 Lots

Light Imprint TND Engineering				
Material	Quantity	Unit	Cost/Unit	Total
Erosion Control				
Silt Fence	8,450	LF*	\$4.00	\$33,800.00
Rip Rap	200	Tons	\$55.00	\$11,000.00
TPP*	4,225	LF*	\$4.00	\$16,900.00
Total				\$61,700.00
Stormwater				
Inlets	24	Ea.*	\$2,500.00	\$60,000.00
Pipes	4,182	LF*	\$30.93	\$129,349.26
Rain Gardens	20	Ea.*	\$5,120.00	\$102,400.00
Total				\$291,749.26
Pavement				
Curb & Gutter	13,091	LF*	\$8.00	\$104,728.00
Sidewalk	7,000	SY*	\$25.00	\$175,000.00
Paved Road	20,515	SY*	\$18.64	\$382,399.60
Crushed Stone Alley	5,765	SY*	\$12.00	\$69,180.00
Total				\$731,307.60
Grand Total				\$1,084,756.86
Cost per Lot	174			\$6,234.23

Conclusions
 Overall : 31% Savings
 Per Lot : 30% Savings

* Notes:
 TPP - Tree Protection Fence
 LF - Linear Feet
 SY - Square Yard
 Ea. - Each

LID designs can significantly reduce development costs through *smart* site design by:

- Reducing impervious surfaces (roadways), curb, and gutters
- Decreasing the use of storm drain piping, inlet structures
- Eliminating or decreasing the size of large stormwater ponds

FIGURE 1: How Green Spaces Affect Property Prices
How nearby green spaces can enhance property values. The figures show the uplift for different types of property.

	DETACHED	FLAT	NON-DETACHED
CITY PARK	19.97%	7.54%	2.93%
LOCAL PARK	9.62%	7.92%	9.44%
OPEN SPACE	2.71%	4.70%	0.44%

SOURCE: Neil Dunse 2007, urban parks, open space and residential property values, RICS.

RESOURCES

1. **Chesapeake Bay Riparian Handbook: A Guide for Establishing and Maintaining Forest Buffers**
See: http://www.na.fs.fed.us/pubs/misc/riparian_handbook/chesapeake_bay_riparian_handbook.pdf
2. **Clean Virginia Waterways homepage**
See: <http://www.longwood.edu/cleanva/>
3. **Coastal Community Watershed Management Checklist** – County planning staff should complete the checklist and provide the Planning Commission with the results. This exercise will help give the county a sense of where they are at, and provide a baseline to measure results.
See: <http://www.cwp.org/component/content/article/39/160-coastal-checklist.html>
4. **Adapting Stormwater Management Practices to Coastal Environments**
See: http://www.cwp.org/images/stories/CPWN_Stormwater.pdf
5. **InFOREST** – Ecosystem services modeling to predict the impact of land use changes on water quality (nutrient and sediment runoff)
See: <http://ifris.dof.virginia.gov/inforest/>
6. **Information LID factsheets**
NC Cooperative Extension Factsheet, which focuses on the economic incentives of LID.
See: http://www.ces.ncsu.edu/depts/agecon/WECO/nemo/documents/WECO_LID_econ_factsheet.pdf

A factsheet that compares traditional stormwater management to an LID approach.
See: <http://www.coastal.ca.gov/nps/lid-factsheet.pdf>

And introductory factsheet used to educate citizens in the Puget Sound region.
See: <http://www.skagitcd.org/sites/default/files/publications/documents/Fact%20Sheet%20-%20Low%20Impact%20Development%20-%204%20page%20format%20for%20website%20viewing.pdf>

Case study in Wilmington, NC. Wilmington is also located in close proximity to the Atlantic Ocean. This case study details their successes in installing LID retrofits to protect the Burnt Mill Creek watershed.
See: http://www.cwp.org/images/stories/WTM/cwp_burntmill_finalpost.pdf

7. ***Quick Guide to Impervious Surfaces and Their Implications***
See: <http://nemo.udel.edu/manual/Chap2Web.pdf>
8. **Factsheet for “BIG BOX” developers, eg. Wal-Mart, Target**
See: www.lowimpactdevelopment.org/bigbox/lid%20articles/bigbox_summary.pdf
9. ***Bioretention Factsheet***
See: http://www.lowimpactdevelopment.org/pubs/Bioretention_Factsheet.pdf
10. **Evaluations for Permeable Pavement**
See: http://www.lowimpactdevelopment.org/pubs/Permeable_Pavement_factsheet.pdf
11. **National Hydrology Manual**
See: http://www.lowimpactdevelopment.org/pubs/LID_Hydrology_National_Manual.pdf
12. **Brochure: *Builder’s Guide to LID***
See: http://www.lowimpactdevelopment.org/lid%20articles/Builder_LID.pdf
13. **Precedent Project; Montgomery County, MD**
See: <http://www.montgomerycountymd.gov/dectmpl.asp?url=/content/dep/water/lowimpact.asp>
14. **California Coastal LID proposal**
See: <http://www.coastal.ca.gov/nps/lid-factsheet.pdf>

FUNDING OPPORTUNITIES

1. **Classroom grants**

The Virginia Resource Use Education Council, the Department of Environmental Quality, the Department of Conservation and Recreation and the Virginia Environmental Endowment offer a simple grant application to provide teachers with small amounts of money for environmental education. Any school or school division is encouraged to apply for a grant of \$500, \$750 or \$1,000 for the purpose of conducting meaningful outdoor experiences with their students. Activities that are eligible for funding include restoration, enhancement, protection and monitoring projects and investigative or experimental design activities that foster academic success, reinforce responsible citizenship, and give children the tools they need to contribute to a healthy and enduring environment.”

For more information, visit: <http://www.vee.org/mini.cfm>

2. **MWEE Partner Mini-grant Program**

“The MWEE Partner Mini-grant Program will support efforts by community groups to provide youth with meaningful watershed educational experiences (MWEEs). Funding is intended to help community groups build capacity for delivering and sustaining high quality, meaningful environmental education related to water and watersheds. The program will complement the Virginia Classroom Grants program designed for teachers.”

For more information, visit: <http://www.vanaturally.org/vanaturally/mweegrant.html>

3. **FVNR Project Funding Criteria & Grant Application**

The Foundation for Virginia's Natural Resources funds projects and programs that strengthen "environmental education, pollution prevention and citizen monitoring" and foster collaboration among businesses, citizens, communities, local governments and state agencies. The Foundation supports non-regulatory, voluntary efforts that address priorities outlined in the Foundation's business plan such as River Basin Strategies, Outdoor Classrooms, Forestry and Agricultural education and programs of 'statewide importance'. Projects must employ best practices of environmental education, engage citizens and students in meaningful activities or help organizations achieve program sustainability.

For more information, visit: <http://www.fvnr.org/>

4. **Watershed Operations**

Through its Watershed Programs, the Natural Resources Conservation Service provides technical and financial assistance to states, local governments and tribes (project sponsors) to plan and implement authorized watershed project plans for the purposes of watershed protection, prevention of soil erosion, groundwater recharge easements, wetland and floodplain easements and more.

For more information, visit:

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wo>

5. ***Bring Back the Natives* Grant Program (Environmental Protection Agency)**

The *Bring Back the Natives* initiative (BBN) funds on-the-ground efforts to restore native aquatic species to their historic range. Projects should involve partnerships between communities, agencies, private landowners, and organizations that seek to rehabilitate streamside and watershed habitats. Projects should focus on habitat needs of species such as fish, invertebrates, and amphibians that originally inhabited the waterways across the country. Funding for the BBN program is administered through NFWF from federal agencies cooperating to support this program. Cooperating agencies and organizations include the US Fish and Wildlife Service (FWS), Bureau of Land Management (BLM), USDA Forest Service (FS), and Trout Unlimited (TU).

For more information, visit: http://cfpub.epa.gov/fedfund/program.cfm?prog_num=2

6. **Chesapeake Bay Program Grants**

The EPA's Chesapeake Bay Program (CBP) awards grants to reduce and prevent pollution and to improve the living resources in the Chesapeake Bay. Grants are awarded for implementation projects, as well as for research, monitoring, and other related activities.

For more information, visit: http://cfpub.epa.gov/fedfund/program.cfm?prog_num=8

7. **Chesapeake Bay Stewardship Fund: Chesapeake Bay Small Watersheds Grant Program**

The Chesapeake Bay Small Watershed Grants Program provides grants to organizations and local governments working on a local level to protect and improve watersheds in the Chesapeake Bay basin, while building citizen-based resource stewardship. The purpose of the grants program is to support protection and restoration actions that contribute to restoring healthy waters, habitat and living resources of the Chesapeake Bay ecosystem. The Small Watershed Grants Program has been designed to encourage the development and sharing of innovative ideas among the many organizations wishing to be involved in watershed protection activities.

For more information, visit: http://cfpub.epa.gov/fedfund/program.cfm?prog_num=9

8. **Watershed Protection and Flood Prevention Program**

Also known as the 'Watershed Program' or the 'PL 566 Program,' this program provides technical and financial assistance to address water resource and related economic problems on a watershed basis. Projects related to watershed protection, flood mitigation, water supply, water quality, erosion and sediment control, wetland creation and restoration, fish and wildlife habitat enhancement, agricultural water conservation, and public recreation are eligible for assistance. Technical and financial assistance is also available for planning new watershed surveys.

For more information, visit: http://cfpub.epa.gov/fedfund/program.cfm?prog_num=64

9. **Pulling Together Initiative**

The National Fish and Wildlife Foundation's Pulling Together Initiative (PTI) provides a means for federal agencies to partner with state and local agencies, private landowners, and other interested parties to develop long-term weed management projects within the scope of an integrated pest management strategy. The goals of PTI are: (1) to prevent, manage, or eradicate invasive and noxious plants through a coordinated program of public/private partnerships; and (2) to increase public awareness of the adverse impacts of invasive and noxious plants. PTI provides support on a competitive basis for the formation of local weed management area (WMA) partnerships, allowing them to demonstrate successful collaborative efforts and develop permanent funding sources for the maintenance of WMAs from the involved parties. Successful projects will serve to increase public awareness and interest in future partnership projects.

For more information, visit: http://cfpub.epa.gov/fedfund/program.cfm?prog_num=88

10. **Nonpoint Source Implementation Grants (319 Program)**

Through its 319 program, EPA provides formula grants to the states and tribes to implement nonpoint source projects and programs in accordance with section 319 of the Clean Water Act (CWA). Nonpoint source pollution reduction projects can be used to protect source water areas and the general quality of water resources in a watershed. Examples of previously funded projects include installation of best management practices (BMPs) for animal waste; design and implementation of BMP systems for stream, lake, and estuary watersheds; and basinwide landowner education programs previously funded under the CWA section 314 Clean Lakes Program.

For more information, visit: http://cfpub.epa.gov/fedfund/program.cfm?prog_num=44

11. **Five-Star Restoration Program**

The EPA supports the Five-Star Restoration Program by providing funds to the National Fish and Wildlife Foundation and its partners, the National Association of Counties, NOAA's Community-based Restoration Program and the Wildlife Habitat Council. These groups then make subgrants to support community-based wetland and riparian restoration projects. Competitive projects will have a strong on-the-ground habitat restoration component that provides long-term ecological, educational, and/or socioeconomic benefits to the people and their community. Preference will be given to projects that are part of a larger watershed or community stewardship effort and include a description of long-term management activities. Projects must involve contributions from multiple and diverse partners, including citizen volunteer organizations, corporations, private landowners, local conservation organizations, youth groups, charitable foundations, and other federal, state, and tribal agencies and local governments. Each project would ideally involve at least five partners who are expected to contribute funding, land, technical assistance, workforce support, or other in-kind services that are equivalent to the federal contribution.

For more information, visit: http://cfpub.epa.gov/fedfund/program.cfm?prog_num=29

12. Conservation Reserve Program

The Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners. Through CRP, you can receive annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible farmland. In Accomack County, this can be used to support owners of agricultural lands that wish to buffer stream corridors.

For more information, visit:

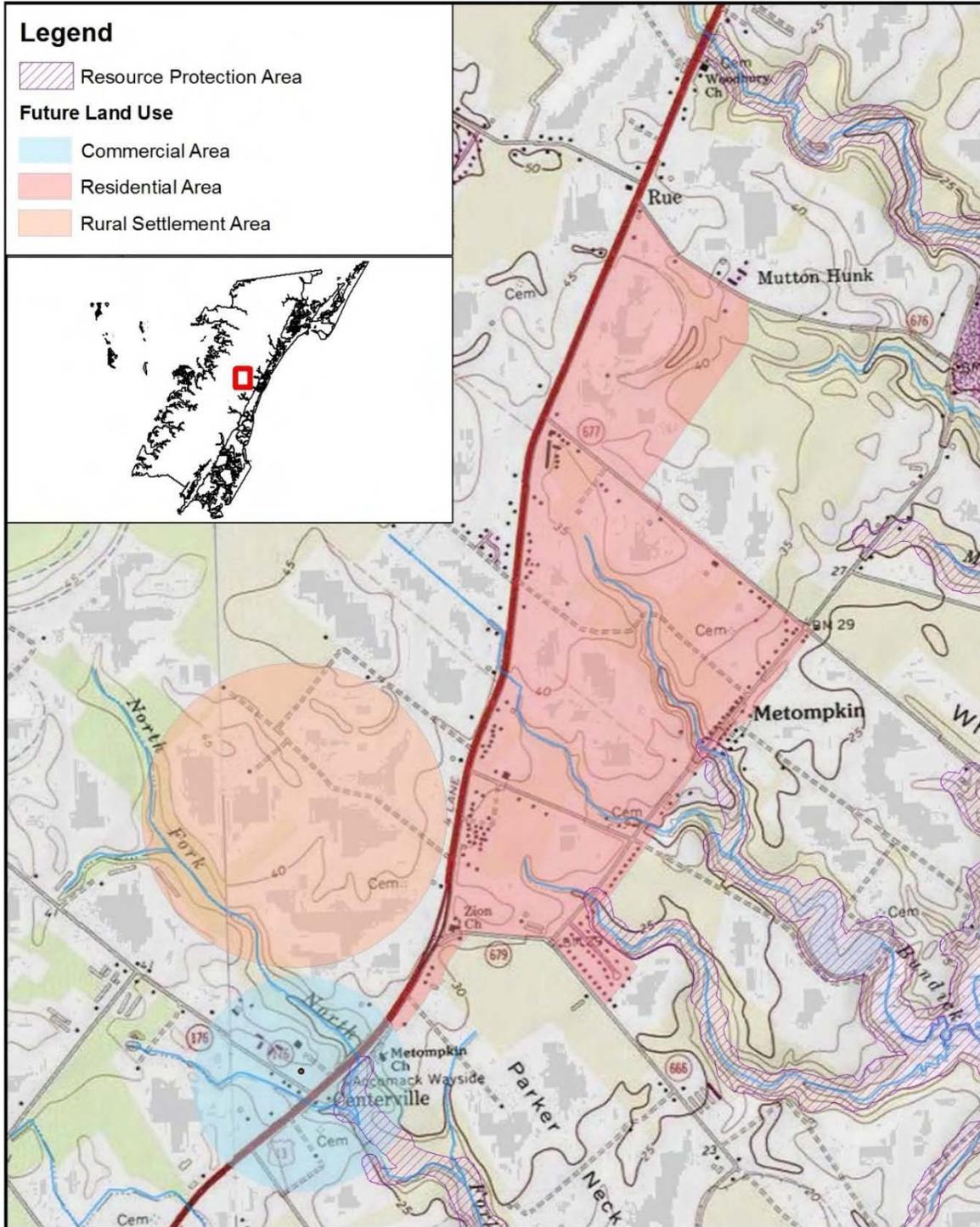
<http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=crp>

13. Riparian Buffer Tax Credit

Wooded buffers along streams, rivers and the Chesapeake Bay are called riparian forests and help protect our water quality. Virginia landowners can receive a tax credit for preserving riparian forest buffers along waterways during a timber harvest operation.

For more information, visit: <http://www.dof.virginia.gov/mgt/rfb/rbtc-index.htm>

MAP 1: DEPICTION OF NEED FOR ADDITIONAL STREAM PROTECTION

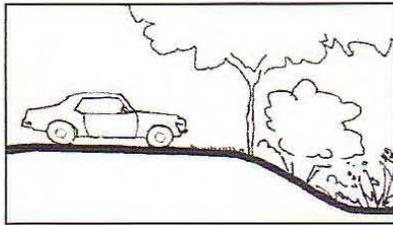


An area near the intersection of Route 176 and Route 13 designated for future growth will affect nearby stream corridors (shown in blue). The RPA (purple hatching) does not extend far enough to protect these vital connections.

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2. Thomas, Mike; Zimmerman, Kim; Gilliam, Tim. *Protecting Riparian Buffers: Incentives Versus Restrictions*. 2001. <http://www.gwri.gatech.edu/uploads/proceedings/2001/ThomasM-01.pdf>
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Parking Lot Design



Description

Two main strategies can help reduce runoff volume or provide water quality benefits in parking lots: reducing paved surface area and incorporating plants and infiltration swales into designs.

Reduced Paved Surface

Pavement reduction can be accomplished in three main ways:

- *Changing municipal codes to reduce parking requirements.* To avoid excessive paving, codes should set a minimum *and* maximum number of spaces a development can provide. Parking demand ratios should be based on site-specific parking generation studies.
- *Reducing stall dimensions.* This can be accomplished by creating dedicated compact car spaces and then offering spillover parking areas with pervious surfaces. Determine the most space-efficient design for the site, which may be angle parking (to reduce driving lane width) or conventional stalls.
- *Promoting shared parking lots.* Allow shared lots between businesses with peak parking demand at different times of the day or week. For example, a restaurant that requires parking primarily evenings and weekends could share parking with an office building with weekday parking needs.

Planting Strategies.

Vegetation is an effective and attractive way to reduce runoff, and smaller parking lots free up more space for landscaping.

Leaves, stems and branches intercept rainwater, which then evaporates. A significant amount of stormwater can evaporate from beds of tall grasses, wildflowers, shrubs, and trees. Furthermore, deep-rooted prairie plants create channels that help encourage infiltration (see Figure 1). They also hold up to a half-inch of stormwater on their leaves and in the thatch they create.

Purpose

Water Quantity

- Flow attenuation
- Runoff volume reduction

Water Quality

- Pollution prevention
 - Soil erosion
 - Sediment control
 - Nutrient loading
- Pollutant removal (*only if runoff is directed into planted swales*)
 - Total suspended sediment (TSS)
 - Total phosphorus (P)
 - Nitrogen (N)
 - Heavy metals
 - Floatables
 - Oil and grease
 - Other
 - Fecal coliform
 - Biochemical oxygen demand (BOD)

<input checked="" type="checkbox"/>	Primary design benefit
<input type="checkbox"/>	Secondary design benefit
<input type="checkbox"/>	Little or no design benefit

Parking Lot Design

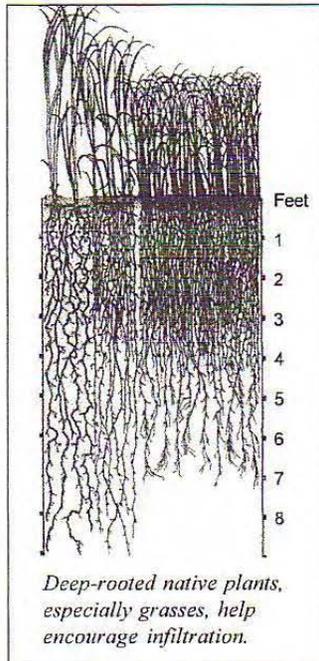


Figure 1

Shallow-rooted turf grass is not nearly so effective; substitute deep-rooted perennial plantings for sod wherever possible.

Even if extensive perennial planting is not possible, include trees to canopy paved areas. In addition to intercepting rainwater, the summer shade they provide helps to reduce the urban heat island effect and make parking lots more pleasant places to be.

Infiltration

Planted areas can also be designed specifically to accept runoff of parking areas (as shown in Figures 2, 3 and 4), providing temporary storage and on-site infiltration. See Rain Garden information in On-Lot Infiltration BMP.

Advantages

- Reducing parking surface reduces the need for stormwater runoff management.
- Less paving means lower development and maintenance costs.
- Grasses, wildflowers, shrubs and trees hold water that is then evaporated, reducing runoff.
- Channels created by deep roots encourage infiltration.
- Shade from trees helps reduce the urban heat island effect and make the area more comfortable for people.

- Planting native vegetation creates wildlife habitat.
- A variety of vegetation creates a more interesting and aesthetically pleasing environment.
- Trees shade impermeable surfaces, keeping stormwater cool and reducing urban heat island effect.

Limitations

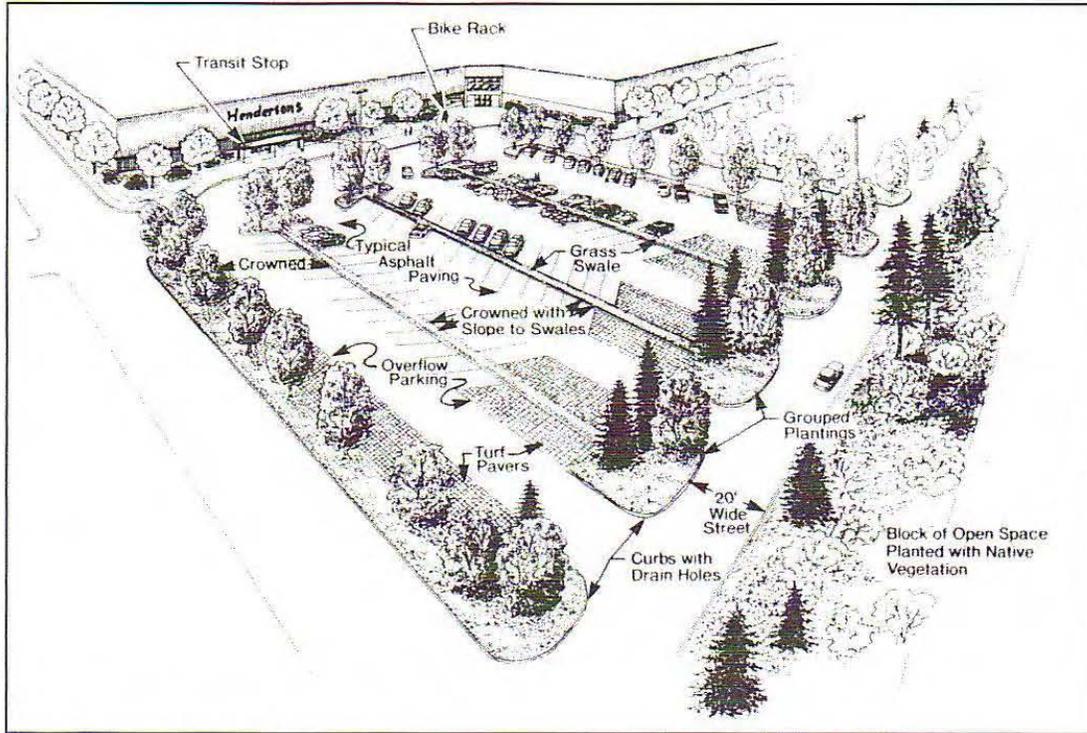
- Municipalities may have firm parking requirement that do not encourage innovation.
- Space allocated for parking lot in a given development may not be sufficient to include significant planted areas.
- Soil type may limit infiltration and/or planting success.

Land Use	"Better Site Design" Parking Ratio
Single family home	2 spaces or less per dwelling unit (driveway spaces count)
Professional offices	3.0 spaces or less per 1,000 ft. ² gross floor area
Retail	4.0 - 4.5 spaces or less per 1,000 ft. ² gross floor area

Table 1

Source: Adapted from CWP, 2000.

Parking Lot Design



Source: Robert W. Droll, ASLA, in Wells 1994.

Requirements

Design

- Revise outdated, overly generous parking ratio requirements. (See Table 1.)
- Use minimum stall dimensions.
- Use the most space-efficient stall configuration for the site (See Turf Pavers BMP).
- In larger commercial parking lots, design 30 percent of the spaces for compact cars only.
- Use pervious surfacing in summer spillover parking areas.
- If soils are suitable, drain parking lot runoff into infiltration islands using curb cuts or flat curbs.
- If soils are unsuitable, excavate to a depth of 3 feet and fill with a planting soil mix.
- Plant native or vigorous nonnative perennials rather than turfgrass over as much of non-paved surfaces as possible. See Plant List on following page.

Parking Lot Design

- Aim to have canopy trees at maturity cover at least 50 percent of paved surfaces. Since tree height and spread will generally be smaller than normal in parking lot growing conditions, compensate by planting more trees closer together.
- Irrigation systems are usually necessary for parking lot island plantings, unless sufficient runoff is directed into them..

Requirements

Construction

- To avoid compaction, do not drive on planting areas during construction.
- After construction, loosen soils in planting areas to a depth of 24 inches, to a maximum compaction of 85 percent standard proctor density. Till the upper 10 inches of soil.

Maintenance

- Planted areas must be weeded monthly during the first two to three years. After that, weeding once or twice a growing season may suffice.
- Regular watering will be necessary during dry spells. Limit irrigation to a maximum of two inches per week.
- During winter plowing, push street snow away from swales whenever possible in order to avoid accumulation of road sand.

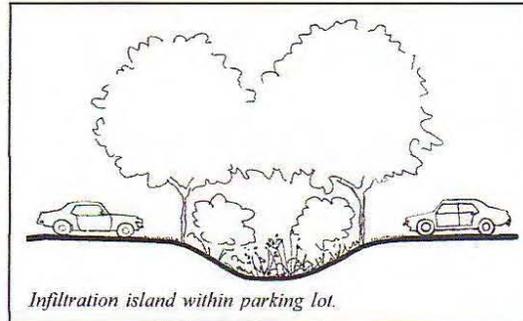


Figure 3
Source: VBWD, 2000

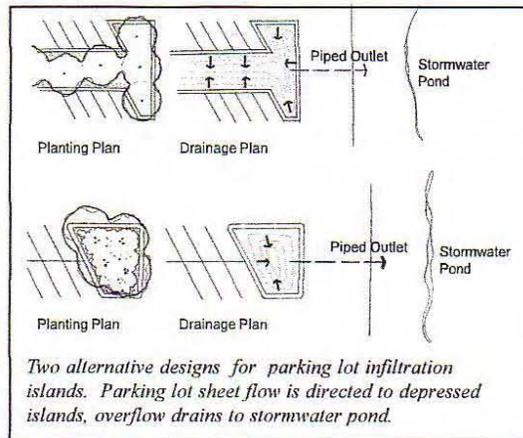


Figure 4
Source: VBWD, 2000

APPENDIX 2: MODEL GROUNDWATER PROTECTION ORDINANCE

Adapted from the Model Groundwater Protection Ordinance, Prepared by Pierce Rigrod for the New Hampshire Dept. of Environmental services

<http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-06-41.pdf>

Prohibited Uses:

1. The development or operation of a hazardous waste disposal facility;
2. The development or operation of a solid waste landfill;
3. The outdoor storage of road salt or other deicing chemicals in bulk;
4. The development or operation of a junkyard;
5. The development or operation of a snow dump;
6. The development or operation of a wastewater or septage lagoon;
7. The development or operation of a petroleum bulk plant or terminal;

Uses requiring a Conditional Use Permit:

1. Any use that will render impervious more than 20 percent of any lot, , excluding single family residences, must consider the Best Management Practices for parking areas outlines in Appendix 1.
2. Any activities that involve blasting of bedrock.

APPENDIX 3: INFOREST MODEL SCENARIOS

The InFOREST ecosystem services modeling program developed by the VA Dept of Forestry was used to assess the effects of conserving trees and reducing impervious surfaces in a sample location in Accomack County. The sample location is an approximately 413 acre site that is designated as a Residential in the *Accomack County Comprehensive Plan* future land use section (see Map 1, shown in red).

Three scenarios were run in the model, with varying tree cover and impervious surfaces. The site currently is largely undeveloped, and has a impervious surface cover of approximately 4% (for reference, the Town of Onancock has an impervious surface cover of about 15.5%).

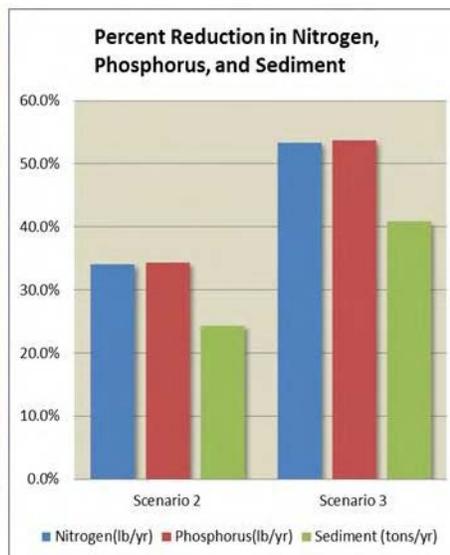
Scenarios 2 and 3 simulate cluster development, which preserves more trees and reduces impervious surfaces (less roadways need to be constructed, for example). Based on the county’s zoning ordinance, a Village Residential district cluster subdivision can accommodate the same number of lots.

The table below shows the land uses in each scenario.

	Impervious Surface	Urban Pervious	Forest
Scenario 1	13%	77%	10%
Scenario 2	10%	40%	50%
Scenario 3	8%	22%	70%

The table below shows the results of the model. Scenarios 2 and 3 contribute significantly less nutrients and sediment than does Scenario 1. The bar chart shows the percentage reduction in nutrients and sediment on Scenarios 1 and 2.

Scenario	Nitrogen(lb/yr)	Phosphorus(lb/yr)	Sediment (tons/yr)
1	1121	121	11.5
2	739	79.5	8.7
3	523	56	6.8



APPENDIX 4: RAIN BARREL PROGRAM

SAFELY USING YOUR RAIN BARREL

Water stored in any kind of container represents a risk for small children. Children can drown in as little just a few inches water. Additionally, animals both wild and domestic may become trapped and drown in your barrels if uncovered. Therefore, you should never use an open container for rainwater collection. Make sure you have some way to cover the barrel with a screen or a top. Standing water is also where mosquitoes breed best. As the West Nile virus and other diseases are important concerns these days, you'll need to take appropriate measures to deter mosquitoes from breeding in your rain barrels. It only takes about ten days for mosquitoes to breed, so you should ideally empty the water in less than ten days. You should also use a fine screen over the top of the barrel so the mosquitoes can't reach the water in the first place.

The type of barrel you use is also important. If making your own, make sure it's a food-grade container that was made to hold liquid. You cannot cut corners and simply use a trashcan because a common trashcan will not withstand the pressure of the water for long. The location of your rain barrel is also important. Make sure you place it on level and stable ground. When your rain barrel is at maximum capacity, it will weigh quite a bit and tipping is risk on un-level ground.

Depending on what part of the country you live in, we recommend disconnecting your rain barrels in the winter if temperatures in your area regularly reach freezing or below. Constant freezing and thawing of the water in your rain barrel may weaken the material or cause cracks. Store your barrels upside down in the winter to keep them clean for future use.

A final bit of advice for all rainwater catchment systems is to always monitor the rain barrels for overflow. If for example you leave for vacation for a week and haven't taken precautions to avoid the overflow of water, you may end up with damage to the foundation of your home or other related problems over time.

Campaign for Cleaner Water

Dearborn County Soil and Water Conservation District
 Tanners Creek Watershed Project
 Hogan Creek Watershed Project
 10729 Randal Avenue, Suite 2
 Aurora, IN 47001



Installing Rain Barrels

Alternatives for Stormwater Runoff



Tips for Keeping Pollutants From Entering Streams



WHAT IS A RAIN BARREL ?



A rain barrel is a container that collects rain water from rooftops called stormwater runoff. Rain barrels come in in several different shapes and sizes, but they all do the same thing: they save water and decrease stormwater runoff. Placed at the base of a downspout, a typical rain barrel can hold 55-75 gallons of water at one time. When connected to a watering hose, a rain barrel can hold a water supply for water gardens, trees and even indoor plants. Rain barrels can be bought from garden supply centers, or they can easily be built.

WHY INSTALL A RAIN BARREL ?

Collecting rainwater for use during dry months in rain barrels or other depositories is an ancient and traditional practice. Historical records show that rainwater was collected in simple clay containers as far back as 2,000 years ago in Thailand, and throughout other areas of the world after that. With the rising price of municipal water and drought restrictions now facing much of the United States during the summer months, more and more homeowners in our own modern society are turning to the harvesting of rainwater to save money and protect this precious natural resource.

Did you know that during an average rainstorm (1 inch in 24 hours) more than 700 gallons of water run off the roof of a typical home? That's enough water to take 17 baths or 58 showers! When rain runs off roofs and lands on impervious surfaces, it cannot soak into the ground. Eventually, it enters a storm drain or a nearby creek. This excess water or runoff causes the soil in its path to erode more rapidly than it would naturally. Gravity causes this runoff to flow downhill and into the closest stream or other waterway, carrying with it sediment, pesticides, fertilizers, and other pollutants it encounters along the way. Rain barrels intercept that stormwater and not only put it to good use, they also stop it from rapidly pushing the land into rivers and streams.

SELECTING A BARREL

There are many possible configurations and degrees of complexity to a rainwater catchment system. Costs vary considerably as well. You can spend anywhere from a few dollars to thousands of dollars. Your best bet is to review the options available on the market to find out what's in your price range and what's a realistic set-up for your home.

Perhaps the simplest use of rainwater if you are on a budget or have space restrictions is to put a rain barrel under one of the gutter downspouts and use the water on sensitive indoor plants. The plants will appreciate the soft water. The barrel should always be covered between uses.



A slightly more sophisticated system might be to use several barrels connected together near the bottom with pvc pipes or hose. A small pump can be used in one of the barrels to pump the water to your garden. In this case, all the barrels will drain simultaneously.

Bigger and more complex systems may use gravity to feed water from gutters to a larger cistern, which pumps water to the landscape. Some online gardening sites sell cisterns and other more complex rainwater harvesting equipment.



Whatever you decide, all systems should use covered barrels or cisterns that keep the water from accumulating leaves and other contaminants. They should also have some kind of filter to keep out silt and leaves. Filters can range from a funnel covered by gravel, to a rainwater washing apparatus.

CHOOSING A LOCATION

Deciding where to put your barrel can be almost as much fun as making (or purchasing) it, especially as the best time to investigate runoff is when it's raining. Don't forget your raincoat! It is important to do some detective work before your purchase your rain barrel or materials so that you can determine the appropriate size barrel and hose length. When you are outside, look closely to see where each downspout is directing water. Is the spout draining into a storm drain or onto an impervious surface? You may find that a downspout is or could be rerouted directly into a landscaped area, garden, or micro nursery.—In other words, find a place where you can use the water collected in your rain barrel. If this is the case, you may not be necessary for that particular downspout. Place your rain barrel where it will collect rain that would otherwise become destructive stormwater runoff.



Any catchment area will pick up some contamination from leaves, bird droppings, dust, and other natural causes. Some roofs, such as old tar and gravel or old asbestos shingle roofs create too much contamination for rainwater harvesting. Treated cedar shakes are also not recommended for water harvesting. While this water is fine for watering your garden, trees, lawns or indoor plants, it should never be used to drink or give to animals.

USING YOUR RAIN BARREL WATER



Any catchment area will pick up some contamination from leaves, bird droppings, dust, and other natural causes. Some roofs, such as old tar and gravel or old asbestos shingle roofs create too much contamination for rainwater harvesting. Treated cedar shakes are also not recommended for water harvesting. While this water is fine for watering your garden, trees, lawns or indoor plants, it should never be used to drink or give to animals.

APPENDIX 5: LOW-IMPACT DEVELOPMENT OPERATIONS

Many of these are used together to create the ideal, and most effective practice for the specific site:

- **Buffer:** A vegetated zone adjacent to a stream, wetland, or shoreline where development is restricted or controlled to minimize the effects of development. (KEY FOR MAINTAINING NATURE CORRIDORS.)
- **Cluster Development:** Buildings concentrated in specific areas to minimize infrastructure and development costs, while achieving the allowable density. This approach allows the preservation of natural open space for recreation, common open space, and environmentally sensitive features.
- **Green Roofs:** Planted rooftops that cut down on energy costs.

The following table shows the cost savings of one Green Roof, as well as the savings if it were to be spread across the entire neighborhood:

Benefit	Annual Benefit (\$) per 5,000 SF green roof (Example Demonstration 1)	Annual Benefit (\$) from scaled green roof program (= annual benefit per roof * 240 converted roofs)
Reduces Runoff	\$6.53	$\$6.53 * 240 = \$1,567.20$
Reduces Energy Use	$\$107.60 + \$444.75 = \$552.35$	$\$552.35 * 240 = \$132,564.00$
Improves Air Quality <i>Note: The figures used here only account for the benefits of reduced NO₂. Similar steps should be performed for the other criteria pollutants, when possible.</i>	\$100.83	$\$100.83 * 240 = \$24,199.20$
Reduces Atmospheric CO₂	\$49.04	$\$49.04 * 240 = \$11,769.60$
Total Annual Benefit Benefits)	\$708.75	$\$708.75 * 240 = \$170,100.00$

- **Permeable Pavements:** Soil or other material that allows the infiltration or passage of water or other liquids.
- **Rain Barrels:** Barrels designed to collect and store rooftop runoff, reducing the loading values because of the decrease in runoff. (See *Rain Barrel Modification Program* in Appendix 4)
- **Rain Garden:** Synonymous with bioretention area, this term is typically used for general audience discussions.
- **Swale:** An open drainage channel designed to detain or infiltrate stormwater runoff.
- **Street Trees:** Help manage runoff in normally dense, paved urban areas, but also on residential roads.

Shared Benefits of LID:

To the Coastal Environment:

- *Helps protect water quality by reducing sediment and stormwater pollution*
- *Protects shellfish growing areas and beaches from bacterial contamination*
- *Preserves trees, natural vegetation and open space*
- *Helps recharge groundwater aquifers and supplies*

To Developers:

- *Reduces costs of infrastructure such as curbs, gutters and stormwater ponds*
- *Reduces costs of site grading and clearing*
- *Helps meet state stormwater regulations*
- *Can help produce more attractive developments that sell faster*
- *Can increase the number of lots by reducing the size of stormwater ponds*

To Local Governments:

- *Balances growth with environmental protection*
- *Helps reduce flooding*
- *Helps reduce the cost of maintaining curbs, gutters and other infrastructure*
- *Promotes positive public and private partnerships in stormwater management*
- *Creates more attractive neighborhoods*

To Homeowners:

- *Creates aesthetically pleasing landscape gardening*
- *Attracts birds and butterflies*
- *Provides free water for landscaping*
- *Helps reduce yard flooding*

RECREATION, TOURISM, AND OPEN SPACE: POLICIES AND STRATEGIES

Written by Ana Aleman, Sarah Culver, Koren Manning, and Laura McCoy

The *Accomack County Blue/Green Infrastructure Study* completed in May 2010 assessed current conditions in the county, including recreational and open space assets (See Map 1). The research and proposals presented here suggest ways to protect and expand these assets in order to build a green infrastructure network for Accomack County. These goals support the policies and objectives outlined in the county's 2008 *Comprehensive Plan* and are aligned with those related to *Forests, Water, and Towns and Culture* presented elsewhere in this report.

Green Infrastructure (GI) provides many benefits, including protecting water quality, providing species habitat, and protecting air quality. In this section, we will focus on GI's potential to afford open space for recreation and tourism. While providing environmental benefits, open space can serve to meet community needs for recreation, mobility, and physical activity. Thus, it can be an important strategy for promoting a healthy population, enhancing quality of life, and developing economic value.

The wealth of natural resources and recreational opportunities allows Accomack County to boast, "You'll Love Our Nature." Recreational activities in the county are focused on taking advantage of the natural landscape, such as boating, fishing, and other water-based activities. However, there is a lack of public open space and conservation lands located inland. As the area between Onancock, Onley, and Accomac is sited for future infill, it will become particularly important to preserve the GI corridor 'rung' through this area. Using preserved GI space for recreational opportunities, such as bike or multi-modal paths, near this development area will increase access to outdoor recreation for residents and tourists, as well as protect important natural resources.

Accomack County is home to an aging population. The median age in the county is 45 (according to the 2008-2010 *American Community Survey 3-Year Estimates*), compared to a Virginia statewide median of 37 years. 25.5% of the population is over 60, compared with 17.5% of the statewide population. These demographics signal the need to support a population that is aging in place.

As they age, older adults will need recreational activities to maintain mobility and social connections. Parks and trails can provide access to low-impact activities, such as biking and walking. Park space located near the county's designated growth areas, especially Onley and Onancock, would meet the needs of the aging population by providing recreational opportunities best suited for the county's growing elderly population. It is recommended that a new park be located in this region of the county. Additional recreational uses can be achieved by enhancing existing infrastructure, such as extending or improving trails, and adding naturalized plantings, benches or bird blinds. Multi-modal trails provide opportunities for walking and biking for recreation as well as transportation.

A new hospital site for the Riverside Memorial Hospital has been selected in Onley. Due to its proximity to the Onley-Onancock growth area, there is an opportunity to create a network of green space by connecting a healing garden on the hospital site to the existing Onancock nature trail and proposed bike path. A healing garden would provide green infrastructure as well as aesthetic and healing benefits to patients and their visitors. Low-impact development strategies should be used in the design of the parking lots in order to enhance water quality and reduce runoff of pollutants. This not only improves water quality, but will also lower stormwater treatment costs.

Open space not only increases quality of life, and thus property values, for local residents, but can serve to draw tourists to the region to enjoy these natural assets. Tourism is a major part of the county's economy, and has potential to expand. The strategies outlined here suggest ways to improve tourist infrastructure to promote the appeal of nature-based tourism. These include developing an online map, enhancing amenities along the Birding and Wildlife trail, and promoting an integrated multi-modal trail for hiking and biking.

GOAL SUMMARY:

- Integrate healing landscapes into the hospital site to promote human health and reduce patient recovery time.
- Improve existing nature trails throughout the county to provide more comprehensive and connected recreational amenities, in order to enhance the county's appeal to nature-based tourists and offer greater opportunities to residents.
- Promote tourist access and visitation rates in Accomack County by those who use digital media through an online mapping tool provided by UVA, and later to be managed and updated by ESVA tourism.
- Establish a new park in Accomack County to meet the existing requirements of the Land and Water Conservation Funds previously distributed to Accomack County.
- Integrate a bicycle network into the current transportation system to provide alternative means of transportation within the Onancock-Onley-Accomac growth area, as well as recreational opportunity along the entire Eastern Shore.
- Hold a regular farmers market and implement a marketing initiative to promote the local agricultural economy, agritourism, and community-wide health.

Goal 1: Integrate healing landscapes into the hospital site to promote human health and reduce patient recovery time.

Rationale: The Riverside Shore Memorial Hospital is located on Virginia's Eastern Shore. The hospital is relocating 18 miles north from its current location in Northampton County, as 74% of the Virginia Eastern Shore's population lives in Accomack County, which is where the majority of their customers are based. However, a significant outpatient, diagnostic, and physician service will be kept in Northampton. The new hospital site has been selected in Onley.

Currently, out of Accomack County's total population of 33,164, 23.5% of the population is 62 years old or older. Since population for 2010 was considerably lower than the county expected, this means that the county needs to enhance their services in order to maintain and even increase future population. Therefore, site design for the new hospital site should consider Accomack County's population, especially elderly people that require more medical attention and also natural areas for physical and mental benefits. Having contact with nature helps seniors maintain a better quality of life, which supports the population's healthy aging in place.

As the Hospital's mission is to "promote, maintain, and restore health with exceptional patient-focused care in a compassionate environment," there is an opportunity to incorporate a healing garden, which is designed to promote human health for patients in recovery, in order to provide and support services for the community while helping promote sustainable growth. Furthermore, there is the opportunity to incorporate low-impact development (LID) strategies, such as bioswales as part of the stormwater management, in the design of the hospital's parking lots, in order to enhance aesthetics for patients while developing sustainable practices. In many cases, LID saves property owners money because it incorporates on-site infiltration, requires less land for stormwater management, reduces engineering costs, lowers maintenance costs, and reduces the amount of land disturbance when developing new sites. (Prince George's County, 1999.)

Healing gardens contribute to the health and well-being of people in the community, especially for people in recovery, as it helps improve mental and physical health. E.O. Wilson introduces the term "biophilia" as the natural bond that exists within humans and nature (Wilson, 1984). In his book, he explains that the connection and physical contact between humans and the natural world is fundamental. This intrinsic bond is so important that humans need this contact with nature "to the degree that we come to understand other organisms, we will place a greater value on them, and on ourselves."

Additionally, research done by Professor Roger Ulrich, director of the Center for Health Systems and Design at Texas A&M University, shows that having physical or visual contact with natural spaces provides a faster recovery, as it evokes energy and positive emotions while reducing stress. Ulrich measured alpha rates, which associate stress and relaxation in patients; he found that patients who enjoy natural scenery were more relaxed than those having urban views. As a result, those patients in contact with nature had “shorter post-operative stays, fewer negative comments from nurses, took less pain medication and experienced minor post-operative complications” (Ulrich, 1984: p.420-421). Thus, healing gardens and natural spaces for the community are assets for their quality of life.

Furthermore, the *Low Impact Development Manual for Michigan: A Design Guide for Implementers and Reviewers*, show the benefits of incorporating LID strategies in a site. The research shows that implementation of stormwater management is a key factor that contributes to water quality protection, while it enhances the aesthetics of urban areas by protecting open space and preventing pollution of water. Therefore, the implementation of LID strategies in the hospital site offers an economically and environmentally viable solution.

Objective 1A: Designers of the hospital site should provide outdoor space and trails in the site plan for hospital patients and visitors to experience nature, leading to faster recovery times and overall improved patient well-being. Hospital administrators and landscape architects can negotiate placement and design.

Action 1) Determine the area needed to create a healing garden.

Action 2) Identify locations on site where paths could be located to connect hospital grounds to the wider community.

[**Related Goal:** Integrate LID practices throughout the site, particularly in the parking lot, in order to improve stormwater quality and infiltration. as well as patient and visitor safety. See recommendations provided under Goal 3 in the *Water* section.]

Goal 2: Improve existing nature trails throughout the county to provide more comprehensive and connected recreational amenities, in order to enhance the county’s appeal to nature-based tourists and offer greater opportunities for residents.

Rationale: Improving the quality of non-boating outdoor recreation for the area around Onancock would have direct economic and social benefits for the town. Upgrading current trails and constructing a more comprehensive trail network would expand the area’s tourism base, as well as providing more pleasant and healthy recreational opportunities for local residents.

Ecotourism is a booming industry. According to a 2006 study by the Outdoor Industry Foundation, 75% of Americans had participated in an outdoor recreational activity in the past year and outdoor recreation trips contributed \$622 billion to the national economy. As a county with the slogan “You’ll Love Our Nature!,” strides have already been taken to tap into this market, but expanding outdoor recreation opportunities in the county will increase the number of tourists, as well as the amount of time tourists spend in the county. West Virginia has invested in its rural character and natural beauty, resulting in \$115 million dollars a year in wildlife recreation-related sales, and \$54 million in wages from the wildlife recreation industry (Benedict & McMahon, 2006).

Studies done by the Thomas Jefferson Planning District Commission have shown that heritage tourists (those who seek out sites of our ‘heritage’, such as historic houses and battlefields and cultural resources such as wineries or sites related to famous stories such as Misty of Chincoteague) typically participate in a variety of activities on a single trip such as a museum, a winery and a seafood festival, so increasing the variety of cultural experiences available will increase the length of stay and dollars spent for each individual tourist.

The Virginia Department of Tourism estimates that heritage tourists spend 2.5 times more dollars per person than all other types of tourists. Heritage tourists also place a high value on the setting of the landscape.

Additionally, improved trail infrastructure can contribute to the health of an aging population. As mentioned in the previous section, access to natural areas improves mental and physical health. Thus increasing the opportunities for less strenuous outdoor recreation will benefit the health of the county's residents. With this goal in mind, existing trails, such as the Onancock Nature Trail, should be improved so that they mimic a naturalized area of native species, instead of a garden. This will filter more pollution, provide better habitat for wildlife, and require less maintenance than a manicured green space.

Another area where the trail system can be expanded and enhanced is along the Virginia Birding and Wildlife Trail (See Map 2). This trail leads visitors along roadways to various bird and wildlife viewing points. Most of these designated points are public boat launches and have few, if any, amenities for birders, such as benches or bird blinds.

Enhancing these points with such amenities would increase the area's appeal among birders and wildlife enthusiasts, which, according to the Outdoor Industry Foundation, is the largest segment of nature-based tourists in America, with 66 million participants. Additionally, a multi-use walking trail following the route would enhance its accessibility and appeal to more recreational tourists. See Goal 5 for more details.



This bird blind at the Cornell Lab of Ornithology was constructed by Eagle Scout Ben Miller. The county could enhance its birding trails with such structures.

Objective 2A: County planners coordinate with local civic groups to add benches and bird blinds to points along the Virginia Birding and Wildlife Trail.

Action 1) Engage local civic groups that could be interested in helping create and fund amenities for these sites. These may include Eagle Scouts, the Eastern Shore Chapter of the Master Naturalists, church groups, and students from local schools or the community college. Accomack County planning staff or other community leaders should communicate with these groups to gauge interest and initiate a plan of action for construction and sponsorship.

Action 2) Select several points along the Birding and Wildlife Trail as preliminary sites for upgrade. Criteria for good sites to be upgraded include: high-use birding locations and sites with available green space for blind placement. Based on these criteria, priority should be given to improving the Harborton and Gargatha landings.

Action 3) Determine preferred locations for bird blinds, benches and vegetation to improve the birding experience. Good bird blind locations will have trees or other natural features buffering birders from vehicular traffic.

Objective 2B: Improve the Onancock Nature Path and Park with additional native landscaping and benches.

Action 1) The town of Onancock should apply for support from the Urban and Community Forestry Assistance program through the Virginia Department of Forestry or the Virginia Recreation Trails Program (see *Grant Opportunities* in the *Resources* section). These grants could fund: the planting of a tree buffer between the park and the nature trail to provide shade for those walking on the trail, and restoration of the stream corridor with native riparian landscaping to enhance the stream's hydrologic function and ability to serve as a habitat for species. See the *Forests* section for a list of recommended native species for planting.

Action 2) Create a program to allow for the donation of benches and trees by individuals and groups. These amenities will make the path more appealing to diverse users by providing shade and respite points.

Goal 3: Promote tourist access and visitation rates in Accomack County by those who use digital media through the online mapping tool, provided by UVA, and later to be managed and updated by ESVA tourism.

Rationale:

This goal supports Policy 7-2 of the Accomack County Comprehensive Plan, which reads, "Support the Eastern Shore Chamber of Commerce and Virginia's Eastern Shore Tourism Commission in their efforts to promote the Eastern Shore of Virginia." (5-15)

Tourism is a major source of revenue and economic vitality for Accomack County. According to the Virginia Tourism Corporation, tourists spent \$145 million and direct tourism-related employment accounted for 1,847 jobs in Accomack County in 2010. Tourism expenditures contributed \$4.5 million to local tax collection (Virginia Tourism Corporation, 2011). Thus, promoting this industry as a means of growing the local economy, will provide livelihoods for a greater number of county residents and will ensure a stable tax base for municipal services.

A primary means of growing this industry is to expand the county's online presence and enhance the accessibility of tourist attractions for visitors who may not be familiar with the area. The development of an online mapping tool featuring county tourist attractions will reach a larger audience of tourists, bring more people to the county, and make it easier for tourists to navigate popular sites while they are travelling. The Eastern Shore of Virginia Tourism currently maintains a website highlighting tourist destinations and packages, and produces numerous brochures and guides to the area. A mobile application would have the advantage of being immediately accessible to visitors with smart phones. Such an application would complement the existing offerings and appeal to today's tech-savvy consumers.

Online mapping provides a geographic information system for visitors that is easy to use and can promote local businesses, festivals, recreational sites, and nature and wildlife viewing areas. One way to do this is the use of Google Maps. This allows users to create their own maps, highlighting particular sites and routes, using pinpoints as well as embedded text and photos. These maps have the advantage of being publicly accessible through a familiar, user-friendly interface. A prototype of such a map for Accomack County has been created and may be accessed at the following url:

<http://maps.google.com/maps/ms?ie=UTF&msa=0&msid=215371303469939002854.0004b23ff3d1d9ab549c0>

Potential visitors can access this map online before a trip to the area, in order to research sites and plan visitation routes. Once a visitor is in the region, this map can be accessed online through a smartphone or other wireless device, such as an iPad, to aid in navigating or choosing a destination. Smart phones now represent 40% of the U.S. cell phone market (IntoMobile, 2011), thus such a map would be accessible to a large share of tourists.

Google Maps has been used by other localities to market tourist destinations. For example, the Canadian Tourism Commission has used interactive Google Maps to promote their destinations to travelers (Boris, 2011). Google Maps has the advantage of a user-friendly interface for both visitors and marketing staff updating the site. No specialized software or computer skills are needed. Should this prototype prove successful, the county, or the Eastern Shore of Virginia Tourism Commission, may choose to expand upon this model by developing a mobile application specific to the county or Virginia's Eastern Shore. This would need to be carried out by a computer programmer with specialized knowledge, however such a program would offer a greater degree of interactivity and specificity. The Commonwealth of Virginia has created such an app

as a component of its tourism marketing, as have other Virginia state agencies and tourist destinations. Please see the appendix for examples.

Objective 3A: ESVA Tourism should promote the use of online Google Maps and Smart phones to likely visitors on their website and at the Eastern Shore visitor’s center in Northampton County.

Action 1) Feature Google Maps on the ESVA Tourism website, as well as all town and county websites.

Action 2) ESVA Tourism staff should expand their online tools in the future, add new photos and information about events, hours, and new businesses and recreational opportunities.

Action 3) ESVA Tourism should consider developing an Eastern Shore-specific mobile application.

Goal 4: Establish a new park in Accomack County to meet the existing requirements of the Land and Water Conservation Funds previously distributed to Accomack County. The establishment of this park will meet the criteria for green infrastructure planning by providing for the protection of water and forest resources.

Rationale: Accomack County was awarded Land and Water Conservation Funds (LWCF) for the “acquisition and development of public outdoor recreation areas and facilities” (NPS). The recreational facility created with this funding was later converted into a research park near Wallops Island, which does include some recreational facilities. However, because the requirements of the LWCF program were not met by the new development, the county must create a new park to fulfill the requirements of the funds.

The establishment of this park will also meet the criteria for green infrastructure planning by providing protection of water and forest resources. There is currently legislation (H.R. 2087) awaiting a House vote that will remove restrictions on the purchase price requirements for the replacement parkland that were imposed by the U.S. Department of the Interior. Currently, the replacement parkland must be of equal value to the parkland being replaced and this will increase the cost for the relocating the park (Pekow, 2011).

By locating the park close to the Onancock-Onley-Accomac growth area, it will serve the needs of residents in the southern part of the county. Chincoteague and Assateague provide recreational and conservation areas in the northern part of the county, which draw many of the Eastern Shore’s tourists to that area. The development of a park near Accomac would draw tourists to more southern areas on Route 13, thus boosting the local economies of the towns south of Chincoteague. Land prices are lower now, so acting soon on the acquisition of land for the new park is preferable. A possible source of additional funding is the Virginia Land Conservation Foundation.

Parks and open spaces contribute to healthier lives because they provide social, mental, and physical health. These areas should include several facilities that offer communities different places and reasons to gather. Having recreational areas helps promote a sustainable sense of place, while improving the community’s quality of life. By locating the park proximate to one of the county’s expected growth areas, it would better serve the needs of the population that is aging in place.

Objective 4A: This park should accommodate the aging population of Accomack County by providing outdoor leisure space and wildlife viewing opportunities.

Action 1) Choosing a location for the park: It is recommended that the park be located close to the Onancock–Onley–Accomac growth area and that the county aligns the site within the green infrastructure network. The county should consider a site proposed in the *Forests* chapter of this report, under Objective 1B, Action 4: Plan for a public park on intact forested land in southeast Onley to protect the large high-value core.

Action 2) In siting the park, Accomack County planning staff should consider ease of access to the site from towns in the county, such as Onancock and Onley, as well as proximity to Route 13, in order to ensure maximum use by residents and visitors. Consider several means of access to the park by connecting it to bicycle and pedestrian paths that are in place, or are in the planning and implementation phase.

Action 3) Incorporate the new park into the *Comprehensive Plan* for the county.

Goal 5: Integrate a bicycle network into the current transportation system to provide alternative means of transportation within the Onancock-Onley-Accomac growth area and recreational opportunity along the entire Eastern Shore.

Rationale:

This goal supports Policies 4-e and 10-c of the Accomack County Comprehensive Plan.

Policy 4-e reads: "Continue the Eastern Shore Heritage Trail into Accomack County. This project would be a continuation of the trail which begins in Northampton County. The trail would combine routes for driving, bicycling, walking, and boating to view scenic areas and cultural sites. The trail would serve to promote and protect the rural nature and cultural history of the Shore and would encourage visitors to travel off Route 13, visiting restaurants, shops, motels and inns along the way. Funding for this project should be sought from the Virginia Department of Transportation's Transportation Enhancement Program." (5-10)

Policy 10-c states: "Develop a trails and greenways plan. The County should develop a trails and greenway plan that links existing and proposed recreational, natural, cultural, water, business/commercial and other resources. The proposed Heritage Trail should be a component of this system. The Accomack County Bicycle Plan should be included to connect the County's wildlife areas, parks, historic sites, and cultural resources." (5-21)

In addition to supporting the *Comprehensive Plan* goals listed above, this goal supports Strategy F of the Eastern Shore Tourism Plan to "develop a bike-trail system on the Eastern Shore" and the Eastern Shore of Virginia Bicycle Plan prepared by the Accomac-Northampton Planning District Commission. Expanding the bicycle network has been identified as a goal by numerous entities, in order to diversify transportation options and enhance the nature-based recreational offerings in the county that appeal to tourists and locals alike. A bicycle trail could be developed in segments, in order to meet both local transportation goals and enhance regional, peninsula-wide recreation.

Multi-use trails designed for bicyclists and pedestrians in the Onancock-Onley development area would provide recreation and transportation opportunities in this population center. According to the Eastern Shore Bicycle Plan, the segment of the trail linking Onancock and Onley is prioritized for initial construction (see map following). This proposed trail segment is directly adjacent to the new hospital site, thus increasing its utility and priority as the hospital becomes a major employment and health care center. The hospital's application for rezoning submitted on October 26 included a proffer granting the county a 20-foot easement for this bicycle trail (Vaughn, 2011). This network will provide a safe route for journeys to work, school or other destinations. Such a route would also provide an outlet for physical activity and enhance mobility for those without access to a car, including young people, the elderly and low-income residents.

In addition to enhancing local transportation options, expanding the bicycle network along the entire Virginia Eastern Shore would provide a unique regional recreational opportunity for locals and tourists alike. At approximately 70 miles in length, the Eastern Shore of Virginia is an ideal location for a long-distance bicycle trail. The flat topography of the peninsula would broaden its appeal to cyclists with a diverse range of experience. Such a trail would be an ideal way to showcase the unique natural and cultural sites of the Eastern Shore. Bicycle trails serve as major tourist destinations in Virginia. The Creeper Trail in southwest

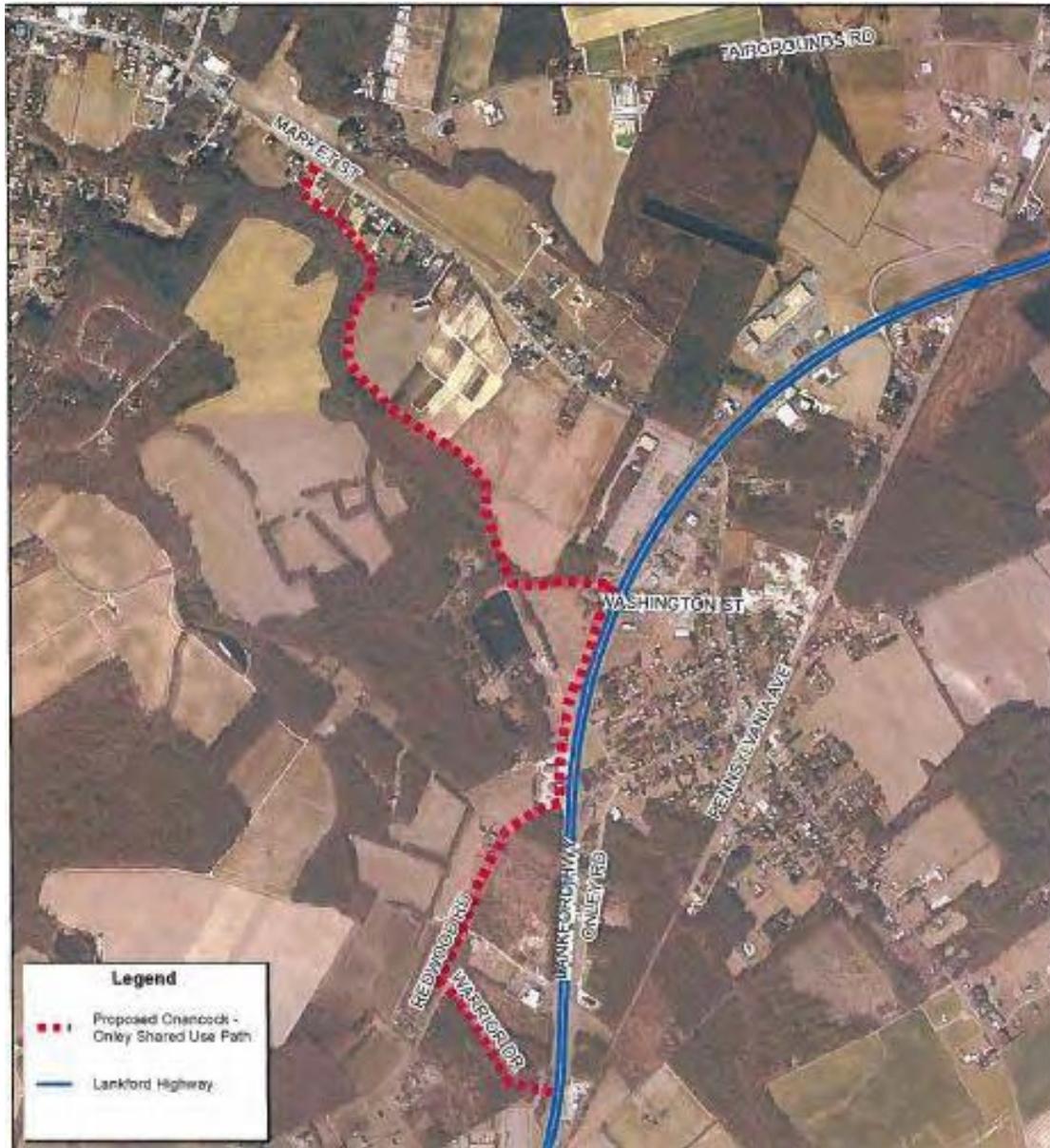
Virginia has been developed as a biking and hiking trail converted from a former railroad right-of-way. This popular 34-mile trail attracts thousands of visitors per year and is a boon to the local economy. An economic impact study found that the trail brought \$1.9 million (in 2011 dollars) of tourist spending to the region (Bowker, 2004).

A bicycle plan has been drafted that identifies current routes appropriate for bicycles, as well as priorities for enhancement (see Map 3). Currently, there are no bike trails in Accomack County on which bicyclists are separated from vehicular traffic. Few roadways meet the standards for bicycles because of their narrow width and high posted speeds. This limits their appeal to experienced cyclists. As well, the lack of network connectivity does not facilitate recreational riding. An off-road or grade, separated, multi-use trail is necessary to attract a broad range of users and recreational tourists. Such a trail could be funded through fee-simple land purchases, proffers, and dedications.

A proffer policy should be developed which includes the donation or dedication of land along the proposed multi-use trail as a community need that could be met by developers seeking rezoning or development approval.

Sources of grant funds for land purchase, as well as trail design and construction, are listed in the following sections. Please see the Appendix for a case study on the implementation of a plan similar to that proposed here.

PROPOSED ONLEY-ONANCOCK BICYCLE TRAIL



Objective 5A: Implement a multi-modal path to create a bike-accessible connection between Onancock, Onley, and Accomac. This route will be within one of Accomack’s growth areas, as noted in the *Comprehensive Plan*, and is a heavily-trafficked route for all forms of transportation. For more details, see the map.

Action 1) Accomack County Planning Commission and Board of Supervisors should approve the regional bicycle plan released in April 2011 by the Accomac-Northampton Planning District Commission.

Action 2) Use available funds, including sources listed in this report, to implement the design and construction of a new path.

Action 3) Incorporate healing gardens and a walking trail on the new hospital grounds, as a central location between Onancock and Onley. See Goal 1.

Objective 5B: Connect county wildlife areas, parks, historic sites, and other cultural resources through a regional multi-use network, as noted in the *Comprehensive Plan* and *Eastern Shore Bicycle Plan*, to attract visitors to these sites.

Action 1) Accomack County planning staff and the Planning Commission should collaborate with other regional stakeholders, including Northampton County planning staff and Planning Commission, local town staff and leaders, Eastern Shore of Virginia Tourism, the Accomack-Northampton Planning District Commission, the Eastern Shore of Virginia Bicycle Committee, and other interested groups and individuals to promote ongoing bicycle and multi-use trail planning.

Action 2) Seek funding from state and federal sources (listed in the subsequent section) to create a multi-modal trail system. It is recommended that priority segments include those near or adjacent to Routes 600 and 605, which are designated state scenic byways and are eligible for special funds. These routes also connect to points on the Virginia Birding and Wildlife Trail. (See Goal 2)

Action 3) Combine new tourism signage with already existing destination signage, such as the Virginia Birding and Wildlife Trail to make it easier to find. Identify important historic sites along the bike route, as noted in the *Town and Culture* section of this report, with interpretative signs along the way.

Goal 6: Hold a regular farmers market and implement a marketing initiative to promote the local agricultural economy, agri-tourism, and community-wide health.

Rationale:

This goal supports Objective 8-i of the Accomack County Comprehensive Plan, which reads: "Promote agriculture as a key economic development component in the county." (5-19)

Agriculture is a major portion of the county's economy. According to the USDA Census of Agriculture, in 2007 agriculture sales brought \$153 million in revenue to the county. This represented a 40% increase since 2002. However, only 53% of farm operators report that farming is their primary occupation. Finding new consumer markets in the region and diversifying farm operations to include agri-tourism could provide a number of operators with additional income sources and make farming a more economically viable occupation.

One way to expand the consumer base for local products is to hold a farmers market. While there is currently a wholesale market in Melfa and a seasonal market for the public in Chincoteague, there is not a regular farmers market near the Onancock-Onley-Accomack area. Holding a market in this population center would make fresh food available to a larger consumer base. Possible locations include the new hospital, the proposed park, or the Onancock School.

Holding a farmers market at the hospital site would not only benefit the local agricultural industry, but would align with the hospital's goal of promoting healthy choices by improving access to fresh food for hospital clients, staff and community members. The practice of hosting farmers markets in hospitals was pioneered by the Kaiser Permanente Hospital System in California. This system now hosts markets at 37 of its' medical centers (Kaplan, 2010). The practice has spread to other hospitals, such as Vanderbilt University Medical Center Plaza in Nashville. The University of Virginia's hospital also has a farmers market. Such a market can be set up in the parking lot or lobby. As an alternative, a flexible-use space, such as a covered pavilion, could be built on the hospital grounds for use by the market and other community events.

Another way to expand the consumer base for local agriculture is to encourage institutional food providers to source locally. As a major food provider, the hospital could support the local agricultural economy by sourcing food for patient meals and the on-site cafeteria from local farmers. This practice has been implemented at the University of Virginia's Hospital in Charlottesville. The Accomack County School System currently participates in Virginia Farm to School program and has instituted a "Delmarva First" produce policy to provide seasonal local foods to students. Expanding this initiative could benefit local farmers by providing a reliable market for their products.

Along with promoting institutional sourcing of local food, expanding the appeal of local produce to general consumers could boost the agricultural economy. "Buy Fresh, Buy Local" is a marketing initiative that has taken hold in a number of areas in Virginia and across the country. It promotes local food and connects consumers with local producers. While the Hampton Roads chapter aims to cover the Virginia Eastern Shore, their listings do not currently include producers in Accomack County. A Chesapeake chapter covers the Maryland Eastern Shore. By enrolling in one of these campaigns, producers in Accomack could access a new outlet for promoting their goods and increasing consumer demand for local agricultural products.

While agri-tourism generated \$12.9 million in revenue for Virginia farms in 2007 (USDA Census of Agriculture), the size of this market in Accomack County was so small that figures were suppressed in reporting, in order to protect the privacy of the few farm operators engaged in this sector. This suggests that there is room to expand this market significantly through planning and marketing.

See the following sections for resources, case studies, and funding sources for farmers markets and local agricultural promotion.

Objective 6A: Hold a regular farmers market for local producers to sell agricultural and other locally-produced goods.

Action 1) Create a local committee or organization to manage market planning and operations. See a later section of this report for funding opportunities to support the establishment of farmers markets.

Action 2) Determine an appropriate site for the market. Potential sites include the hospital, the new park, or Onancock School.

Action 3) Enroll local farmers as vendors. Promote the market locally and in tourism materials.

Objective 6B: Promote the purchasing of local agricultural products by institutional providers, such as the hospital and school system, as well as general consumers, through a "Buy Fresh, Buy Local" campaign.

Action 1) Develop a task force of local agricultural producers and other stakeholders (Virginia Cooperative Extension, Farm Bureau, Eastern Shore Marketing Cooperative) to promote local agriculture.

Action 2) Encourage the new hospital to consider local food sourcing. Expand the farm-to-school initiative in Accomack County Schools.

Action 3) Accomack County producers should enroll in the Virginia Hampton Roads "Buy Fresh, Buy Local" chapter or work with the Chesapeake "Buy Fresh, Buy Local" chapter. This latter chapter could expand to include the Virginia Eastern Shore. Use this initiative to encourage local purchasing and promote local agricultural products directly to consumers.

Action 4) As market recognition for Accomack products grows, develop agri-tourism initiatives to deepen engagement with consumers.

RESOURCES

1. Low-Impact Development Center

The Low-Impact Development (LID) Center is a non-profit organization committed to the innovation and implementation of low-impact development technology. LID is a design approach for planning and engineering that is devoted to maintain and enhance the pre-development hydrologic regime of urban and developing watersheds.

See: <http://www.lowimpactdevelopment.org/>

2. Sustainable Urban Landscape Information Series

The Sustainable Urban Landscape Information Series (SULIS) is a website from the University of Minnesota which provides sustainable landscape information to the public. It shows a number of different projects that have successfully implemented sustainable landscape practices in order to use them as models, so that future design processes will create spaces that are environmentally safe, cost-effective, and aesthetically pleasant.

See: <http://www.sustland.umn.edu/design/healinggardens.html>

3. American Planning Association – Parks and Recreation

The American Planning Association (APA) is an independent, non-profit educational organization committed to offering leadership to develop communities. The APA is also committed to developing safe and well-designed parks, open spaces, and recreation areas that are impartially located and physically accessible, in order to enhance communities' quality of life. They offer resources on park design for physical activity, as well as parks as a component of green infrastructure planning.

See: <http://www.planning.org/nationalcenters/health/parks.htm>

4. Planterra

Planterra is a leading interior landscape firm established in 1973. The firm's area of expertise is in interior landscape design, as well as installation, horticultural preservation, and floral arrangements. Their website offers case studies, for which they have designed the interior landscape for healthcare facilities, as Planterra is aware of the many benefits nature brings to human health and the environment.

See: <http://www.planterra.com/media/henryford/index.html>

5. Virginia Department of Conservation and Recreation Greenways and Trails Toolbox

This toolbox offers tips and strategies for local governments and organizations planning trails, including land acquisition, design, construction, operation, and maintenance.

See: http://www.dcr.virginia.gov/recreational_planning/greentrailtools.shtml

6. Building Healthy Communities for Active Aging

This initiative of the US Environmental Protection Agency offers resources on combining the principles of Active Aging and Smart Growth. Since 2007, this program has made awards to communities leading in this area; its website lists past winners and describes their efforts. For example, in 2009 the Martinsville-Henry County (MHC) Coalition for Health and Wellness in Virginia received an award for their initiative to promote biking and walking among seniors, including installing their first bike lane.

See: <http://www.epa.gov/aging/bhc/index.htm>

7. Virginia Department of Transportation Bicycling and Walking in Virginia

This website offers numerous resources for bicycle and pedestrian planning, including a bicycle facility resource guide, links to cost estimates, and best practices.

See: <http://www.virginiadot.org/programs/bk-default.asp>

8. Rural Transportation Planning

This website run by the Federal Highway Administration offers resources for areas not covered by Metropolitan Planning Organizations (i.e. fewer than 50,000) residents.

See: <http://www.fhwa.dot.gov/planning/rural/index.html>

9. Rural and Small Town Transportation Planning

This website offers capacity-building resources, including publications, case studies, and data sources.

See: <http://www.planning.dot.gov/rural.asp>

10. Kaiser Permanente Farmers Markets and Healthy Eating

This website provides details on the Kaiser Permanente Farmers Market system, including a guide for other medical centers or major employers who wish to establish such a program. The site also contains case studies, information on nutrition and health, and news articles covering the Kaiser farmers markets.

See: <http://www.permanente.net/homepage/kaiser/pages/f40669.html>

11. Buy Fresh, Buy Local

The “Buy Fresh, Buy Local” initiative provides a way for localities and individual food growers and business owners to promote their goods. The campaign “helps consumers find local products while building relationships between growers, food artisans, farmers markets retailers, restaurants, and institutions.”

The Hampton Roads chapter covers the Virginia Eastern Shore, however their listings do not currently include producers in Accomack County (nor do the Virginia statewide listings). The Chesapeake Bay Foundation sponsors a “Buy Fresh, Buy Local” Chesapeake chapter, which currently covers only the Maryland Eastern Shore.

For Virginia, see: <http://www.buylocalvirginia.org/index.cfm>

For Hampton Roads, see: <http://www.buylocalhamptonroads.org/>

For Chesapeake (Maryland), see: <http://www.cbf.org/page.aspx?pid=2059>

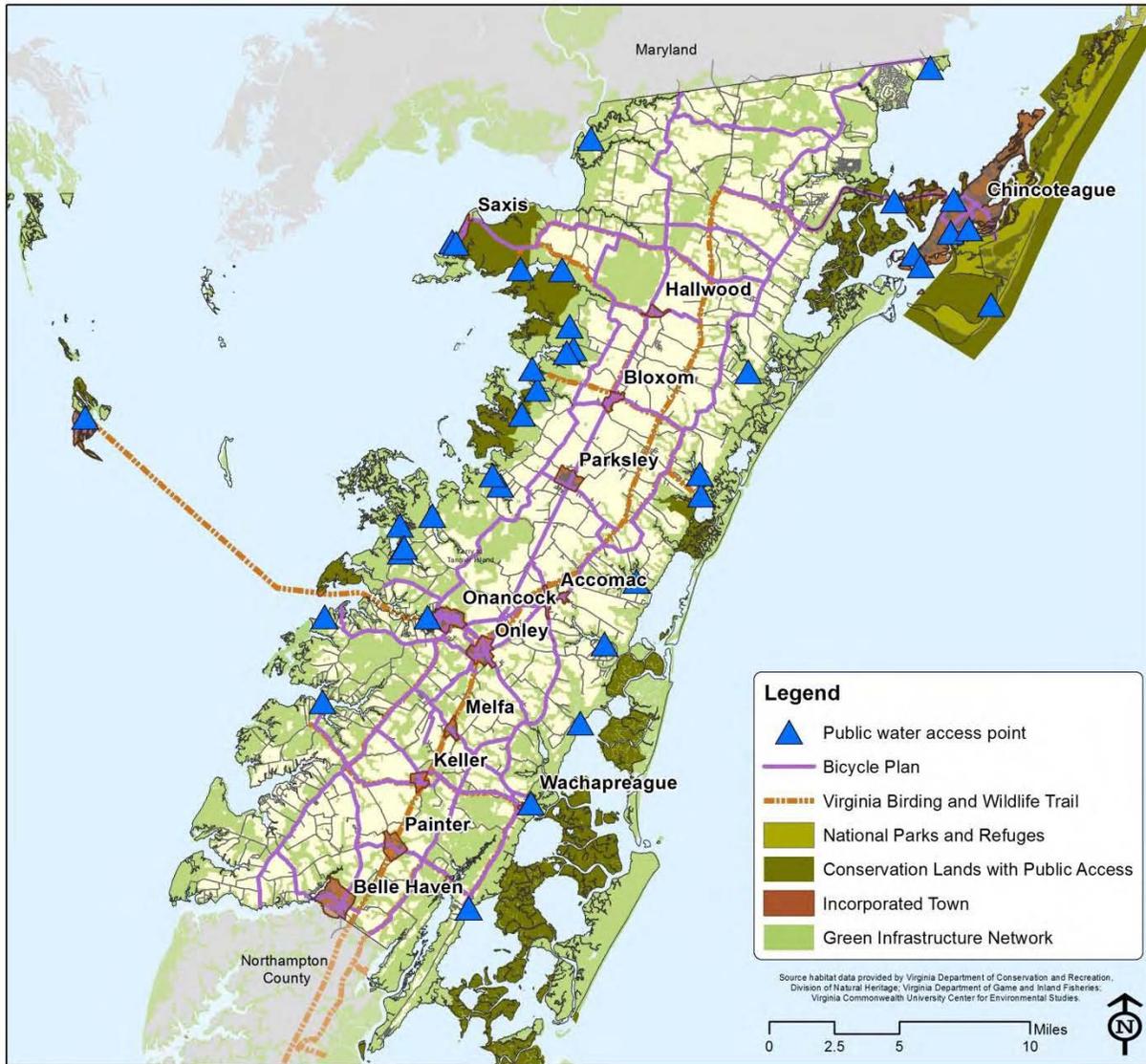
12. Virginia Cooperative Extension

They have publications on agri-tourist activities, such as corn mazes, birding, hay rides, and festivals and studies about the economic impact of agri-tourism and planning and marketing tips.

For agri-tourism, see: <http://pubs.ext.vt.edu/310/310-003/310-003.html>

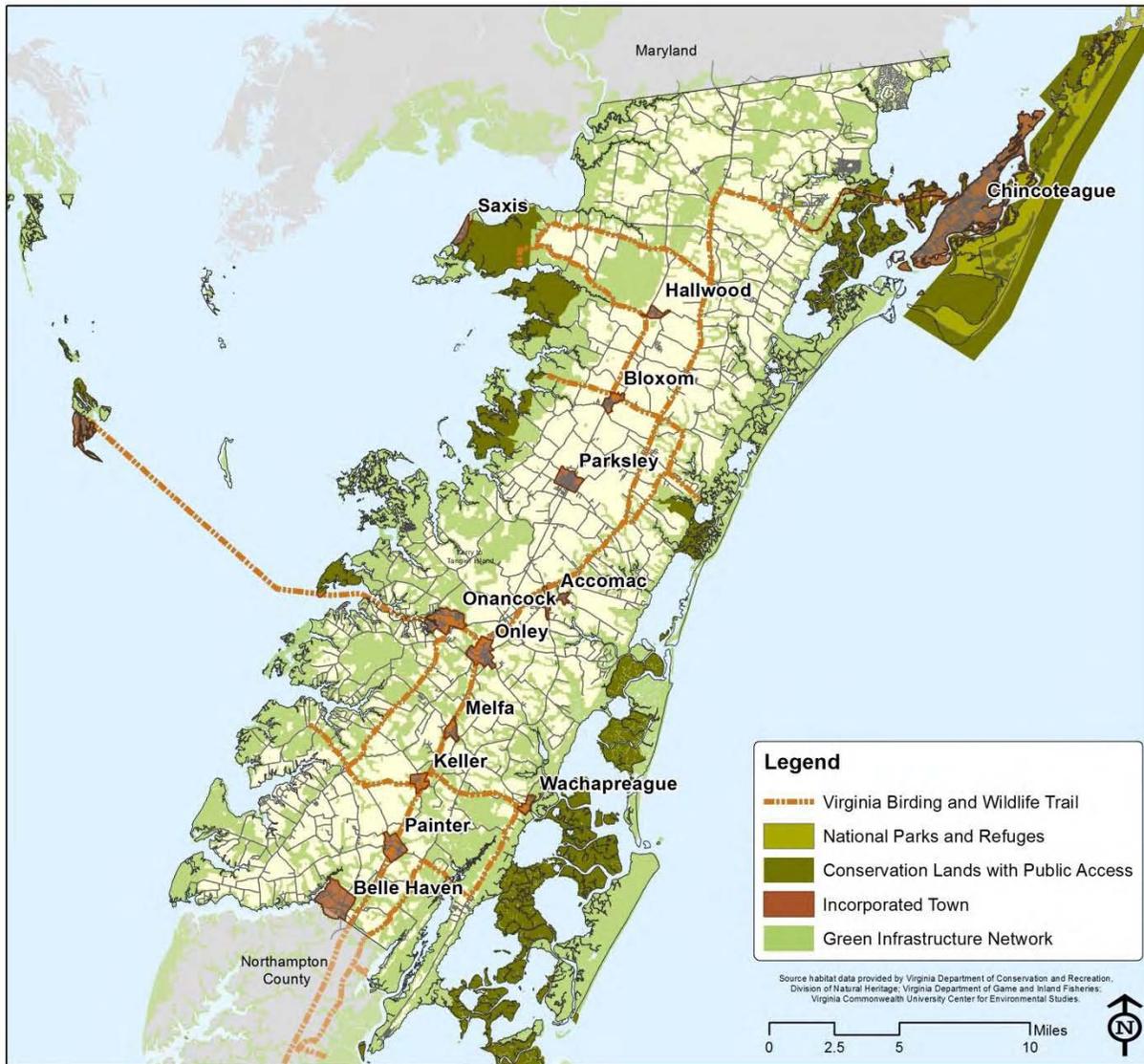
For ideas and resources, see: <http://pubs.ext.vt.edu/310/310-004/310-004.html>

MAP 1: EXISTING OPEN SPACE AND RECREATION INFRASTRUCTURE



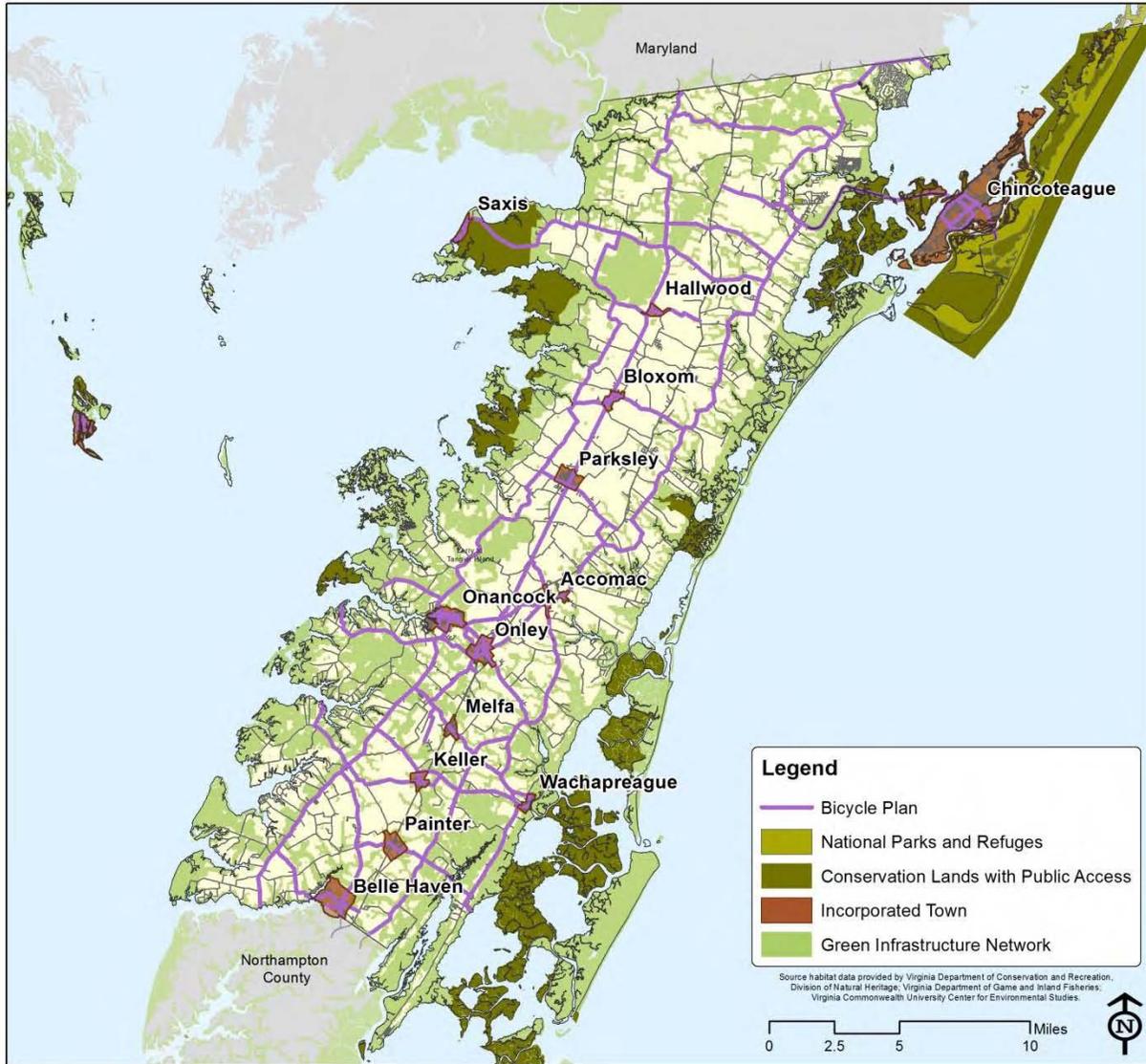
Source: Green Infrastructure Center, Inc.

MAP 2: VIRGINIA BIRDING AND WILDLIFE TRAIL



Source: Green Infrastructure Center, Inc.

MAP 3: PROPOSED BICYCLE NETWORK



Source: Green Infrastructure Center, Inc.

FUNDING

Those strategies outlined above that suggest different ways to build a green infrastructure network for Accomack County will need some funding and rezoning, along with the implementation of best management practices. A list of grants and alternative funding is provided.

Grants:

1. Urban and Community Forestry Assistance Program

The Urban and Community Forestry Assistance Program is provided by the USDA and administered by the Virginia Department of Forestry. It is “designed to encourage projects that promote tree planting, the care of trees, the protection and enhancement of urban and community forest ecosystems, and education on tree issues in cities, towns and communities across the nation.” Grants are between \$1,000 and \$15,000.

See: <http://www.dof.virginia.gov/urban/index-ucf-assist-grants.shtml>

2. Virginia Recreation Trails Program

The Virginia Recreational Trails Program provides funds for spaces that offer recreational activities, such as trails related to either motorized or non-motorized uses. Projects that can apply for the funding include: construction of new trails, development of trail linkages, restoration of existing recreational trails, etc. The awarded projects receive grants beginning at \$25,000 and rising to a maximum of \$200,000. The 2011 funding cycle has closed; funding availability for 2012 has not yet been announced.

See: http://www.dcr.virginia.gov/recreational_planning/trailfnd.shtml

3. Virginia Land Conservation Foundation

The Virginia Land Conservation Foundation provides grants for those who want to conserve and protect ecological, cultural, and historical assets. There are application procedures, which include categories such as Open Spaces and Parks, Natural Area Protection, Historic Area Preservation, and Farmlands and Forest Preservation. In 2011, the board approved 17 grants for a total of \$2.4 million. With these grants, the projects awarded are protecting a total of 2,234 acres. Governor McDonnell has a goal for conserving 400,000 acres by the year of 2014.

See: http://www.dcr.virginia.gov/virginia_land_conservation_foundation/index.shtml

4. Virginia Department of Transportation - Safe Routes to School

The Virginia Department of Transportation’s Safe Routes to School Program is a federally-funded initiative to encourage walking and cycling to school. It provides grants to local governments, school districts, and community organizations to support either transportation infrastructure improvements or outreach and awareness initiatives. It focuses on routes for kindergarten through eighth grade students.

Funding may be available for the proposed segment of the bike path connecting Onancock and Onley, as it will serve to link neighborhoods with Nandua Middle School. Funding availability is expected to be announced in Spring 2012. Listings of previous grant recipients and their projects may be found online; funding has been awarded for the construction and improvement of sidewalks, bike land and shared-use paths.

See: http://www.virginiadot.org/programs/srsm_school_travel_plans_and_grants.asp

5. Virginia Department of Transportation - Transportation Enhancement Program

The federally-funded Transportation Enhancement Program (administered through VDOT) provides funding for infrastructure projects and other initiatives designed to encourage non-motorized transportation. The application period for this year's funding source has passed. However, funding is likely to be available for next year. Previously funded projects include \$237,000 to Roanoke County for the design and construction of the Roanoke River Greenway multi-use trail and \$313,000 to the City of Norfolk for the design and construction of a multi-use trail along the Elizabeth River. This program could be used to fund the design and implementation of a bicycle and pedestrian path along the Eastern Shore. (Funding for the next fiscal year has not yet been authorized.)

See: <http://www.virginiadot.org/business/prenhancegrants.asp>

6. National Scenic Byways Program

The Federal Highway Administration provides grants through the National Scenic Byways Program for scenic roads. Projects are funded in a number of categories, including access to recreation, marketing, corridor management planning, safety improvements and interpretive information. In 2008, \$647,955 was awarded for the improvement and extension of the Colonial Parkway shared-use path, intended to eventually connect Historic Jamestown with the Virginia Capital Trail. Funding could be sought from this source for a shared-use path adjacent to or integrated with Routes 600 and 605, which are designated Virginia Scenic Byways. (Funding for the next fiscal year has not yet been authorized.)

See: <http://www.bywaysonline.org/news/2011/3434>

7. Transportation, Community, and System Preservation Program

The Transportation, Community, and System Preservation Program, administered through the Federal Highway Administration, makes grants available to communities for transportation planning and project implementation. The program funds projects that enhance transportation system efficiency, reduce environmental impacts, or examine community development patterns, among other categories. The application deadline for the current funding cycle is January 6, 2012.

Examples of past projects funded in Virginia include \$222,300 awarded to Prince Edward County in 2009 for the construction of a multi-use recreational trail at High Bridge State Park and \$88,920 awarded to the City of Danville, also in 2009, for the extension of its Riverwalk trail. Funds could be sought from this program for construction of a multi-use path in the Onancock, Onley, Accomac growth area, or for expansion of this network.

See: <http://www.fhwa.dot.gov/tcsp/index.html>

8. Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Program

TIGER Grants are available from the US Department of Transportation in two categories: Planning and Capital Improvements. In their selection criteria, the funders seek to support projects that foster livability, enhance economic competitiveness, improve safety, promote environmental sustainability and maintain a state of good repair for transportation infrastructure. A set portion of funds must be awarded to rural areas. The application period for the current round of funding closed on October 31, 2011. However, additional funds may be available next year. In 2010, \$708,500 was awarded to the City of Ranson in West Virginia to enhance the community's main roadway with green infrastructure and create a "Complete Street" that provided for multiple modes of transportation. (See the case study in Appendix)

See: <http://www.dot.gov/tiger/index.html>

9. Farmers Market Promotion Program

The Farmers Market Promotion Program, administered by the United States Department of Agriculture, provides grants of up to \$100,000 to facilitate the creation, expansion, or promotion of farmers markets. Entities that may apply include governments, non-profits, and producer networks. Riverside Shore Memorial Hospital could thus apply on its own, as could a community group formed to manage the market. Last year, six grants were made to entities in Virginia. One of these was awarded to a non-profit in Floyd in the amount of \$87,277 to purchase equipment for a mobile market stand and to carry out a promotional campaign.

See: <http://www.ams.usda.gov/AMSV1.0/FMPP>

Alternative Funding Opportunities:

1. Donations for Healing Gardens

Healing gardens are places for patients as well as their families to enjoy nature and escape from hospital halls. They provide time to connect with the community and enhance one's quality of life by encouraging peaceful moments. There are different ways in which individuals or families can help to support the creation and maintenance of healing gardens. One idea is to donate money by purchasing a brick, which would be placed in the healing garden, and it could be engraved with the name that one wants to recognize with the donation. Another is for people to sponsor those features that add to the reflexivity of the garden, such as a fountain, arbor or bench; perhaps they can be named after the donor. These features may include flower beds, healing circles of stones, rose gardens, etc.

2. Donations for Park Amenities

There are several ways to obtain donations for park resources. For example, a committee could be established to oversee donations for park amenities such as benches, bird blinds, native tree plantings, and signage through a donation campaign that would solicit monetary donations for the purchase of necessary amenities. Much like the strategies mentioned above, donations can be made in the honor or memory of a particular person, who would be recognized for their donation.

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APPENDIX 1: HEALING GARDEN PLAN. CREATING A MULTI-USE HEALING GARDEN

<http://www.medical-architecture.com/glensidetext.html>

Sector: Master planning
Client: South Australia Health
Role: Full Architectural Services
Value: AUD\$130m
Status: On Site

Medical Architects are working in partnership with local architects Swanbury Penglase to design a new, 129-bed health facility providing specialist services for mental health and drug and alcohol care on the existing Glenside Campus site in Adelaide. This project brings together acute, rehabilitation, drug alcohol withdrawal, and perinatal inpatient units alongside outpatient, front-of-house, and office and support accommodation. The master plan locates these facilities adjacent to new retail, commercial, and residential precincts while creatively re-using the existing heritage asylum building to become an independent film centre.

The principle design objectives are to provide modern health facilities for Glenside as a place of refuge, safety, security and healing through demystification, destigmatisation, autonomy and integration with flexibility & adaptability, ecological sustainability and accommodation of diversity.

The concept is based on the client's desire for integration within the community. Achieved to a high standard of aesthetic quality in a park like setting courtyard buildings are arranged around a shared central "healing garden" which is accessible to both patients and the public in an aim to de-stigmatise the existing site. The facilities are configured for flexibility, and to provide a continuous gradient of privacy and security for consumers, to foster autonomy and support a recovery focused model of health care.

Bird's Eye View of the Site



APPENDIX 2: DESIGNING A HEALING GARDEN

http://pbwla.blogspot.com/2010_03_01_archive.html

Design Program

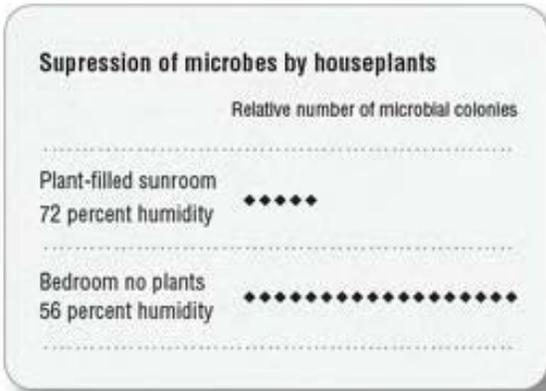
A healing garden is designed as an accessible oasis adjacent to a hospital where hospital patients could go to help with the healing process. Elements included in the design program are a water feature, a sculpture, planting beds, seating areas, and universal accessibility.

Objective

The design for the healing garden takes a simplistic, streamlined approach so as to give patients a relaxing destination to concentrate on their mental healing in order to accelerate their physical healing. Wide paths provide accessibility to people of all ages and abilities and the use of concrete lessens the tripping hazard posed by other paving materials. Raised planting beds help to create a tranquil atmosphere with aromatic herbs and other plants that stimulate the senses. A fountain and pool surrounded by glass provides optimum views of the translucent sculptures within, serving as focal points.



As long as a plant is living, the plant will continually produce oxygen and absorb toxics from the air. The plant does not store the toxics but it chemically converts them into food and beneficial natural chemicals. According to NASA studies the plants removal rate accelerates as the volume of airborne toxics increases.



APPENDIX 4: PROJECT USING THE LAND AND WATER CONSERVATION FUND PROGRAM

http://www.nps.gov/ncrc/programs/lwcf/exemp_prijts/LWCF_VA.pdf

Land and Water Conservation Fund

National Park Service
U.S. Department of the Interior



Community Park, Town of Louisa, VA

LWCF Funding Assistance: \$85,425

Supporting Quality of Life in Louisa

In Louisa, thanks to the Land and Water Conservation Fund, Community Park is a first. With no public outdoor recreation facilities in town (and the closest facility seven miles away), construction of this new park will provide the first trails for walking and bicycling, plus basketball, playgrounds, and picnic and other recreation opportunities, all within easy reach for over 3,000 residents.



"This is truly a community park—the recreation facilities and overall design respond to resident input gathered at public meetings and through the town's website. It also supports Louisa's growing needs for essential physical activity and recreation."

*John Davy, Planning and
Recreational Resources Director
Virginia Department of Conservation
and Recreation*



www.nps.gov/lwcf

APPENDIX 5: EAGLE SCOUT BIRD BLIND PROJECT

<http://pascagoulariver.audubon.org/news-events/eagle-scout-builds-bird-blind>

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Eagle Scout builds Bird Blind

Bird watching is a favorite pastime for visitors to the Pascagoula River Audubon Center, and thanks to the work of a local scout, it has become easier to see a larger variety of birds.

Kevin Stachowski, a Boy Scout with Troop 230 in Pascagoula, approached Dr. Mark LaSalle, director of the PRAC, and asked what projects he might like done around the center that could serve as his Eagle Scout project.

"I knew I wanted my Eagle Scout project to benefit the Audubon Center, and this was what he said was needed most," Stachowski said. "I had never heard of a Bird Hide before though. "LaSalle asked for the construction of a Bird Hide, a covered platform with bench seating so bird watchers aren't detected by the flying feathered friends.



© Mozart Mark Dedeaux | Click image to enlarge
1 of 3

"Birders enjoy having a comfortable place to sit and watch birds at a location that is attractive to them," LaSalle said.

A Dripper station is located near the hide and is a bird bath above which a small hose provides a slow but steady stream of water that attracts birds to the bath. The bird hide and dripper are located in the wooded area just south of the center. After researching and sketching plans, it was determined that the structure would cost nearly \$1300 to complete. Stachowski began soliciting funding from family, friends and local businesses.

"Everyone was so gracious and we were able to raise the money needed to purchase the supplies," Stachowski said. "Because of the guidelines for building on the property at the Audubon Center, I also learned a lot about using environmental friendly products."

While waiting for the supplies to be delivered, Stachowski, fellow scouts, his father and other scout leaders began working to clear the area. Once the materials arrived the group began setting posts and creating the deck. Working evenings and weekends, the structure began to take shape.

"I know a little about carpentry, but this was more than I had ever done before," Stachowski said. "I learned new terminology and how to see a project from beginning to end."

Stachowski also supervised and guided fellow scouts on proper skills and techniques.

After nearly two years, from design to completion, the Bird Hide is being enjoyed by Audubon Center visitors.

"Guests to the bird hide have enjoyed the comfort that it provides while they watch and photograph the many species of birds that use the dripper," LaSalle said. "This has been a wonderful success for the Center and the people that visit."

Along with being environmentally friendly, the bird hide is also wheelchair accessible. It is equipped to seat up to eight people comfortably.

APPENDIX 6: MOBILE TOURISM APPLICATIONS

Examples of mobile applications for Virginia tourism destinations can be found online at <http://www.virginia.org/VirginiaApps/>

Below are screen shots demonstrating the user interface and features of these applications.

Virginia's Historic Triangle



Visit Fairfax



APPENDIX 7: RANSON AND CHARLES TOWN GREEN CORRIDOR REVITALIZATION

This case study provides an example of a project funded by HUD and DOT through the TIGER program to aid two small towns in West Virginia in enhancing their green infrastructure and transportation networks in a manner similar to what has been proposed for Onancock, Onley and Accomac growth area.

From: <http://cityofransonwv.net/economicdevelopment/grants/93-economicdevelopment/grants/76-dothudchallenge>

DOT/HUD Challenge Grant

Amount: \$1,400,000 (30% local match; Charles Town providing \$100,000)

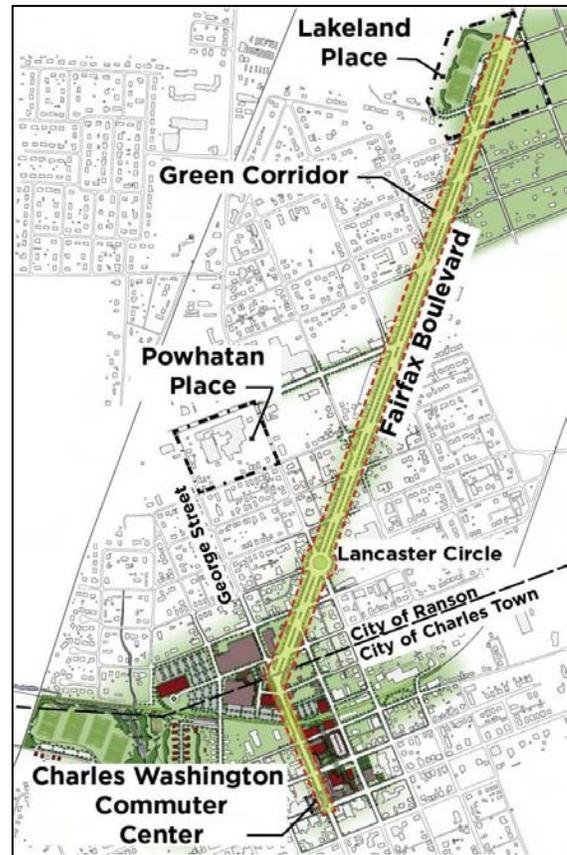
Grantor: United States Department of Transportation & United States Housing and Urban Development

Awarded: October 20, 2010

Status: Awarded and In progress

Estimated Completion: November 2012

Project Summary: (1) Redesign the Fairfax Boulevard-George Street corridor through the adjacent downtowns of Ranson and its sister city, Charles Town, into a "complete street" with new green infrastructure, to promote a better and safer transportation route for pedestrians, cyclists, transit and other vehicles; (2) Design a new regional Charles Washington Commuter Center along this roadway in downtown Charles Town that will facilitate access to regional rail and bus transit systems for Ranson, Charles Town and Jefferson County residents and workers; and (3) Develop a new, form-based "Smart Code" system for the City of Ranson that links together a green downtown overlay district with a new zoning approach for the undeveloped, outlying areas of the City that combines traditional neighborhood and mixed-use development with green infrastructure.



On June 21, 2010, the U.S. Department of Transportation (DOT) and the Department Housing and Urban Development (HUD) announced the new grants for transportation planning and sustainable community planning. The DOT will be awarding \$35 million in "TIGER II Planning Grants" for the planning and design of transportation facilities that support six "Livability Principles" developed by the Obama Administration, and HUD will be awarding \$40 million in "Sustainable Community Challenge Grants" for local planning and smart growth initiatives. The agencies will also allow an applicant to submit a joint application seeking both a TIGER and a Challenge grant. Grants can be up to \$3 million for the TIGER component and \$3 million for the Challenge component.

Ranson has applied for a joint TIGER-Challenge grant of \$980,000 to fund the planning/design/engineering of the Green Corridor complete street project, the Charles Washington Commuter Center project, and a comprehensive "Smart Growth & Smart Codes" initiative. Ranson partnered with the City of Charles Town on this application. The application that Ranson and Charles Town submitted, along with a briefing sheet and letters of support is posted below. On October 20, 2010, Ranson was notified by DOT/HUD that the City had been awarded the grant.

APPENDIX 8: FARMER'S MARKETS AT KAISER PERMANENTE HOSPITALS

From: Project for Public Spaces

<http://www.pps.org/pending-updates/kaiser-farmers-markets/>

Kaiser Farmers Markets

“Nothing is more important to people’s health than what they eat every day,” says Dr. Preston Maring, a physician for 34 years and the creator of the first Kaiser Permanente hospital farmers market. By developing a farmers market at his hospital and inspiring the creation of 25 others in just two years, Dr. Maring is helping hospitals around the country illustrate the connection between food, diet, and health.

Six years ago Dr. Maring noticed vendors selling jewelry and handbags in the lobby of the Oakland, CA hospital where he worked. As a longtime farmers market shopper, he wondered if he could develop a market at his hospital that would serve large groups of people and support the hospital’s mission. To get started he brought the idea of a farmers market to the CEO and hospital operators. Through them he connected with John Silveira at the Pacific Coast Farmers Market Association (PCFMA) who immediately loved the idea.

In May 2003, with a contract from the PCFMA, the first Kaiser Permanente market opened between the parking lot and the main entrance to Dr. Maring’s Oakland hospital. Functioning as a subtle form of preventative medicine, the eight to nine vendors at the market provided a place for hospital visitors, patients, and employees to buy fresh produce, shop for food at a convenient location, and enjoy a work environment that encourages them to breathe fresh air as they buy locally grown strawberries, apricots, or peaches outside the hospital.

The first day felt like a block party and was an immediate success – strawberry vendors alone made over \$2000. Quickly Dr. Maring sent emails and called peers at other Kaiser Hospitals. By the spring of 2004 six new farmers markets were providing fresh food at different hospital locations. The farmer-to-hospital momentum continued building and by the summer of 2005, 25 markets existed in five states, ranging from Georgia to Colorado to Hawaii.

The markets are geographically diverse and unique in that each hospital works with local vendors and farmers to manage their own market. What connects them are their three shared guiding principles: first, the markets must provide certified organic food; second, the food should not need refrigeration, meaning no fish, chicken, meat, or dairy; third, the markets must serve as healthy complements to the existing in-hospital cafeteria food, and not as competitive alternatives.

As a large company, Dr. Maring believes Kaiser can help build demand for fresh healthy food while it supports local farmers through its farmers market programs. Hospitals are where people go to regain their health, and Dr. Maring says there is “something to be said for hospital leadership supporting these markets” – markets that can help patients, visitors, and employees both stay healthy and get better.

APPENDIX 9: LOCAL FOOD AT UVA HOSPITAL

From: Local Food Hub

<http://chofoodhub.blogspot.com/2010/09/video-finding-cure-for-hospital-food.html>

When you think about hospital food, the last thing that likely comes to mind is healthy, fresh, delicious food. It's probably something closer to this: mushy, tasteless mystery meats and veggies, pureed beyond recognition. Isn't it ironic that in the very place you go to get well, the food they serve could be so very bad? But things are changing...at least they are at the University of Virginia Hospital. Together, Local Food Hub and UVA Health Systems (the department that handles food purchasing) have created a unique partnership that is both improving hospital food and supporting local family farms.

Feeding the Change

UVA Health Systems Purchasing Manager Dale Haskins is a personal believer in local food and is a major part of why the hospital has become one of the Local Food Hub's most successful buyers. With an annual budget of around \$600,000 dedicated solely to purchasing produce, Haskins has made a great effort to keep much of that spending local by buying directly from the Local Food Hub.

On any given day, the hospital serves food to all of its patients, 125 children in a day-care program, 225 'meals on wheels,' and operates a full-service cafeteria for staff and visitors. Produce from Local Food Hub often makes the menu whether through the use of local tomatoes, onions, squash, green peppers or whatever happens to be fresh and in season that day. Patrons swear that the food tastes fresher than it used to, and have even marveled about eating the "best tomatoes" they've ever had. In a hospital, no less. Can you believe it?!

In addition, the hospital also hosts a weekly indoor farmer's market open to anyone passing through, including staff, visitors, and patients. The tables are piled high with fresh, local offerings provided by Local Food Hub and sourced from small family farms surrounding Charlottesville.

Making it Work

Large institutional buyers and small local farms haven't always been able to play nicely. Often, big businesses can't (or won't) source produce from many individual farms when they can purchase everything from one conventional produce supplier. And small farms face insurmountable barriers like liability insurance requirements and accounting challenges that prevent them from accessing these markets in the first place.

Local Food Hub helps to connect buyers and farmers in a way that benefits both. By purchasing food from local farms for a fair price, and then selling and distributing to institutions, restaurants and markets, Local Food Hub has created "one number to call" for local food while also supplying the required liability insurance, traceability, and refrigerated delivery.

When large buyers like UVA Hospital keep their spending local, it can have a big impact on the economy. According to a recent report by the Wallace Center and the BALLE, every dollar spent at a local business can have two to four times the economic impact of a dollar spent on a non-local business by generating jobs, income and wealth.

Supporting local farmers has been one of the best takeaways from this partnership, and it is at the core of what the Local Food Hub strives to accomplish. Alan Moore, head of sales at Local Food Hub raved about working with Dale and the hospital. "It has been a pleasure seeing firsthand how UVA Hospital really believes in supporting its local community and has been such a steadfast supporter of the Local Food Hub," Moore said. Not only has the partnership between UVA Health Systems and Local Food Hub been successful, it's also providing a model for how large institutions can move away from imported, industrialized vegetables and towards a sustainable, healthy local food economy that benefits patients, farmers and the community alike.

TOWN AND CULTURE: POLICIES AND STRATEGIES

Written by Lauren Cross, Marie Miller, Chelsey Ward

Green infrastructure (GI) provides the backdrop for our cultural and historical resources. Nearly all designed and vernacular landscapes evolve from, or are often dependent on, natural resources. The interconnected systems of land, air and water, vegetation, and wildlife have dynamic qualities that differentiate cultural landscapes from other cultural resources, such as historic structures.

Accomack County's distinct character is strongly influenced by its rich agricultural history. Its overall landscape reflects the unique historic agricultural patterns of the area and their evolution over time. Looking at the overarching patterns within the region and its interconnected green landscape allows us to better understand and appreciate the significance of individual sites. Accomack's distinct character is often directly connected to the greater historical landscape and its natural systems. Thus, the GI network should be managed in a manner that enhances and protects the cultural and historical integrity of individual sites.

It is important that the cultural landscape and historic context inform future development and planning decisions. The recommendations in this plan are aimed to improve, enhance, and protect the cultural integrity of Accomack County. Our aim is to improve aesthetic quality and preserve the county's distinct character. In doing so, the county will attract residents and tourists and strengthen the sense of place for current residents.

Oftentimes, planning for the aesthetics of the built landscape including its roadways, signage, streetscapes, even the "furniture" of the street such as benches, is thought of separately from landscape planning. Yet the aesthetics of the pathways through the landscape affect perceptions of the natural world. Ugly or overly large signage set against what should be a breathtaking iconic view, or hot sidewalks lacking shade trees, benches and landscaping detract from the enjoyment of both natural and historic areas. Tourists will not traverse blighted areas in search of gems, such as the final scenic view and residents regret the loss of character that makes up what they call home. Property values also decline. It is in the spirit of protecting the aesthetics of the county's landscape, both in rural areas as well as towns and settlements, and offering places to enjoy and appreciate the area, that this chapter addresses signage, entrance corridors and suggests efforts to catalog and characterize what the community values the most.

GOAL SUMMARY:

- Protect Accomack County's historic, architectural and natural resources by ensuring new developments respect the county's architectural and natural character and are orderly and attractive.
- Improve the integrity of historic landscapes and properties, in order to both protect and enhance Accomack's historic character, and to attract tourism.
- Implement sign ordinances and signage to improve the attractiveness of towns and to highlight the rich historic character of Accomack County.

<p>Goal 1: Protect Accomack County's historic, architectural, and natural resources by ensuring new developments respect the county's architectural and natural character and are orderly and attractive.</p>
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Rationale:

Accomack County has many historic and natural resources that are an integral part of its character. Enacting an Entrance Corridor Overlay District would protect the county's historic, architectural, and cultural resources by ensuring that the quality of development is compatible with those resources through design-control measures. The entrance corridors would also serve to stabilize and improve property values and protect and enhance the county's attractiveness to tourists and other visitors.

By adopting an entrance corridor, the county could control the quality of development along important county roads and thoroughfares through design-control measures. By enforcing simple design guidelines along the entrance corridor, the county could ensure that developments along key corridors utilize architectural facades and site features that are consistent with and complementary to the surrounding neighborhood and context.

Aside from setting architectural standards, the entrance corridors can be used to minimize the visual impact of parking lots and utilities by screening or landscaping existing parking lots, dumpsters, service areas, loading docks, recycling centers, and septic tanks. It is important to screen these utilities from direct view along the entrance corridors by using minimally visible low fences or walls, so that they do not detract from the natural beauty and character of the county.

Enacting an entrance corridor overlay would ensure that the roads most traveled by visitors and tourists are kept orderly and attractive. Route 13 and the other entrance roads offer visitors a first impression of Accomack County and therefore, because the county relies so heavily on tourism, it is important to maintain the appearance of these entrance corridors.

Ultimately, this first impression of Accomack will influence how long tourists stay and explore the county's sights. If the roadways are designed to enhance Accomack's historic architectural character and its beautiful rural landscape, visitors will take an interest in the qualities of the county and tourists will be more inclined to stop and visit the county's towns and landmarks.

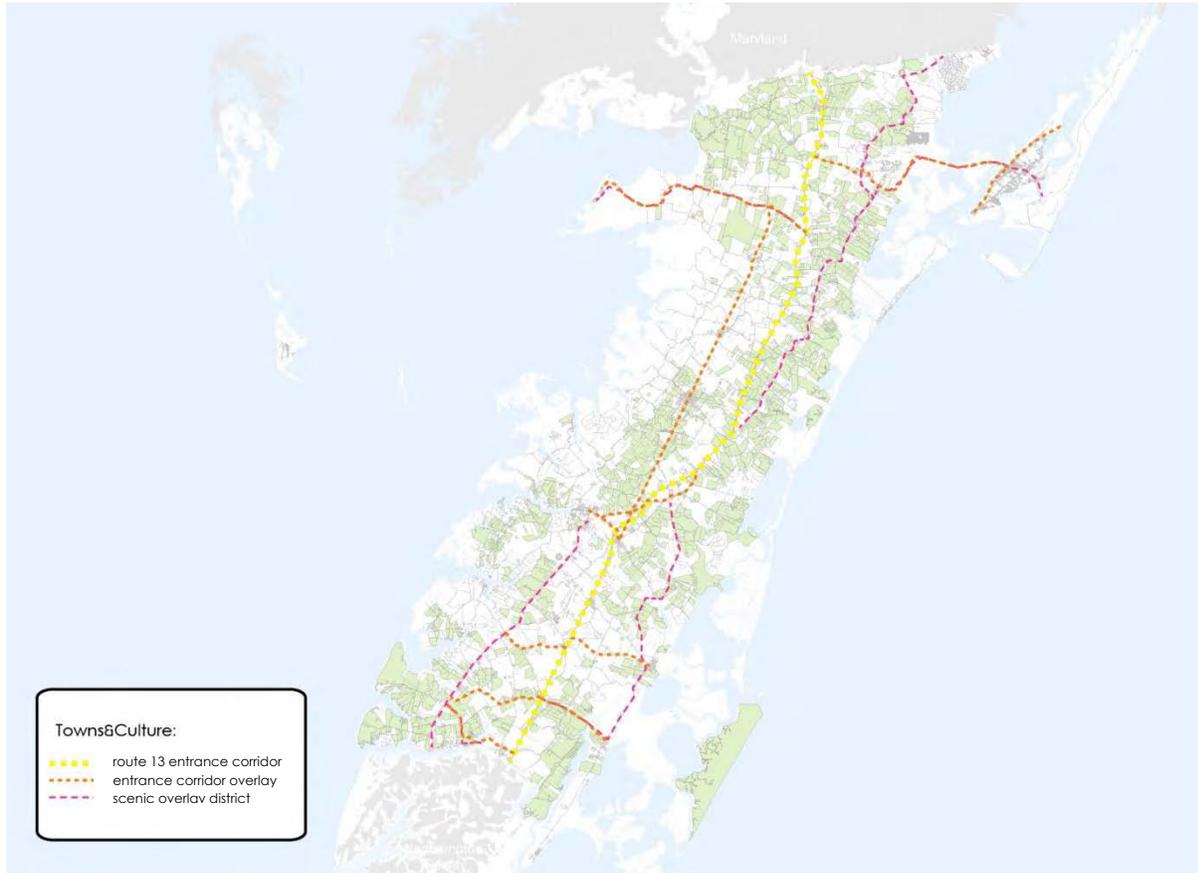
Objective 1A: Establish entrance corridors (roads that provide routes of tourist access to the county and to historic landmarks, structures, and districts) along Route 13 and other entrance roads and scenic routes.

Action 1: Identify key entrance corridors throughout the county and establish an entrance corridor review board by July 2012. See Appendixes 1 & 2 for examples of regulations to establish and enforced entrance corridor ordinances. Possible entrance corridors include:

Front Street	State Route 614
Route 13	State Route 695
Route 126 (Fairgrounds Rd)	West Main St
Route 175	State Route 605
Route 178	State Route 718
Route 179 (Market St)	Route 178
Route 180	State Route 679
Route 182	State Route 695
Route 316	Route 175

Note: The county should work with local incorporated towns where a road runs through both.

MAP 1: ENTRANCE CORRIDOR OVERLAYS AND SCENIC ROADS



Objective 1B: Establish architectural standards along entrance corridors to improve the aesthetic qualities of the county.

Action 1: The county, working with towns, neighborhoods, and the Eastern Shore of Virginia Historical Society, should use existing walking tour guides and the National Register of Historic Places to create an inventory of historic sites, in order to identify and protect historically significant properties along entrance corridors, thoroughfares, and in transitional neighborhoods. (See Appendix C for information on historic survey funding.)

Action 2: Create guidelines based on the suggestions outlined in the formbook.

Objective 1C: Maintain existing tree and shrub plantings and encourage new plantings along the entrance corridors to provide shade, promote visual order, and help integrate buildings into the corridor. Encourage developers to design around designated open spaces and environmentally sensitive areas by providing incentives, such as relaxed parking standards, density bonuses, or tax credits.

Action 1: Using the maps provided by the Green Infrastructure Center, the county should work with the Virginia Department of Forestry to identify important forested areas along the entrance corridors and encourage owners of those areas to put their property into conservation easements. (See Appendix 4 for financial benefits of conservation easements for landowners. See *Forest and Corridors' Objective 1A & 1B.*)

Action 2: Increase landscaping and tree planting requirements for commercial developments, re-development, and renovations by re-writing "Section 106-411: Landscape Regulations on Landscape Area Planting Requirements" of the *Accomack County General Business ("B-1") Zoning District Ordinance*. (See Appendix 5 for an example of regulations to increase landscaping along the entrance corridors.)

Objective 1D: Minimize the visual impact of parking lots and utilities by screening or landscaping existing parking lots, dumpsters, service areas, loading docks, recycling centers, and septic tanks from direct view along the entrance corridors, using minimum-impact low fences, walls, or plantings.

Action 1: Add a new section to the regulations to the *Accomack County General Business ("B-1") Zoning District Ordinance* about loading and utility areas. (See suggestions outlined in the formbook and Appendix 5 for examples of regulations to control the visual impact of utilities and parking lots along the entrance corridors.)

<p>Goal 2: Improve the integrity of historic landscapes and properties in order to protect and enhance Accomack's historic character and attract tourism.</p>
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Rationale:

Green infrastructure and cultural landscape components are integral to the significance of historic properties and sites. Cultural landscapes reveal much about our evolving relationship with the natural world. These special places disclose aspects of our country's origins and development through examining their form and features and the ways they were used. Accomack County has a distinct rural character that is rooted in its agricultural history. The county is unique in that it still possesses many visible historic and cultural features that other mainland and southern beachfront communities have lost. These rare landscapes should be protected and preserved, in order to maintain their historic integrity and to continue to enrich the county's distinct character.

In addition to enriching the sense of place in the community, historic properties and landscapes can be used as a mechanism to attract tourism. Landscapes with significant cultural or historical significance may be added to the National Register as a Rural Historic Landscapes. Doing so offers the county recognition and increases its exposure, which will attract more tourists and bring additional revenue into the county. In Virginia, visitors spend \$9.1 billion visiting historic and cultural sites each year (Hollberg and McMahon, 1999: p.54). Earning Historic Landscape designation provides an opportunity to recognize and acknowledge the unique assets that the county still possesses, without restricting the county or adding additional regulations.

Additional landscapes should be identified, documented, evaluated, and restored to optimal historical integrity. Areas with potentially significant historic landscapes may include those surrounding scenic byways, historic churches, and plantations. The following objectives outline the process of identifying and evaluating potential candidates for Rural Historic Landscapes, in order to increase tourism within the county.

Objective 2A: Identify landscapes with significant historic and cultural significance to submit as Rural Historic Landscapes on the National Register. The Rural Historic Landscape is one of the categories of property qualifying for listing in the National Register as an historic site or district. For the purposes of the

National Register, a rural historic landscape is defined as a geographical area that historically has been used by people, or shaped or modified by human activity, occupancy, or intervention, and that possesses a significant concentration, linkage, or continuity of areas of land use, vegetation, buildings and structures, roads and waterways, and natural features.

Action 1: Apply for grants to hire a consultant who specializes in historic and cultural landscapes to conduct a landscape review and analysis and assist in the nomination process.

Action 2: Obtain information about specific historical examples of landscape gardening, planning, and design in the county through documentation of its history and the collection of available plans and photographs. Members of the Eastern Shore of Virginia Historical Society and a cultural landscape specialist should conduct site visits to identify the historic characteristics of the 'design intent' of the landscape.

Action 3: Identify appropriate landscape types within which the landscape should be evaluated. (See Appendix 1)

Action 4: Analyze the characteristic features that the landscape should possess to be a good representative of its landscape type. (See Appendix 2)

Action 5: Evaluate the significance of the historic landscape using National Register criteria.

Action 6: Evaluate the integrity of each landscape characteristic and list the features that the landscape should retain to possess integrity.

Action 7: Determine if any aspect of the landscape's history or present condition might place it in a category of properties generally considered to be ineligible for the National Register and therefore requiring special justification. (See Appendix 3)

Objective 2B: Collaborate with the Eastern Shore of Virginia Historical Society to educate landowners on the opportunities and procedures that apply, if they want to submit their properties as Rural Historic Landscapes on the National Register

Action 1: Host an information session to educate landowners on cultural landscapes, in order to increase opportunities to identify qualifying landscapes.

Action 2: Identify potential landscapes and contact landowners via mail and in-person visits.

Goal 3: *Implement sign ordinances and signage to improve the attractiveness of highways and the approaches to towns, and to highlight the rich historic character of Accomack County.*

Rationale:

Regulating signage throughout Accomack County by updating the zoning ordinance to include more stringent sign control will enable businesses to promote and identify their establishments, while preserving and protecting the attractiveness of county roads and approaches to towns. Signage should be regulated to limit the amount of excessively distracting advertisement signs that contribute to visual clutter on Route 13 and official scenic routes. Criteria for the size, location, height, materials used, and construction of signs less than 25 feet tall need to be established and enforced. Numerous communities are using sign and design controls to create places where people will want to live, invest, visit, shop, and buy real estate.

Note: County sign ordinances do not apply within incorporated towns. The county should work with these towns to coordinate attractive signage ordinances.

The presence of sign controls and architectural standards are seldom a disincentive to new investment. Entrance into a profitable trade area is a far more important issue in business decision-making than having to adhere to local design, landscaping, or signage requirements. More stringent sign control to limit unattractive signage can increase the economic vitality of Accomack County by protecting its scenic character. A good sign code is pro-business, since an attractive business district will pull in more customers than an unattractive one (Hollberg and McMahon, 1999: p.76). When signs are controlled, businesses will do a better job of selling at less cost because, when clutter is reduced, consumers have an easier time finding what they are looking for (Hollberg and McMahon, 1999: p.76). Virginia's top tourist destinations, Williamsburg, Alexandria, and Virginia Beach, all have strict sign ordinances (Hollberg and McMahon, 1999: p.77).

Signage can also be used to define the rich historic character of Accomack County. It should clearly demarcate the many locally, statewide, and nationally recognized historic structures in the county. The county should partner with towns and the Eastern Shore of Virginia Historical Society to design a plaque or sign that will visibly designate historically significant structures.

Adequate signage can be used to bring attention to the architectural excellence and the historic importance of certain buildings, structures, places, and areas in Accomack County. It also serves to educate residents and tourists about the culture and local history of Accomack County. Marking a significant number of buildings in a district or neighborhood provides a graphic image of history in that area. Adopting a clear historic signage system would help to identify, designate, and protect Accomack County's historic sites. It would also enhance the historical awareness in Accomack County and foster a greater sense of character, as well as a greater sense of community.

Property values increase more in historic areas than in non-historic areas. For example, between 1987 and 1995, residential districts in each of Staunton's five historic districts appreciated 52 %- 66%, compared to only 51% for properties not in the historic districts (Hollberg and McMahon, 1999: p.55).

Historic Preservation also has commercial benefits. In Virginia, visitors spend \$9.1 billion a year visiting historic and cultural sites in the Commonwealth (Hollberg and McMahon, 1999: p.54). While there are limitations on what a property owner is permitted to do with his or her sign, building, or site, the net economic effect is, by-and-large, positive for the individual owner and the community tax base. Historic district controls and sign controls are rather similar; they both create a sense of place and character that promotes a district identity for an area, or even a specific building (Hollberg and McMahon, 1999: p.76). Implementing a local historic marker program and adopting more stringent sign ordinances would be greatly beneficial to Accomack County because attractiveness and identity contribute to economic success.

Objective 3A: By 2013, the county should partner with incorporated towns and the Eastern Shore of Virginia Historical Society to implement a county-wide marker program to demarcate historic homes and structures.

Action 1: Create a committee that will conduct a marker program for Accomack County. The committee should hold public meetings to involve the community. The committee will encourage current owners of historic homes to participate in a plaque program for their historic homes and structures. (See Appendix 12.3 - 12.4)

Action 2: Coordinate with incorporated towns and the Eastern Shore of Virginia Historical Society to choose a sign design (plaque or free-standing) for designated historic homes and structures that participants of the program will be responsible for installing on their homes and structures.



Existing signage at the Debtors' Prison in Accomac. Historic homes and other structures throughout the county could be similarly highlighted with a uniform marker design.

Participants in this program will help choose a template, along with the committee. The plaques should be relatively inexpensive and paid for by participants. (See Appendix 12.1 – 12.2 and the *Accomack County Formbook* for sign design templates)

Action 3: Adopt a zoning ordinance that will address the historic marker program. (See Appendix 9)

Objective 3B: Adopt zoning ordinances to reduce the visual clutter on entrance corridors.

Action 1: Implement a zoning ordinance that will restrict off-site signs that are less than 25 square feet.

Action 2: Implement a zoning ordinance that will prohibit signs that contribute to confusion in the field of vision. This ordinance should restrict illuminated signs, flashing lights, floating or inflatable signs, portable signs, and signs that move – in addition to other types of signs that the entrance corridor board sees fit to restrict.

Action 3: Implement a zoning ordinance that will define time restrictions for temporary signs. The ordinance should require that signs for temporary events, sales, or special promotions be taken down 48 hours after the event. Require that signs are not erected more than one month before the event or activity.

Action 4: Update the current Board of Zoning Appeals permit application to include signs less than 25 square feet.

Action 5: Implement regulations to enforce zoning ordinances for signs. (See *Appendix 10: Scottsville*; and *Appendix 11: Charlottesville* for examples of regulations that enforce sign ordinances)

Example: Any sign erected, posted or maintained in violation of subsection (b)(2) above is hereby declared and deemed to be a public nuisance, subject to immediate removal by county employees authorized by the Director of Neighborhood Development Services (*Charlottesville, Virginia, Code of Ordinances, Sec. 34-1027*).

Example: The zoning administrator shall have the authority to order the removal, without compensation, of any sign or sign structure that due to neglect or damage poses a clear danger to the health, safety and welfare of the public. (*Charlottesville, Virginia, Code of Ordinances*)

CONCLUSION

In order to achieve Chapter 5, Objective 10-a of the *Accomack County Comprehensive Plan*, to “coordinate tourism attractions with Route 13 signage,” the county should implement a way-finding sign system and a tourist-oriented directional sign system (TODS). Implementing these signage systems would decrease the amount of billboard and off-site advertisement clutter along the highways in Accomack County.

The President's Commission on Americans Outdoors reported that natural beauty was the most important criteria for adults choosing a site for outdoor recreation (*Scenic America*). The U.S. Travel Data Center estimates that scenic byways generate yearly \$33,000 per mile in increased consumer spending (*Scenic America*).

Way-finding signs and TODS are better models for development because, unlike billboards, they do not detract from the views along scenic routes and entrance corridors. In addition to detracting from scenic views, billboards lower property values and stunt economic growth, especially when they are in disrepair, when they contribute to blight (*Scenic America*). Billboard clutter is also unsafe because a bombardment of signs along a highway distracts drivers.

In Williamsburg, Virginia, three years after billboard controls were toughened, sales in eating and drinking establishments grew from \$48 million in 1988 to \$81 million in 1992; (*Scenic America*).

A cohesive way-finder signage network will bring people into the towns of Accomack to shop and explore. Tourists' attractions and historic structures, landmarks, and historic districts recognized locally, by the state, and nationally can be appropriately designated and highlighted by these two different types of signage system (way-finder and TODS). In 1991 alone, total retail sales rose 44%, despite an ongoing recession (*Scenic America*).

The County of Accomack should consider using a portion of the \$86,000 that it annually provides to the Eastern Shore Tourism Commission to fund the implementation of these signage systems. The more Accomack County does to enhance its unique natural, scenic, historic, and architectural assets, the more tourists it will attract.

FUNDING

Virginia Land Conservation Fund (VLCF)

Website: www.dcr.virginia.gov/virginia_land_conservation_foundation/index.shtml

Contact: Sarah Richardson, Virginia Department of Conservation and Recreation, 203 Governor St., Richmond, VA 23219, (804) 225-2048, sarah.richardson@dcr.virginia.gov

The VLCF (§10.1-1020 et.seq., <http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+10.1-1020>) is used to conserve certain categories of special land. Those categories are open spaces and parks, natural areas, historic areas, and farmland and forest preservation. A portion of the fund may be used for developing properties for public use. Matching grants provided to holders and public bodies for acquisition are generally used only for current projects; only in exceptional cases - where considerable public benefit and compelling, unusual financial need and circumstances have been shown - might grants be made for already complete purchases.

Virginia Open-Space Lands Preservation Trust Fund (VOSLPTF)

Website: http://www.virginiaoutdoorsfoundation.org/VOF_land-ptf.php

Contact: Bob Lee, Virginia Outdoors Foundation, 324 Waterloo St., Warrenton, VA, (540) 347-7727

The VOSLPTF (§10.1-1801.1, <http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+10.1-1801.1>) helps landowners cover costs of conveying conservation easements and the purchase of all or part of the value of the easements. Conservation easements preserve farmland, forestland, and natural and recreational areas by restricting intensive uses, such as development and mining, which would alter the conservation values of the land. Costs that the fund may reimburse include: legal costs; appraisal and other costs; and all or part of the easement's value. Priority may be given to applicants who seek cost re-reimbursement only, demonstrate financial need, or cover a family-owned or -operated farm.

Land and Water Conservation Fund

Website: http://www.dcr.virginia.gov/recreational_planning/lwcf.shtml

Contact: Jerry Cassidy, Virginia Department of Conservation and Recreation, 203 Governor St., Richmond, VA 23219, (804) 786-3218, synthia.waymack@dcr.virginia.gov

The Department of Conservation and Recreation administers a grant-in-aid program for acquisition and development of public outdoor recreation areas and facilities. These grants are for public bodies only. Towns, cities, counties, regional park authorities and state agencies may apply for 50 percent matching fund assistance from the Virginia Outdoors Fund (VOF). When available, these funds are provided through state general fund appropriations and from federal apportionment from the Land and Water Conservation Fund (L&WCF) meant for the acquisition and/or development of outdoor recreation areas. This is a reimbursement program meaning that the sponsoring agency should be capable of financing the project while requesting periodic reimbursement.

Virginia Recreational Trails Fund (VRTF)

Website: www.dcr.virginia.gov/recreational_planning/trailfnd.shtml

Contact: Jerry Cassidy, Virginia Department of Conservation and Recreation, 203 Governor St., Richmond, VA 23219, (804) 786-6140, synthia.waymack@dcr.virginia.gov

The VRTF provides grants for developing and maintaining recreational trails and trail-related facilities. Funding may be provided to private organizations, local governments, other government entities, and federal agencies if teamed with private trail groups and organizations.

Conservation Reserve Enhancement Program (CREP)

Website: www.dcr.virginia.gov/stormwater_management/crep.shtml

Contact: Gary Moore, Virginia Department of Conservation and Recreation, 203 Governor St., Richmond, VA 23219, (804) 692-0070, email gary.moore@dcr.virginia.gov

The CREP aims to improve the Virginia's water quality and wildlife habitat by offering rental payments to farmers who voluntarily restore riparian buffers, filter strips and wetlands through the installation of approved conservation practices. Another CREP goal is to establish 8,000 acres of perpetual conservation or open space easement statewide. State cost-share payments are administered through local Soil and Water Conservation District (SWCD) offices. The state will reimburse up to 25 percent, not to exceed \$200 per acre of restored buffer or wetland, of conservation practice costs deemed eligible by the local soil and water conservation district. There is also a 25 percent state income tax credit for out-of-pocket expenses, thus further reducing the landowner's cost. Federal reimbursement is made through the Farm Service Agency (FSA) for up to 50 percent of a participant's eligible expenses for implementing best management practices (BMP), such as fencing or alternative watering systems.

Farmland Protection Program (FPP)

Website: <ftp://ftp->

fc.sc.egov.usda.gov/VA/Technical/conservation_planning/Crop_Agr/SQL.Tech.Note.13.Cover.Crop.Rolling.pdf
(PDF)

Contact: Ken Carter, USDA Natural Resources Conservation Service (NRCS), 1606 Santa Rosa Rd., Suite 209, Richmond, VA 23229, (804) 287-1663

The voluntary Farmland Protection Program, managed by the NRCS, helps farmers keep land in agriculture. The program provides matching funds to state, local or tribal government entities and non-governmental organizations with existing farmland protection programs to purchase conservation easements. Participating landowners agree to keep land in agricultural uses and retain all rights to use the property for agriculture. To qualify for FPP, the land offered must be:

- prime, unique or farmland of state or local importance (high yielding)
- included in a pending offer from a non-governmental organization, state, local or tribal government
- privately owned
- covered by a conservation plan
- large enough to sustain agricultural production
- accessible to markets for what the land produces and
- surrounded by parcels of land that can support long-term agricultural production.

American Battlefield Protection Program (ABPP)

Website: <http://www2.cr.nps.gov/abpp/funding.shtml>

Contact (state): David Dowling, Virginia Department of Conservation and Recreation, 203 Governor St., Richmond, VA 23219, (804) 786-4570, email david.dowling@dcr.virginia.gov

This program provides funding for battlefield preservation projects. Individual project funding has ranged from \$1,000 to more than \$115,000. The average grant is about \$25,000. Although not required, the ABPP

encourages matching funds or in-kind services. The program supports partnership projects that lead to the protection of battlefield land and sites associated with battlefields. The ABPP does not fund land acquisition or capital improvement projects. Projects associated with lands already owned by the National Park Service are not eligible for ABPP grants. Types of projects that support this goal may include:

- Historical research
- Cultural resources surveys
- Archaeological surveys
- National Register of Historic Places documentation and nominations
- Assessment of the condition of battlefields and potential threats to their continued survival
- Battlefield acquisition plans and preservation plans
- Local land use strategies for sensitive planning
- Technical assistance for organizations and governments needing help to protect battlefields
- Public education

Civil War Battlefield Acquisition Grants

Website: <http://www2.cr.nps.gov/abpp/LWCF2002.shtml>

Contact: Leon App, Virginia Department of Conservation and Recreation, 203 Governor St., Richmond, VA 23219, (804) 786-4570, david.dowling@dcr.virginia.gov

Land and Water Conservation Fund (LWCF) monies are available to help states and localities acquire and preserve threatened Civil War battlefield land. The grants are awarded on to state and local governments. Private, nonprofit organizations can seek to acquire these funds by applying in partnership with a state or local government agency. In Virginia, the designated agency partner is DCR.

LWCF grants will be awarded through a competitive process over three years. Each grant requires a dollar-for-dollar non-federal match. They are available for the fee simple acquisition of land, or for the acquisition of permanent, protective interests in land as listed by the Civil War Sites Advisory Commission, Civil War battlefields. Greater consideration is given to acquisition of endangered priority I or II battlefield lands.

Historic Resources (DHR) Incentives and Grants

Website: www.dhr.state.va.us

Contact: Virginia Department of Historic Resources, 2801 Kensington Ave., Richmond, VA 23221, (804) 367-2323, ext. 137, email webmaster@dhr.state.va.us

Contact the DHR for historic resources incentives and grants, including easements, archaeological threatened sites, local government grants, survey and planning cost-share, rehabilitation tax credits, state grants, and non-state grants.

1. Natural Resources Commitment Fund

This is a bill effective 7/1/09 to begin in Fiscal year 2010-2011, that would allocate funds for the protection of natural resources, like waterways. This could provide funds for BMP implementation and stream buffers.

2. Office of Farmland Preservation.

The Office of Farmland Preservation has a program where they can match a localities' expenditures on the purchase of development rights, or easements. The current budget for Fiscal Year 2012 (beginning July 1, 2011) is \$100,000, although this stands in chance between January and March of 2011 as the legislature reviews Virginia's budget. Still, the program is expected to have some funding in this year, and this is a great way to assist in funding the purchase of easements in the county, although as noted it does require funds to be allocated by the county.

3. USDA's Farm and Ranchland Protection Program

The FRPP is another way to fund the purchase of easements. They have currently allocated \$1.5 million to the purchase of easements on agricultural land in Virginia. They will fund up to 50% the value of the easement - this program could be combined with funding from the Office of Farmland Preservation. Both programs are project-specific; that is, an easement must be identified in advance of application to the programs.

4. Other Funding Sources for PDR Programs.

With significant funds available from the state and federal governments, Nelson County could leverage minimal county funds to purchase easements on their farms. It will require some funding be put towards the PDR program though. Funding options include allocations from the general fund, a bond issue (James City County issued bonds to fund their program), dedicating a portion of the real estate tax (Virginia Beach dedicates \$.015 from their real estate tax to the program, in addition to funding allocated from their general fund), or from proffers for new developments. Since Nelson County's designated development area is not in the fastest-growing part of the county, and because the area which is growing (near Wintergreen) is currently zoned agricultural, a proffer policy may be an attractive strategy for Nelson County. This is not likely to garner enough funding for any significant purchases in the near term, but putting this policy in place will ensure that funding is generated when development picks up – which is also when the county will need to get much more serious about protecting its farmland. Note that Virginia Beach purchases development rights using Installment Purchase Agreements, meaning that the payments are spread out over 25 years. This has allowed them to purchase the most easements of any city or county in Virginia, making them theirs one of the most successful programs in the nation. Some case studies are presented at Evergreen Conservation Finance's (a private finance firm) website, <http://evergreencf.com/experience.php>.

5. The Foundation for Virginia's Natural Resources

The FVNR provides money each year for those seeking to further public education about environmental topics, including agriculture. The main purpose of the program is to strengthen environmental goals, specifically seeking out new efforts. A grant like this could do towards adult education of agricultural and local food opportunities, further funding the extension office's resource center, or starting a community garden. Projects with long-term efforts that will be sustainable are looked at highly, and Nelson County could certainly justify getting the grant.

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APPENDIX 1: CHARLOTTESVILLE, VIRGINIA, ENTRANCE CORRIDORS

Chapter 34, Zoning Article II, Division 3, Entrance Corridor Overlay Districts,
Sec. 43-307 – Applicability:

(a) Subject to subsection (b), below, entrance corridor overlay districts are hereby established upon and along the following arterial streets or highways, which are deemed by the city council to be significant routes of tourist access to the city, or to designated historic landmarks, buildings, structures or districts within the city ("EC streets"):

- (1)** Route 29 North from the corporate limits to Ivy Road;
- (2)** Hydraulic Road from the corporate limits to the 250 Bypass;
- (3)** Barracks Road from the corporate limits to Meadowbrook Road;
- (4)** Ivy Road from the corporate limits to Emmet Street;
- (5)** Fontaine Avenue/Jefferson Park Avenue from the corporate limits to Emmet Street;
- (6)** Fifth Street, SW from the corporate limits to the beginning of the Ridge Street Architectural Design Control District;
- (7)** Avon Street from the corporate limits to the CSX Railroad tracks;
- (8)** Monticello Avenue/Route 20 from the corporate limits to Avon Street;
- (9)** Long Street from the corporate limits to St. Clair Avenue;
- (10)** East High Street/9th Street from Long Street to East Market Street;
- (11)** Preston Avenue from McIntire Road to Rosser Avenue; and
- (12)** McIntire Road, from Preston Avenue to Route 250.

(b) Entrance corridor overlay districts are hereby established upon the lots and parcels of land contiguous to the streets and highways enumerated within subsection (a), above, from the edge of the right-of-way to the full depth of the lot or parcel, as the lot or parcel existed on the date the adjacent EC street was designated.

(c) The entrance corridor overlay districts are hereby established over the existing zoning district classifications of the land contiguous to the streets and highways enumerated within subsection (a), above. The regulations set forth within this article shall apply to all such land, in addition to the regulations of the underlying zoning district and in addition to other generally applicable zoning ordinance provisions (e.g., generally applicable standards governing parking, lighting, landscaping, signs, etc.). In the event of a conflict between the regulations set forth within this article and those set forth within the regulations of the underlying zoning district classification, or elsewhere within this zoning ordinance, the more restrictive regulation shall govern.

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APPENDIX 2: CHARLOTTESVILLE, VIRGINIA, ENTRANCE CORRIDOR REVIEW BOARD

Chapter 34, Zoning Article II, Division 3, Entrance Corridor Overlay Districts,
Sec. 34-308. – Review Board

(a) The provisions of this article shall be administered by an entrance corridor review board ("review board" or "ERB") hereby created by the city council. The city's planning commission shall serve as the review board.

(1) The meetings of the ERB shall be held at the call of its chairman or at such times as a quorum of the board may determine.

(2) The ERB shall keep minutes of its proceedings, showing the vote of each member upon each question, or, if absent or failing to vote, indicating such fact.

(3) All records of official actions shall become part of the permanent records of the ERB.

(4) The ERB shall choose annually its own chairman and vice-chairman, who shall act in the absence of the chairman.

(5) The ERB may, from time to time, adopt and amend bylaws for the regulation of its affairs and the conduct of its business.

(6) The ERB may, from time to time, recommend areas for designation as entrance corridor overlay districts and may also recommend removal of any such designation.

(7) The ERB shall serve in an advisory capacity to city council and the board of zoning appeals in rezonings, special use permits, site plans, subdivisions, variances and other matters within entrance corridor overlay districts.

(8) The ERB shall be responsible for issuance of certificates of appropriateness required by this article.

(b) The ERB shall develop and recommend to the city council for its approval design guidelines for the entrance corridor overlay districts ("Entrance Corridor Design Guidelines"), consistent with the purposes and standards set forth within this article. The ERB shall develop such guidelines in consultation with the city's director of neighborhood development services and after seeking input from business and property owners in the various overlay districts. Guidelines developed by the ERB shall become effective upon approval by city council and thereafter shall have the status of interpretive regulations. The ERB shall undertake a comprehensive review and update its design guidelines at least once every five (5) years. Until the initial guidelines have been completed and approved, the ERB shall apply the design guidelines developed by the city's BAR for the entrance corridor districts.

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APPENDIX 3: HISTORIC PRESERVATION SURVEY AND FUNDING

The Virginia Department of Historic Resources provides a Survey and Planning Cost-Share Program that allows localities to partner with DHR to take stock of their historic resources. DHR will partially fund and fully administer the projects, including securing consultants, paying bills, monitoring the work, and ensuring the delivery of the products.

For more information, visit: <http://www.dhr.virginia.gov/survey/Survey1.htm>

Furthermore, the Code of Virginia, Section 10.1-2213 provides for matching grants for historic preservation work by nonprofit museums, historic sites, historical organizations, and local governments which could help restore dilapidated historic structures in Accomack listed in, or eligible for listing in, the Virginia Landmarks Register. For information visit: http://www.dhr.virginia.gov/homepage_general/finance.htm

APPENDIX 4: FINANCIAL BENEFITS OF CONSERVATION EASEMENTS

According to the Land Trust of Virginia, there are several financial benefits to landowners who choose to place their property into a conservation easement, including:

1. The donation of a conservation easement to the Land Trust normally qualifies as a charitable contribution, which may entitle the donor to a charitable income tax deduction for the easement's value.
2. The Commonwealth of Virginia grants donors of conservation land and easements a credit against state income taxes of one-half the value they contribute.
3. Many landowners receive a federal income tax deduction for the gift of a Conservation Easement.

For more information, visit: http://www.landtrustva.org/easement_benefits.asp

APPENDIX 5: CHARLOTTESVILLE, VIRGINIA, ENTRANCE CORRIDOR APPLICATIONS

Chapter 34, Zoning Article II, Division 3, Entrance Corridor Overlay Districts,
Sec. 34-312 – Application Requirements

- (a)** Application for a certificate of appropriateness pursuant to this division shall be filed with the director of neighborhood development services by the owner, contract purchaser, or lessee of the property, or by the authorized agent of any such person, of the subject property.
- (1)** A complete application shall include all plans, maps, studies, reports, photographs, drawings, and other informational materials which may be reasonably required in order to make the determinations called for in a particular case.
 - (2)** Building elevations shall be provided, unless waived by the director.
 - (3)** Each application for a certificate of appropriateness shall be accompanied by the required application fee, as set forth within the most recent zoning fee schedule approved by city council.
- (b)** The director shall establish submission deadlines for applications. For purposes of this division a complete application shall be deemed to be "officially submitted" on the date of the next submission deadline following the date on which the application was received by the director.
- (c)** Each application shall include a landscaping plan, for the uses described following below.
- (1)** For development subject to site plan review, such plan shall meet the requirements set forth below as well as those required within Article VII, [section 34-867](#)

(2) For other applications, the landscaping plan shall consist of drawings, documents and information sufficient to allow the director to determine whether the following requirements are satisfied:

a. Uses to be screened: Parking lots, loading areas, refuse areas, storage areas, detention ponds and mechanical equipment shall be screened from view from the adjacent EC street.

b. Standards for screening: When required, screening shall consist of the following:

(i) A planting strip of vegetation or trees, an opaque wall, an opaque fence or a combination of these.

(ii) Where only vegetative screening is provided, such screening strip shall not be less than twenty (20) feet in depth and shall consist of a double staggered row of evergreen trees on fifteen-foot centers, a minimum of five (5) feet in height when planted, or a double staggered row of evergreen shrubs on five-foot centers, a minimum of twenty-four (24) inches in height when planted. Alternative methods of vegetative screening may be approved by the ERB or the director in connection with approval of a certificate of appropriateness.

(iii) Where a fence or wall is provided for screening, it shall be a minimum of six (6) feet in height with planting required at ten-foot intervals along such structure.

(3) Landscaping. All nonresidential uses, including parking lots and vehicular display areas, shall have the entire street frontage, exclusive of driveways and walkway connections, landscaped with trees and other varieties of plant material at least eighteen (18) inches in height at maturity. The planning commission or the planning director may allow a deviation from these requirements if, in its judgment, such deviation is consistent with the intent of this article. The tree varieties shall conform to those recommended in the city's List of Approved Plantings. All uses shall have the side and rear property edges defined with a fence, wall or curbed planting strip of trees and other plantings a minimum of twenty-four (24) inches in height at maturity.

(d) Each application shall include information about proposed lighting. Lighting fixtures shall be harmonious with the character of existing and proposed structures fronting along the EC street, and shall not exceed the height of any buildings on the site. Further, lighting shall comply with the provisions of Article IX, Division 3, section 34-100, et seq.

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APPENDIX 6: LANDSCAPE TYPES

From the *National Register Bulletin*, U.S. Department of the Interior National Park Service, Interagency Resources Division:

To establish a consistent National Register designation for designed historic landscapes, several distinct landscape types have been identified in order that similar types of designed landscapes can be evaluated according to the same criteria. Some designed landscapes, particularly those that are large or complex may incorporate several of the landscape types listed below. In such cases, the designed landscape should be classified according to the most general type that applies. Designed historic landscapes can usually be described as one of the following types:

- estate or plantation grounds (including a farm where the primary significance is as a landscape design and not as historic agriculture)
- arboreta, botanical and display gardens
- small residential grounds
- zoological gardens and parks
- church yards and cemeteries
- monuments and memorial grounds
- plaza/square/green/mall or other public spaces
- campus and institutional grounds
- city planning or civic design
- subdivisions and planned communities/ resorts
- commercial and industrial grounds and parks
- parks (local, state and national) and camp grounds
- battlefield parks and other commemorative parks
- grounds designed or developed for outdoor recreation and/or sports activities such as country clubs, golf courses, tennis courts, bowling greens, bridle trails, stadiums, ball parks, and race tracks that are not part of a unit listed above
- fair and exhibition grounds
- parkways, drives and trails
- bodies of water and fountains (considered as an independent component and not as part of a larger design scheme)

The type to which the landscape most properly belongs should be determined once the history of the landscape has been compiled. Important events and trends that influenced the development of the landscape type during the period of the property's design or any major alterations should then be identified. At present the standard source for American landscape history is *Design on the Land, the Development of Landscape Architecture* by Norman T. Newton. It also may be helpful to check with the State Historic Preservation Officer, the American Society of Landscape Architects, the National Association for Olmsted Parks, the Alliance for Historic Landscape Preservation, and other historical, preservation and landscape professionals and organizations that may have already evaluated the significance of the landscape or identified the designed landscape type that it represents. They may also be able to recommend important source materials, to assist in identifying the physical features necessary to represent a particular type, period, or method of construction or planting, or to suggest significant associations within the development and practice of landscape gardening and planning.

Decisions about the significance of properties can only be made with knowledge of the historic and comparative context for the property evaluated. Therefore, determining the relationship between an individual landscape and the historic development and practice of landscape architecture is an essential factor in determining significance. All landscapes that possess age are not significant, and what is significant must be determined from its connection to the historic theme(s) it represents and in relationship to a group of similarly associated properties. All the information required to demonstrate the significance of a designed historic landscape will vary according to whether it is significant to the local community, the State, or the nation. It may not be necessary to describe the development of local gardening styles, for example, for a designed historic landscape that is significant in the national development of landscape architecture. If, however, the designed landscape has no importance on the State or national level but is a significant example of a local style of landscape gardening or landscape architecture, then such a discussion is required. If a designed landscape is important at all three geographic levels—local, State, and national—it should be discussed within the context of all three with significant contributions noted for each level. Many State Historic Preservation Offices are defining formal historic contexts as part of their comprehensive State historic preservation planning process and may be able to assist nomination preparers with the compilation of comparative and thematic data for the evaluation of a property.

APPENDIX 7: REQUIRED FEATURES FOR NATIONAL REGISTER

From the *National Register Bulletin*, U.S. Department of the Interior National Park Service, Interagency Resources Division:

The researcher needs to determine the characteristic features that the property must possess to be a good representative of its type, period or method of design or construction and how it relates to the development and philosophy of its designed landscape type. For example, a researcher approaching a park designed in the American Romantic style may be looking for an emphasis on natural scenery and native plant materials, a lack of formal design, and a curvilinear circulation system and other characteristics generally associated with such parks. A landscape where these characteristics are not identifiable would not be a good representative of this type and, therefore, ineligible for the National Register.

APPENDIX 8: INELIGIBLE CATEGORIES/ CATEGORIES REQUIRING NEED FOR SPECIAL JUSTIFICATION FOR THE NATIONAL REGISTER

From the *National Register Bulletin*, U.S. Department of the Interior National Park Service, Interagency Resources Division:

Certain types of properties do not usually qualify for the National Register. Cemeteries, birthplaces or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years are not ordinarily considered eligible for the National Register. However, such properties will qualify under the criteria as they apply to designed historic landscapes if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- a. a religious property deriving primary significance from architectural or artistic distinction or historical importance; or
- b. a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his productive life; or
- c. a cemetery that derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
- d. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance; or
- e. a property achieving significance within the past 50 years if it is of exceptional importance.

Cemeteries and the grounds associated with religious institutions are among the most obvious examples of landscapes requiring justification under the National Register criteria considerations. Only those possessing artistic quality because of their landscape design will meet the test of significance as designed historic landscapes.

A landscape that had pivotal physical characteristics reconstructed may be eligible if it is significant for its original landscape design, if it is the sole surviving landscape of its type, or if it is the only survivor associated with a significant figure in landscape architecture. However, the property will require special justification.

To be eligible for the National Register, a designed historic landscape that is less than fifty years old must be exceptionally significant. A property that has achieved significance within the last fifty years can be evaluated only when sufficient historical perspective exists to determine that the property is exceptionally important and will continue to retain that distinction in the future. Scholarly recognition is usually required to establish exceptional significance because only that type of analysis can convincingly demonstrate that despite the lack of the passage of the fifty-year period, sufficient historical perspective exists to evaluate the particular property. A property must be compared with other properties of its type that have similar associations and qualities to establish exceptional significance. The reasons for which a property is considered exceptionally significant must be explained along with a discussion of the qualities and characteristics that distinguish the landscape as exceptional.

Additional Information See: http://www.cr.nps.gov/nr/publications/bulletins/nrb30/nrb30_9.htm

APPENDIX 9: LEXINGTON, VIRGINIA HISTORIC MARKER PROGRAM

Lexington Virginia has created a building marker sign program. This is an example of how a historic plaque program can be adopted and addressed in the zoning ordinance.

City of Lexington Virginia, Zoning Ordinance--Lexington VA: 420-160. Building markers:

The Board shall encourage one or all of the local historical organizations to design an appropriate marker for the proposed Historic Downtown Preservation District and place such recommendations before the Board for adoption and shall invite each owner of an historic building described in the inventory to display the marker thereon.

The Building Official shall thereupon cause to be erected and thereafter shall maintain such marker on or adjacent to such building, on which shall be inscribed the name of the building or its builder and the original owner or the date of construction of the building. The cost of marking, inscribing, installing and maintaining such marker shall be paid through public funds raised for this purpose.

420-161. Signs:

The Board shall prescribe the character, type, color and materials used in the erection, posting, display or maintenance of signs permitted in the Historic Downtown Preservation District, and, in so doing, the Board shall give due consideration to the purposes of such signs and require that they be in harmony with the exterior general design, arrangement, textures, materials, color and use of the building or structure on or at which they are erected, posted, displayed or maintained and congruous with the purposes and objectives declared in § 420-151, without defeating the purpose for which such signs are intended.

<http://www.ci.lexington.va.us/PDFs/Chapter%20420.pdf>

APPENDIX 10: SCOTTSVILLE, VIRGINIA SIGNAGE ORDINANCE

The town of Scottsville's ordinance clearly states that there are penalties for violating the sign ordinance thereby enforcing regulations.

Town of Scottsville, Virginia, Sign Ordinance—Penalties

(a) The violation of any of the provisions of this sign ordinance is hereby declared a misdemeanor. (See section 20, *Administration, Enforcement and Interpretation*.)

(b) In the event that a sign is installed in violation of the provisions of this ordinance, in non-compliance with the specifications stated in the sign permit application, or in non-compliance with the conditions attached to a special use permit, the Zoning Administrator shall cause a written notice of violation to be issued to the owner of the sign.

(c) The written notice may either request that the sign be brought into compliance or removed, or that the sign owner otherwise comply with the provisions of this ordinance within fifteen (15) days of receipt of the notice of violation.

(d) If the sign owner fails to bring the sign into compliance with this ordinance, as stated by the terms of the notice of violation, the Zoning Administrator, after consultation with the Mayor, may cause the sign to be removed at the expense of the sign owner.

(e) If the owner or erector of a sign that is in violation of this ordinance has a documented record of prior violations of the provisions of this ordinance, the zoning administrator may have the offending sign removed immediately and without prior notice. (Added 12-20-04)

f. Cardboard, paper and other disposable signs that have been removed by the Town shall be destroyed upon removal.

g. All other signs that have been removed by the Town shall be held for a period of thirty (30) days and may be reclaimed within that time by payment of the costs of removal. Thereafter, such signs shall be deemed to have been forfeited by the owner and shall be disposed of in accordance with applicable statute.

(Page 51 Town of Scottsville Article 2 Basic Regulations: 4.14.13 Enforcement and Penalties http://www.scottsville.org/search.php?zoom_query=sign+ordinance&submit.x=11&submit.y=7).

APPENDIX 11: ENTRANCE CORRIDOR OVERLAY STANDARDS

Below are Entrance Corridor Overlay Standards for signs that could be beneficial to Accomack County.

Charlottesville, Virginia, Code of Ordinances, Chapter 34 Zoning
Sec. 34-1025 – Permit requirements—Generally.

(a) No person shall erect, install, alter, modify, reface, re-hang or replace any sign within the city, without obtaining a permit pursuant to this article, provided that a permit shall not be required for the performance of regular maintenance.

(b) An application for such a permit shall specify the type of sign to be constructed and the zoning district in which this sign is to be located and shall be accompanied with plans and specifications showing the location, dimensions, materials, lighting and details of construction. The application shall contain photographs and sizes of all existing signs on the building or parcel and the written consent of the owner or lessee of the land or building upon which the sign is to be erected.

(c) Applications for sign permits shall be submitted to the city's zoning administrator, and shall be accompanied by the required application fee, as set forth within the most recent zoning fee schedule approved by city council. Permits are issued as followed:

(1) For new construction within any of the city's architectural design control and entrance corridor districts, such permit shall take the form of a certificate of appropriateness issued by the board of architectural review and the planning commission, respectively.

(2) For all other signage within any of the city's architectural design control and entrance corridor districts, such permit shall take the form of a certificate of appropriateness issued administratively by the director. Appeals from decisions of the director shall be taken to the board of architectural review and the planning commission, respectively.

(3) Within all other districts, the required permit shall be issued by the zoning administrator. No permit shall be issued by the zoning administrator except upon a determination that a proposed sign is in conformity with the requirements of this article and, where applicable, in conformity with the requirements of an approved site plan for the property upon which the sign is to be placed. Appeals from decisions of the zoning administrator shall be taken to the city's board of zoning appeals.

(d) A sign permit shall become null and void if the use to which it pertains is not commenced within six (6) months after the date the sign permit is issued. Upon written request and for good cause shown, the zoning administrator may grant one (1) six-month extension.

(e) The zoning administrator shall revoke a sign permit if the sign does not comply with applicable regulations of this article.

(2-19-08)

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Sec. 34-1029 – Prohibited signs.

The following signs and sign characteristics are prohibited in all zoning districts, unless otherwise provided within this article:

(a) Signs that violate state or federal law are prohibited, including, but not limited to:

(1) Signs that violate any law of the Commonwealth of Virginia related to outdoor advertising, including, but not limited to Virginia Code §§ 33.1-351 to 33.1-381, inclusive, and § 46.2-831, related to Virginia byways or scenic highways; or related to the state building or fire codes.

(2) Signs that violate any law of the United States related to the control of outdoor advertising, including, but not limited to 23 U.S.C. § 131.

(b) Signs that create safety hazards or are contrary to the general welfare are prohibited, as follows:

(1) Any sign that is nailed, tacked, painted or in any other manner attached to any tree, cliff, fence, utility pole or support, utility tower, telecommunications or radio tower, curbstone, sidewalk, lamp post, hydrant, bridge, or any kind of public property; provided that this provision will not affect traffic, parking or informational signs placed by a public authority.

(2) Any sign on public land or right-of-way, other than those erected at the direction of a public authority, or by an official of the state or county pursuant to statute or ordinance, and those otherwise authorized by this article.

(3) Any sign attached to, rather than printed on, an awning which is not a marquee.

(4) Any sign that moves or contains or consists of a searchlight, beacon, strobe light, flashing lights or similar form(s) of illumination; provided that this provision will not affect traffic, parking or informational signs placed by a public authority.

(5) Any off-premises sign, whether commercial or non-commercial. Where the owner or leaser of the premises is seeking a new tenant, signs relating to the activities of the previous tenant may remain in place for not more than thirty (30) days from the date of vacancy.

(6) Any sign that creates a public safety hazard, as determined by the fire code official, the building code official, a law enforcement officer, the city engineer, the zoning administrator, or the city's traffic engineer including, without limitation: signs erected in a location so as to be unsafe or an obstruction to vehicular, bicycle or pedestrian traffic; a sign that prevents egress or ingress from a required door, window or fire escape; a sign that obstructs ventilation; or a sign that imitates an official traffic sign, signal or road name sign.

(7) Any sign that obscures a sign displayed by a public authority.

(8) Any sign that produces sound, odor, liquid or visible matter such as smoke or vapor.

(9) Roof signs.

(10) Any portable sign.

(11) Any sign consisting of a moored balloon, or other type of tethered floating sign or inflatable sign.

(12) Window signs that obscure more than fifty (50) percent of the total glazed area on each facade of the building.

(c) Signs on or within a vendor stand, other than a price sign and a sign or logo identifying the name of the vendor or the product being sold. No sign permitted on a vendor stand shall be greater than two (2) square feet in area.

(d) Any sign erected, posted or maintained in violation of subsection (b)(2) above is hereby declared and deemed to be a public nuisance, subject to immediate removal by City employees authorized by the Director of Neighborhood Development Services.

(2-19-08)

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APPENDIX 12: SIGNAGE RESOURCES

Possible Plaque Design Samples Standard National Register Plaques

10" x 7"

Bronze Plaque, Brown Background, Double Border
Bookman Font Style, Costs: Aluminum: \$79.00 Bronze: \$83.00



Custom Worded National Register Plaques

10" x 7"

Bronze Plaque, Brown Background
Single Line Border, Cost: Aluminum: \$144 Bronze: \$152



Custom Worded National Register Plaques

18" x 12" Bronze, Single Line Border

Brown Background, Bas Relief

Cost: * Call for pricing

Erie Landmark Company
637 Hempfield Hill Road
Columbia, PA 17512
1-800-874-7848

<http://www.erielandmark.com>



Other Plaque Manufacturing companies

Equestrian Forge
222 S King St
Leesburg, VA 22075
703-777-2110

Artistic Bronze
13867 Northwest 19th Avenue
Miami, Florida 33054
800.330.Plak (7525) 305.681.2876 Fax
<http://www.artisticbronze.com/>

All-Craft Wellman Products, Inc.
4839 East 345th Street
Willoughby, OH 44094
Phone: 800-340-3899
Fax: 440-946-9648

Eagle Sign & Design Inc.
901 E. Liberty St.
Louisville, KY 40204
888-561-0007
<http://www.eaglesign.com/>

www.all-craftwellman.com

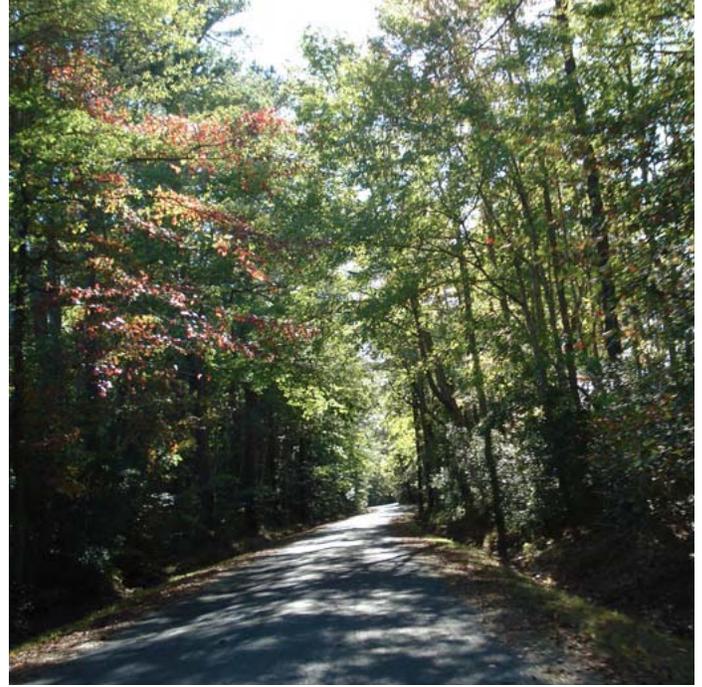
List obtained from National Park Service website: <http://www.nps.gov/nr/faq.htm#plaque>

Establishing a Plaque Program: <http://www.erielandmark.com/establish>

Texas Historic Marker Program: <http://www.thc.state.tx.us/markerdesigns/madhistory.shtml>

Accomack County_Formbook

A Design Guide for Conserving Accomack County's
Scenic and Historic Character



Accomack County_Formbook

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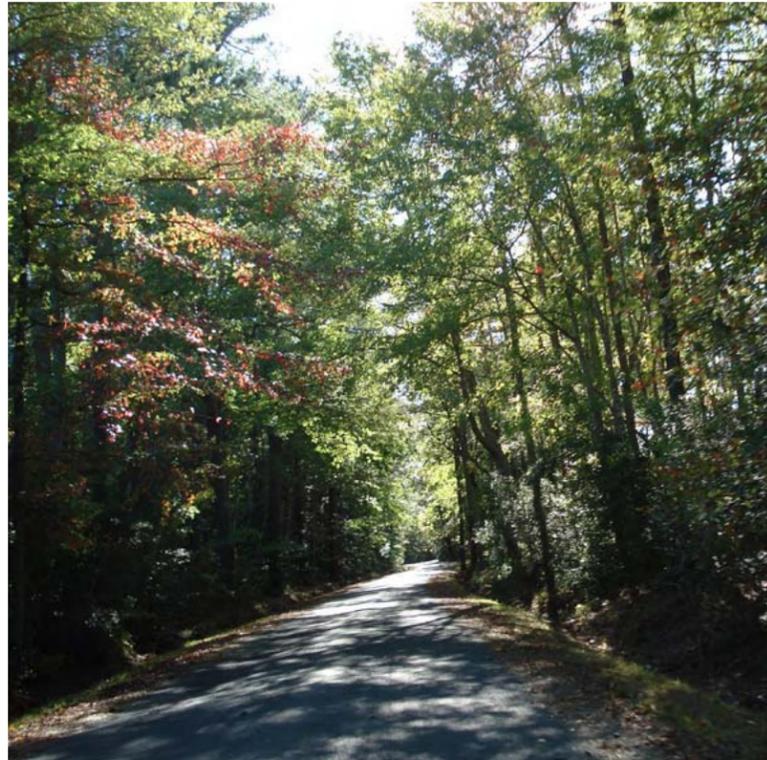
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Accomack County_Formbook

This formbook has been compiled to help Accomack County and the towns within Accomack set design, landscape, and signage guidelines to improve and protect the aesthetic character of the county's historic, architectural and natural resources. By following these guidelines, new and existing developments can make improvements to ensure their attractiveness and that they are respectful of the county's architectural and natural character.

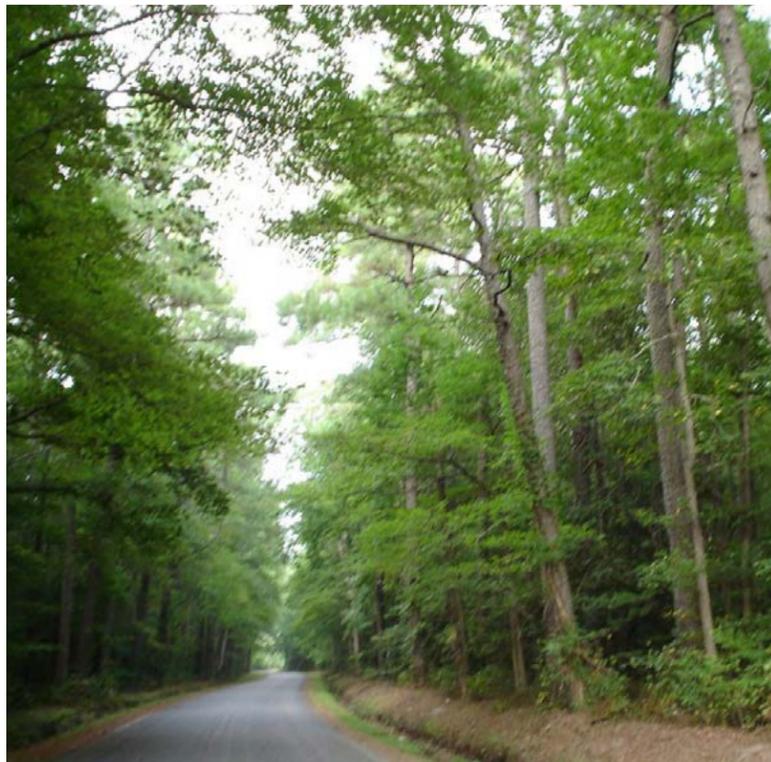


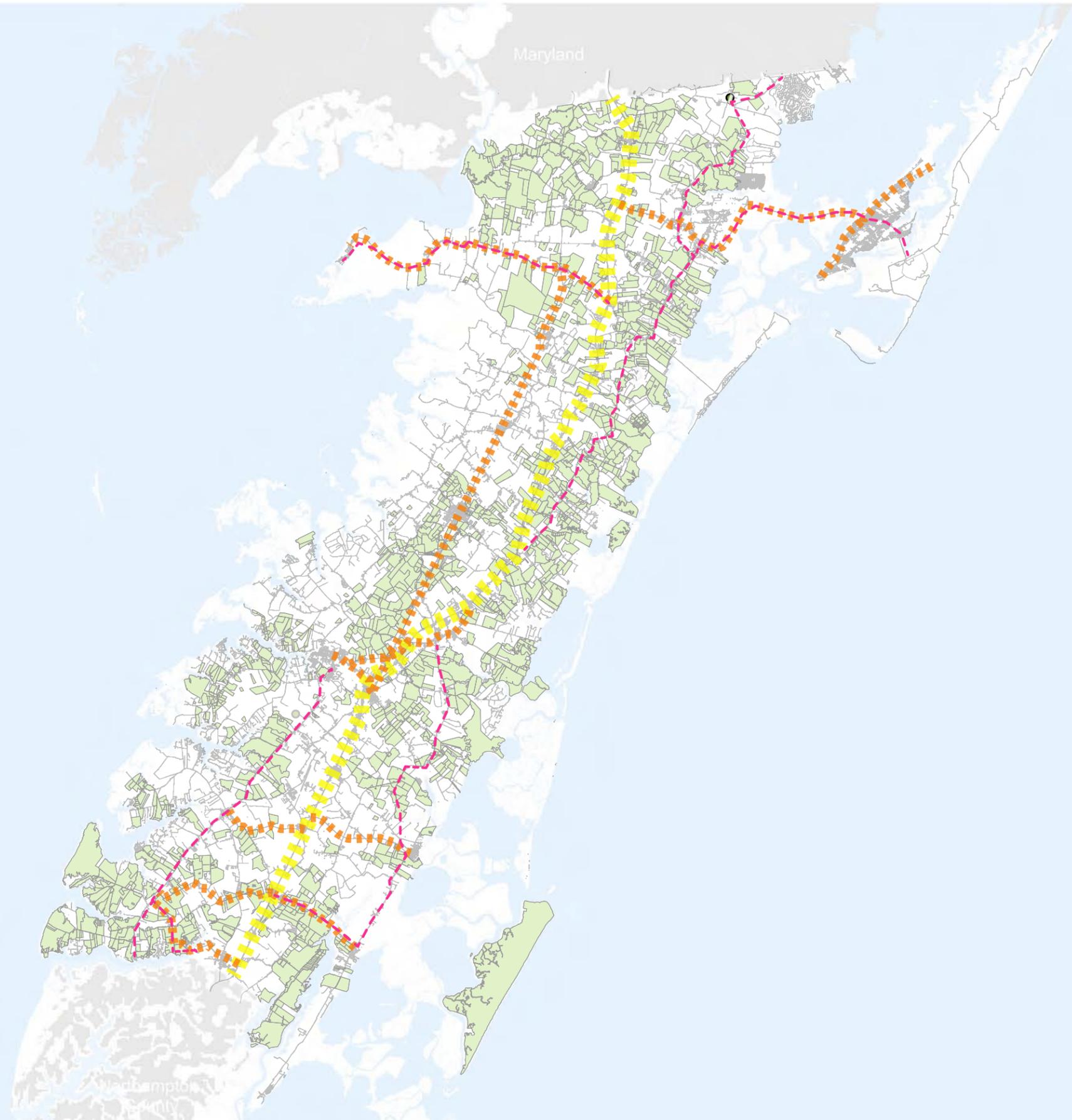
Accomack County's distinct character is strongly influenced by its rich agricultural history. Its overall landscape reflects the unique historic agricultural patterns of the area and their evolution over time. Looking at the overarching patterns within the region and its interconnected green landscape allows us to better understand and appreciate individual sites. The historical significance of individual sites is often directly connected to the greater historical landscape and its systems of land, air and water, wildlife and vegetation. Thus the network of green infrastructure should be managed in manner that enhances and protects and the cultural and historical integrity of individual sites.

The green infrastructure and cultural landscape elements are integral to the significance of historic sites. Looking at individual historic buildings or properties, in the context of their overarching landscapes allows us to more fully understand the significance of each individual site. Cultural and historic landscape components exist in tandem with built features. These features often lose their historical significance if isolated. A plantation's buildings, for example, lose historical significance if severed from its adjacent lands. This is especially important to consider in the face of encroaching development, which can fragment these lands and reduce historical integrity.

In addition to enriching the sense of place in the community, historic properties and landscapes can be used as a mechanism to attract tourism. Landscape interpretation is defined as the process of providing the visitor with tools to experience the landscape as it existed during its period of significance, or as it evolved to its present state (Birnbaum 1994). These tools may vary widely, from a focus on existing features to the addition of interpretive elements. Many properties may lack sufficient architectural integrity for individual eligibility for the National Register of Historic Places, but they can be included as National Rural Historic Districts.

Areas of significant historic landscapes in Accomack County may include scenic by-ways, historic churches, as well as plantations. Additional landscapes should be identified, documented, evaluated and restored to optimal historical integrity. Careful planning will prevent irrevocable damage. These cultural landscapes, together with their historic building components, should be viewed as assets to the community and preserved in their historic context.





Entrance Corridors & Scenic
Overlay Districts:
route 13 entrance corridor
entrance corridor overlay
scenic overlay district



route 13 is defined by its “anywhere america” commercial structures and vast expanses of parking lot

fast food



billboards



dilapidation

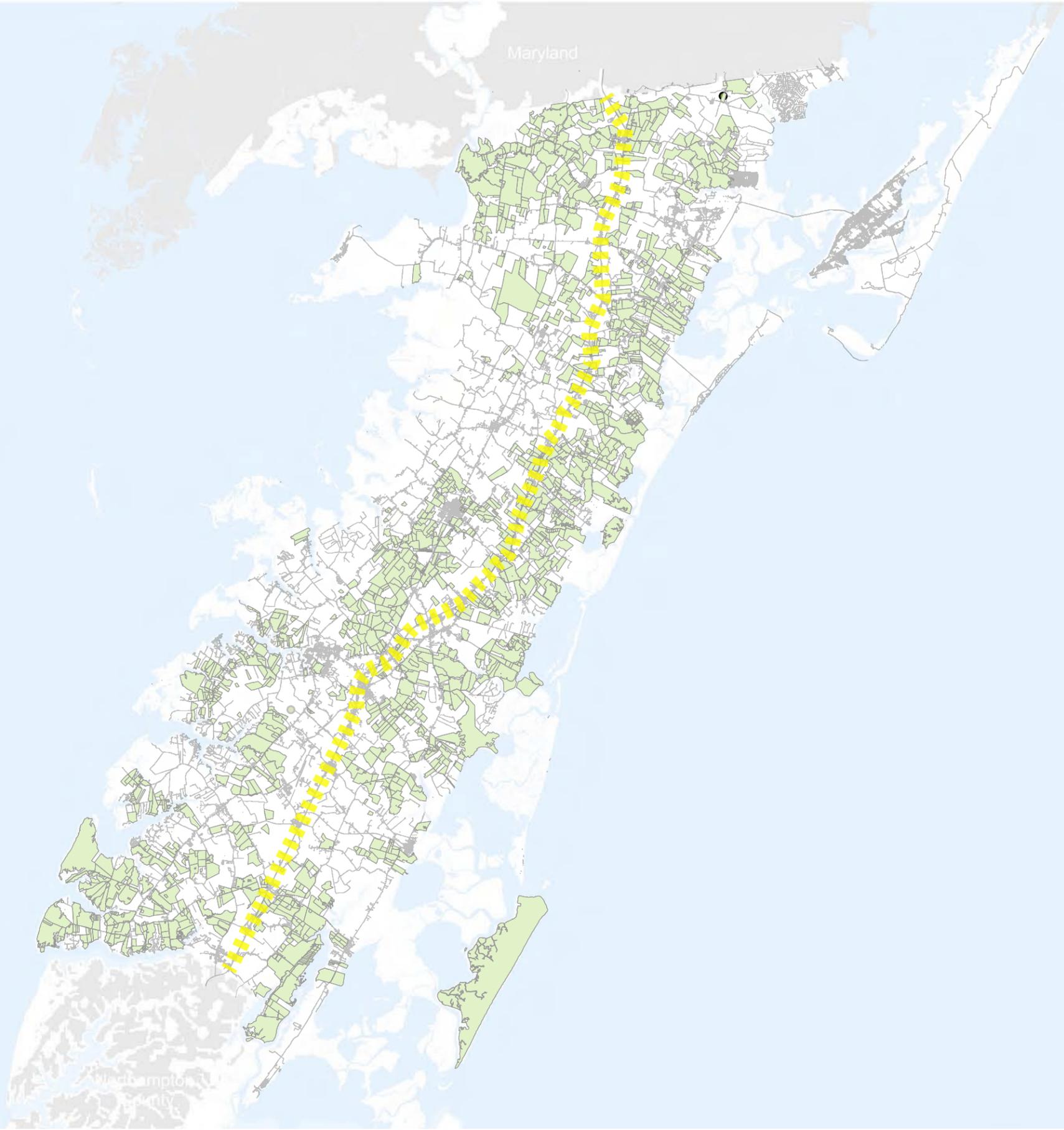


signage



The route 13 corridor is heavily commercialized and is a stark contrast to the small town charm of the surrounding towns. Route 13’s unpleasant nature is largely due to the unattractive signs, billboards, and run-down buildings and houses. An entrance corridor overlay and improved sign ordinance could greatly enhance the local cultural and aesthetic integrity of Route 13. This is important both for attracting shoppers as well as for improving the impressions of visitors or potential new businesses.

Entrance Corridors & Scenic
Overlay Districts:
route 13 entrance corridor





onancock's main entrance corridor

tourism signage



sidewalks



sign clutter

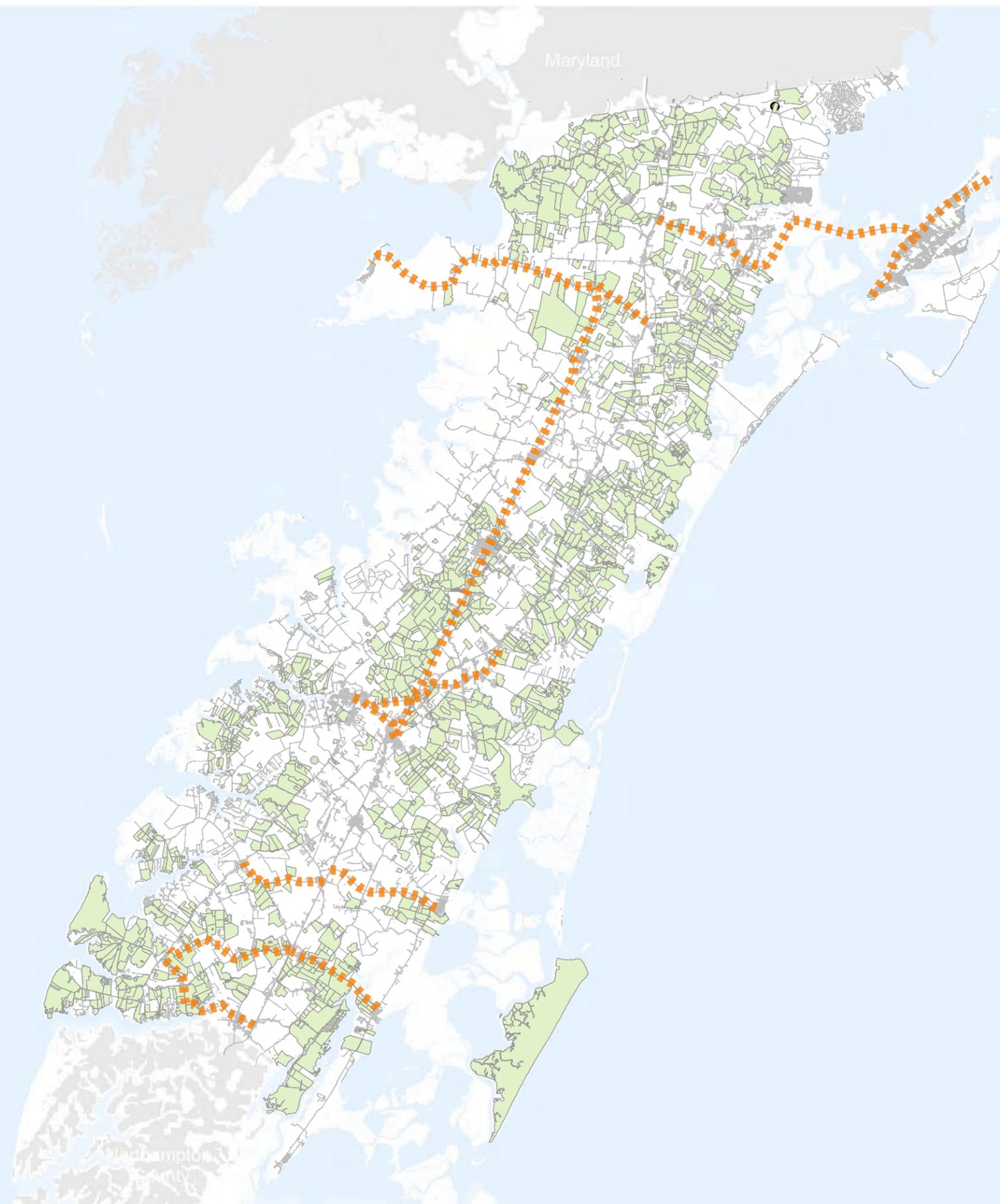


dilapidation



Entrance Corridors to Accomack and Onancock are critical in pulling visitors into the charming towns. These corridors could be made more attractive and thus inviting by integrating a signage network throughout Accomack County and planting street trees. The entrance corridors could also be enhanced through the removal of blight and cluttered advertisement signage which both detract from the town's character and ultimately decrease property values.

entrance corridors



- entrance corridors include:
- Front St into Accomac
 - Route 13
 - Route 126 (Fairgrounds Rd)
 - Route 175
 - Route 178
 - Route 179 (Market St)
 - Route 180
 - Route 182
 - Route 316
 - State Route 614
 - State Route 695
 - West Main St into Onley

Entrance Corridors & Scenic Overlay Districts:

■■■■■ entrance corridor overlay



natural beauty of the landscape as seen along the scenic routes of the Eastern Shore

historic churches



agriculture



creeks



landmarks



Among many other things, the Eastern Shore is known for its greenways—flat rural country and blueways. The scenic routes that run parallel to route 13 provide alternate transportation routes to navigate the Eastern Shore and also showcase the county’s extraordinary green infrastructure. These scenic routes showcase the beauty and charm of the county’s existing greenways and, ultimately, serve to link many of the county’s historic landmarks and churches. It is imperative that these scenic roads, and the greenways and blueways that run along them, are protected to preserve the natural character and landscape that link the county’s historic churches in order to promote both the historic and natural integrity of Accomack County.

scenic overlay districts

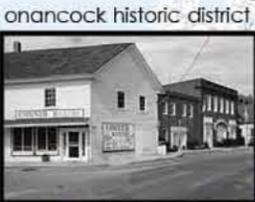
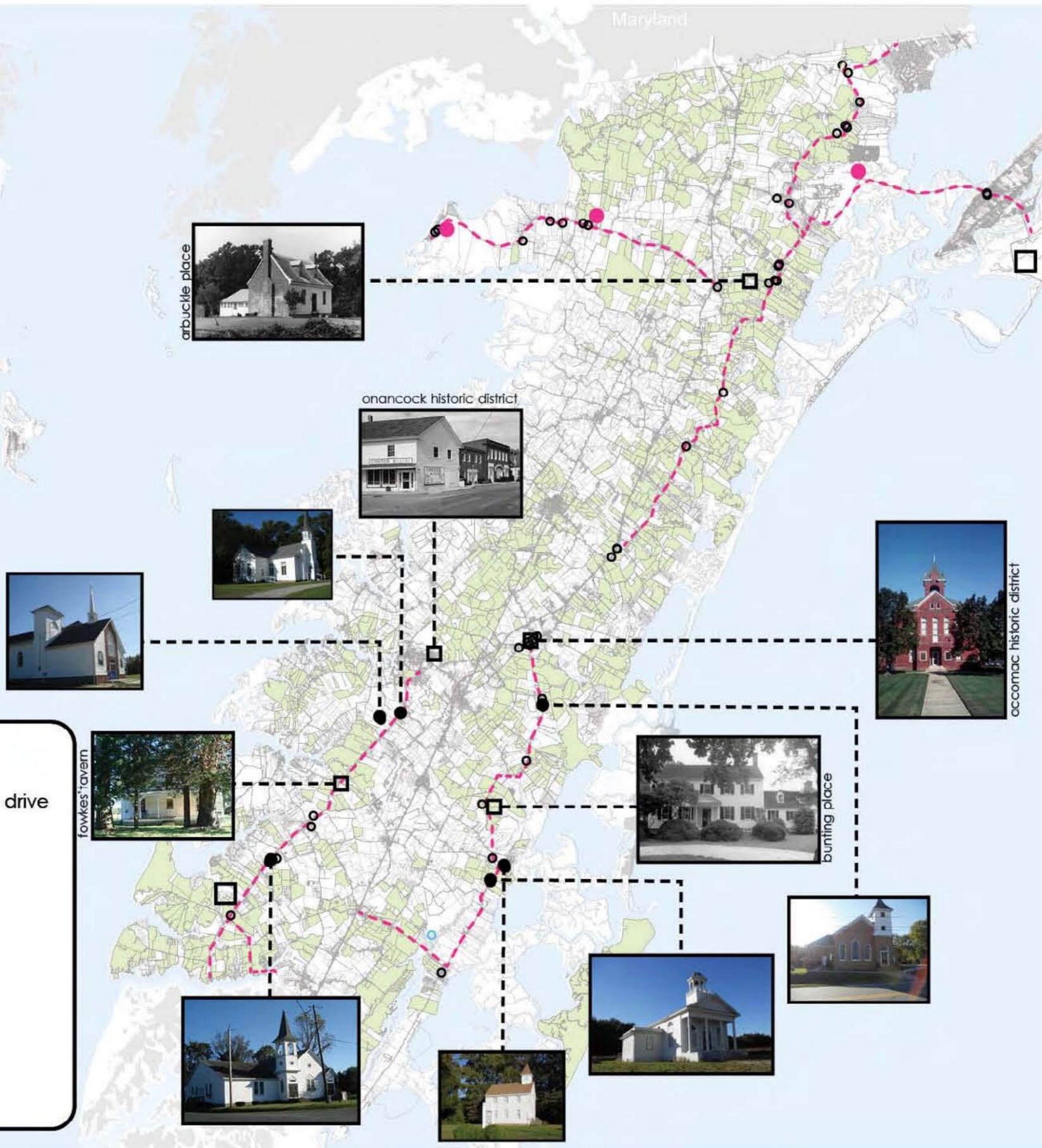
scenic roads include:

- Route 175
- Route 178
- State Route 605
- State Route 679
- State Route 695
- State Route 718

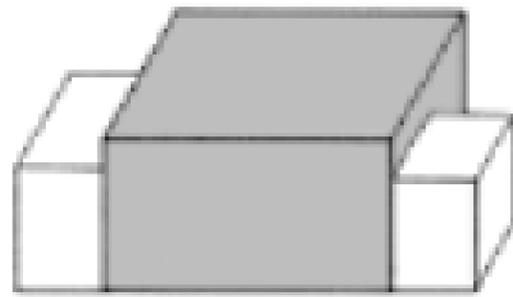
Towns&Culture:
sites located near scenic drive

- beautiful view
- churches
- historic points of interest
- national historical sites

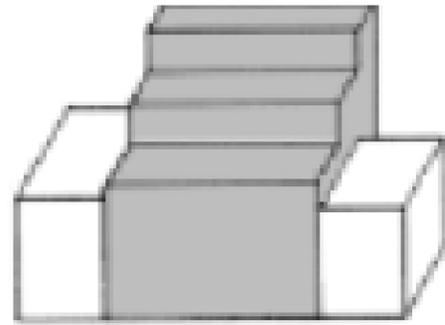
--- scenic drive



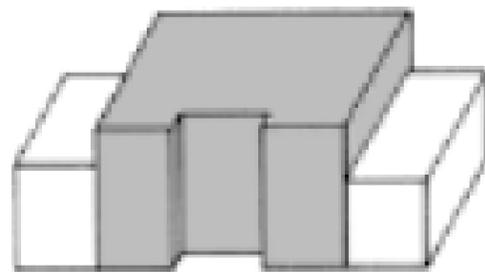
11 Commercial Structures_Design Guidelines



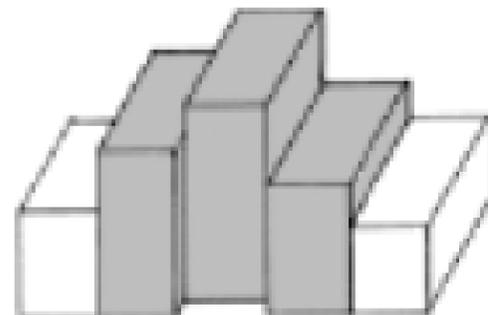
unmodulated mass



stepped-back height



varied wall surfaces



varied height with regular width

To avoid big-box structures, here are some general guidelines to follow:

1) Break down large, massive buildings by:

- avoiding an unmodulated mass
- using stepped-back height
- using varied wall surfaces
- using varied height with regular width
- using variation in materials, textures, patterns, colors and details

Ultimately height variations, set backs, detailing and color changes will help break down the mass of the building and provide visual interest.

2) Choose a strategic color scheme:

- coordinate the color palette for each development
- make sure that a new development's color scheme is compatible with adjacent developments.
- limit the number of color choices. Generally there are 4 key color differentiations: wall color, trim color, accent color, and roof color.
- beware of bright or strong accent colors—although they may be appropriate for smaller areas such as awnings and signs on commercial buildings.



12 Commercial Structures_Design Guidelines



the historic church is overshadowed by the imposing height and form of the surrounding commercial structures



awkward transition between the gas station and the adjacent residential building

While it is important to utilize architectural facades and site features that are consistent with and complement the surrounding context, it is also important to use building mass appropriate to the site. "Place the buildings of the greatest footprint, massing, and height at the center of commercial or office developments where the impact on adjacent uses is the least," and strategically reduce the height of structures near lower density uses (Frazier Associates, 2005: p. 7). Remember that building heights can be made higher if the mass is visually broken up with varying heights, wall surfaces, colors, patterns and set-backs.

When designing new developments it is also important to strategically place new buildings and uses in relationship to the existing site and adjacent buildings. This is especially important when designing around historic structures or districts where an unflattering juxtaposition can ruin the charm of the historic structure(s).

13 Commercial Structures_“Big Box” Retailers



Walmart,
Accomack County, VA



Chesapeake Square,
Accomack County, VA



Kmart, Jackson, Wyo.



Walmart

Recently national retail chains have started to develop more options beyond their standard “cookie-cutter” designs. Most chains research potential locations extensively and are primarily concerned with securing locations with the best economic potential (Hollberg, 1999: p. 70). In the end, if your community insists on a customized design that is required to address local historic or architectural concerns most franchises will be willing to address them.

If some franchises are not willing to work to maintain the architectural integrity of Accomack County, the county could provide some incentives. Possible incentives may include: relaxed parking standards, density bonuses, and tax credits.

The two images to the right are examples of how “big box” retailers have utilized site specific design.

To the left are two examples of commercial retailers in Accomack. While the Walmart makes efforts to break down the mass of the building, the buildings of Chesapeake Square do not.

14 Commercial Structures_Fast Food



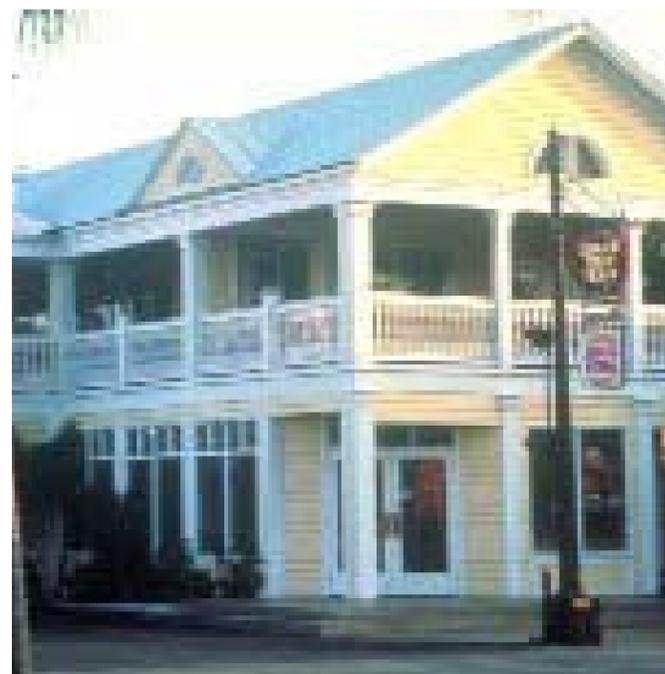
McDonald's,
Accomack County, VA



Bojangles,
Accomack County, VA



McDonald's, Richmond, VA



Burger King, Key West, FL

The two images to the right are examples of how national franchises like McDonalds and Burger King have changed their standard "cookie-cutter" designs to address local historic and architectural concerns.

To the left are two examples of commercial "cookie-cutter" fast food restaurants in Accomack County. With proper design guidelines in place, Accomack County could work with national chains to ensure that new developments fit into the county's historical architectural aesthetic.

Here are the city of Charlottesville's guidelines for franchise design outlined in their entrance corridor:

1. Charlottesville seeks new construction that reflects the unique character, history, and cultural diversity of this place.
2. Franchise design or corporate signature buildings should not reflect "Anywhere, USA" designs but should follow the same guidelines applicable to other buildings. Architectural transplants from other locales or shallow imitations of historic architectural styles, for example, are neither appropriate nor desirable. Incompatible aspects of franchise design or corporate signature buildings must be modified to fit the character of this community.
3. Avoid using false or non-functional design elements to appear compatible with surrounding buildings."

15 Commercial Structures_Gas Stations



Valero Station,
Accomack County, VA



Sunoco Station,
Onancock, VA



Texaco Station, Hanover, VA



Shell Station, Charlottesville, VA

In addition to “big-box” retailers and national franchises, gas stations can also be designed to respect the local character of the county by:

- using compatible materials, colors and forms for both the building and canopy
- designing the canopy so that it is integrated with the rest of the building.
- not internally illuminating the canopy cornice.
- using fully shielded lighting fixtures.
- minimizing the number of logos displayed

To the left are two examples of generic gas station types that can be found in Accomack County.

To the right are two examples of how gas stations can be designed to be more aesthetically pleasing and respect local character.

16 Street Trees



Trees make communities livable for people. They add beauty and create an environment that is beneficial to our mental health and the surrounding ecosystem. Tree-lined streets are especially beneficial to commercial districts. A recent study confirms that consumers respond positively to shopping environments having a healthy urban forest (Wolf 1999). Across our nation, many revitalizing business districts are working hard to create vibrant, vital consumer environments. Trees are a necessary part of any improvements program and are an important component to attract shoppers and visitors. American Forests, a national tree non-profit, suggests a goal of 15% tree canopy cover in business districts.

Maintenance

Trees usually require watering in the summer and wind protection in the first one to three years. Trees should be staked loosely for the first year. Routine maintenance includes raking and disposing of leaves and debris, removing weeds, pruning dead branches, and controlling pests. Although care and maintenance of trees in urban places can be a somewhat costly task, the value in returned benefits is so great that a sustainable community cannot be imagined without these important green features. Selecting appropriate trees further reduces maintenance needs.

Costs

Costs vary with the type and size of the tree, but the general range is \$20 to \$100 each (planting not included). For a planting cost of \$250-600 (includes first 3 years of maintenance) a single street tree returns over \$90,000 of direct benefits (not including aesthetic, social and natural) in the lifetime of the tree.

17 Street Trees



Benefits of trees:

- **Improved business.** Businesses on tree scaped streets show 20% higher income streams, which is often the essential competitive edge needed for main street store success. Shoppers in tree-lined areas were found to shop more often and longer in well-landscaped tree-lined business districts, and were willing to pay more for goods and services (Wolf 1999).

- **Added value to adjacent homes, businesses and tax base.** Realtor based estimates of street tree versus non-street tree comparable streets relate a \$15-25,000 increase in home or business value. This often adds to the tax base and operations budgets of a city allowing for added street maintenance. Future economic analysis may determine that this is a break-even result for city maintenance budgets.

- **Lower urban air temperatures.** Asphalt and concrete streets and parking lots are known to increase urban temperatures 3-7 degrees. These temperature increases significantly impact energy costs to homeowners and consumers. A properly shaded neighborhood, mostly from urban street trees, can reduce energy bills for a household from 15-35%.

- **Longer pavement life.** Studies conducted in a variety of California environments show that the shade of urban street trees can add from 40-60% more life to costly asphalt. This factor is based on reduced daily heating and cooling (expansion/contraction) of asphalt. As peak oil pricing increases roadway outlays, this will become a significant cost reduction to maintaining.

18 Street Trees



Parking Lot,
Accomack County, VA



Parking Lot,
Accomack County, VA



Landscaped Parking Lot



Parking Lot, Hingham, MA

Benefits of trees continued:

- **Convert streets, parking and walls into more aesthetically pleasing environments.** Research on aesthetic quality of residential streets has shown that street trees are the single strongest positive influence on scenic quality (Schroaeder and Cannon 1983). Low plantings and trees can also be used to minimize the visual impact of parking lots and utilities located along entrance corridors and adjoining developments that will detract from the natural beauty and historic character of the county.

- **Improved operations potential.** When properly positioned and maintained, important features, such as vital traffic regulatory signs, can be better seen. Trees soften the hard geometry that typically dominates the urban environment. Proper tree placement and maintenance must be rigidly adhered to in order to optimally enhance these features.

- **Less drainage infrastructure.** Trees absorb the first 30% of most precipitation through their leaf system, allowing evaporation back into the atmosphere. This moisture never hits the ground. Another percentage (up to 30%) of precipitation is absorbed back into the ground and taken in and held onto by the root structure, then absorbed and then transpired back to the air. Some of this water also naturally percolates into the ground water and aquifer. Storm water runoff and flooding potential to urban properties is therefore reduced.

19 Container Planters



Description

A container planter is a means to temporarily store rainwater while aesthetically enhancing urban districts. Planter boxes can be prefabricated pots or constructed in place. They come in all shapes and sizes, are made of stone, concrete, brick, plastic lumber or wood, and can hold a variety of plants.

Benefits

Container planters provide aesthetic benefits and make urban landscapes more attractive. Large planters reduce impervious area and stormwater runoff. Container planters are simple, cost-effective, and visually appealing. They can be placed on many types of flat impervious surfaces, such as sidewalks, plazas, and rooftops. They are a low-cost and convenient way to incorporate green infrastructure within urban centers.

Maintenance

Container planters require minimal maintenance. They must be checked periodically to maintain adequate drainage. They are likely to need summer watering and weeding. Potted plants require more water than the same plants growing in the ground.

Costs

Commercial quality and sized planters can run anywhere from \$140-\$1200 per planter. The cost of contained planter boxes varies, depending on the size and materials.

20 Flow-Through Planters



Flow-through planters are structures or containers with impervious bottoms that temporarily store stormwater runoff on top of the soil placed and filter sediment and pollutants as water slowly infiltrates down through the planter. Excess water collects in a perforated pipe at the bottom of the planter and drains to a destination point or conveyance system.

Flow-through planters come in many sizes and shapes, and are made of stone, concrete, brick, plastic lumber or wood. They can be placed in or above the ground level. They can contain a variety of shrubs, small trees, and other plants appropriate for seasonally moist and/or dry soil conditions.



Benefits

Flow-through planters add aesthetic appeal and wildlife habitat to city streets, parking lots, and commercial and residential properties while providing a means for stormwater collection and treatment.

Because flow-through planters require limited space and can be built immediately next to buildings, they are ideal for constrained sites with setback limitations, poorly draining soils, steep slopes, or contaminated areas. Flow-through planters reduce stormwater flow rates, volume, and temperature, and improve water quality. They can also provide shading and energy benefits when sited against building walls. They can be an attractive landscape feature and provide wildlife habitat.

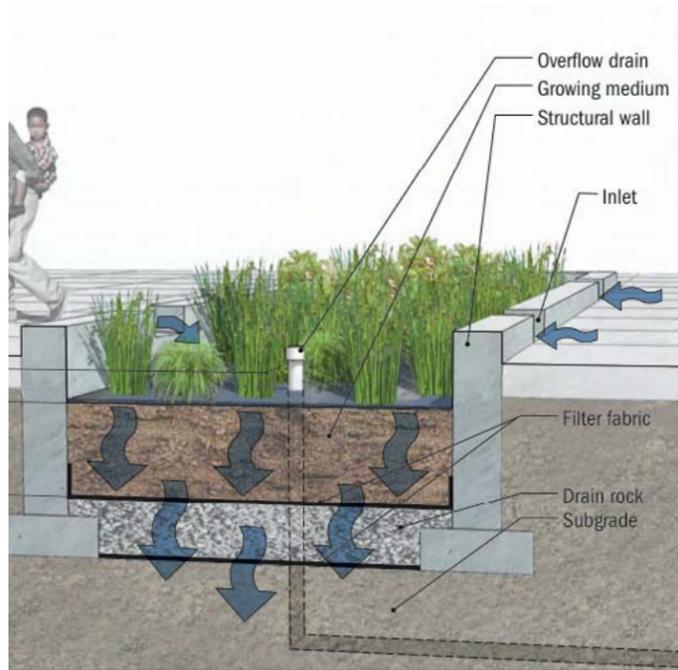
Maintenance

Plants and structural components of flow-through planters must be inspected periodically. Maintenance needs are low and similar to that of all container plantings. Additional maintenance needs may include removing sediment, cleaning and repairing pipes, and maintaining proper drainage. Downspouts, curb cuts, and other features where debris may obstruct flow must be inspected and cleaned periodically. Summer irrigation and weed pulling may be required. Minimize the need for permanent irrigation as much as possible by using native and well-adapted plants.

Costs

Costs run at about \$400–\$500/year for a 500 square foot planter. Maintenance costs will vary depending on the size and material of the planter and the types of plants utilized. Installation costs are approximately \$8/square foot. Installation costs will vary depending on the size and material of the planter structure.

21 Infiltration Planters



Infiltration planters add aesthetic appeal and wildlife habitat to city streets, parking lots, and commercial properties while reducing and treating stormwater runoff. They are structures with open bottoms that allow the stormwater to slowly infiltrate into the ground. Treated stormwater is then infiltrated into the ground as groundwater. Infiltration planters are not recommended for soils that don't drain well, use flow-through planters instead.

Infiltration planters come in many sizes and shapes, and are made of stone, concrete, brick, plastic lumber, or wood. They can contain a variety of shrubs, small trees, and other plants appropriate for seasonally moist and dry soil conditions. Planters are likely to need watering and weeding in the first one to three years.

Benefits

Infiltration planters are ideal for space-limited sites with good drainage. They reduce stormwater runoff flow rate, volume, temperature and pollutants, and recharge groundwater. Infiltration planters can be attractive, and are easily integrated into the overall landscape design. They can also provide energy benefits when sited near building walls.

Maintenance

Flow-through planters require regular maintenance of vegetation, such as weeding, soil replacement and watering during dry periods. They should also be regularly inspected to ensure structural components are functioning properly, especially following large rain events

Costs

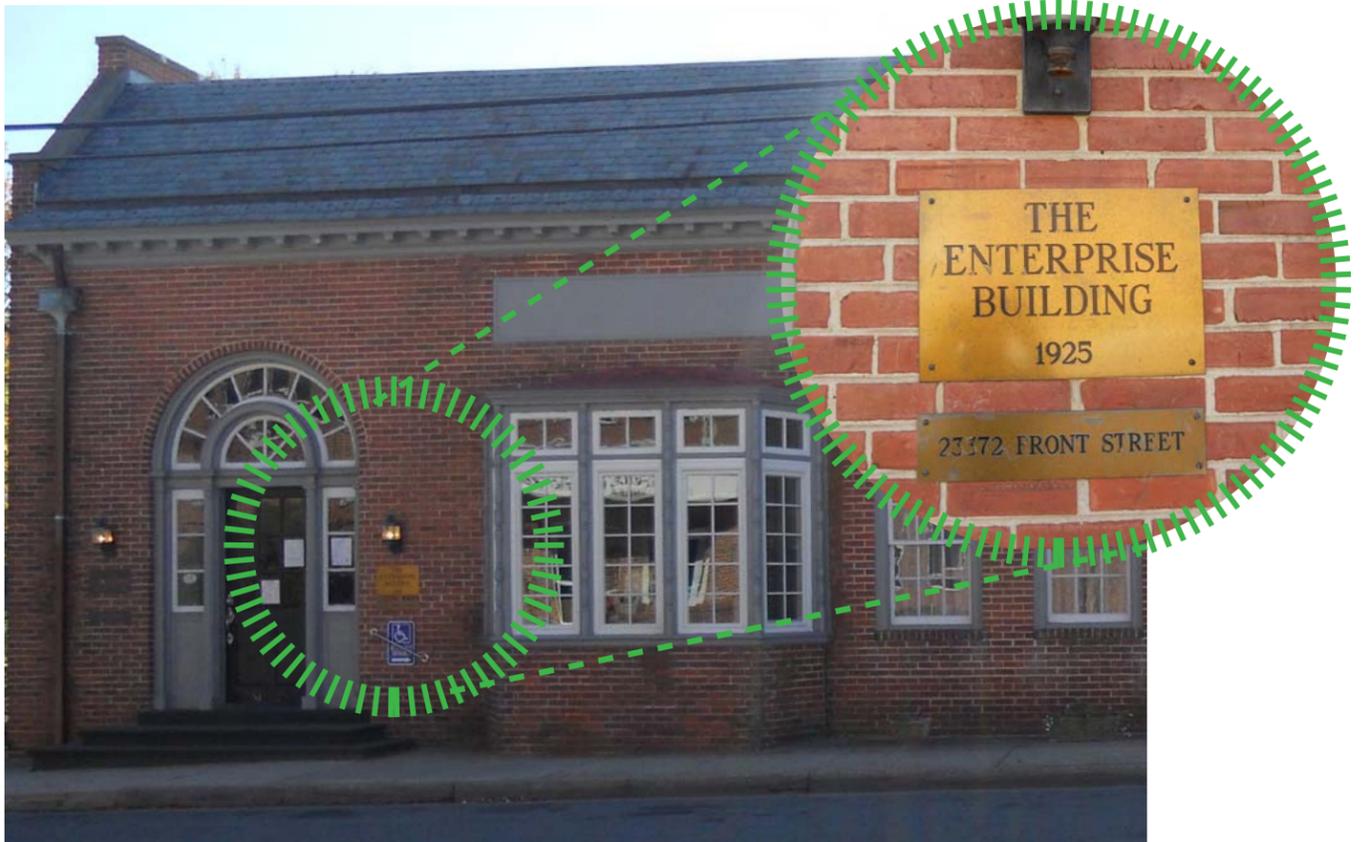
\$400-\$500/year for a 500 square foot planter. Maintenance costs will vary depending on the size and material of the planter and the types of plants utilized. Installation costs run at approximately \$8/ square foot. Cost will vary depending on the size and material of the planter.



historic and way-finding signs in Accomack County are often overpowered by sign clutter

Many historic sites in Accomack County have already been designated on the Virginia Landmarks Register and the National Register of Historic Places however, the signage to demarcate these places should be more cohesive and consistent. Historic landmarks and historic districts recognized locally, by the state and nationally should be appropriately identified and incorporated into a way finding sign network. A cohesive signage network will bring people into the towns in Accomack County to shop and explore while defining the local character of the towns. Furthermore, adopting a clear historic signage system would help identify, designate, and protect Accomack County's historic sites.

Property values increase more in historic areas than in non-historic areas. For example, between 1987 and 1995, residential districts in each of Staunton's five historic districts appreciated from 52 percent to 66 percent compared to the 51 percent for properties not in historic districts. Historic Preservation also has commercial benefits. In Virginia, visitors spend \$9.1 billion visiting historic and cultural sites in the Commonwealth (data from Better Models for Development in the Shenandoah Valley).



existing historic signage in Accomack County

To the left are some sign examples that demarcate historic structures throughout Accomack County. Some of these signs are located on busy highways and do not stand out because of the amount of visual clutter (illustrated in the upper left image). A visually clear wayfinder sign system would help to attract visitors directing attention to historic districts and historic landmarks while making them easier to find.

Existing signage like that shown in the lower left located in Accomack distinguishes historic structures; however it is unclear whether or not this structure is on a Historic Register or its historic significance. However, many historic structures throughout Accomack County do not have signs to distinguish whether or not they are historic.

Many of the beautiful historic homes and churches, shown to the right, in Accomack County do not have markers to designate Historic Register status. This makes walking tours and site seeing on scenic routes difficult and confusing.



Unindicated Historic Structures



historic plaque designed by the Texas Historical Commission

Accomack County should consider design and adopting a historic plaque similar to this design created by the Texas Historical Commission to be placed on historic homes, churches and structures. These plaques are visible from the street and greatly enhance walking tours throughout town centers like Onancock. People will know exactly which structures are officially highlighted on the walking tour. The Eastern Shore logo could be adopted as a part of the sign template design similar to how Texas has personalized their land mark signs (shown on the left).

To the right are some other sign designs that could be implemented to demarcate historic structures. A simple free standing sign, illustrated in the second and third image on the right, provides another option. Free standing signs do not require nailing signs to structures and can be easily read from sidewalks making information on the history of the structure more public during walking tours. Another option is to place a stone plaque, pictured to the right, could also be placed in front of structures to demarcate historical significance. This sign is less obtrusive and blends into the scenery.



More Plaque Design Samples



Standard National Register Plaques
10" x 7"
Bronze Plaque
Brown Background
Double Border
Bookman Font Style
Costs: Aluminum: \$79.00 Bronze: \$83.00



Custom Worded National Register Plaques
10" x 7"
Bronze Plaque
Brown Background
Single Line Border
Cost: Aluminum: \$144 Bronze: \$152



Custom Worded National Register Plaques
18" x 12" Bronze
Single Line Border
Brown Background
Bas Relief
Cost: * Call for pricing
Prices vary—cost calculated by art development per hour

Erie Landmark Company , 637 Hempfield Hill Road
Columbia, PA 17512
1-800-874-7848
<http://www.erielandmark.com>

The prices of these types of plaques, signs set in stone and free-standing signs range from about \$80–\$500. Local and state grants are available to cover the some costs for developing historical marker signage programs. Community foundations offer grants and are common funding sources. Applicants applying for grants are typically 501(c)(3)s and governmental entities. The Eastern Shore of Virginia Community Foundation is a potential funding source (dhr.virginia.gov).

Eastern Shore of Virginia Community Foundation
c/o The Norfolk Foundation
P.O. Box 205
Onley, VA 23
Geographical area: Accomack and Northampton counties



Accomack County Way-finding Sign



Onancock Way-finding Sign



Local marker, Fairfax County



Baltimore Way-finding Sign

As mentioned before, a wayfinder sign system would help to attract visitors and direct their attention to historic districts and historic landmarks. However, existing way finding signs in Accomack County, pictured in the two left most images, are very small and get lost in the visual clutter of advertisement signs. The small size of these signs make them hard to see clearly from the street and are only somewhat helpful on walking tours.

A bold and cohesive way finder sign system like Baltimore's, illustrated to the right, would be beneficial to Accomack County and help direct tourist to historic local sites. Furthermore, local markers could also be a way to enhance the character of historically significant sites and towns in Accomack County. The Code of Virginia empowers local governments to establish marker programs to commemorate persons or events of local significance, provided that the local markers look different from the state ones. Local programs use markers of a different style and color than the state markers, such as this one in Fairfax County.



Charlottesville Way-finding Sign



Tourist Oriented Directional Sign



Charlottesville Way-finding Sign



Tourist Oriented Directional Sign

The more Accomack County does to enhance its unique natural, scenic, historic, and architectural assets, the more tourists it will attract. Implementing a Tourist Oriented Directional (TOD) signage system along high way 13 in addition to a way finding signage system throughout the towns in Accomack County in the future will solve the billboard and signage clutter issues. Tourists' attractions as well as historic structures, landmarks and historic districts recognized locally, by the state and nationally can be appropriately designated and highlighted by these two different types of signage systems. These two signage systems work together as a better alternative to billboards and other forms of off-site advertisement.

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Landscape



Due to its geography, Accomack County has a special relationship with both the Chesapeake Bay and the Atlantic Ocean. From aquaculture in the Chesapeake to ecotourism at barrier islands, water resources play an integral part in the past and present of the County. The images at left show wetland environments near the Chincoteague National Wildlife Refuge. The image above shows the Assateague Lighthouse (1867).



Human/Environment Interaction



Most of Accomack county is quite rural. The image at left shows an unpaved parking lot near Harbortown. This marine facility is adjacent to Pungoteague Creek (top).

The image at left shows a private dock on Onancock Creek. Residential uses comprise much of the land adjacent to the Creek.



This small tributary of Onancock Creek routinely fills with sand placed on nearby roadways by VDOT. The stream has been highly altered, and rocks can be seen that have been introduced to prevent erosion.



Some riparian areas are relatively free of development, such as this portion of Folly Creek

Built Environment



Development in Accomack County must cope with a high water table. The image above shows a series of mounded septic systems which serve the residential units in the background. Mounded septic systems are designed to overcome limitations to traditional septic systems.



The image at right shows an on-site wastewater treatment system for a residential complex (pictured above). While effective, these systems are expensive and require additional land.

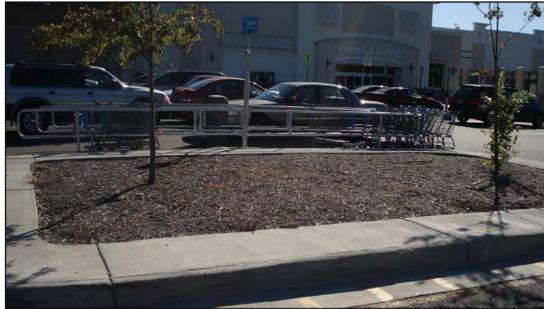


The threat of floods does not stop development along coastlines. The image above shows a structure in Chincoteague built on raised pillars to withstand flood events.



Pipes that discharge stormwater from the streets of Onancock into Onancock Creek.

Water Resources in Accomack County | Opportunities



An elevated island in the Wal Mart parking lot. Elevated islands like this are poor at absorbing runoff. This island is also sparsely vegetated.



This elevated section of grass could be recessed and planted with native vegetation that could provide shade as well as filter stormwater runoff.



A portion of an intersection in Accomack with excessive impervious surface cover. Swales and other pervious elements could be introduced, beautifying the area as well as helping to control runoff.



This image shows another example of excessive pavement. Impervious surfaces could be reduced while not affecting ingress/egress to the site on the right.



A retention pond for Wal Mart. This pond uses extra land that could have been used for a more productive use, and is a potential safety hazard. The use of LID techniques can mitigate the need for such facilities in the future.



An elevated median in a commercial center that could be retrofitted to control stormwater runoff from the site.



A portion of a parking lot in Onancock that is in poor condition and receives relatively little use. This site could be replaced with grass or permeable pavers that would accommodate peak capacity parking needs.



The image above shows a future growth area, as designated by the County. This area is also in the groundwater recharge spine, which means that proper use of low impact development strategies will be especially important.



A site in the heart of Onancock located near the wharf. The site is currently used as a gravel yard, but represents an opportunity to expand Onancock's water-based recreation and tourism.



A large grass field adjacent to Onancock Creek. This is an area where the vegetated buffer along the Creek could be expanded, providing for both water quality and shade.



Phragmites along Onancock Creek. This invasive species could be removed to allow native species to flourish.



One of many streams in the Nandua Creek watershed that will be stressed by future development. Early planning will help these streams retain their integrity, and even improve their health, creating a community asset.



A site outside the Planning Department's office that could be used as a demonstration rain garden



Bioretention Basin (Rain Garden)
Image Source: Karen Firehock



An existing swale that could be used as a vegetated swale in the future.



Image Source: wevj.org

Forests provides

.....Intact Wildlife Habitat



Forests and trees are extremely important for wildlife. Accomack County is home to a wide variety of wildlife including many threatened species. It is also a rest stop for migrating birds on the East Coast, such as the Piping Plover. The tree pictured above right is home to a Bald Eagle nest. Habitat like this provides opportunities for tourists to view the county's rich species diversity.

.....Protection for Water Supply



Accomack County is surrounded by large bodies of water, with creeks and rivers extending inland. Most of the areas along water bodies are not forested and lack beneficial green buffers. Forests and trees help filter pollutants from stormwater runoff. Additionally, they help cool streams and thus improve habitat for aquatic species. This can benefit localities by reducing pollution while simultaneously enhancing opportunities for fishing, tourism, boating and other forms of recreation.

.....Better Quality of Life and Cleaner Air



Large forested areas help improve local air quality by filtering pollutants and preventing wind from eroding soils.



Trees in this residential neighborhood in Onancock provide a number of services. They improve local air and water quality as well as reduce heating and cooling costs of nearby residences.

Opportunities lie in

.....Reducing Forest Fragmentation



Intact landscapes, or cores, are land areas 100 acres or larger in size that are needed to provide adequate space for biodiversity and complete ecological functions. Development should be kept out of these areas. Accomack County currently has large areas of fragmented patches which need to be restored.



The edges of the cores are vigorous bio-areas and badly need protection. A great variety of plants would create a buffer belt for keeping different species of wildlife. A parking lot is located next to the wetland area above, which may degrade living environment for wildlife along the edge.

.....Treating Stormwater and Sediment



Throughout the county there are many areas that could benefit from strategically planted trees. Appropriate plantings can protect the water bodies from stormwater runoff and the pollutants it carries. The pictures above show barren parking lots that have been flooded or filled with sediment by stormwater runoff. Low impact development and the use of trees can help manage flooding and sediment build up.



A tree in this location could reduce the rate and volume of untreated stormwater flowing into the drain.



While this part of Joynes Branch appears forested, upstream it may not be as well protected, since sediment can accumulate and damage water quality.

.....Street Trees and Urban Forestry



Trees along this street in Accomack could help provide shade in the summer to cool pedestrians. They would increase aesthetic quality and create a more inviting space for residents, tourists and shoppers. They would also provide many other ecosystem services.



Adding trees can enhance otherwise unattractive places, such as this large square in Onley, which could use trees to reduce the urban heat island effect and restore urban environmental quality.

Forests provides

.....Recreation Opportunities



Integrating landscaped features with recreation and trail plans will help create more inviting and pleasant experiences for recreation. The trail pictured above could use better plantings.

.....Scenic beauty for Tourism



This bench benefits from the nearby shade trees and allows bird watchers and other visitors to take in scenes, such as the forests and lakes above, while sitting in comfort.

.....Revenue and Jobs



Agriculture and silviculture are two major economic sectors in Accomack County. It is important to promote these industries as not only a long term investment but also to help them protect the county's natural resources.



Source: Wikipedia-Charlottesville Downtown Mall

Trees are good for business. Studies have shown that consumers will spend more money at shops with trees near them, sometimes even increasing sales by 20 percent!

.....Active Public Participation



Residents of Accomack County are aware of the value of trees and forests, but may not be aware of incentives and programs to promote them. There are many readily available allies that can help with tree maintenance and management at a variety of scales. Landowners can be educated about the value of trees and encouraged to plant them on their properties. Groups such as the Virginia Master Naturalists, the Nature Conservancy, the Audubon Society, Ducks Unlimited, the Eastern Shore Master Gardeners and even schools and youth organizations can provide resources such as expertise, labor and donations.

Opportunities lie in

.....Improving Parks and Trails



This park behind the old Onancock High School could use some shade trees to encourage more use by residents and visitors.

In Accomack, trees and some benches in this historic site could make it a major destination for people walking in the town.

..... Green Buffers around Transportation Hubs



If you were a tourist, would you rather drive along the natural beauty of the road on the right or past the unattractive landscape that dominates Route 13? Appropriate green buffers not only provide continuous scenic beauty along major tourist routes, but also protect wildlife from the impacts of traffic such as noise and exhaust.

.....Farming, Timber & Commercial Services



Encouraging private forest owners to reforest areas that they harvest, either naturally or by planting, helps maintain a viable timber economy. Incentives, such as tax program and help with management can prevent the loss of timber stands like the one pictured above.



The photo above shows the common problem of scarce vegetation in shopping areas throughout the county. More trees at these locations not only improve drainage and provide shade, but it also creates a more comfortable and aesthetically pleasing shopping area.

..... Encouraging Tree Stewardship with Landowners



Technical assistance, subsidies and cost-share programs can help involve residents and landowners in management and maintenance plans to ensure that trees are properly cared for over their life cycles. Urban forestry plans can help protect new trees and replace old trees. This ensures that streets and public areas constantly benefit from the services that trees provide.

Recreation, Tourism, and Open Space in Accomack County, VA.

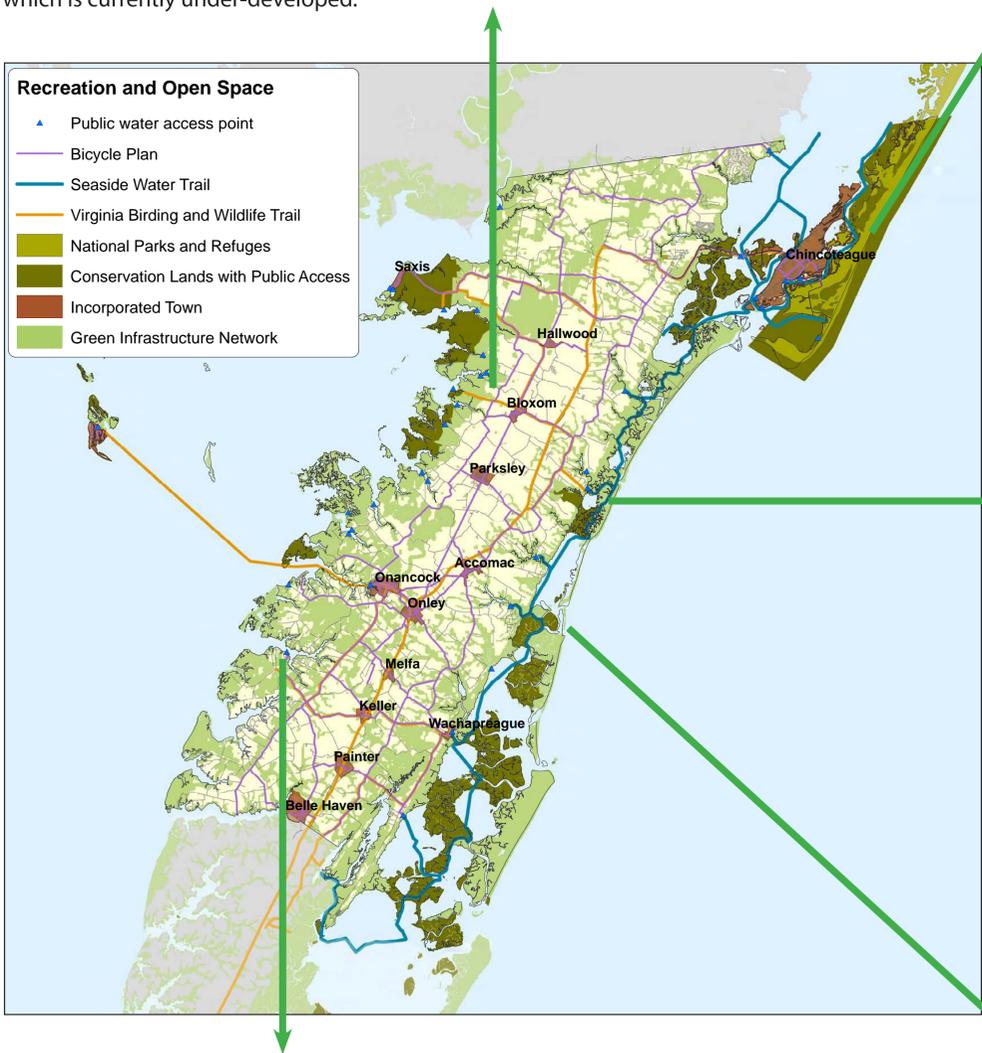
Existing Recreational and Eco-Tourism Opportunities



Bloxom Vineyard. This vineyard, which features a tasting room and restaurant on-site, is one of the few agri-tourism opportunities in Accomack County. Agri-tourism is a segment of the tourism market which is currently under-developed.



Left: Chincoteague National Wildlife Refuge Visitor's Center. Right: Chincoteague Island public beach. Accomack County's popular tourist destinations are located at Chincoteague. Major attractions include the beach and the wild ponies on the island. These areas divert tourist attention from other areas in the county, such as the towns of Onancock and Accomac, as well as the other wildlife areas in the middle of the county.



Gargatha public boat landing and Birding and Wildlife Trail point. Several boat landings in the county are open to the public. They are often also locations designated as part of the Virginia Birding and Wildlife Trail. However, few provide amenities for birders, such as benches or bird blinds.



Public Boat Landing at Harborton. The Harborton boat landing is also a designated point on the Virginia Birding and Wildlife Trail. It is the only place we found that had benches and a small park space for birders. The boat landing is well used, but a portion of the large parking lot has the potential to be transformed into additional green space to enhance the wildlife and tourist area. One major challenge to improving this space is that all of the area surrounding the county's boat landing is privately owned land, making it difficult to make accommodations desired by the county.



Kayaking with Dave Burden of SouthEast Expeditions. Folly Creek. Kayaking and other modes of water transportation are popular tourist and recreational activities available on the Eastern Shore of Virginia. Public access to the water provides opportunities for kayakers and boaters to the Chesapeake Bay and the tidal flats of the Barrier Islands. However, these provide little for tourists that do not have their own boats, as there are no waterfront amenities at these landings such as picnic areas, benches, or viewing areas.

Recreation, Tourism, and Open Space in Accomack County, VA.

Town Parks and Walking Nature Trails



Nature Trail at the Old Onancock School. Onancock. This trail is maintained by the Eastern Shore chapter of the Master Naturalists. It is located on the property of the former Onancock School, which is now a community center. The information kiosk at the trailhead provides information about current events and information about the trail and its wildlife.



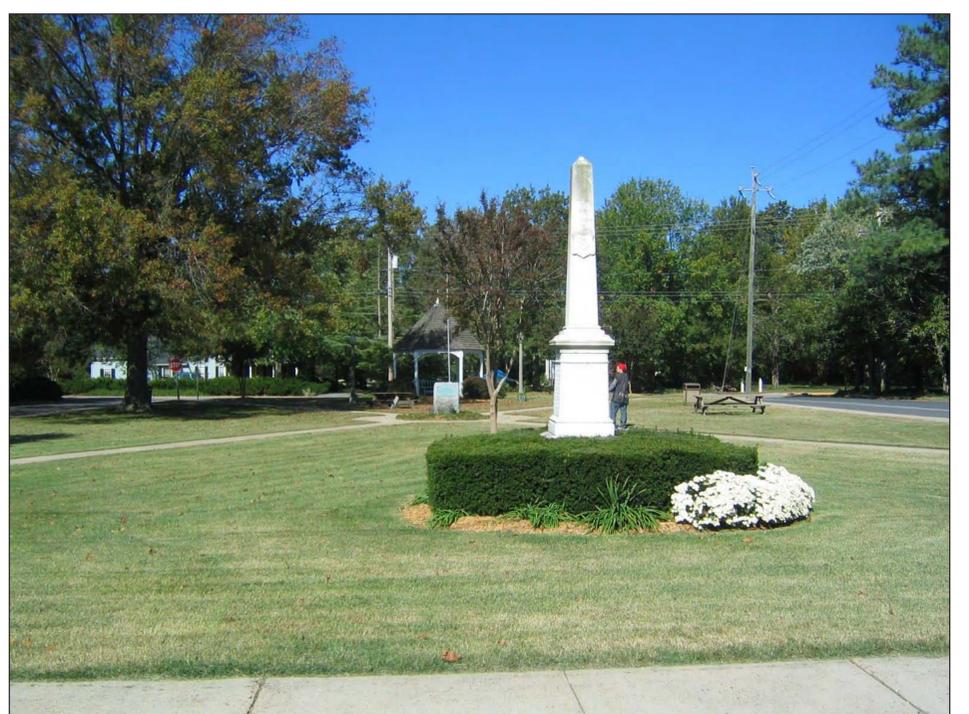
Nature Trail, Recreational Fields, and Picnic Area at Onancock School Community Center. Onancock. Several picnic tables are situated on the school property, however a more appropriate placement of the tables would be in a shaded area instead of in direct sunlight. The picnic area would then attract more users. Because of Onancock's older population, sitting areas, walking paths, and garden space might provide a more suitable recreational area than the existing soccer fields.



Park at Onancock Marina. Located just across the street from the Onancock Wharf is the Onancock Marina Park, which is barely recognizable as a park. There is a single picnic table and lawn space, which is hard to distinguish from that of the nearby private residence. Additional signage, landscaping, or benches could increase usage of the park.



Robert Custis Memorial Park in Onancock. This park was created and managed by the Eastern Shore of Virginia Master Gardener program. Its greenery does include the native crepe myrtle, but is otherwise composed of decorative non-natives. This well-maintained park includes benches and is located at the intersection of Market and Ames Streets in downtown Onancock. Pocket parks such as this could encourage continued mobility for residents as they age in place.



Town Park in Onancock. Located at the center of Onancock, this park features a gazebo and statue marking the route of John Smith. This park seems to be a popular meeting spot for young people in town.

Recreation, Tourism, and Open Space in Accomack County, VA.

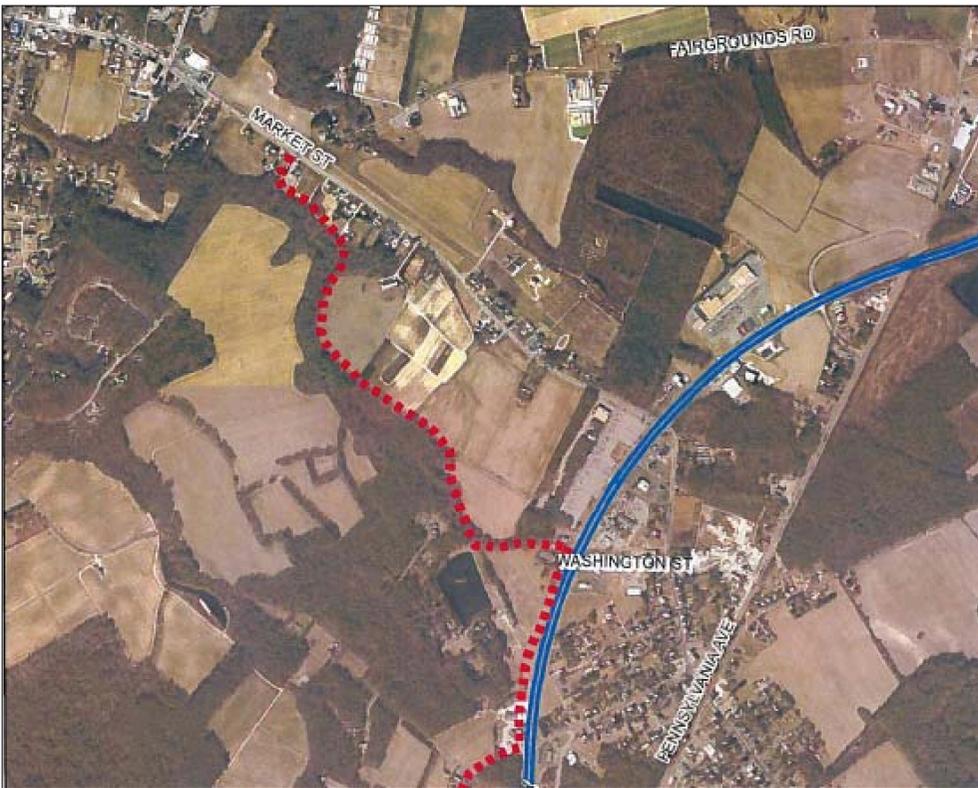
Future Hospital Site and Options for the Bike Plan



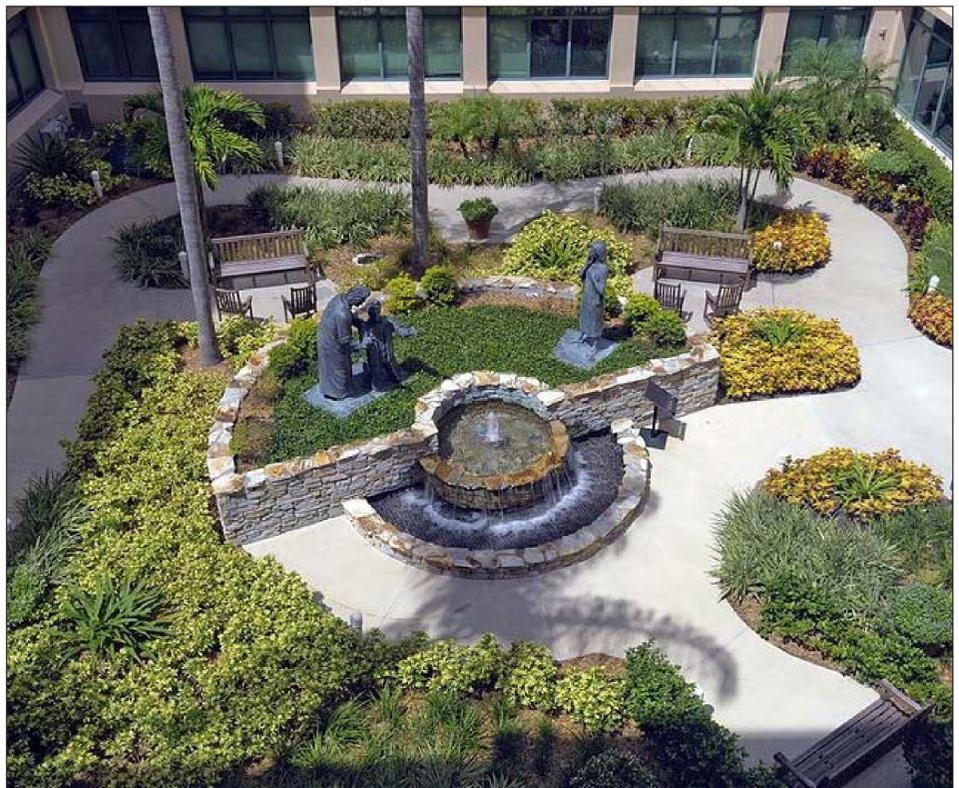
The future hospital site is located between the towns of Onancock and Onley. There is a wooded lot behind the site, which is protected by an RPA. This means there is potential to design the hospital so that even bed-ridden patients would be able to see green space, increasing their rate of healing.



Existing conditions of the future hospital site. This parcel is currently zoned as agricultural and will need to be rezoned for hospital use. The rezoning process could provide an opportunity for the developer to offer proffers such as community paths and high-quality landscaping. The parcels surround a number of existing homes.



Proposed Bike Plan between Onancock and Onley. The proposed route between Onancock and Onley runs along the edge of the proposed hospital site. If this bike route were to be completed, it could provide cyclist and pedestrian access to the hospital site and connect with the green infrastructure plan "rung" that runs across the Shore horizontally in this area.



Example healing garden. (Source: Florida Celebration Health) Several studies have shown that healing gardens and access to nature in hospitals result in faster patient recovery times. The inclusion of a healing garden into the site design for the new hospital would be a way to incorporate the hospital site into the green infrastructure plan.



Multimodal (bike/ped) paths. (Source: Friends of the Community Path, Boston) The county planning staff is interested to see the incorporation of a multimodal path in the green infrastructure plan. These paths provide safe areas for pedestrians and cyclists apart from vehicle transit. Biking and walking appear to be popular modes of transportation in areas around Onancock and Onley.



Bioswales and stormwater management in parking lots. (Source: Clean Water Minnesota) The Accomack County planning staff is interested in incorporating low-impact development strategies for stormwater management into the new hospital site design, particularly in the parking lots.

photojournal_towns&culture

Lauren Cross
Marie Miller
Chelsy Ward



route 13

The route 13 corridor is heavily commercialized and is a stark contrast to the small town charm of the surrounding towns. Our team took several pictures to document the experience of traveling along route 13 as well the town entrance corridors. We found route 13 unpleasant, largely due to the unattractive signs, billboards, and run-down buildings and houses. To improve the route 13 corridor, we suggest the implementation of a sign ordinance along the corridors in order to enhance the local cultural and aesthetic integrity.



billboards

The route 13 corridor is lined with billboards. These billboards are obtrusive, unattractive and distract drivers.



restaurants

There are several large chain restaurants along the corridor, none of which reflect the cultural character of the local community. Many of the restaurants have obtrusive signage as well. Future development should seek to blend in aesthetically with the surrounding area.



signage

There were several large signs along the corridor that also serve to make the local community less attractive. We believe the implementation of a sign ordinance will provide a remedy to this problem.



dilapidated structures

There are several rundown structures along route 13. These structures are eyesores; they bring down property values and deter private investment. They make the economic struggles of the community far too visible.



town character

The small towns of the eastern shore each have a unique architectural scale and character. As part of our investigation into the towns and culture of Accomack, we sought to isolate the key elements of the towns that make them unique, including: town centers, residences, churches and national landmarks. By evaluating these elements, we can begin to brainstorm how to preserve and enhance the historic towns of Accomack County. Our interventions and recommendations will attempt to preserve the historic character of the local architecture, enhance the views and town experience through street trees and sign ordinances, and promote clear signage to designate historic site and places of interest to promote tourism.



Accomack



Onancock

town centers

Pictured to the left are the town centers of Accomack (left) and Onancock (right). Both the town centers of Accomack and Onancock are nationally recognized historic sites and act as the social, commercial and political centers of their respective towns.

residences

Both Accomack and Onancock have unique residential typologies. The left most image shows one of the long houses located in Accomack, and, next to it is an example of the local Onancock residential typology which uses intricate detailing to ornament the porches and railings.

churches

Pictured to the left are two churches located in Accomack and Onancock. Accomack County has many small, historic, local churches that help add to the scenic landscape of the county and could service as a local tourist attraction.

landmarks

Picture to the left are two national landmarks located in Accomack County: Accomack's Debor's Prison (the left most image) and Onancock's Hopkin's and Brothers Store.



entrance corridors

Entrance Corridors to Accomack and Onancock are critical in pulling visitors into the charming towns instead of passing through to the big box chains located on route 13. We aim to bring life to these corridors by adding trees. We also aim to make these corridors more attractive and thus inviting by first researching the feasibility of integrating a signage network throughout Accomack County. Our recommendations for enhancing these entrance corridors also addresses the removal of blight and cluttered advertisement signage, because both detract from the town's character and ultimately decrease property values. We also feel that trees need to be added to these corridors and throughout the town centers to bring life to them.



tourism signage

Signage is necessary in order to present the character of towns to visitors in entrance corridors. This sign to the left welcomes visitors to the town of Onancock.



sign clutter

There is significant sign clutter along the entrance corridors especially during campaign season. Advertisements detract from important indicator signs, guide, traffic and route marker signs.



sidewalk conditions

The conditions of the sidewalks are fair throughout the center of the town of Accomack and Onancock. Sidewalks are continuous fairly well maintained, however street trees could be implemented to foster more pedestrian traffic nice days. This picture was taken in the entrance corridor of Accomack.



dilapidated structures

Pictured to the left is an unsightly dilapidated structure near the center of the town of Accomack. The structure can be seen from the street and is especially visible walking around town.



scenic roads

Amongst many other things, the Eastern Shore is known for its greenways-flat rural country and blueways-pristine rivers and streams. The scenic routes that run parallel to route 13 provide alternate transportation routes to navigate the Eastern Shore. These scenic routes showcase the beauty and charm of the rural landscape on the Eastern Shore. Our aim is to provide a plan to preserve and promote the historic and natural integrity of these scenic routes.



historic churches

Pictured left: The various historic churches of the Eastern Shore are an integral component of Accomack County cultural landscape.



agriculture

Pictured Left: Greenways-Agriculture farming has continued to be one of the most important industries on the Eastern Shore. Landscapes like these shape the character of the region or the direction and timing of development.



creeks

Blueways and streams can also be seen from these scenic routes. Some of these areas are protected by Scenic or open space easements.



landmarks

National Historic Landmarks are also viewable from these routes. Pictured left: "Bear and the Cub". This sign demarcates the location of the first play recorded in the United States was presented August 27, 1665.