

Respecting the Past, Creating the Future:

Accomack County Comprehensive Plan



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Amended: February 19, 2014
Amended: January 20, 2016
Amended: October 17, 2018

Accomack County Comprehensive Plan

**The following information reflects the 2008 Comprehensive Plan.*

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The Honorable Steve D. Mallette, Vice-Chair
The Honorable Grayson C. Chesser
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Accomack County Comprehensive Plan

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Introduction

Purpose

The overall purpose of the Comprehensive Plan is to guide the future social, economic and physical development of Accomack County so as to ensure the provision of adequate, quality, community facilities and services and the maintenance of a healthy, safe, orderly, and harmonious environment.

Preface

The Accomack County Comprehensive Plan was rewritten in 1997. This document is an update of the 1997 Plan. Like the earlier Plan, it contains information, policies, and programs for the county to implement in order to manage development and resources in a manner most beneficial to the citizenry. *The Future Land Use Plan (Chapter 6) was updated and amended on February 19, 2014 by the Accomack County Board of Supervisors.

This document is the result of significant effort on the part of the Accomack County Planning Commission, Accomack County Board of Supervisors, the staff of the Accomack County Department of Planning and Department of Building and Zoning, and the citizens of Accomack County.

The preparation of this document drew upon the efforts and information from many agencies and organizations including the Virginia Coastal Resources Management Program and the Chesapeake Bay Local Assistance Department.

The Accomack County Comprehensive Plan is divided into several chapters. The first chapter is an overview of the plan revision process and the legislative authority that enables Accomack County to plan for the future development of the county. The second and third chapters inventory existing conditions. The fourth chapter includes a discussion of issues and concerns facing Accomack County. The fifth chapter presents the county's goals for the future and outlines objectives, policies, and recommended actions designed to achieve those goals. The sixth chapter, which was amended on February 19, 2014, contains the future land use plan which includes the future land use map and proposed land use categories to be considered in the development of future revisions to the county's zoning and subdivision ordinances.

Acknowledgments

The Accomack County Planning Commission and Board of Supervisors acknowledge the following agencies and organizations for the provision of information, assistance and support during the 1997 Comprehensive Plan revision process, and information from many of these resources was also part of the update process in 2006-07.

Accomack County Stakeholder Group
Accomack County Department of Building and Zoning
Accomack County Department of Planning
Accomack County Department of Parks and Recreation
Accomack County Department of Public Works
Accomack County Office of the Tax Assessor
Accomack-Northampton Housing Redevelopment Corporation
Accomack-Northampton Planning District Commission
Eastern Shore of Virginia Ground Water Committee
Environmental Health Division of the Virginia Department of Health
Natural Resource Conservation Service
Shellfish Sanitation Division of the Virginia Department of Health
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
Virginia Department of Conservation and Recreation, Division of Chesapeake Bay Local Assistance
Virginia Department of Conservation and Recreation, Planning and Recreation Resources Division
Virginia Department of Conservation and Recreation, Natural Heritage Division
Virginia Department of Environmental Quality
Virginia Department of Environmental Quality, Virginia Coastal Program
Virginia Department of Historic Resources
Virginia Department of Transportation
Virginia Institute of Marine Science
Virginia Marine Resources Commission
Weldon Cooper Center for Public Service

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Accomack County Comprehensive Plan**Executive Summary****Introduction**

Accomack County is a unique place – a historic, coastal community with cultural roots in early settlements of Native Americans, Europeans and Africans; a fragile, ecologically rich, and productive natural environment of national and international significance; a highly productive and innovative agricultural and seafood economy; a popular and widely known destination for tourism, recreation, and retirement; and a place with huge potential for future economic productivity and innovation in terms of sustainable natural resource and technology industries.

Through a series of studies, meetings, and work sessions during 2005, 2006, and 2007, the County Planning Commission, Stakeholder Group, County staff, consulting team, and local citizens created this updated plan, in accord with the requirements of the Code of Virginia.

Vision for the Future

The updated Comprehensive Plan supports a vision for the future of Accomack County that recognizes the County's unique qualities and outstanding potential as a leading agricultural and seafood producer, as well as an excellent place for families and retirees to live, and for tourists to visit. If the policies of this plan are successfully implemented, the County will achieve its vision and have a future in 20 to 30 years that could be described as follows:

Accomack County is a tranquil, rural community of small towns and villages set in a rural landscape of farms, forests, creeks, wetlands, and shorelines. Agricultural activities are productive, and profitable, yet are managed to limit impacts on the County's fragile and valuable groundwater and surface water resources. Clean water resources support seafood and shellfish industries, vibrant tourism, and healthy rural settlements and downtowns. The local economy is based on adding value to local natural resource products. All land use activities follow best management practices to maintain the health of the natural systems that underpin the local economy and culture.

The number of people and jobs continues to increase gradually, through new development and revitalization. Growth occurs mainly in and around the towns and villages where public facilities and services are most efficiently provided, as well as in small residential subdivisions clustered on farmland. Limited development occurs along the shorelines to protect water quality and quantity. Employment continues to grow, producing a range of jobs at all levels of skill and income, in small and medium-sized enterprises that are compatible with the County's fragile natural systems. The housing supply expands to match the job growth, and provides adequate housing for the full range of household income levels in the County.

In making investments and applying regulations to achieve this vision of the future, the County balances the desire for individuals to develop land as they wish, with the essential need to protect the natural, cultural and economic resources that provide sustenance to the entire

community, thus ensuring that the County's overall wealth and well-being continues to steadily increase in a manner that is sustainable for future generations.

As the County grows and changes, it maintains the essential natural and cultural qualities that both natives and new arrivals cherish: an agricultural landscape, clean air and water, healthy and expansive wildlife habitats, historic neighborhoods and downtowns, efficient government services, friendly and helpful neighbors, and a strong sense of community.

Defining the Problem

The fundamental problem facing the County is that the demand for growth is coming from outside economic and demographic pressures that are beyond the County's direct control, yet the County has very fragile, finite and critical natural resources, and very limited fiscal and infrastructure resources, to accommodate those pressures. Thus, in order to support existing and new residents with adequate public services, the County also needs to expand its economy and employment base in a manner that supports its other goals. Further, the short-term individual economic interests of landowners (such as groundwater withdrawals, sewage disposal and development opportunities) often conflict with the long-term sustainability of the natural resources countywide.

Major Planning Issues

Agricultural and Forestal Land Preservation: Agriculture is a major element of the County's culture and economy. In 1997 There were approximately 82,560 acres of land in 22 Agricultural and Forestal Districts. In 2007 there are approximately 80,215 acres in the 22 districts, nearly a 2.8 percent decrease from 1997. The best farmland is also the best land for development. Conflicts occur between home owners and farm operators, and between agriculture and fisheries.

Groundwater Protection: Groundwater is the only drinking water source for Accomack County. The aquifer is recharged by rainwater infiltration. The area that recharges the deep aquifer is in a strip of land that runs along the central portion of the peninsula. There is a limited supply of groundwater and it is prone to contamination from land uses and saltwater intrusion.

Natural Resource Preservation: The County's natural resources base, including forests, fields, marsh, creeks, bays, and barrier islands, has economic, aesthetic, and recreational value, as well as being valuable habitat for a variety of wildlife.

Physical Constraints to Development: The main physical constraints to development in Accomack County are soil suitability for septic systems, flood hazard, and shoreline erosion.

The Route 13 Corridor: The mix of local and through-traffic creates a dangerous situation. Route 13 is a major thoroughfare and part of the National Highway System. Maintaining capacity and safety as traffic increases is critical to the county's future.

Central Water and Wastewater Treatment*: The prospects for achieving a compact, traditional growth pattern that protects agricultural and environmental resources will be greatly increased if central water and wastewater facilities are available to more areas, in concert with the overall future land use plan. **Please see Chapter 6 for updated information.*

Character, Pattern and Form of Development: Many of the county's goals can be achieved or enhanced if new development occurs in a compact, traditional pattern and form, similar to what exists in the County's existing historic towns and villages. Expansion around towns is often difficult due to the pattern of land use regulation and overall lack of infrastructure.

Affordable Housing: Most new housing is built for incoming residents and the second-home market, and does not meet the need for adequate housing for the existing population.

Economic Development: Better economic development efforts are needed to expand existing businesses and industries, including aerospace, tourism, agriculture, forestry, and fisheries, to provide more jobs, better wages, and a increase the tax base.

Fiscal Impacts of Growth: As residential growth and population expand, the demand for services expands. Job growth and economic development must keep pace in order to maintain a reasonable fiscal balance.

Balance of Needs: Short-term individual desires must be balanced with long-term community needs.

Analysis and Forecasts of Change

Analysis. Substantial analysis of available data was carried out during 2005-07, including many hours of public deliberation in a series of work sessions conducted by the Planning Commission, Stakeholder Group and Board of Supervisors. Analytical work included:

1. Analysis of land use, environmental and demographic data
2. Forecasts of future population and land development needs
3. Detailed examination of the major environmental and cultural elements of every area of the County, using the County's GIS data base
4. Preparation and evaluation of alternative future land use scenarios
5. Creation and evaluation of updated policies and actions to achieve the goals of the plan in light of the forecasts of future needs

The updated plan maintains many of the overall goals, policies and actions of the 1997 plan, but provides additional and updated analysis of the County's current conditions and projected future needs. Thus, it also contains new policies and actions, including a refined Future Land Use Map and a clear growth management strategy for achieving the County's desired future.

The key element of the updated plan is the revised Future Land Use Map, which will better help the County successfully manage development and accommodate population growth while enlarging the local economy and preserving key resources.

Forecasts.* Driven by outside growth pressures, current trends indicate that the County will add between 7,900 and 15,300 new people by the year 2030, requiring between 2,000 and 5,000 additional acres of land to be converted to residential and civic uses. This plan provides policies to

guide that development so that it has maximum benefit and minimum impact on the County while still balancing the various desires of individual property owners with the broader public good. The aim of this plan is to provide a policy framework for the County that will accommodate expected population and employment growth while also achieving the County's vision. **Please see Chapter 6 for the updated forecast.*

Growth Management Strategy

The policies and actions set forth in Chapter 5 of the plan, as well as the Future Land Use Map and supporting policies set forth in Chapter 6, provide a strong framework for managing growth in the County during the coming years. Taken as a whole, these policies and actions create a planning framework with the following **key strategic objectives**:

1. **Natural Resources.** Conserve natural resources, including farmland, forests, tidal and non-tidal wetlands, surface water, fisheries, and ground water.
2. **Economic Development.** Promote compatible economic development and job growth, including the agriculture, seafood, and tourism industries.
3. **Affordable Housing.** Maintain an adequate the supply of affordable housing.
4. **Rural Character.** Preserve the county's small-town feel and rural character.
5. **Public Services.** Provide efficient and cost-effective public service delivery.

In order to achieve these objectives, the **overarching, cohesive growth management** strategy is to:

- **Conserve the County's finite and fragile groundwater supply** by accommodating new development near the central spine and northern portions of the County where groundwater withdrawals have the least impact, while limiting new development near the shorelines.
- **Conserve the County's fiscal resources** by locating new development and infrastructure in well-designed, human-scale, compact, mixed-use developments in and around existing towns and villages, as incremental, natural extensions of existing settlements.
- **Enhance the County's economic base** by expanding compatible and sustainable natural resource industries, and compatible, low-impact industries.
- **Provide adequate housing for all households** in the County by facilitating well-designed, higher density housing in and around existing towns, facilitating incremental expansions of existing rural villages, and providing incentives for affordable housing development.

Major Actions to Implement the Plan

The key strategies will be implemented through several major methods:

- 1. Future Land Use Map.** The County will use the Future Land Use Map to guide all decisions regarding growth, development, and public infrastructure. This will focus public infrastructure investments in and around existing towns and villages, including central water and sewer service, and limit development in outlying areas through zoning regulations and operational programs (such as agricultural and forestal districts).
- 2. Rezoning Decisions.** The County will use the specific criteria set forth in Chapter 6 for making decisions about rezoning property.
- 3. Natural Resource Conservation.** The County will enact a variety of policy, regulatory, and program tools to preserve farmland, shorelines, water resources, and other natural resources. These tools include adopting a Planned Unit Development (PUD) district to ensure coordinated development in and around designated communities, encouraging rural cluster development for residential growth that occurs on farm and forest lands, revitalizing Agricultural and Forestal Districts (AFD), promoting best management practices (BMP) for agricultural and forest uses, applying Chesapeake Bay protection standards to the Seaside areas, and adopting the state's stormwater management code for new development.
- 4. Affordable Housing.** The County will encourage expansion of existing communities in a compact, mixed-use pattern, and will adopt an Affordable Dwelling Unit ordinance (ADU).
- 5. Economic Development.** The County will encourage compatible economic development through ensuring that prospective industrial sites are properly zoned for development, protecting water quality to support aquaculture and other marine industries, and promoting the expansion of the "distributed workforce" (using broadband internet access).

The Planning Commission recommends the following priorities for implementation actions:

1. Zoning Ordinance Amendments (Actions 1-a, 2-a, 4-b)
2. Groundwater and Surface Water Protection (Actions 5-b, 5-g, 6-b, 6-1, 6-f)
3. Affordable Housing (Actions 11-a, 11-b, 11-c, 11-d, 11-e)
4. Transportation (Actions 10-a, 10-f)
5. Recreation (Actions 4-e, 9-e, 9-f, 10-c)

Future Land Use Categories

Conservation Areas: will preserve and protect Accomack County's areas of ecological importance on which development of any intensity would be damaging or unsafe. Areas in the conservation district include marshland and the undeveloped barrier islands.

Agricultural Areas: will provide an area for the production of agricultural and forestry products. The County's target outcome for this area in the long-term is to have as little new non-farm development as possible, through zoning regulations, Agricultural and Forestal Districts, cluster development, conservation development designs, and conservation easements. Cluster

development is a technique in which a tract of land is subdivided into roughly the same number of lots as would be permitted under regular zoning, but the cluster lots each have a smaller area, so that they can be located on a small portion of the tract, leaving the remainder of the tract in open space or in lots that are larger than the average size.

Rural Settlement Areas: will allow for low density, rural residential development to provide home sites for those who chose to live on relatively large tracts of land outside of the County's villages and towns. Clustering options could be provided to allow smaller individual lot sizes if a portion of the development site is set aside as open space.

Residential Areas: will allow for new residential development in existing communities for those who chose to live on moderately sized lots. New Residential Areas should be located adjacent to existing residential areas located outside of flood zones that have roads with adequate capacity and soils with good septic suitability.

Village Development Areas: will allow for a mix of residential and commercial uses in keeping with the traditional development pattern of Accomack County's villages and towns (subject to wastewater treatment capability). These areas should be compact, with interconnected street networks, parks, sidewalks and a mix of uses, convenient to both motor vehicles and pedestrians.

Commercial Areas: will provide appropriate locations for a broad range of business activities which may be characterized by heavy traffic, noise, or other factors that could be considered a nuisance to residential uses.

Industrial Areas: will provide suitable locations for industrial activities with minimal interference from, or impact to, adjacent land uses.

Further, more than 60 discreet actions for implementing the plan are identified. These are organized under each major policy in Chapter 5, and at the end of the chapter are also organized as a list of four types of actions:

- Zoning and Regulatory Actions
- Planning and Research Actions
- Operational Programs
- Capital Investments and Construction

In addition to these four categories, specific actions are identified for implementing the Transportation and Affordable Housing plans.

Summary and Conclusion

The updated Comprehensive Plan clarifies Accomack County's vision for the future, and affirms the long terms goals for future change. It calls for a strategy of focusing growth in and around existing communities and away from the shorelines and farmland in order to conserve important agricultural and natural resources. It also proposes a variety of policies and actions to implement that strategy. These strategies include making land use and public facility decisions in accord with the new Future Land Use Map, adopting new zoning districts to accommodate expected development needs

(including affordable housing), identifying and rezoning key industrial sites, and promoting the construction of new and expanded central water and wastewater systems in specific areas.

If followed, the updated Comprehensive Plan will enable the County to achieve its vision to conserve natural resources, provide expanded opportunities for jobs and housing, and sustain Accomack County's rural way of life.

Chapter One:

The Planning Process and Virginia Code Requirements

The Planning Process

Introduction

Chapter 1 provides an overview of the process used for creating the updated Comprehensive Plan, and references to the enabling legislation that provides the basis for local comprehensive planning in Virginia.

Planning

“Plan-ning n (1748): the act or process of making or carrying out plans; specif: the establishment of goals, policies, and procedures for a social or economic unit <city ~> <business ~>”
Webster’s Ninth New Collegiate Dictionary

Planning is an opportunity for the citizens of a community to shape their destiny. Planning is a continuous process by which a community: (a) assesses its current situation, needs, problems, and resources; (b) determines desired future characteristics; (c) establishes public policies designed to achieve the desired future; and (d) uses established policies to influence the public and private decisions which create change. Such a process is intended to enable the community to anticipate needs and problems related to physical development and population growth in order that sufficient time may be available for development of appropriate responses. The planning process also serves to foster rational allocation of scarce resources to satisfy the community’s priority needs and to avoid or minimize problems.

The comprehensive plan is the primary vehicle through which local governments conduct this process. The Code of Virginia requires that every locality in the state adopt a comprehensive plan and review it at least every five years. A comprehensive plan generally consists of: (a) an inventory of available resources and analysis of existing conditions; (b) goals and objectives; (c) future plans; and (d) recommendations for implementation. Some specific benefits which can be realized through the planning process include:

- Future-oriented, rather than reactive and crisis-oriented decision making;
- Fewer “crisis” situations requiring immediate attention or unanticipated public expenditures;
- Rational, consistent objectives for land use decisions;
- Greater cost efficiency for both public and private projects;
- Increased federal and state awareness of county needs, problems, and attitudes;
- Opportunity for communication between the public and the governing body; and
- Greater public assurance that Accomack County will remain a desirable place to live and work.

Public Participation: In 1997 the Accomack County Planning Commission produced a plan which accurately represented the desires of the community to the greatest degree possible. State code requires that the Planning Commission seek public participation in the form of a public hearing. This process allows for the public to comment on the finished draft plan prior to it being sent to the Board of Supervisors for approval.

In preparing the update to the 1997 Comprehensive Plan, the County held two public forums in September 2006, one at Nandua High School and the other at Arcadia High School. These forums focused on land use issues, since those concerns are central to the plan update. The forums were well attended with approximately 40 citizens attending each session, in addition to members of the Planning Commission and Board of Supervisors. Participants identified key issues and opportunities for future land use in the County and marked up maps in small work groups to show those ideas in a graphic format. These ideas were incorporated into the land use recommendations contained in the updated Plan. Summaries of the results of these meetings are included in the Appendix to this Plan.

The results of these meetings were used by the County to create a draft Future Land Use Map which focused on each major area of the County. These maps were presented to the public for review and comment at a series of public meetings held in January and February 2007. Subsequently, the Planning Commission held several work sessions to review and refine the Future Land Use Map.

The Planning Commission

The Accomack County Planning Commission consists of nine members appointed by the Board of Supervisors. Each member serves a four year term. The primary purpose of the Planning Commission is to advise the Board of Supervisors on matters pertaining to land use planning and development. The Planning Commission is also responsible for subdivision and conditional use permit review.

The current Commissioners are:

E. Phillip Hickman
Chairman
William A. Sprague
Vice-Chairman
James T. Frese
Robert C. Hickman
Robert L. Nock
Herbert A. Thom
Leander Roberts, Jr.
Stella Rohde
E. Bryan Turner

A Vision for the Future of Accomack County

The Vision set forth in the 1997 Plan was updated by the Planning Commission in 2007, based upon citizen input during 2005, 2006, and 2007, as follows:

The updated Comprehensive Plan supports a vision for the future of Accomack County that recognizes the County's unique qualities and outstanding potential as a leading agricultural and seafood producer, as well as an excellent place for families and retirees to live, and for tourists to visit. If the policies of this plan are successfully implemented, the County will achieve its vision and have a future in 20 to 30 years that could be described as follows:

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The number of people and jobs continues to increase gradually, through new development and revitalization. Growth occurs mainly in and around the towns and villages where public facilities and services are most efficiently provided, as well as in small residential subdivisions clustered on farmland. Limited development occurs along the shorelines to protect water quality and quantity. Employment continues to grow, producing a range of jobs at all levels of skill and income, in small and medium-sized enterprises that are compatible with the County's fragile natural systems. The housing supply expands to match the job growth, and provides adequate housing for the full range of household income levels in the County.

In making investments and applying regulations to achieve this vision of the future, the County balances the desire for individuals to develop land as they wish, with the essential need to protect the natural, cultural and economic resources that provide sustenance to the entire community, thus ensuring that the County's overall wealth and well-being continues to steadily increase in a manner that is sustainable for future generations.

As the County grows and changes, it maintains the essential natural and cultural qualities that both natives and new arrivals cherish: an agricultural landscape, clean air and water, healthy and expansive wildlife habitats, historic neighborhoods and downtowns, efficient government services, friendly and helpful neighbors, and a strong sense of community.

The comprehensive plan is one tool for achieving that vision. Plans are a way of taking stock of the community and setting out a path to achieve goals, whether it is to protect the things we like or to improve conditions that are unacceptable. According to the Code of Virginia, the comprehensive plan is "made with the purpose of guiding and accomplishing a coordinated, adjusted and harmonious development of the territory which will, in accordance with present and probable future needs and resources best promote the health, safety, morals, order, convenience, prosperity and general welfare of the inhabitants."

Planning is necessary if our visions are to be achieved. Planning is a cyclical process that responds to the changing world, always grounded firmly in the community's vision for the future. It is easy, when there are no immediate threats apparent and few signs of change taking place, to dismiss long range planning as unnecessary, especially when more immediate needs and situations demand our attention. Change, however, is seldom readily apparent. Change occurs gradually and often goes unnoticed until it is too late to do anything about it and a community's prosperity, resources and way of life can slip through its fingers with little notice. Planning recognizes the need to constantly monitor the pulse of the community, forces citizens to look closely at what is happening around them and make decisions about their future, and empowers them with the resources to achieve their visions. Through the Comprehensive Plan and the process involved in creating it, citizens of Accomack County have an opportunity to shape their future.

What is a plan?

A Comprehensive Plan is an official document that is formally adopted by the Board of Supervisors. Goals and policies are established for guiding the long term land use and infrastructure changes in the county. The Code of Virginia requires that all local governments prepare a plan and review it every five years.

In Virginia, the Comprehensive Plan is a guide. The Plan is not an ordinance; it establishes broad policy framework for local regulations and public investments, but is not as narrow or binding as an ordinance.

State law requires that zoning ordinances and capital improvement programs be based on the Comprehensive Plan. Recent Virginia Supreme Court decisions have required that rezonings be in accordance with the Comprehensive Plan.

Enabling Authority and Virginia Code Requirements

The Accomack County Comprehensive Plan was prepared in accordance with the following sections of the Code of Virginia.

The “Dillon Rule”

The Dillon Rule, put forth by Judge John F. Dillon in Commentaries on the Law of Municipal Corporations (1873), holds that the powers of local governments are limited to those expressly granted by the state. Under this rule, whenever doubt exists as to whether a locality has a certain power, the courts will rule against the locality. The result is that a locality must seek enabling legislation for every new program or ordinance it wishes to implement, if enabling authority does not already exist.

§ 15.2-2223. (Effective July 1, 2007) Comprehensive plan to be prepared and adopted; scope and purpose. - *The local planning commission shall prepare and recommend a comprehensive plan for the physical development of the territory within its jurisdiction.*

Every governing body in this Commonwealth shall adopt a comprehensive plan for the territory under its jurisdiction by July 1, 1980.

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

The comprehensive plan shall be general in nature, in that it shall designate the general or approximate location, character, and extent of each feature, including any road improvement and any transportation improvement, shown on the plan and shall indicate where existing lands or facilities are proposed to be extended, widened, removed, relocated, vacated, narrowed, abandoned, or changed in use as the case may be.

As part of the comprehensive plan, each locality shall develop a transportation plan that designates a system of transportation infrastructure needs and recommendations that may include the designation of new and expanded transportation facilities and that support the planned development of the territory covered by the plan and shall include, as appropriate, but not be limited to, roadways, bicycle accommodations, pedestrian accommodations, railways, bridges, waterways, airports, ports, and public transportation facilities. The plan should recognize and differentiate among a hierarchy of roads such as expressways, arterials, and collectors. The Virginia Department of Transportation shall, upon request, provide localities with technical assistance in preparing such transportation plan.

The plan, with the accompanying maps, plats, charts, and descriptive matter, shall show the locality's long-range recommendations for the general development of the territory covered by the plan. It may include, but need not be limited to:

- 1. The designation of areas for various types of public and private development and use, such as different kinds of residential including age-restricted, housing, business, industrial, agricultural, mineral resources conservation, active and passive recreation, public service, flood plain and drainage, and other areas;*
- 2. The designation of a system of community service facilities such as parks, sports playing fields, forests, schools, playgrounds, public buildings and institutions, hospitals, nursing homes, assisted living facilities, community centers, waterworks, sewage disposal or waste disposal areas, and the like;*
- 3. The designation of historical areas and areas for urban renewal or other treatment;*
- 4. The designation of areas for the implementation of reasonable groundwater protection measures;*
- 5. A capital improvements program, a subdivision ordinance, a zoning ordinance and zoning district maps, mineral resource district maps and agricultural and forestal district maps, where applicable;*
- 6. The location of existing or proposed recycling centers; and*
- 7. The location of military bases, military installations, and military airports and their adjacent safety areas.*

The plan shall include: the designation of areas and implementation of measures for the construction, rehabilitation and maintenance of affordable housing, which is sufficient to meet the current and future needs of residents of all levels of income in the locality while considering the current and future needs of the planning district within which the locality is situated.

The plan shall include: a map that shall show road improvements and transportation improvements, including the cost estimates of such road and transportation improvements as available from the Virginia Department of Transportation, taking into account the current and future needs of residents in the locality while considering the current and future needs of the planning district within which the locality is situated.

Respecting the Past, Creating the Future: The Accomack County Comprehensive Plan

Public Hearings

The public hearing process for adoption of plans and ordinances is specified by State Code. The Planning Commission may not recommend nor the Board of Supervisors adopt a Comprehensive Plan or amendments thereof, until a public hearing has been held. Notice of the public hearing must be published once a week for two successive weeks in a newspaper having general circulation in the county. The notice will specify the time and place of the hearing at which persons may appear and present their views. The Planning Commission and Board of Supervisors may hold a joint public hearing.

Following a public hearing, the Planning Commission may either approve, amend and approve, or disapprove the plan. If the plan is approved, the Commission recommends the plan to the Board of Supervisors. The Board of Supervisors then conducts a public hearing and either approves and adopts, amends and adopts, or disapproves the plan. If the plan is disapproved, it is returned to the Planning Commission for reconsideration, with written reasons for disapproval. The Commission has sixty days to reconsider the plan and resubmit it to the Board of Supervisors.

In its 2007 Session, the Virginia General Assembly passed new legislation requiring localities with a population of at least 20,000 and population growth of at least 5% between the latest census years (which includes Accomack County) to incorporate urban development areas in its Comprehensive Plan. This new and important legislation is shown below.

§ 15.2-2223.1. Comprehensive plan to include urban development areas; new urbanism.

A. Every county, city, or town that has adopted zoning pursuant to Article 7 (§ 15.2-2280 et seq.) of Chapter 22 of Title 15.2 and that (i) has a population of at least 20,000 and population growth of at least 5% or (ii) has population growth of 15% or more, shall, and any county, city or town may, amend its comprehensive plan to incorporate one or more urban development areas. For purposes of this section, population growth shall be the difference in population from the next-to-latest to the latest decennial census year, based on population reported by the United States Bureau of the Census. For purposes of this section, an urban development area is an area designated by a locality that is appropriate for higher density development due to proximity to transportation facilities, the availability of a public or community water and sewer system, or proximity to a city, town, or other developed area. The comprehensive plan shall provide for commercial and residential densities within urban development areas that are appropriate for reasonably compact development at a density of at least four residential units per gross acre and a minimum floor area ratio of 0.4 per gross acre for commercial development. The comprehensive plan shall designate one or more urban development areas sufficient to meet projected residential and commercial growth in the locality for an ensuing period of at least 10 but not more than 20 years, which may include phasing of development within the urban development areas. Future growth shall be based on official estimates and projections of the Weldon Cooper Center for Public Service of the University of Virginia or other official government sources. The boundaries and size of each urban development area shall be reexamined and, if necessary, revised every five years in conjunction with the update of the comprehensive plan and in accordance with the most recent available population growth estimates and projections. Such districts may be areas designated for redevelopment or infill development.

B. The comprehensive plan shall further incorporate principles of new urbanism and traditional neighborhood development, which may include but need not be limited to (i) pedestrian-friendly road design, (ii) interconnection of new local streets with existing local streets and roads, (iii) connectivity of road and pedestrian networks, (iv) preservation of natural areas, (v) satisfaction of requirements for stormwater management, (vi) mixed-use neighborhoods, including mixed housing types, (vii) reduction of front and side yard building setbacks, and (viii) reduction of subdivision street widths and turning radii at subdivision street intersections.

C. The comprehensive plan shall describe any financial and other incentives for development in the urban development areas.

D. No county, city, or town that has amended its comprehensive plan in accordance with this section shall limit or prohibit development pursuant to existing zoning or shall refuse to consider any application for rezoning based solely on the fact that the property is located outside the urban development area.

E. Any county, city, or town that would be required to amend its plan pursuant to this section that determines that its plan accommodates growth in a manner consistent with this section, upon adoption of a resolution certifying such compliance, shall not be required to further amend its plan.

F. Any county that amends its comprehensive plan pursuant to this section may designate one or more urban development areas in any incorporated town within such county, if the governing body of the town has also amended its comprehensive plan to designate the same areas as urban development areas with at least the same density designated by the county.

G. To the extent possible, state and local transportation, housing, and economic development funding shall be directed to the urban development area.

(2007, c. 896.)

The urban development areas (UDAs) to be designated by Accomack County to comply with the new statute relate to other state law concerning the imposition of road impact fees, which localities like Accomack County are now enabled to impose. The County is specifically enabled to exclude UDAs from the imposition of road impact fees as a means of providing incentives and promoting new development to occur in the UDAs, as follows:

§ 15.2-2320. Impact fee service areas to be established.

The locality shall delineate one or more impact fee service areas within its comprehensive plan. Impact fees collected from new development within an impact fee service area shall be expended for road improvements benefiting that impact fee service area. An impact fee service area may encompass more than one road improvement project. A locality may exclude urban development areas designated pursuant to § 15.2-2223.1 from impact fee service areas.

(1989, c. 485, § 15.1-498.3; 1992, c. 465; 1997, c. 587; 2007, c. 896.)

Road impact fee service areas are designated as part of a local road improvement program, as follows:

§ 15.2-2321. Adoption of road improvements program.

Prior to adopting a system of impact fees, the locality shall conduct an assessment of road improvement needs benefiting an impact fee service area and shall adopt a road improvements plan for the area showing the new roads proposed to be constructed and the existing roads to be improved or expanded and the schedule for undertaking such construction, improvement or expansion. The road improvements plan shall be adopted as an amendment to the required comprehensive plan and shall be incorporated into the capital improvements program or, in the case of the counties where applicable, the six-year plan for secondary road construction pursuant to § 33.1-70.01.

The locality shall adopt the road improvements plan after holding a duly advertised public hearing. The public hearing notice shall identify the impact fee service area or areas to be designated, and shall include a summary of the needs assessment and the assumptions upon which the assessment is based, the proposed amount of the impact fee, and information as to how a copy of the complete study may be examined. A copy of the complete study shall be available for public inspection and copying at reasonable times prior to the public hearing.

The locality at a minimum shall include the following items in assessing road improvement needs and preparing a road improvements plan:

- 1. An analysis of the existing capacity, current usage and existing commitments to future usage of existing roads, as indicated by (i) current and projected service levels, (ii) current valid building permits outstanding, and (iii) approved and pending site plans and subdivision plats. If the current usage and commitments exceed the existing capacity of the roads, the locality also shall determine the costs of improving the roads to meet the demand. The analysis shall include any off-site road improvements or cash payments for road improvements accepted by the locality and shall include a plan to fund the current usages and commitments that exceed the existing capacity of the roads.*
- 2. The projected need for and costs of construction of new roads or improvement or expansion of existing roads attributable in whole or in part to projected new development. Road improvement needs shall be projected for the impact fee service area when fully developed in accord with the comprehensive plan and, if full development is projected to occur more than 20 years in the future, at the end of a 20-year period. The assumptions with regard to land uses, densities, intensities, and population upon which road improvement projections are based shall be presented.*
- 3. The total number of new service units projected for the impact fee service area when fully developed and, if full development is projected to occur more than 20 years in the future, at the end of a 20-year period. A "service unit" is a standardized measure of traffic use or generation. The locality shall develop a table or method for attributing service units to various types of development and land use, including but not limited to residential, commercial and industrial uses. The table shall be based upon the ITE manual (published by the Institute of Transportation Engineers) or locally conducted trip generation studies, and consistent with the traffic analysis standards adopted pursuant to § 15.2-2222.1.*

The new authority may be read as an opportunity or as a curse. It appears that the 2007 requirement that localities plan for growth in relatively dense “urban” development areas and first-ever broad authorization of local imposition of road impact fees reflect the General Assembly’s resolve that future growth must be more compact and recognition that the Commonwealth is falling behind in the planning, funding and completion of transportation infrastructure improvements necessary to maintain our citizen’s quality of life. These legislative changes may be the beginning of a trend in Richmond to delegate hard choices about transportation planning and funding to the localities. What is clear is that state resources being committed to transportation are not keeping pace with either population growth or inflation. Consequently, bare compliance with the UDA planning requirement without implementation of the impact fee authority would not appear to serve the future quality of life in Accomack County. However, thoughtful implementation of the new road impact fee authority may help Accomack County direct future growth, protect our environment, and enhance quality of life in our community.

§ 15.2-2224. Surveys and studies to be made in preparation of plan; implementation of plan.

- A. In the preparation of a comprehensive plan, the local commission shall survey and study such matters as the following:

1. Use of land, preservation of agricultural and forestal land, production of food and fiber, characteristics and conditions of existing development, trends of growth or changes, natural resources, historic areas, groundwater, surface water, geologic factors, population factors, employment, environmental and economic factors, existing public facilities, transportation improvements, the need for affordable housing in both the locality and planning district within which it is situated,, and any other matters relating to the subject matter and general purposes of the comprehensive plan....

2. Probable future economic and population growth of the territory and requirements therefor.

B. The comprehensive plan shall recommend methods of implementation and shall include a current map of the area covered by the comprehensive plan. Unless otherwise required by this chapter the methods of implementation may include but need not be limited to:

- 1. An official map;*
- 2. A capital improvements program;*
- 3. A subdivision ordinance; and*
- 4. A zoning ordinance and zoning district maps.*
- 5. A mineral resource map; and*
- 6. A recreation and sports resource map.*

The Presumption of Validity

Legislative actions, i.e. a locality's law-making authority, enjoy the presumption of validity. This means that, in a court of law, the party challenging the land use decision of a local governing body bears the burden of proving that the governing body's decision should be invalidated. The Virginia Supreme Court has stated the following rule about presumptive validity concerning a legislative land use decision: The original presumption of the validity of a legislative land use decision is in favor of the local governing body. However, when the private property owner opposing the decision can make a basic (prima facie) case that the action of the local governing body has been unreasonable (arbitrary and capricious), the burden of proof shifts to the local governing body. The local governing body must then show that the correctness of its decision is a least fairly debatable - at least that reasonable men can differ as to the correctness of the decision - before the court will allow the locality to prevail.

[In other words, if the choice between two land uses is "fairly debatable" then the Board of Supervisors' choice shall prevail.]

Source: Zoning and Subdivision Law in Virginia, Stephen P. Robin.

§ 15.2-2225. Notice and hearing on plan; recommendation by local commission to governing body. - *Prior to the recommendation of a comprehensive plan or any part thereof, the local planning commission shall give notice in accordance with § 15.2-2204 and hold a public hearing on the plan. After the public hearing, the commission may approve, amend and approve, or disapprove the plan. Upon approval, the commission shall by resolution recommend the plan or part thereof, to the governing body and a copy shall be certified to the governing body.*

§ 15.2-2226. Adoption or disapproval of plan by governing body. - *After certification of the plan or part thereof, the governing body after a public hearing with notice as required by § 15.2-2204 shall proceed to a consideration of the plan or part thereof and shall approve and adopt, amend and adopt, or disapprove the plan. In acting on the plan or part thereof, or any amendments to the plan, the governing body shall act within ninety days of the local planning commission's recommending resolution.*

§ 15.2-2227. Return of plan to local planning commission; resubmission. - *If the governing body disapproves the plan, then it shall be returned to the local planning commission for its reconsideration, with a written statement of the reasons for its disapproval. The commission shall have sixty days in which to reconsider the plan and resubmit it, with any changes, to the governing body.*

§ 15.2-2228. Adoption of parts of plan. - *As the work of preparing the comprehensive plan progresses, the local commission may, from time to time, recommend, and the governing body approve and adopt, parts thereof; any such part shall cover one or more major sections or divisions of the county or municipality or one or more functional matters.*

§ 15.2-2229. Amendments. - *After the adoption of a comprehensive plan, all amendments to it shall be recommended, approved and adopted, respectively, as required by § 15.2-2204. If the governing body desires an amendment it may direct the local commission to prepare an amendment and submit it to public hearing within sixty days after formal written request by the governing body. In acting on any amendments to the plan, the governing body shall act within ninety days of the local planning commission's recommending resolution.*

§ 15.2-2230. Plan to be reviewed at least once every five years. - *At least once every five years the comprehensive plan shall be reviewed by the local commission to determine whether it is advisable to amend the plan.*

§ 15.2-2230.1. Public facilities study.

In addition to reviewing the comprehensive plan, the planning commission may make a study of the public facilities, including existing facilities, which would be needed if the comprehensive plan is fully implemented. The study may include estimations of the annual prospective operating costs for such facilities and any revenues, including tax revenues that may be generated by such facilities. For purposes of the study, public facilities may include but need not be limited to water and sewer lines and treatment plants, schools, public safety facilities, streets and highways. The planning commission may forward the study to the local governing body or any other local, regional, state or federal agency that the planning commission believes might benefit from its findings.

§ 15.2-2231. Inclusion of incorporated towns in county plan; inclusion of adjacent unincorporated territory in municipal plan. - *Any county plan may include planning of incorporated towns to the extent to which, in the county local commission's judgment, it is related to planning of the unincorporated territory of the county as a whole, provided, however, that the plan shall not be considered as a comprehensive plan for any incorporated town unless recommended by the town commission, if any, and adopted by the governing body of the town. Any municipal plan may include the planning of adjacent unincorporated territory to the extent to which, in the municipal local commission's judgment, it is related to the planning of the incorporated territory of the municipality; provided, however, that the plan shall not be considered as comprehensive plan for such unincorporated territory unless recommended by the county local commission, if any, and approved and adopted by the governing body of the county.*

§ 15.2-2232. Legal status of plan. - *A. Whenever the local commission shall have recommended a comprehensive plan or part thereof for the county or municipality and such plan shall have been approved and adopted by the governing body, it shall control the general or approximate location, character and extent of each feature shown on the plan. Therefore, unless such feature is already shown on the adopted master plan or part thereof or is deemed so under subsection D, no street or connection to any existing street, park or other public area, public building or public structure, public utility facility or public service corporation facility other than railroad facility, whether publicly or privately owned, shall be constructed, established or authorized, unless and until the general location or approximate location, character, and extent thereof has been submitted to and approved by the local commission as being substantially in accord with the adopted comprehensive plan or part thereof. In connection with any such determination the commission may, and at the direction of the governing body shall, hold a public hearing, after notice as required by § 15.2-2204.*

B. The commission shall communicate its findings to the governing body, indicating its approval or disapproval with written reasons therefore. The governing body may overrule the action of the commission by a vote of a majority of the membership thereof. Failure of the commission to act within sixty days of such submission, unless the time shall be extended by the governing body, shall be deemed approval. The owner or owners or their agents may appeal the decision of the local commission to the governing body within ten days after the decision of the commission. The appeal shall be by written petition to the governing body setting forth the reasons for the appeal. The appeal shall be heard and determined within sixty days from its filing. A majority vote of the governing body shall overrule the commission.

C. Widening, narrowing, extension, enlargement, vacation or change of use of streets or public areas shall likewise be submitted for approval, but paving, repair, reconstruction, improvement, drainage or similar work and normal service extensions of public utilities or public service corporations shall not require approval unless involving a change in location or extent of a street or public area.

D. any public area, facility or use as set forth in subsection (a) which is identified within, but not the entire subject of, a submission under either § 15.2-2258 for subdivision or provision 8 of § 15.2-2286 for development or both may be deemed a feature already shown on the adopted master plan, and therefore, excepted from the requirement for submittal to and approval by the commission or the governing body; provided that the governing body has by ordinance or resolution defined standards governing the construction, establishment or authorization of such public area, facility or use or has approved it through acceptance of a proffer made pursuant to § 15.2-2303

E. Approval and funding of a public telecommunications facility by the Virginia Public Broadcasting Board pursuant to Article 12 (§ 2.2-2426 et seq.) of Chapter 24 of Title 2.2 shall be deemed to satisfy the requirements of this section and local zoning ordinances with respect to such facility with the exception of television and radio towers and structures not necessary to house electronic apparatus. The exemption provided for in this subsection shall not apply to facilities existing or approved by the Virginia Public Telecommunications Board prior to July 1, 1990. The Virginia Public Broadcasting Board shall notify the governing body of the locality in advance of any meeting where approval of any such facility shall be acted upon.

F. On any application for a telecommunications facility, the commission's decision shall comply with the requirements of the Federal Telecommunications Act of 1996. Failure of the commission to act on any such application for a telecommunications facility under subsection A submitted on or after July 1, 1998, within ninety days of such submission shall be deemed approval of the application by the commission unless the governing body has authorized an extension of time for consideration or the applicant has agreed to an extension of time. The governing body may extend the time required for action by the local commission by no more than sixty additional days. If the commission has not acted on the application by the end of the extension, or by the end of such longer period as may be agreed to by the applicant, the application is deemed approved by the commission.

Chapter 2

Inventory and Existing Conditions: The Natural Environment

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Introduction:

Accomack County's location at the tip of the Delmarva Peninsula between the Atlantic Ocean and the Chesapeake Bay provides a unique environment that is rich with natural resources. Accomack's mild climate, productive soils, and abundant wetlands, support a unique way of life that depends on these resources for farming, fishing, aquaculture, and tourism. Chapter 2, The Natural Environment, documents these resources and establishes the need to manage our resources wisely to support Accomack County's unique way of life.

Climate

The climate in Accomack County is mild in the winter and hot and humid in the summer, with south/southwest prevailing winds. The tables below list average temperatures recorded at Wallops Island and Painter. Differences in temperatures at these two sites are attributed to the fact that the southern end of the county is narrower than the northern end and is thus more susceptible to the Ocean and Bay's moderating influences on temperatures.

Temperature:

Average Daily Temperatures

Location	Winter	Summer
Wallops Island	37.1°F	73.7°F
Painter	39.1°F	75°F

Average Winter Minimum and Summer Maximum Temperatures

Location	Winter	Summer
Wallops Island	30.03° F	81.6°F
Painter	30.3°F	84.7°F

Growing Season:

The approximate frost-free growing season lasts about 270 days, stretching from April 11 to November 4 on average. (<http://www.nass.usda.gov/va/accomack.pdf>)

Precipitation: Precipitation is well distributed throughout the year and adequate for most commonly grown crops. The average annual rainfall is 41.9". Fifty percent of annual precipitation falls during the months of April through September. The average seasonal snowfall is 6 inches. The greatest snow depth at any one time during the periods of record was 6 inches.

Soils

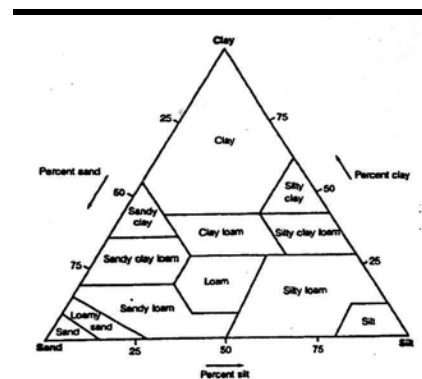
The suitability and limitation of soils in Accomack County have a significant impact upon development and agricultural use. The character of soils is a factor in the selection of agricultural sites, the design, layout, and grading of roadways, structure foundations, and sanitary operation of septic tanks.

Soil Characteristics: Soils factors such as percolation, depth, absorption, shrink-swell conditions, wetness, and filtering action all affect development. These factors are dependent on the soil characteristics of texture, slope, and depth.

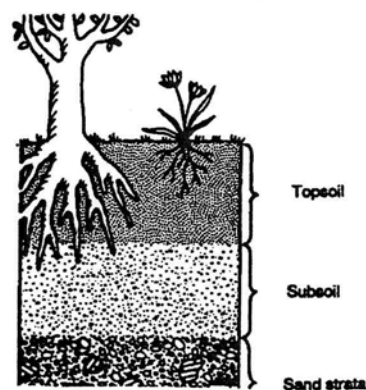
Texture: Soils are made up of various size particles known as clay (very fine particles), silt (fine particles), and sand (course particles). Particle content varies with each soil type. The distribution of each particle type within a soil determines its texture. Soil texture determines the stability of a soil and its porosity or ability to drain surface water. Drainage capability increases with the amount of large size particles, thus a sandy soil drains better than a clay soil.

Slope: The terrain of Accomack County is generally level with surface features ranging from the flat foreland bordering the Chesapeake Bay to the level upland plain occupying the central and most of the eastern sections of the county. The majority of the county is less than 1% slope and, on an average, the slope does not exceed 2%. However, in some terrain and in hilly sections, the slope reaches up to 15%. Elevation ranges from sea level to 45 feet above sea level.

Depth: The depth of soil to the water table affects the suitability of the soil for development and agricultural use. Where the water table is high, surface soils will be excessively wet, making them unsuitable for crop cultivation or construction sites. The average depth to water table in Accomack County is about 18 inches.



Soil porosity and texture depend on the percentages of clay, silt and sand particles in the soil.



A typical soil cross section

County Soil Types: Accomack County lies wholly within the Atlantic Coastal Plain, a large physiographic division extending along the Atlantic and Gulf seaboards. The soil materials of the county were originally deposited in coastal waters and are among the most productive in the entire Atlantic Coastal Plain region.

For the most part, the soil profile for Accomack County consists of eight to ten inches of loam to sandy loam topsoil and roughly thirty inches of sandy loam subsoil. Below forty-four inches there is a continuous sand strata. A seasonally high water table determines, to a large degree, the use of these soils for agricultural and development purposes.

A general soil survey was completed for the county in 1917. However, this survey was not sufficient for determining land use capabilities on a site-by-site basis. A more comprehensive soil survey was completed for the county in 1988 by the U. S. Department of Agriculture, Soil Conservation Service. This survey, while more site specific than the previous survey, does not replace the need for site testing of soil suitability prior to development. However, the soil survey is useful for identifying the general location of soil types. Based on this information, the important characteristics of soils such as if the soil type will adequately support development can be identified. After the general location of a soil type has been identified and its characteristics noted, proper land use management procedures can be developed and implemented.

Soil types identified in the survey have been grouped into associations. A soil association is an area of land comprised of one or more soil types that occur in a characteristic pattern. The association may consist of soils that are similar or that differ widely in important characteristics. Each soil association, however, has a certain repeating pattern of soils distribution and other features that give it a characteristic landscape. The following section discusses each association and its related soil types.

Carolina Bays, also known as whale wallows, are shallow, oval depressions that do not have a natural drainage outlet. The technical term for a Carolina Bay is Poquoson. These land forms appear along the Atlantic Coastal plain from Florida to New Jersey.

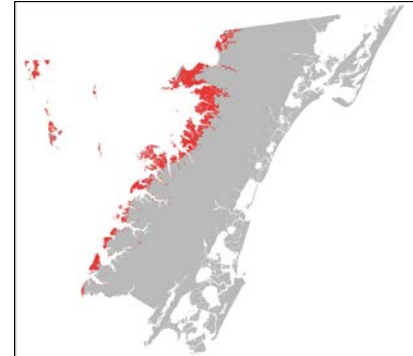
These elliptical depressions are surrounded by an elevated rim with gently sloping ridges. In aerial photography, rims of Carolina Bays appear higher in elevation and lighter in color than the interior. Most Carolina Bays contain standing water, unless they have been drained. The rims are well drained and roads and buildings have been built on some of this high land.

Soils Associations:**Melfa-Hobucken:**

This soil association comprises approximately 8% of the county. The soils of this association are level, poorly drained, loamy soils found in brackish tidal marshes. Below are the classifications for each soil type in this association:

Melfa is a poorly drained, mucky soil which is frequently flooded. This soil is found in tidal marshes and is useful as wildlife habitat.

Hobucken is a poorly drained, flat, loam soil which is frequently flooded. This soil is found in tidal marshes and is useful as wildlife habitat.



Melfa

Nimmo-Dragston-Munden:

This soil association comprises approximately 17% of the county. These soils were formed in marine and fluvial sediments and are found on coastal plain uplands and creek terraces. They are nearly level and poorly drained to moderately well drained. Below are the classifications for each soil type in this association:

Nimmo sandy loam is a nearly level, very deep and poorly drained soil that is located on flats and in depressions of Carolina bays. These soils are poorly suited to cultivated crops due to wetness and low organic matter content. The main use of this soil is woodland.

Dragston fine sandy loam is a nearly level, very deep and somewhat poorly drained soil that is located on flats, rims of depressions, and in depressions. When adequately drained this is prime farmland and is primarily used for cultivated crops and woodlands.

Munden sandy loam is a nearly level, very deep and moderately well drained soil that is found on broad flats and in depressions. This soil is prime farmland and used mainly for cultivated crops. Some areas are in woodland.



Nimmo



Dragston

Nimmo-Arapahoe-Polawana:

This soil association comprises approximately 19% of the county. The soils of this association are found primarily on flats, depressions, and area adjacent to drainageways. These are nearly level, poorly drained, loamy and sandy soils that formed in marine and fluvial sediments. Below are the classifications for each soil type in this association:

Nimmo sandy loam is a nearly level, very deep and poorly drained soil that is located on flats and in depressions of Carolina bays. These soils are poorly suited to cultivated crops due to wetness and low organic matter content. The main use of this soil is woodland.

Arapahoe mucky loam is a nearly level, very deep and very poorly drained soil that is located on flats and in depressions of Carolina bays. This soil is used mostly for woodland and wildlife.

Polawana mucky sandy loam is a very poorly drained, frequently flooded soil found adjacent to drainageways. This soil is suitable for woodland and wildlife use.

Bojac-Munden-Molena:

This soil association comprises approximately 34% of the county. These are nearly level to steep, moderately well drained to excessively drained, loamy and sandy soils. These soils were formed in marine and fluvial sediments and have high organic matter content. Below are the classifications for each soil type in this association:

Bojac loamy sand is a gently sloping, very deep and well drained soil that is located on side slopes and rims of Carolina bays. This soil is mainly used for cultivated crops and residential development. The main limitations are droughtiness, slope and erodibility.

Bojac sandy loam is nearly level, deep and well drained soil that is located on broad flats. These soils are prime farmland and used mostly for cultivated crops and residential development.



Munden



Arapahoe



Polawana



Bojac

Bojac fine sandy loam is a nearly level, very deep and well drained soil located on broad flats in the southwestern and northeastern sections of Accomack County. This soil is prime farmland and used mainly for cultivated crops and residential development.

Munden sandy loam is a nearly level, very deep and moderately well drained soil that is found on broad flats and in depressions. This soil is prime farmland and used mainly for cultivated crops. Some areas are in woodland.

Molena loamy sand is moderately sloping to very steep soil that is very deep and somewhat excessively drained. This soil is used mainly for woodland and wildlife. Cultivated crops are unsuited to this soil due to severe erosion hazard and low available water.

Chincoteague:

This soil association comprises 16% of the county. These are level, very poorly drained soils found in tidal salt marshes. These soils are frequently flooded and poorly suitable for anything other than wildlife habitat.

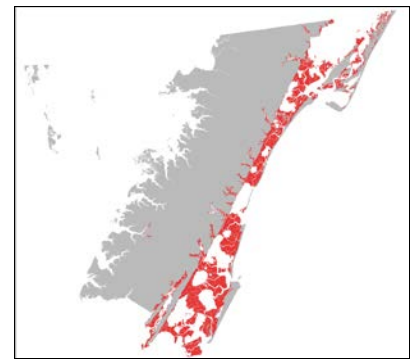
Camocca-Fisherman-Beaches:

This soil association comprises approximately 6% of the county. These are moderately well drained to poorly drained, nearly level to gently sloping soils which were formed by marine and fluvial sediments. These soils are found in marshes, dunes, and adjacent beaches. Below are the classifications for each soil type in this association:

Fisherman fine sand is a nearly level to gently sloping soil that is very deep and moderately well drained. It is located in depressions and undulating areas associated with dunes and marshes on the barrier islands. This soil is used mainly for wildlife habitat and recreation.



Molena



Chincoteague



Camocca

Fisherman-Camocca complex is a combination of two intermingled soils. Fisherman soil is moderately well drained and the Camocca soil is very poorly drained. These soils are located in depressions and on undulating areas associated with dunes and salt marshes on the barrier islands. These soils are used mainly for wildlife and recreation.

Fisherman - Assateague complex is a nearly level to very steep soil that is very deep. The Fisherman soil is moderately well drained, and the Assateague soil is excessively drained. These soils are used mainly for wildlife habitat and recreation. Crops are unsuited to these soils.

Beaches are nearly level to moderately sloping units of sand sediment located between the barrier islands and the Atlantic Ocean and along the Chesapeake Bay shoreline. This soil is mainly used for recreation and wildlife habitat.



Fisherman



Assateague



Beaches

Water

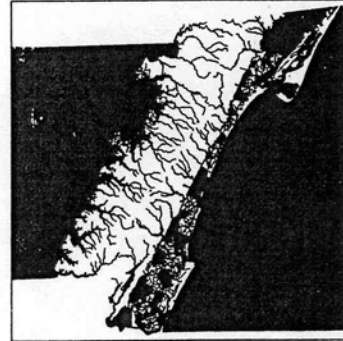
Surface Water: Accomack County is located on a narrow strip of land at the lower end of the Delmarva Peninsula bordered to the east by the Atlantic Ocean and the west by the Chesapeake Bay. There are eighteen tidal creeks on the Seaside and twelve tidal creeks on the Bayside. A large portion of the freshwater in these creeks is supplied from groundwater discharge (approximately 80%).

Although surface water is not used as a source of drinking water in Accomack County, it is an important resource for irrigation water and for shellfish, finfish, and other wildlife habitat. According to Eastern Shore Agricultural Extension Agents, farm ponds supply 85% of the amount of water used for irrigation.

Some of these ponds are used to store water that has been pumped from underground. Also, dams have been built in some tidal creeks to provide irrigation water.

Threats to Water Quality: Contamination threats to surface water quality come from point sources and nonpoint sources. Point sources of pollution are obvious pipe discharges into surface waters. Examples of point sources include sewage treatment plants and factories. Nonpoint source pollution enters water indirectly, through the travel of water over land and through the ground. As water moves, it picks up and carries away pollutants, transporting them over the surface or underground and eventually into creeks and streams. Examples of nonpoint source pollution include erosion and runoff from agricultural fields, construction and logging operations, leaching from septic systems and septage lagoons, and stormwater runoff from impervious surfaces such as roads, parking lots, and building roofs.

A 2004 report by the Virginia Institute of Marine Science (VIMS) on the *Economic Activity Associated with Clam Aquaculture in Virginia* illustrates the importance of water quality to Accomack County's economy. The Eastern Shore of Virginia aquaculture industry produces 75 percent of Virginia's hard clams. The value of Eastern Shore hard clam production rose from an estimated \$4,100,000 in 1991 to \$23,900,000 in 2004, with a direct



Accomack County is bordered by the Chesapeake Bay and Atlantic Ocean and crossed by 30 tidal creeks.

local economic output of \$29,600,000. Personal income associated with initial clam aquaculture sales in 2004 was \$9,200,000. The overall economic impacts from Eastern Shore hard clam aquaculture are an increase in economic output of \$48,800,000 and an overall increase in personal labor incomes of \$15,800,000. The 2007 VIMS *Shellfish Aquaculture Situation and Outlook Report* states that aquaculture of hard clams continues to expand in Virginia, which leads the nation in the culture of hard clams.

Wastewater Discharges: Within Accomack County there are several industries which discharge wastes directly into surface waters. The largest are Perdue, Inc., which discharges approximately 1.97 million gallons per day (MGD) into Parkers Creek, and Tyson's which discharges an average of 0.87 MGD into Sandy Bottom Branch, and the NASA Wallops Flight Facility with an approximate flow of 0.80 MGD into Hog Creek and 0.03 MGD into Mosquito Creek. The Town of Onancock's wastewater treatment plant discharges into the north branch of Onancock Creek and has a design flow of 0.25 MGD. Six seafood facilities have VPDES permits for surface water discharge. The remainder of discharge permits belong to an assortment of schools, packing facilities, and residential facilities.

Erosion and Sedimentation: Erosion and sedimentation occurs when materials such as soil, nutrients, and chemicals are suspended in and transported by water. These suspended materials are transported away from their original location and deposited elsewhere, usually in surface water down gradient from the original site. Sediment is generated by soil erosion and runoff from land disturbing activities such as agricultural tillage and construction work. High velocity runoff from impervious surfaces such as roads and parking lots increase sedimentation. The use of plastic mulch in agricultural fields can increase the amount and velocity of water leaving the field and may increase loading of chemicals to downstream surface waters. Sedimentation not only pollutes our waters, it fills in our creeks and harbors and results in costly dredging projects.

Nutrient Enrichment: Nutrient enrichment is the result of an over abundance of nitrates and phosphates in the water. These fertilizers enter water from point and nonpoint sources of pollution. Sources of nutrient enrichment include industrial discharges, agricultural, forestry, and urban runoff, sewage treatment plants, septage lagoons, septic tanks, animal feedlots, and boat discharges. Nutrient enrichment can result in growth explosions of phytoplankton. When these algae die they use valuable oxygen to decompose, depleting the waters of dissolved oxygen and possibly causing fish kills.

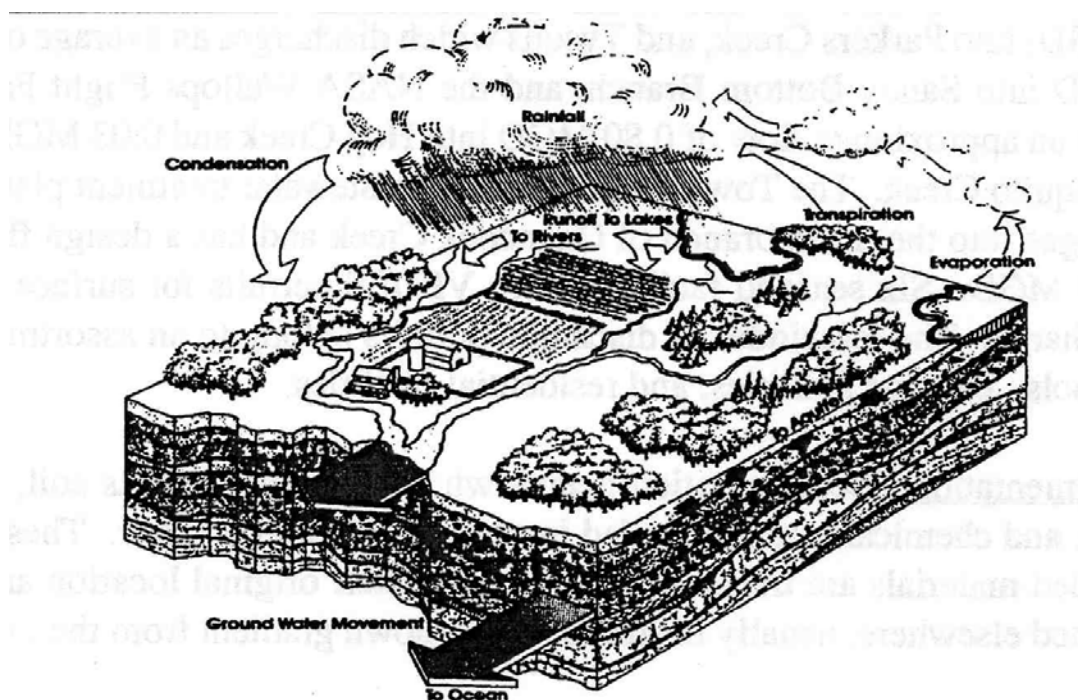
A 2007 VIMS study, *Application of a Nitrogen Loading Model to Gargathy Bay Watershed, Accomack County, VA: Implications for Future Development*, documents the potential impact of land use activities on the amount of non-point source pollution entering coastal waters. The study concludes that intense land development and intense poultry production will result in increased nitrogen loads and adversely affect the water quality of ground water and the adjacent coastal bays.

The dissolved oxygen standard for surface water in Accomack County is a daily average of 5 milligrams of oxygen per liter of water (5 mg/l). There are some indications that

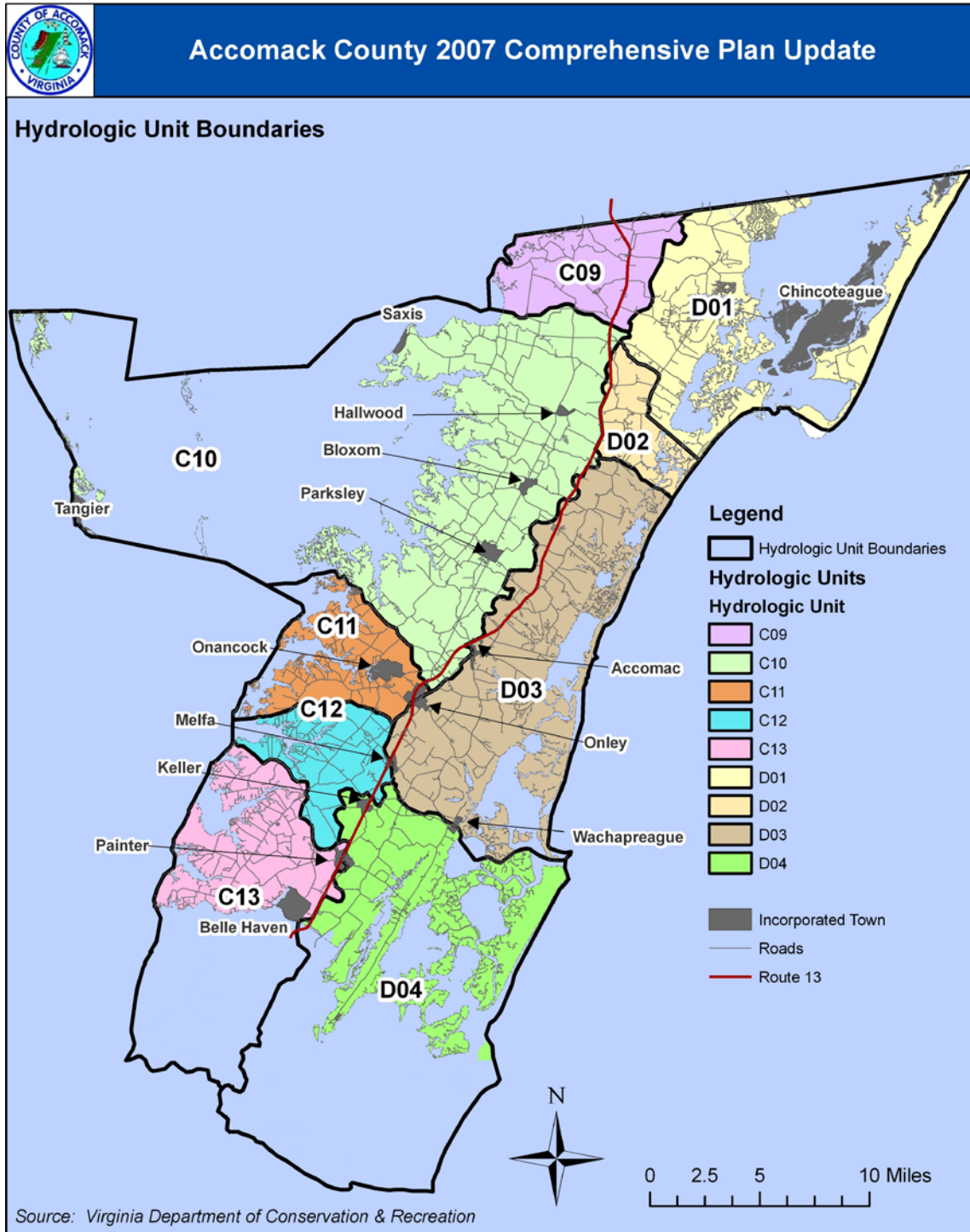
small creeks which lack the ability to flush themselves, like Accomack County's creeks, have naturally low levels of dissolved oxygen.

For example, a study conducted on Parker Creek by the Virginia Institute of Marine Science found that dissolved oxygen concentrations in Parker Creek at the time of the study frequently fall below 4 mg/l and average less than 5 mg/l on a daily basis. The low level of dissolved oxygen in Parker Creek has been attributed to the fact that it is the receiving creek for Perdue, Inc. treated wastewater. The VPDES permits for Perdue and Tyson Foods discharges allow a minimum of 6.5 mg/l of dissolved oxygen; (a level that the companies' monitoring reports for 1996 indicated they were meeting). The Parkers Creek study also found observations of dissolved oxygen concentrations below 5 mg/l in creeks which are not impacted by industrial discharges, suggesting that dissolved oxygen concentrations below 5 mg/l are a natural occurrence. DEQ VPDES permit monitoring data for Perdue from 2002 through 2007 shows that the 6.5 mg/l standard is being met.

The **hydrologic cycle** traces the flow of water in its solid, liquid, and vapor states through its various pathways and reservoirs.



Map 2-A



Fecal Coliform Bacteria: The presence of fecal coliform bacteria is a water quality indicator for groundwater and surface water. Fecal Coliform is found in the intestinal tracts of warm blooded animals and, while not necessarily harmful in itself, it is indicative of fecal contamination and the possible presence of pathogenic organisms.

Although surface water in Accomack County is not utilized for human consumption, fecal coliform is a concern with respect to surface water if there are high levels in an area used for recreation or shellfish harvesting. State water quality standards require that in all surface waters, except shellfish waters, the fecal coliform bacteria shall not exceed a geometric mean of 200 fecal coliform bacteria per 100 ml of water for two or more samples over a calendar month period, or a fecal coliform bacteria level of 7,400/100 ml in 10% of samples in any given month.

Municipal discharges along with individual systems which discharge directly into surface water are the major sources of fecal coliform bacteria entering the surface water. Septic systems may leach fecal coliform bacteria into surface waters. This leaching occurs where septic systems have been placed at a higher density than the soil can accommodate or in soils that are too wet to function properly. Problems sometimes exist around boat marinas due to the direct discharge of waste into the water when pump-out facilities are unavailable. Run-off from wild and domestic animal wastes can also contribute to fecal coliform pollution.

There are eight facilities authorized to discharge fecal coliform into surface waters in Accomack County. All of the facilities are required to limit the monthly average of fecal coliform to less than 200 parts per ml. Five of the facilities are permitted to discharge no more than 400 parts per ml. A review of the monitoring data for 1996 showed great swings in the concentration of fecal coliform in discharges among facilities with permits in both monthly average and maximum releases. In several instances the maximum discharge was in excess of 200 parts per ml. DEQ VPDES permit monitoring data from 2002 through 2007 shows that the Tyson fecal coliform standards are currently being met. The DEQ data shows that Perdue had fecal coliform violations on two occasions between 2002 and 2007.

Water Quality Standards: State Water Control Law mandates the protection of existing high quality state waters and provides for the restoration of all other state waters to a condition that will permit all reasonable public uses and support the propagation and growth of all aquatic life that might be reasonably expected to inhabit those waters. The adoption of water quality standards is one method the state uses to accomplish this goal. Established standards describe the level of water quality necessary to meet and maintain reasonable and beneficial uses such as swimming and other water based recreation, public water supply and the propagation and growth of aquatic life. Virginia's standards are intended to protect all state waters for recreational use and for the propagation of a balanced population of fish and wildlife. Through the protection of these two uses, which usually require the most stringent standards and the highest degree of protection, other usually less restrictive uses like industrial water supply, irrigation and navigation are usually also protected.

Impaired Waters: Virginia has developed an Impaired Waters Total Maximum Daily Load (TMDL) Priority List program to identify state waters in need of restoration. Virginia has 381 TMDLs, and 14 of them are located in Accomack County. TMDL refers to the total amount of pollution a water body can absorb without being unusable for its intended use, such as shellfishing, swimming, and fishing. Many of the waters in

Virginia that do not meet water quality standards fail because of bacterial levels above the water quality standards that are designed to protect waters for swimming use, but other waters are also impaired as a result of pH, temperature, sediment, toxic chemicals, and other impairments. The following table is the Impaired Waters TMDL Priority List for development of TMDLs in Accomack County.

**Impaired Waters
2002 303(d) Total Maximum Daily Load
(TMDL) Priority List
Source: DEQ, 2002**

Water Body	Stream Name	Size	Cause	Source	First Listing	TMDL Due
VAT-C09R	UT* to Pitts Creek	5.96 Miles	Dissolved Oxygen, pH	Unknown	2002	2010
VAT-C10E	Messongo Creek	0.01 Sq. Mi.	Dissolved Oxygen; Fecal Coliform	Unknown	2002	2010
VAT-C10E	Holdens Creek	0.01 Sq. Mi.	Fecal Coliform	Unknown	1996	2010
VAT-C10R	Sandy Bottom Branch	1.24 Miles	Copper; General Standard (Benthic); Nutrients – TP	Unknown	1996	2010
VAT-C10R	UT* to Sandy Bottom Branch	1.65 Miles	General Standard (Benthic); Fecal Coliform; Nutrients- TP	Unknown	1996	2010
VAT-C11E	Onancock Creek, Central Br.	0.02 Sq. Mi.	Fecal Coliform	Unknown	1998	2010
VAT-C11E	Onancock Creek, North Br.	0.03 Sq. Mi.	Fecal Coliform; Dissolved Oxygen	Unknown	2002	2010
VAT-C11E	Onancock Creek, Southern Br.	0.01 Sq. Mi.	Fecal Coliform	Unknown	2002	2010
VAT-D02E	Assawoman Creek	0.05 Sq. Mi.	Dissolved Oxygen; Fecal Coliform	Unknown	2002	2010
VAT-D02R	Petit Branch	1.79 Miles	Fecal Coliform; General Standard (Benthic)	Unknown	1996	2010
VAT-D03R	Ross Branch	3.11 Miles	General Standard (Benthic)	Unknown	2002	2014
VAT-D03R	Parker Creek	2.26 Miles	General Standard (Benthic); Fecal Coliform	Unknown	1994	2010
VAT-D03R	Gargathy Creek	4.66 Miles	General Standard (Benthic)	Unknown	2002	2014
VAT-D03R	UT* to Folly Creek	1.61 Miles	General Standard (Benthic)	Unknown	2002	2014

* UT stands for Unnamed Tributary

Regulation: Water resources and water pollution in Virginia are regulated by the Virginia Department of Environmental Quality (DEQ), the Virginia Department of Conservation and Recreation (DCR), the State Water Control Board, and the Environmental Protection Agency (EPA). They administer programs created by the federal Water Pollution Control Act of 1972 (commonly known as the Clean Water Act), the federal Water Quality Act of 1987, and a 1984 amendment to the federal Resource Conservation and Recovery Act.

Virginia's water permit programs include the Virginia Pollutant Discharge Elimination System (VPDES) permit, Virginia Pollution Abatement (VPA) permit, Virginia Water Protection (VWP) permit, Corrective Action Plan (CAP) permit (for underground storage tanks), groundwater withdrawal permit, surface water withdrawal permit, and Virginia Stormwater Management Program permit (VSMP).

In addition to permitting on an individual basis, DEQ has made an effort to streamline the permitting process through the use of general permits and permits-by-rule. These permits are issued for facilities with similar industrial, remedial or sanitary processes. For general permits, DEQ develops, with EPA, requirements for category-specific permits and adopts the permits through the regulatory process. Individual facilities within the Commonwealth are then able to apply for and be covered by the umbrella of a general permit. General permits are currently in place for petroleum cleanups, non-metallic mineral mining operations, confined animal feeding operations, stormwater discharges (from construction activities and from industrial operations), sanitary sewage discharges of less than 1,000 gallons per day, seafood processors, non-contact cooling water, ready-mix concrete plants, fish farms, car washes, and poultry growing operations.

With permits-by-rule, an applicant is deemed to have a permit upon filing specified information with DEQ. Generally, these permits are used for categories of facilities that have very simple permit requirements and pose minimal threat to the environment. The information submitted is certified by a professional engineer as being accurate and in compliance with regulatory requirements. DEQ currently uses permits-by-rule for yard waste composting facilities, energy recovery or incineration facilities for solid waste, waste transfer stations, and materials recovery facilities for solid waste. Increased permitting efficiency will be achieved in the future through the use of general permits and permits-by-rule wherever possible. These streamlined permits save the applicant time and money.



The Department of Environmental Quality administers state and federal environmental programs, issues environmental permits and ensures compliance with regulations; coordinates planning among Virginia's environmental programs, and helps build partnerships on environmental issues among business and industry, local governments, and interested citizens and groups.

DEQ's programs include: agriculture, Air Check Virginia, air quality, avian influenza, brownfield/land renewal, Chesapeake Bay Program, citizen monitoring, Clean Marina Program, computers & electronics recycling, construction assistance, energy technologies (Virginia Information Source for Energy), enforcement, environmental education, environmental excellence, environmental impact review – federal consistency, environmental management, eProcurement, federal facilities, groundwater protection, innovative technology, ISO 14001, ozone and particle pollution monitoring, petroleum programs, pollution prevention, Pollution Response Program- Report Pollution, power plants, recycling & litter prevention, SARA Title III, small business assistance, superfund, total maximum daily loads, toxic release inventory, Virginia Coastal Program, vehicle emissions inspections, Virginia Naturally, voluntary remediation, waste management, waste tires, wastewater engineering, wastewater treatment, water quality, water resource management, water supply planning, and wetlands.

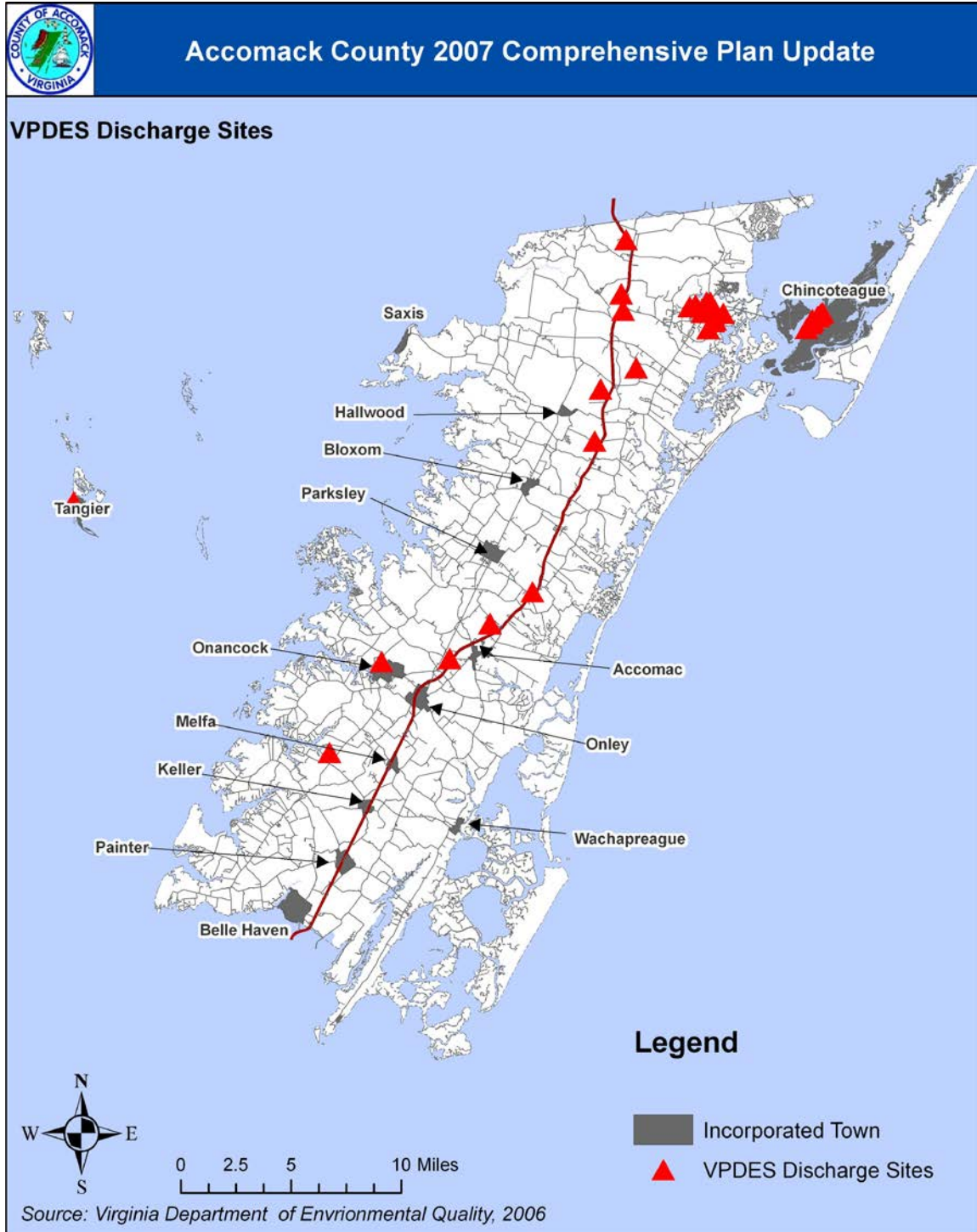
Virginia Pollution Discharge Elimination System: Facilities that discharge waste from any pipe

or ditch into surface waters are required to obtain a Virginia Pollution Discharge Elimination System (VPDES) Permit. Map B shows the location of VPDES permitted sites in Accomack County. Typical requirements of a VPDES permit include limits on concentrations and quantities of pollutants, proper operation and maintenance of facilities, discharge monitoring, record keeping, and reporting of data to DEQ, and a requirement to be open to inspections. A limit is set for discharge and the facility must submit monthly monitoring reports to DEQ. The following table shows the facilities in Accomack County with VPDES permits.

VPDES Sites
Source: DEQ, 2007

Facility Name	Design Flow (MGD)	Receiving Stream
Oak Hall Shopping Center	0.0100	X-trib to Tunnels Mill Br to Bulbegger
Tyson Foods Inc.	2.0000	Sandy Bottom Branch
Sunset Bay Utilities - South	0.0395	Chincoteague Channel
Taylor Landing	0.0120	Chincoteague Channel
Town of Onancock – Waste Water Treatment Plant	0.2500	N. Bran. of Onancock Creek to Chesapeake Bay
Hampton Inn and Suites	0.0100	Chincoteague Bay
Perdue Farms Incorporated	3.0000	Parker Creek to Metompkin Bay
Perdue Farms Incorporated	3.0000	UTRIB to Folly Creek
Comfort Suites Hotel – Chincoteague	0.0090	Chincoteague Bay
Whispering Pines Motel	0.0190	UTRIB to Deep Creek
Whispering Pines Motel	0.0190	Groundwater
Chincoteague Landmark WWTP	0.0350	Chincoteague Channel
Birchwood Housing Development	0.0350	Chincoteague Channel
Accomack County - N Landfill Leachate Treatment	0.0200	Assawoman Creek
Cardinal Village	0.0060	UTRIB to Tunnels Mill Br to Bulbegger
Tangier Town	0.1000	Chesapeake Bay
US NASA – Wallops Flight Facility	0.3000	UTRIB to Little Mosquito Creek
US NASA – Wallops Flight Facility	0.3000	UTRIB to Jennys Gut
US NASA – Wallops Flight Facility	0.3000	UTRIB to Simoneaston Bay
Accomack County – Pungoteague Elementary	.0090	Xtrib to Warehouse Prong to Pungoteague Creek
Sunset Bay Utilities - North	0.0250	Chincoteague Channel to Chincoteague Bay
Shore LifeCare at Parksley	0.0200	N.F. Parker Creek to Parker Creek
Accomack County – Kegotank Elementary	0.0090	Unnamed ditch to Messongo Creek
VDOT – Route 13 Information Center	0.0200	Ditch to Pitts Creek
Chincoteague Town – Water Treatment Plant	0.0200	Chincoteague Channel
US Coast Guard Group – Eastern Shore	0.0060	Chincoteague Channel

Map 2-B



Six seafood facilities in Accomack County are approved to discharge with a Consent Order in Lieu of a VPDES permit. Special exceptions have been made for seafood processing facilities with an expired VPDES permit while DEQ completes final regulations on a general VPDES permit for seafood processors. Additional information on DEQ's VPDES program can be found at www.deq.state.va.us/vpdes.

Virginia Pollution Abatement Permit: A Virginia Pollution Abatement (VPA) Permit is required for any operation that proposes to manage pollutants without resulting in a point source discharge to surface waters. VPA permits are required for land application of sewage sludge, animal waste, or industrial waste and for closed systems that reuse and recycle waste water. Excluded are vessels, run-off from fields and orchards, return flows from irrigation, land disposal of pollutants otherwise permitted and discharges into otherwise permitted treatment systems.

Typical requirements of a permit include prohibition of discharge of pollutants to surface waters, waste storage and disposal requirements, a nutrient management plan for manure disposal, best management practices such as berms and buffer strips to protect surface water, groundwater monitoring to detect possible contamination, and sludge monitoring to determine concentration of pollutants.

Virginia Water Protection Permit: This permit is required for any project that requires federal permits for discharge of dredge material or fill in a waterway or wetlands, or work or construction in a navigable waterway. Typical requirements of a Virginia Water Protection Permit include alteration of the design or scale of the proposal, requirements to employ specific construction practices, and limitations on disturbances during certain times of the year.

Underground Storage Tank Corrective Action Plan Permit: A Corrective Action Plan permit may be required by DEQ after initial abatement measures for any person or entity having an underground storage tank that has discharged petroleum or a controlled substance into the surrounding soil or onto the surface. Typical requirements of a Corrective Action Plan Permit include satisfactory completion of initial response to a release of material, completed abatement measures, site characterization, removal of released product, all reporting required for the release, and a complete Corrective Action Plan for the site problems caused by the release, including descriptions of the site and the release, remediation methods to be used, and a schedule of completion.

As of January 29, 2005, DCR has been responsible for the issuance, denial, revocation, termination, and enforcement of NPDES permits for the control of stormwater discharges from MS4s and land disturbing activities under the Virginia Stormwater Management Program (VSMP). The VSMP permit program is authorized under the Virginia Stormwater Management Act. DCR uses both individual and general permits for stormwater discharges.

Any owner or operator of construction activities equal to or larger than one acre are required to apply for registration coverage under the General Permit for Discharges of Stormwater from Construction Activities. Owners/operators of construction activities larger than 2,500 square feet and less than one acre located in Chesapeake Bay Preservation localities are also required to apply for registration coverage.

In addition, construction activity (i) of less than one acre yet part of a common plan of development of sale disturbing one or more acres, and (ii) having the potential to discharge stormwater, requires coverage under the *VSMP General Permit for Discharges of Stormwater for Construction Activities*.

Additional information on DCR's VSMP program can be found at http://www.dcr.virginia.gov/soil_&_water/vsmp.shtml.

Ground Water Withdrawal Permit: Any person or entity wishing to withdraw 300,000 or more gallons of groundwater per month in the Eastern Virginia Ground Water Management Area or the Eastern Shore Ground Water Management Area must obtain a Ground Water Withdrawal Permit. Accomack and Northampton Counties are located in the Eastern Shore Groundwater Management Area. Typical permit requirements include demonstration of the need for the amount of water applied for, predication of the area of impact, which is defined as the area in any aquifer that will experience at least one foot of groundwater level declines due to the proposed withdrawal, a plan to mitigate impact to pre-existing users within the area of impact, a conservation and management plan that requires the use of water-saving plumbing and processes, a water loss reduction program, a water use education program and mandatory use reduction during water shortage emergencies, a limit to the annual amount of groundwater that may be withdrawn (a monthly limit is also generally included), and potential groundwater levels and groundwater quality monitoring. The 1992 Ground Water Management Act requires qualifying Agricultural uses to have permits.

Groundwater withdrawal permits put a limit on the amount of water that can be withdrawn. The permitted amount allowed for each facility may include a grandfathered amount plus an amount based on historical use. Perdue Farms, Tyson Foods, the Town of Chincoteague, the Town of Tangier, and the Town of Parksley have historic uses for which permits have not been issued. Permits are being developed for these facilities. The following table lists Groundwater Withdrawal Permits in Accomack County that have been issued:

Groundwater Withdrawal Permits*Source: DEQ, 2007*

<u>Owner Name</u>	<u>Owner City</u>	<u>Annual Permitted Amount</u>	<u>Gallons per Day</u>
Integrated Fisheries International Limited	Easton	95,000,000	260,274
Town of Onancock	Onancock	61,000,000	167,123
Shore LifeCare Incorporated	Parksley	6,800,000	18,630
Trails End Utility Company Incorporated	Oak Hall	15,700,000	43,014
US NASA – Wallops Island Flight Facility	Wallops Island	13,300,000	36,438
Commonwealth Chesapeake Power Station	Omaha	61,400,000	96,693
Eastern Shore Yacht and Country Club	Melfa	25,000,000	68,493
Emily Rae Heflen	Virginia Beach	31,000,000	84,932
Accomack County	Tasley	5,453,000	14,940
Virginia Landing – National American Corporation	Quinby	8,000,000	21,918
Batista Madonia Sr. (multiple permits)	Mulberry	394,596,000	1,081,084
William Earl Dennis (multiple permits)	Wattsville	7,700,000	21,096
William M. Daley	Onancock	3,700,000	10,137
Ronald Graunke	Mt. Airy	1,800,000	4,932
Taylor and Fulton Inc. (multiple permits)	Mappsville	76,600,000	209,863
Gordon L. Sturgis	Exmore	4,400,000	12,055
Agnes B. Willard	Painter	1,400,000	3,836
Robert Van Dessel	Parksley	3,400,000	9,315
David Van Dessel	Parksley	4,500,000	12,329
Ace 1971 and Gigi 1971 Trust (multiple permits)	Mappsville	30,000,00	82,192
500 Group, LLC	Melfa	10,900,000	29,863
Richard F. Hall III (multiple permits)	Accomac	148,400,000	406,575
Donald L. Fitchett	Melfa	8,400,000	23,014
Milton Douglas Evans	Accomac	106,000,000	290,411
Nell Thomas, Pres. c/o Dorothy Nell Thomas, VP (multiple permits)	Onancock	250,000,000	684,932
Kuzzens Incorporated (multiple permits)	Exmore	183,571,000	502,934
BAR-RAB, L.L.C	Lewes	30,124,000	82,531
Ellen Wessels	Bloxom	21,517,000	58,951
Virginia Dept. of Conservation and Rec'n	Richmond	40,340,000	110,521
Byrd Foods, Incorporated	Parksley	13,500,000	36,986
Alice Russell	Leemont	34,560,000	94,685
June Sterling	Parksley	93,060,000	254,959
Ann Godwin	Onancock	22,650,000	62,055
Gerald Wilgus	Bethany Beach	21,517,000	58,951
Toni Trepanier	Hallwood	10,900,000	29,863

The Virginia Department of Health: The Virginia Department of Health (VDH) regulates the placement of wells and septic systems. Virginia has statewide septic regulations but the state code allows localities to adopt more stringent regulations.

Septic Systems: Septic systems are natural, on-site, wastewater treatment and disposal systems. These systems use bacteria to clean wastewater. Water and waste are transported out of a building and into the septic tank. In the septic tank, biodegradable solids are broken down by bacteria and converted to liquid and gas and non-biodegradable solids settle out onto the bottom of the tank. The liquid waste then moves through pipes, by gravity flow or pumped pressure, into the drainfield. The drainfield consists of a series of underground pipes laid over a bed of gravel. The liquid leaves the pipes and percolates down through the gravel and soil below. Organisms in the soil perform the final wastewater treatment.

Eastern Shore Ground Water Management Area

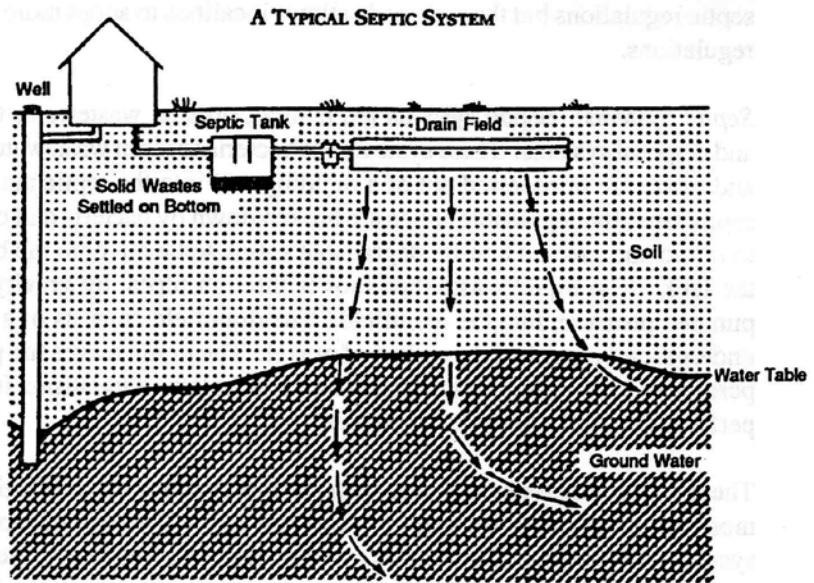
In 1976, the Virginia State Water Control Board designated the Eastern Shore as a "Ground Water Management Area." The Eastern Shore was the second area in the state to be given this designation. The designation was based on findings of groundwater level declines, well interference, and localized groundwater contamination.

Ground Water Management Area designation means that all water users that withdraw more than 10,000 gallons per day are subject to a state permitting process. At the time the designation was made, ten major existing industrial and municipal withdrawals became grandfathered and did not have to go through the permitting process.

There are several types of septic systems approved for use in Virginia. The most commonly used include conventional septic systems, enhanced flow systems, low pressure distribution systems, and, less frequently, the elevated sand mound system. Conventional systems are the most widely used, the most economical and the easiest to maintain. A conventional system consists of a tank, a distribution box which splits effluents off to the drainfield lines, and a drainfield consisting of a series of parallel trenches dug on contour and filled with 13 inches of stone and four inch pipe. An enhanced flow system varies from the conventional system in that a pump is added to improve distribution of effluent to the drainfield. A conventional system may also have a pump to overcome gravity, but it does not necessarily aid distribution. The pump in an enhanced flow system is carefully sized to wet all of the absorption area.

Low pressure distribution systems are also similar to conventional systems, except that the low pressure distribution system uses a pump and a set of small diameter pipes with holes every three to five feet to distribute the wastewater. This pressure dosed system uses all of the absorption field on every pump cycle. A gravity system uses less than 15% of its field at any given time and a few square feet of soil within the drainfield area may treat all of the effluent. Research has shown that systems that dose an absorption field last significantly longer than gravity fed systems. Also, because this type of system uses each square foot of soil in the treatment and disposal process, better effluent treatment is achieved. The Health Department's sewage handling and disposal regulations allow absorption areas to be reduced by up to 50% when low pressure distribution is used. This can be beneficial on lots with small areas of suitable soil. These systems are more expensive to install because they require a pump, more expensive pipe, and more skill to install than a conventional system.

Diagram of a typical septic system



The elevated sand mound is a system built above ground that partially treats the effluent before applying it to the soil below the mound. The mound consists of one foot of graded sand placed over plowed top soil. A small low pressure system is placed in a gravel filled trench over the sand. The system is then covered with top soil and seeded. Effluent is pumped to the mound after receiving primary treatment in the septic tank. Effluent treatment occurs when the wastewater passes through the sand in the mound and continues into the soil below the mound. According to the Health Department, elevated sand mounds provide better sewage treatment than any other system regularly permitted in the state. Elevated sand mound systems use less area than other systems and may be the only option for limited spaces. The construction of elevated sand mound systems can cost two to five times that of a conventional system. The Health Department has modified its regulations to permit alternative systems, such as those using peat moss.

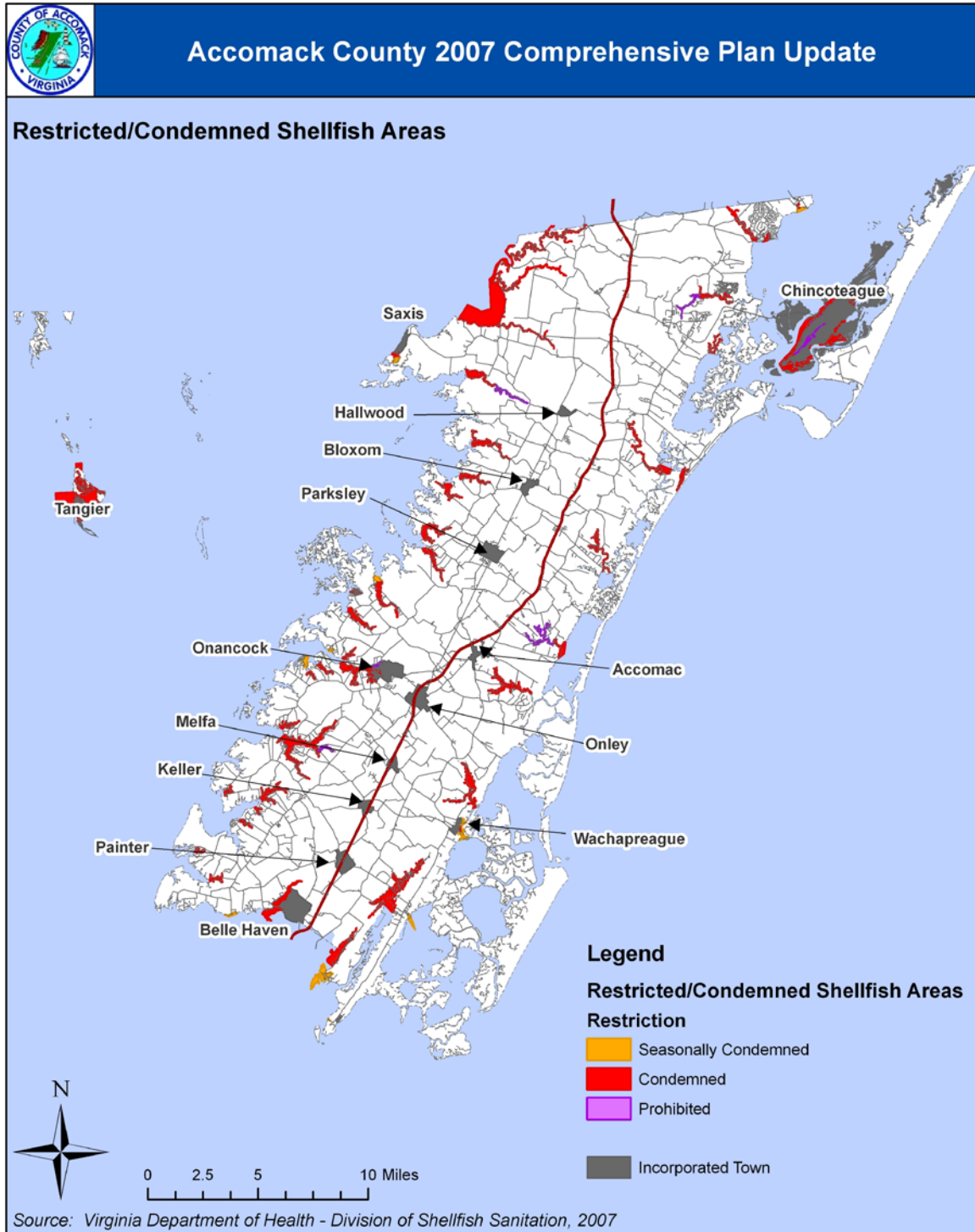
Septic System Approval: The Health Department issues two types of approval for septic systems. A construction permit contains a design for a specific system, at a specific location, for a specific use and is valid for 18 months. The permit expires after 18 months and a new application must be filed, complete with re-evaluation of the site under current regulations. A certification letter does not contain a system design and has no expiration date. The letter is a commitment by the Health Department to issue a permit at any time in the future on a specific site. The Health Department conducts an on-site evaluation for each septic system permit application. The site is evaluated for soil depth. Most research shows that two to four feet of well drained soil is needed to clean waste water. The site is also evaluated for how fast the soil will move water, or

“perc.” Soils that perc too quickly can contaminate groundwater. Those that perc too slowly can cause sluggish plumbing flow and produce sewage overflows.

Septic System Maintenance: The Health Department suggests that septic tanks be pumped out once every three to five years. Pumping removes solids that have accumulated in the tank. If left unpumped, solids will clog the soil where the wastewater is absorbed, leading to system failure. The county currently requires that all septic systems on the Bayside be pumped out at least once every five years. This is a requirement of the Chesapeake Bay Preservation Overlay District and does not apply to septic systems on the Seaside of the county. Accomack County updated its septic system database in 2006 and is notifying property owners of the septic system pumpout requirement on a five-year cycle.

Groundwater Contamination: A properly functioning septic system will effectively treat biodegradable solids and liquids. Chemical wastes such as used engine oil, gasoline, pesticides, paints, solvents, and photographic chemicals cannot be broken down by the bacteria in the septic system or soil. These substances move through the system, sometimes killing the useful bacteria, and exit in the same form they entered, posing a threat to groundwater quality.

Map 2-C



Impaired Shellfish Waters
Source: VDH, 2007

VAT-D01E	Jennys Gut	0.01 Sq. Mi.	VDH Shellfish Restriction	Unknown	2002
VAT-D01E	Big Simoneaston Cr	0.01 Sq. Mi.	VDH Shellfish Restriction	Unknown	2002
VAT-D01E	Toms Cove Boat Basin	0.001 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-D01E	Andrews Landing Gut	0.03 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-D01E	Black Point Drain	0.05 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-D01E	Assateague Channel/ Sheepshead Creek	0.23 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-D01E	Drainage ditch	0.01 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-D01E	Chincoteague Channel/ Fowling Gut	0.61 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-D01E	Greenbackville Harbor	0.02 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-D01E	Swans Gut Creek	0.14 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-D01E	Mosquito & Little Mosquito Creek	0.18 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-D01E	Cockle Creek	0.11 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C09E	Pocomoke Sound & Pocomoke River	2.6 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C10E	Deep Creek	0.3 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C10E	Starling Creek	0.08 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C10E	Messongo Creek	0.32 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C10E	Bagwell Creek	0.06 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C10E	Hunting Creek	0.22 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C10E	Young Creek	0.19 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C10E	Guilford Creek	0.2 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C10E	Muddy Creek	0.32 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C11E	Chesconessex Creek	0.19 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C11E	Finneys Creek	0.1 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C11E	Matchotank Creek	0.08 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C11E	Cedar Creek	0.06 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C11E	Onancock Creek	0.36 Sq. mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C12E	Pungoteague Creek	0.41 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C12E	Taylor Creek	0.17 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C13E	Craddock Creek	0.08 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C13E	Nandua Creek: Back Creek	0.04 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998

		Impaired Shellfish Waters (cont'd)			
VAT-C13E	McLean Gut	0.03 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C13E	Occohannock Creek	0.46 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C13E	Nandua Creek	0.15 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-C13E	Kusian Cove	0.03 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-D02E	Assawoman Creek and Womans Bay	0.36 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-D03E	Parker Creek	0.09 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998
VAT-D03E	Folly Creek	0.29 Sq. Mi.	VDH Shellfish Restriction	Unknown	1998

Shellfish Waters: State Water Quality Standards require that all open ocean or estuarine waters capable of propagating shellfish or specific areas where public or leased private shellfish beds are present, including those waters on which condemnation or restriction classifications are established by the State Department of Health, have a fecal coliform value of not more than 14 parts per 100 milliliters.

The Virginia Department of Health's Division of Shellfish Sanitation condemns portions of water bodies due to hazards or when water quality standards are not met. In condemned areas it is illegal to remove shellfish for any purpose, except by permit granted by the Virginia Marine Resources Commission (VMRC). With a VMRC permit, shellfish may be removed from a condemned area

under the following conditions; the water temperature must be above 50 degrees Fahrenheit and the shellfish must be out of the condemned area for at least 15 days before harvesting. In accordance with the National Shellfish Sanitation Program, areas around certain point source discharge are prohibited. Shellfish cannot be removed from prohibited areas. The only prohibited area in Accomack County is around the Town of Onancock Sewage Treatment Plant.

As of January 1, 1997, the Bureau of Shellfish Sanitation has condemned 8,740 acres of productive shellfish grounds in Accomack County. This represents a 9% increase over the amount of acreage condemned in 1992 (8,033 acres). Map C shows the location of condemned shellfish grounds. In comparison, as of July 1, 2007, the Virginia Department of Health, Division of Shellfish Sanitation had condemned approximately 7,587 acres of shellfish grounds within Accomack County. This represents an approximate 6% decrease in condemned acreage.

Division of Shellfish Sanitation

The Division of Shellfish Sanitation functions under the Virginia Department of Health as the state agency responsible for assuring that shellfish harvested and sold in Virginia are safe for consumers in accordance with the National Shellfish Sanitation Program. The National Shellfish Sanitation Program is monitored by the U.S. Food and Drug Administration to insure compliance by shellfish growing states. Shellfish, as defined by the National Shellfish Sanitation Program, are all edible species of oysters, clams, mussels, and scallops.

Since they are filter feeders, shellfish can filter large amounts of water thereby concentrating suspended bacteria and viruses in their tissues. In the early 1900's public health authorities in the U.S. began relating a large number of illnesses to raw shellfish consumption and initiated guidelines for sanitary controls.

Pollution of Condemned Shellfish Grounds is being addressed by DEQ's TMDL

program. A TMDL study is currently being prepared for Occohannock Creek, and will make recommendations to reduce fecal coliform pollution. Since fecal coliform is produced by humans, pets, livestock, and wildlife, an implementation strategy will be developed to reduce fecal coliform pollution in the watershed.

Condemned Shellfish Grounds

Creek	1992 Acres	2007 Acres
Pocomoke Sound and Pocomoke River	1,843	1,663
Starling Creek	48	58
Messongo and Guilford Creek.....	243	377
Messongo Creek.....130 Acres to 180 Acres		
Muddy Creek.....136 Acres		
Guildford Creek.....70 Acres to 96 Acres		
Young Creek.....43 Acres to 60 Acres		
Hunting and Deep Creek	715	450
Deep Creek	355 Acres to 177 Acres	
Doe Creek	106 Acres	
Hunting Creek	142 Acres to 108 Acres	
Bagwell Creek	112 Acres to 165 Acres	
Tangier Island	1,098	1029
Chesconessex Creek	120	153
Onancock and Matchotank Creeks.....	491	449
Onancock Creek	299 Acres to 281 Acres	
Finneys Creek	45 Acres to 43 Acres	
Parkers Creek	59 Acres to 76 Acres	
Cedar Creek	38 Acres to 40 Acres	
Poplar Cove.....10 Acres		
Pungoteague Creek	414.....	578
Pungoteague and Taylor Creeks —371 Acres to 492 Acres		
Underhill Creek	43 Acres to 58 Acres	
Warehouse Prong.....27 Acres		
Butcher Creek	52	
Nandua and Curratuck Creeks.....	220.....	235
Nandua Creek, Kusian Cove.....	163 Acres to 144 Acres	
McLean Gut	39 Acres to 33 Acres	
Boggs Gut.....22 Acres		
Back Creek.....18 Acres to 36 Acres		

Condemned Shellfish Grounds (cont'd)

Craddock Creek	93.....	76
Occohannock Creek.....	148.....approx...	175
Machipongo River.....		569
Folly Creek	236.....	209
Finney Creek.....		273
Parker Creek	59.....	146
Gargathy Creek	75.....	88
Assawoman Creek and Womans Bay.....	235.....	171
Little Cat Creek.....		62
Little Simoneaston and Big Simoneaston Creeks.....		26
Cockle Creek	165	
Little Mosquito Creek	102.....	133
Swans Gut Creek	91.....	77
Cockle Point Harbor.....		22
Greenbackville Harbor	13.....	38
Chincoteague Island and Adjacent Areas	596.....	464

Chincoteague Channel/

Fowling Gut 388 Acres to 337 Acres

Andrews Landing Gut 21 Acres to 12 Acres

Black Point Drain 32 Acres to 29 Acres

Toms Cove Boat Basin 2 Acres

Lewis Creek.....0.6 Acres

Drainage Ditch..... 5 Acres

Assateague Channel/

Sheepshead Creek/ Oyster Bay.148 Acres to 85 Acres

Total Condemned Acres 8,740 7,587

Water Quality Restoration: Virginia is using two programs, Total Maximum Daily Load (TMDL) and Chesapeake Bay Tributary Strategies, to plan for and implement the restoration of our surface waters.

Total Maximum Daily Load (TMDL) Program: The TMDL Program provides the management framework for restoring water quality in Virginia's impaired streams, rivers, lakes and estuaries. The major steps under the TMDL program include development of the TMDL, development of the TMDL Implementation Plan, and implementation of the plan to restore water quality. A TMDL is currently being prepared for Occohannock Creek.

Chesapeake Bay Tributary Strategy Program: Virginia's Tributary Strategy Program was developed in response to the 2000 Chesapeake Bay Agreement to improve the Bay's water quality. The Eastern Shore Tributary Strategy was developed in 2005, and includes in proposed projects to reduce non-point source pollution from agriculture, forestry, and urban development, including water quality BMPs, shoreline buffer restoration, and upgrading municipal sewage treatment plants. Further information is available at:
<http://www.naturalresources.virginia.gov/Initiatives/WaterQuality/FinalizedTribStrats/easternShore.pdf>

Chesapeake Bay Preservation Overlay District: In 1991, the Chesapeake Bay Preservation Overlay District was added to the county's Zoning Ordinance to bring Accomack County into compliance with the Virginia Chesapeake Bay Preservation Act. The purpose of the District is to protect existing high quality state waters, restore all other state waters to a condition or quality that will permit all reasonable public uses and will support the propagation and growth of all aquatic life, safeguard waters from pollution, prevent any increase in pollution, reduce existing pollution, and promote water resource conservation. Performance standards are included in the regulations with the goal of preventing a net increase in nonpoint source pollution from new development, achieving a 10% reduction in nonpoint source pollution from redevelopment, and achieving a 40% reduction in nonpoint source pollution from agricultural uses. Map D shows the approximate location of Resource

Protection Areas and Resource Management Areas in Accomack County.

Land in the Overlay District is that which, if improperly developed, could contribute to the significant degradation of the water quality of the Bay and its tributaries. The Overlay District is divided into two segments, the Resource Protection Area (RPA) and the Resource Management Area (RMA). The RPA is the portion of the District which comprises lands at or near perennial streams or the shoreline. The RPA consists of land that performs ecological and biological processes or is sensitive to impacts which may result in significant degradation to the quality of state waters. Lands included in the RPA are tidal wetlands, non-tidal wetlands that are connected by surface flow and are contiguous to tidal wetlands or water bodies with perennial flow, and tidal shores. In addition, a 100-foot vegetated buffer strip landward of the other components and along perennial tributary streams is included in the RPA to retard runoff, prevent erosion and filter nonpoint source pollution from runoff.

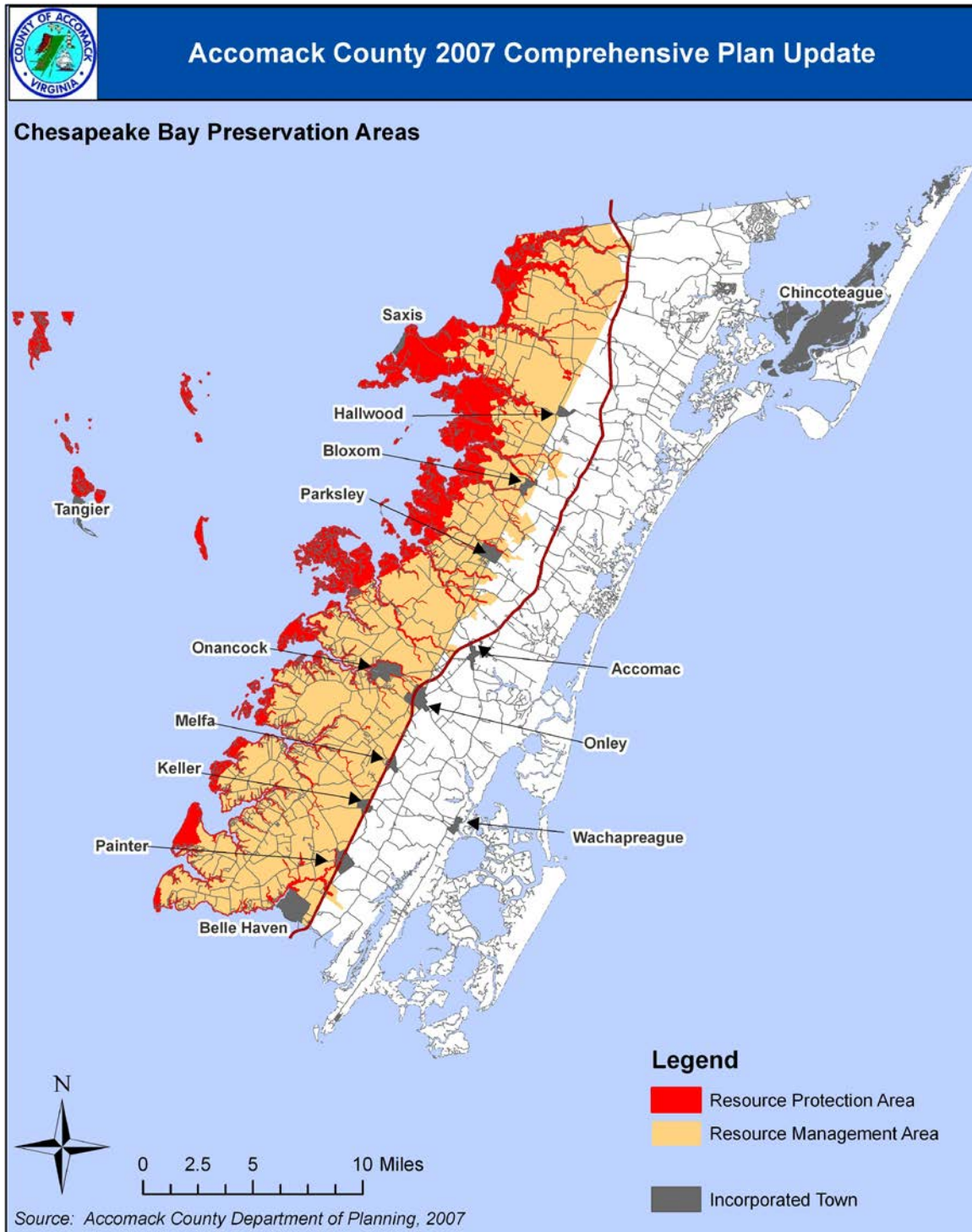
The intent of the 100-foot vegetative buffer is to minimize the effects of human activities on the Resource Protection Areas. Development activity within this area is restricted in order to maintain the functional value of the buffer. Trees may be pruned or removed to provide sight lines and vistas, with County approval, if they are replaced with vegetation which is effective in meeting the intent of the buffer. The vegetated buffer area retards

The Bay Act

The Virginia General Assembly enacted the Chesapeake Bay Preservation Act in 1988. The Bay Act established a cooperative program between state and local government aimed at reducing nonpoint source pollution. The Bay Act Program is designed to improve water quality in the Chesapeake Bay and its tributaries by requiring wise resource management practices in the use and development of environmentally sensitive land features.

runoff, prevents erosion, filters nonpoint pollution and is presumed to achieve a 75% reduction in sediment runoff as well as a 40% reduction of nutrients.

Map 2-D



The buffer may be reduced on parcels recorded prior to October 1, 1989, if imposition of the buffer results in the loss of a buildable area on the lot. In this event the modification shall be the minimum necessary to achieve a reasonable buildable area for a principal structure and utilities. If possible, an area equal in size to the encroachment into the buffer must be established in another location on the lot.

For agricultural fields, the buffer may be reduced to 50 feet if federal, state, or locally-funded best management practices are being implemented that achieve water quality protection, pollutant removal, and water resource conservation equivalent to the buffer area. The buffer may be further reduced to 25 feet if a soil and water quality conservation plan approved by the local Soil and Water Conservation District is implemented the land.

Because the land within an RPA is so sensitive, development is very restricted. The permitted development within RPAs include water-dependant uses (e.g. marinas and piers), or the redevelopment of already existing structures. Passive recreation facilities are also permitted within RPAs. Passive recreation facilities include uses such as paths and trail ways.

Land within the Resource Management Area (RMA) portion of the Overlay District is that which if improperly used or developed, has the potential for causing water quality degradation or diminish the functional value of the Resource Protection Area. Features of land which constitute a RMA are flood plains, non-tidal wetlands, highly erodible soils, and highly permeable soils. All land west of the Eastern Shore Railroad tracks as well as a five hundred foot buffer around Chesapeake Bay tributaries which extend east of the tracks have been designated as a RMA. Within the Overlay District, allowable land uses must be developed in accordance with overlay district standards in addition to those of underlying zoning districts. Development in Resource Protection Areas is allowed only if the use is water-dependent or constitutes redevelopment, and complies with performance standards. All development and redevelopment in the Overlay District in excess of 2,500 square feet of land requires approval of a development plan which includes impervious surface limits, erosion and sediment control measures, and water quality impact analysis. Further information on Virginia's Chesapeake Bay Preservation Act can be found at: <http://www.cblad.state.va.us/>.

Seaside Water Quality Protection: Implementation of the Chesapeake Bay Preservation Act on the Bayside points to the benefits of implementing similar water quality measures on the Seaside. While Accomack County is not required to implement the Chesapeake Bay Preservation Act requirements on the Seaside, the Virginia Code allows local governments to use these provisions to protect water quality in other watersheds. Given Accomack County's concerns about protecting Seaside water quality for aquaculture, other fisheries, recreation, and tourism, requirements similar to the Chesapeake Bay Preservation Act should be implemented on the Seaside.

Ground Water: The Eastern Shore was formed through the deposition of sediment during the period of glacial retreat. The sediments were layered through the different geologic time periods, forming both the land mass and the aquifer system. A number of separate aquifers were formed, but the potable water supply is limited to the two upper aquifers. The upper aquifer, called the Columbia aquifer, is unconfined and between 80 and 100 feet thick. It is used primarily for private on-site domestic wells and agricultural irrigation.

The next aquifer is the Yorktown-Eastover multi-aquifer system. The Yorktown-Eastover aquifer is confined and ranges primarily from 80 to 350 feet thick, although it is much deeper in the northern portion of Accomack County. The aquifer consists of coarse shelly sands found in three layers separated by clay confining units. These confining units serve to protect the aquifer from many water quality threats, but they also act to impede the amount and rate of recharge to the aquifer. Groundwater found in the aquifers below the Yorktown-Eastover is brackish and thus not used.

Ground Water Management Area Designation

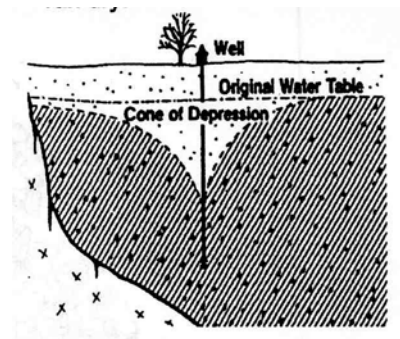
In 1976, Virginia designated the Eastern Shore as a "Ground Water Management Area." This designation was based, at the time, on the following findings:

- Groundwater level declines have been observed in two sections of Accomack County;
- Interference between wells has been observed in the same two sections of Accomack County;
- Some evidence of localized groundwater contamination has been observed in the water table aquifer of Accomack County but not in the confined aquifers;
- Even though the groundwater supplies in Accomack County are not overdrawn and are not expected to be in the near future, it should be recognized that they may overdraw in some areas in the future if water withdrawals are not distributed throughout the region. Further, saltwater intrusion has not been observed to date but may occur in the future if heavy groundwater withdrawals are concentrated in any one area.

This designation by the state means that major users of groundwater (those who withdraw over 300,000 gallons per month) must obtain a permit before pumping. This provides some protection against well interference and over pumping of the aquifer.

Well Interference

The natural path and flow rate of groundwater can change dramatically through groundwater well pumping. Wells will draw in water from all directions and can increase the flow rate. The drawing-in action of a well creates a cone of depression around the well site. It is called a cone because, when the well withdraws groundwater, the water table surrounding the well lowers, creating slopes that become increasingly steep closer to the well. The geologic characteristics of the aquifer and the rate and duration of pumping will affect the size and shape of the cone. This cone may draw down the water level over a large enough area to cause wells that were previously deep enough to draw water to run dry.



Groundwater Use: Groundwater is the only viable drinking water source on the Eastern Shore. Seven towns on the Eastern Shore have municipal water supply systems, and approximately 25 small public water supplies serve subdivision and mobile home parks. The remaining population derives its water supply from private domestic wells. Map E shows the major public water supply wells in Accomack County.

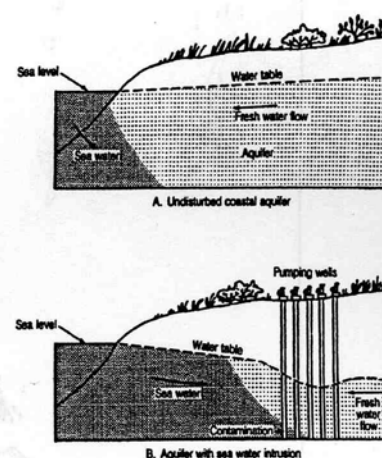
Agriculture and industry are the most water-intensive land uses on the Eastern Shore. Water withdrawal for crop irrigation is significant, with the Eastern Shore accounting for 62% of the reported statewide total for irrigation water use. Estimating the quantity of water used for irrigation can be complicated because the acreage irrigated and amount of water applied vary from year to year depending on weather, crops, and economics. Major industrial users include two poultry processing plants which account for 42% of the total permitted industrial withdrawals on the Eastern Shore of Virginia.

A study conducted in 1992 by the Eastern Shore of Virginia Ground Water Study Committee reported that 4.5 million gallons per day were being withdrawn at the time from the Yorktown-Eastover Aquifer for industrial and public water supply use. Permits from the State Water Control Board at the time allowed withdrawals of up to 15.6 million gallon per day (MGD) from the Yorktown- Eastover Aquifer. The Groundwater Study report estimated the recharge rate of water to the Yorktown-Eastover Aquifer as 11 MGD. The Ground Water Study reported that, if groundwater withdrawals of over 11 MGD (the permitted level at the time for industrial uses and public water supplies was 15.6 MGD) were to occur, problems of well interference and salt water intrusion, already observed at the time near the largest industrial water uses, would be greatly enhanced. A more recent study and simulation which was conducted by the Richmond Regional PDC reported that an estimated 5.51 million gallons per day were being withdrawn from the Yorktown-Eastover Aquifer. Accomack County accounted for 3.94 million gallons per day.

A 1991 study conducted by the U.S. Geological Survey, *Hydrogeology and Analysis of the Ground-Water-Flow System of the Eastern Shore, Virginia*, recognized that groundwater demand from increased industrial, commercial, municipal, and agricultural growth on the Eastern Shore has caused water level declines. This study used groundwater model scenarios of hypothetical increases in withdrawals to predict the impact such withdrawals would have on the groundwater supply. The study found that

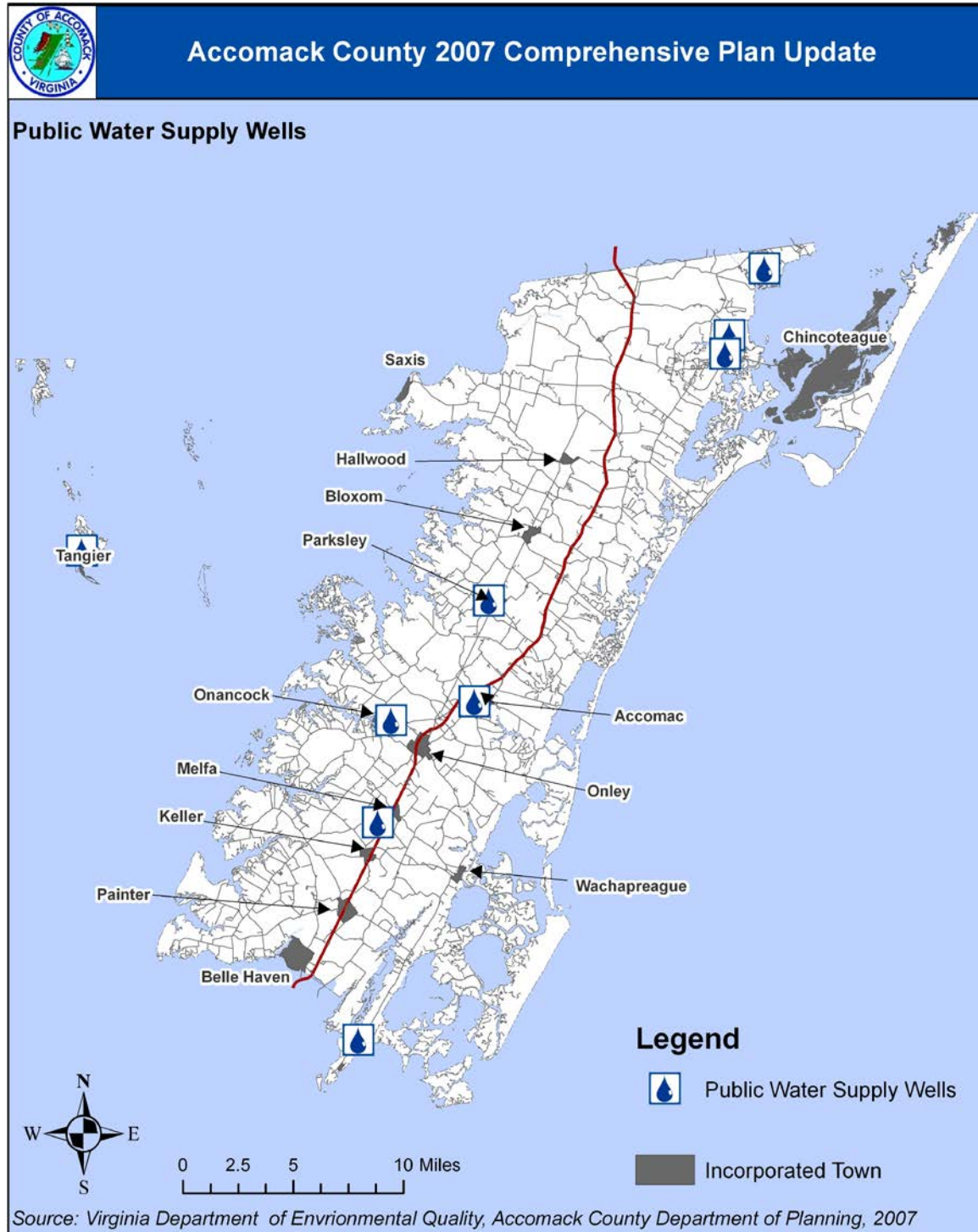
Saltwater Intrusion

In coastal areas, the fresh water aquifer is in contact with the ocean and bays. If the water table within the aquifer is above sea level, the intrusion of salt water is repelled and little or no contamination occurs. However, if groundwater use lowers the water table to below sea level, a wedge of seawater can intrude into the aquifer. Once this occurs, salt and brackish water may begin to appear in wells.

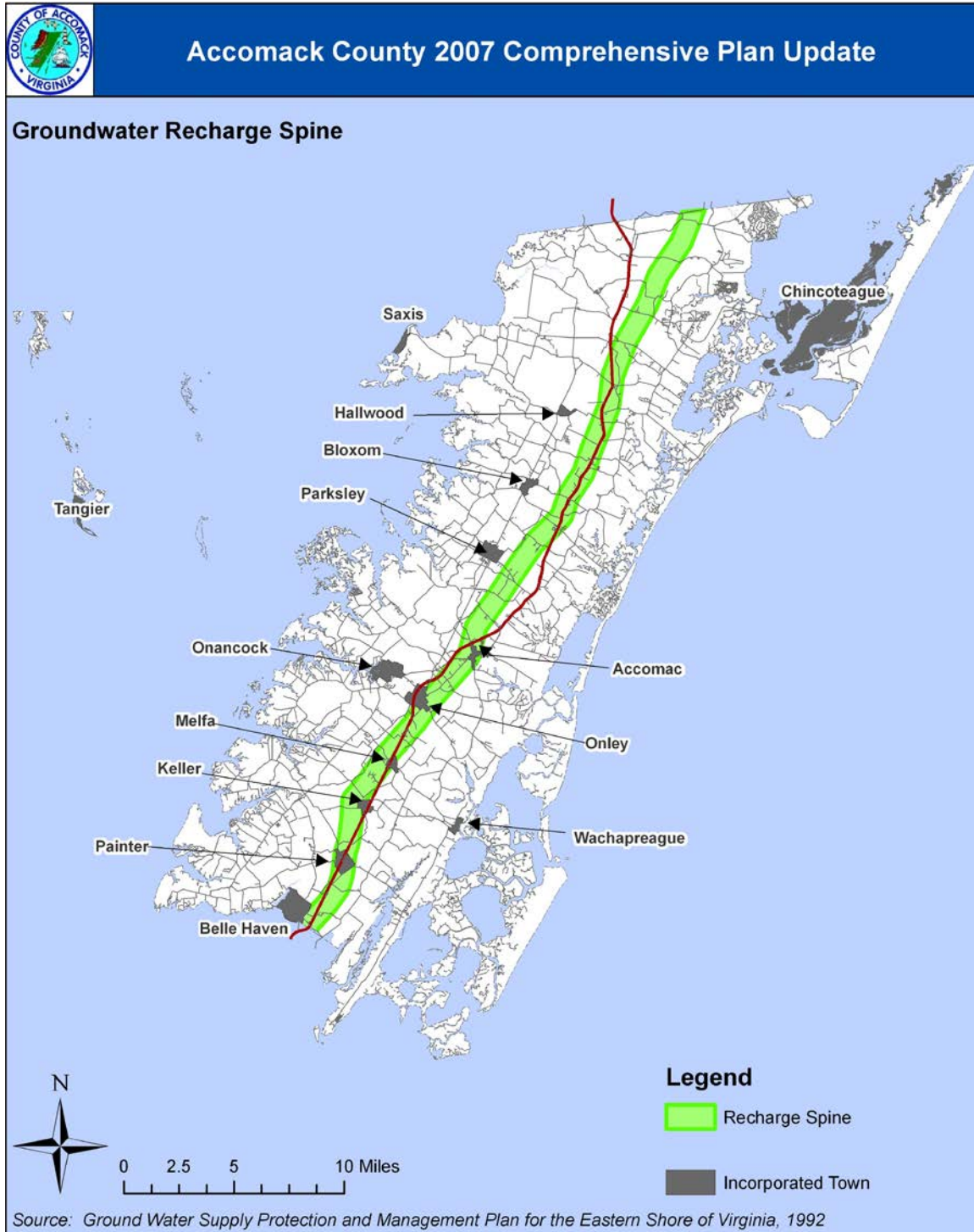


(1) water levels continue to decline as withdrawals increase and could result in well interference among major groundwater users, (2) increases in withdrawals result in a decrease in the amount of off-shore fresh water recharge, (3) water-level declines associated with increased withdrawals cause slight movements of the saltwater/freshwater interface over a 50 year simulation period, (4) increased withdrawals near the shoreline cause off-shore water level declines and a reversal in the direction of groundwater flow that could induce vertical leakage of saltwater into the freshwater parts of the uppermost confined aquifer, and (5) withdrawals near the center of the peninsula cause less landward movement of the saltwater-freshwater interface than withdrawals near the shoreline.

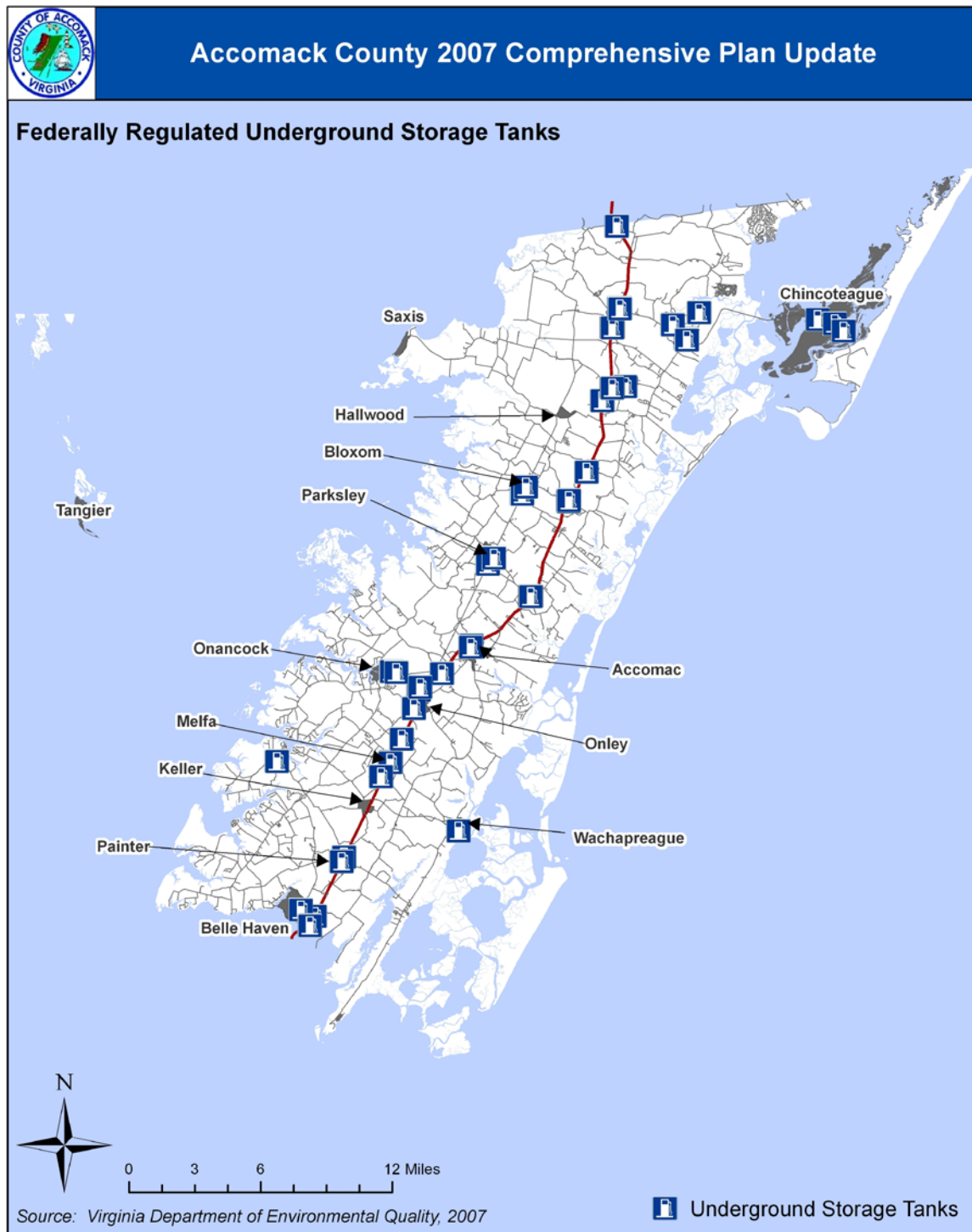
Map 2-E



Map 2-F



Map 2-G



Groundwater Recharge: The only source of freshwater recharge to the aquifer system is rainwater infiltration. The 1992 Ground Water Study found that the primary source of recharge to the Yorktown-Eastover aquifer is located along a 5,000 foot wide strip which occupies the central portion of the peninsula. Map F shows the location of the recharge spine.

Pressure from the freshwater lens provides a boundary which prevents the movement of saltwater from mixing with the freshwater. Freshwater, through recharge and other aquifer characteristics, is constantly moving through the aquifer to maintain this pressure. Decreases in recharge, combined with increased withdrawals could lead to intrusion of saltwater into the freshwater aquifer.

Sources of Pollution: Water quality in the upper, unconfined Columbia aquifer is threatened by the many land uses that discharge, leach, or dispose of contaminants into the ground. Some of these threats include septic systems, agricultural fertilizers, manure storage and animal waste disposal, septage lagoons and landfills. Map G shows the location of the registered underground storage tanks in Accomack County.

Technical Analysis and Justification for Ground Water Ordinances: In 2001, the A-NPDC published the study *Technical Analysis and Justification for Ground Water Ordinances on the Eastern Shore of Virginia*. The report used ground water computer models to estimate the impact of lawn fertilizer, pesticides, and residential water use on ground water quality and supply. The study recommends that homeowners apply fertilizer at the minimum rate needed for their soil and grass type, and that new developments with 50 or more lots and average lot sizes between 0.25 and 0.5 acres should have a central water supply and a wastewater treatment system. Water conservation measures or alternate well design, including shallow irrigation wells, are recommended for developments with 50 or more lots. The study concludes that impacts to ground water resources are more severe along coastal shorelines. The study is available at: <http://www.a-npdc.org/groundwater/publications.html>.

Groundwater Concerns: There are two major concerns regarding groundwater in Accomack County, quantity and quality. Groundwater quantity is limited by the nature of the aquifers and must be carefully managed to prevent overuse that can result in saltwater intrusion. Groundwater quality depends on proper management of land use activities that can contaminate our aquifers. In recognition of our limited groundwater supply and the potential for contamination, the U.S. Environmental Protection Agency designated the Eastern Shore of Virginia a Sole Source Aquifer in 1997. The designation provides protection to the Shore's water supply by requiring the EPA to review proposed projects on the Shore that are receiving federal financial assistance to ensure they do not endanger our water supply. The EPA Sole Source Aquifer designation excludes Tangier Island and Chincoteague Island.

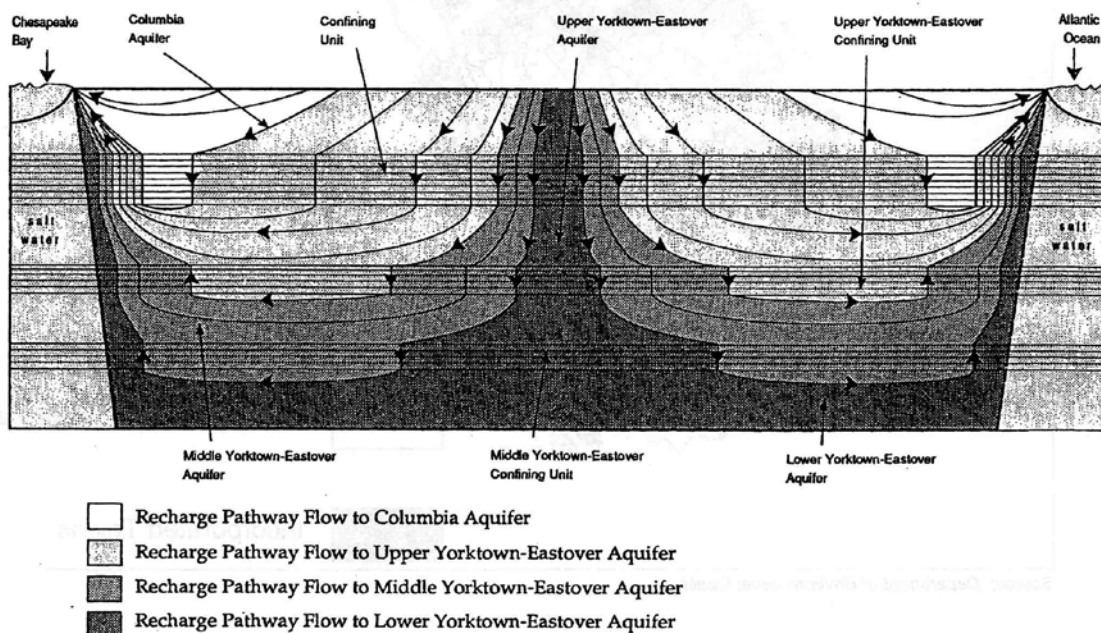
US Geological Survey Ground Water Model Update: The US Geological Survey (USGS) is currently updating the Eastern Shore Ground Water Model. The model will be used to estimate groundwater supply and the potential for contamination, and to evaluate

ground water withdrawal permit applications. As groundwater management tools improve, Accomack County will be better able to plan for future development without threatening our groundwater supply. Additional information on USGS groundwater research in Virginia is available at: <http://water.usgs.gov/wid/html/va.html>

Eastern Shore of Virginia Ground Water Committee: Since 1990, the Eastern Shore of Virginia Ground Water Committee has worked with Eastern Shore local governments, as well as with state and federal agencies, to study our ground water system and improve our knowledge on how to manage this limited resource. Further information on the Eastern Shore of Virginia Ground Water Committee and groundwater reports, data, and educational materials is available at: <http://www.a-npdc.org/groundwater/>

Conceptual Hydrogeologic Model of Non-Pumping Groundwater Conditions on the Eastern Shore of Virginia

Source: Ground Water Supply Protection and Management Plan for the Eastern Shore of Virginia



Air Quality

Air quality is important to human health, the health of domestic and wild plants and animals, the prevention of corrosion to materials such as paints and metals, and the maintenance of visibility levels. Air quality is measured by the concentration of pollutants in the air (referred to as “ambient concentration”). Primary ambient air quality standards have been established based on the level of pollutant concentration present in air which is considered hazardous to human health. Secondary ambient air quality standards have been established for levels which threaten human welfare (health of domestic and wild plants and animals, the prevention of soiling (corroding) of materials (paint, metal, etc.) and the maintenance of natural levels of visibility). The degree of harm associated with a pollutant depends on the exposure “dose.” The exposure dose is a function of the average concentration of the pollutant and the duration of the exposure. In order to address the dosage factor, ambient air quality standards are established for set exposure periods of the established concentration. The table below lists ambient air quality standards which have been established in the United States.

Federal Air Quality Standards

Source: EPA, 2007

Pollutant	Primary Standard	Secondary Standard
Particulate Matter (as PM-10)		
Annual arithmetic mean (3 Yr. Average)	50 ug/m ³	50 ug/m ³
Maximum 24 hr. concentration	150 ug/m ³	150 ug/m ³
Particulate Matter (as PM-2.5)		
Annual arithmetic mean (3 Yr. Average)	15 ug/m ³	15 ug/m ³
Maximum 24 hr. concentration ⁽¹⁾	65 ug/m ³	65 ug/m ³
Sulfur Dioxide		
Annual arithmetic mean	(0.03 ppm) 80 ug/m ³	----
Maximum 24 hr. concentration*	(0.14 ppm) 365 ug/m ³	----
Maximum 3 hour concentration*	----	(0.5 ppm) 1300 ug/m ³
Carbon Monoxide		
Maximum 8 hour concentration*	9 ppm (10mg/m ³)	----
Maximum 1 hour concentration*	35ppm	
Ozone		
1 hour standard ⁽²⁾ Maximum daily hourly average concentration	0.12 ppm (235 ug/m ³)	0.12 ppm (235 ug/m ³)
8 hour standard Maximum daily hourly 8 hour average concentration	0.08ppm	0.08 ppm
Nitrogen dioxide		
Annual arithmetic mean	0.053 ppm (100 ug/m ³)	0.053 ppm (100 ug/m ³)
Lead		
Maximum arithmetic mean over a quarter	1.5 ug/m ³	1.5 ug/m ³

*Not to be exceeded more than once a year per site.

(1) Three-year average of 98th percentile concentration.

(2) Even though a new 8-hour ozone standard was adopted in July 1997, the 1 hour standard continues to apply as of May 2004.

Pollutants: Air pollutants for which there are registered emission sources in Accomack County include particulates, Lead, Carbon Monoxide, Sulfur Dioxide, Nitrogen Dioxide, Volatile Organic Chemicals, Ammonia and Chlorine. A brief description of each pollutant and its potential impacts is given below.

Particulates (PM₁₀): Suspended particulate matter includes dust, soot (carbon), asbestos, lead, cadmium, chromium, arsenic, beryllium nitrate, and sulfate salts. Lead compounds (all poisonous) include tetraethyl lead (formerly used as a gasoline antiknock additive) and oxides used in mortars and pigments. Continued exposure to lead, through inhalation of fumes or sprays and ingestion of food containing lead, can result in a cumulative chronic disease called lead poisoning.

Carbon Monoxide (CO): colorless, odorless, tasteless, extremely poisonous gas that is less dense than air under ordinary conditions. When air containing as little as 0.1% carbon monoxide by volume is inhaled, the oxygen carried by hemoglobin is replaced by the carbon monoxide, resulting in fatal oxygen starvation throughout the body.

Sulfur Dioxide (SO₂): A colorless, suffocating gas which is a product of burning coal or oil. Chronic exposure can increase chances of respiratory infections and lung cancer. Causes corrosion to stone, concrete, metals, and paints.

Nitrogen Dioxide (NO₂): A secondary pollutant, formed in the air from a chemical reaction between nitrogen and oxygen. Nitrogen Dioxide is a yellowish brown gas with a pungent, choking odor. This gas causes a characteristic brown haze. Chronic exposure can increase chances of respiratory infections and lung cancer.

Volatile Organic Compounds (VOC): Gaseous and liquid compounds containing carbon and hydrogen, including methane, butane, ethylene, benzene, and benzopyrene.

Ammonia (NH₃): Ammonia is a colorless gas and a common molecule given off by living organisms. It is used to make fertilizers, animal foods, synthetic fibers, glues and explosives. It may enter the environment through natural organic matter decomposition, run-off from agricultural fields or feedlots, municipal waste treatment plant discharges, oil refinery and chemical manufacturing effluents, or atmospheric fallout. Short term health effects of exposure may include irritation of the mouth, nose, and throat. Higher levels may irritate the lungs, causing coughing and/or shortness of breath.

Chlorine (Cl): Chlorine is a greenish yellow gas with an irritating odor. Chlorine is a natural element of common occurrence. It is produced as a gas to be used extensively as a fabric bleach, for purifying water, for disinfecting, and for making synthetic rubber, plastics, and a large number of chlorinated chemicals. Exposure can cause irritation of the eyes, nose, and throat, and also tearing, coughing and chest pain. Higher levels burn the lungs and can cause a build up of fluid in the lungs (pulmonary edema) and death.

Sources of Air Pollution: Sources of air pollution is Accomack County which are

required to register with the Virginia Department of Environmental Quality (DEQ) are listed below.

Regulation: Air pollution sources in Virginia are regulated by the Virginia Department of Environmental Quality (DEQ), the Air Pollution Control Board, and the U.S. Environmental Protection Agency (EPA). These agencies administer programs created by the federal Clean Air Act. DEQ issues permits for emission sources in order to maintain ambient air quality standards established by the EPA. The EPA has established standards for total suspended particulates (TSP), carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen oxides (Nox), Ozone (O₃), and lead (Pb). Existing emission sources are required to use “reasonably available control measures,” and new emission sources are required to use “best available control technology,” to meet national ambient air quality standards.

The Department of Environmental Quality also enforces federal standards for hazardous air emissions. EPA has established standards for eight hazardous air pollutants (arsenic, asbestos, benzene, beryllium, mercury, radionuclides, vinyl chloride, and coke oven emissions). Virginia has established threshold limits for 600 additional hazardous or toxic compounds. The threshold limit is the lowest concentration at which a pollutant is estimated to be hazardous to human health. If these limits are exceeded, the source can reduce the emission to meet the limits; prove to the Department’s satisfaction that the limits are met; or, petition the Department to raise the limit. Newly permitted emission sources are also required to use Best Available Control Technology to control offensive odors. For existing or unanticipated sources of odor, the Department takes enforcement action, beginning with analysis of the problem and requiring a plan to correct it. Virginia’s air permit program includes existing source registration and standards, minor new or modified source construction permits, major new or modified source construction permits, Prevention of Significant Deterioration (PSD) permits, and operating permits.

Registered Air Pollution Sources

Source: DEQ, 2007

Commonwealth Chesapeake Power Station	New Church
US NASA – Wallops Flight Facility – Main Base.....	Wallops Island
US NASA – Wallops Island.....	Wallops Island
Tyson Foods Inc.	Temperanceville
Perdue Farms Incorporated	Accomac
Branscome Inc. – DBA Branscome Eastern Shore....	Oak Hall
Old Dominion Electric Cooperative.....	Belle Haven
Old Dominion Electric Cooperative.....	Onancock
Old Dominion Electric Cooperative.....	Accomac
KMX Chemical Corporation.....	New Church
Conectiv Delmarva Generation Inc.....	Tasley
Shore LifeCare at Parksley.....	Parksley
Island Crematory.....	Chincoteague
Ryan Lee Brady Farm.....	Atlantic

Prevention of Significant Deterioration Permit: Any person or entity intending to construct a new air pollution source; or to modify, relocate or reactivate an existing source that will emit 250 tons per year of any regulated pollutant or combination of regulated pollutants, must apply for a Prevention of Significant Deterioration Permit. Also, any of 28 specific industries identified by DEQ that will emit 100 tons per year of a regulated pollutant must apply for a permit. These industries include fossil fuel fired power plants of more than 250 million Btu per hour heat output, coal cleaning plants with thermal dryers, kraft pulp mills, Portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, municipal incinerators capable of charging more than 250 tons of refuse per day, primary copper smelters, hydrofluoric acid plants, sulfuric acid plants, nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven bottles, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel burners (or combinations thereof) totaling more than 250 million Btu per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plant, glass fiber processing plants, and charcoal production plants. The stationary sources must be designed so that any additional emissions will not exceed the increment of pollution allowed for the area. Typical requirements of a permit include demonstration that the design incorporated the “Best Available Control Technology,” evidence that local zoning requirements are satisfied, and extensive predictive emissions modeling.

State and Federal Operating Permits: A state operating permit is required for any stationary source of air pollutants. Federal Title V operating permits are required for major stationary sources, plus any source subject to “Maximum Achievable Control Technology” requirements and those subject to “New Source Performance Standards” under the federal Clean Air Act. A major source under both state and federal operation permits is one that emits, or has the potential to emit, 100 tons or more per year of any criteria pollutant; for Title V permits, a source that emits 10 tons per year or more of any hazardous air pollutant or 25 tons per year of any combination of hazardous air pollutants. Operating permits typically include requirements for emission rates, emission controls, fuels, fuel consumption, visibility, operation and maintenance, record keeping, reporting, inspection, and permit review.

Existing Sources Registration and Standards: Registration is required for any existing (constructed before March 17, 1972 or reconstruction before December 10, 1976) stationary source that exceeds threshold amount of fugitive dust, odor or any other criteria pollutants from emission causing processes, exceeds national emission standards for hazardous air pollutants, maximum achievable control technology standards, or toxic pollutants under Virginia Air Toxics Regulation. Registered existing sources are typically required to report types and amounts of pollutants emitted, operate the source in compliance with maximum allowable levels of emissions as defined in the applicable rules, and conduct ambient air quality monitoring as directed by DEQ.

Minor New or Modified Source Construction Permit:

This permit is required of any person or entity intending to construct a new air pollution source, or to modify, relocate or reactivate an existing source not exempted by state regulation. A modification is any change to the facility or process, including hours of operation, which increases the potential to emit an air pollutant or causes a pollutant to be emitted that was not previously emitted. Stationary sources must control their emission using the “Best Available Control Technology” for each criteria pollutant and “Maximum Achievable Control Technology” for regulated hazardous air pollutants, certain identified toxic pollutants must be limited to specified levels, and procedures are established for measuring and recording emissions.

B.A.C.T

Under the 1977 Clear Air Act, new sources of emission must achieve a level of control at least as good as that obtained by using the best technological system of continuous emission reduction. This requirement is referred to as the use of “Best Available Control Technology,” or “BACT.” Best Available Control Technology levels are defined by the Environmental Protection Agency for each industry, based on control system performance and costs. The control system selected as the performance standard must have been “adequately demonstrated” to be achievable in practice, although it does not have to have been routinely achieved in the industry.

Major New or Modified Source Construction Permit: This permit is required for any person or entity intending to construct a new stationary air pollution source or to modify, relocate or reactivate an existing source of a “criteria pollutant” for which the area is designated nonattainment. A modification is any change to the facility or process, including hours of operation, which increase the potential to emit an air pollutant or causes a pollutant to be emitted that was not previously emitted. Stationary sources in a nonattainment area must control their emission with the “Best Available Control Technology” for the criteria pollutants that meet the standard. For volatile organic compounds and nitrogen oxides, the more restrictive “Lowest Available Emission Rate” must be achieved.

Air Quality Monitoring: According to the Virginia Department of Air Pollution Control, there are no air quality monitoring stations on the Eastern Shore. Most areas of the state meet the primary ambient air quality standards, with the exception of the Northern Virginia, Richmond, and Hampton Roads areas, which are nonattainment areas for ozone. It can probably be safely assumed that air quality in Accomack County does not exceed any ambient air quality standards. The establishment of an air quality monitoring station in the county, however, would allow for the detection of any air quality deterioration and the study of long term trends.

Odors and Noise: Although Accomack County is a rural area, offensive odors from facilities such as poultry processing plants should be minimized. Noise from industrial facilities should also be minimized. In order to limit the impact of odors and noise, new industrial facilities should be located away from residential areas. New residential development should not be encouraged near industrial facilities.

Plants and Animals

Accomack County supports populations of a wide variety of species of plants and animals. Many of these species have economic or recreational importance to the county and several are rare, threatened, or endangered species which have found habitat suitable for survival on the Eastern Shore.

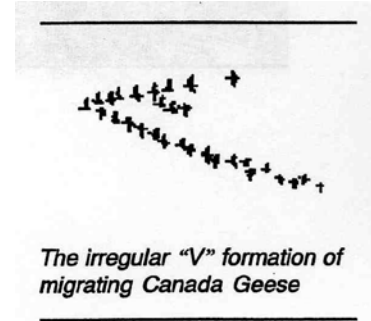
Biodiversity: Biodiversity is a term used to describe the collection of plants, animals and other living organisms which make up an ecosystem. For example, the Chesapeake Bay is home to an estimated 2,700 species. These species make up the Bay's biodiversity. Scientists have found that maintaining this diversity of species in an ecosystem is important because the survival of each of these species is interconnected. Managing for biodiversity is not so much a matter of keeping all the parts of every community, but maintaining balance in the community. A broad range of species need to be present in any community in large enough numbers to fulfill their roles in that community. For example, it is speculated that the oyster population in the Bay was once great enough to filter all of the Bay's waters every few days. It would take today's reduced oyster population about a year to accomplish this task. Thus, decrease in the oyster population affects water quality which, in turn, has an impact on many other species.

Habitats: Accomack County offers large areas of undeveloped wildlife habitats. Important habitats include forests, open fields, creeks and creek corridors, wetlands, and the barrier islands. These areas provide sustenance to wildlife which are important to the county's seafood industry, hunting, tourism, nature watching, and sport fishing. Accomack County's natural areas and the rich wildlife and finfish and shellfish communities it supports are a part of the area's heritage and important to many industries as well as the quality of life for county residents.

Forests: Large amounts of Accomack County are covered in woodlands (32%). Loblolly pine is the primary tree species in these areas due to the fact that it thrives in poorly drained, sandy soils. Most of the soils which would support hardwood stands have been cleared and converted to cropland or residential uses. About a quarter of the county's forest land contains solid hardwood stands, the remainder is made up of pine or a pine/hardwood mix. Wooded areas provide habitat for white-tailed deer, raccoon, gray squirrel, opossum, cottontail rabbit, otter, wild turkey, quail, mourning dove, woodcock, and numerous breeding and migrating neotropical and temperate songbirds. Historically, the forests of Accomack and Northampton Counties likely supported small populations of federally endangered Delmarva Fox Squirrels; however, no naturally occurring populations currently exist on the lower Delmarva Peninsula. Maintaining diversity in forest type and age class will provide habitat for the greatest number of species across all taxa. Forest acreage can be increased by reforesting abandoned and unsuitable cropland with native forest crops. Additional information on Accomack's forests is included in the 2002 U.S. Census of Agriculture for Accomack County:

<http://www.nass.usda.gov/va/accomack.pdf>

Open Land: Cropland, pasture, meadows, and areas overgrown with grasses, herbs, shrubs, and vines provide habitat for several species of wildlife, including woodcock, bobwhite quail, songbirds, butterflies, cottontail rabbits, and red and gray foxes.



Barrier Islands: The Atlantic coast barrier islands provide important breeding habitat for shorebirds (i.e., federally threatened piping plovers, state threatened Wilson's plovers, American oystercatchers, willets, and killdeer), seabirds (i.e., state threatened gull-billed terns, least terns, common terns, royal terns, sandwich terns, black skimmers, brown pelicans, laughing gulls, herring gulls, and great black-backed gulls), wading birds (i.e., white ibis, glossy ibis, great egrets, snowy egrets, tri-colored herons, green herons, little blue herons, black-crowned night herons, yellow-crowned night herons), waterfowl (i.e., American black ducks, mallards, gadwalls, and Canada geese) clapper rails, and raptors (state threatened peregrine falcons and bald eagles and northern harriers). The barrier islands also represent critical stopover sites for thousands of migrating shorebirds such as red knots, dunlin, sanderlings, ruddy turnstones, whimbrels, and various species of sandpipers, plovers, godwits, and dowitchers. Assateague Island currently supports the only viable population of the federally endangered Delmarva Fox Squirrel whose distribution used to extend into Northampton County. This population stems from the translocation of 30 squirrels from Maryland on to the lower half of Assateague Island between 1968 and 1971. Assateague Island also provides habitat for non-native Chincoteague ponies thought to have swum ashore from a wrecked Spanish vessel in the 1600's and the Asian sika elk which were released on the island in the 1920's a herd of wild ponies.

The barrier islands of Virginia's Eastern Shore, and the adjacent seaside lagoon system represent one of the last remaining vestiges of pristine coastal habitats on the Eastern Seaboard. Together they comprise a community which is not only unique in this country, but in the world. The string of islands, many of which are owned and managed by the Nature Conservancy, (i.e., parts of Metompkin and Cedar Islands, Parramore Island, Revel Island, Hog Island, Cobb Island, Little Cobb Island, Ship Shoal Island, Myrtle Island, and Smith Island) while rest are owned and/or managed by USFWS and the state of Virginia, has been designated by the United Nations as a World Biosphere Reserve in recognition of it's great ecological value. Because of their ownership status, all 14 barrier islands are protected in perpetuity from future development. The barrier islands located in Accomack County include Assateague Island, Wallops Island, Assawoman Island, Metompkin Island, Cedar Island, Revel Island, and Parramore Island. The remaining Virginia barrier islands are located in Northampton County.

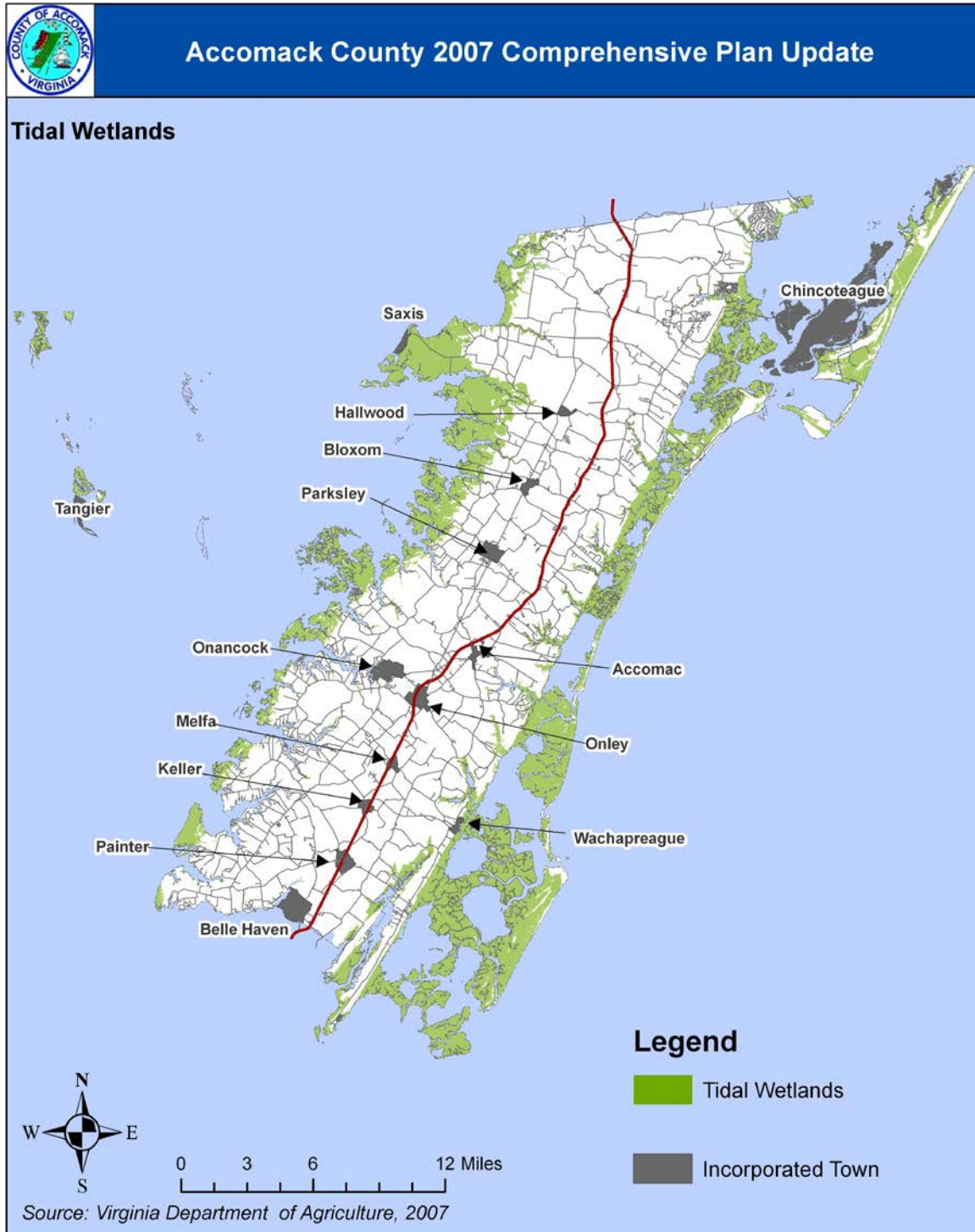
Wetlands: The county has approximately 109,508 acres of tidal wetlands. Tidal wetlands have been identified as some of the most productive ecosystems in the world. Because tidal wetlands trap nutrients from both land and sea, their productivity dwarfs that of all but a few other exceptional ecosystems. They provide essential resting, wintering and nesting grounds for many species of migratory waterfowl, other

waterbirds and songbirds. These birds, along with other wildlife, find nourishment and rest in the same lush marsh grass which produces detritus. Detritus, bacterially decomposing grass, is the basis of the food chain that feeds oysters, clams, scallops, crab larvae and newborn fish. It has been calculated that 90% of the commercial fish and shellfish caught in the area are dependent, during at least part of their lives, upon tidal wetlands. Among these are menhaden, oysters, clams, and crabs. In addition, tidal flats attract thousands of birds during their spring and fall migrations, and the numerous creeks and channels provide refuge for a wide variety of ducks and geese.

Tidal wetlands in the Commonwealth of Virginia have been defined, by the Wetlands Act, Title 62.1, Section 13.2, Code of Virginia, as “all land lying between and contiguous to mean low water and an elevation above mean low water equal to the factor 1.5 times the mean tide range at the site...” The definition is further specified to include tidal vegetated wetlands and tidal non-vegetated wetlands. Tidal vegetated wetlands include such features as swamps, marshes, bogs and similar areas. Non-vegetated tidal wetlands include such features as beaches, tidal flats and similar areas. The general location of tidal wetlands areas in Accomack County are shown on Map H.

Vegetated Tidal Wetlands: Vegetated tidal wetlands in Accomack County are divided into two natural categories, the massive salt marshes along the Atlantic Ocean shoreline situated behind the barrier islands and the extensive brackish marshes on the Chesapeake Bay shoreline and bay islands. The salt marshes, dominated by salt marsh cordgrass, total approximately 46,452 acres. The brackish marshes, most of them dominated by Black Needlerush, total approximately 23,918 acres. The total for the county, the largest acreage of tidal marshes for any county in Virginia, is approximately 70,470 acres.

Map 2-H



The ecological significance of an area can be estimated on the basis of the number of species of vegetation present, the potential productivity of the dominant forms and the relative value of those forms to wildlife, both terrestrial and aquatic. Not all grasses and shrubs in tidal wetlands have equal values to all types of animal life that might be present, and these variations provide the means for placing varying levels of significance on different wetland units.

The Virginia Institute of Marine Science (VIMS) has identified twelve marsh types and grouped them into five classifications based on the estimated total environmental value of an acre of each type.

Group One marshes have the highest values in productivity, wildfowl and wildlife utility and are closely associated with fish spawning and nursery areas. They also have high values as erosion inhibitors, which is important to the shellfish industry.

Group Two differs from *Group One* only in the fact that the amount of detritus produced is less readily available to the marine environment. This is because *Group Two* marshes grow at higher elevations and consequently less tidal action exists to flush the detritus into adjacent waterways. However, these marshes have very high values in protection of water quality and acting as buffers against coastal flooding.

Group Three contains two marsh plants that are quite dissimilar in properties. The yellow pond lily marsh is not a significant contributor to the food chain, but it does have high value to wildlife and waterfowl. Black Needlerush has a high productivity factor but a low availability value because it grows at higher elevations. Black Needlerush does rank high as an erosion and flood buffer.

Group Four is valued primarily for the diversity and bird nesting area it adds to the marsh ecosystem and somewhat as an erosion buffer.

Group Five marshes have very few values as either a habitat, detritus producer or erosion control agent.

The most vegetatively diverse area of tidal marsh in Accomack County is found between Pitts Creek (Maryland State line) and Holden's Creek. The only tidal freshwater marsh in Accomack County is found in this area at the upper end of Pitts Creek, near the Maryland border. This tidal marsh contains a rich variety of marsh grasses. Because of the uniqueness of this marsh, consideration should be made for its preservation.

Non-vegetated Tidal Wetlands: Non-vegetated tidal wetlands are those coastal environments between mean higher high water and mean lower low water in which no vascular plants grow. They occur adjacent to tidal marshes, beaches and other shorelines. The seaside, because of its greater tidal range, contains non-vegetated intertidal flats at least as extensive as tidal marshes.

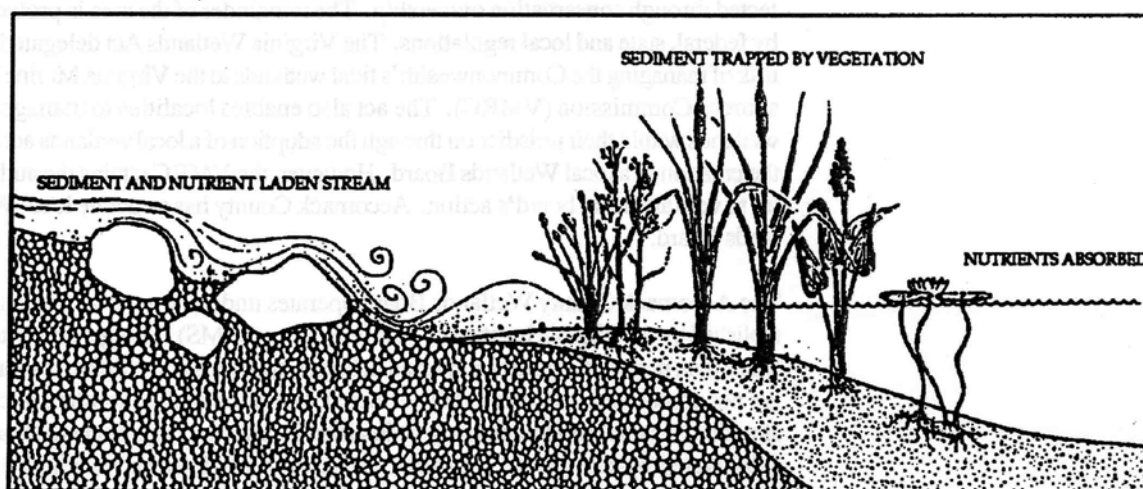
Non-vegetated tidal wetlands are among the most valuable of coastal environments in supporting coastal resources. They share valuable attributes with both tidal marshes and subaqueous estuarine habitats. Primary productivity in intertidal areas is larger than in open waters because of the greater supply of light and nutrients available in very shallow areas.

Intertidal areas are widely recognized as important nursery and feeding grounds for important fishes and crustaceans and for the prey which support them. In addition, shellfish such as oysters and clams inhabiting non-vegetated wetlands constitute a resource of notable commercial and recreational importance. Nonvegetated tidal wetlands constitute the principal feeding ground of shorebirds and many waterfowl which exploit benthic animal prey. Some birds specialize in protected mud flats, while others forage only on exposed sandy beaches.

Impacts on Wetlands: According to the Accomack County Tidal Marsh Inventory, 1977, by the Virginia Institute of Marine Science, in Accomack County the major damage to tidal wetlands stem from dredge and fill operations. Dredging is usually performed to create or to maintain existing channels in order to provide water access to land or to other waterways. Sometimes it is performed to obtain fill to create land; in many of these situations channels are dredged to create “waterfront” properties to which high real estate values may be attached.

Dredging may destroy productive bottoms directly by mechanical disruption or indirectly through the creation of silt which drifts with the currents and smothers the oysters, clams, fish eggs and larvae, and beds of marine vegetation in areas beyond the actual site of dredging.

**Vegetated tidal wetlands filter
sediment and nutrients from runoff.**



In addition, the dredging of a channel may alter the velocity of water flow in and out of the tidal marsh. This may lead to sedimentation problems in the future or may affect the rate in which beneficial marsh detritus is flushed into the marine environment.

When tidal marshes are filled, their biotic productivity and diversity is greatly reduced, and only slowly do these areas recover to viable natural segments of the environment. Their recovery, in addition, is to a habitat more upland in nature. This reduces the amount of detritus that contributes to the food chain and subsequently causes reduced values to the marine ecosystem.

The Island District, because of the high values of its tidal wetland areas and the high development pressure affecting those wetlands was selected by the United States Environmental Protection Agency (EPA) for an extensive wetland survey. The results of the survey, which were presented to Chincoteague in 1986, are to be used by the agencies which manage tidal and non-tidal wetlands.

Massive damage to tidal wetlands has taken place from Swans Gut Creek to the vicinity of Powell Creek, an area now known as Captain's Cove. Dredged channels have been cut through the tidal marsh and spoil deposited on the marsh surface. Damage has also occurred in the tidal wetlands of the Greenbackville-Franklin City area, again by dredge and fill operations. Overwash and spoil disposal have adversely affected the tidal marshes on Upper Metompkin Island, immediately south of Gargatha Inlet. There are a number of tidal wetlands that have been altered by dredge and fill operations in the area around Metompkin Bay to Wachapreague. These include Parker Creek, Walston Creek, the mouth of Folly Creek and the western shoreline of Burton's Bay. A number of tidal marshes have been impacted by unconstrained spoil.

Wetlands Protection: Much of the wetlands area in Accomack County is protected through conservation ownership. The remainder of the area is protected by federal, state and local regulations. The Virginia Wetlands Act delegated the task of managing the Commonwealth's tidal wetlands to the Virginia Marine Resources Commission (VMRC). The act also enables localities to manage the wetlands within their jurisdiction through the adoption of a local wetlands act and the creation of a local Wetlands Board. However, the VMRC retains the authority to veto any local board's action. Accomack County has an active local Wetlands Board.

The Accomack County Wetlands Board operates under the general criteria established by the Virginia Institute of Marine Science (VIMS). This general criteria states that, provided significant marine fisheries, wetlands and wildlife resources are not unreasonably detrimentally affected, alteration of the shoreline or construction of shoreline facilities may be justified in order to (1) gain access to navigable waters by commercial, industrial, and recreational interests for which it has been clearly demonstrated that waterfront facilities are required or by owners of land adjacent to waters of navigable depth or waters which can be made navigable with only minimal adverse impact on the environments, and (2) protect property from significant damage or loss due to erosion or other natural causes.

Alteration of the shoreline is ordinarily not justified (1) for purposes or activities which can be conducted on existing fastlands and which have no inherent requirement for access to water resources, (2) for purposes of creating waterfront property from lots and subdivisions which are not naturally contiguous to waters of navigable depth or waters which can be made navigable by substantial alteration or destruction of marine resources, (3) when damage to properties owned by others is a likely result of the proposed activity, (4) when the alteration will result in discharge of effluents which impair wetlands, water quality or other marine resources, or (5) when there are viable alternatives which can achieve the given purpose without adversely affecting marshes, oyster grounds or other natural resources.

Other general criteria followed by the Wetlands Board include that the utilization of open-pile type structures for water access are preferred over the construction of solid structures or dredging and filling, that channels, fills and structures should be designed to withstand the stress of the marine environment and minimize the need for future maintenance activities, and that high density development in or immediately adjacent to wetlands and/or other floodplains is discouraged.

The Wetlands Board also follows specific criteria for certain types of projects including shoreline protection strategies and filling and dredging material disposal. Specific criteria for shoreline protection strategies include that shoreline protection structures are justified only if there is active, detrimental shoreline erosion which cannot be otherwise controlled, that the planting of marsh grass is the preferred means of stabilization for shores experiencing mild to moderate erosion, that erosion control structures

should ordinarily be placed landward of any existing and productive marsh vegetation, and that sloped rock or riprap revetments and gabions are generally preferred over vertical structures. Specific criteria for filling and dredge material disposal include that filling should be confined to the area land-ward of any wetlands, that controlled disposal of dredged material on highland property is the preferred method, and that dredge spoil disposal areas should be constructed to minimum criteria to ensure that sedimentation is controlled.

Habitat Creation

The improper placement and containment of dredge spoil material can adversely impact wetlands and destroy habitat. The U.S. Fish and Wildlife Service's Atlantic Coast Piping Plover Recovery Plan recommends the use of dredge spoil deposition to create shore bird habitat. The plan states that spoil of suitable material (sand, pebble, shell mix) has proven to be suitable habitat for beach nesting birds such as the piping plover and least tern.



Natural Communities: Accomack County is home to many significant natural communities, including some that are found nowhere else in Virginia.

Sea-level Fens: A unique and extremely rare type of coastal wetland, sea-level fens are only documented in Sussex County, Maryland, and Accomack County, Virginia. These fens are distinguished from a marsh or a bog by unique hydrological regimes and vegetation associations. In general, sea-level fens are open, freshwater wetlands located at the upland edges of wide, ocean side tidal marshes. Vegetation consists of an unusual combination of northern bog plants and southern tidal freshwater wetlands plants. The number of rare species documented in fens is significant. For some of these species, the Virginia sea-level fens represent the southernmost extent of their range and the only habitat that supports these species in the state. The greatest threat to sea-level fens is groundwater pollution. Possible movement of fertilizers and wastes into the groundwater from nearby developments or agricultural fields could lead to increased nutrient levels in the fen. Increased nutrient levels could disrupt soil characteristics and plant species that naturally exist in fen conditions. Virginia has protected the Mutton Hunk Fen, on the Seaside near Gargatha, as a 425-acre Natural Area Preserve.

Migratory Songbirds: In 1993, the Department of Environmental Quality released a report on Neotropical Migratory Songbird Migration that resulted from observation of songbird migration patterns over the Delmarva and Cape May peninsulas. The report stresses the importance of protecting migratory stopover habitats. The study found that migratory songbirds concentrate within certain geographical areas. Specifically, migrants are more abundant in areas close to all coastlines (within 0-0.9 miles) than in equivalent areas farther from the coast (0.9-1.9 miles); Bay coastal zones have higher densities of migrants than seaside coastal zones or interior regions; migratory songbirds are more abundant on barrier islands than the coastal mainland; and migrants are associated with particular habitats on a species specific basis.

Chesapeake Bay Beach Habitat of the federally threatened Northeastern Tiger Beetle: This species primarily inhabits the Chesapeake Bay region of Maryland and Virginia. Historically found from the Chesapeake Bay north to Massachusetts, only two remnant populations remain in Massachusetts, while all other historical populations along the east coast outside the Chesapeake Bay area are extirpated. This species inhabits wide, white, highly dynamic, sandy beaches bordering the eastern and western shores of the Chesapeake Bay. Threats to this species include shoreline development, beach stabilization, high recreational use, pesticides, and natural events including winter beach erosion, flood tides, and hurricanes.

Migratory Songbird Corridor: The Atlantic migratory flyway covers the entire Atlantic coast. Significant stopover areas for land birds in this flyway occur within coastal habitats from Cape May, New Jersey to Cape Charles, Virginia. Many species of neotropical songbirds spend up to one-third of each year migrating. During this phase of their annual cycle, the birds are faced with many hazards. It is estimated that half of the birds that leave their northern range in the autumn will not make it back in the spring. One reason

for this is the high amount of energy required to make the journey of several hundred to several thousand miles. Many migrants are unable to find sufficient food resources needed to maintain their energy reserves. Other reasons for such high mortality rates include predation, exposure, and unfavorable weather and wind conditions. Migrant land birds depend on large tracts of undisturbed Forested and scrub-shrub habitats where they can rest and refuel before resuming their long journeys south. Stopover sites that are comprised of large contiguous forest blocks, particularly deciduous and mixed forests that support a high diversity of insects and fruits, provide suitable stopover habitat for the greatest number of species. More specifically, forests consisting of several layers of vegetation provide the greatest amount of feeding and resting niches for migratory songbirds dense undergrowth and closed canopy of trees provide cover from predators. Shrub-scrub habitats including those occurring along shorelines and dominated by bayberry and high tide brush also serve as important staging areas.

Over the years, human activities have affected the survivorship of songbirds migrating between breeding and wintering grounds. Many migrants travel at night over urbanized areas. Lights illuminating tall structures such as high rise buildings, communication towers and bridges can cause large flocks of birds to become disoriented and fly into these edifices. One of the greatest threats human pose to migrant landbirds is the widespread reduction in high quality stopover habitats, especially at migration bottlenecks where large numbers of resting and feeding birds congregate such as peninsulas and mountain passes. The lower Delmarva Peninsula is a well known example of such a bottleneck; as such special efforts should be made to conserve large contiguous tracts of forests and shrub-scrub habitats.

Extensive Marshes for Marsh Nesting Birds: These habitats provide resting, nesting and feeding habitat for numerous bird species whose population status is either unknown or declining. In Accomack County these include, but are not limited to, Black Rails, Sora, Virginia Rails, Little Blue Herons, Henslow's Sparrows, Saltmarsh Sharp-tailed Sparrows, Black Ducks, and Northern Harrier. Recent studies in Virginia, conducted by the Center for Conservation Biology, College of William and Mary, suggest that the number of bird species found in a marsh is directly related to the size of the marsh. It can therefore be assumed that Accomack County's extensive marshes provide important habitat for a large variety of marsh-nesting birds. The minimum marsh size to support significant marsh bird communities appears to be between 10 and 15 acres. The primary threat to marsh nesting birds is loss or degradation of marsh habitat. Where marsh vegetation is disturbed by heavy equipment or changes in water hydrology the common reed, a tall wetland grass, often invades the area. Once established, common reed aggressively displaces native vegetation and produces large stands which have little value to wildlife.

Migratory Songbirds In 1993, the Department of Environmental Quality released a report on Neotropical Migratory Songbird Migration that resulted from observation of songbird migration patterns over the Delmarva and Cape May peninsulas. The report stresses the importance of protecting migratory stopover habitats. The study found that migratory songbirds concentrate within certain geographical areas. Specifically, migrants are more abundant in areas close to all coastlines (within 0-0.9 miles) than in equivalent areas farther from the coast (0.9-1.9 miles); Bay coastal zones have higher densities of migrants than seaside coastal zones or interior regions; migratory songbirds are more abundant on barrier islands than the coastal mainland; and migrants are associated with particular habitats on a species specific basis.



Natural Heritage Resources: The Code of Virginia established a program within the Department of Conservation and Recreation to protect habitats of rare, threatened, and endangered plant and animal species; exemplary natural communities, habitats, and ecosystems; and other natural features of the Commonwealth. These protected resources are given the label of “Natural Heritage Resources.” The Department of Conservation and Recreation has provided the county with a list of Natural Heritage Resources in Accomack County. Species which are believed to be sufficiently rare or threatened to merit an inventory of their status and location are listed on the tables that follow.

Ranking System: Ranking systems have been developed to designate a species’ rarity based on its range-wide status. A species’ global rank is based on its level of occurrence world-wide, whereas its state rank is based on its occurrence within the boundaries of the state of Virginia. Species which are fairly common in other parts of the country but seldom found in Virginia will have different global and state ranks.

Protection Status: The U.S. Fish and Wildlife Service and the National Marine Fisheries Service identify species which receive protection under the Federal Endangered Species Act. Federal status lists a species as endangered, threatened, or as proposed or candidates for listing.

Fisheries Management: The Virginia Marine Resources Commission is responsible for tracking finfish and shellfish landings in Virginia waters. This provides information on the economic contribution to the County as well as an inventory of aquatic life in County waters. During 1992, 2,351,459 pounds of finfish were sold dock-side in Accomack at a value of \$1,209,789. Total landings for shellfish were 845,956 pounds with an economic value of \$1,258,308. The economic value of the landings represents 4% of all landings in Virginia. This data is anticipated to change drastically in future years as the method of reporting this data has changed. Prior to 1993, the Virginia Marine Resources Commission reporting system for catches was voluntary reporting by seafood dealers. Information is now being assembled from mandatory reporting by fishermen and not the dealer.

The 2005 VIMS report *The Importance of Commercial and Recreational Fishing* estimates the economic contributions of fisheries to Virginia’s economy. The study measures fisheries sales/output, income/value added, and the number of full and part-time jobs

generated by expenditures on commercial harvesting and recreational angling. The value of Accomack County's 2005 commercial fisheries/landings was \$13,695,000, or 9.5 percent of Virginia's total landings. Accomack County's total 2005 commercial fisheries value added economic impact was \$1,480,000. The direct value of Accomack County's 2005 recreational angling was \$23,151,000, or 7.7 percent of Virginia's total value. Accomack County's value added total was \$29,971,000.

	Common Name	Global Rank	State Rank	Federal Status	State Status
Plants	Seabeach Amaranth	G2	S1	LT	LT
	Sea-beach Knotweed	G3	S1S2		
	Blue maiden-cane	G4	S1		
	Prairie False-indigo	G4	S1		
	Southern Beach Spurge	G4G5	S2		
	Horse-tail Spikerush	G4	S1		
	Salt-marsh Spikerush	G4	S1		
	Low Frostweed	G4	S1		
	Big-head Rush	G4G5	S2		
	Golden Puccoon	G4G5	S1		
	Elongated Lobelia	G4G5	S1		
	Salt Marsh Goosegrass	G3G5	S1		
	Awned Mountain-mint	G4	S1		
	Few-flowered Beakrush	G4	S1		
	Long-beaked Baldrush	G4	S1		
	One-flower Sclerolepis	G4	S1		
	Large Cranberry	G4	S2		
	Puerto Rico Peatmoss	G5	S1S2		
	Sea-beach Sedge	G5	S1		
	Hazel Dodder	G5	S2?		
	Smartweed Dodder	G5	S2?		
	Umbrella Flatsedge	G5	S1		
	White-top Fleabane	G5	S2		
	White Buttons	G5	S1		
	Ten-angle Pipewort	G5	S2		
	Seaside Heliotrope	G5	S1		
	Northern St. John's-wort	G5	S2		
	Brown-fruited Rush	G5	S1		
	Sheep-laurel	G5	S2		
	Big Floating-heart	G5	S1		
	Joint Paspalum	G5	S2		
	White Beakrush	G5	S2		
	Slender Marsh Pink	G5	S2		
	Whorled Nutrush	G5	S2		
	Fraser's Marsh St. John's-wort	G5	S1		
	Southern Bladderwort	G5	S2		
	Colombia Water-meal	G5	S1		
	Virginia Least Trillium	G3T2	S2	SOC	

	Common Name	Global Rank	State Rank	Federal Status	State Status
Animals	Piping Plover	G3	S2B,S1N	LT	LT
	Spectral Tiger Beetle	G3G4	S1		
	Loggerhead (Sea Turtle)	G3	S1B,S1N	LT	LT
	Saltmarsh Sharp-tailed Sparrow	G4	S2B,S3N		SC
	Peregrine Falcon	G4	S1B, S2N		LT
	Black Rail	G4	S2B,S2N		
	Brown Pelican	G4	S1B,S3N		SC
	Least Tern	G4	S2B		SC
	Great Egret	G5	S2B,S3N		SC
	Wilson's Plover	G5	S1B		LE
	Northern Harrier	G5	S1S2B,S3S4N		SC
	Little Blue Heron	G5	S2B,S3N		SC
	Snowy Egret	G5	S2B,S3N		
	Tricolored Heron	G5	S2B,S3N		SC
	Bald Eagle	G5	S2S3B,S3N	LT,PDL	LT
	Black-necked Stilt	G5	S1B		
	Glossy Ibis	G5	S2B,S1N		SC
	Sora	G5	S1B,S2N		
	Virginia Rail	G5	S2B,S3N		
	Black Skimmer	G5	S2B,S1N		
	Caspian Tern	G5	S1B,S2N		SC
	Gull-billed Tern	G5	S2B		LT
	Bronze Copper	G5	S1		
	Delta-spotted Spiketail	G5	S1		
	Northeastern Beach tiger Beetle	G4T2	S2	LT	LT
	Delmarva Fox Squirrel	G5T3	S1	LE	LE

Global Ranking System

Rank	Description
G1	Extremely rare and critically imperiled with 5 or fewer occurrences or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
G2	Very rare and imperiled with 6 to 20 occurrences or few remaining individuals; or because of some factor (s) making it vulnerable to extinction.
G3	Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range; or vulnerable to extinction because of other factors.
G4	Common and apparently secure globally, though it may be rare in parts of its range, especially at the periphery.
G5	Very common and demonstrably secure globally, though it may be rare in parts of its range, especially at the periphery.
GH.....	Formerly part of the world' biota with expectation that it may be rediscovered.
GX	Believed extinct throughout its range with virtually no likelihood of rediscovery.
G?	Unranked, or, if following a ranking, rank uncertain (ex. - G3?).
G_Q.....	The taxon has a questionable taxonomic assignment, such as G3Q.
G_T	Signifies the rank of subspecies or variety. For example, a G5T1 would apply to a subspecies of a species that is demonstrably secure globally (G5) but the subspecies warrants a rank of T1, critically imperiled.

State Ranking System

Rank	Description
S1.....	Extremely rare and critically imperiled with 5 or fewer occurrences or very few remaining individuals in Virginia; or because of some factor(s) making it especially vulnerable to extirpation in Virginia.
S2.....	Very rare and imperiled with 6 to 20 occurrences or few remaining individuals in Virginia; or because of some factor(s) making it vulnerable to extirpation in Virginia.
S3.....	Rate to uncommon in Virginia with between 20 and 100 occurrences; may have fewer occurrences if found to be common or abundant at some of these locations; may be somewhat vulnerable to extirpation in Virginia.
S4.....	Common and apparently secure with more than 100 occurrences; may have fewer occurrences with numerous large populations.
S5.....	Very common and demonstrably secure in Virginia.
SH	Formerly part of Virginia biota with expectation that it may be rediscovered.
SX.....	Believed extirpated from Virginia with virtually no likelihood of rediscovery.
SE	Exotic; not believed to be a native component of Virginia's flora.
SU	Possibly rare, but status uncertain and more data needed.
S_?	Rank uncertain; for example, an S2? denotes a species with rarity that may range from S1 to S3, an SE? means a species may or may not be native to Virginia.

The Virginia Wildlife Action Plan

In 2000, the U.S. Congress began to address the need for conserving all wildlife by creating the [State Wildlife Grants](#) program. This new funding is being used by states, including Virginia, to conserve wildlife and habitats, especially those that are rare or in decline, and to proactively keep other species from becoming less common. In addition to providing this critical new funding, Congress asked each state to develop a comprehensive plan - an Action Plan - for proactive management of all wildlife and the network of habitats that support them. The [Virginia Wildlife Action Plan](#) (WAP) provides a common vision for wildlife conservation across the Commonwealth, identifying the important steps that we must all take to keep common species common and to prevent further decline, or possible extinction, of imperiled species. The Virginia Department of Game and Inland Fisheries which is responsible for managing the state's wildlife resources completed the WAP in 2005 which is available on line at <http://www.BeWildVirginia.org/wildlifeplan/>.

Accomack County supports 11% (99/925) of the state's species of greatest conservation need (SGCN). These species were broken into four tiers that offer a finer resolution of conservation need than what is currently afforded by state and federal ranking of endangered, threatened and species of special concern. The four tiers of imperilment are defined as follows:

Tier I. Critical conservation need. Faces an extremely high risk of extinction or extirpation. Populations of these species are at critically low levels, face immediate threat(s), or occur within an extremely limited range. Intense and immediate management action is needed.

Tier II. Very high conservation need. Has a high risk of extinction or extirpation. Populations of these species are at very low levels, face real threat(s), or occur within a

very limited distribution. Immediate management action is needed for stabilization and recovery.

Tier III. High conservation need. Extinction or extirpation is possible. Populations of these species are in decline, have declined to low levels, or are restricted in range. Management action is needed to stabilize or increase populations.

Tier IV. Moderate conservation need. The species may be rare in parts of its range, particularly on the periphery. Populations of these species have demonstrated a declining trend or a declining trend is suspected which, if continued, is likely to qualify this species for a higher tier in the foreseeable future. Long term planning is needed to stabilize or increase populations.

Table #. List of species of greatest conservation need (and associated tier rankings) known to occur in Accomack County broken by taxa.

Tier	Common Name	Scientific Name
Birds		
I	Plover, piping	Charadrius melodus
I	Plover, Wilson's	Charadrius wilsonia
I	Falcon, peregrine	Falco peregrinus
I	Sparrow, Henslow's	Ammodramus henslowii
I	Tern, gull-billed	Sterna nilotica
I	Rail, black	Laterallus jamaicensis
I	Sapsucker, yellow-bellied	Sphyrapicus varius
I	Warbler, black-throated green	Dendroica virens
II	Eagle, bald	Haliaeetus leucocephalus
II	Heron, little blue	Egretta caerulea caerulea
II	Owl, northern saw-whet	Aegolius acadicus
II	Sparrow, saltmarsh sharp-tailed	Ammodramus caudacutus
II	Tern, least	Sterna antillarum
II	Wren, winter	Troglodytes troglodytes
II	Bittern, American	Botaurus lentiginosus
II	Duck, American black	Anas rubripes
II	Oystercatcher, American	Haematopus palliatus
II	Rail, king	Rallus elegans
II	Skimmer, black	Rynchops niger
II	Tern, royal	Sterna maxima maximus
III	Harrier, northern	Circus cyaneus
III	Heron, tricolored	Egretta tricolor

III	Ibis, glossy	<i>Plegadis falcinellus</i>
III	Night-heron, yellow-crowned	<i>Nyctanassa violacea violacea</i>
III	Owl, barn	<i>Tyto alba pratincola</i>
III	Wren, sedge	<i>Cistothorus platensis</i>
III	Bittern, least	<i>Ixobrychus exilis exilis</i>
III	Brant	<i>Branta bernicla brota</i>
III	Night-heron, black-crowned	<i>Nycticorax nycticorax hoactii</i>
III	Redhead	<i>Aythya americana</i>
III	Tern, common	<i>Sterna hirundo</i>
IV	Blackbird, rusty	<i>Euphagus carolinus</i>
IV	Bobwhite, northern	<i>Colinus virginianus</i>
IV	Catbird, gray	<i>Dumetella carolinensis</i>
IV	Chat, yellow-breasted	<i>Icteria virens virens</i>
IV	Chuck-will's-widow	<i>Caprimulgus carolinensis</i>
IV	Creeper, brown	<i>Certhia americana</i>
IV	Cuckoo, yellow-billed	<i>Coccyzus americanus</i>
IV	Dowitcher, short-billed	<i>Limnodromus griseus</i>
IV	Dunlin	<i>Calidris alpina hudsonia</i>
IV	Flycatcher, willow	<i>Empidonax traillii</i>
IV	Godwit, Hudsonian	<i>Limosa haemastica</i>
IV	Godwit, marbled	<i>Limosa fedoa</i>
IV	Grebe, horned	<i>Podiceps auritus</i>
IV	Grosbeak, rose-breasted	<i>Pheucticus ludovicianus</i>
IV	Heron, green	<i>Butorides virescens</i>
IV	Kingbird, eastern	<i>Tyrannus tyrannus</i>
IV	Knot, red	<i>Calidris canutus rufus</i>
IV	Meadowlark, eastern	<i>Sturnella magna</i>
IV	Nuthatch, brown-headed	<i>Sitta pusilla</i>
IV	Ovenbird	<i>Seiurus aurocapilla</i>
IV	Parula, northern	<i>Parula americana</i>
IV	Pewee, eastern wood	<i>Contopus virens</i>
IV	Plover, black-bellied	<i>Pluvialis squatarola</i>
IV	Rail, clapper	<i>Rallus longirostris crepitans</i>
IV	Rail, Virginia	<i>Rallus limicola</i>
IV	Scaup, greater	<i>Aythya marila</i>
IV	Sparrow, field	<i>Spizella pusilla</i>
IV	Sparrow, grasshopper	<i>Ammodramus savannarum pratensis</i>
IV	Sparrow, seaside	<i>Ammodramus maritimus</i>
IV	Swallow, northern rough-winged	<i>Stelgidopteryx serripennis</i>
IV	Swift, chimney	<i>Chaetura pelagica</i>
IV	Tanager, scarlet	<i>Piranga olivacea</i>
IV	Tern, Forster's	<i>Sterna forsteri</i>

IV	Tern, roseate	<i>Sterna dougallii dougallii</i>
IV	Thrasher, brown	<i>Toxostoma rufum</i>
IV	Thrush, wood	<i>Hylocichla mustelina</i>
IV	Towhee, eastern	<i>Pipilo erythrophthalmus</i>
IV	Vireo, yellow-throated	<i>Vireo flavifrons</i>
IV	Warbler, black-and-white	<i>Mniotilta varia</i>
IV	Warbler, Canada	<i>Wilsonia canadensis</i>
IV	Warbler, Kentucky	<i>Oporornis formosus</i>
IV	Warbler, prairie	<i>Dendroica discolor</i>
IV	Warbler, prothonotary	<i>Protonotaria citrea</i>
IV	Warbler, worm-eating	<i>Helmitheros vermivorus</i>
IV	Warbler, yellow	<i>Dendroica petechia</i>
IV	Waterthrush, Louisiana	<i>Seiurus motacilla</i>
IV	Whimbrel	<i>Numenius phaeopus</i>
IV	Whip-poor-will	<i>Caprimulgus vociferus</i>
IV	Woodcock, American	<i>Scolopax minor</i>
IV	Wren, marsh	<i>Cistothorus palustris</i>
Mammals		
II	Squirrel, Delmarva Peninsula fox	<i>Sciurus niger cinereus</i>
III	Squirrel, Southeastern fox	<i>Sciurus niger niger</i>
IV	Cottontail, Appalachian	<i>Sylvilagus obscurus</i>
Amphibians		
IV	Frog, New Jersey chorus	<i>Pseudacris feriarum kalmi</i>
IV	Spadefoot, eastern	<i>Scaphiopus holbrookii</i>
Reptiles		
I	Turtle, loggerhead sea	<i>Caretta caretta</i>
II	Terrapin, northern diamond-backed	<i>Malaclemys terrapin terrapin</i>
III	Turtle, spotted	<i>Clemmys guttata</i>
III	Turtle, eastern box	<i>Terrapene carolina carolina</i>
IV	Snake, eastern hog-nosed	<i>Heterodon platirhinos</i>
Terrestrial Insects		
II	Beetle, northeastern beach tiger	<i>Cicindela dorsalis dorsalis</i>
Fishes		
III	Shiner, emerald	<i>Notropis atherinoides</i>
IV	Eel, American	<i>Anguilla rostrata</i>
IV	Lamprey, least brook	<i>Lampetra aepyptera</i>
IV	Swampfish	<i>Chologaster cornuta</i>
IV	Topminnow, lined	<i>Fundulus lineolatus</i>
Aquatic Invertebrates		
III	Amphipod, tidewater	<i>Stygobromus indentatus</i>

Shoreline Erosion

Accomack and Northampton Counties possess approximately 70% of Virginia's total oceanfront shoreline and 15% of the state's tidal shoreline. The inland Seaside shoreline is relatively protected by the barrier islands, marshes and bays that lie between the shoreline and the Atlantic Ocean. The barrier island shoreline and Bayside shoreline are susceptible to erosion. The following information is summarized from the Virginia Institute of Marine Sciences (VIMS) Shoreline Situation Reports published in 1975 and 2002. Since the 2002 study does not include erosion rates in feet and does not cover the entire Seaside, the 1975 study is used to provide that information.

Bayside: Erosion on Accomack County's Bayside shore is generally less than that of most of the counties with Bay shorelines. This is attributable to the extremely broad near shore zone, the sheltering of the subaqueous platform west of Tangier Sound, and the great extent of the marsh areas. Wind generated waves are the primary cause of erosion on the Bayside. The growth and height of wind generated waves are factors of the over water distance across which the wind blows (known as fetch), wind speed, wind duration, and water depth. In Accomack County, most severe erosion occurs from northeasters and storm fronts that bring strong north and northwest winds. Northeasters force additional water into the Bay, causing storm surges that can reach two or three feet above the normal high tide level. As the storm passes, the winds shift to the northwest or north and pile up water on the western side of the Shore. The average erosion rate for Bay shoreline in Accomack County (excluding Tangier Island) is 2.2 feet per year. This average dips to 1.6 feet per year for areas with marsh margins and rises to almost 3 feet per year for shorelines with sand beaches.

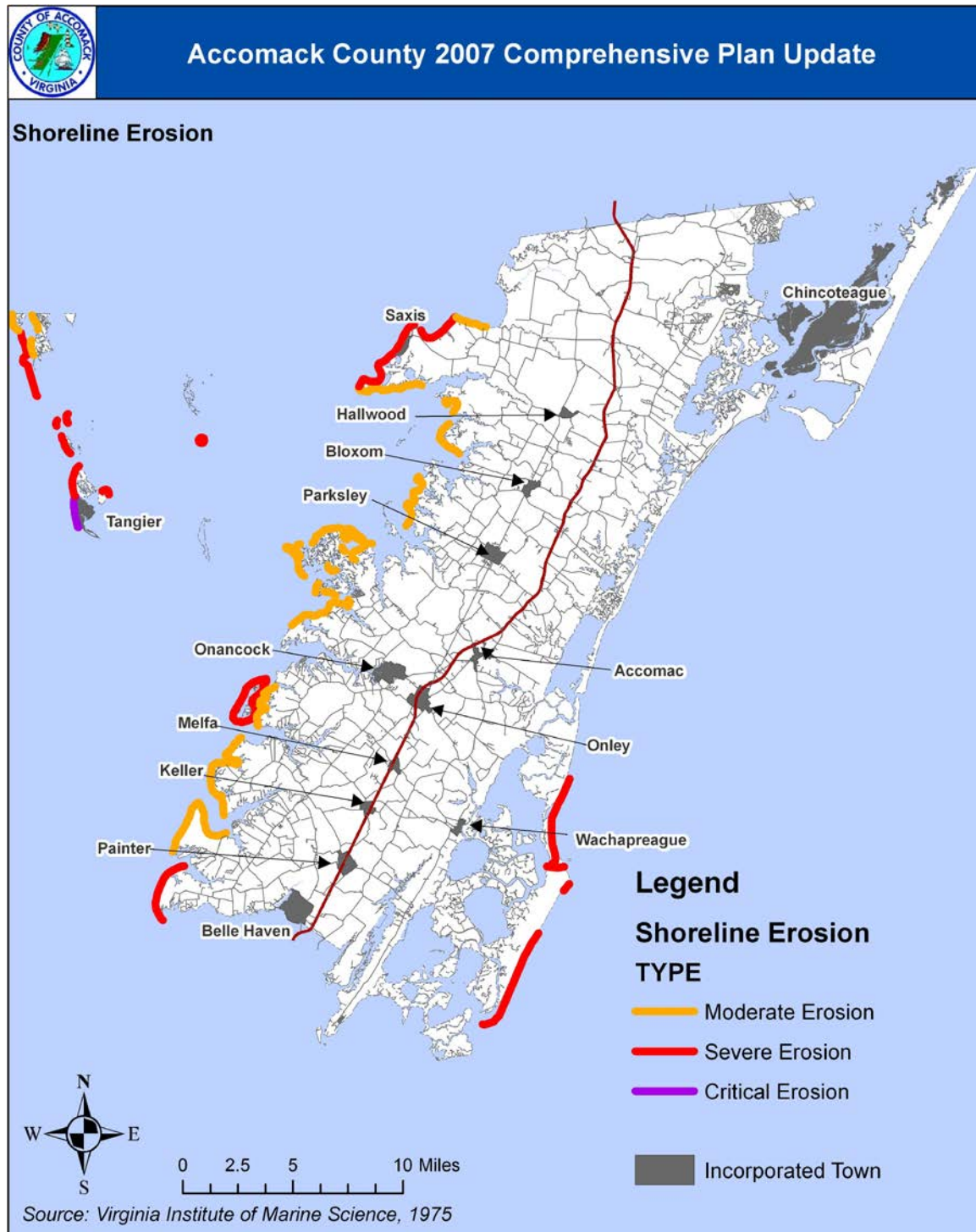
Seaside: Accomack County's Seaside is bordered by a series of barrier islands. The most serious barrier island erosion occurs when northeasters and hurricanes bring storm surge and intense wave action. The storm surge lifts the water level to one to three feet above normal, allowing high waves to wash over the island, pulling sand into the ocean, filling marsh and inlets and sometimes breaching the island. A barrier island's natural response to storm impact is to roll over on itself; the beach front retreats, former marsh deposits are excavated and washover raises marshland behind the island. Erosion rates on Accomack County's barrier islands range from seven to seventeen feet per year. The land on the seaside's interior is, for the most part, protected from erosion by the complex of barrier islands, marsh and bays that lie between the mainland and the Atlantic Ocean.

The Virginia Institute of Marine Sciences (VIMS) conducted a new shoreline situation report for Accomack County in 2002. The report defines erosion as either "low", "high", or "undercut". A bank is defined as low erosion if there is minimal erosion on the bank face or toe, a marsh is defined as low erosion when there are no obvious signs of erosion, and a beach is defined as low erosion if the beach is accreting. To be classified as high erosion, a bank must include slumping, scarps, and exposed roots. A marsh that has high erosion has the marsh edge eroding or loss of vegetation. A beach with high erosion has an eroding beach or is non emergent at low tide. Erosion at the toe of a bank indicates that the bank is undercut. Locations with moderate and severe ratings are further specified as being critical or non-critical. The erosion is considered critical if buildings, roads, or other structures are endangered. The 2002 *VIMS Accomack County Shoreline Situation Report* is available at:

<http://ccrm.vims.edu/gisdatabases.html>

The following evaluation of shoreline erosion is from the 1975 report. Map I depicts areas with moderate to severe rates of erosion.

Map 2-I



Critically Eroding Areas:

Sluitkill Neck (Segment 6A): 1.9 miles along the boundary between Klondike Point on Pungoteague Creek and Indian Point on Matchotank Creek. Includes Finneys, Scarborough and Parkers Islands. Erosion rate on the bayshore of the islands is 4 to 5 feet per year. The erosion rate on the mainland is 1.5 feet per year. The large expanse of marsh shore both on the islands and the mainland, together with the general low elevation and relief of the subsegment preclude any major development either for residential use or recreation.

Severely Eroding Areas:

Scarboroughs Neck (Segment 2A): 3.2 miles from Powells Bluff at the entrance to Occohannock Creek to the marshy point at the entrance of Craddock Creek. Erosion rate is 5 feet per year. Low potential for residential use primarily due to the high flood hazard and secondarily to the expense involved in constructing effective shore erosion defenses. Best use is to remain with agricultural and tree crop production. Recreational camping, particularly in the Bull Cove area, may be developed to advantage, provided no substantial permanent structures are involved and that adequate sewage disposal facilities are established.

Parkers Marsh (Segment 8A): 2.4 miles along the shore-fastland boundary between Onancock and Chesconessex Creeks. Crystal Beach at the end of Route 782 and the inland part of South Chesconessex are included in this section. Erosion rate is 5 feet per year and there is a 1 foot per year accretion rate to the south at Ware Point. No erosion is indicated by the study in the area north of Back Creek, but local property owners state that there is about 1 foot per year loss along the sand area at Crystal Beach. The marsh areas to the south of Back Creek are already well designated as a state natural area (Parkers Marsh Natural Area). It would seem desirable to reserve the marshes to the north for the same purpose as they are more or less contiguous. The fastland area near Crystal Beach is too low to justify extensive development and probably should be restricted to occupation by relatively low value seasonal residences.

Freeschool Marsh (Segment 11B): 4.7 miles along the shore-fastland boundary between Messongo Creek and Holdens Creek. This segment includes the peninsula south of the Pocomoke Sound, on which the town of Saxis is located. Erosion rates of 3.2 feet per year between Pig Point and North End Point, 4.9 feet per year between North End Point and Starling Creek (Saxis waterfront), 3.6 and 4.4 feet per year between Starling Creek and Long Point, and 1.9 feet per year between Long Point and Back Creek. Nearly the whole of Freeschool Marsh is set aside as a wildlife refuge. Saxis Island is very limited in area, has no satisfactory beaches, and is probably developed to near its maximum for shellfish industry and supporting population.

Moderately Eroding Areas:

Hyslop Marsh (Segment 2C): 2.9 miles from the mouth of Craddock Creek across the mouth of Back Creek to Milbys Point at the north end of Hyslop Marsh. Erosion rate is 2-3 feet per year. At present the area should be left as is.

SEAS

The Virginia Department of Conservation and Recreation's Shoreline Erosion Advisory Service (SEAS) promotes environmentally acceptable shoreline erosion control measures to protect private property and reduce sediment and nutrient loads to the Chesapeake Bay and other waters of the Commonwealth. SEAS was created in 1980 by the General Assembly to work one-on-one with landowners experiencing erosion problems. Since its creation SEAS has provided technical advice about shoreline erosion problems to more than 6,300 clients. In addition, the program promotes research for improved shoreline management techniques to protect and enhance Virginia's shoreline resources.

Nandua Creek (Segment 3): 5.1 miles along the main axis of Nandua Creek, including Back Creek, Curratuck Creek, McLean Gut, Boggs Gut and Kusian Cove. Erosion rate is between 2 to 3 feet per year at exposed beach areas in the lower creek; no erosion noted on the upper creek. Nandua Creek is very attractive in its present state. It appears undesirable to develop the creek as it is surrounded by creeks of greater commercial capacities. The fastland surrounding the lower creek is too low in elevation to be suitable for residential development. The upper creek seems well suited for its present use, agriculture and low density residential.

Broadway Neck (Segment 6B): 1.9 miles along the shore-fastland between Matchotank Creek and the northeast end of East Point. Erosion rate south of Thicket point is 2 feet per year. No figures are given for the rate at Broadway Landing or East Point, but the presence of old groins and bulkheads indicates a history of moderate erosion along the shore north of Thicket Point also. No erosion is evident in Matchotank creek or in the smaller creeks. Replacement of existing beach defenses will improve presently developed areas. High flood hazard should be considered before future development.

Onancock Creek (Segment 7): 4 miles from the bayside boundary to the head of Central Branch. Moderate erosion at sand beaches, such as at the end of Bailey Neck. On the upper creek, where low bluffs are close to the water, there are local areas of erosion. The lower part of Onancock Creek is too susceptible to flood damage to permit a recommendation for additional development. There are some areas on the upper reaches and branches which would permit additional low density residential development. There is already considerable boating, and increasing the traffic would also increase the danger of water pollution.

Big Marsh (Segment 8C): 1.5 miles along the shorefast boundary between Chesconessex Creek and Deep Creek. Erosion rate is moderate at present but the development area might become critical during floods. Erosion rates vary from 0 to 3 feet per year. There is not enough fastland behind the marsh between Chesconessex and Deep Creek for any sort of development other than low density residential or agricultural. The present development at Schooner Bay was probably unwise. No other development on the marshes should be permitted, both because of the low elevation and unstable substrate and because of the value of the natural marsh to the estuarine food chain.

Parksley (Segment 10B): 3 miles along the shore-fastland boundary between the north

bank of Hunting Creek and the middle of Young Creek. Erosion rate is slight to moderate, critical along the bay shore. Erosion rates are up to 2 feet per year at various exposed sand beach areas. There is no erosion noted in the creeks. The area is primarily marshland which should be preserved as a primary food source for shore and near shore life. The adjoining fastland is low and suitable for lumber and agriculture.

Michael Marsh (Segment 11A): 1.9 miles along the shore-fastland boundary between Cattail Creek and Messongo Creek. Erosion rate is 1.3 to 1.7 feet per year along the part of the shore facing Beasley Bay. Almost the total marsh is set aside as part of the Saxie Wildlife Management Area. The adjacent fastland area is low and suitable for timber production. The creeks are shallow and, being within or adjacent to the wildlife sanctuary, should not be exploited.

Shoreline Hardening: Accomack County's residents have constructed miles of shoreline erosion control structures in an attempt to cease or slow erosion. There has been no comprehensive survey done of Accomack County's erosion control structures, but many applications for new erosion control structures are approved each year. Structural practices such as jetties, groins, riprap, and bulkheads are the most expensive and most potentially damaging options for erosion control. These structures can impede the natural inland migration of wetlands and impact other natural processes such as the natural movement of sand. With the impending threat of sea level rise and the predicted increase in the intensity and frequency of storms resulting from global climate change, the Wetlands Board should, where applicable, discourage waterfront property owners from installing bulkheads and other types hardened structures in ecologically sensitive coastal areas. Sloped rock or riprap revetments and gabions are preferable to vertical structures. Non-structural alternatives can be effective in certain conditions, saving the property owner money and having less impact on the environment. Most non-structural alternatives involve the use of marsh areas for natural protection and may involve planting marsh grass or cutting trees that are shading the marsh. "Living shorelines" are considered another viable shoreline management option in areas where moderate erosion is occurring. "Living shorelines" are designed to enhance natural shoreline habitat while providing erosion control benefits. They also allow for natural coastal processes to occur, such as the expansion and migration of marshes, through the strategic placement of plants, stone, sand fill, and other structural and organic materials. For additional information on line go to <http://www.deq.state.va.us/coastal/livingshore.html>.

Information Needs: The best information currently available on shoreline erosion in Accomack County is the Shoreline Situation Reports prepared by the Virginia Institute of Marine Sciences in 1975 and 2002. Information on shoreline structures is limited to the 2002 report and permit information collected by the county since the 1970's. A comprehensive shoreline management plan needs to be conducted to evaluate the shoreline erosion problem in Accomack County and determine the effectiveness of erosion control structures. This plan would divide the county's shoreline into planning segments in which shoreline processes and materials are similar, identify and evaluate shoreline erosion and accretion patterns within those segments, inventory the type, location and condition of existing erosion control structures, evaluate whether structures have been

effective or are aggravating erosion problems, identify areas where control structures should be avoided, identify areas which require stabilization, and examine shoreline areas characterized by high erosion rates in relation to existing and proposed land use. The Virginia Institute of Marine Sciences has developed a Comprehensive Coastal Inventory for the state which includes data that would be useful for such a study. Identification of erosion control structures could be achieved through review of permits issued by the local Wetlands Board, examination of aerial photography, and field surveys. The VIMS Comprehensive Coastal Inventory is available at: <http://ccrm.vims.edu/index.html>

Sea Level Rise

According to the Virginia Institute of Marine Sciences (VIMS), historic rates of sea level rise were always estimated at approximately one foot per century. Sea level has been rising since the last Ice Age, but modern rates of sea level rise are estimated to be 1.5 to 3 times the historic rate. In addition to threatening buildings, roads, and other development, sea level rise can destroy natural habitats such as tidal wetlands. In order to protect tidal wetlands from sea level rise, coastal management strategies will need to be developed that allow tidal wetlands to migrate inland over time. The US EPA is working on improving knowledge of sea level rise and climate change, and more information is available at: <http://www.epa.gov/climatechange/effects/coastal/index.html>

The most current information on global climate change can be found in the IPCC Fourth Assessment Report which is available on line at <http://www.ipcc.ch/ipccreports/ar4-wg2.htm>.

The County should evaluate the impacts of climate change and sea level rise on groundwater and water quality and marshlands.

Storms

Accomack County is subject to frequent storm activity including northeasters, tropical storms and hurricanes. These storms bring local flooding and considerable shoreline erosion.

History: Accomack County has experienced several major storms since the early settlement of the area. A brief history of major storms to hit the area is given in the following paragraphs:

The August 23, 1933, hurricane passed directly over the lower Chesapeake Bay area, then moved north up the west side of the bay. In addition to damage from tidal flooding, high winds caused much damage to roofs, communication lines and other structures.

The hurricane of September 1936 passed approximately 20 miles east of Cape Henry on the morning of the 18th. High tides and gale force winds caused much damage throughout the lower Chesapeake Bay area and Eastern Shore as the storm moved to the northeast. Late crops were destroyed and approximately 60,000 broiler chickens were killed. The loss in crops was estimated at \$250,000 and other damage amounted to another \$250,000.

The northeaster of October 6, 1957, with wind gusts of 60-70 miles per hour, moved north just east of Cape Hatteras during the evening of the 5th, then turned northwest to move

through the lower portion of the Chesapeake Bay on the 6th. Heavy rains and gales extended west through central Virginia. The greatest property damage occurred in the coastal areas where heavy seas and high tides battered structures, grounded vessels, and disrupted transportation. The town of Wachapreague reported tides of four feet above normal.

Hurricane Donna, which occurred on September 12, 1960, skirted the Virginia coast on the morning of the 12th before moving to the northeast. Strong winds, heavy seas, and severe flooding occurred along the Chesapeake Bay shoreline of the Eastern Shore from Cape Charles north, causing extensive damage. Winds of up to 100 miles per hour were recorded in Chincoteague and 4.5 inches of rain fell in a 24 hour period.

The northeaster of March 6-8, 1962 caused flooding of major proportions from New York to Florida. This storm, which came to be known as the Ash Wednesday Storm, was unusual for a northeaster since it was caused by a low pressure cell which moved from south to north past Hampton Roads and then reversed its course to the south again. Waves from Chincoteague Bay were breaking on the High School. Five homes on Chincoteague Island were destroyed in addition to nearly 1,000 homes which had water in them. This storm wiped out the poultry industry on Chincoteague as well as killing one hundred of the Assateague Ponies. The northeaster brought with it high volumes of water and high waves which battered the mid-Atlantic coastline for several days.

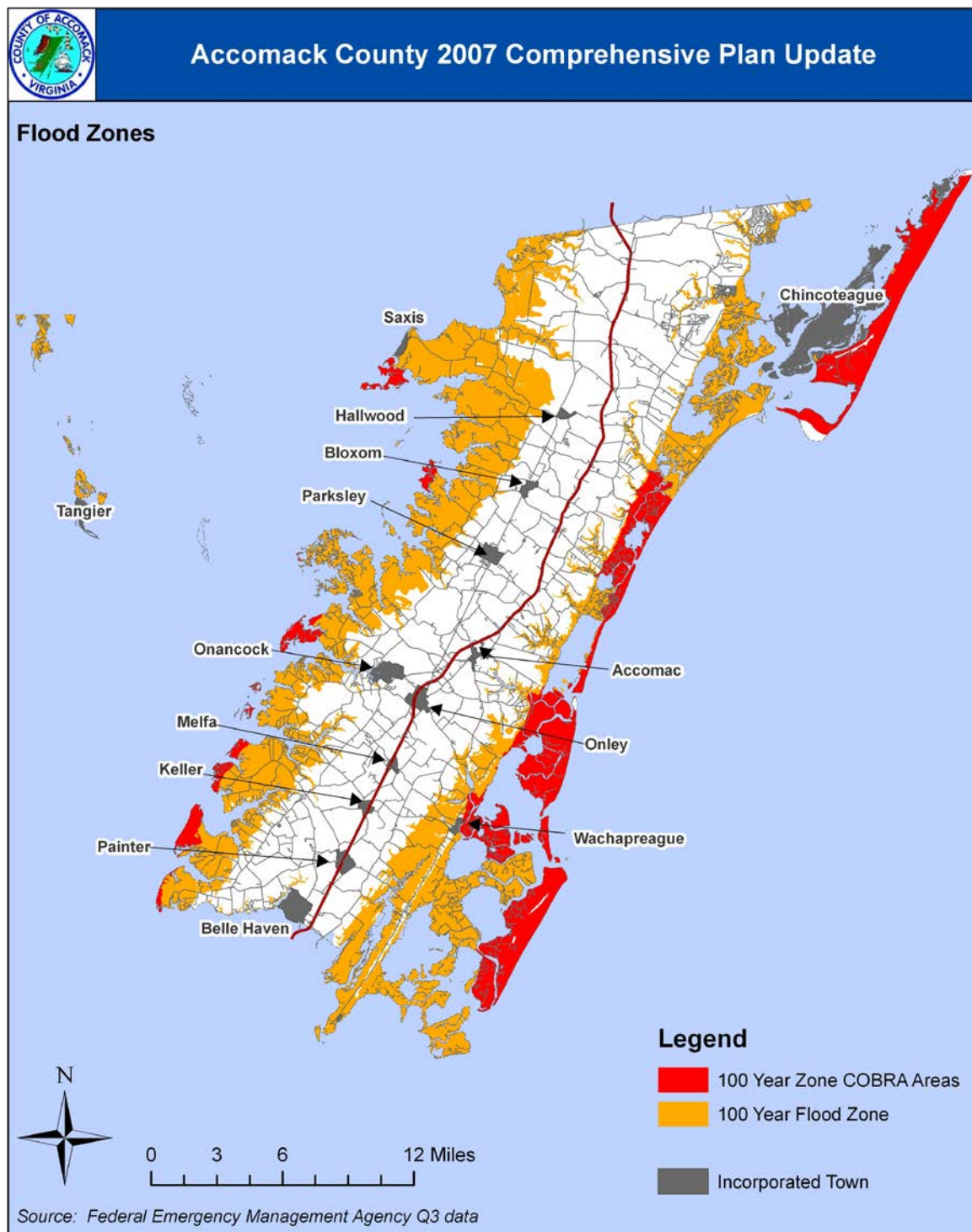
The northeaster of March 29, 1984, caused significant flooding on the bayside of Accomack County. The storm brought winds of up to 46 mph which piled up tidal waters, resulting in flooding which sent water pouring into homes at East Point, Checonessex, Mears, Saxis, and Sanford. Accomack County saw its worst tidal flooding since 1962 as a result of this storm.

Hurricane Gloria, on September 27, 1985, caused significant flooding and wind damage in Accomack County. The Chesapeake Bay Bridge Tunnel recorded winds from 79 to 90 mph and NASA recorded 4.27 inches of rainfall during the storm. Accomack County suffered an estimated \$2 million in damage to mobile homes, houses, boats, docks, and property as a result of the storm.

100 Year Floods

For the purposes of managing development and assessing risk within areas prone to flooding, the Federal Emergency Management Agency (FEMA) developed the concept of the "100 year flood." The 100 year flood does not refer to a flood that happens once every 100 years, but rather a flood level that has a probability of occurring once every 100 years (i.e. has a 1% chance of occurring in any given year). A flood insurance study was prepared for Accomack County in 1982 which identifies height of flood waters during a 100 year flood and predicts the area within the county that would be flooded and at what level flooding would occur. Information from this study was used to develop Flood Insurance Rate Maps (FIRMs) which are used by insurers to determine flood insurance requirements and by the county to regulate development in flood prone areas.

Map 2-J



The northeaster of October 30, 1991, is also known as the “Great Halloween Storm.” A northeaster merged with passing tropical storm, Grace, to create a very powerful system. The storm remained off shore but produced considerable damage. Many piers were lost, as well as a motel. Observations at the Virginia Coast Reserve noted sea waves of up to 35 feet in height. This storm changed the landscape of many of the barrier islands, which

absorbed the brunt of the storm.

Hurricane Fran, of September, 1996, brought considerable wind damage to the Shore. This storm made landfall on the coast of North Carolina, September 6, 1996, as a category 3 hurricane. The Eastern Shore experienced a great deal of damage from wind and several spin-off tornados struck the area.

The Nor'easter of February 3 and 4, 1998, battered eastern Virginia with an extended period of gale to storm force onshore winds due to the slow movement of the storm. The entire island of Chincoteague was underwater, in addition, the causeway was closed. The flooding was to the extent that some buildings had water in them and some families had to evacuate. The water rose high enough to cover the hoods of police cars. Some hotels in Wachapreague also endured some flooding.

Hurricane Floyd on September 15 and 16, 1999, was a Category 1 hurricane as it crossed the Wakefield WFO county warning area. Flooding of five to seven feet due to the storm surges occurred in central parts of the Chesapeake Bay, engulfing areas of Accomack County. Some homes in the County were flooded with three to six feet of water. Three hundred buildings endured flood damage as a result of Hurricane Floyd.

Hurricane Irene on October 17 and 18, 1999, was a Category 1 hurricane which was intensifying at the time it reached the Wakefield County warning area. It brought heavy rain to the southeastern parts of Virginia along with sustained wind speeds of 27 mph at Wallops Island. The highest recorded speeds at Wallops Island were 39 mph.

Hurricane Isobel, September 2003, flooded parts of Wachapreague, Oyster, Tangier, and Saxis. The tide monitor in Wachapreague was swept away, however, the Chesapeake-Bay Bridge Tunnel reported a surge of 7.4 feet and the surge registered 6.4 feet at Kiptopeke. The high winds produced salty air, which killed many crops, as well as coating power lines, which caused power outages until rainfall after the hurricane washed the salt off the lines.

Hurricane Ernesto on September 1, 2006, scraped eastern and southeastern Virginia. The remnants of the storm were sustained wind speed that reached 56 mph at Wallops Island and had gusts as strong as 76 mph.

Risks: The amount and extent of damage caused by any tidal flood depends on the topography of the flooded area, the rate of rise of floodwaters, depth and duration of flooding, exposure to wave action, and extent of development in the floodplain. The depth of flooding during these storms depends on the velocity, direction and duration of the wind, and the astronomical tide. The duration of flooding depends on the duration of tide-producing forces. Fortunately, tidal flooding is usually characterized by a gradual increase in water levels, which under normal conditions, permits orderly and timely evacuation from encroaching floodwaters. The greatest potential for flood damage in Accomack County comes from flooding of low lying shorelines along the Chesapeake Bay. Bayside areas lying lower than eight feet above mean sea level would be flooded during a 100 year storm

event. The highest elevation of flood waters recorded in Accomack County is 9.2 feet above mean sea level. Map J shows the location of the 100 year floodplain. Accomack County consists of 284,931 acres of land and marsh. Of those 284,931 acres, 126,667 acres are in the 100 year flood zone. There are approximately 16,755 addressed structures in the unincorporated part of Accomack County, 3,577 of which are in the flood zone. These numbers represent a significant potential hazard to residents and property owners of the county and demonstrate the need to take measures to lessen the possible impact of flood events on the area. Moreover, the frequency and intensity of major storm events and storm surges along the Atlantic is expected to increase as a result of sea level rise and global climate change.

Floodplain Management: In January of 1995, the Accomack County Board of Supervisors adopted the Accomack County Floodplain Management Plan. The plan was developed as a comprehensive examination of sources of flooding, flooding history, and existing flood protection programs to determine what further measures, if any, are needed to adequately protect the residents of the county from flood hazards. The plan discusses existing development regulations in the floodplain, the preservation of floodplain areas as open space, and suggests additional floodplain management measures such as educational outreach projects, drainage system maintenance, and lower density zoning districts in the floodplain. The county currently has a class 8 designation from the National Flood Insurance Program (NFIP) Community Rating System (CRS) which encourages community and state activities beyond those required by the NFIP.

The Community Rating System

The Community Rating System (CRS) was established by the Federal Insurance Administration in 1987 to, "encourage, by the use of flood insurance premium adjustments, community and state activities beyond those required by the NFIP." Communities which participate in CRS receive points for activities they undertake which reduce flood losses, facilitate accurate insurance rating, and promote the awareness of flood insurance. Each community is assigned a classification based on their total points. Residents of the community are rewarded with reduced premium rates. Accomack County is currently a class 8 community receiving a 10% premium reduction.

There are currently 1,597 National Flood Insurance policies in Accomack County with a total coverage of \$129,952,000. Annual flood insurance premiums are \$527,004. There have been \$822,901 in claims in Accomack County since 1978.

In August 2006, Accomack County adopted the Eastern Shore of Virginia Hazard Mitigation Plan (HMP). The HMP was developed by the Accomack-Northampton Planning District Commission (A-NPDC) with financial and technical assistance from the Virginia department of Emergency Management. Accomack County staff participated in development of the plan, which contains the following findings:

1. 22% (61,717 acres) of all the land in Accomack County is in the V zone. The V zone is the area with waves 3 feet or greater during a 100-year storm.
 - a. 61% of this land is held in some form of conservation ownership.

2. 64,950 acres are in the A zone. The A zone is the area with waves less than 3 feet during a 100-year storm.
 - b. Most structures located in a flood zone are in this area.
3. In Accomack County, a 100-year storm event would affect approximately 3,933 structures. It would generate an estimated \$109 million in residential losses; an expected \$76 million would be covered by flood insurance.

The HMP recommends the following Goals and Strategies:

1. LOCAL GOVERNMENTS GUIDE A SMOOTH MITIGATION PROGRAM.

Strategy: Train county staff for mitigation duties.

2. RESIDENTS BUSINESSES AND LOCAL GOVERNMENT PROMOTE MINIMAL COMMUNITY DISRUPTION THROUGH RESIDENTIAL AND COMMERCIAL MITIGATION ACTIVITIES

Strategy: Reduce damages from flooding.

Strategy: Reduce damages from non-flooding natural disasters if that type of event occurs.

3. RESIDENTS ARE SELF SUFFICIENT AND TAKE RESPONSIBILITY FOR MANAGING THEIR OWN RISK

Strategy: Educate the public about natural hazards and what is expected of them in an event.

Strategy: Educate the public about their responsibility in reducing and insuring their own risks.

4. LOCAL INFRASTRUCTURE WILL CONTINUOUSLY FUNCTION DURING AND AFTER A NATURAL HAZARD EVENT

Strategy: Maintain safe traffic flow in case of wide scale power loss.

Strategy: Maintain emergency fire service functions in case of wide scale power loss.

5. LOCAL GOVERNMENTS MAKE SPECIAL EFFORTS TO REACH SPECIAL NEEDS POPULATIONS

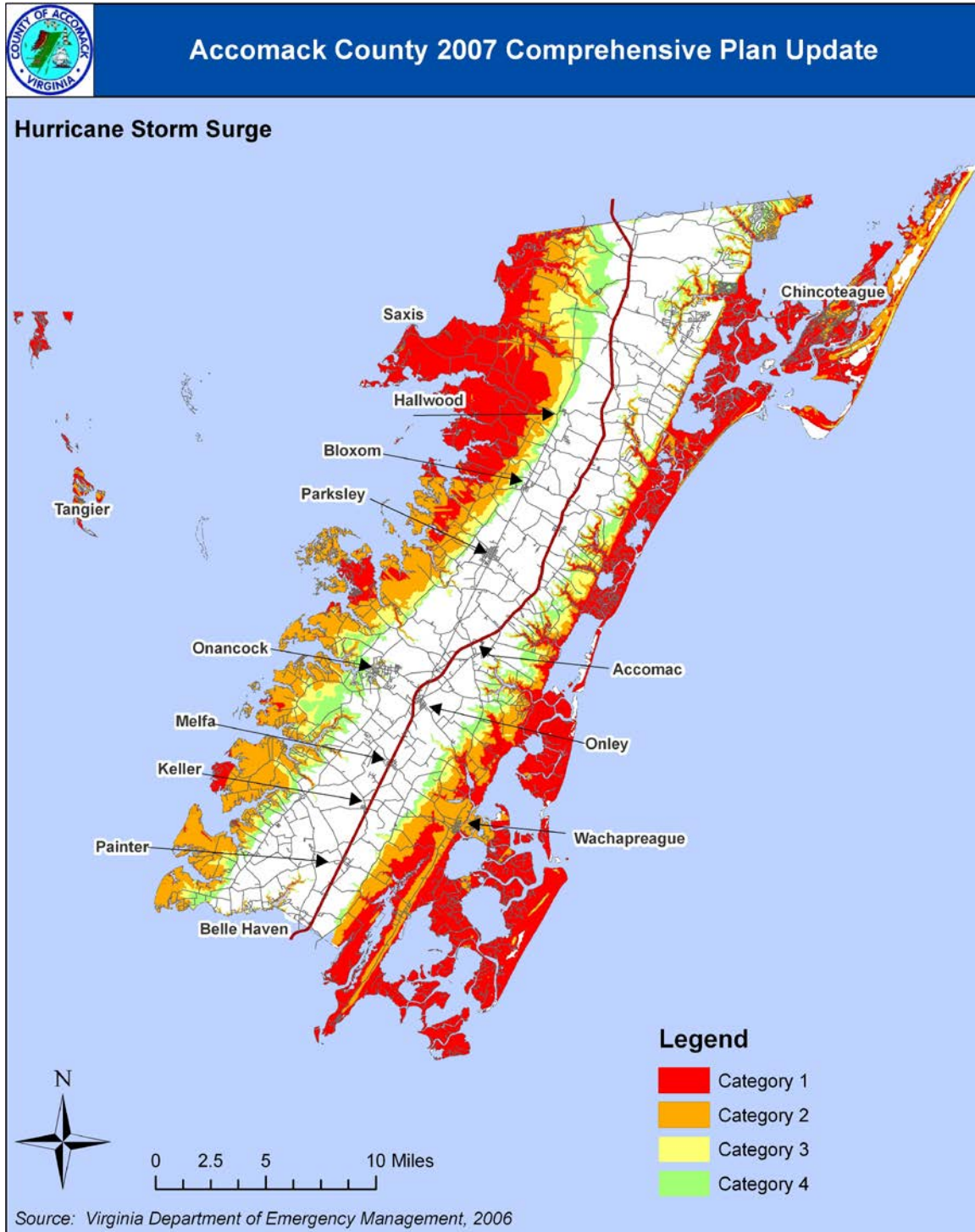
Strategy: Reach out to migrant workers to ensure their safety while maintaining shelter space for a voluntary or mandatory evacuation.

Strategy: Institute an arrangement providing evacuees from Tangier Island transportation to shelters.

The Eastern Shore of Virginia Hazard Mitigation Plan is available online at:

<http://www.a-npdc.org/hazardmitigation>

Map 2-K



Chapter 3

Inventory and Existing Conditions: The Developed Environment

Chapter 3

Inventory and Existing Conditions: The Developed Environment

Introduction:

Accomack County's settlement pattern has evolved and changed with changes in the economy, technology, and demographics. Historically it featured a pattern of small towns, villages and hamlets interspersed among farms and forests. In more recent years, rural subdivisions have become more common, as has commercial and industrial development located outside of traditional towns and village centers. Chapter 3, The Developed Environment, documents the County's land use and development patterns, and how they relate to the local natural environmental resources.

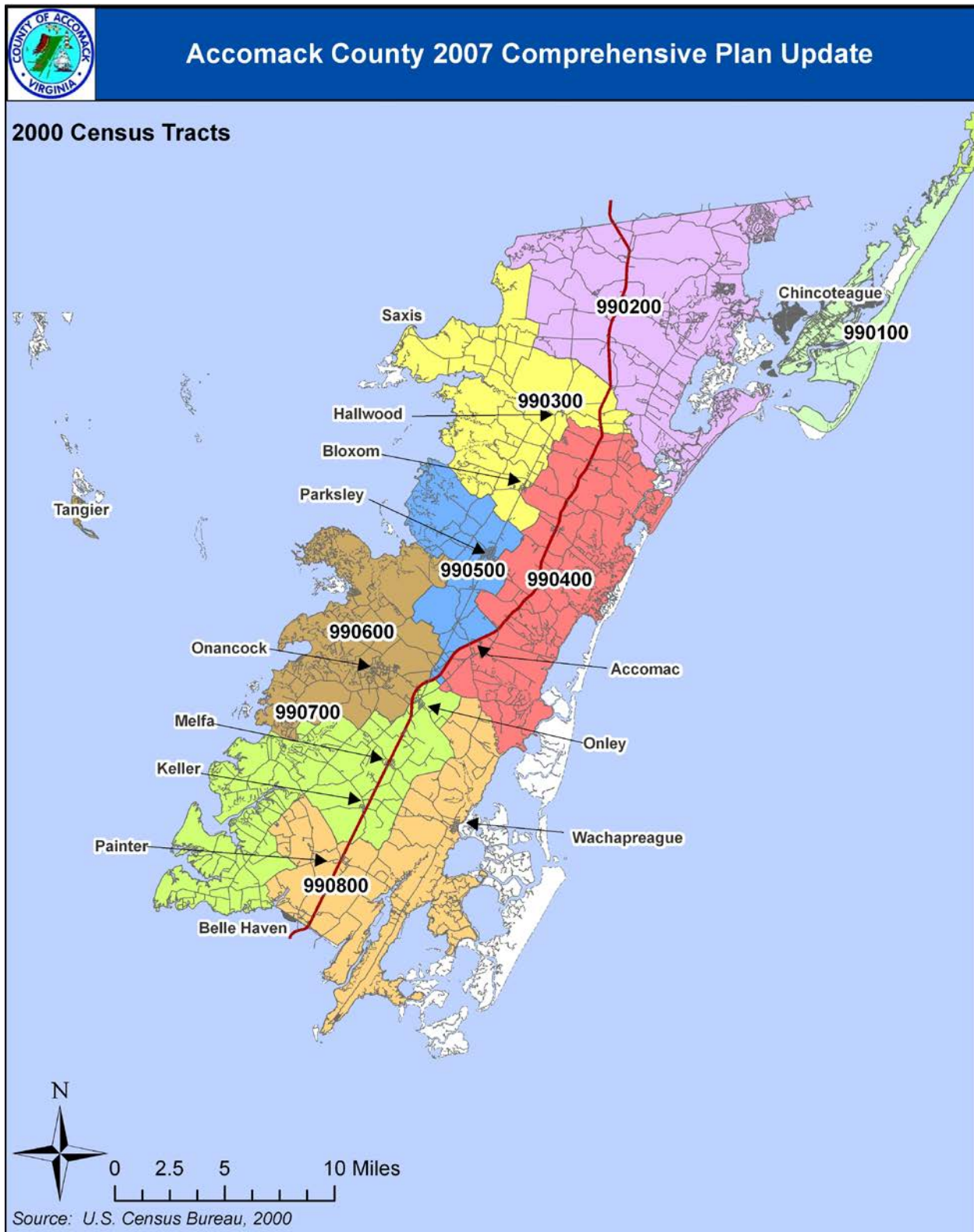
Population

Until recently, Accomack County experienced an overall decline in population over the last fifty years. In 1930, Accomack County contained a population of 35,854 persons. In the following years of decline, the lowest population recorded for the county was 29,004 people in 1970. Between 1970 and 1980, Accomack County experienced its first substantial population increase since 1930. From 1970 to 1980, the recorded population for Accomack County increased by 2,264 persons. After 1980, the population stabilized and only increased by 435 persons between 1980 and 1990.

The Census figures for 2000 showed a sharp increase of 6,602 persons since 1990. However, the County reviewed the Census data and determined that a large error had been made in the Horntown area and the actual increase was closer to 2,785 persons. The estimated revised County figures, with a total 2000 population of 34,488, were used by the County for redistricting and, where possible, have been used to update this plan. The 2000 Census Tracts are shown on Map 3-A. It is anticipated the 2010 Census will provide a more accurate picture of growth in Accomack County.

Historically, approximately 50% of the total population is located in the southern Pungoteague and Lee Districts. The Lee District has been the largest district, containing an average of 28.1% of the county's total population since 1930. The Island district has been the smallest district, containing an average of 10.7% of the county's population since 1930. The county's magisterial district boundary lines were redrawn after the 1970 and 1980 census counts. The district boundary lines were redrawn in an attempt to balance voter populations according to U.S. Department of Justice guidelines. The redistricting created minor geographic shifts of district boundary lines, along with the shifting of Tangier Island from the Lee District to the Metompkin District in 1970 and to the Atlantic District in 1980. The effect of redistricting on population projections is to reduce the value of historic data in calculating future district populations. The 1970 redistricting, which affected population counts in the 1980 census, had a minimal balancing effect. The 1980 redistricting has, however, balanced the population of the county districts, with each district containing roughly 22% of the county's total population with the exception of the Island District.

Map 3-A



Population by District, 1930 -1990

Source: U.S. Census Dept.

Year	Atlantic	Lee	Metompinkin	Pungoteague	Island
1930	7,476 (21%)	10,576 (29%)	6,394 (18%)	8,226 (23%)	3,182 (9%)
1940	6,632 (20%)	10,576 (29%)	5,835 (18%)	7,669 (23%)	3,349 (10%)
1950	7,695 (23%)	9,562 (28%)	5,592 (17%)	6,917 (20%)	4,066 (12%)
1960	6,095 (20%)	9,020 (30%)	5,796 (19%)	6,254 (20%)	3,470 (19%)
1970	6,464 (22%)	8,102 (29%)	5,796 (19%)	5,607 (19%)	3,258 (11%)
1980	6,261 (20%)	8,833 (29%)	6,449 (20%)	6,170 (20%)	3,555 (11%)
1990	7,214 (23%)	7,240 (23%)	6,917 (22%)	6,750 (22%)	3,582 (11%)

The County undertook a re-districting process after the 2000 Census, creating the districts shown in the following table and on Map 3-B, *Election Districts*.

Population by Election District, 2000

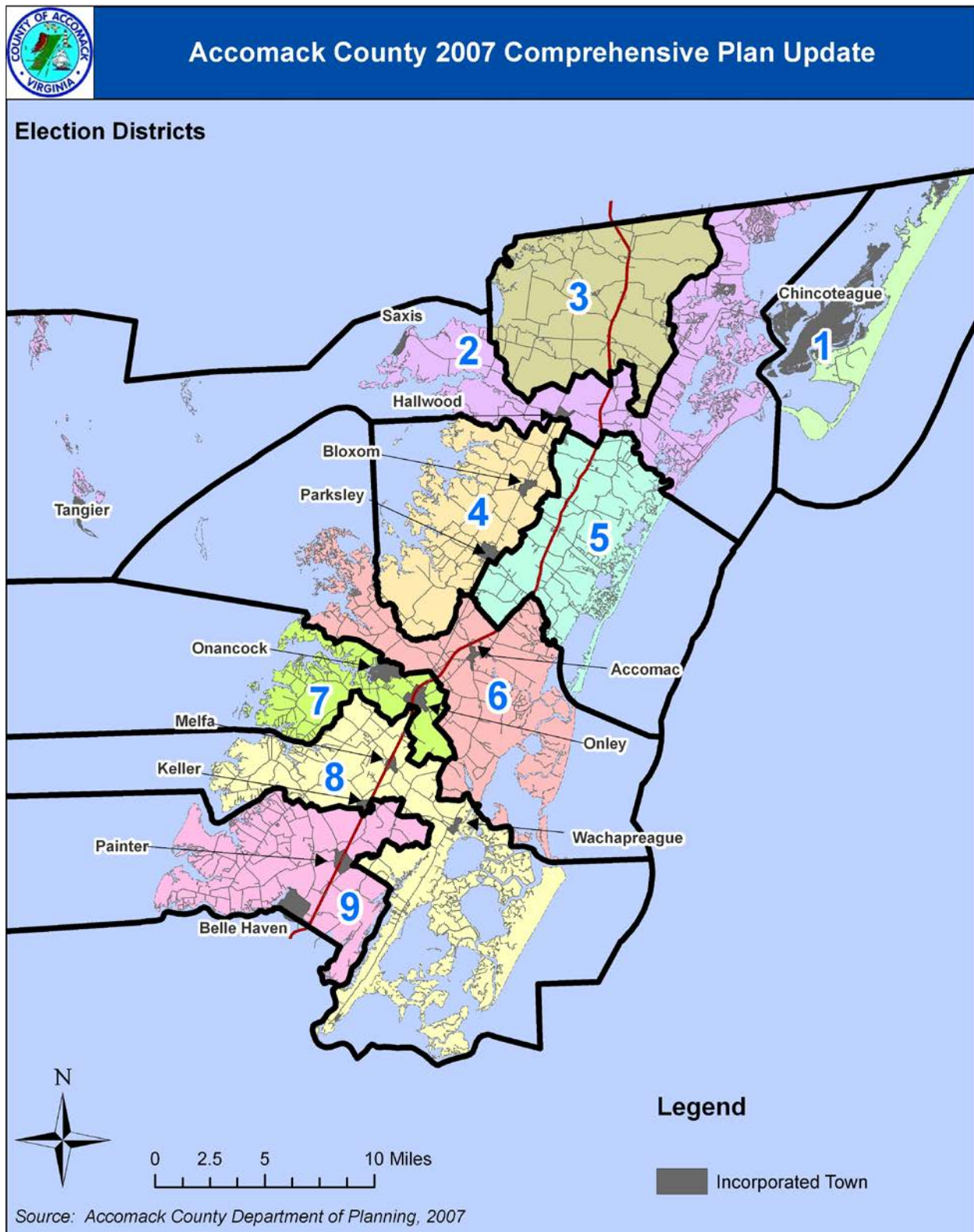
Source: Accomack County Department of Planning
(corrected from U. S. Census data using County data)

District 1	3,906	(11%)
District 2	4,023	(12%)
District 3	3,868	(11%)
District 4	3,693	(11%)
District 5	3,996	(12%)
District 6	3,659	(11%)
District 7	3,701	(11%)
District 8	3,725	(11%)
District 9	3,917	(11%)
TOTAL	34,488	

Population Change Factors: The trends in population change factors for Accomack County are: 1) in the 1950's and 1960's births exceeded deaths, but not enough to offset out-migration, which was the cause of population loss, 2) in the 1970's and early 1980's deaths outnumbered births, but enough in-migration occurred to result in population growth, and 3) in the late 1980's and early 1990's, deaths continued to outnumber births and in-migration slowed to lead to a more stable population.

Age Distribution: The trends in age distribution over the past four decades reflect three population trends. First, the "Baby Boom" of the 1950's is apparent as 1990 populations in the age groups from 25 to 44 years of age were higher than the 1960, 1970 and 1980 populations. This "bulge" has continued moving through the population during the 1990's as the 35-44 and 45-54 age groups increased in size. Second, the birth rate has slowed, as evidenced by the lower 1980 and 1990 population in the 0-9 age group, although this trend seems to have stabilized since 1990. Third, there is evidence of Accomack County's attraction as a retirement community in higher 1990 populations in the 65-85 age groups. This latter trend seems to have stabilized as well, during the 1990s.

Map 3-B



Age Distribution;
Total population within each age group and percentage of total population

Source: U.S. Census Dept.

(Does not account for corrections to total County population based on County data)

Age Group	1960 Total %	1970 Total %	1980 Total %	1990 Total %	2000 Total %
0-4	3,095 10%	2,104 7%	2,046 7%	1,994 6%	2,336 6%
5-9	2,998 9%	2,596 9%	2,124 7%	2,071 7%	2,695 7%
10-14	2,757 9%	2,894 10%	2,490 8%	2,174 7%	2,655 7%
15-19	2,185 7%	2,531 9%	2,661 9%	2,000 6%	2,585 7%
20-24	1,421 5%	1,569 5%	2,292 7%	1,792 6%	2,175 6%
25-34	3,348 11%	2,729 10%	4,074 13%	4,595 15%	4,311 11%
35-44	3,810 12%	3,254 11%	3,156 10%	4,237 13%	5,716 15%
45-54	3,717 12%	3,562 12%	3,458 11%	3,434 11%	5,167 13%
55-64	3,249 11%	3,303 11%	3,757 12%	3,525 11%	4,274 11%
65-74	2,653 9%	2,690 9%	3,100 10%	3,312 10%	3,505 9%
75-84	1,168 4%	1,414 6%	1,602 5%	1,947 6%	2,129 6%
85+	--	--	--	--	755 2%
Total	30,635	29,004	31,268	31,703	38,305

Race Distribution: The distribution of Accomack County's population by race remained relatively constant between 1960 and 1990. The total nonwhite population declined by 4%, and the white population increased by 4% during that period. However, between 1990 and 2000 the total non-white population increased from 35% to 37%, due in part to an increase in the Hispanic population from 1.4% to 5.4%, against a decrease in the black population from 34.5% to 31.6%. This trend has continued in the current decade, with the Hispanic population rising to 7.6% in 2004, while the black population declined to 30.1%.

Race Distribution of Population, 1960 –2000

Source: U.S. Census Dept.

(Does not account for corrections to total County population based on County data)

Year	1960	1970	1980	1990	2000
White	18,779 (61%)	18,086 (62%)	19,753 (63%)	20,598 (65%)	24,276 (63%)
Non-White	11,856 (39%)	10,918 (38%)	11,515 (37%)	11,105 (35%)	11,105 (37%)

Population Growth for 1980-2000: Data from the U. S. Census shows that Accomack County's population growth rate between 1980 and 1990 averaged just over one-tenth of one percent per year. Using the corrected data, the growth rate was about 6 times greater between 1990 and 2000, averaging just under 1% per year. The growth rate for Virginia as a whole between 1990 and 2000 was slightly over 1.3% annually.

Year	1980	1990	2000	Population Growth 1980-2000
Population.	31,268	31,703	34,488	<i>Source: U. S. Census</i>
Average Annual Rate		0.14%	0.9%	

Population Estimates for 2000-2005: The Weldon Cooper Center's population estimates for 2000-2005 indicate that Accomack County's total growth over the last five years was 2.1% (0.5% average annually), less than the growth rate during the 1990's, and less than the total 6.9% growth for the state as a whole over the five year period. However, these estimates are likely based on the official 2000 U. S. Census estimates which are not consistent with local data available to the County.

Population Projections: Population projections act as a tool to give elected officials, government administrators and planners a rough idea of how many people will need to be served in the future.

Based on the official 2000 Census data, the Virginia Employment Commission projects Accomack County's population to grow from 38,305 in 2000 to 46,500 by 2030, a 21 percent total increase and an average annual growth rate of about two-thirds of one percent (0.65%). This would be less than the rate the County grew during the decade of the 1990s. If the growth trends of the 1990s continue (about 2% annually), the County's population would reach 69,000 by 2030. Please note that the actual numbers in the following VEC forecasts are based upon the higher base line population estimate for 2000 of the U.S. Census.

Year	2000	2010	2020	2030	<i>Virginia Employment Commission Population Projections</i>
Pop. Proj.	38,305	41,300	44,500	46,500	

Year	2000	2010	2020	2030	<i>Trend Forecast at average annual rate of 2%</i>
Pop. Proj.	38,305	46,700	56,900	69,400	

Accomack County has prepared the following revised forecasts based on the County's corrected estimate for the year 2000 population total.

Population Forecast based on recent "trend" rate:

Year	2000	2010	2020	2030	<i>Revised Trend Forecast at average annual rate of 0.8%</i>
Pop. Proj.	34,488	37,350	40,446	43,800	

Population Forecast based on "trend plus" rate (similar to overall statewide average):

Year	2000	2010	2020	2030	<i>Revised "Trend Plus" Forecast at average annual rate of 1.4%</i>
Pop. Proj.	34,488	39,630	45,540	52,300	

Land Use

Accomack County contains approximately 602 square miles of land and water reaching out to Tangier and Smith Islands to the west, to the Atlantic Ocean to the east, the Maryland state line to the north, and the Northampton County line to the south. The area directly affected by this plan is the upland area of the county and the tidal lands immediately adjacent to the upland. This area is approximately 476 square miles and can be subdivided into three basic geographic features; mainland, marsh and barrier islands. According to a survey conducted by the Accomack-Northampton Planning District Commission in 1989, land use in Accomack County was 5.8% residential, 0.2% commercial, 1% industrial (includes Wallops Flight Facility), 36.8% cropland, 42.5% woodland, 13.4% parks, conservation or vacant land, and 0.3% institutional. 1996 satellite land use imagery shows that less than 2% of the county is developed, 35% is crop and field, 39% is wooded, and 24% wetlands. The following is an analysis of recent change and trends.

Overall Land Use Pattern: As noted below, Accomack County's landscape consists mostly of farms, forests, and marshlands, interspersed with towns, villages and hamlets. The County's traditional land use pattern continues to provide the basic framework for human settlement, although in recent years, transportation and communication technologies have allowed people to settle in more dispersed patterns, on relatively isolated rural lots, rather than in compact villages and hamlets. Alternatives to the dispersed development patterns are addressed in Chapter 4.

Cropland: Agriculture is the dominant land use in Accomack County. According to the 1992 Census of Agriculture, there were 279 farms in Accomack County, covering 91,568 acres of land, 69,420 acres of which was harvested cropland. This compares to 318 farms, 91,056 total acres and 70,096 acres of cropland in 2002 (the date of the most recent Agricultural Census). The average farm size was 328 acres in 1997, compared to 286 acres in 2002. Total cropland in Accomack County decreased by 1,711 acres between 1987 and 1992 (from 74,134 acres to 72,423 acres), but increased to 73,294 by 2002. In summary, the average size of farms decreased but the number of farms increased and the amount of land in production has remained largely stable. This is a common general trend that can be observed in many growing areas in Virginia, although it is opposite of the overall statewide trend.

In 1997, the county had approximately 82,851 acres of land in 22 Agricultural and Forestal Districts. In 2007, there were approximately 80,215 acres of land in the 22 Agricultural and Forestal Districts, nearly a 2.8 percent decrease. These districts were created in recognition of their economic, ecological, and aesthetic value. Among the benefits to landowners is that land within these districts is protected by Right to Farm legislation from local regulations that would interfere with farm operation. The reduction in Agricultural and Forestal District acreage from 1997 to 2007 reflects the removal of land from districts at the owner's request, due to no longer meeting minimum area requirements or for residential subdivisions and other land development.

Farms in Accomack County

Source: U.S. Census of Agriculture

	Farms (number)	Land in Farms (acres)	Harvested Cropland (acres)	Average Farm Size (acres)
1992	279	91,568	69,420	328
1997	268	92,452	71,493	345
2002	318	91,056	70,096	286

Poultry Operations: Accomack County ranks third among jurisdictions in Virginia in broiler chicken production (2002). There are a significant number of poultry operations in Accomack County and additional poultry houses are being built each year. Permits were issued for 43 poultry houses from 2001 through 2007. These growers supply the Tysons and Perdue poultry processing plants. Poultry houses are an intensive form of livestock production that involves certain land use considerations. Odors, noise, light, and hours of operation at poultry houses may conflict with surrounding uses.

Forested Land: According to the USDA-Forest Service, in 1991 there were about 94,507 acres of forest in Accomack County. In 2001, the Forest Service estimated that the acreage had increased to 128,033 acres. The forested land consists of approximately 64,598 acres of loblolly pine, 33,049 acres of loblolly/hardwood, 11,845 acres of sweet gum/yellow poplar, 11,858 acres of mixed hardwood, and 6,694 acres of swamp chestnut oak/cherrybark oak. Of the total forest acreage, there are 51,454 acres of large diameter, 41,791 acres of medium diameter, and 34,788 acres of small diameter trees.

Trend in forested acres, Accomack County

Source: USDA-Forest Service

Year	Acres
1956	111,300
1965	103,300
1976	114,092
1986	102,592
1991	94,507
2001	128,033

Construction Starts, 1990-2006

Source: Accomack County Building Permits (categories combined)

Year	Res.	Com.
1990	253	21
1991	265	6
1992	316	10
1993	275	15
1994	316	15
1995	335	10
1996	292	15
1997	252	15
1998	285	10
1999	323	19
2000	308	11
2001	306	7
2002	322	14
2003	374	4
2004	344	13
2005	433	4
2006	319	11
Total	5,318	200

Res. = Number of permits issued for new frame construction or manufactured housing,

Com. = Number of permits issued for new commercial structures.

Residential Development: During the seven-year period from 1990 through 1996, 392 subdivision lots were recorded and 2,052 new residential structures (conventional and modular) created. Housing starts represented about a 2% annual increase in housing units, a 10% increase since the 1990 census.

Year	1990	1991	1992	1993	1994	1995	1996	Total	<i>Subdivision of Land, 1990-1996</i>
New subdivisions	1	2	4	5	0	6	4	18	Source: Accomack County
Number of lots	30	30	126	59	0	81	32	326	subdivision approvals

During the four year period from 1997 through 2000, 200 lots in 22 subdivisions were recorded, an average of 50 lots per year. In contrast, during the five-year period from 2001 through 2005, 60 subdivisions with 407 lots were recorded (many of the divisions were two, three, and four lot subdivisions) and 2,087 new residential structures created (conventional, manufactured, and modular), an average of 81 lots per year. From January 2005 through August 2007, 63 major subdivision applications were submitted with a total of 2,174 lots on 3,900 acres. To date, 14 of these subdivisions received final approval and have been recorded, with a total of 452 lots on 984 acres. These 2005-2007 subdivision application figures do not include new minor subdivisions or new family subdivisions. In April 2007, a GIS analysis of unimproved parcels in Accomack County estimated that there are approximately 8,831 small unimproved non-wetland parcels outside of incorporated towns ranging in size from 1,000 square feet to two acres. Housing starts represent about a 2.0% average annual increase in occupied year-round housing units, the same as the 2% annual increase in the seven years prior to the initial adoption of this Comprehensive Plan.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total	<i>Subdivision of Land, 1997-2005</i>
New subdivisions	5	2	7	8	5	9	14	20	12	82	Source: Accomack County
Number of lots	46	13	91	50	63	30	68	147	99	607	subdivision approvals

Zoning Capacity for Future Development

Existing zoning classifications and future development capacity are major considerations for understanding the potential development that will affect all of the county's resources and systems: farmland, forests and vegetative cover, wildlife habitat, groundwater, transportation safety and capacity, emergency services, schools, etc. U.S. Census data, zoning classifications, and existing traffic data provide important points of reference for future decisions about the County's transportation and land use planning and management.

The 2000 U.S. Census reported that Accomack County had a population of 38,305. There were a total of 19,550 housing units in 2000, with 16,965 year-round units and 2,585 seasonal housing units. This is a ratio of over 6:1 year-round units to seasonal units. The average number of persons per year-round household was 2.5. These numbers will be used to estimate future development and traffic under different population scenarios.

The following *Zoning Map* shows the location of the current Accomack County zoning classifications. As the map indicates, Accomack County's predominant zoning category is Agricultural, with many smaller clusters of residential zoning.

During 2006, the County conducted a “build-out” analysis of what the original Agricultural Zoning District would allow if all of the maximum amount of residential structures permitted by the zoning were to actually be built. The results of this analysis are shown in the following table.

Buildout Analysis of Original and Alternative Agricultural Zoning Regulations - 2006

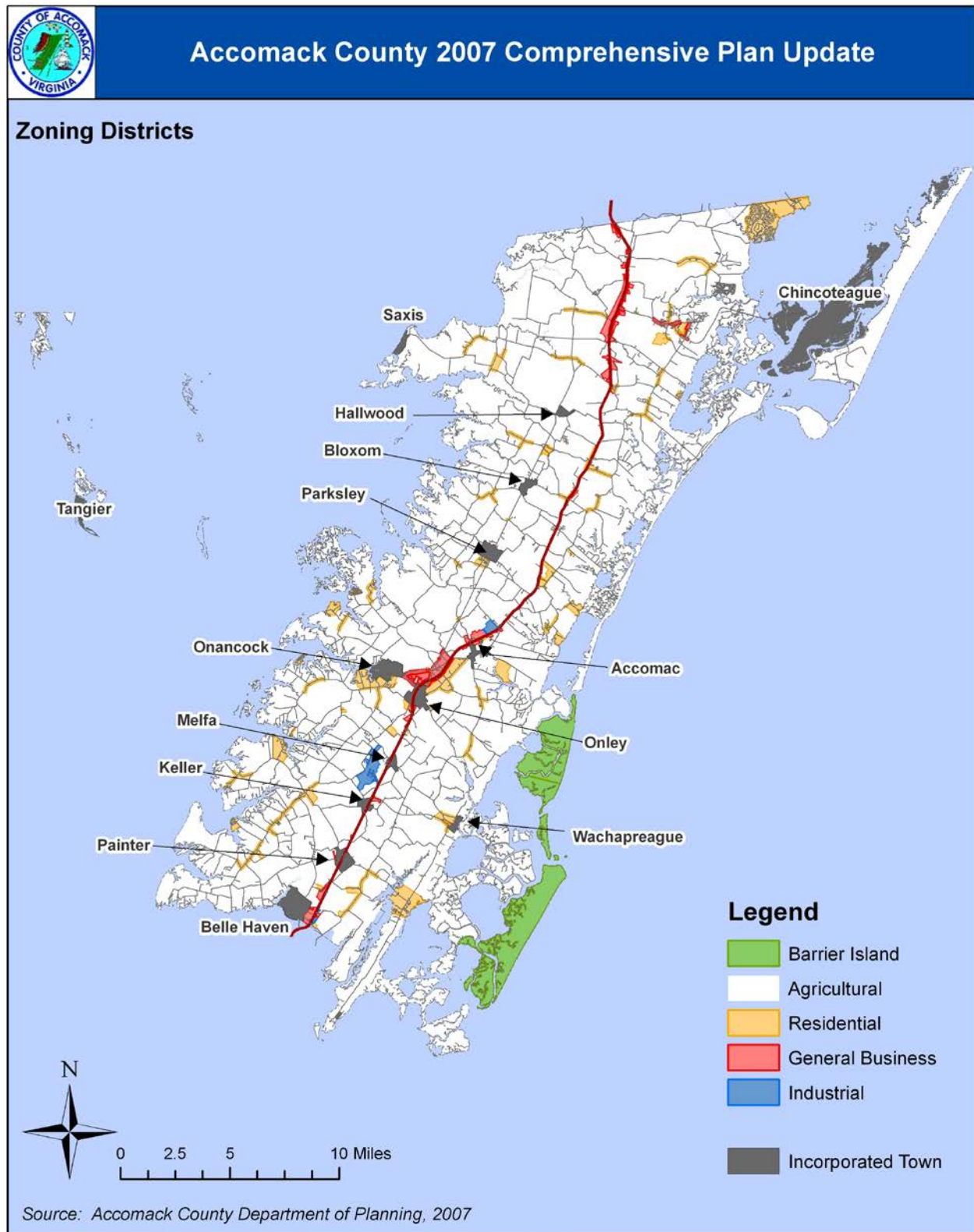
Alternative Scenarios Tested*	Total Dwelling Units at Full Build-out
1. Original A District Opt. 1 (No Constraints) Assumes no constraints other than original A District zoning regulations, with 30,000 square-foot minimum lot size.	159,666
2. Original A District Opt. 2 (Soil Constraints) Assumes soil constraints and original A District zoning regulations, with 30,000 square-foot minimum lot size.	114,168
3. Alternative Zoning Regulations Opt. 1 Assumes no development on wetlands and density of one dwelling per 10 acres plus 2 bonus lots for clustering.	27,171
4. Alternative Zoning Regulations Opt. 2 Assumes no development on wetlands, consideration of soil limitations, and density of one dwelling per 10 acres plus 2 bonus lots for clustering.	23,036

**Assumptions and process for all scenarios:*

Non-Tidal (Developable) Parcels created for the study as follows:

- Exclude non-Ag zoning (Commercial, Industrial, Residential, Towns)
- Exclude all Federal, State, TNC, Conservation, lands and easements (including partial parcel easements of TNC)
- Exclude Flood areas zoned ‘VE’
- Exclude Tidal (Estuarine) Wetlands
- Exclude all Roads, Railroads and ROWs represented as parcel polygons
- Exclude all polygons less than 4,000 square feet and tiny polygon slivers created by the erase operations.
- If parcel has up to 20% Bojac soil, assume 50% developable; if up to 50% Bojac, assume 90% developable; if more than 50% Bojac, assume 100% developable.

Map 3-C

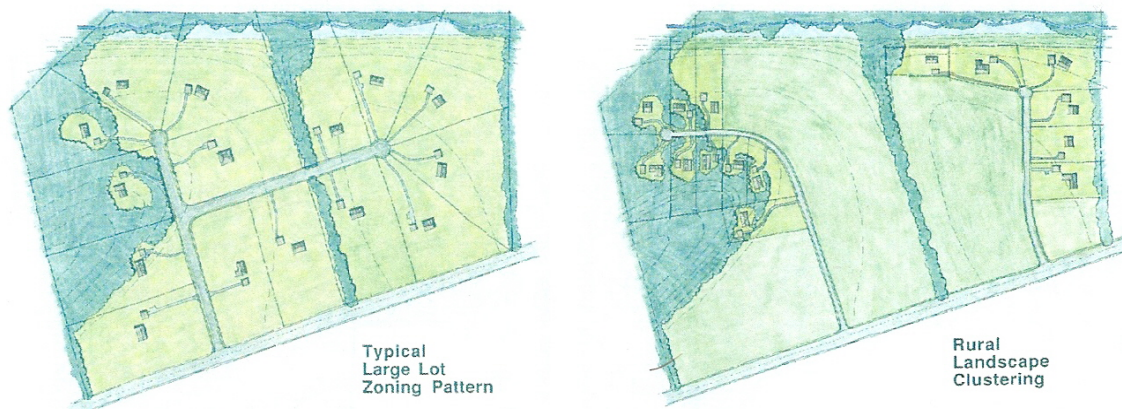


This analysis preceded final action by the Board of Supervisors in adopting amendments to the A District which increased the minimum lot size for non-cluster lots from 30,000 square feet to five acres, with provisions for clustering houses on 30,000 square-foot cluster lots and providing two bonus lots for choosing the cluster option. The approximate effect of a 5 acre minimum lot size would be to allow roughly twice as many lots as the 10 acre minimum scenario shown in the preceding table, plus a number of additional lots due to the bonus for clustering. Thus, the total yield for the new regulations is estimated to be on average about three acres per lot. The full build-out under the new A District zoning would therefore be expected to be approximately 50,000 lots.

Terminology

Note the difference between the terms “lot size” and “density”. *Density* refers to the total number of lots on a tract divided by the total area of the tract, which yields a measure of average “lots per acre”. The size of individual lots on that tract may vary from the average density because some lots could be smaller than average and others could be larger than average.

Also note the difference between “regular” or conventional lots and “cluster” lots. *Regular lots* are formed when a tract is divided into roughly uniform-sized lots of the minimum permitted lot size. *Cluster lots* are formed when the same number of lots are created, but each has a smaller area, so that they can be “clustered” onto a portion of the tract, leaving the remainder of the tract in open space or in lots that are larger than the average size. The following illustrations compare a conventional subdivision of “regular” five acre lots, with a clustered subdivision incorporating “cluster” lots.



Source: Herd Planning & Design, Ltd.

Residential Development and Ground Water Supply

The 1992 Eastern Shore of Virginia Ground Water Supply and Management Plan estimated that there are approximately 5.5 to 22 million gallons per day (MGD) of ground water available from the Eastern Shore of Virginia's confined aquifers. An average estimate is 11 MGD. In 1988, public, industrial, commercial and agricultural users held withdrawal permits for approximately 15 MGD, although only 5 MGD was actually used.

Using a factor of 250 GPD per dwelling unit, or 100 GPD per person at 2.5 persons per household, the estimated ground water use for Accomack County's 16,965 year-round units is approximately 4,241,250 GPD. If the County's original Agricultural Zoning District had remained in place, at full build-out of 160,000 year-round dwelling units, ground water use from residential uses alone would be approximately 40,000,000 GPD. A simple rule of thumb for ground water use is: 4,000 units using 250 GPD equals 1,000,000 GPD.

As daily use approaches 40 million GPD, total withdrawal becomes a serious issue, in terms of the finite capacity of the groundwater aquifers. Despite this long term concern, a more immediate concern is the risk of saltwater intrusion as the aquifers are depleted. This is already occurring in some areas along the shorelines of the County.

Further, it is reasonable to assume that in the future, Accomack will use an increasing proportion of the total groundwater used on Virginia's Eastern Shore, because it has a larger population than Northampton County and is likely to grow faster in absolute terms. Accomack County's current population is about three times that of Northampton County,

The following table shows expected groundwater use for existing and future residential development in Accomack County, using the very conservative assumption that its proportion of total groundwater use remains constant in relation to Northampton County.

Estimate of Future Groundwater Needs for Residential Uses

Average Daily Groundwater Use ¹ (1,000's GPD)	Year							
	2000	2010	2020	2030	2040	2050	2060	2070
Total Groundwater Recharge for Eastern Shore	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000
Total Groundwater Available for Accomack Co.²	8,250	8,250	8,250	8,250	8,250	8,250	8,250	8,250
Alternative Scenario 1:								
Total Year Round Dwellings	13,024	13,940	14,620	15,810	17,000	18,820	19,210	28,662
Daily Residential Water Use in Accomack County with VEC growth forecast	3,256	3,485	3,655	3,953	4,250	4,705	4,803	7,266
Remaining Groundwater Recharge	4,994	4,765	4,595	4,297	4,000	3,545	3,447	984
Alternative Scenario 2:								
Total Year Round Dwellings	13,024	15,878	19,346	23,596	28,764	35,020	42,500	52,020
Daily Residential Water Use in Accomack County at Trend growth rate³	3,256	3,970	4,867	5,899	7,191	8,755	10,625	13,005
Remaining Groundwater Recharge	4,994	4,280	3,383	2,351	1,059	-505	-2,375	-4,755

¹Total year-round residential dwelling use only; assumes 250 gpd per unit; does not include public, agricultural, commercial and industrial uses. Agricultural, commercial and industrial uses have permits allowing for the total withdrawal of approximately 4,986,525 gallons per day.

²Assumes ¾ of Eastern Shore capacity is used in Accomack

³Assumes an average annual growth rate of 2% after 2030.

The above analysis clearly demonstrates that prior to amending the A District regulations from the 30,000 square-foot minimum lot size to a 5 acre density, the County had too much zoning capacity for residential development in relation to the groundwater supply, both in terms of recharge and in terms of total capacity. The problem can be summarized as follows:

- If, on the one hand, the County's population were to grow at the rate forecast by VEC, individual residential users would not withdraw groundwater at a rate that exceeds the rate of recharge for the next 50 years and beyond, even though the remaining zoning capacity at that time will still be far in excess of what is needed.

- Yet, on the other hand, if the County's population growth rate were to continue at the current trend, the resulting amount of development would exceed the recharge rate before 2050, potentially causing serious environmental, economic, and/or financial problems in the County. (Note that these estimates of future recharge rates only consider individual residential users, and do not include public, agricultural, industrial or commercial users, which may in fact, require far more groundwater use than individual residential users. When existing 2007 agricultural, industrial, and commercial permits are considered, approximately 5 million GPD, Accomack County's remaining recharge capacity is very limited.)

This shows that in either case, the previous zoning capacity for residential development was excessive, and by amending the A District density provisions as it did in June, 2006, the County has taken an important step in protecting the groundwater supply in the long term.

Despite this action, however, saltwater intrusion problems are likely to continue to worsen in the near term, especially in vulnerable areas near the shorelines. Further, total groundwater supply is still a potential long-term problem that needs to be monitored, and saltwater intrusion is a current, immediate problem.

Therefore, the County's planning strategy must remain aimed at avoiding over-committing a supply of land far in excess of what is needed or what can be supported by the groundwater supply. Rather, the zoning capacity should be kept in reasonable balance in relation to the need for residential development so that the County can better predict the location and patterns of residential uses, and can plan accurately for providing services to the new residents. In that way, the County can gradually upgrade all of its infrastructure capacities to serve the growing population.

Commercial/Industrial: Commercial construction activity has been fairly slow but steady, with 77 new commercial, retail, or professional buildings constructed during the six years prior to 1997, and 76 permits from 1997 through 2002. From 2003 through 2006 there were 37 new commercial/industrial structures. The most sizable commercial construction projects were a hatchery expansion at the Tysons poultry processing plant and three new starts in the industrial park. The county has a 360 acre industrial park, located adjacent to the county's airport in Melfa. One hundred and twenty acres of the park are improved with streets, water and sewer. The industrial park currently houses the Eastern Shore Chamber of Commerce, a manufacturer of housing components, a manufacturer of aircraft components, a manufacturer of computer components, a specialty foods distributor, and an underground utilities contractor. The proposed Wal-Mart store in Onley, planned for construction in 2008, will add over 150,000 square feet of retail space.

Conservation: As of 2007, a fairly large portion of Accomack County was in conservation ownership, as shown on Map 3-D, *Publicly Owned Conservation Lands*. 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. The federal government owns 9,459 acres on Assateague Island, 550 acres on Chincoteague Island, 1,434 acres on Assawoman Island, 174 acres on Metompkin Island, 1,250 acres on Cedar Island, and 3,376 acres on Wallops Island (3,000 acres owned by NASA). The Commonwealth of Virginia owns 750 acres of Parkers Marsh, 5,574 acres of Saxis Marsh, 425 acres at the Mutton Hunk Fen, and 19,491 acres of marshland on the Seaside.

In 2007 there were 11,002 acres of land under conservation easements, as shown on Map 3-E, *Conservation Easements*.

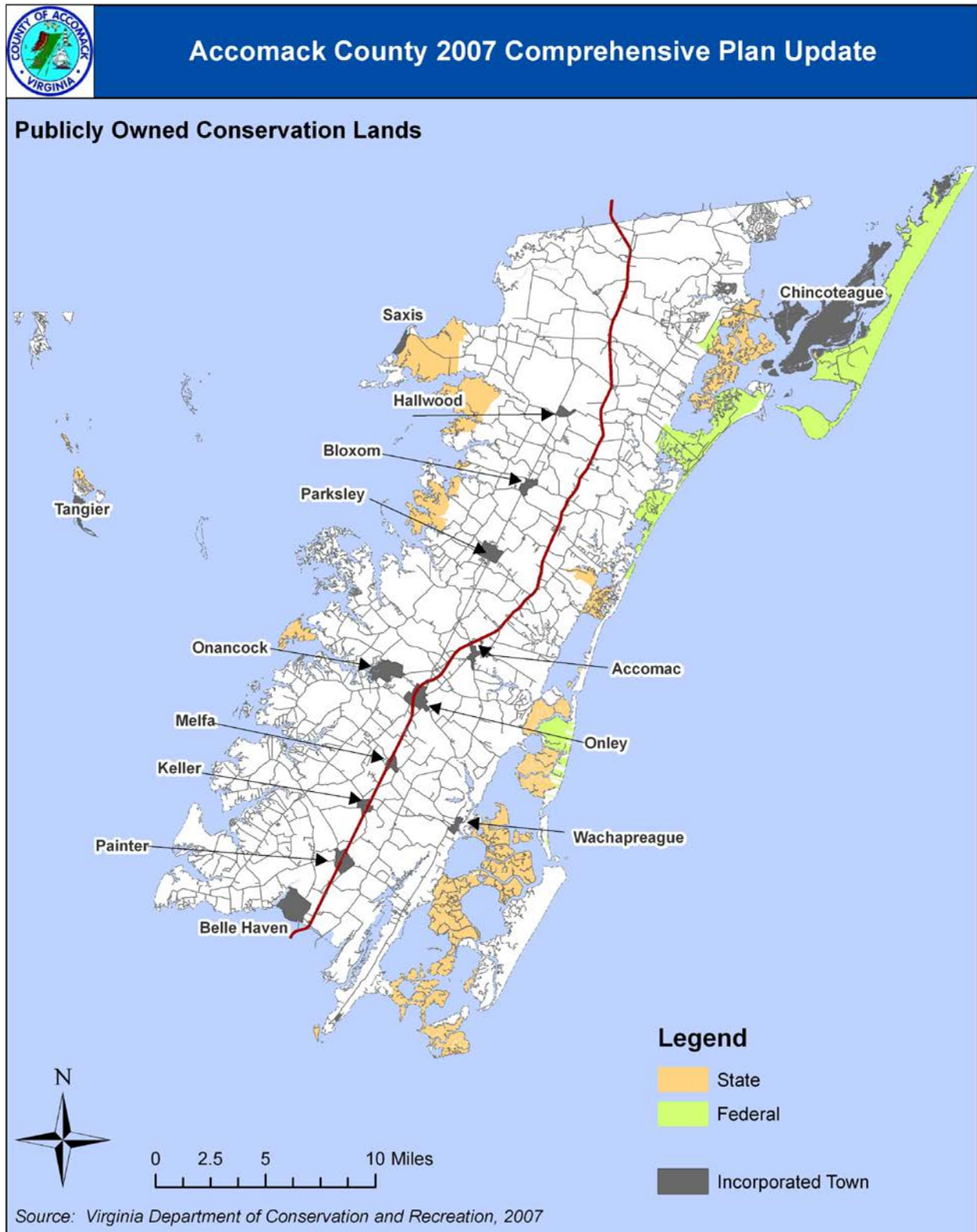
Accomack County Land in Conservation Ownership

Source: Accomack County Office of the Tax (1996)

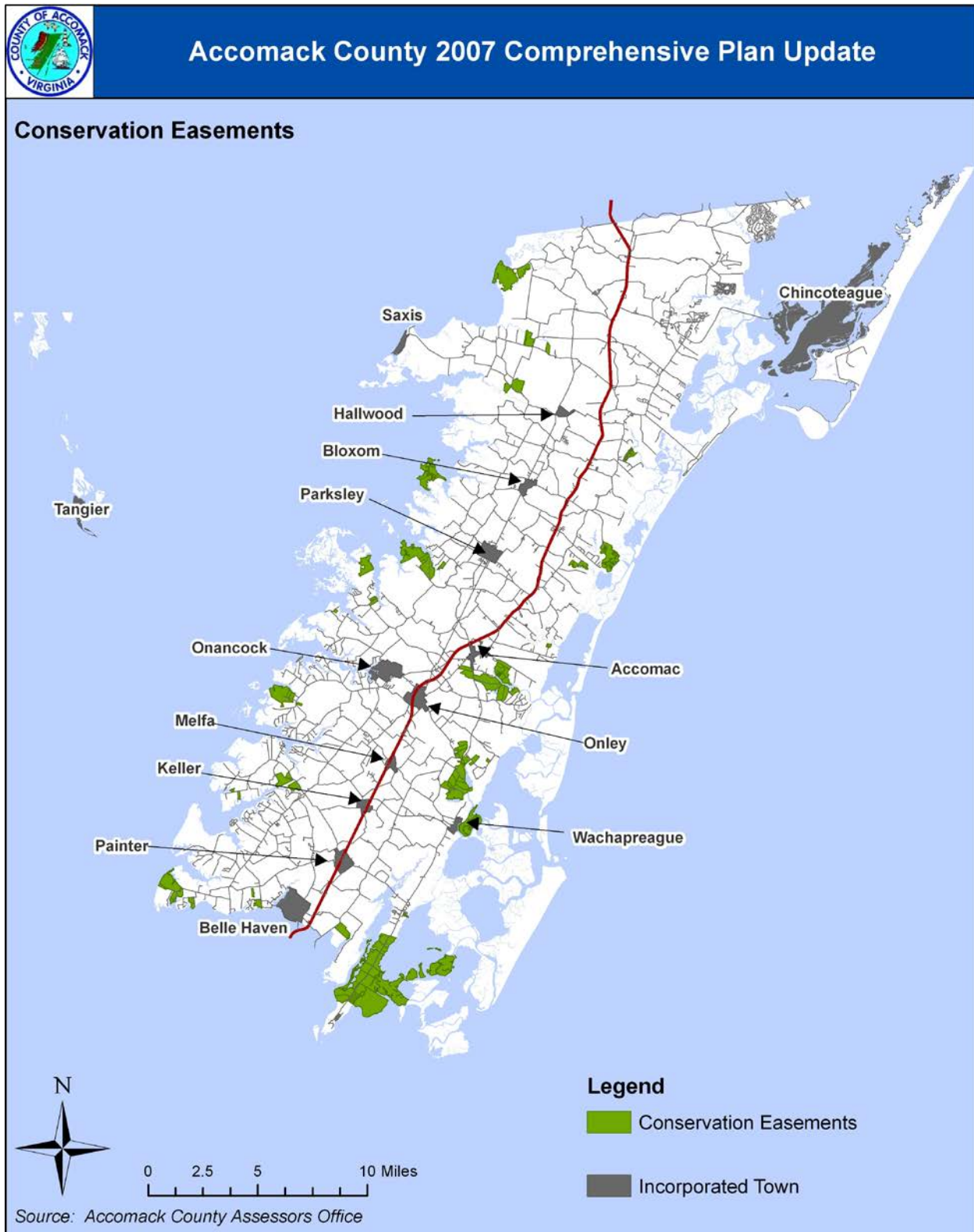
Management	Location	Acreage
USFWS	Assateague	7,465
USFWS	Chincoteague	550
USFWS	Wallops	1,284
USFWS	Assawoman Island.....	1,434
USFWS	Metompkin Island.....	174
USFWS	Cedar Island	1,250
VA DCR.....	Parker's Marsh	750
VA DCR.....	Mutton Hunk Fen.....	425
VA DGIF	Saxis Marsh	6,177
VA DCR.....	Seaside Marsh	19,491
TNC	Parramore & Revel Islands	7,692
CBF	Fox Island	500
CBF	South Point Marsh	437
Total		47,272

USFWS=U.S. Fish & Wildlife Service, VA DCR= Virginia Department of Conservation and Recreation, VA DGIF=Virginia Department of Game & Inland Fisheries, TNC=The Nature Conservancy, CBF=Chesapeake Bay Foundation.

Map 3-D



Map 3-E



Housing

Existing Housing Stock: According to the 1990 census, there were 15,840 housing units in Accomack County, and 12,653 of those units were occupied at the time of that census. Since then the number of housing units has increased to 19,550, with 15,229 occupied, according to the 2000 census. Of the existing housing stock, 19.2% were built between 1990 and March of 2000, 16.7% were built between 1980 and 1989, 26.7% built between 1960 and 1979, 17.6% built between 1940 and 1959, and 20.2% built prior to 1940. Detached single unit homes were the predominant housing type (13,724). There were 3,208 mobile home or trailer units, comprising 25% of the existing housing stock. There were 611 multi-unit homes in Accomack County in 1990. Population per household has remained steady at 2.5 per occupied dwelling. The following data from the 1990 and 2000 censuses shows these changes and trends.

Housing Characteristics

Source: U. S. Census

Characteristic	1990	2000
Total housing units	15,840	19,550 (23% increase)
Occupied housing units	12,653 (79.8%)	15,299 (78.3%)
Owner-occupied housing units	11,848 (74.8%)	11,482 (75.1%)
Renter-occupied housing units	4,815 (30.4%)	3,817 (24.9%)
Vacant housing units	3,187 (20%)	4,251 (21.7%)
Mobile home	3,208 (25%)	4,512 (23.1%)
Age (more than 30 years old)	7,445 (47%)	9,462 (48%)
(less than 10 years old)	2,851 (18%)	3,910 (20%)

Housing Costs: The median value of owner-occupied housing in Accomack County increased significantly between 1980 and 1990, and again between 1990 and 2000. According to the U.S. Census Bureau, the median value in 1980 was \$26,700, \$52,700 in 1990 and \$79,300 in 2000. This increase could be due in part to the higher value of new houses constructed in the 1980s and 1990s.

The median selected monthly ownership costs (mortgage payments, real estate taxes, hazard insurance, utilities and fuels) increased from \$552 a month for homeowners with a mortgage in 1990, to \$750 a month in 2000. For homeowners with no mortgage, ownership costs increased from \$183 a month in 1990 to \$240 in 2000. The median rent for housing in Accomack County was \$335 in 1990 and \$446 in 2000.

The Accomack-Northampton Regional Housing Authority administers the Section 8 Rental Assistance Program to help lower income people obtain adequate housing. This program is funded with federal and county funds. Under the rental assistance program, participants pay up to 30% of their income towards rent and the program pays the remainder, up to the fair market rental price. In 1996 there were 133 families participating in the rental assistance program in Accomack County. In 2007, 482 families were participating, a 362 percent increase from 1996.

Substandard Housing: The following table compares 1990 data to 2000 data.

According to the 1990 Census, 7.5% of the county's housing units lacked complete plumbing facilities, 4.9% lacked complete kitchen facilities, and 6.9% had neither a septic system nor public sewer hook-ups. The 2000 Census reported that 2.9% of the county's housing units lacked complete plumbing facilities, 2.4% lacked complete kitchen facilities. Although the Health Department will allow for replacement of existing privies, the county's building code will not allow new homes to be constructed without indoor plumbing.

Housing Conditions

Source: U. S. Census

Condition	1990		2000	
Lack complete plumbing	1,188	7.5%	404	(2.6%)
Lacking complete kitchen facil.	776	4.9%	248	(2.4%)
No telephone	4,815	(30.4%)	649	(4.2%)

Over the last 30 years, both the number of vacant housing units and the number of occupied housing units have increased, suggesting that some of the county's older housing is being abandoned. Through a combination of attrition and rehabilitation, substandard housing in Accomack County is diminishing.

The Accomack-Northampton Housing and Redevelopment Corporation rehabilitated over 100 units of substandard housing between 1990 and 1996, and rehabilitated or constructed an additional 504 units from 1997 through 2007. The Accomack-Northampton Housing and Redevelopment Corporation, Accomack-Northampton Regional Housing Authority, Virginia Eastern Shore Economic Empowerment and Housing Corporation, Eastern Shore Area Agency on Aging, and Habitat for Humanity offer housing rehabilitation services.

In 1994, the Accomack County Board of Supervisors identified the communities of Savagetown, Locust Mount, Metompskin, and Graysville as priorities for housing rehabilitation assistance. At that time, the Board of Supervisors requested that the Accomack-Northampton Planning District Commission and the Accomack-Northampton Housing and Redevelopment Corporation explore sources of Federal and State funding that could address the needs of these communities. Since 1994, housing rehabilitation programs have been completed in three of these four communities, with the exception of Graysville. In 2007, the Accomack Manor Senior Housing Project was completed as a public/private partnership using partial funding from the Virginia Community Development Block Grant Program. Accomack County's current rehabilitation priorities are the communities of Savagetown/Cats Bridge, Locust Mount, Metompskin, Accomack Manor, Graysville, Wishart's Point, East Horntown, and Gospel Temple Road.

Housing Units Authorized by Permits

Source: Accomack County Building Permits

Year	Units
1990	253
1991	265
1992	316
1993	275
1994	316
1995	335
1996	292
1997	252
1998.....	285
1999.....	323
2000.....	308
2001.....	306
2002.....	322
2003.....	374
2004.....	374
2005.....	433
2006.....	319

Manufactured Housing: The Virginia General Assembly passed legislation during their 1995 session which severely limits the county's control over manufactured housing. This legislation, effective as of July 1, 1995, allows any manufactured home which has a HUD approval sticker to be placed, by right, in an Agricultural zoning district. These homes may have been manufactured as early as 1976, when the HUD labeling program started. Prior to the effective date of this legislation, Accomack County allowed double-wide manufactured homes and single-wide manufactured homes with A-frame roofs, house type siding, and a masonry foundation, by right in both Agricultural and Residential zoning districts. Older manufactured homes required a special use permit from the Board of Zoning Appeals. This legislation has a particular impact on Accomack County due to the fact the 93% of the county is currently zoned as Agricultural.

Regional Housing Assessment: In 2002, the Accomack-Northampton Planning District Commission completed the *Regional Housing Assessment* in cooperation with Accomack and Northampton counties. The report analyzes the Eastern Shore's multi-faceted housing market, which ranges from gated communities to homes without indoor plumbing. The Eastern Shore's middle and upper income segments of the housing market are quite healthy, but is underserved regarding condominiums, upscale apartments, independent living, assisted living, and nursing homes. For the lower income segment, housing is a symptom of underlying socioeconomic conditions, and 26 percent of the Eastern Shore's households have housing problems that include cost burdens, overcrowding, and substandard conditions. The inability to pay rent leads to credit problems, which inhibits the upward mobility of rented households to homeownership. Low household incomes on the Eastern Shore can be traced to lower educational attainment, fewer job options, and a chronic history of poverty and unemployment.

The report stresses the need for central water and sewer to provide small, affordable lots and higher density housing, as well as the need for additional rental housing for those who simply cannot qualify for mortgages. The report outlines nine strategies with goals and actions to increase rental housing; promote home ownership; provide housing for the homeless, persons with disabilities, and migrant workers; revitalize neighborhoods; improve credit and capital; provide counseling and support services; and develop infrastructure to enable housing on small, affordable lots.

The 2002 *Regional Housing Assessment* can be found on the A-NPDC web site at:
<http://www.a-npdc.org/housEXECSUMM.pdf>

The Economy

The Local Economy: Accomack County's economy is based primarily on agriculture, manufacturing, services and public administration. The county's major industries are two poultry processing plants operated by Perdue and Tyson. These two plants combined account for approximately one quarter of the jobs in Accomack County. The NASA Wallops Flight Facility and related services also account for a large portion of the local economy. The Flight Facility and related contractors provide approximately 1,000 jobs.

Largest Employers in Accomack County

Source: Virginia Employment Commission (October 4, 2007)

Industry	Type
Perdue Products.	Poultry Processing
Tyson Farms.	Poultry Processing
Accomack County School Board	Local Government
County of Accomack	Local Government
NASA	Federal Agency
Eastern Shore Community Services	Alcohol and Drug Abuse Information and Treatment
Shore Memorial Hospital	Hospital
Byrd Food	
The Cube Corporation	NASA Contractor
Intrepid USA Inc.	Healthcare Services
Eastern Shore Community College	
Lockheed Martin Service Inc.	
EG & G. Inc	
Food Lion	
Eastern Shore Ambulance	

Traditional Industries: Agriculture and seafood production are the Eastern Shore's traditional industries. The waters of the Atlantic Ocean and Chesapeake Bay support the local seafood industry and create a warming effect on the area's climate, providing a long growing season for agriculture. As a result of these conditions, Accomack County ranked third among Virginia localities in total value of agricultural products sold in 2002, and ranked first in Virginia in vegetable production.

According to the 2002 Census of Agriculture, the market value of agricultural products sold in Accomack County was \$109,133,000. Total farm production expenses were \$80,600,000. The average net return per farm was \$94,546. A decade earlier, in 1997, the market value of agricultural products sold in Accomack County was \$71,806,000. Total farm production expenses were

\$56,811,000. The average net return per farm was \$50,292.

The county's proximity to major markets makes the area suitable for production of market crops, thus the state's investment of \$2.3 million in the construction of the Eastern Shore Farmers Market to promote the distribution of Eastern Shore produce.

Forestry: Accomack County's forests are an important economic asset to both the owners of the forests and those that work in the wood products industry. Wood products that area produced by the county's forests include saw logs, poles and pilings, and pulpwood. The fact that loblolly pine is the most preferred species for salt treated lumber makes it a resource of considerable economic importance. Secondary products that are produced as a result of the harvesting process include firewood, bark (for mulch), and sawdust. Virginia Department of Agriculture statistics indicate that timber is the second most valuable agricultural crop in Virginia, ahead of field crops, vegetables, and tobacco, with only poultry and egg crops having a higher market value. Forest related employment in Accomack County consists of jobs in timber harvesting, sawmilling, trucking, firewood production, forest management and consulting, timber stand improvement, and reforestation.

The value of timber has increased steadily since the 1970's and timber demand is projected to increase into the 21st century. These trends should provide incentive for land owners to keep land in forests rather than converting it to a different land use. Economic benefits can be increased through better utilization of the forest resource at the time of harvest. Improved management techniques can shorten the amount of time of harvest. Improved management techniques can shorten the amount of time it takes to grow valuable sawtimber from 55-70 years to 35-45 years.

Agricultural Promotion: In 2006 Virginia Tech prepared a report on *Recommendations for Creation of a Plan to Promote the Agriculture Industry in Accomack County, Virginia*. The report analyzes Accomack County agricultural and land use data and identifies the following four strategies and 16 recommendations to improve Accomack's agricultural economy:

Strategy 1: Land Conservation

1. Maintain use-value assessment within the county.
2. Reinvigorate Agricultural and Forestal Districts within the County.
3. Initiate a purchase of development rights (PDR) program within the county.
4. Implement an agricultural protection lease agreement program within the county.

Strategy 2: Better Ways to Accommodate Development

5. Amend the existing agricultural zoning ordinance to provide more incentives for clustering.
6. Implement incentive zoning within the county.
7. Add a Planned Unit Development (PUD) classification to the county zoning ordinance.
8. Consider a Transfer of Development Rights (TDR) Program.
9. Establish Urban Service Areas (USAs) within the county.
10. Institute maximum residential lot sizes within the agriculturally zoned areas of the county.

Strategy 3: Education

11. Work with Virginia Cooperative Extension to implement programs to educate the non-farm community within the county on agricultural issues.

12. Clearly communicate support of agricultural education programs in public schools and youth programs.
13. Collaborate with Virginia Cooperative Extension to educate county residents on smart growth techniques.

Strategy 4: Economic Development for Agriculture

14. Institute an Agriculture Industry Council
15. Establish a staff position within the county with the title Director of Agriculture Development [Promotion of the agricultural industry will be the responsibility of the Director of Economic Development – see policy 8-i]
16. Conduct a review of the present agricultural zoning ordinance to ensure that appropriate commercial activities are allowed.

Tourism: Virginia's Eastern Shore Tourism Commission currently promotes the Shore as a tourist destination. Traditionally, tourism in Accomack County has been focused primarily on the county's natural assets, such as the Chincoteague ponies, Assateague Beach, camping, fishing, and hunting. In recent years there has been a new focus on other activities such as bicycling, kayaking, bird watching, local art and crafts, specialty shops, seasonal festivals, and historic towns. The Eastern Shore hosts an annual Birding Festival to promote nature tourism and regular bike tour weekends are being scheduled. Tourism is a vital part of the economy and is the growing industry. In 2005, Virginia's Eastern Shore Tourism Commission developed the *Virginia's Eastern Shore Tourism Strategy*, which calls for Accomack and Northampton counties and their towns to work together to "brand" the Eastern Shore for tourism. Further information on local tourism can be found on the Virginia's Eastern Shore Tourism Commission web site at: <http://www.esvatourism.org/home.asp>

Taxes: Accomack County's real property tax rate in 1997 was \$0.62 per \$100 of value for real estate and \$3.22 per \$100 of value for personal property. In 2005, the real property tax rate was \$0.57 and the personal property rate varied among the districts, ranging from \$3.13 to \$3.26.

Property Tax Rates, 1996, 2005

Source: 1996, 2006 Virginia Review of State and Local Government

	Real estate tax (per \$100 of value)		Personal property tax (per \$100 of value)		
	1996	2005	1996	2005 (nominal)	2005 (effective)
Accomack County.....	\$0.62.	\$0.57	\$3.22	\$3.13 to \$3.26	\$2.41 to \$2.51
Average for Va. Counties	\$0.69	\$0.69	\$3.38	n/a	n/a
Median for Va. Counties ..	\$0.66	\$0.67	\$3.50	n/a	\$2.50
Average for Va. Cities	\$1.04	\$0.98	\$3.83	n/a	n/a
Median for Va. Cities	\$1.11	\$0.98	\$4.20	n/a	\$2.61

Work Force: According to 2000 census data, there are 18,116 individuals in Accomack County's work force. Of these, 9,542 are male and 8,574 female. This shows an increase in the workforce in Accomack County by 3,180 individuals since the 1990 census. Twenty-eight percent of county residents have had some post-high school education, compared to the 25% in the 1990 census. Sixty-two and one half percent of county residents 18 years or older have a high school education or better. Approximately twenty-five percent of those 18 years or older have

had one or more years of post-high school education, 6.8% have a Bachelors degree from a four year college and 2% have graduate or professional degrees.

Employment: According to the 1990 census, 93% of the civilian work force in Accomack County is employed. The 2000 Census shows that the percentage of those employed in the work force has dropped to 92%. The county's unemployment rate has ranged from 4.4% to 8.1% over the last ten years. This rate has been about two points higher than the state average. Services and wholesale/retail trade are the largest employment sectors with each employing approximately one quarter of the working population. The table below breaks down employment by industry. Eighty-four percent of the county's employed residents work within Accomack County, 9% work outside of Virginia and 7% find employment in Virginia, but outside of Accomack County.

Employment by Sector, 2006

Source: Virginia Employment Commission
(some categories combined)

Sector	Employed		% of Total	
	1995	2006	1995	2006
Agriculture, forestry & fishing	397	278	3.7%	2%
Construction	564	672	5.3%	6%
Manufacturing	3,626	3,202	34.1%	26%
Transportation & public utilities	370	187	3.5%	2%
Wholesale trade	299	187	2.8%	2%
Retail trade	1,590	1,101	15.0%	9%
Finance, insurance & real estate	344	379	3.2%	3%
Services	3,013	3,548	28.4%	29%
Public administration [government].	415	2,595	3.9%	21%
Total	10,618	12,149	100%	100%

Unemployment Rates.

Source: Virginia Employment Commission and
E.S. of Virginia Economic Development Commission

	Accomack	Va.	U.S.
1985	7.8	5.6	7.2
1990	5.9	4.3	5.5
1995	8.1%	4.5	5.6
2000	3.9%	2.3%	4.0%
2005	4.4%	3.5%	5.1%

Income: The median household income in 1989, as reported in the 1990 census, was \$20,431. The 2000 census reported that median household income in 1999 had increased to \$30,250, with 1,353 families below poverty level (13%), and 6,788 individuals below (18%). Tables in this chapter show the distribution of household incomes in Accomack County.

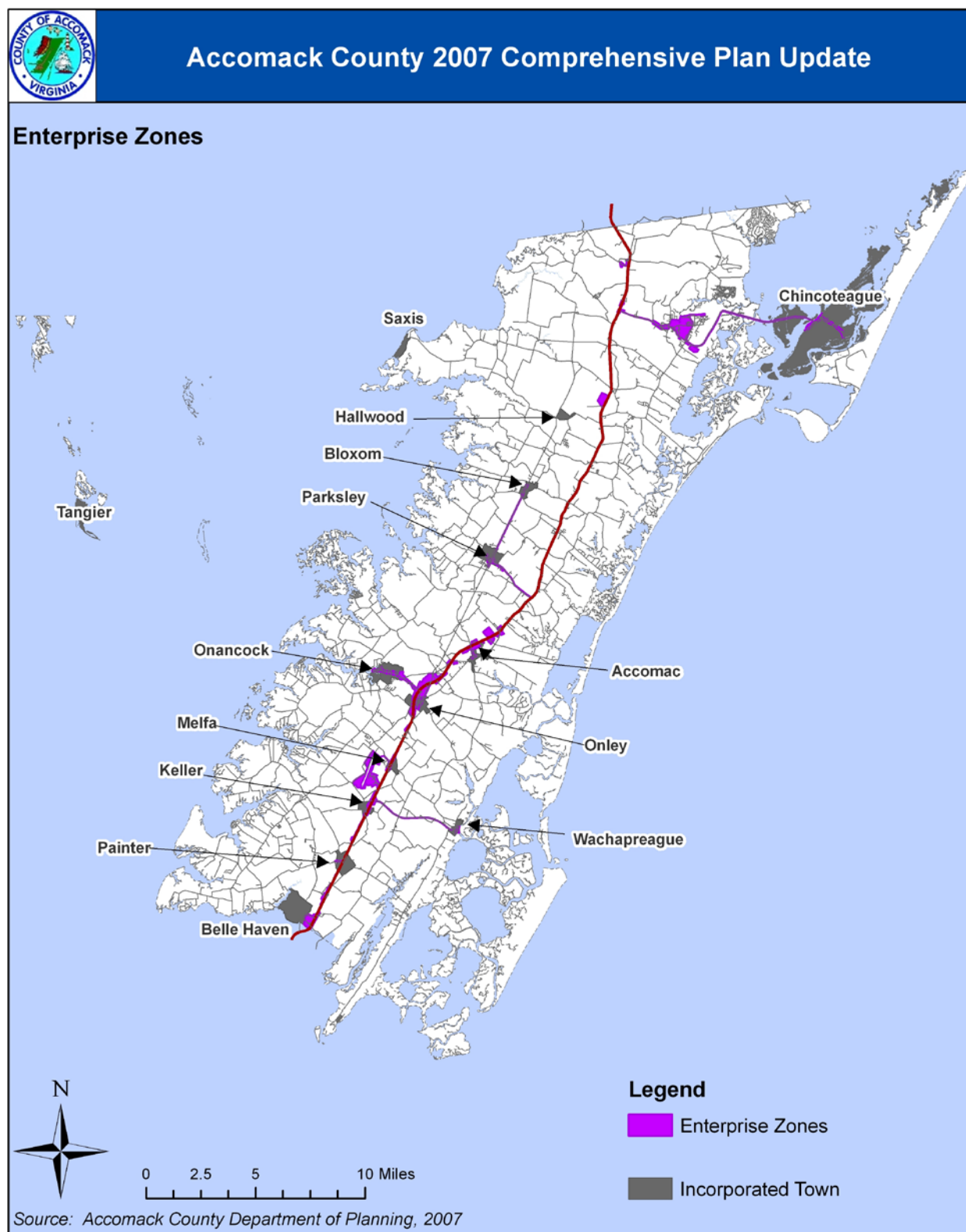
Economic Development: Accomack County actively promotes business development through

the recruitment of new industry, local business starts, and growth of existing business. Agencies involved in economic development for the county include the Eastern Shore Chamber of Commerce, the Eastern Shore Tourism Commission, and the Virginia Eastern Shore Economic Empowerment and Housing Corporation. Economic development activities include development of the Virginia Spaceflight Center, NASA Wallops Flight Facility, Mid-Atlantic Regional Spaceport, Wallops Research Park, Workforce Development Center, Broadband, Farmers Market and Airport Industrial Park, and the acquisition of Enterprise Community, Enterprise Zone, and Free Trade Zone designation for portions of the county.

Enterprise Community/Enterprise Zone Designation: In December of 1994, parts of Accomack and Northampton Counties were designation as a federal Enterprise Community and state Enterprise Zone. The Eastern Shore Enterprise Community is one of thirty rural Enterprise Communities nationwide.

The Enterprise Community designation is the result of the federal government's Empowerment Zones and Enterprise Communities Initiative to direct federal resources towards impoverished rural areas. The Enterprise Community Program, administered by the U.S. Department of Agriculture, provides successful applicants with \$3 million and special consideration for a variety of competitive federal loan, grant, and technical assistance programs for a period of ten years. The original zone boundaries were expanded in 1996 to include all of Northampton County and census tracts 9907 and 9908 in Accomack County. The Accomack County tracts cover an area from Onley south. Map 3-F shows the geographic extent of the Enterprise Zone designation.

Map 3-F



Household Income.

Source: 1990 Census; 2000 Census.

1989 Income	Households	1999 Income	Households	Percent
Less than \$5,000	1,355	Less than \$10,000	2,186	14.3
\$5,000 - \$9,999	1,582			
\$10,000 - \$12,499	935	\$10,000 - \$14,999	1,339	8.8
\$12,500 - \$14,499	762			
\$15,000 - \$17,499	806	\$15,000 - \$24,999	2,799	18.3
\$17,500 - \$19,999	759			
\$20,000 - \$22,499	720			
\$22,500 - \$24,999	673			
\$25,000 - \$27,499	713	\$25,000 - \$34,999	2,599	17.0
\$27,500 - \$29,999	497			
\$30,000 - \$32,499	579			
\$32,500 - \$34,999	437			
\$35,000 - \$37,499	393	\$35,000 - \$49,999	2,591	17.0
\$37,500 - \$39,999	307			
\$40,000 - \$42,499	320			
\$42,500 - \$44,999	183			
\$45,000 - \$47,499	200			
\$47,500 - \$49,999	193			
\$50,000 - \$54,999	366	\$50,000 - \$74,999	2,238	14.7
\$55,000 - \$59,999	139			
\$60,000 - \$74,999	353			
\$75,000 - \$99,999	227	\$75,000 - \$99,999	793	5.2
\$100,000 - \$124,999	48	\$100,000 - \$149,999	515	3.4
\$125,000 - \$149,999	24			
\$150,000 or more	75	\$150,000 - \$199,999	65	0.4
		\$200,000 or more	145	0.9

Employed civilian population 16 years and over

Source: 2000 Census.

Occupation	Number	Percent
Management, professional, and related occupations	4,026	24.2%
Service occupations	2,774	16.7%
Sales and office occupations	3,675	22.1%
Farming, fishing, and forestry occupations	982	5.9%
Construction, extraction, and maintenance occupations	1,835	11.0%
Production, transportation, and material moving occupations	3,326	20.0%
Total	16,618	100.0%

Industry	Number	Percent
Agriculture, forestry, fishing and hunting, and mining	1,050	6.3%
Construction	1,357	8.2%
Manufacturing	2,945	17.7%
Wholesale trade	697	4.2%
Retail trade	1,963	11.8%
Transportation and warehousing, and utilities	581	3.5%
Information	199	1.2%
Finance, insurance, real estate, and rental and leasing	702	4.2%
Professional, scientific, management, admin., and waste management services	940	5.7%
Educational, health and social services	2,696	16.2%
Arts, entertainment, recreation, accommodation and food services	1,567	9.4%
Other services (except public administration)	740	4.5%
Public administration	1,181	7.1%

Class of Worker	Number	Percent
Private wage and salary workers	11,945	71.9%
Government workers	3,029	18.2%
Self-employed workers in own not incorporated business	1,591	9.6%
Unpaid family workers	53	0.3%

The Virginia Eastern Shore Economic Empowerment and Housing Corporation (VESEHC) has been established to administer the Accomack-Northampton Enterprise Community program. VESEHC directs use of the federal funds in accordance with the strategic plan submitted to the U.S. Department of Agriculture during the application process. The strategic plan addresses economic development, education, community development, infrastructure, public safety, human services, and environmental protection.

The Enterprise Community operates under the following guiding principles:

(1) The community will use the federal investment in combination with other local, state and private resources to renew and revitalize its once productive economy. This will be accomplished principally through development of programmatic and financial infrastructure to promote development of locally owned and operated business enterprises and by supporting existing industry.

(2) Sustainable development strategies will provide leadership for concerted action to protect and capitalize on Northampton and Accomack's world class natural, cultural, historic and human assets for the ongoing benefit of all citizens.

(3) Strategies to promote sustainable community and economic development will involve concerted public and private actions to facilitate increased financial investment in the designated census tracts. Key to realization of this goal will be the creation of community business incubation services where new local entrepreneurs can obtain information and technical assistance, and where financial institutions can disseminate information concerning their programs and available resources. (4) Programs and initiatives will be developed that build the capacity of community residents to sustain physical, social and economic improvements once the designation period expires. (5) To provide all residents of both counties with the knowledge, opportunities and resources to access decent, safe and affordable housing regardless of class or income. (6) To create equal opportunity within economic, educational and social aspects of life and provide the target communities with the resources to take complete charge of their collective futures.

The federal government provides no direct financial incentives for business in Enterprise Communities. However, when the county obtained Enterprise Community designation, the Commonwealth of Virginia also designated the area as a state Enterprise Zone. Enterprise Zone designation provides development and redevelopment incentives to encourage the private sector to invest in distressed areas. The following package of Enterprise Zone state tax incentives apply to development in the Enterprise Community/Enterprise Zone: (1) Ten-year general income tax credit against a business's state tax liability in an amount up to 80% in year one and 60% in years two through ten. (2) Real property improvement tax credit equal to an amount of up to 30% of qualified zone improvements with a maximum amount not to exceed \$125,000 within a five-year period. Rehabilitation projects must have a minimum investment of at least \$50,000 and an amount that equals the assessed value of the real property prior to the improvements being made, whichever is greater. New construction projects must have a minimum investment of at least \$250,000 in real property. The credit is refundable to the extent that if the business state tax liability is less than the credit allowed, the remaining balance would be refunded. (3) Investment tax credit against a business's state tax liability for businesses investing \$100 million and creating 200 jobs. The percentage amount is negotiable and could be worth up to 5% of the investment. (4) Job grants for jobs created by business start-ups and expansions by existing firms in amounts equal to \$1,000 per zone resident hired and \$500 for any other job per year. The maximum grant to any one firm per year is \$100,000 for a period of three consecutive years commencing with the first year. Businesses may qualify for additional job grant incentive periods provided there is additional job creation.

The Accomack County Airport Industrial Park: The Accomack County Airport Industrial Park contains 360 acres of property strategically located adjacent to the county's airport, U.S. Route 13 and the Eastern Shore Community College. The park also lies within the boundaries of the Accomack-Northampton Enterprise Zone. The park has 120 acres of building sites which are served by water, sewer and paved roads. Airport improvements include a new terminal building, eighteen new hangars, a new apron, new taxiway, and a jet fuel facility. The airport improvements connect the airport to the industrial park and farmers market. The airport currently handles approximately 10,000 take-offs and landings a year. The industrial park now houses the Eastern Shore Chamber of Commerce, the Accomack County garage, Altair Inc. (a

company that overhauls and repairs auxiliary power units for jet engines), Truss-Tech Inc. (a manufacturer of building components), Interad Inc. (a manufacturer communications electronics components), Blue Crab Bay Company, (a manufacturer of specialty foods), and Lucas Underground, (installs underground utilities).

NASA Wallops Flight Facility/Mid-Atlantic Regional Spaceport/US Navy/NOAA: The NASA Wallops Flight Facility not only hosts NASA and the Mid-Atlantic Regional Spaceport (MARS), it is the location of the US Navy's Naval Surface Combat System Center, Naval Support Activity, the National Oceanic and Atmospheric Administration (NOAA) data acquisition center, and the Marine Science Consortium (MSC). These facilities and operations provide the basis for one of Accomack County's most promising economic growth opportunities, including the proposed Wallops Research Park.

The NASA Wallops Flight Facility, the US Navy Surface Combat System Center, and related facilities are vital assets for our national defense system and are a major part of Accomack County's economy. With growing missions and hundreds of skilled, well paying jobs, these facilities also present opportunities to improve Accomack's economy, employ additional local residents, and add to our tax base. The NASA Wallops Flight Facility (WFF) and the Eastern Shore Defense Alliance (ESDA) are working with Accomack County to identify and address issues that affect the future development and viability of the following Wallops facilities:

- NASA Wallops Flight Facility (WFF)
- Mid-Atlantic Regional Spaceport (MARS)
- US Navy Surface Combat Systems Center (SCSC)
- US Navy Naval Support Activity, Wallops (NSAW)
- National Oceanic and Atmospheric Administration (NOAA) Data Acquisition Center
- US Coast Guard (USCG) Station Chincoteague (Under Dept. of Defense in time of war.)

Other military organizations that work in the Eastern Shore area include:

- US Navy Center for Surface Combat Systems, Dahlgren, VA
- US Navy Naval Surface Warfare Center (NSWC) Corona, CA
- US Navy Naval Surface Warfare Center (NSWC) Dahlgren, VA
- US Navy Naval Surface Warfare Center (NSWC) Port Hueneme, CA
- US Navy Naval Air Warfare Center (NAWC)
- US Air Force Space Command (AFSP) Det 12

The combined Wallops workforce of NASA, associated contractors, and the military operations is nearly 1,500 employees and growing. These operations attract 3,000 business visitors annually who patronize local motels, restaurants, and shops.

NASA WFF has estimated that in 2007, a total of \$184,000,000 was spent regionally at Wallops by NASA (\$107,000,000), the US Navy (\$70,000,000), and NOAA (\$7,000,000). Sixty-three percent of WFF employees live in Accomack County, two percent in Northampton County, and the remaining 35 percent in Maryland and Delaware. These facilities represent substantial public investment and, with new programs and growth, can continue to support and grow Accomack County's economy.

A 2003 study, *Economic Development Value of the U.S. Navy Surface Combat Systems Center at Wallops Island* Development conducted by Salisbury University, estimated the annual economic value of the US Navy facilities. This economic value study used multiplier factors to estimate the total economic value of the facilities, which results in numbers greater than the actual dollars spent. Accomack County's economy captured the largest share of this activity, or \$58,000,000 per year. The study showed that this dollar amount is equivalent to the total annual income and taxes generated by 10 percent of the County's population. The report is available at <http://beacon.salisbury.edu/scsc.pdf>.

Due to the geographic location in a rural area at the 38th parallel of latitude, on the Atlantic Ocean, and due east of Washington, DC, the Wallops facilities provide a unique location for efficient and safe low-cost rapid-response rocket launches and satellite deployment for NASA, DOD, and the commercial launch industry; open-ocean combat systems development, testing, and training; and ballistic missile defense. The SCSC is also the only location where realistic combat systems "interoperability" testing and training can be conducted without real ships. The close proximity to Naval Station Norfolk and Patuxent River Naval Air Station also provides for efficient operations with real ships and aircraft. The need to operate these facilities in an area with low population density is also compatible with local goals to foster the agricultural industry, conserve wildlife habitat, and promote tourism.

The ESDA has prepared a Needs Assessment for the Wallops Island facilities and believes that, "The collection of diverse organizations and assets at Wallops are uniquely positioned to contribute inestimable value to our nation; militarily, environmentally, and economically. The single greatest threat to that promise is the potential for encroachment (of many types) to 'strangle' future potential." WFF and ESDA have outlined the following issues and recommendations for the long-term growth and viability of the Wallops Island facilities:

1. Employee Housing

Because of the high-priced seasonal housing market, there is no significant year-round rental housing market in Accomack County. This presents a problem for Navy and Coast Guard personnel, as well as newly hired government and defense industry employees.

2. Transportation

The Route 175 corridor is narrow and substandard. With growth in the area, this road needs to be upgraded to improve safety and traffic capacity. While VDOT has made recommendations for this road in the 2002 *Route 13/Wallops Island Access Management Study*, no funding has been made available to make improvements. Road shoulders and improved public transportation are needed to get bicycles and pedestrians off the road and provide a way for low-wage workers to commute to work.

3. Broadband Access

Accomack County has limited access to high-speed internet connections. Many residents are constrained to dial-up speeds, thus limiting their ability to work from home, or engage in entrepreneurial and educational activities. The Virginia government and legislature

have recognized this limitation and funds have been appropriated to provide a high-capacity fiber cable up the Eastern Shore.

4. Workforce Development

In order for local people to benefit from employment growth and the higher-paid positions at Wallops Island, local schools will need to improve math and science programs so local children can compete with other applicants. Improving local schools will also make Accomack County more attractive to highly skilled applicants with children who are considering locating in Accomack County. Through local workforce development programs, existing employees can also take classes to improve their skills and enhance their economic opportunities.

5. Community Coordination

While there is some informal coordination, Wallops and ESDA identify the need for a mechanism to formally coordinate the efforts of Wallops Island organizations with Accomack County and other community interests.

WALLOPS and ESDA RECOMMENDATIONS: With regard to encroachment reduction and prevention, Wallops and the ESDA offer the following recommendations:

1. Explore the creation of noise awareness areas wherein prospective home buyers would be made aware of the potential of aircraft operation as well as possible RF EM aspects of choosing to live in the vicinity of Wallops as they conduct operations which support our national defense and other national purposes.
2. Explore the potential for use of conservation easements on land near areas of concern. Conservation easements would permit tourists and local residents to enjoy the biodiversity for which the Eastern Shore is famous, while also enjoying the economic benefits of the high-tech jobs and pay scales at Wallops.
3. Explore the potential of modifying existing zoning regulations to protect the economic vitality of Wallops while protecting residents' property rights. Several of these recommendations can be combined as appropriate to achieve an optimum mix of economic benefit and land use. There are several locations where the recommended actions have been successfully applied, including the nearby Naval Air Warfare Center at Patuxent River, MD.
 - a. Ensuring that all identified hazard areas have planning and zoning provisions to either protect compatible use, or as a minimum, potential incompatible uses are specifically not permitted by right. From a process standpoint, this would require a special use permit so that WFF as well as other adjacent property owners can comment on the special proposed use within identified hazard zones.
 - b. Limiting further population density in the Red Zones of the Airport and Launch Range Accident Potential Zones;

- c. Deed notices for all property owners in all potential impact areas (located in active airfield /launch range area, no quiet hours, subject to direction by local emergency management authorities, etc.)
- d. Miscellaneous other issues such as:
 - i. Restrictions on storm water management practices and other uses that attract wildfowl;
 - ii. Restrictions on the type of lighting so that it does not interfere or impair pilot's vision;
 - iii. Restriction on Radio Frequency (RF) emitter sources, generally the type of sources that require an FCC license. There are also other more minor notification requirements for local spectrum management issues.

NASA Wallops Flight Facility (WFF): In 1991, Accomack County and WFF worked together to create Accomack County Zoning Ordinance Article XIX, Airport Overlay District. This part of the Zoning Ordinance provides airport overlay districts around WFF and the Accomack County Airport to ensure that there are no obstructions with the potential for endangering the lives and property of airport users and County residents. The Airport Overlay District, which includes building height restrictions, also ensures that there are no obstructions that may reduce the size of areas available for landing, takeoff, and maneuvering of aircraft, thereby protecting the utility of the airports and the value of these substantial public investments.

With operations expanding at NASA WFF, there is growing concern about protecting flight operations and public safety through measures in addition to the Airport Overlay District. Based on discussions, letters and public meetings between NASA WFF and Accomack County in November 2005, the County agreed to consider developing actions to protect the operational environment and public safety near WFF.

2015 Accomack County Joint Land Use Study

Joint Land Use Study (JLUS) Overview: In 2010, the Navy conducted an internal encroachment study for Navy missions and operations at NASA Wallops Flight Facility (WFF). The study was conducted to determine if any non-Navy activities were impeding the performance of Navy operations with the recommendation that a Joint Land Use Study (JLUS) be undertaken to further explore existing and future land use compatibility issues associated with Navy missions at the WFF. As JLUS initiatives typically involve communities around military installations, the Accomack County JLUS is unique as it involves Navy and other Department of Defense (DOD) organizations that operate as tenants of WFF, a NASA (non-DOD) facility.

Beginning in 2012, the County undertook a substantial collaborative project known as the Accomack County Joint Land Use Study along with the Navy, NASA and a wide range of various other stakeholders in an effort to create a planning tool for Accomack County. The JLUS

includes relevant data, analysis, recommended actions and strategies to influence future County policy-making decisions regarding compatible land use in order to accomplish the following primary goals:

- Protect the health, safety, and welfare of Accomack County residents living or working in potentially impacted areas surrounding the installation;
- Sustain the economic vitality of the Accomack County community;
- Promote a cooperative land use planning process where Accomack County collaborates with NASA, Navy and other DOD and Federal agencies onboard or operating from Wallops Flight Facility (WFF) to safeguard their mission capabilities, and in doing so, retain their critical economic value to the County;
- Ensure engagement of local private property owners in the land use planning process.

What is a joint land use study (JLUS)? There are many positive interactions between a military installation and the local jurisdiction. However, the activities of either can have unintended impacts on the other. Changes in military operations may increase noise, dust or safety concerns on the surrounding areas, while new residential or commercial development may restrict the military's ability to operate or train. Determining compatible development patterns on and around the installation is needed to protect the long term, viable relationship between the installation and the local community.

A joint land use study (JLUS) is a project that brings local officials, military installation officials and the community together, in a collaborative effort, to discuss current and future needs, and to identify and promote compatible land use development patterns that are mutual beneficial to the military installation, the county and towns, and the citizens.

It was found by the study that there are five (5) potential impact factors/issues affecting WFF's operational impact on the community and the community's impact on installation operations:

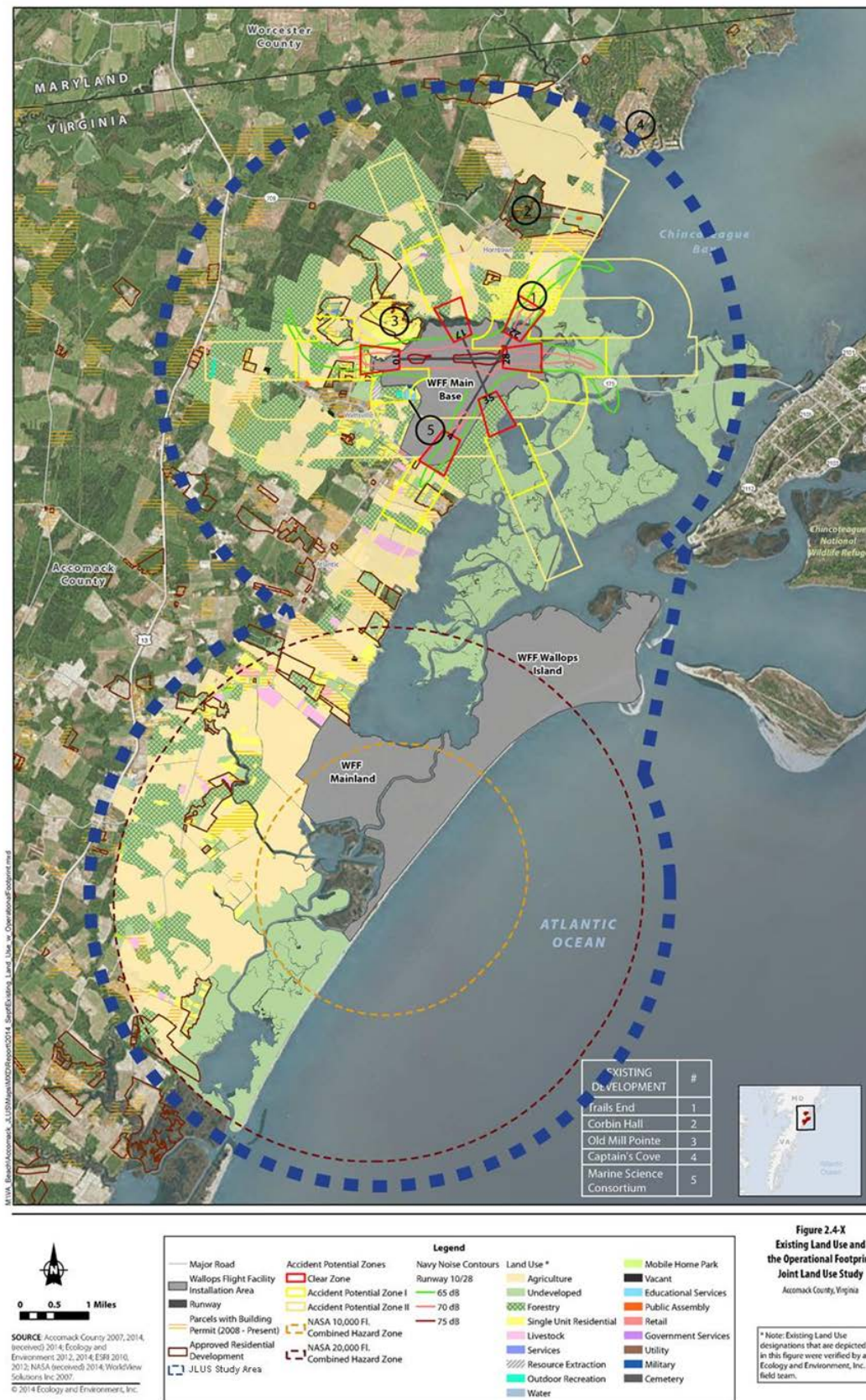
- Aircraft Accident Potential Zones;
- Coastal Resiliency;
- Electromagnetic Interference (EMI) and Radar Interference;
- Aircraft Noise Zones
- Rocket Range Hazard Areas

****For more information please refer to the 2015 Accomack County Joint Land Use Study****

Operational Footprint: The following map identifies the joint land use study area (shown as a dashed blue outline) where the WFF operations and county land uses overlap and potentially conflict. The operational footprint was determined based on the nature and extent of current, known plans and mission operations performed at WFF as of 2015. Operations are program and project-driven and can change from year to year as missions evolve or change.

The following map depicts the operational footprint which includes noise and aircraft accident potential zones (APZs) associated with airfield operations at WFF Main Base, range hazard area arcs associated with rocket launches at WFF Wallops Island, and additional considerations related to operations conducted by NAS Patuxent River. Radar communications associated with operations at NAS Patuxent River could be potentially impacted by tall structures (such as utility scale wind turbines) if constructed within defined operational boundaries or ‘view-shed’ of the sensitive radar systems used by NAS Patuxent River.

Map 3-G



Aircraft Accident Potential Zones (APZs): Installations and airfields often experience increased development and residential population growth near their boundaries. Development of businesses and residential neighborhoods near an installation allows the neighboring community to provide services to the installation and its personnel and allows personnel to live near their work place. However, development near an installation or airfield may present risks to the surrounding community and be incompatible with aircraft and other operations. The Department of Defense (DOD) established the Air Installations Compatible Use Zones (AICUZ) program to assist local governments and communities in identifying and planning for compatible land use and development near military installations. The goal of the program is to protect the health, safety and welfare of civilians and military personnel and preserve an installation or airfield's operational capabilities.

One land use planning component utilized within the AICUZ program is the designation of APZs. APZs are designated areas where the NAVY encourages land uses which are compatible with aircraft operations in order to minimize the risk to the public in the unlikely event of an aircraft mishap (NAVY 2008). APZs are the areas where the greatest potential for aircraft accidents exists based on historical accident data, and the type and mission of the aircraft in use. The locations of APZs are driven by the types of aircraft and types and numbers of aircraft operations that occur at the airfield (NAVY 2014).

Clear Zones (shown in red on following map): are located immediately beyond the runways and present the highest risk for aircraft accidents.

APZ(1) and APZ(2) (shown in orange and yellow, respectively, on following map): are located further from the end of the runway and the risk for aircraft accidents diminishes.

It is important to note that while APZ mapping is based on statistical evidence for the specific aircraft and mission, accidents can occur outside the mapped APZs.

Map 3-H



Aircraft Noise Zones: The DOD air installation guidance also covers aircraft noise. Noise is unwanted sound measured in decibels. Noise contours (see following map), or the areas of various noise levels are described in “decibels DNL.” DNL is a term to represent the average sound level generated by all aviation – related operations during a 24 - hour period. Below the threshold of 65 decibels DNL, noise is considered relatively low. For example, residential uses are not suggested in areas where aircraft noise is expected to exceed 65 decibels DNL, while recreational activities are not discouraged unless the noise exceeds 75 decibels DNL. Warehousing, agriculture, forestry, and fishing are considered compatible.

As shown on the following map, the area of noise exposure to aircraft operations is shown as a series of noise contours connecting points of equal value, i.e., points exposed to the same noise levels. Areas between the noise contours are called “noise zones.” The mapping of expected noise levels shown on the following map is based on acoustic modeling. However, given variables such as weather, actual flight paths, etc., actual noise levels/locations may vary.

Map 3-I



Rocket Range Hazard Areas: The rocket launches at WFF Wallops Island are not only a major catalyst to bring Government, academia and industry business and economic development to the Wallops area, but are also an attraction for both tourists and residents alike. Yet, these types of operations are inherently hazardous. As such, NASA develops and implements mission – specific safety plans - NASA’s Range Safety Program - to ensure the protection of both members of the public and their property for all of its launches.

NASA’s Range Safety Program is divided into two (2) primary areas – ground and flight safety. Ground safety considers potential hazards associated with activities such as fuel handling, assembly, and checkout for all prelaunch activities; occupational hazards; and crash, fire and rescue. Flight safety considers the potential risks to the public, NASA personnel, contractors and civilians from flight operations, including vehicle trajectory and dispersion.

As shown on the following map, the Rocket Range Hazard Areas consist of concentric rings (arcs) centered on the two (2) current and one (1) future planned orbital launch pads:

10,000 Feet Arc: The smaller of the two (2) hazard arcs, the 10,000 foot arc is NASA’s planning level estimate for the area potentially requiring the most stringent controls, including clearing the zone of all people prior to launch, to protect the safety of the public and for the ability to launch. The primary hazards it is intended to protect against are the direct blast and debris generated in the event of a launch failure at or near the launch pad.

- Hazards: explosions, falling debris, dissipated toxic propellant vapors and distance focus overpressure (may shatter windows) if a vehicle failure occurs on pad or soon after launch.
- General Conditions: full evacuation of all residents is required or Wallops cannot launch certain orbital rockets. Current or new buildings would be at risk. Agriculture would be permitted, as long as the area is cleared of people.

20,000 Feet Arc: The larger arc, at 20,000 feet, depicts an area that may be susceptible to range hazards that are largely dictated by atmospheric conditions on launch day. In contrast to the 10,000 foot arc, the 20,000 foot arc would not likely require complete clearance, rather select areas within it could require special consideration, such as ensuring that large groups of people are not present or that building occupants are not in front of single – pane windows at launch.

- Hazards: dissipated toxic propellant vapors and distance focus overpressure (may shatter windows) if a vehicle failure occurs on pad or soon after launch.
- General Conditions: encourage compatible land uses. This rocket range hazard area should generally restrict dense population facilities such as gyms, theaters, school, trailer parks, multifamily dwelling, etc. No schools, hospitals, medical centers or other concentration of very young, very old or medically challenged should be considered a compatible use.

NASA coordinates all hazard area information with local law enforcement officials, and those officials are responsible for any notification and evacuations that may be necessary to protect the safety of the public.

The 10,000 and 20,000 foot arcs depict NASA's best estimate of the extent of launch hazard areas required for current planned and future missions. The actual hazard area requiring clearance is defined for each launch based on the specific hazards of that launch and historically have not exceeded 9,000 feet for Antares and Minotaur launches. While the extent of a hazard area will be tailored to each mission (and consequently could be smaller or larger), the 10,000 and 20,000 foot arcs depict the expected extent of those required for current and future missions. Rockets larger than the Antares or Minotaur classes may be of concern in the future. At the time of the JLUS study, implementing hazard arcs in excess of 10,000 feet have not been necessary; all orbital-class rockets (e.g. Minotaur, Antares) launched from WFF since late 2006 have required launch hazard areas between approximately 8,500 and 9,000 feet.

Recently the validity of these areas and the hazards experienced have been verified by the actual events and lessons learned from the ORB-3 rocket mishap on October 28, 2014.

Map 3-J



WFF has provided Accomack County with the information presented herein for informational and comparative purposes for consideration by the County in the Comprehensive Plan and for consideration of further zoning and compatible use restrictions in the WFF area. Based on this analysis and description of hazards, and the examples of how other municipalities in the Commonwealth of Virginia and elsewhere have treated these hazards, WFF trusts that Accomack County will find the proper balance between the public interest, economic development supported by the WFF mission, and public safety. WFF wants to work together with Accomack County to implement additional conditions necessary for the safety of the public, and for WFF to preserve the operational environment today, and for future large orbital launch programs that are currently scheduled that will make a substantial contribution to the economic development of the area. WFF is committed to being a good neighbor with property owners near its facilities, and feels that planned and compatible growth is the best way to overcome encroachment that threatens to interfere with, restrict, or even cancel WFF's existing programs.

Wallops Research Park: The Wallops Research Park (WRP) is a partnership between Accomack County, the Goddard Space Flight Center (GSFC), and the Marine Science Consortium (MSC) to provide a long term environment that attracts and maintains science, technology, and education. These programs supplement the core capabilities of GSFC, other WFF partners, and the MSC while contributing to the economic development of Accomack County and the surrounding region.

The WRP will provide the location, infrastructure and overall environment to attract and support economic growth through new commercial and educational institutions affiliated with WFF activities. The WRP will also house the supporting services that will enable these new enterprises, as well as support the resident County workforce, such as a business incubator and workforce training facilities. The WRP is currently developing a Master Plan to guide development of the facility.

Comprehensive Economic Development Strategy (CEDS): As part of the *Eastern Shore Comprehensive Economic Development Strategy* (CEDS) update in 2006, Virginia Tech held economic development summits in Accomack and Northampton counties. The summits focused on “asset-based economic development” and those in attendance identified local assets that can be developed to improve the Eastern Shore’s economy. Virginia Tech produced a report, *Community Economic Development for the Eastern Shore: Summit Report*, that analyzes regional data and makes recommendations for economic development. Since most job growth takes place in the expansion of existing companies and as much as 80 percent of new jobs and investments come from existing industries, the report focuses on how the Eastern Shore can use its assets to improve our economy. Agriculture, manufacturing, aerospace, health care, and tourism are identified as the major sectors for economic growth. The report can be found on the Accomack County web site under Studies and Presentations at: <http://www.co.accomack.va.us/index2.html>

Transportation

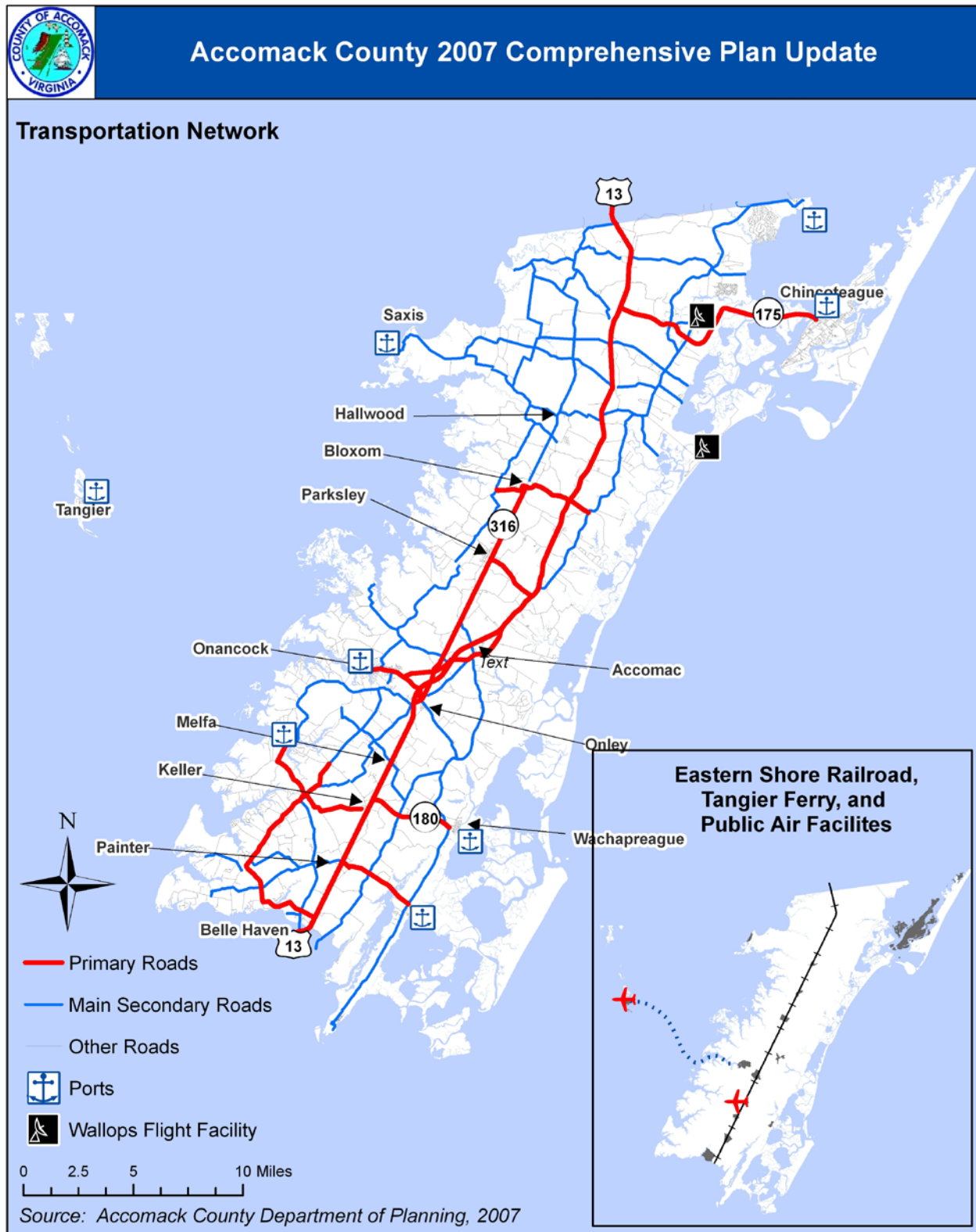
Roadways

U.S. Route 13: Route 13 plays multiple roles in Accomack County. It provides efficient transport for through travelers, provides local access to services, jobs and homes, and serves as the gateway through which travelers enter the county. Trucks make up about 15% of the traffic on Route 13. Approximately one-third to one-half of the annual Route 13 traffic is through traffic, as opposed to local traffic. This estimate is approximate since more detailed surveys are needed to precisely count the number of vehicles whose purpose is solely to travel from the Maryland state line to the Northampton County line. Through traffic can include commercial and industrial trucks, tourists and Northampton residents traveling to Maryland. For these drivers, the function of Route 13 is for rapid and safe transport through Accomack County.

Capacity and Level of Service: Highway capacity is defined as the maximum number of vehicles that can use a specific section of roadway during a specific period of time. Capacity is usually expressed in terms of vehicles per hour and is dependent on roadway conditions, traffic conditions and control conditions (i.e. the number of lights, signage, turn restrictions, etc.). The quality of service provided by a highway is measured in terms of its level of service. Level of Service A represents free-flow. Vehicles can maneuver within the traffic stream and easily maintain the posted speed limit. Level of Service B is in the range of a stable flow. Drivers are somewhat restricted in maneuverability, but usually maintain the posted speed. Level of Service C is still in the zone of stable flow, but the maneuverability and speed are more restricted with higher traffic volumes. The drivers are more restricted in their freedom to select their speeds, to change lanes, or to pass. Level of Service D approaches unstable flow. Temporary restrictions to the traffic flow may cause substantial drops in the operating speed, the drivers have little freedom to maneuver to pass, and the comfort and convenience of the driver are lowered. Drivers usually tolerate this condition for short periods of time. Level of Service E represents the capacity of the facility. The traffic flow is unstable, there may be momentary stoppages in the traffic flow, and the vehicle operating speeds are very low. Level of Service F describes a forced flow condition usually with low operating speeds and traffic volumes that are below capacity. This is often described as stop-and-go conditions.

The *Route 13 Corridor Study* prepared by VDOT in 1989, analyzed the level of service for sections of Route 13. The analysis shows that the highway operates far below capacity. Traffic was consistently at level of service A during weekdays and stayed within levels of stable flow through weekend traffic increases. The *U.S. Route 13 Corridor Plan* prepared in 1999 showed that traffic was growing steadily. In 2002, VDOT prepared the *Route 13 / Wallops Island Access Management Study*. The study recommends major access management improvements throughout the corridor, including \$83,574,000 of improvements in Accomack County. The study also recommended adoption of a Highway Corridor Overlay District (HCOD) by local governments to help coordinate land development and highway access management to improve safety and maintain traffic capacity. Recommended access management measures include requiring left turn lanes, right turn lanes, shoulders, driveway spacing, and side street connections. The complete 2002 VDOT study is available online at: <http://www.viriniadot.org/projects/const-project.asp?ID=88>

Map 3-K



The Chesapeake Bay Bridge Tunnel: The Chesapeake Bay Bridge Tunnel serves to connect the Eastern Shore to the rest of Virginia and provides south bound passage for through traffic from the north. The Bridge Tunnel consists of two tunnels and a two lane span of bridge, crossing 17 miles of open water. In April, 1999, construction was completed on a parallel bridge span. The second span allows for each bridge to handle two lanes of one way traffic. This has improved safety on the bridge and lessened the likelihood of head-on collisions. Traffic from the two bridges merges into the existing two lane tunnels. In a study conducted by Wilbur Smith Associates for the parallel crossing project, it was found that traffic flows to the bridge-tunnel vary dramatically according to the season. Traffic during the summer months of July and August can be 50% to 60% higher than the average monthly traffic and 20% to 40% lower during the winter months of December to March. Origin-Destination studies conducted at the Bay Bridge-Tunnel found that 60% of all trips during the summer months were for recreational purposes. The most common points of origin or destination where Virginia Beach/Norfolk, Eastern North Carolina, New Jersey, New York, and the Eastern Shore. As of 2003, the average number of automobiles to cross the Chesapeake Bay Bridge Tunnel had increased by approximately 25%, from 7,690 per day to 9,641 per day. In order to accommodate the increased amount of traffic, authorities at the Chesapeake Bay Bridge Tunnel began studying a possible increase in tunnels, going to two tunnels, each with two lanes, for traffic going in each direction (<http://www.tollroadsnews.com/node/689>). The Chesapeake Bay Bridge Tunnel began using the EZpass toll system in November 2007 order to reduce commute times and increase convenience for those traveling across the Chesapeake Bay.

2000 Route 13 Average Daily Traffic (ADT) Volumes
Source: 2002 Route 13/Wallops Island Access Management Study

From	To	SPRING ADT	Percent Trucks	SUMMER ADT	Percent Trucks
Maryland State Line	Route 175	17,000	9%	21,500	10%
Route 175	N. Bus. 13 at Accomac	16,000	12%	19,000	10%
S. Bus 13 at Accomac	Route 179	16,000	14%	18,000	12%
Route 179	Bus. 13 at Onley	18,000	14%	19,000	12%
Bus. 13 at Onley	Keller	16,900	12%	18,500	10%
Keller	N. Bus 13 at Exmore	15,500	14%	18,500	12%
S. Bus 13 at Exmore	N. Bus 13 at Eastville	12,200	15%	13,500	13%
N. Bus 13 at Eastville	Bus 13 at Cheriton	8,500	17%	11,800	15%
Route 184	Bay Bridge Tunnel	8,500	19%	12,500	17%

Through Traffic: The goal of a road serving through traffic is to provide safe transport at the highest possible speed. Such roads are designed to be as straight as possible, have few traffic control devices, and have few access points to the roadway.

Local Traffic: The goals of a road serving local traffic is to provide safe access at lower speeds to stores, services, employment, and homes. These arterial roads tend to have numerous curb cuts, median crossovers, and traffic control devices.

Strip Development: Commercial land uses tend to prefer slower traffic so that the driver has sufficient time to observe signs and storefronts. At the same time, business feasibility studies tend to encourage locations on high volume roadways. The historic result has often been strip

development, where traffic congestion is generated by slow-moving traffic, making numerous turns on and off the roadway. Congested areas can lead to the construction of bypasses around the congestion. These bypasses, if improperly managed, can become the site of new congested strip development.

Gateway: Route 13 serves as a gateway to Accomack County. Most travelers entering the county arrive via Route 13. The highway should present a positive image of the community. This can be accomplished by maintaining the transportation efficiency of the road while also maintaining an attractive road corridor. The appearance of the corridor could be protected through landscaping requirements and sign regulations.

Secondary Road Network: Accomack County does not maintain any of the road system. All public roads are maintained by the state as part of the secondary highway system. This practice is common in rural areas of the state. Subdivision developers who create public roads are required to build them to state standards for acceptance into the highway system. The Department of Transportation is responsible for maintenance of the roads once they are accepted into the system. Generally, a subdivision road that has been built to state standards will be accepted into the highway system once three homes have been built on the road. The issues of subdivision roads and private versus public road requirements have received considerable attention over the last twenty years. The issue involves a conflict between the developer's goal to make a profit while selling subdivision lots at a marketable price and the government's goal to provide a safe, efficient road network. Prior to November 20, 1996, Accomack County's subdivision ordinance required that all roads in subdivisions be built to VDOT standards. The problem arose from the fact that divisions of land into less than five lots, or into any number of lots over three acres each, were exempted from the definition of a subdivision. The definition also did not include the resubdivision of land, so situations arose where a developer would divide a piece of land into several three acre parcels and then resubdivide each of these parcels into three one acre parcels, creating a large subdivision of one acre lots and circumventing the requirements for state roads. On November 20, 1996, Accomack County's Subdivision Ordinance was revised to define a subdivision as any division of land into three or more parts. The ordinance further defines a large lot subdivision as one in which each of the lots is three or more acres in size. Private roads are allowed in large lot subdivisions, but a statement must be recorded on the subdivision plat stating that the roads are not built to state standards and will not be maintained by the state or the county.

VDOT

The Virginia Department of Transportation (VDOT) is responsible for building, maintaining and operating the state's roads, bridges and tunnels and, through the Commonwealth Transportation Board, it also provides funding for airports, sea ports, rail, and public transportation. In Accomack County, VDOT is responsible for all public roads.

Analysis of Safety and Future Highway Conditions

U.S. Route 13. U.S. Route 13 is Accomack County's major transportation facility, and one of only two four-lane roads in the County. On the Eastern Shore of Virginia, U.S. Route 13 extends for 69 miles from the Virginia-Maryland state line through Accomack County (37 miles) Northampton County (32 miles) to the Chesapeake Bay Bridge Tunnel. U.S. Route 13 links the Eastern Shore of Virginia with Maryland to the north and Hampton Roads to the south. Along with the Chesapeake Bay Bridge Tunnel, U.S. Route 13 also provides an alternative to Interstate 95 for traffic traveling between the Northeast, Tidewater Virginia, coastal North Carolina, and points south. In 2002 VDOT completed the U.S. Route 13 / Wallops Island Access Management Plan, which makes recommendations for physical improvements and implementation of local government access management regulations. The following discussion of U.S. Route 13 conditions also includes data for Northampton County in order to provide a regional perspective on the issues.

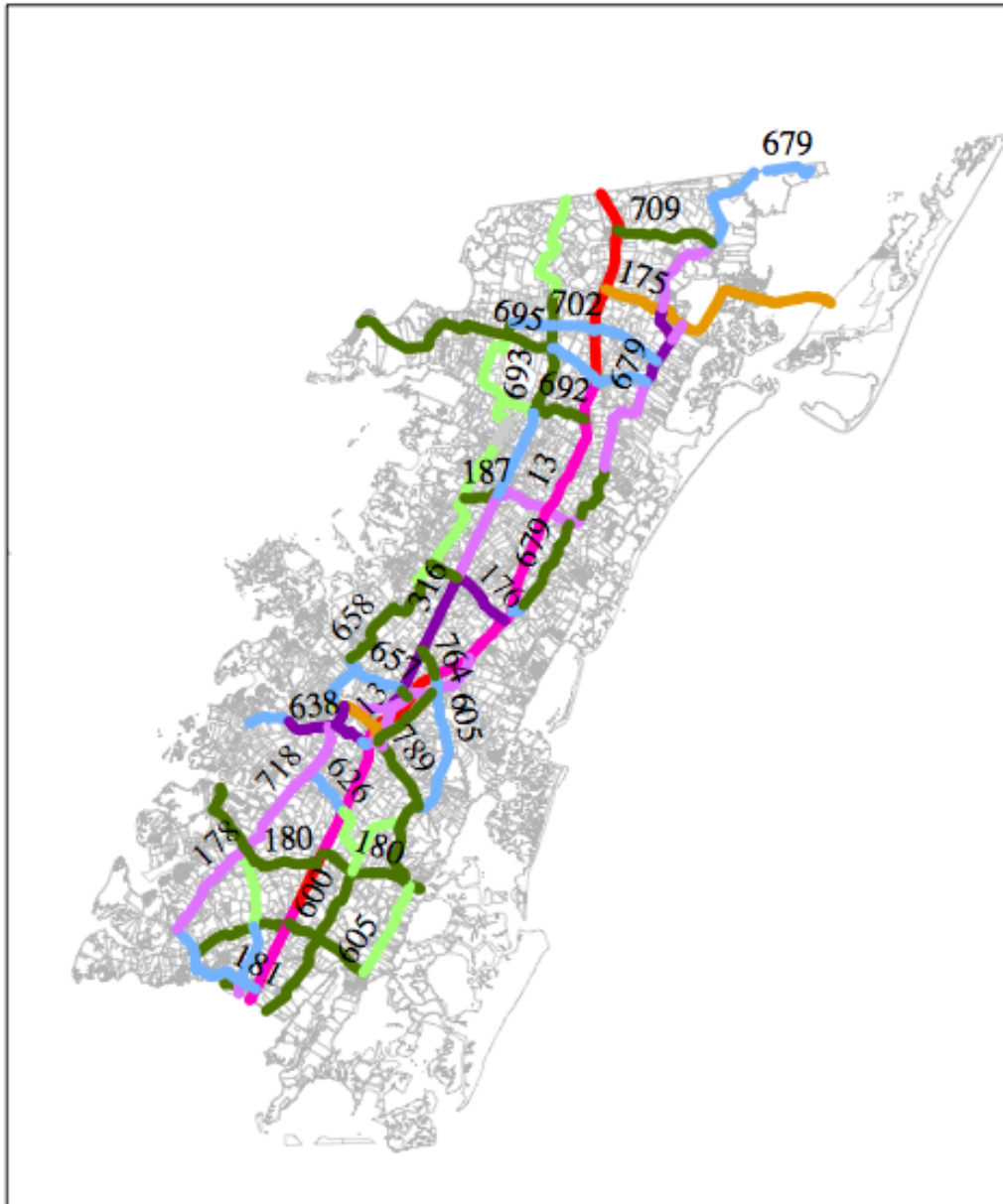
Traffic Growth. U.S. Route 13 traffic has been steadily growing over the years, and Average Daily Traffic (ADT) on the Eastern Shore of Virginia is expected to grow from a range of 12,000 to 21,500 in 2000 to a range of 24,000 to 33,000 by 2020. Traffic volumes in Accomack County are higher than in Northampton County due to the higher population and greater density of development. Traffic is growing and is expected to increase to 33,000 ADT in northern Accomack County by 2020.

Traffic Safety. Vehicle crash rates and fatalities on U.S. Route 13 are increasing. From 1997 through 1999, there were 37 fatalities along U.S. Route 13 on the Eastern Shore of Virginia. Of the 24 fatalities that had site identification, 16 were in Accomack County and 8 were in Northampton County. There were 17 fatal accidents in 2000 alone. The higher number of fatalities in Accomack County, despite a similar U.S. Route 13 length as in Northampton County, is likely due to higher traffic volumes and more side roads, roadside development, and driveways.

Existing Traffic. Map 3-J, *2003 Traffic* shows the 2003 VDOT average daily traffic (ADT) data for Accomack County's major state roads. Since VDOT does not do traffic counts on all roads every year, most of these data are from 2003 or earlier. The major factors in traffic generation are population, trips per day per housing unit, and through-traffic on U.S. Route 13.

The *2003 Traffic* map shows that most major roads in Accomack County had less than 5,000 ADT in 2003. The exceptions are U.S. Route 13, Business Route 13, and Routes 175 and 179. The higher ADT on these roads reflects the denser development and commercial activity near T's Corner, Chincoteague, Onley, and Onancock.

Map 3-L



Draft Accomack County Transportation Element EXISTING 2003 TRAFFIC



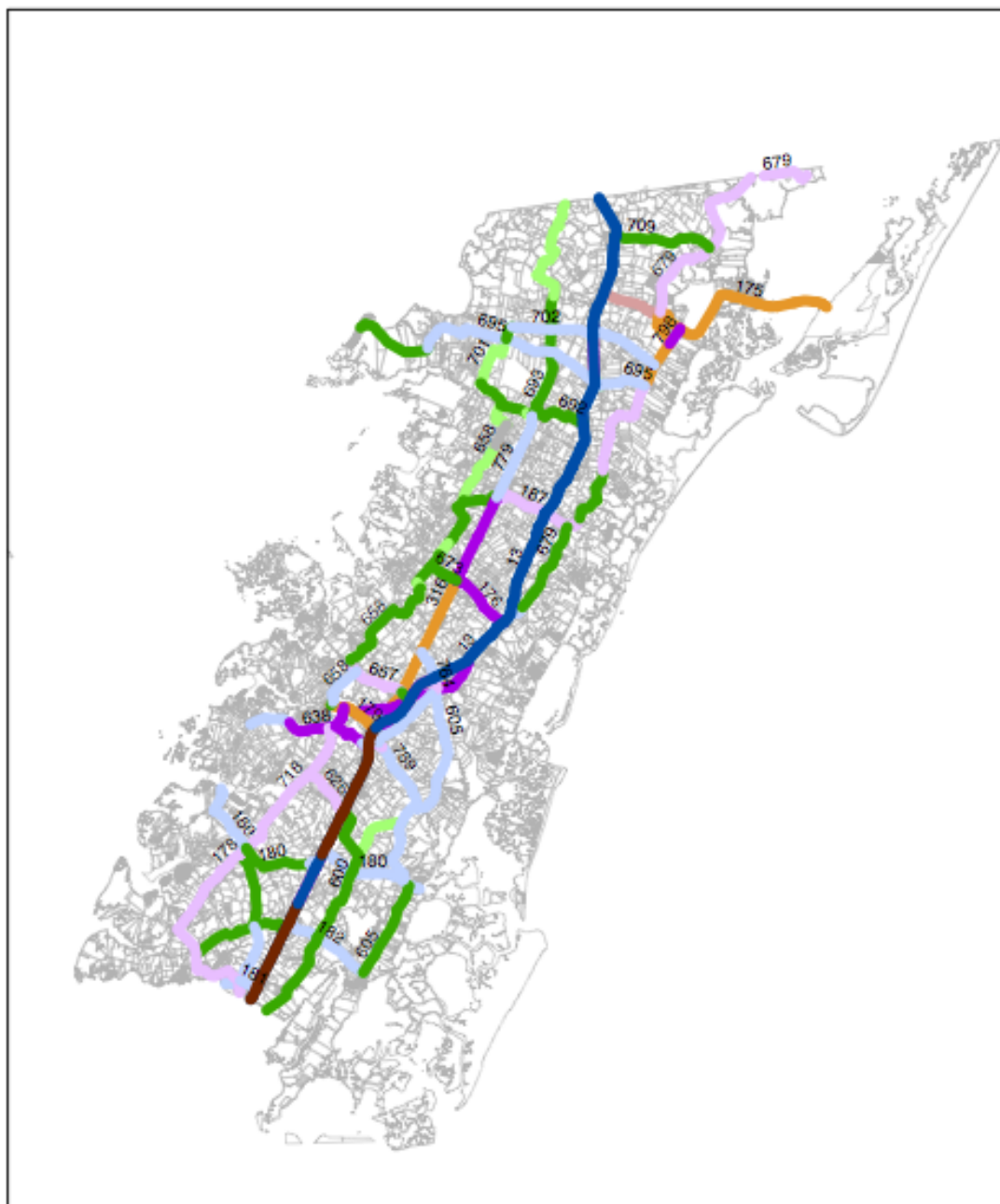
Estimated Future Traffic. In the long term, traffic growth in Accomack County will depend upon population growth, the location of new development, and through-traffic growth on U.S. Route 13.

The following maps, *Estimated Future Traffic*, show how traffic would grow if Accomack County's 2000 population grew by 30 percent (49,796), 50 percent (57,457), and 100 percent (76,610). These maps were prepared by multiplying the existing main road traffic data by the same percentage as each population growth scenario. Traffic estimates for U.S. Route 13 were based on the local traffic growth factor of 1.1 percent/year and the through-traffic growth factor of 2.8 percent/year as calculated in the 2002 U.S. Route 13 / Wallops Island Access Management Study.

- **30 Percent Population Growth (49,796)** With a population of 49,796 and 25,415 total dwelling units, parts of Routes 679 and 316 would cross the 5000 ADT threshold. Part of Route 178 would reach 2,000 to 3,500 ADT. Traffic on most of U.S. Route 13 would grow to over 25,000 ADT. Business Route 13 in Accomack and Onley would exceed 3,500 ADT.
- **50 Percent Population Growth (57,457)** With a population of 57,457 and 29,325 total dwelling units, all of U.S. Route 13 would grow to over 25,000 ADT. Route 176 would exceed 5,000 ADT and part of Route 175 would exceed 10,000 ADT.
- **100 Percent Population Growth (76,610)** With a population of 76,610 and 39,100 dwelling units, U.S. Route 13 would reach over 30,000 ADT. Part of Route 175 would exceed 15,000 ADT and Route 126 would exceed 5,000 ADT.

This analysis of the *Estimated Future Traffic* maps shows that significant population growth under existing zoning will impact Accomack County's major roads. New rezonings and subsequent development will increase the intensity of future traffic in a given location. Applications for rezonings should be reviewed for traffic impacts and other transportation needs.

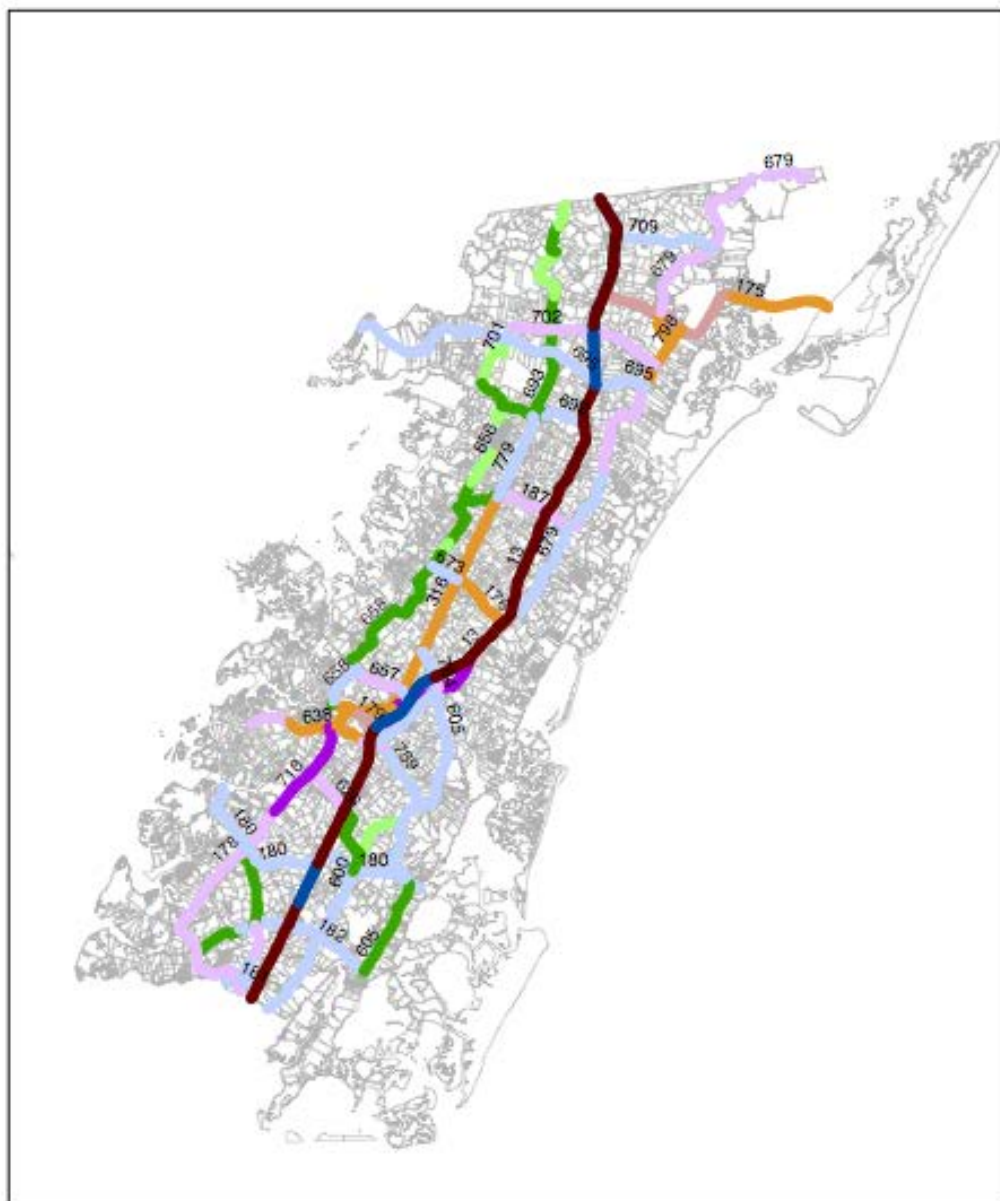
Transportation Improvement Areas and Urban Development Areas: To address Virginia's growing concern about how to manage growth and fund road improvements, the General Assembly passed legislation in 2007 to allow local governments to identify Transportation Improvement Areas (TIA) and Urban Development Areas (UDA). These new tools can help Accomack County require new development to pay for needed road improvements and focus growth in designated areas. In order to do this, Accomack County must designate TIAs and UDAs in the Comprehensive Plan.

Map 3-M

Draft Accomack County Transportation Element 30 Percent Growth

Legend

Map 3-N

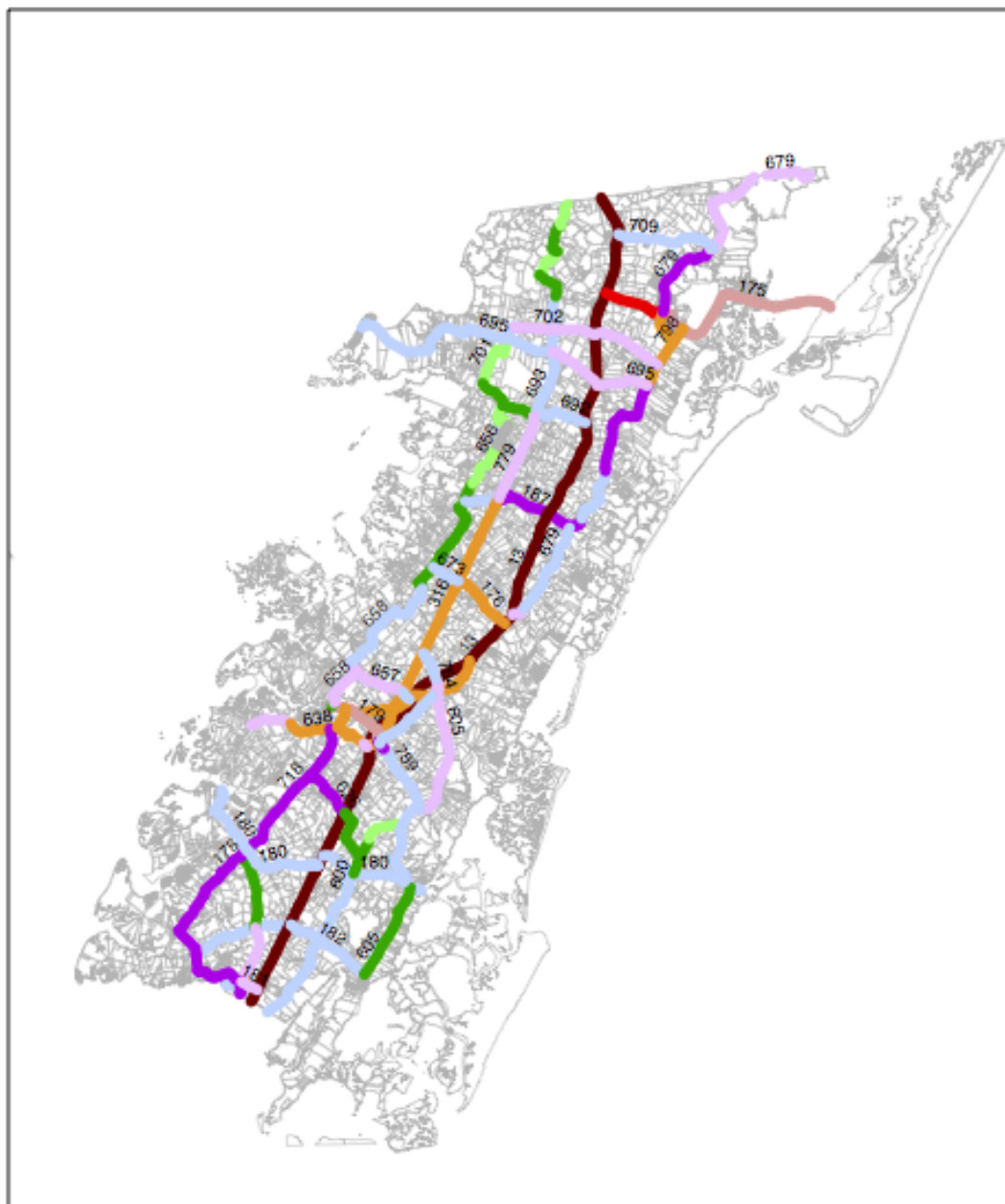


Draft Accomack County Transportation Element 50 Percent Growth

Legend



Map 3-O



Draft Accomack County Transportation Element 100 Percent Growth

Legend



Public Transportation

In 1996, the Accomack-Norhampton Transportation District Commission operated a pilot bus system called STAR Transit. This system started with two buses on two north-south routes stretching from Cape Charles to Chincoteague and added a third bus and route in Northampton County. The system operated beyond the expectations of its director during the first year. The most heavily traveled zone is between Cape Charles and the Onley area. STAR Transit is planning to build a new bus terminal and maintenance off U.S. Route 13 in Onley.

Rail

The Bay Coast Railroad, formerly the Eastern Shore Railroad, has more than 90 miles of track that covers the length of Accomack and Northampton Counties. The line is connected to Maryland Rail to the north and the Norfolk-Southern line to the south. The southern connection is made by use of a barge which carries rail cars from the port of Cape Charles to the port of Hampton Roads. The Port of Hampton Roads is served by 70 steamship lines linking it with 100 foreign countries through 260 overseas ports.

Air Service

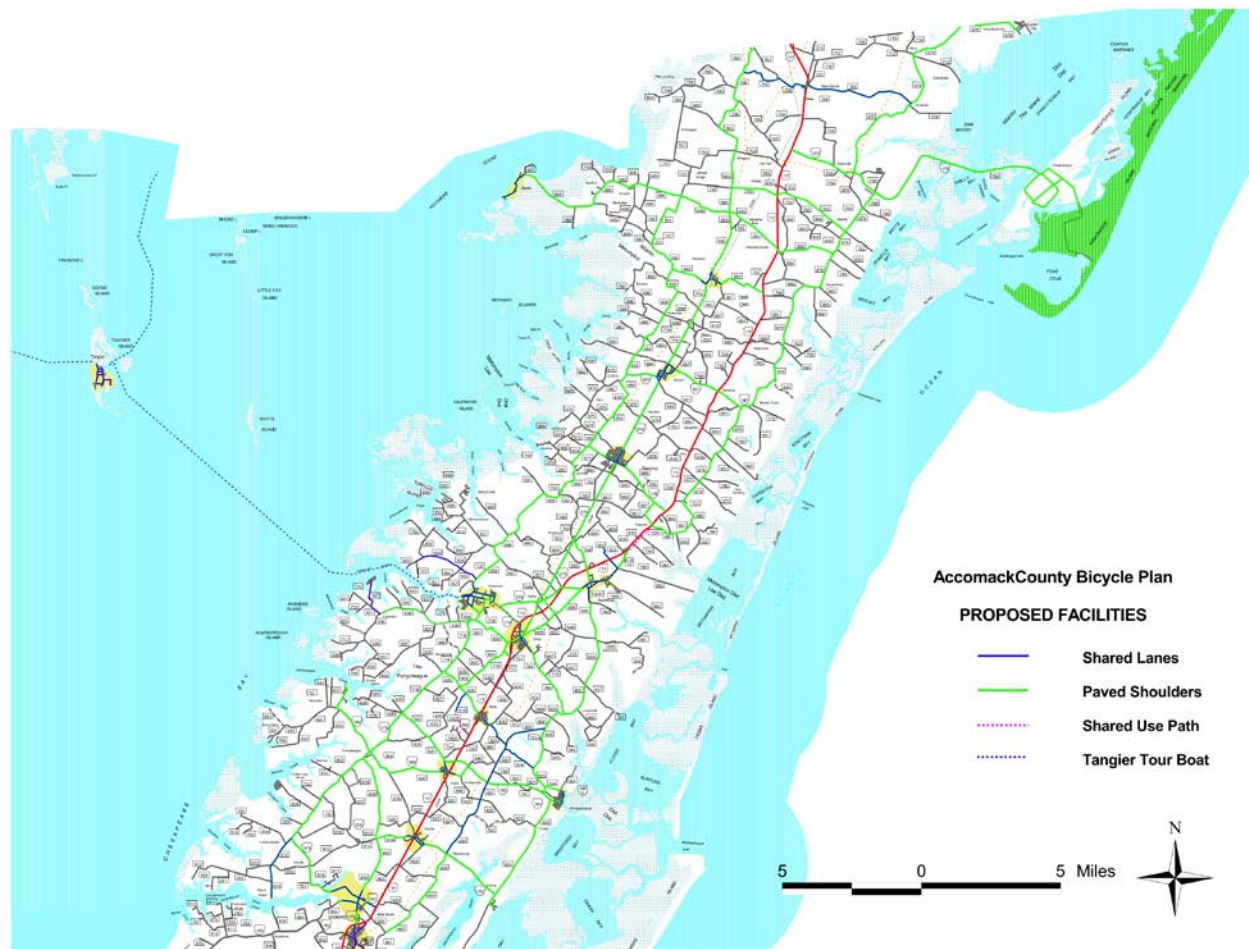
The Accomack County Airport is located adjacent to the Accomack County Industrial Park near the town of Melfa. The airport was originally constructed as a U.S. government facility during World War II. The airport has a 7,000 foot concrete runway capable of accommodating modern jets, and now has a jet fuel facility.

Commercial air service is provided 60 miles to the south through the Norfolk International Airport and 60 miles to the north through the Salisbury Airport. The Norfolk airport offers service from a full line of air carriers, includes air freight facilities, and has a customs office for foreign imports. The Salisbury airport is a regional facility which offers daily flights to major cities.

Bicycle Facilities: In 2004 Accomack County adopted the Eastern Shore Bicycle Plan, which identifies bicycle facilities throughout the County to improve safety for bicyclists and motorists. Map 3-N, *Bicycle Plan*. Shows the plan recommendations for shared lanes, paved shoulders, and shared use paths. In 2007 Accomack County amended the plan to extend the proposed Onley-Onancock Shared-Use Path from Onley to Nandua High School.

Pedestrian Facilities: Since all vehicle trips begin and end with pedestrian trips, it is important for Accomack County to include require appropriate pedestrian facilities in all new development.

Map 3-P



Waste Disposal

Solid Waste and Recycling Collection System: Accomack County has three different options for trash removal for its citizens. One option is the County's Convenience Centers. There are four Convenience Centers located in the County, with three more planned in the future. These centers are manned, and collect not only trash, but recycled items also. For recycling, into one bin citizens can drop off all types of paper items, cardboard, hard plastics, glass, and all types of metal cans. Items that can be recycled into their separate containers include waste oil, waste antifreeze, lead acid batteries, tires, cell phones, rechargeable batteries, ink cartridges, and scrap metal. There is also a Put and Take area where citizens can drop off reusable items that are in good condition. Patrons may take items from the Put and Take area any time the Centers are open.

Another option for citizens is a greenbox site. Greenboxes are enclosed roll off containers with a 40 cubic yard capacity. The sites are unmanned and the containers are serviced by county owned and operated vehicles. Items such as furniture, tires, and appliances must be delivered to a convenience center or to one of the county landfills. The county currently maintains 16 of these sites. As Convenience Centers are built, greenbox sites are removed from around that area with the result that once all Convenience Center sites are operational, all greenbox sites will be closed.

There are also private haulers in the county that can be hired for curbside pickup of trash.

Litter Control: The County has Litter Control employees assigned to pick up litter from roadways, county owned docks and ramps and around greenbox sites. In November of 2006, the County hired a Litter control Officer. The Litter Control Officer offers recycling and litter prevention education to school groups and various adult groups within the county and organizes community clean up programs. The Litter Control Officer also oversees roadside litter pickup, utilizing citizens who have been court ordered to do community service hours as part of their sentence. The community service program has become so successful that the Litter Control crew is now able to concentrate on greenbox sites and docks/ramps cleanup.

Landfills: Accomack County currently operates two landfills under permits from the Virginia Department of Solid Waste Management.

Southern Landfill: The southern landfill was purchased in 1973. The landfill is located at 16640 Hollies Church Road, Melfa, VA. The landfill is 113 acres in area, of which approximately 70 acres have been used. This landfill was constructed without a liner prior to adoption of the Department of Solid Waste Management's regulations on landfills. It has a stormwater management system in place to protect the area surface waters and a system of groundwater monitoring wells that allows for sampling of the area groundwater. This facility is scheduled to close by 2012.

Northern Landfill: The northern landfill was purchased in 1984. The landfill is located at 9403 Cutler Lane, Atlantic, VA. The site is approximately 140 acres in area, of which one approximately 20 acres have been used. This landfill is lined and has a leachate collection system that sends leachate to the adjacent county owned wastewater treatment plant. It has a stormwater management system in place to protect the area surface waters and a system of groundwater monitoring that allows for sampling of the area groundwater.

Adopt-A-Highway

VDOT administers the Adopt-A-Highway program. Volunteers agree to pick up litter on state maintained highways four times a year for two years. VDOT provides trash bags, vests, safety information and a highway sign with volunteer's name on it. Virginia's program is the second largest in the country, with 50,000 participants. VDOT sponsors two annual state-wide clean-ups, the Spring Clean-Up on the third Saturday of each April and the Great State Trash-Off on the third Saturday of October.

Tons of Solid Waste Received Annually at Landfills

Source: Accomack County Dept. of Public Works

	2001	2002	2003	2004	2005	2006
Northern	23,920 ..	22,443 ...	25,003 .	25,373 .	24,088 ..	21,025
Southern	18,876 ..	18,410 ...	22,090 .	27,771 .	28,655 ..	28,468
Total	42,796 ..	40,853 ...	47,093 .	53,144 .	52,743 ..	49,493

Tons of Solid Waste Landfilled Annually

Source: Accomack County Dept. of Public Works

	2001	2002	2003	2004	2005	2006
Northern	21,789 ...	20,329.	24,314.....	24,658.....	23,589	20,256
Southern	18,000 ...	17,759.	21,437	26,565.....	28,062.....	26,906
Total	39,789	38,088 ...	45,751.....	51,223.....	51,651.....	47,162

Waste Stream: The tables above show the amount of trash collected at the county landfills. All of this waste is not necessarily placed in the landfill. Tires, scrap metal, and lead acid batteries brought separately to the landfill are recycled. Construction debris and brush are reused whenever possible.

As the County continues to increase numbers of recycling collection sites and also increase the types of recyclable items accepted, the tonnage of solid waste being landfilled should decrease. In 2006, the state accepted recycle rate for the County was 16.3%.

Public Safety

Accomack County is served by a network of Volunteer Fire Companies and Rescue Squads supplemented by paid firefighters and emergency medical technicians. In 2007 the County hired a consultant to prepare a Public Safety System Capability Analysis. The draft report was released on September 2007, and the County, Volunteer Fire Companies, and Rescue Squads are reviewing the report and its recommendations. According to the draft report, in 2006 the Public Safety System in Accomack County was dispatched to a total of 5,056 incidents (Chincoteague numbers only include incidents when other County units responded to assist under mutual aid). These dispatches vary greatly from station to station throughout the County, although 85% of the incidents from 2006 occurred in the districts for the stations in Parksley, Oak Hall, Onancock, Bloxom, Melfa, and Onley.

Because there is a shortage of personnel at the fire departments in Accomack County, the draft report recommends that Fire and Rescue stations be carefully positioned throughout the county to ensure the proper response capabilities, as follows:

1. Proper spacing between stations should be calculated based on response time standards and incident call volume.
2. Stations need to be able to respond to provide both fire suppression and EMS care and transport.
3. Certain stations should be designated for regional response of special tactical units.

The draft Public Safety System Capability Analysis also suggests that a GIS analysis of the impact on response time and workload shift among response units be done to assess the cost-effectiveness of existing stations and their locations.

Important Comprehensive Plan considerations regarding Public Safety include the ability of existing fire and rescue stations to respond in a timely manner to incidents located at existing development and well as at planned development. As the County considers development proposals in the future, adequate fire and rescue response should be a primary consideration for approval. In order to insure adequate public safety, the County should consider developing mechanisms, such as proffers and impact fees, to fund adequate public safety facilities if they are not available for a given development site.

Public Wastewater Treatment

In order to provide basic accommodations for housing and/or other development in areas in which the soils do not support septic systems, a shift towards public sewer is a necessity. In 2007, Accomack County hired a consultant to prepare a Draft Wastewater Action Plan, which was presented in October 2007. The draft plan calls for development and expansion of wastewater treatment systems in Accomack County communities as an alternative to septic systems. Central wastewater treatment can improve water quality by replacing failing septic systems, and also allows for traditional development patterns and density not possible with septic systems.

Public wastewater systems are generally composed of three components: treatment, conveyance, and collection facilities. Treatment facilities can be constructed to serve either a large or small service area. Conveyance facilities transport wastewater by means of pump stations and force mains. Collection facilities are usually gravity or vacuum sewers adjacent to the property of the service user. Previously, vacuum sewers have been recommended for use in Accomack County.

The draft report identifies failing septic systems and the unlined septage lagoons as the highest priority. These issues are a major factor in potential groundwater degradation as well as public health concerns. The Virginia Department of Health is currently working on a plan that will permit the cleaning and lining of existing septage lagoons or development of septage receiving stations at wastewater treatment facilities, thus enabling the closure of the lagoons completely.

A second priority is central Accomack County, which is the County's most densely populated area and includes a viable commercial district. If the County and the Town of Onancock were to

work together, they could begin construction of new collection facilities at the Town's perimeter and radiate outward until they reach the boundary of the service area.

The third priority in developing the Wastewater Action Plan is the Wallops Island Area. NASA's Wallops Flight Facility currently has unused capacity in its existing wastewater treatment plant and is willing to work towards a joint use. A possible service area to consider would include Wattsville, Atlantic, and Chincoteague.

Recreation

Parks: Accomack County currently has limited public park facilities. Many of these facilities are operated through cooperative agreements. The Department of Parks and Recreation owns and maintains the tennis courts at Nandua High School, the ball fields and park at Arcadia High School, and a driving range at South Accomac Elementary School. The county has a lease agreement with the Town of Wachapreague in which they share maintenance of the town park in exchange for use of the ball fields, playgrounds, and picnic areas. The Navy has assisted with the construction of a playground at county owned Wallops Park and there are currently plans for the Navy to assist with improvements to the nature trail at that park. The county recently acquired the Wayside Park, located on U.S. Route 13 outside of Parksley, from the Department of Transportation. Wayside Park has been turned over to the Department of Parks and Recreation and is open for daytime use.

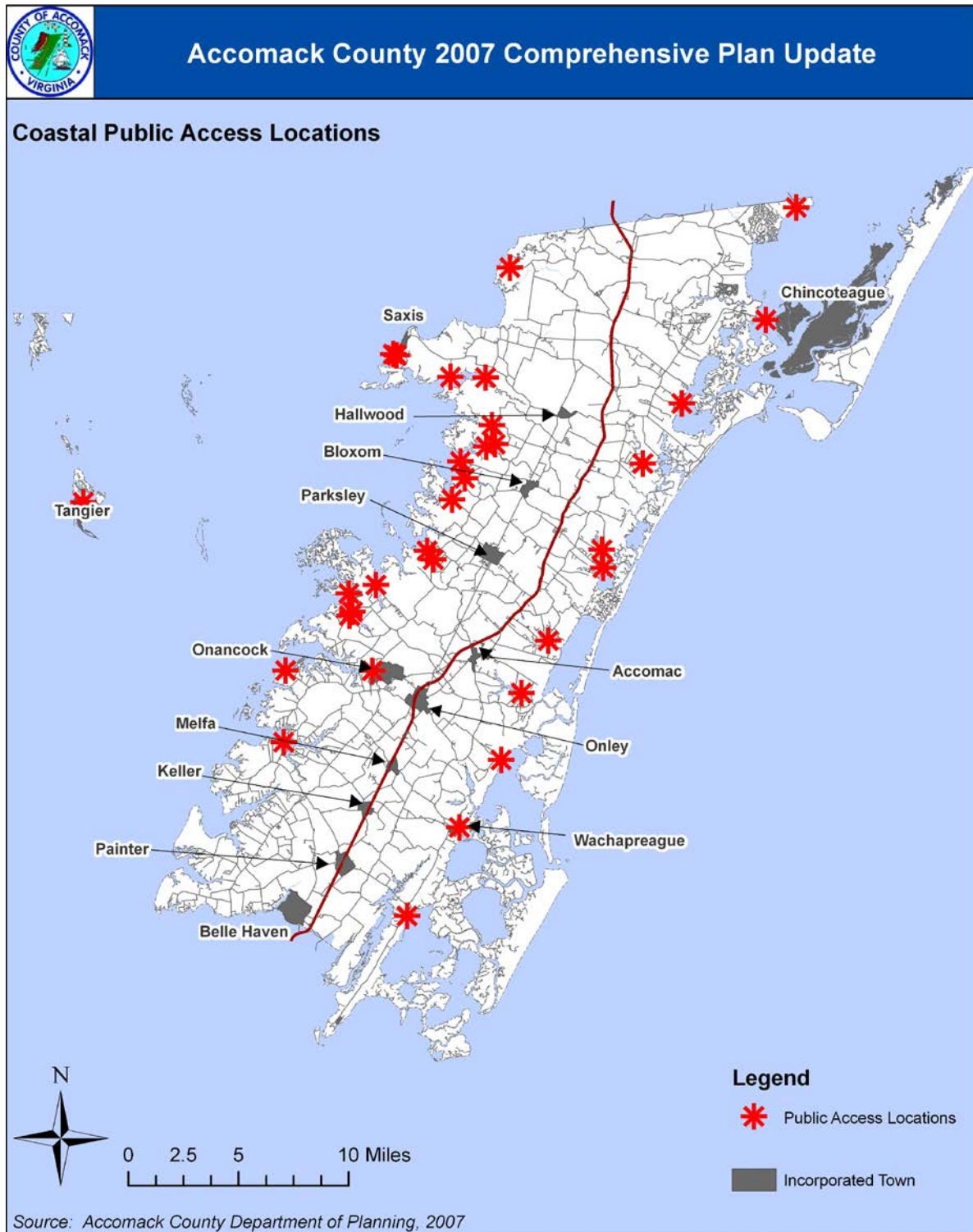
Beach Access: The only truly public beach area accessible by automobile in Accomack County is Assateague National Seashore. There are several sandy beaches along the Chesapeake Bay that have been traditionally used by the public but are privately owned. The barrier islands are also available for day use, but must be accessed by boat.

Public Wildlife Areas: There are a number of publicly owned natural areas and wildlife management areas in Accomack County. Depending on which agency manages the property, these are available for wildlife observation, hiking, canoeing, fishing, and hunting. Public areas include the Chincoteague National Wildlife Refuge, 750 acres at Parkers Marsh Natural Area and the 6,177 acre Saxis Wildlife Management Area.

Coastal Public Access: The County currently maintains 30 boat ramps, as shown on Map 3-O, *Coastal Public Access Locations*. These ramps vary in condition from unusable to brand new, and several of the ramps are for cartop boats only. In some cases, the County only owns the property that the ramp is located on and no surrounding parking area. In 2001, the County hired a consultant to prepare the *Accomack County Coastal Public Access Study*. The study inventoried all of the County's boat ramps and waterfront public access facilities, and made the following recommendations:

1. *Maintenance:* Reduce the number of access sites to 24, distributed geographically, to reduce redundancy and provide better maintenance.
2. *Development:* Develop and/or expand the following six sites to a higher usage type, and seek funding on an annual basis to make phased improvements: Wisharts Point, Pitts Creek, Queens Sound, South Chesconessex, Guilford Creek, and Deep Creek.

3. *New Sites:* Where obvious service gaps exist, the access study identified areas where new sites might be appropriate: Bayside access south of Pitts Creek, Bayside access at the southern end of the County, and Seaside access at Wisharts Point, which is the County's highest improvement priority.

Map 3-Q

Sports Facilities: The two high schools have tennis courts that are available after hours for public use. The Town of Chinoteague also maintains public tennis courts. Ball fields at the schools are also used for soccer, football and baseball. The Little League maintains baseball fields just outside of Parksley. Ball fields are also available at the parks in Wallops, Wachapreague, and Melfa. There is a public golf course at the Captain’s Cove development, near Greenbackville. The private Eastern Shore Yacht and Country Club has a golf course, swimming pool and tennis courts. There is also a private pool in the Town of Onley.

Recreation Centers: Accomack County has no indoor recreation facilities except those in the public schools, and those are not open for regular public use. In 1999 the Eastern Shore Family YMCA opened in Onley and provides a wide range of activities for members, including fitness equipment and an indoor pool. The Department of Parks and Recreation has created a Capital Improvement Fund for the future creation of a county recreational facility and is developing a Parks and Recreation Plan.

The Eastern Shore Family YMCA

The 1997 YMCA feasibility study recommended construction. After a successful fundraising campaign, the Virginia’s Eastern Shore Family YMCA opened in 1999

Capital Improvement Plan

Virginia Code Section 15.2-2239 allows, “A local planning commission may, and at the direction of the governing body shall, prepare and revise annually a capital improvement program based on the comprehensive plan of the locality for a period not to exceed the ensuing five years.” In 2006 Accomack County prepared its first Capital Improvement Plan (CIP), which was updated in 2007. The CIP can be a valuable tool in planning for public facilities and providing a basis for new development to pay for public facilities. The following is a summary of Accomack County’s FY 2008 CIP.

Accomack County, Virginia

Capital Improvement Plan

FY 2008 thru FY 2012

PROJECTS BY DEPARTMENT

Department	Project#	Priority	FY '08	FY '09	FY '10	FY '11	FY '12	Total
Airport								
T-Hanger Site, T/W Design, Construction	07-Air-001	0	30,000	275,000				305,000
Security Fencing (Phase II & III) - Construction	07-Air-002	0		125,000				125,000
Apron Expansion (Design, Construction)	07-Air-003	0		50,000	298,947			348,947
Partial Parallel Taxiway - North (Phase II)	07-Air-004	0			80,000	400,000		480,000
Airport Total			30,000	450,000	378,947	400,000		1,258,947
Building & Zoning								
Engineering Copier	08-BZ-001	4						
Building & Zoning Total								
Central Accounting								
Comprehensive Software Upgrade	08-CA-001	0						
Central Accounting Total								
E.S. Public Library								
Bookmobile	08-ESPL-001	3		200,000				200,000
Building Consultant	08-ESPL-002	1	25,000					25,000
Library Remodeling	08-ESPL-003	3		75,000				75,000
E.S. Public Library Total			25,000	275,000				300,000
Economic Development								
Wallops Research Park Development	07-PWD-022	0						
Economic Development Total								
Parks and Recreation								
Central Parks & Recreation Facility	08-PR-001	5	230,000	660,000				890,000
Southern Parks & Recreation Facility	08-PR-002	5	230,000	155,000				385,000
Parks and Recreation Total			460,000	815,000				1,275,000
Public Safety								
Vehicle Replacement -1994 Ford Explorer	08-PS-001	0	30,000					30,000
Ambulance Purchase	08-PS-002	2	175,000					175,000
Vehicle Replacement (2002 Pick-up Truck)	08-PS-003	3					30,000	30,000
EMS Station	08-PS-004	3		75,000	65,000	500,000	200,000	860,000
Vehicle Replacement (1996 Ford Crown Victoria)	08-PS-005	3		12,000				12,000
Storage Facility/Fire Safety/Hazmat/Emergency Mgmt	08-PS-006	3			30,000	75,000		105,000

Department	Project#	Priority	FY '08	FY '09	FY '10	FY '11	FY '12	Total
Back-up Emergency Operations Center	08-PS-007	4					175,000	175,000
Emergency Power Generator - Co. Office Bldg	08-PS-008	3	88,000	25,000				113,000
Public Safety Total			293,000	112,000	115,000	575,000	405,000	1,500,000
Public Works								
Storm Drainage: Walking Excavator (Tag #654)	07-PW-001	0	275,000					275,000
Storm Drainage: Ford Truck (Tag #633)	07-PW-002	0	28,000					28,000
Buildings & Grounds, Operations: Mobile 21 Vehicle	07-PW-005	0			25,000			25,000
Solid Waste, North Landfill: Design Next Cell	07-PW-006	0	200,000					200,000
Public Works - Mobile 1, 1997 (Tag #623)	07-PW-007	0	25,000					25,000
Solid Waste, Garage: Service Vehicle #1 (1998)	07-PW-008	0	35,000					35,000
Solid Waste, Collection: Southern Transfer Station	07-PW-009	0	110,000	50,000	1,000,000			1,160,000
Solid Waste, Collection: Roll-off Truck #16 (2000)	07-PW-010	0			150,000			150,000
Solid Waste, N. Landfill: Dump Truck #17 (1994)	07-PW-011	0		90,000				90,000
Solid Waste, S. Landfill: Buy Back Opt IT14 ('05)	07-PW-012	0			100,000			100,000
Solid Waste, N. Landfill: Buy Back Opt IT14 (2005)	07-PW-013	0			100,000			100,000
Solid Waste, N. Landfill: Buy Back Opt 963 Loader	07-PW-014	0				200,000		200,000
Solid Waste, Collection: Roll-Off Truck #22 (2001)	07-PW-015	0				150,000		150,000
Solid Waste, N. Landfill: Septage Upgrade (LTF)	07-PW-016	0	325,000					325,000
Solid Waste, North Landfill: Subcell 5 Prep	07-PW-017	0	120,744					120,744
Solid Waste, North Landfill: Subcell 6 Prep	07-PW-018	0		120,744				120,744
School Administration Office	07-PW-019	0	3,749,950					3,749,950
North Accomack Wastewater Treatment System	07-PW-020	0				7,000,000		7,000,000
Central Accomack Wastewater Treatment System	07-PW-021	0			7,000,000			7,000,000
Broadband Initiative	07-PW-022	0			3,000,000			3,000,000
County Administration Building	07-PW-023	0	1,608,210					1,608,210
Health Department Building	07-PW-024	0	1,927,900					1,927,900
Sheriff's Office	07-PW-025	0	286,810					286,810
County Administration Annex	08-PW-015	0	3,344,600					3,344,600
South Landfill Dump Truck (1995)	08-PW-017	2	90,000					90,000
Wastewater Treatment Facility	08-PW-018	1	320,000	5,180,000				5,500,000
Collections - Litter Control Vehicle LC5 (2001)	08-PW-019	3				100,000		100,000
North Landfill - Compactor 826 (2005)	08-PW-020	3					500,000	500,000
Landfills - Slope Mower (1997)	08-PW-021	1	34,000					34,000
Landfills - NLF Tipping Floor	08-PW-022	3			75,000			75,000
Veteran's Affairs Building Roof	08-PW-023	2	38,000					38,000
Parking Lots	08-PW-024	3		250,000				250,000
Queen Sound Access Road	08-PW-025	1	400,000					400,000
Harborton Ride-on Dock	08-PW-026	3		90,000				90,000
Multi-purpose Maintenance Tractor	08-PW-027	3	38,000					38,000
Maintenance Building	08-PW-028	3		80,000				80,000
Quinby Harbor Improvements	08-PW-029	3	125,000					125,000
Garage Dump Truck Mobile 20 (1993)	08-PW-16	2	90,000					90,000
Public Works Total			13,171,214	5,860,744	11,450,000	7,450,000	500,000	38,431,958
GRAND TOTAL			17,234,214	8,232,744	12,483,947	8,425,000	905,000	47,280,905

Cultural Resources

Cultural Resources: The Eastern Shore has a rich history and many surviving cultural treasures. Towns, homes, farms, churches, roads, waterways, and people are woven into the county's cultural fabric. This is evident to any visitor who happens down one of the county's back roads, winding around productive farm fields and forests of pines, through small villages with maybe a store, a church and several large old homes, past an open field with an oyster shell drive leading to a traditional Eastern Shore long house set back from the main road, and ending at a spot where the pavement meets the water's edge and deadrises float at a dock piled high with crab pots. Accomack County is fortunate to have a cultural history which is still very much alive in its traditional industries, churches, homes, and families.

History Overview: Archaeological digs have found evidence of humans on the Shore as early as 8,000 to 10,000 B.C. Prior to European settlement, the Shore was populated by a number of Indian tribes. It was these natives of the area the named the land, "Accawmacke," meaning, "land beyond the waters." Local Indian tribes included a group of families (the Accohanocks, Curratocks, Nasswattocks, Magothas, Mattawames) who called themselves, "Ginga skins" and where ruled by a tribal leader who held court at Great Nasswattock (now Nassawadox). Other tribes included the Assateagues, Chicoteagues, Kickotanks, and Matchipungoes. These tribes all belonged to the Powhatan nation, but due to geographical isolation, had little communication with the Powhatans on the mainland. Algonquin speaking Indians settled near the Maryland border and were more closely related than the Nanticokes to the North than to the Powhatans of the lower shore. The first recorded European to visit the Eastern Shore was Giovanni de Verrazano, who arrived in 1524. Captain Bartholmew Gilbert of England visited the area in 1603 and Captain John Smith explored the Eastern Shore in 1608. The first permanent English settlement on the Shore was settled in 1620 by Thomas Savage along what is now known as Cherrystone Creek in Northampton County. Accomack County was founded in 1663. The county courthouse was originally located in Onancock and moved to a site midway between the Atlantic Ocean and Chesapeake Bay in 1786. That site is now the town of Accomac. The Shore was originally all one county. In 1673, the border was settled to divide the area into two separate counties. The southern county was named "Northampton," after the birth place of Colonel Obedience Robins, who came to the Shore from a shire northwest of London and was a friend of King Debedeavon. The northern county retained the name, "Accomack," as given by its native people.

European settlers began to settle on the Shore in large numbers in the 1630s and timberland was cleared for the planting of crops. Food for sustenance and tobacco were the primary crops until the steamboat era began in the early 1840s. Use of the steamboat allowed local farmers to expand from staple crops to commercial vegetable production. Sweet potatoes, beans, peas, cotton, flax, fire wood, tobacco, and oysters were shipped up and down the coast. The introduction of rail service in 1884 allowed for further expansion of the produce market and for the export of perishable items such as strawberries and seafood.

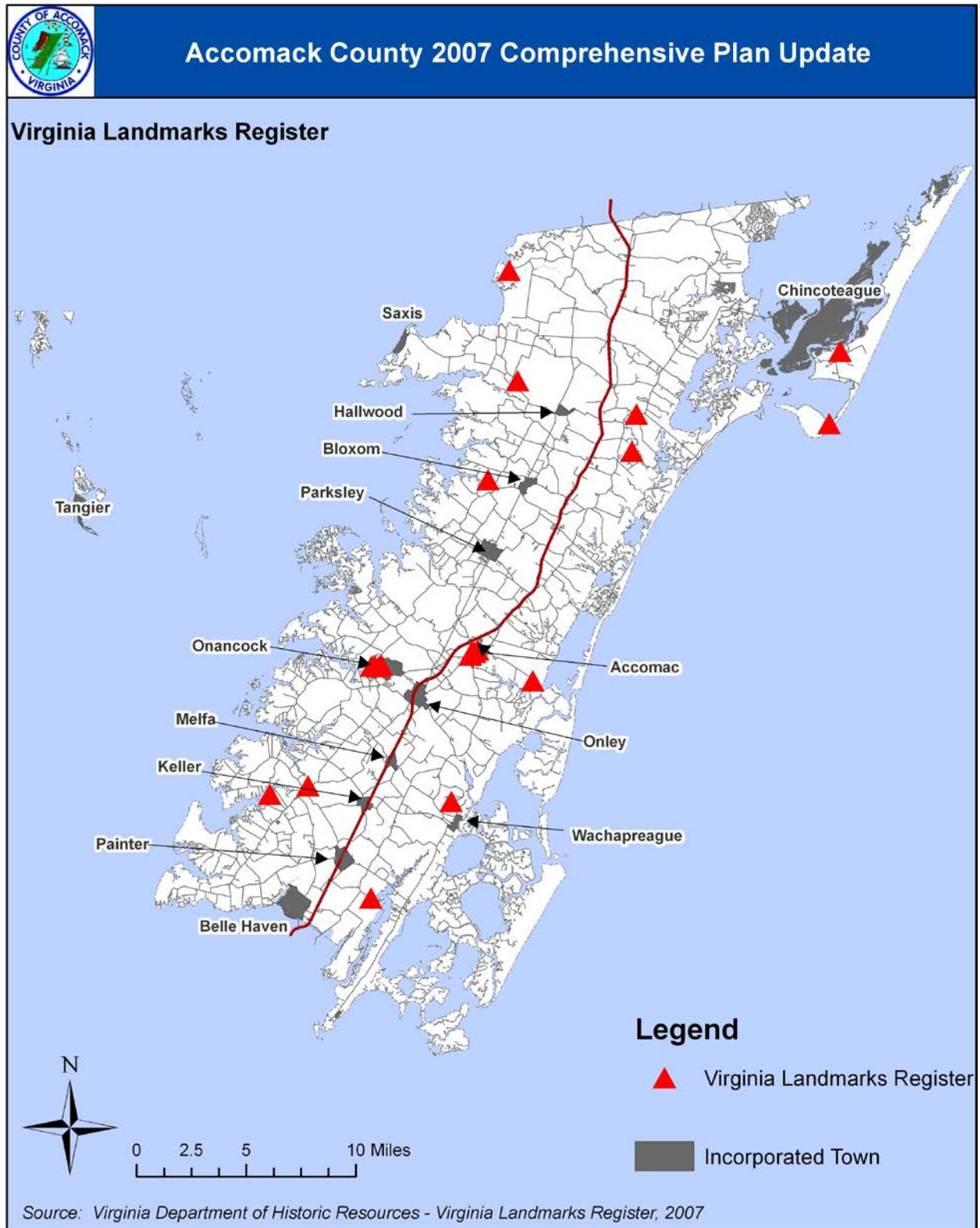
Architecture: The Eastern Shore has a unique style of architecture exemplified by the long house, or "big house, little house, colonnade, kitchen." This style developed from the local practice of starting out with a small, modest house and detached kitchen, and as a family became more prosperous, building a larger house next to the first and connecting the two with a colonnade. There are many fine examples of this style still standing and in use in Accomack

County. The county also has many old farm houses, stately town residences, waterfront estates, churches, government buildings, stores, and schools.

State and National Designated Landmarks: There are a number of sites in Accomack County that are on Virginia's register of historic landmarks and the National Register of Historic Places. Properties included on these registers are historically, architecturally or culturally significant. Accomack County sites include Saint James Episcopal Church, Bowman's Folly, Hopkins and Brother Store, Kerr Place, Wessels Root Cellar, Saint George's Episcopal Church, Wharton Place, Assateague Lighthouse, the Mercantile Building, the Mason House, Pitts Neck Farm, the Debtor's Prison, the Scarborough House Archaeological Site, the Edmond Bayly House, Shepherd's Plain, Arbuckle Place, and the Assateague Beach Coast Guard Station. Also, the towns of Accomac and Onancock have state designated historic districts. Virginia Historic Landmarks Register Sites are shown on Map 3-P.

Museums: Accomack County has several museums dedicated to the area's history and natural resources. Most of these museums are located in the Chincoteague area, including the Assateague National Seashore Visitors Center, Chincoteague National Wildlife Refuge Visitors Center, the Oyster Museum, and the NASA Wallops Island Visitor Center. The Town of Parksley has the Eastern Shore Railway Museum and an antique car museum, and the Town of Onancock is home to the Kerr Place Historic House and Museum.

Map 3-R



Chapter 4
Issues and Concerns

Chapter 4

Issues and Concerns

Introduction:

The natural and cultural resources identified in Chapters 2 and 3 point to many issues and concerns facing the County as it looks to the future. Chapter 4 examines those issues in more detail, connects many of the related themes that cross over between various resources, and identifies some of the “trade-offs” the County faces in terms of conflicting goals and opportunities. This analysis sets the stage for the policies and actions contained in Chapters 5 and 6.

Development

Cluster Development: Haphazard spread of residential and commercial development throughout an area can lead to loss of important farmland and forestland, degradation of scenic vistas, adverse impacts on fragile natural resources, traffic congestion, decreased emergency response time, and costly and inefficient provision of government services. Directing growth towards designated growth areas which are carefully selected based on existing development patterns, transportation links, soil suitability, and location of fragile resources and environmental hazards, will result in safe, pleasant, and efficient development while protecting resources that are important to the county as a whole. Clustering development within specified growth areas allows development to capitalize on existing infrastructure investments and more efficiently and cost effectively provide infrastructure improvements in the future. Roads, drainage, schools, police protection, and emergency services can all be provided more efficiently when development is clustered. In order to ensure effective use of the areas outside of development clusters for agricultural, forestry, habitat, and recreational use, development outside of designated growth areas should be low density in nature. This density can be achieved through large minimum lot sizes, open space requirements for subdivisions and conservation area zoning. In June, 2006, the County adopted amendments to the A (Agriculture) Zoning District that permitted cluster development, including incentives of bonus lots for such developments, as well as an increase in the minimum lot size for non-cluster developments.

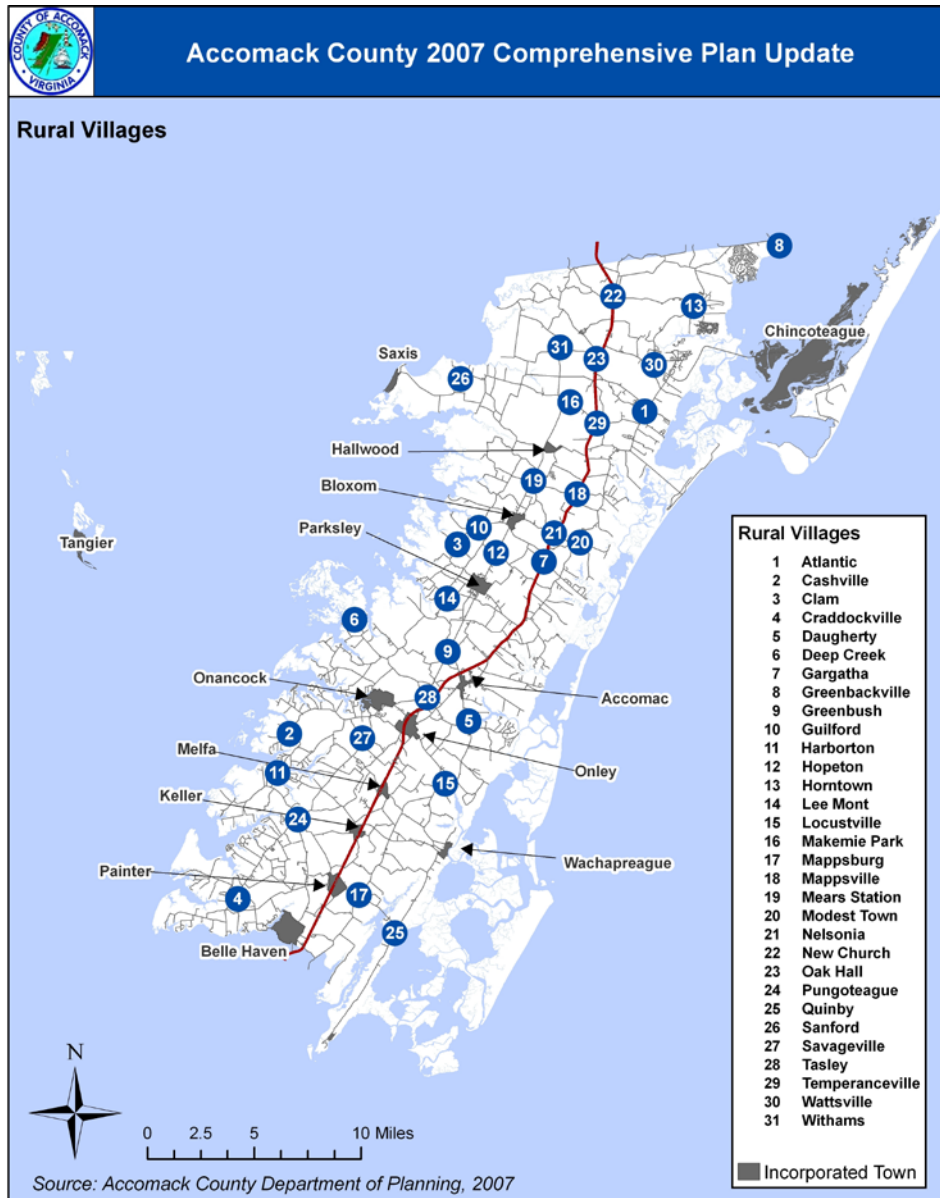
Waterfront Development: A good amount of waterfront development has occurred in Accomack County over the last ten to fifteen years. This development has been significant enough to warrant some concern about the impact it may have on the environment and personal safety. High density waterfront development can pose a significant threat to property and the environment. Forty-four percent of Accomack County is located in the 100-year floodplain, bordering the county’s creeks and marshland. Structures in this area are prone to repeated damage from flood events. The coastal fringes are also most susceptible to

A “Bundle of Rights”
When you own land, you are said to have a “fee simple” interest. This interest is like a bundle of sticks, each of which represents a right associated with the property. These rights include the right to farm, to extract minerals, to cut timber, to develop, and to do anything else with the property unless prohibited by law. These rights can be separated and transferred to other parties as “less than-fee interest.” An easement is one such less than-fee interest. In granting an easement, an owner gives up some of the rights in a property, as specified in the deed of easement. For example, an owner can give a neighbor the right to cross his property (a right-of-way). Under a conservation easement, the owner may give up all or most rights associated with construction on the property, often referred to as the “development rights.”

Map 4-A



Map 4-B



saltwater intrusion in the groundwater aquifer from excessive pumping. Concentration of septic systems in close proximity to creeks and bays could lead to water pollution via contaminated groundwater leaching into surface waters. A proliferation of private piers on closely spaced waterfront lots also pose a threat to surface water quality. Currently, Accomack County's Zoning Ordinance does not include any specific requirements for waterfront development, except the 100-foot setback requirement of the Chesapeake Bay Preservation Overlay District. The 100-foot setback requirement should be implemented county-wide to provide the same level of water quality protection to Seaside and Bayside watersheds. Increased minimum lots sizes and water frontage requirements would limit the density of waterfront development and decrease the likelihood of impacts on water quality.

Substandard Housing: Lack of complete plumbing facilities, complete kitchen facilities, and adequate, safe heating remain problems for many Accomack County residents. Accomack County should continue to support the efforts of the Accomack-Northampton Housing Corporation, VESEHC, and other organizations that are addressing this problem. In order to provide adequate plumbing to more houses, the use of alternative septic systems should be pursued in cooperation with the Health Department. Enforcement of the building and fire safety codes will ensure that new housing stock meets minimum standards. The county has made use of Community Development Block Grant Program funds for rehabilitation work in communities with concentrations of substandard housing. The Board of Supervisors has prioritized the communities of Savagetown, Locust Mount, Metompkin, and Graysville for rehabilitation assistance. The Board of Supervisors has stated that these communities should receive priority in consideration for Community Development Block Grant Program funding and that other sources of funding should also be sought to address the needs of these communities. A Housing Plan was developed for Accomack County by the Accomack- Northampton Planning District Commission in 1977. The implementation of this plan lead to the creation of the Accomack-Northampton Housing and Redevelopment Corporation and has driven housing assistance and rehabilitation programs over the last twenty years. The county should consider creating an updated housing plan which includes an accurate survey of existing housing conditions, identification of housing needs, and a plan of action to address those needs. The county should seek assistance from the Accomack-Northampton Housing and Redevelopment Corporation in developing this plan and should assist in providing necessary funding.

Manufactured Housing: The Code of Virginia grants localities the authority to adopt and enforce building codes, safety standards, and land use ordinances to promote the public health, safety, convenience, and welfare. Section 15.2-2283 of the Code of Virginia authorizes the county to provide for the health, safety and general welfare of the public through zoning regulations and establishes the purposes of zoning regulations. Since 1995, §15.2-2290 requires all local governments to allow "the placement of manufactured houses that are on a permanent foundation and on individual lots shall be permitted, subject to development standards that are equivalent to those applicable to site-built single family dwellings within the same or equivalent zoning district."

The following table lists the number of permits issued for new housing units each year (conventional and manufactured) and the number of those permits that were issued for single-wide and doublewide manufactured housing. The general trend in recent years has been a reduction in the percentage of manufactured units.

Year	Housing Units	Man.Units	%
1990 ...	253	166	66%
1991 ...	265	132	50%
1992 ...	316	170	54%
1993 ...	275	123	45%
1994 ...	316	157	50%
1995 ...	335	223	67%
1996 ...	292	191	66%
1997....	252	157	62%
1998....	285	190	67%
1999....	323	206	64%
2000....	308	204	66%
2001....	306	149	49%
2002....	322	180	56%
2003....	374	146	39%
2004....	344	144	42%
2005....	433	160	37%
2006	319		

Source: Accomack County Building Permits

The Code also allows valid, nonconforming mobile or manufactured homes to be replaced with newer one that meets the current HUD manufactured housing code. A number of older manufactured housing units have appeared in Accomack County which, due to age, deterioration, and general wear, provide living conditions which would generally be considered substandard. Some of these units are in condition which would not be approved as acceptable for conventionally built structures. Yet, because these units bear a HUD approval label, they must be allowed in agricultural zoning districts. The inability to regulate minimum standards for manufactured homes thus creates a significant safety hazard to citizens who reside in these units. Ninety-three percent (93%) of Accomack County is zoned as agricultural, reflecting the rural nature of the county. The county's zoning ordinance states that the agricultural zoning district, "is established for the specific purpose of facilitating existing and future farming operations, conservation of land and other natural resources, reducing soil erosion, protecting shellfish waters from pollution and reducing hazards from flood, fire and storm." Prior to the effective date of this legislation, Accomack County allowed double-wide manufactured homes and single-wide manufactured homes with A-frame roofs, house type siding, and a masonry foundation, by right in agricultural and residential zoning districts. Older manufactured homes were allowed in manufactured home parks or in agricultural and residential districts by special use permit from the Board of Zoning Appeals.

Septic System Use: Due to the lack of central wastewater treatment facilities, most new development in the county, whether residential, commercial, industrial, or institutional, requires individual wastewater treatment facilities, i.e. septic systems or package plants. Septic systems are an efficient and effective waste disposal method, if properly designed, installed, and maintained. Key aspects of good septic system design and maintenance include location in relation to wells and surface water, separation from the groundwater table and soil surface, soil suitability, and regular septic tank pump-out. It is important to understand the general suitability of soils for septic tank filter fields. The requirement of well drained soils, those that will effectively filter wastewater, is an influential factor to the development of the county. Either the soil on which development is to take place effectively filters wastewater or the waste must be

pumped to a soil that will. In general, the Health Department's Division of Environmental Health finds the following soils acceptable: Bojac Loamy Sand (BhB), Bojac Sandy Loam (BkA), and Bojac Fine Sandy Loam (BoA). These are soils which will drain, allowing septage to properly filter through the soil.

Failing septic systems create potential health and water quality problems. When a septic system stops working properly, untreated effluent can make its way to the surface, into shallow wells or into nearby surface waters. Septic systems can fail due to poor design or improper maintenance. Some of the most common causes of system failure are age of drainfield, lack of maintenance and shallow or seasonally high water tables. The hazards of septic system failure are addressed in the Chesapeake Bay Preservation Overlay District of the county's zoning ordinance through requirements for a reserve drainfield area and regular septic tank pump-out. Development in the Overlay District that uses a septic system must have a reserve drainfield area, equal in capacity to the installed system, set aside for future use in case the installed system fails. Septic systems located within the Overlay District must also be pumped out at least once every five years. Pumping the sludge out of the bottom of a septic tank reduces that amount of suspended solids in the wastewater that goes into the drainfield, thus extending the life of the septic system by reducing the suspended solids that can clog the pores in the soil and cause the system to fail. The County should consider requiring septic system effluent pre-treatment in waterfront areas county-wide to better protect water quality. The pumping of septage effluent to a remotely located drainfield is a fairly common practice in Accomack County. This practice often results in effluent from multiple structures within a residential development being pumped to a small area of the development that has acceptable soils. The use of remotely located drainfields results in septic systems being more densely concentrated than they would be if the systems were located on individual lots. Very dense concentrations of septic systems limit the effectiveness of the soil in that area to absorb and filter septic waste. The location of these remote drainfield areas can be poorly marked and are often allowed to become overgrown in tall grass, shrubs and trees, making it difficult to locate and clear the area for drainfield placement.

Problems associated with remotely located drainfields could be addressed in the county's subdivision ordinance. Options available to address the potential impact of densely concentrated drainfields on water quality include requiring that drainfields be located on the parcel being served, limiting the percentage of lots in a development that may be served by remotely located drainfields, or regulating the density of remote drainfields through minimum separation distances or minimum lot size requirements. Currently, due to the Chesapeake Bay Overlay District reserve drainfield area requirement, the allowable density within a remote drainfield area on the Bayside is half the allowable density on the Seaside. Drainfield density should be limited county-wide through adoption of the reserve drainfield area requirement throughout the county.

Map 4-C



Central Water and Sewer Systems: Due to the need to use individual sewage disposal systems, development is currently dependent on good soils. This places development in competition with agriculture for the best land in the county. Provision of sewage treatment plants would allow development to occur in previously undevelopable areas, leaving the prime soils for agricultural use. However, the development of sewage treatment systems can be costly, may have adverse environmental impacts and, if not properly planned, can lead to uncontrolled growth within the service area. Centralized water and sewer systems could be beneficial to certain areas of the county, but such systems should be considered only in the county's designated growth areas. Also, any proposals for centralized water or sewer should be carefully analyzed to ensure that the demand for the system justifies construction costs and any environmental impacts. If demand justifies a system and the system would help development in designated growth areas, steps should be taken to ensure that environmental impacts are minimized and the service area should be carefully planned to prevent sprawl and haphazard development.

In order to achieve the traditional, compact pattern of development the County seeks, it will need to foster the provision of central wastewater treatment facilities in appropriate, planned locations. This may require public investment, and/or cooperation with private companies to provide such systems.

Future Development Patterns: The County's historic development pattern was generally compact and clustered, with most development occurring in towns, villages, and hamlets. The modern pattern of more dispersed or scattered land use does provide certain benefits, including rural lifestyle choices, but it also creates various impacts, including higher public service costs, interference with farming and forestry activities, and environmental impacts.

Thus, returning to a more traditional, compact settlement pattern while retaining some of the key benefits of dispersed development would help the County manage the costs of future growth, and respond to expected demographic, economic, and technological changes.

In October of 2005, at the beginning of the Comprehensive Plan update process, the Planning Commission and the Land Use Planning Stakeholders Group conducted a facilitated Joint Work Session on Land Use Planning Issues and Options. Some of the policy ideas from this work session that relate to issue of guiding future development patterns include:

Problems:

- *Zoning around existing towns is not adequate and this pushes people out into agricultural areas.*
- *It's too easy for development to come into agricultural areas. These areas lack adequate roads for residential development and it often creates conflict among users.*
- *There is a countywide lack of affordable housing.*
- *Expansion around existing towns is difficult because the soils are not suitable for septic systems and centralized wastewater treatment facilities are not available.*

Solutions:

- Concentrate new development in and around existing towns and communities. They are well situated, have good access and this will help revitalize these communities.
- Identify ways for larger new developments to reproduce the attractive village concept that is already found throughout the county.
- Encourage more commercial development in existing villages to serve residents and attract tourists.
- Use Planned Unit Developments (PUDs) with their own sewage treatment plants so development can occur in areas with poor soils for septic systems.

In addition to this and other work sessions, Randall Arendt evaluated the County's plans and ordinances and prepared two memoranda with recommendations for amendments. Among the key recommendations were to implement "conservation design" techniques for new rural residential developments, and to implement the principles of traditional village design for larger developments in and around existing communities. These principles are summarized below:

Conservation Design

Conservation or Open Space Design is technique for laying out rural subdivisions and/or for preparing concept development plans for rezoning applications in rural areas, outside of towns and villages. The process is detailed in "Designing Open Space Subdivisions" by Randall Arendt, published by The Natural Lands Trust, Inc., 1994, from which the following illustrations are excerpted. The process consists of four basic steps, as follows:

Step One: Identify All Potential Open Space Areas on the Site

These areas are those that are most environmentally sensitive, most scenic, or most historically or culturally significant, and which would be most severely missed if they were destroyed by clearing or construction. Typically these would include wetlands, floodplains, and steep slopes.

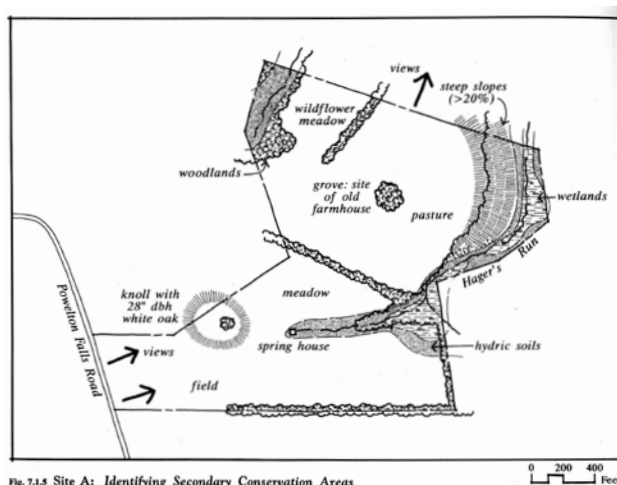


Fig. 7.1.5 Site A: Identifying Secondary Conservation Areas

Step Two: Locate House Sites

In modern rural development, lot value can be maximized by siting houses to maximize the views of open space or water features from as many lots as possible. This can be accomplished by using relatively narrow lot widths, and in some cases, single-loaded roads.

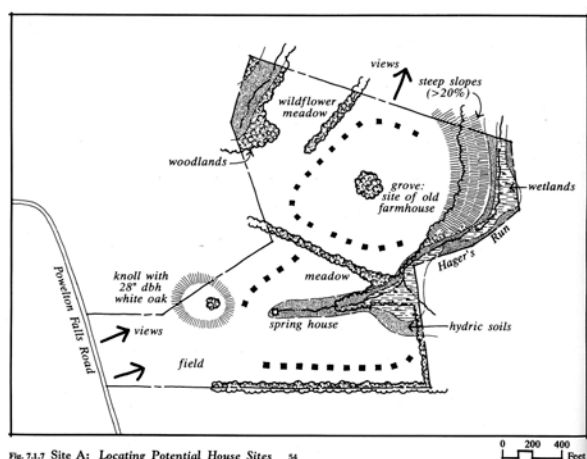


Fig. 7.1.7 Site A: Locating Potential House Sites 54

Step Three: Design Road Alignments and Trails

Once open space has been reserved and house lots located, the roads to access those lots can be located. The road system should fit the topography and avoid long straight sections, and avoid crossing wetlands and water bodies to the greatest extent possible. Streets should be connected with each other and to adjacent properties where possible, and should avoid dead ends.

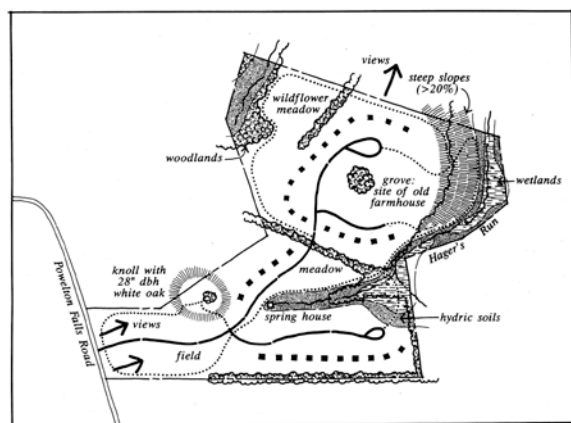
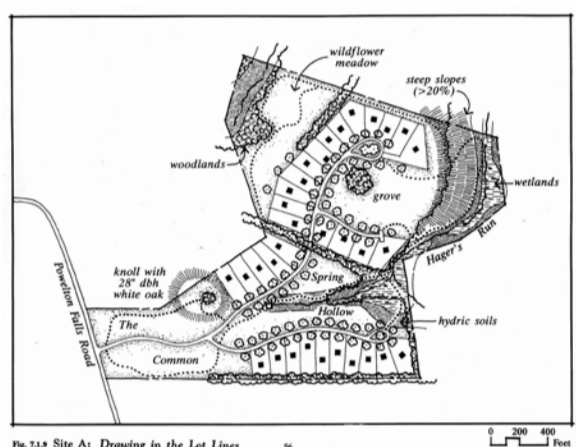


Fig. 7.1.8 Site A: Designing Road Alignments and Trail Links

nsive Plan

Step Four: Draw Lot Lines

The final step is to draw lot lines to create separate parcels for each house site. Lot lines must provide adequate area for septic fields, as well as reflect any reservations for commonly owned open space, if that is a feature of the development.



Traditional Village Development

The method outlined above for designing subdivisions is appropriate for rural areas, but not for areas within or adjacent to existing towns and villages. In those areas, many of the traditional features of those historic settlements should be reflected in new development. The benefits of incorporating traditional design features in new development include:

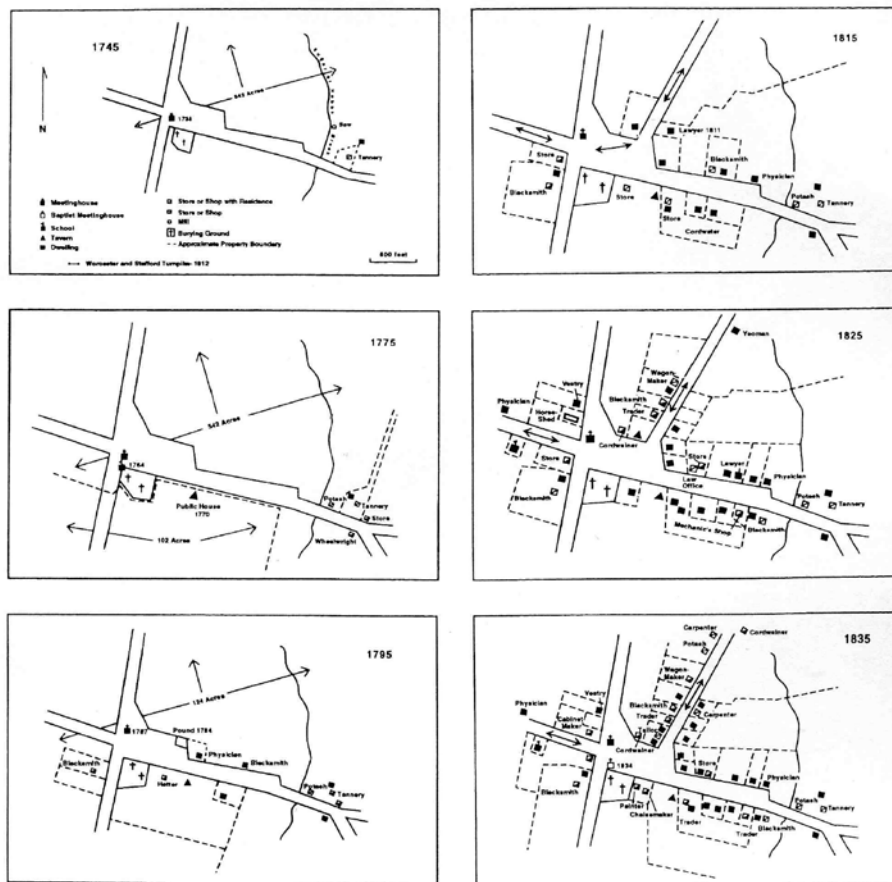
- Limit fiscal and environmental impacts
- Provide a range of dwelling types and lot sizes, including affordable housing
- Provide neighborhoods that are compatible with historic character and the tourism industry
- Allow for fewer and/or shorter motor vehicle trips
- Better meet changing market demand for pedestrian-friendly neighborhoods

Features of traditional village neighborhoods include the following (Note that not every historic village nor every new village will necessarily have all of these features, but these are typical).

- Mixed uses, dwelling types, and lot sizes
- Relatively shallow front yards and deep rear yards
- Front porches; Garages at the rear

- Parking on street and to the side or rear of buildings
- Interconnected street network
- Narrow pavement widths on local streets
- Views into the surrounding open landscape
- Civic sites in prominent locations within the village

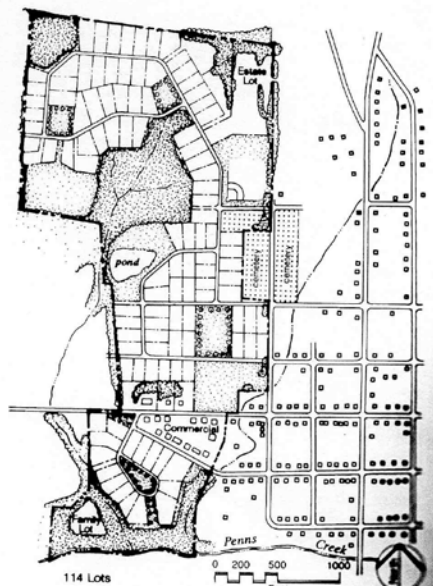
Some of these features are shown in the graphics below, excerpted from “Crossroads, Hamlet, Village, Town”, PAS Report Number 487/488, 1999, by Randall Arendt, published by the American Planning Association.



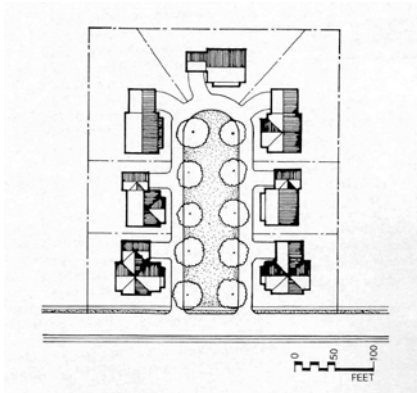
The above maps show the gradual historic evolution of a New England village around a crossroads.



Conventional "suburban" expansion of historic village



Expansion using traditional design patterns



Alternative to conventional “suburban” cul-de-sac



Narrow House (22') with rear garage allows better affordability

The Local Economy

Strategic Plan for Economic Development on the Eastern Shore

The Challenge: A strategic plan for economic development on Virginia's Eastern Shore was developed by a local economic development advisory council in 1994. That plan defined the challenge to successful economic development on the Shore as holding on to the area's history, heritage, and fragile unique natural assets, while attempting to capture new concepts and opportunities for economic growth. According to the plan, the keys to economic growth are; revitalizing and diversifying the economic base, promoting homegrown entrepreneurship, investing in the work force and, investing in infrastructure.

Revitalizing and Diversifying the Economic Base: In revitalizing and diversifying our economic base, we must overcome a significant apprehensiveness toward economic development that arises from the misguided belief that economic development and environmental protection are mutually exclusive. This can be accomplished by conducting comprehensive regional strategic planning which seeks broad based input; employs a consensus building process; develops a vision for the region; and produces an action plan for implementation which targets economic development that is consistent with, and capitalizes on, the existence and preservation of our fragile ecological environment and unique Eastern Shore culture.

Promoting Home Grown Entrepreneurship: By promoting home grown entrepreneurship, we can create new opportunities for businesses and jobs for people who already have a strong commitment to the region; who are already knowledgeable of the area's strengths and weaknesses; and who will not require special inducements to locate here. This approach has the added benefit of retaining a greater percentage of business profits locally – enhancing capital formation for further regional growth. Emphasizing this approach does not preclude attempting to attract suitable businesses to locate in the region. In fact, it will enhance the attractiveness of the region to prospective firms.

Investing in the work force and infrastructure: Success in accomplishing economic development is highly dependent on the public sector's long-term commitment of resources for work force and infrastructure development. We must have the political will and leadership necessary to acquire the capital to improve the quality of our public school system; provide relevant training opportunities that will improve the quality of our labor pool; optimize those facets of our transportation system which support the economic activity envisioned by our strategic planning; develop regional solutions to water, waste water, and solid waste issues; and increase the supply and quality of housing for our citizens. Since the region is one of the poorest in the Commonwealth, financial assistance from the State is essential. We must, however, also examine our regional sources and uses of revenues to assure they are consistent with the priorities which emerge from our strategic planning.

Recommendations: The following discussion includes information and recommendations from the *Strategic Plan for Economic Development on the Eastern Shore*, the Countryside Stewardship Exchange Report, and the Eastern Shore Economic Development Commission's Plan of Action.

Business and Industrial Development: Exciting opportunities exist for the Eastern Shore to

attract and develop new businesses and industries, retain existing companies, and encourage expansion. Business and industry development can provide well paying jobs, a diversified tax base, improved quality of life, retention of our young people as they enter the work force, and a stable economy. To be successful in recruiting, developing and sustaining new industry, the Eastern Shore must pursue an economic development strategy that balances the needs of growth against those of protection of our ecological resources and rural character.

Industrial Park: The Shore's industrial parks and properties marketed by the Eastern Shore of Virginia Economic Development Commission are superb development assets. The Accomack County Airport Industrial Park is served by water, sewer, and paved streets and is strategically located adjacent to the County's airport, the Eastern Shore Community College, and U.S. Route 13.

Foreign Trade Zone Designation: NASA's Wallops Flight Facility, the Cape Charles Port area in Northampton County, and the Accomack County Airport Industrial Park have great potential as a Foreign Trade Zone (FTZ). A FTZ designation by the U.S. Department of Commerce would serve existing and future companies as an economic development incentive through the elimination or deferral of import duties. A Foreign Trade Zone application is currently being prepared by the Eastern Shore of Virginia Economic Development Commission.

Small Business Development: The development of micro-business enterprises would provide opportunities for the establishment of resident owned and operated or employee owned businesses. An Incubator/Business Center would provide the facilities, services, equipment, and expertise required by new and expanding local enterprises at a single location and at a cost that would increase the chances of those businesses succeeding. Such a center could be a partnership of local business service providers such as banks, chambers of commerce, local enterprise agencies, and local governments. The benefit of such a center lies in both the combined expertise gained from the partnership which would benefit regional economic development and individual gains for service providers through referrals.

Artisans and small production companies are a growing sector of the county's economy. Many producers of local arts, crafts, and food products would benefit from a marketplace which would sell and promote their products. A marketplace, located on Route 13, could provide this central outlet and encourage highway travelers to stop and shop in Accomack County. This concept has been developed successfully in North Carolina and West Virginia.

Federal and Local Enterprise Zone Incentives: In 1994, parts of Accomack County were designated as a Federal Enterprise Community and State Enterprise Zone. The state provides an incentive package for business in the Enterprise Zone but the federal government provides no incentives. The addition of a federal incentive package would be beneficial to promoting growth in the zone and Accomack County should support any efforts to have such incentives developed. In addition to the tax incentives provided by the state to businesses that locate in the Enterprise Zone, localities are encouraged to adopt local incentives. Although these incentives will not be of the same monetary impact as those provided by the state, they advertise the county's pro-business attitude. Examples of local incentives initiated by other localities include accelerated permit processing, crime prevention programs and education, waiver or reduction of certain permitting fees, real property rehabilitation tax abatement (i.e. five year, tax credit on

the increased assessed real property value resulting from rehabilitation work completed on commercial or industrial property), and machinery and tools tax credit (i.e. five year exemption from machinery and tools tax to qualified businesses). Some localities that give tax rebates base those rebates on the number of jobs that a business creates.

Local Economic Assets and Issues

Commercial Space Activity: Virginia is uniquely positioned to capture a portion of the emerging market for commercial space activity. The existing infrastructure at NASA's Wallops Flight Facility provides maximum leverage for any new capital investment which targets this market.

Advantages include:

- (1) Satellite orbits, which provide coverage of the majority of the earth's populated land mass, can be launched from Wallops Flight Facility with less energy (i.e. less cost) than from any existing launch site in the U.S.
- (2) The Eastern Shore is a "radio frequency quiet" area making it an ideal location for ground stations supporting satellite operations
- (3) Wallops Flight Facility's mission and tempo of operations provide the launch schedule flexibility needed to profitably conduct commercial activity
- (4) Wallops Flight Facility has earned the reputation as a low cost/quick response utility – attributes compatible with commercial activity. Development of the Mid-Atlantic Regional Space Port (MARS) at Wallops Island is currently underway. The MARS handles commercial rocket and satellite launches. MARS has a significant impact on Accomack County's economy. In addition to revenue generated by Space Port activities, it is expected that additional support industries will locate in the vicinity of the facility. Development of the Wallops Research Park will help the county to capture a major sector of the emerging market for commercial space activity by supporting development of the MARS.

Tourism: Virginia's Eastern Shore is a peaceful peninsula nestled between the Atlantic Ocean and the Chesapeake Bay. There is an abundance of natural scenic, recreational, and multi-cultural assets which offer saltwater fishing, beaches, bird watching, hunting, boating, antique shops, a unique style of architecture, and historic old homes. Tourism development must be carefully planned to create a diversity of attractions, have a low impact on the environment and link the interests and assets of existing businesses, communities, and individuals with the county's environmental and cultural assets for the benefit of the county as a whole.

The county's unique heritage and natural resources present opportunities for increased tourism activity. Tourism could be encouraged through extension of the heritage trail into Accomack County and development of museums and information points which would interpret Eastern Shore history and direct visitors to local points of interest. Signs on Route 13 could be used to entice travelers to venture off the highway and direct them towards towns, harbors, beaches, and points of interest. The Eastern Shore should have representation at the Virginia visitor center on



Route 13 to encourage travelers entering the state to explore the area. Special events such as the Seafood Festival, Harvest Festival, Garden Tour, and Eastern Shore Birding and Wildlife Festival and attractions such as beaches and parks should be actively promoted.

Infrastructure: Businesses investigate the quality of infrastructure, such as available facilities, utilities and the transportation network, when selecting locations for operation. These items must be given attention in order to be competitive with other areas also trying to attract new industry. **Facilities:** The availability of quality business facilities is important to recruitment efforts. There is a lack of existing modern industrial and office buildings in Accomack County for new business to move into. A prospective location is more attractive to a business if that business knows that either a building is ready for them to move into or that they will face few obstacles in obtaining the land and necessary permits to build. In order to stay competitive, some localities construct shell buildings to attract new business. Construction of these buildings can be funded through a revolving building fund. With a revolving fund, the Industrial Development Authority constructs industrial buildings, and when the first buildings are sold or leased, the proceeds are used to build more buildings. Another, less desirable, option is to establish a “ready-to-build” program which provides cleared and pre-permitted sites with building plans drawn, building costs estimated and sources of financing identified. With this option, prospective businesses can be assured that an approved building site is available. The county should research, and possibly establish a revolving fund for, the construction of speculative industrial buildings and consider the establishment of a “ready-to-build” program for new businesses.

Sewage Disposal: One town in Accomack County, Onancock, has central sewage collection and tertiary treatment facilities. The Accomack County Industrial Park has its own water supply and water tower and is connected to Onancock’s sewage treatment plant. All other areas, including the incorporated towns, use various septic systems. Properly designed septic systems provide an effective and efficient method of waste disposal. Placement of septic systems, however, are dependent on the availability of suitable soils. Approximately 35% of Accomack County has soils that are suitable for septic system installation. Traditionally, the distribution of suitable soil has directed the distribution of residential and commercial development. As Accomack County continues to grow, it may be desirable to investigate alternatives to individual septic systems. Any central sewage treatment systems proposed should be designed to minimize impact on the environment and should serve compact development areas around villages and towns.

Transportation: The Eastern Shore has several major components of an effective and complete transportation system to support business activity and development. Accomack County Airport, with a 7,000 foot runway (5,000 feet lighted), is strategically located on the coastal North-South air routes and offers a low-activity destination, interim rest and refuel, and a possible training location for various sized commercial aircraft. Its location, adjacent to the Accomack Airport Industrial Park, gives added advantages for businesses requiring on or near airport locations and operations. U.S. Route 13, a major four-lane highway, connects Virginia to Maryland, and the Eastern Shore to the Virginia mainland via the Chesapeake Bay Bridge-Tunnel, an 18 mile long structure of multiple bridges and tunnels. U.S. Route 13 is the major transportation link for all commercial, industrial, and tourism activities on the Eastern Shore. Eleven interstate commercial carriers, primarily engaged in furnishing “over-the-road” trucking and common carrier services to the Eastern United States, are in operation on the Eastern Shore. The Eastern Shore Railroad (ESRR) provides rail service from Norfolk through the Port of Cape Charles to Pocomoke, Maryland and offers interline transport of products and material that is critical to many local businesses. Onancock and

Chincoteague harbors and waterways also offer additional locations for barge transport operations.

Education: Job training is closely linked to the creation of jobs. Residents must have the opportunity to pursue training for available jobs and new industry needs assurance that a trained work force will be available to fill necessary positions. The county is served by a public school system and the Eastern Shore Community College. Both offer significant services to business and industry. Enrollments suggest stable high school graduation numbers with college enrollment at 1,200. Of that number, 730 are at the Community College and 470 at other institutions. Literacy/GED classes enroll 375 adults. The public school test scores and the percent of adults with high school diplomas are below state averages. High schools offer varied vocational programs and work closely with the college. In order to develop a work force that is well trained to fill the needs of local industry, business, education and community representatives should work together to identify local training needs and facilitate solutions. The public schools should also work to improve student performance and graduation rates, and pursue techprep, school-to-work transition, dual enrollment, technology utilization, and other options to increase student preparedness for the work force. In order to provide better opportunities for local residents, the County should encourage development of a 4-year college.

Regional Cooperation: The success of regional economic development efforts on the Eastern Shore requires an effective working relationship between various public and private organizations and individuals. The broad range of programs and projects being pursued by these interests represents a major commitment of valuable Eastern Shore resources. Since the success of these separate efforts depends upon a sustained commitment of resources over a long period of time, a high degree of cooperation is needed to jointly agree on regional priorities. An essential feature of this cooperation is the process for determining and assuring an equitable and adequate allocation of these limited resources to projects and programs that have the greatest potential to benefit the most people in our region. Accomack and Northampton County and town governments must play a leadership role in encouraging inter-county cooperation. Bi-county organizations such as the Eastern Shore of Virginia Economic Development Commission, Accomack-Northampton Planning District Commission, and the Accomack-Northampton Transportation District Commission can provide an effective framework for accomplishing projects which impact the whole Eastern Shore. Significant economies can be realized by combining resources and finding shore-wide solutions to critical infrastructure needs.

Growth Trends: Current trends show significant growth in service industries while the manufacturing and agriculture/seafood sectors are declining. Aquaculture and shellfish farming, however, are showing new growth potential and offer new business opportunities with intensive management and farming techniques. Tourism offers many opportunities to support development efforts. Eastern Shore tourism is primarily based on the area's natural, ecological, cultural and historical assets. Two new festivals have emerged on the Shore; one focused on the harvest season and its bounty and the other on nature and bird watching.

Labor Pool: The county's labor pool includes a large, under-utilized, low wage and unskilled labor force. Many workers are caught in a low skills/low wage economic trap. The most visible trends affecting the labor pool today are (1) college educated and skilled labor is relocating elsewhere for better paying, quality jobs off the Shore and (2) employment opportunities are declining. It is believed that those workers "out-migrating" would stay on the Shore if a broader range of employment were available. The Eastern Shore Community College provides

vocational training programs which serve many of the community's needs but continues to produce graduates that must leave the Shore to find work in their field.

The Distributed Workforce, Telecommunications and the Quality of Life: In 2005, roughly 12% of the workforce in the United States had become what economists call the “distributed workforce”. This refers to people whose place of work need not be located near their place of residence due to their use of telecommunications technology. Many occupations are now able to use the internet and world wide web for day-to-day tasks, allowing them to live many miles from the center of their business. Examples include writers, sales people and consultants. Jobs in the distributed workforce tend to be high paying professional jobs, either independent entrepreneurs, or senior people in larger companies. This trend puts increasing value on a community's quality of life as a basis for economic development, since these types of employees have a wide range of choice as to where they reside. Accomack County has many quality of life factors that are attractive to segments of the distributed workforce, such as small towns, and high quality environmental resources for hunting, fishing and outdoor recreation. The County should strive to retain and enhance these factors as an underpinning of future economic development.

The Seafood Industry

Seafood production is an industry that holds important ties to Accomack County's past and future. For years, watermen have made their living harvesting fish, crabs, oyster, and clams and many others were employed by seafood processing plants. Today, crab, oysters and clam quantities have declined and most of the seafood processing plants have gone out of business. Aquaculture, the farming of fish and shellfish, has become the seafood industry of the future. Clam aquaculture is now a \$30 to \$40 million dollar business on the Eastern Shore.

Seafood Harvest: Seafood catches continue to steadily decline. To compensate for decreased catch, watermen have tried extending their season and switching to species that are more abundant.

Seafood Processing: Many of the Shore's seafood processing plants have closed. Closure was brought on by both declining seafood harvests and the state's adoption of more stringent water quality standards. Some of the plants, faced with decreased profits were unable to afford to upgrade their plants to meet the new standards. The DEQ is now working on general permits for seafood processing plants which save the applicant money and streamline the application process. For these general permits, DEQ develops requirements for category-specific permits with EPA and adopts the permits through the regulatory process. Individual facilities in Virginia are then able to apply for and be covered by the umbrella of a general permit. This should relieve some of the burden placed on processors that are required to obtain a permit.

Water Access: Currently, watermen have little trouble gaining access to the Bay and Ocean to make their living. However, as waterfront development continues to increase and areas traditionally used by the public change hands, access could become more scarce. In recognition of the seafood industry's importance to Accomack County, effort should be made to ensure that adequate waterfront access is maintained for boat access and water dependent uses such as crab shedding.

Aquaculture: Fin and shellfish populations are declining while the demand for seafood continues to grow. Virginia's Eastern Shore has the reputation for good seafood, there is a large labor force, and markets are established. The area is bordered on the east by the Atlantic Ocean with a coast of pristine bays and creeks, and on the west by the nutrient rich Chesapeake Bay. The traditional seafood industry is in serious decline, but Virginia's Eastern Shore remains an ideal location for major shellfish and finfish aquaculture. Taking advantage of the location, reputation, work force and markets, aquaculture could continue to revitalize the local seafood industry. The county should work to identify the level of water quality necessary for viable aquaculture operations and establish standards to be maintained in waters supporting aquaculture. The County should work closely with the Virginia Department of Agriculture to protect water quality for aquaculture.

Water Quality: In the shellfish aquaculture industry, water quality is important because seawater from tidal creeks is used in raising young shellfish that are very sensitive to water conditions. In recent years, several aquaculture operations have suffered clam larvae mortalities attributed to water quality problems. At times these problems have been related to large-scale runoff in the greater Chesapeake Bay basin which Reduced salinities and at others to blooms of toxic dinoflagellates. In 1996, controversy arose between aquaculture operators and farmers accused of creating a pollution problem. The water quality problems were occurring in creeks downstream from agricultural fields in plasticulture production. Plasticulture is a method of farming that uses plastic ground covers to control soil moisture, reduce pesticide requirements and increase yields. Problems observed in shellfish hatcheries included chronic feeding inhibition and shell deformation in larvae and acute toxicity to larvae and juveniles. -These occurrences are consistent with both heavy metal and organic toxicant contamination.

A study conducted by the Virginia Institute of Marine Science evaluated water quality in Seaside creeks in relation to the presence or absence of vegetable cultivation using plastic ground cover within the watershed. -Eleven sites in six watersheds were tested. -Sites were selected to represent a variety of surrounding land use. -Since problems witnessed at the hatcheries indicated heavy metal toxicity, water at each site was tested for the presence of heavy metals. -Each site was also tested for toxicity from insecticides. -Insecticide toxicity was tested using grass shrimp, a common inhabitant of tidal marshes and creeks that is sensitive to insecticides.

Growing Clams



Growing clams is the basis of a million dollar aquaculture industry on the Shore. Hard clam operations hatch and feed clams in holding tanks until they are large enough (about 4 millimeters) to move outdoors. The small clams are placed in long sloughs of fresh, unprocessed seawater, to prepare them for planting in the shallows of coastal bays. The "grow-out" stage of the process is often handled by independents who work on a cooperative basis with the hatcheries. The entire process, from spawning tank to market, takes two and a half years. Producing high enough spawn rates from broodstock is essential to success. The Shore's aquaculture industry has experienced lower than usual spawn rates over the last several years.

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Water Quality Test Sites

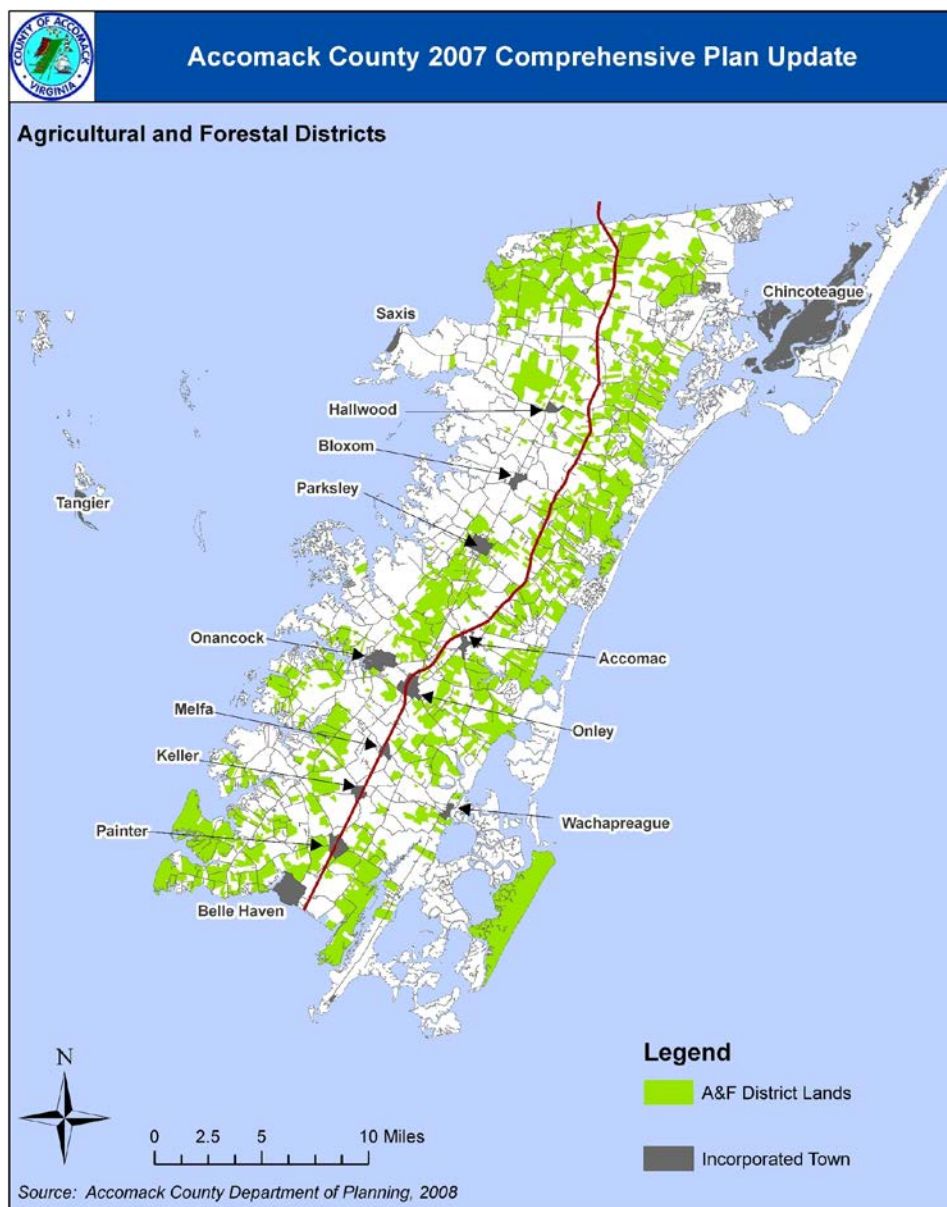
Site	marsh & open water	woodland	urban/res.	cropland	plasticulture
Phillips	11%	32%	4%	53%	0%
Nickawampus ...	5%	38%	5%	51%	<1%
Indiantown	1%	35%	4%	47%	13%
Gargathy.....	7%.....	33%.....	4%	51%	5%
Finney	2%	40%	3%	46%	9%
Folly.....	6%	32%.....	7%	48%	7%

Evidence of metals toxicity was observed in filtered water samples collected from the upstream site at Gargathy Creek. Less toxicity was observed in the midstream site at Gargathy Creek. Metals toxicity was also observed in filtered samples from Finney and Nickawampus Creeks. A trace of toxicity was observed in unfiltered water samples from Wachapreague Channel and Indiantown Creek. At the upstream location on Gargathy Creek, complete mortality of the shrimp was observed after virtually every rainfall event. Available data indicates that this mortality was not associated with low salinity or dissolved oxygen levels. Coupled with observations of direct runoff from an adjacent tomato field, the implication of this finding is that agricultural practices in the immediate watershed are impacting living resources at this site.

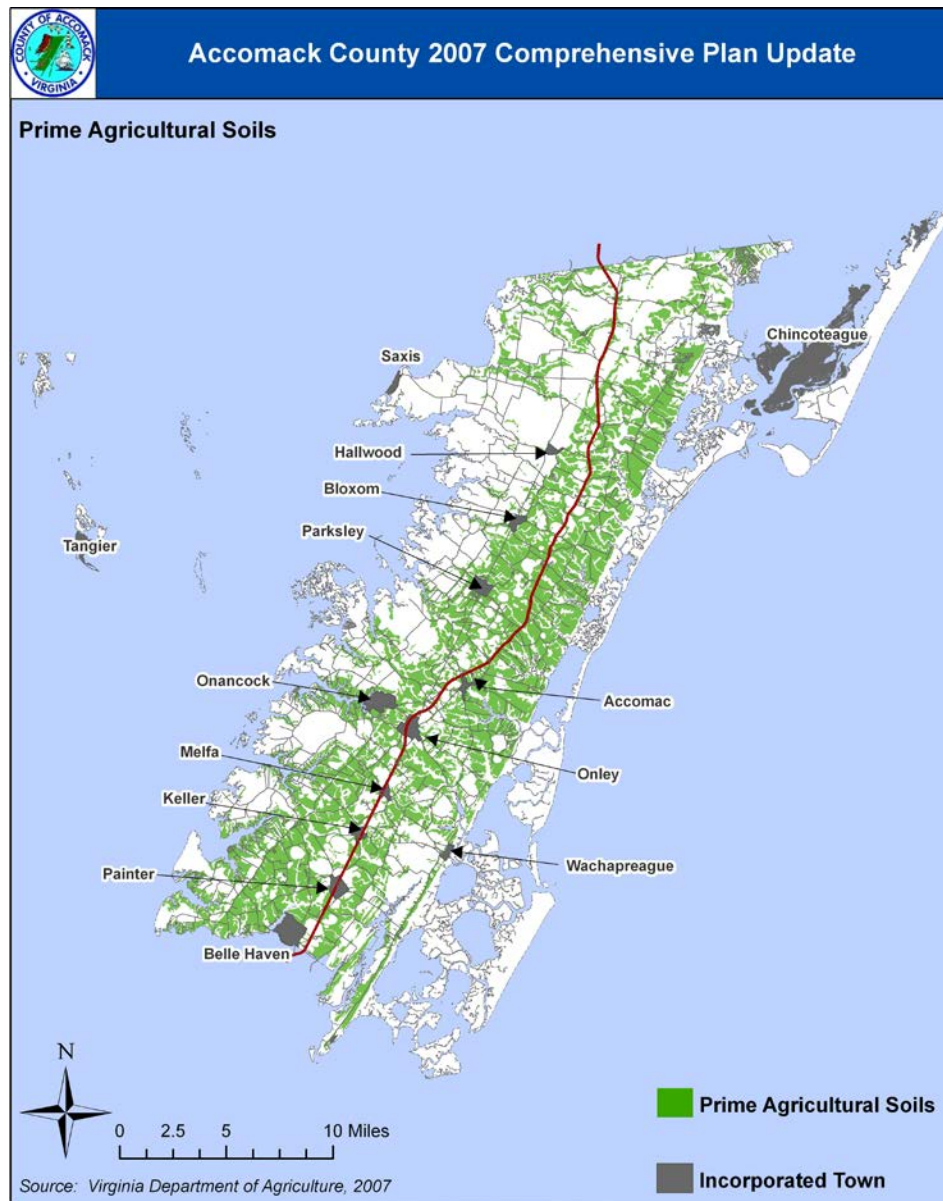
A similar, but less severe, pattern of mortality in relation to rainfall was observed at the downstream site at Gargathy Creek. Mortality of shrimp was also observed at Indiantown Creek, but generally only after rainfall events in excess of 50 mm / 48 hr. The Finney Creek site experienced approximately 70% mortality after a large rainfall, but over 30% mortality was observed in Nickawampus Creek, which has almost no vegetable cultivation, following the same rainfall. Upstream stations at Folly Creek and Phillips Creek, along with downstream stations at Folly Creek and Wachapreague, experienced only minimal mortalities.

Information Needs: Additional information is needed on the role water quality and surrounding land use has on the seafood industry in order to effectively manage impacts. The recent controversy between the agriculture and aquaculture industries has lead to a good deal of research and study. The county should carefully monitor the results of these studies and take action to correct problems that are defined.

Map 4-D



Map 4-E



Agriculture

Viability: Conditions which affect the viability of commercial farming include soils, farm size, land ownership, surrounding development patterns, taxes, and market conditions.

Soils: Soil factors such as permeability, depth, natural fertility, and drainage are important when considering the agricultural potential of a piece of land. In general, loamy soils are best suited for crop production, being of medium porosity they can hold enough water and air to support good crop growth. In Accomack County, bojac and munden are the soils best suited to crop production. Bojac soils are also the prime soils for residential and commercial development because they are the soils most suitable for septic systems. This creates competition between farmers and developers for the best soils.

Farm size: The geography of the Eastern Shore does not allow for large, contiguous farm tracts. The peninsula is narrow and land is bisected frequently by creeks. Efficient, large scale farming often requires the use of large high-speed equipment which requires large areas in which to maneuver. The USDA conducted a study in 1981 which determined that the most efficient corn-producing farms in the Midwest were about 640 acres. The study also found that efficiencies of 90% could be achieved on farms as small as 300 acres. The average farm size in Accomack County in 1992 was 328 acres. It increased to 345 acres by 1997, but fell to only 286 acres in 2002. It is important that viable farmland be protected from fragmentation by residential and commercial development.

Land ownership: Population increases and the resultant competition for land leads to higher land values. As land values increase, it becomes difficult for a farmer to purchase land for a new operation or expansion. Instead, farmers are forced to lease land. Non-farmer land owners are often reluctant to tie up the potential development value of their property with long term agricultural leases. When the land owner decides to sell or develop the land for another use, the farmer must find other land to farm. A side effect of non-farmer ownership of agricultural land is that, without a commitment to a long-term lease from the property owner, the farmer leasing the land may not be willing to invest in long-term soil improvement measures and soil quality can be adversely impacted over the long term.

Taxes: Real Estate taxes are usually based on fair market value which is derived from the "highest and best use" of that piece of property. As development pressures increase in a rural area, increasing property taxes can have a real impact on agricultural land owners. If farm land is in an area with development potential, that property may be taxed based on its potential as residential or commercial property rather than its current agricultural use. Agricultural use of the land may not produce enough income to offset increased taxes and may force property owners to pursue other uses for their land.

Farm Ownership

The following table lists Accomack County farm acreage by ownership for 1987, 1992, 1997 and 2002.

	Acreage			
	1987	1992	1997	2002
Full owners	10,740	10,425	10,436	21,775
Part owners ...	66,621	63,758	66,011	65,341
Tenants	12,414	17,385	16,917	3,940

Source: Census of Agriculture, 1992, 1997, 2002.

Accomack County currently offers land use taxation for property in agriculture or forestry use. Under land use taxation, property is assessed at its agricultural or current use value instead of fair market value. The savings to owners of agricultural property can be significant. The land use taxation option affords relieve from pressures to remove land from agriculture and develop it to it's "highest and best use." When land that has been in land use taxation is developed for more intensive use, roll back taxes must be paid by the property owner. One option the County may wish to consider to enhance the efficiency of the Use Value Taxation Program would be to limit eligibility to land that is within an adopted Agricultural and Forestal District (AFD).

Surrounding land use: Farming and residential development seldom successfully mix. As rural development increases and residential developments spring up in formerly agricultural areas, conflicts between the newcomers and surrounding farmers often occur. Agricultural practices which occur in once wide-open areas now pose nuisance problems for homeowners who have moved to the country. People who move to the country with bucolic visions of rural life are soon confronted with the realities of manure spreading, pesticide spraying and noisy farm equipment operating at all hours of the day. The result is an increase in complaints and nuisance lawsuits against farmers. When a farm is creating a nuisance that threatens neighboring property owners, the farmer is usually forced to modify or cease the offensive agricultural practices, regardless of whether the farm was there first. Accomack County currently requires that a statement be recorded on the plat of any subdivision created in an Agricultural zoning district, stating that, "These residential building lots are located in an area and zoning district specifically designated for agricultural activities, including horticulture and the raising of animals. Residents may expect the use of herbicides, pesticides, and fertilizers on adjacent agricultural fields, as well as other general agricultural activities, including plowing, spraying, pruning, and harvesting, which may occasionally generate dust, smoke, noise, and odor, and may also include changes from one specific agricultural activity to another."

In spite of this notice, conflicts still arise and it is best to keep these uses segregated. The conflict that arises from uses incompatible with agricultural operations illustrates the need for agricultural zoning that minimizes those conflicts. Currently, Accomack County's zoning ordinance allows uses such as single family housing, schools, churches, and post offices by right in an Agricultural district. In addition to those uses, all other uses are allowed by special use permit; specifically: camping facilities, light industry, retail stores, restaurants, office buildings, health care facilities, mobile home parks, duplexes, apartment buildings, banks, hotels, and motels. Many of the uses specified are not compatible with the use of land for agricultural

production and should be excluded from a district that takes the goal of agricultural production seriously. However, any such amendments should consider potential pressures for “spot” zoning for such intensive uses, due to the extensive coverage of the A District in Accomack County.

Agricultural and Forestal Districts:

In 1983, the Accomack County Board of Supervisors created 22 Agricultural and Forestal Districts with a total of 82,560 acres of land. In 2007, the total acreage is estimated to be 80,215 acres. Property owners made application for inclusion of their land in an Agricultural and Forestal District and those applications were considered by an Agricultural and Forestal District Advisory Committee, the Planning Commission, and the Board of Supervisors. In considering land for inclusion, the County reviewed the agricultural and forestal significance of land within the district (significance is evaluated based on soils, extent and nature of farm improvements, present status of farming and forestry, anticipated trends in economic conditions and technology, etc.), the nature and extent of land uses other than active farming or forestry, and local development trends and needs. The ordinances creating these districts state that land in the districts is “land which requires conservation and protection for the production of food and other agricultural and forestal products and as such is a valuable natural and ecological resource, providing open spaces for clean air and adequate and safe water supplies and other aesthetic purposes and is therefore valuable to the public interest.” Land in these districts qualified for land use taxation, under which land is taxed based its current, rather than “highest and best” use.

In 1994, the Board of Supervisors approved an amendment to each of the Agricultural and Forestal Districts to include a paragraph stating that, “In order to further the intent and purpose of this Ordinance, in accordance with provisions in § 15.2-4309, Code of Virginia, (1) any lands currently included, or subsequently added to, this District shall not be developed to any more intensive uses, other than for more intensive agricultural and/or forestal production, (2) nor shall any rezoning request for more intensive uses, nor any subdivision of lands be permitted within a District for other than agricultural and/or forestal uses, unless such lands are first approved for removal from the District, in accordance with § 15.2-4311 Code of Virginia. The state enabling legislation which allows for the creation of Agricultural and Forestal Districts has a stated purpose of providing “a means for a mutual undertaking by landowners and local governments to protect and enhance agricultural and forestal land as a viable segment of the Commonwealth’s economy and an economic and environmental resource of major importance.” The enabling legislation provides insurance that agricultural uses may continue unimpeded by local regulation by stating that, “No government shall exercise any of its powers to enact local laws or ordinances within a district in a manner which would unreasonably restrict or regulate farm structures or farming and forestry practices in contravention of the purposes of this chapter unless such restriction or regulation bear a direct relationship to public health and safety.” The legislation goes on to state that, “Local ordinances, comprehensive plans, land use planning decisions, administrative decision and procedures affecting parcels of land adjacent to any district shall take into account the existence of such district and the purposes of this chapter,” ensuring that local plans and regulations are consistent with the purpose of the Agricultural and Forestal Districts created. In 2006 the Agricultural and Forestal District Advisory Committee began reviewing the 22 A&F Districts and updating each A&F District ordinance. Review of the A&F Districts will be completed in 2008.

Pollution Control

Much of Accomack County's economy is based on the wise use of natural resources. The key to continued utilization of these resources lies in promoting economic development that is compatible with the county's goal of protecting the natural resource base. Adverse environmental impacts can be minimized through the use of performance standards and Best Management Practices (BMPs) for all land uses. BMPs are conservation measures that can be used to lessen the impact a land use has on environmental resources. Effective BMPS have been developed for agricultural, industrial, commercial, and residential land uses. Traditionally, land use regulation and environmental protection have been achieved through specification standards with which allowable land uses and development activities are specified by zoning, subdivision ordinances and building codes. Specification standards indicate what one can or cannot do. Performance standards are increasingly being used for environmental regulation. Performance standards are concerned with results. Standards are set and the method of achieving those standards is left up to the developer. The difference between specification standards and performance standards can be illustrated through the example of a building code that mandates what materials can be used for a wall versus a code that states how the wall should perform, in terms of fire resistance and other factors. The specification code tends to stifle innovation while the performance code tends to encourage it. A performance code eliminates the need for the drafters of the code to know about and test all available materials and processes. Instead, the proponents of the new materials or process must prove that it performs as required. Performance standards work particularly well for environmental regulations where the goal, such as a particular water quality standard, is known and there is an ever evolving number of options available for achieving that goal.

Erosion and Sediment Control: Sedimentation is a source of nonpoint source pollution which impacts the quality of surface water. As sediment increases, it reduces the amount of light and oxygen available for living organisms in the water. As it settles, sediment covers and inhibits the respiratory functions of immobile bottom dwelling organisms such as oysters, clams and submerged aquatic vegetation. Sediment also acts as a carrier of other forms of pollution such as nutrients and toxic compounds. Erosion and sediment control regulations are principally concerned with the process of construction. Agriculture and forestry operations are exempt from the regulations. Accomack County has an erosion and sediment control ordinance which requires that construction activity be managed in a way that minimizes the potential for soil to leave the site. Projects in Accomack County must conform to the state's established minimum standards for erosion control.

Nutrients in Water

Fertilizer and nutrients from farmland, household detergents and sewage stimulate excess algae growth in waterways. The algae die, respire and decay. If water has too much organic waste, such as dead algae, bacteria, which break down the waste, use more dissolved oxygen than usual, leaving reducing dissolved oxygen levels. Most aquatic life does well in water with oxygen concentrations of nine parts per million. Concentrations less than five parts per million will asphyxiate some species.

Stormwater Management: Impervious surfaces created by development prevent the natural infiltration of rain water into the soil. Rain flows off these surfaces in sheets, carrying with it pollutants that have collected on these surfaces, and concentrates and collects in low areas, often causing erosion and flooding. The first inch of rain carries away most of the pollutants which have accumulated on surfaces. Certain techniques can be used to control stormwater and reduce the likelihood of flooding, erosion and water pollution. Stormwater management regulations regulate the effects of development after construction by requiring that post construction water runoff quantity not exceed what would occur if the site was left in a natural condition and/or limiting the level of pollutants that leave the site. There are many options available to developers to meet these standards. Infiltration trenches are probably the most common devices used. They typically consist of a shallow trench two to ten feet deep, filled with coarse stone aggregate permitting water storage and gradual infiltration into the soil. Vegetated or grass swales are also commonly used. These are depressions in the ground which slow and trap runoff permitting infiltration. Filter strips and roof drainage systems that runoff to grass areas are similar approaches, though they may require more space and hold less capacity than trenches. Porous pavement, concrete grids and lattice blocks represent alternatives to the conventional impervious material used to build roads and parking areas. Recharge or percolation basins are another infiltration strategy and are usually built around stormwater collection outflows. Detention devices such as ponds or basins are very effective in collecting stormwater runoff and removing pollutants through the settling of sediment. Wetlands, both natural and man-made, are quite effective at absorbing rainwater and filtering out pollutants. It may not be desirable, however, to expose pristine natural wetlands to stormwater pollutants. To effectively use wetlands as filters or detention areas it may be necessary to incorporate pretreatment lakes to reduce sediment loads and remove certain types of pollutants (i.e. oil and grease). Accomack County's erosion and sediment control ordinance regulates the quantity of stormwater runoff for any project over 10,000 square feet in size. Developers are required to show that increases in the volume, velocity, and peak flow rate of stormwater runoff will not create erosion of properties or waterways downstream. The stormwater management regulations require that increased volumes of sheet flow that may cause erosion or sedimentation on adjacent property be diverted to a stable outlet, adequate channel or detention facility and that concentrated stormwater runoff leaving a development site must be discharged directly into an adequate natural or manmade receiving channel, pipe or storm sewer system.

Stormwater *quality* is regulated within the county's Chesapeake Bay Preservation Overlay District. These regulations require that stormwater runoff be controlled by the use of best management practices that achieve, for new construction, post-development nonpoint source pollution runoff load that does not exceed the pre-developed load and for re-development, post-development non-point source pollution loading that is ten percent less than the existing level. These stormwater quality standards are important in that, while stormwater quantity standards protect from flooding and erosion by requiring that runoff be diverted to an adequate receiving channel, no consideration is given to the quality of water entering that channel. The Bay Overlay District's nonpoint source pollution loading standards provide an additional level of water quality protection within the Chesapeake Bay watershed. No comparable protection is provided for Seaside water quality protection.

Contamination from Septic Systems: Researchers at Virginia Tech conducted an extensive literature search for the Virginia Health Department regarding the cause and effect relationship between on site wastewater disposal systems and ground and surface water pollution. The study

identified nitrates, bacteria, and viruses as the principle pollutants generated from onsite wastewater disposal systems (septic systems). It was found that groundwater has the greatest potential for pollution where septic systems occur in high density or are placed in soils with high water tables and/or coarse sand. The extent to which Virginia groundwaters are being polluted by septic systems is currently unknown. The study calls for further research to document the extent of groundwater pollution attributable to septic systems in Virginia, identify the areas within the state most susceptible to pollution, evaluate the maximum density of septic systems a recharge basin can safely support in terms of groundwater pollution, and establish standards for separation distances between septic systems and high water tables.

The report also recommends that alternate systems be developed to reduce the level of nitrates leaving the system. In 2000, the Health Department adopted new regulations for on-site sewage disposal, including regulations governing “alternative” onsite systems.

Although properly functioning septic systems are an effective means of treating biodegradable waste, septic systems are not designed to treat chemical waste. Engine oil, gasoline, paints, solvents, pesticides, and other chemicals disposed of in septic systems, exit the system untreated and pose a threat to the groundwater supply. An effort should be made to educate county citizens about this matter and safe, alternative disposal methods should be made available. Some counties hold an occasional household clean-up day to help citizens safely dispose of chemical waste.

Agricultural “Bad Actors”: Significant progress has been made towards the control of agricultural runoff through the voluntary use of Best Management Practices, responsible use of chemicals and fertilizers, and good land stewardship practices. There continue to be, however, certain “bad actors,” people who fail to manage their land responsibly to prevent pollution and degradation of resources. In 1996, the Virginia Legislature passed the Agricultural Stewardship Act, effective April of 1997, that holds these “bad actors” responsible for their actions. The Agricultural Stewardship Act allows citizens to make a complaint to the Virginia Department of Agriculture and Consumer Services against any agricultural activities that creates pollution. Pollution is defined by the Act as, “any alteration of the physical, chemical or biological properties of any state waters resulting from sedimentation, nutrients, or toxins.” The complaint is to be investigated by the local Soil and Water Conservation District and, if it is found that the activity does or will create pollution, the operator of that activity has sixty days to develop an agricultural stewardship plan that includes measures to prevent or cease the pollution.

At the time, the Accomack County Planning Commission supported the intent behind the Agricultural Stewardship Act but was concerned that the impact of this legislation, as written, will extend beyond the “bad actors,” to farm operators who are acting in good faith to control pollution runoff. Due to the Eastern Shore’s extensive shoreline and pattern of creeks and bays, most agricultural operations on the Shore, even with Best Management Practices in place, are going to produce some runoff to state waters at some point in operation. Care should be taken by the State and the local Soil and Water Conservation District to ensure that enforcement actions are directed towards the true “bad actors,” those who have not implemented pollution control measures, rather than farmers who manage their operations to control pollution but experience occasional runoff events.

Air Quality Monitoring: The state currently has no air quality monitoring stations on Virginia’s Eastern Shore. It is unlikely that ambient air quality standards are being exceeded on the Shore,

but monitoring equipment to confirm compliance is not available on the Shore. An air quality monitoring station would allow for the detection of air quality deterioration and the study of long term trends. The county should look into the possibility of having the state establish a monitoring station on the Shore or the possibility of establishing a monitoring station in cooperation with a university research station.

Groundwater Management

Ground Water Supply Protection and Management Plan for the Eastern Shore of Virginia:

The Ground Water Supply Protection and Management Plan for the Eastern Shore of Virginia was initiated in 1990 at the request of Accomack and Northampton Counties. A bi-county Ground Water Study Committee was formed to oversee the development of the plan. This study committee consists of two members from each county's Board of Supervisors, one citizen appointee by each Board, the County Administrator from each county, and the Executive Director of the Accomack-Northampton Planning District Commission. The consulting firm of Horlsey Witten and Hegemann (HWH) assisted with preparation of the plan. The plan, which was adopted in 1992, summarizes information on groundwater hydrology, water withdrawals, land use threats, and current control mechanisms on the Eastern Shore. The Ground Water Plan recognizes the importance of understanding the water system as a whole in order to make future land use and development decisions designed to protect water supplies. An understanding of the flow patterns and locations of the recharge areas on the peninsula was seen as crucial, so a conceptual model was developed which took a three-dimensional approach. The key element of the model with respect to protecting the long term quality and quantity of groundwater in the Eastern Shore is the role played by the central spine of the peninsula. The center portion functions as the primary recharge source for the heavily used confined Yorktown-Eastover aquifer, and its protection is of utmost importance to the continued viability of the aquifer as a source of water. Recommendations were proposed to develop a comprehensive groundwater protection and supply management strategy which will maintain an adequate supply of high quality water for the future needs of the region. All recommendations listed below must take into account sea level rise.

Recommendations for Water Quality Protection:

The 1992 HWH plan recommended the following:

Pursue water conservation measures with major industrial users:

The Ground Water Study Committee has met with major industrial users, to recommend freshwater conservation possibilities. These include the use of lower quality water for effluent dilution, and the reduction in wastewater flows from treatment plants.

Create an overlay protection zoning district to protect the spine recharge area to the Yorktown-Eastover aquifer: d upon the Wellhead Protection Area Map prepared by HWH, and the delineation of wellhead protection areas and recharge areas to the Yorktown-Eastover aquifer, Accomack County has considered but has not adopted a zoning overlay groundwater protection district.

Underground Storage Tanks

Underground storage tanks (USTs) pose a threat to groundwater in that older steel tanks that are not of double wall construction can corrode and leak contaminants into the soil. These leakages can continue undetected for a considerable amount of time. USTs are used primarily for fuel storage, either at retail establishments such as gas stations or home fuel oil supplies. The concentration of gas stations along Route 13, which runs along much of the groundwater recharge spine is a reason for concern.

Review and revise county zoning and subdivision regulations: Accomack County has revised its current zoning and subdivision regulations to incorporate some groundwater quality and quantity protection measures to control the density, location and the pattern of development. Additional measures are needed to designate the ground water recharge area, require central water supplies for large developments, and require shallow irrigation wells for new residential development.

Land Use in the Groundwater Recharge Spine 1996

Source: Accomack County Dept. of Building, Planning & Zoning

Land Use	Acreage	Percent of Total
Agricultural/Vacant	8,832	43.27%
Agricultural/Forested	8,673	43.39%
Agricultural/Poultry	46	.23%
Residential/General	828	4.05%
Residential/Mobile Home	42	0.20%
Commercial	129	0.63%
Industrial	495	2.42%
Public/Institutional	52	0.25%
Incorporated Town	1,129	5.51%
Route 13 right-of-way	214	1.04%

Incorporate groundwater protection requirements into site plan review : Accomack County has revised its zoning ordinance to require that groundwater protection be considered in all major site plan reviews.

Develop a private well ordinance to control the siting and construction of new wells:

Accomack County does not have a requirement, but most new private wells should be finished in the Yorktown-Eastover aquifer.

Support the implementation of agricultural nutrient management plans: The Soil Conservation Service, County Extension Agents, and the Eastern Shore Soil and Water Conservation District have continued their program of assisting farmers in developing nutrient management plans.

Recommendations for Water Quantity Management:

Revise State Ground Water Act and Regulation to allow for reevaluation of existing permits:

The State Ground Water Act now requires reevaluation of ground water withdrawal permits every 10 years.

Develop an Eastern Shore Water Management District to manage water withdrawals:

No action has been taken on this recommendation.

Control the siting and development of new water supply wells to prevent well interference and reduce the threat of saltwater intrusion:

New wells using 10,000 gallons per day are required to have ground water withdrawal permits, which are evaluated for impacts such as overpumping and saltwater intrusion. However, large residential developments with individual wells are not required to have permits.

Continue the accurate reporting of agricultural water withdrawals, by well location and depth:

Large agricultural water withdrawals are now required to have permits, and submit water use data.

Continue the consideration of mandatory permitting of agricultural withdrawals after review of reporting data:

Large agricultural water withdrawals are now required to have permits, and submit water use data.

Protect open space and undeveloped land in the spine recharge area:

To date, there has been no program to acquire open space or easements to protect the Zone 2 Recharge Area.

General Recommendations:

Implement a land use/water quality data base:

The A-NPDC works with a ground water consultant to update ground water data annually, but has not developed a centralized water quality data base for all water use on the Eastern Shore.

Acreage of Irrigated Land

Year	Acreage
1974	4,097
1978	5,388
1982	6,345
1987	9,132
1992	7,889
1997	9,399
2002	9,716

Source: Census of Agriculture 1992, 1997, 2002

Develop a public education program on groundwater:

The Eastern Shore of Virginia Ground Water Committee developed materials and a web site on the importance of the groundwater resource on the Eastern Shore, and coordinates research conducted by the U.S. Geological Survey.

Continued Research and Investigation:

Investigate the nature of recharge to the Yorktown-Eastover aquifer: USGS is updating the Eastern Shore Ground Water Flow Model to better estimate recharge and pumping impacts.

Research dilute saltwater issues: DEQ has reactivated its ground water quality monitoring program, which was dormant for many years. The most recent data has been used to update the USGS ground water model.

Investigate the Character of Pleistocene Paleochannels on the Eastern Shore: The USGS Ground Water Flow Model update includes better information on the paleochannels.

Evaluate pesticide use on the Eastern Shore:
Progress to date on pesticide impacts to ground water is unknown.

The impact of pesticide use on groundwater quality on the Eastern Shore should be studied. Currently, information is not available to accurately assess this potential source of contamination. The Virginia Department of Agriculture and Consumer Services, Office of Pesticide Management should be contacted to provide assistance in this effort. Since agriculture is planned as the predominant land use in the future, this effort should be a priority for future investigations.

Support additional agricultural nutrient management research: Progress to date on nutrient management research is unknown.

Revise the nitrogen model used in the study over time:
Progress to date on revisions to the nitrogen model is unknown.

Technical Analysis and Justification for Groundwater Ordinances

In January, 2001, Malcolm Pirnie issued a Technical Analysis and Justification for Groundwater Ordinances on the Eastern Shore of Virginia, for the Accomack-Northampton Planning District Commission. This report contained findings and recommendations for action.

The recommendations of the Malcolm Pirnie report included the following:

- Homeowners apply the minimum fertilizer application rate for the soil and grass type on their lot.
- Centralized wastewater collection and treatment systems should be constructed for any new developments of 50 or more lots of 0.25 acres or less.
- Institute water conservation measures such as low flow plumbing fixtures, irrigation only in the evenings and metered irrigation, and landscaping that requires minimal water use.
- Use centralized water systems for larger residential areas (greater than 50 lots) to buffer the peak water demand. A centralized potable water system withdrawing from a confined aquifer with non-potable irrigation water supplied by individual residential wells pumping from the

water table aquifer provides the greatest protection from saltwater intrusion and loss of yield due to over pumping.

- All developments of 50 lots or greater should obtain their potable water supply from the upper Yorktown aquifer, and obtain non-potable (irrigation) water from the water table aquifer.

Waste Disposal

Recycling: The County is required by the state to meet certain recycling levels. In addition to those mandated levels, increasing the amount of the waste stream that is recycled helps to extend the life expectancy of our landfills. The county currently has four solid waste convenience and recycling centers that collect paper, glass, and plastic. Additional centers of this type should be created to provide access for all county residents. A bottle deposit would further encourage residents to recycle glass bottles and reduce the amount of trash in the landfill. For this reason, the county should support any efforts to adopt bottle deposit legislation in Virginia.

Litter: Many of Accomack County's roadsides are cluttered with litter. This litter creates a bad image of the Shore for visitors, degrades the visual quality of the county for residents, and can pose a threat to water quality. The Virginia Department of Transportation conducts an adopt-a-road program in Accomack County in addition to general spring and fall clean-ups. Accomack County could cooperate with VDOT in organizing and providing support for two county-wide litter clean-up efforts annually. County support could be provided in the form of providing bags, providing trucks to pick up trash collected, assigning areas most in need of cleaning, and reducing tipping charges on clean-up days.

Trash Collection: Accomack County should re-evaluate its greenbox collection system to ensure that the distribution of boxes is efficient and cost effective. Improvements may need to be made to some locations to make dumpster access safer and easier for elderly or handicapped citizens.

Septage Lagoons: All septic system waste pumped in Accomack and Northampton Counties by Bundick Well & Pump and Boggs Water and Sewage is currently being disposed of in three anaerobic lagoons located in Accomack County. Anaerobic stabilization of biodegradable organisms is a slow process characterized by bad odors and the possibility of contamination to groundwater and nearby surface water. Concentration of bacterial organisms in these ponds is close to that found in primary sewage sludge. Contamination threats lie in potential breaching of the earthen berms that contain the septage and leaching of pollutants through the bottom of the lagoon into the groundwater system. Health Department records indicate that lagoon berms have been breached on occasion, allowing contents to discharge onto the ground surface and drain into nearby streams. There were no comprehensive septage disposal regulations in Virginia until 1982. Accomack County's facilities were constructed prior to that time and consist of unlined ponds that are permitted for continued operation through "grandfathered" permits. The septage lagoons are regulated by the Virginia Department of Health, which will allow the facilities to continue operation as long as they do not threaten public health. The Health Department inspects the facilities quarterly and monitoring wells located around each of the septage lagoons are sampled annually for groundwater quality.

As of 1997, water samples do not indicate any impact on groundwater quality. The *Ground Water Management Plan* recommends that groundwater flow direction be modelled to ensure that monitoring wells are capturing recharge from the lagoons. The three facilities are located in fairly remote wooded areas, where there are few surrounding residents to be disturbed by odors associated with the lagoons. The Boggs lagoon is located northeast of the town of Wachapreague, in the Finney and Folly Creeks watershed. The closest stream to that site is an unnamed stream that drains to the headwaters of Nickawampus Creek. The southern Bundick lagoon is located just east of Coal Kiln, in the Machipongo River watershed. The closest stream to that site is an unnamed stream that drains to the Machipongo River. The northern Bundick lagoon is located near Atlantic, in the Chincoteague Bay watershed. The closest stream to this lagoon is an unnamed stream that drains to Wallops Mill Pond, which drains to Mosquito Creek. According to the Groundwater Management Plan, the northern Bundick lagoon lies within the groundwater recharge spine area, posing a serious threat to groundwater quality as deep as the lower confined aquifer. Use of the lagoons varies seasonally. The daily amount of septage received at Bundick's northern lagoon increases three to four fold during the summer months.

Both Accomack and Northampton County require that septic systems in Chesapeake Bay Resource Management Areas be pumped out once every five years. This requirement is expected to significantly increase the amount of effluent placed in the lagoons. If the existing facilities exceed their capacity, the local companies will be faced with the challenge of finding other means of disposal. Concerns about groundwater protection, odor, structural stability, and capacity for increased use; and the fact that septage waste from both Accomack and Northampton County is being disposed of in facilities that do not meet current standards, suggest that the county should pursue other options for septage disposal. The current state on-site sewage handling and disposal regulations require that septage be taken to approved facilities. Approved facilities include municipal sewage treatment plants or state-approved (lined) lagoons. As long as the existing facilities are allowed to remain in operation, there is little incentive for the haulers on the Eastern Shore to build lined lagoons. The only readily available alternative to disposal in lagoons would be use of the Shore's two municipal sewage treatment facilities, located in the towns of Onancock (Accomack County) and Cape Charles (Northampton County). The Onancock plant could be modified to handle septage. Funding assistance is available from the state for these kind of improvements and the town could recoup costs through fees charged to haulers for disposal. An alternative to expansion of the Onancock facility would be the development of a separate treatment system that could serve as a regional sewage treatment plant and septage disposal facility. Accomack County could require that septage be disposed of at a sewage treatment facility.

Toxic Waste Disposal: Industrial, agricultural and household chemicals are a special waste disposal problem. If disposed of improperly, they can cause health and environmental problems. The county should work with the Virginia Department of Agriculture and Consumer Affairs to develop a safe system for the disposal of pesticides and pesticide containers. The county could also hold annual household chemical clean-up days during which residents could bring paints, oil, yard and garden and household chemicals to collection centers for safe disposal.

Transportation

The U.S. Route 13 Corridor: Proper management of the Route 13 corridor is vital to the future of Accomack County. Route 13 is a gateway to Accomack County. The highway is part of a

major east coast north-south transportation route, carrying people and goods to areas beyond Accomack County, bringing travelers who spend money at local gas stations, restaurants and hotels. Route 13 is also a local transportation link, connecting residents to stores, services, homes, and jobs. Measures must be taken to maintain the road's capacity to safely and efficiently carry through traffic while providing for the safety of local traffic entering and exiting the highway. It is important that Route 13's capacity to handle through traffic be maintained in order to avoid future construction of bypasses or a limited access highway, which would further dissect the county's countryside and isolate businesses on existing sections of the highway.

The Route 13 Corridor Plan: The U. S. Route 13 Corridor Plan was completed in 1999, and in 2002 VDOT completed the U.S. Route 13 / Wallops Island Access Management Plan, The results of these plans are discussed in Chapter 3.

Setbacks: Minimum setbacks for all uses need to be expanded along Route 13. Greater setbacks promote safety by improving sight lines, reducing curb cuts, by allowing room for shared entrances, reducing traffic noise, and insuring the availability of vacant land for future access roads in the more congested portions of the corridor. Accomack County's zoning ordinance currently requires a minimum setback of 50 feet in agricultural, residential, and industrial zones and 20 feet in commercial zones. A minimum setback of 200 feet from Route 13 would provide enough space for future access roads with a standard 50 foot right-of-way.

Clustering: The current high speed sections of Route 13 can be preserved if new commercial uses are grouped in existing commercial clusters. Examples of existing clusters along Route 13 are T's Corner, Nelsonia, Four Corners, Melfa, Painter, and Belle Haven. These areas already have traffic lights and reduced speed limits to manage local traffic.

Site Plan Review: Site plan review, as provided for in the zoning ordinance, should give attention to alternatives that minimize curb cuts, encourage joint entrances, and direct traffic to alternative entrances on smaller collector roads when possible. Conditional use permits are required for certain large development projects in Accomack County (over 5 acres in business districts and over 2 acres in agricultural districts), and can be used to require traffic management measures.

Sign Ordinance: The county's sign regulations should be reviewed to determine if there is a need to improve management of sign location, size and appearance. Any regulations pertaining to signs should seek a balance between marketing needs of local businesses and enhancing the appearance of Route 13. Off premise signs on Route 13 are regulated by the Virginia Department of Transportation. County regulation of signs should be consistent with VDOT's standards and requirements.

Public Transportation: The Accomack-Northampton Transportation District Commission is currently conducting a pilot public transportation program. This is a regional public transit system known as Shore Transit and Rideshare (STAR) that connects Eastern Shore towns and provides north-south transit on the Shore. The pilot program is grant funded. If the pilot program proves that there is a need for public transportation and a means of efficiently providing the service can be established, sources of continuing funding for the system should be sought. According to the 2000 U.S. Census, there are approximately 1,447 (9.5%) households in Accomack County with no vehicle present. A public transportation system will provide increased mobility for these residents.

Heritage Trail: Northampton County acquired grant funding for the Northampton County Heritage Trail in 1994. The funding came from the Department of Transportation's Intermodal Surface Transportation Enhancement (ISTEA) program. Accomack County made application in 1995 for grant funding to establish a heritage trail, but the project was not funded. The county should seek the cooperation of the Eastern Shore Historical Society and the Accomack-Northampton Planning District Commission to further the concept of a regional, Eastern Shore, heritage trail and identify funding sources. The Accomack County Heritage Trail would be a self-guided tour of Accomack County's cultural resources. The concept of the trail is to recognize and celebrate Accomack County's unique heritage while encouraging travelers to get off of Route 13 and visit some of the county's towns, restaurants and shops. Signage and a trail guide would direct visitors to sites of historic and cultural interest in the county. The trail would be designed for motorized and non-motorized travel.

Non-Motorized Transportation: Walking, jogging, bicycling, and horseback riding are all popular activities with residents and visitors. The nature of much of the county's road system, however, sometimes makes these activities dangerous. Most roads in Accomack County are characterized by a crowned surface, minimal width and deep ditches on either side. Few of the roads in the county have paved shoulders. The establishment of a system of trails providing safe areas for walking, jogging, bicycling, and horseback riding would improve recreational opportunities.

Cultural Resources

Historic Preservation: It is important that historic preservation planning be integrated with the community's broader planning efforts. The Virginia Department of Historic Resources encourages localities to engage in historic preservation planning and to take a comprehensive approach that integrates planning into broader development plans including, land use and regulation, capital improvements, transportation, economic development, housing, open space, and recreation. The Department suggests a five step planning process that includes: identification of local historic properties; evaluation of current trends and influences on historic properties; community consensus on goals and priorities; identification of appropriate tools, strategies and action needed to achieve those community goals; and an action plan for implementation.

Current Planning Efforts: Currently, the county has made no effort to identify or protect historic resources. Application was made in 1995 to the Department of Historic Resources for grant funds to conduct a survey of historic architecture and to the Department of Transportation for grant funds to develop the Accomack County portion of the Heritage Trail. The Department of Transportation grant was not funded and the Department of Historic Resources grant was dependent on that grant for match funds, so no action was taken that year.

Interpretive Opportunities: In addition to recording and preserving the county's history, it is important that resources and information be accessible to citizens and visitors. Giving residents and visitors the opportunity to learn about the area's history and providing access to significant resources is important to creating and maintaining a strong identity for Accomack County. The county currently has several museums that do a good job of interpreting the area's natural resources; several that deal with specific aspects of history, such as transportation; and several

building museums such as Kerr Place, Locustville Academy, and the Debtors Prison. However, there is no interpretive center or readily available materials that comprehensively teach the history of Eastern Shore culture. A museum or series of museums that told the visitor about the area's unique culture, including history of agricultural production, the barrier islands, the seafood industry, nautical traditions, and architectural styles would be beneficial to the county. Both the Countryside Stewardship Exchange and the Regional Economic Development Council suggested the development of such facilities.

Level of Concern: In preparing the 1997 Comprehensive Plan, the citizen's advisory committee on development recommended that a historic resources survey be conducted, and 90% of newspaper survey respondents said that it was either important (35%) or very important (55%) to protect historic buildings. The Eastern Shore Historical Society has expressed interest in development of an architectural survey and the Heritage Trail and the county's application for funding of the Heritage Trail received letters of support from the towns of Accomac, Chincoteague, Onancock, Parksley and Wachapreague, the Accomack County Taxpayers Association, Citizens for a Better Eastern Shore, and the Nature Conservancy.

Recreation

Recreational Facilities: The 2002 Virginia Outdoors Plan evaluates the recreational needs of each planning district in the state. This evaluation is based on the 2000 Virginia Outdoors Survey and 1995 Outdoor Recreation Areas and Facilities Inventory. The 1992 survey was a questionnaire mailed to a random selection of addresses in four regions of the state (Chesapeake Region, Urban Corridor, Piedmont Region, and Mountain Region). Responses were weighted according to 1990 census data to correspond with population data such as race, income, and property ownership. The table below lists the facility inventory and needs assessment for Accomack County. Activity clusters were developed for some activities, such water based recreation, which share the same resources. The Plan was updated in 2002, but data and analysis for Accomack and Northampton counties were combined. Therefore information from both plans is shown below.

Accomack County

Activity	Activity Days	Demand	Units	Total Supply	Private Supply	Needs
Baseball	79,153	16	fields	3	0	13
Basketball	265,214	63	goals	7	0	56
Bicycling	436,883	31	miles	NI		
Lake, River, Bay Use (combined)	957,750	14,684	water acres	428,684		-414,000
-Power boating	457,442	11,026	water acres	S		
-Sailing	46,104	399	water acres	S		
-Lake Fishing	37,521	211	water acres	S		
-Salt Water Fishing	372,533	2,095	water acres	S		
-Jet Ski / Personal Watercraft	27,447	430	water acres	S		
-Water Skiing/ Towed on Water	16,704	523	water acres	S		
Camping (*)	70,518	416	sites	5,305		-4,889
-Tent Camping	12,593	74	sites	1,699		-1,625
-Developed Camping	57,926	342	sites	3,606		-3,264
Fitness Trail Use	15,419	1	mile trails	1	0	0
Fields (combined)	456,671	96	fields	7	0	89
-Football	357,730	75	fields	NS		
-Soccer	98,941	21	fields	NS		
Stream Use (combined)	119,500	53	stream miles	0		53
-Stream Fishing	52,169	37	stream miles	S		
-Human-powered boating	57,052	15	stream miles	S		
-Rafting	4,934	1	stream miles	S		
-Tubing	5,345	1	stream miles	S		
Golfing	92,002	3	courses	3	4	0
Hiking/Backpacking	45,744	23	trail miles	26	2	-3
Horseback Riding	7,401	3	miles	4	0	-1
In-Line Skating	79,667	6	miles	NI		
Jogging/Running	678,454	54	mile trails	NI		
Nature Study/Programs	28,783	4	sites	3		1
Picnicking Away from Home	84,498	219	tables	1,065	750	-846
Skateboarding	21,587	7	sites	NI		
Snow Skiing or Snowboarding	10,794	0	ski lifts	0	0	0
Softball	186,575	33	fields	12	1	21
Sunbathing/ Relaxing on Beach	307,617	22	beach areas	574	49	-552
-Swimming Outdoor Area	146,793	15	beach areas	574		-559
-Swimming Outdoor Pools	132,093	6	pools	10	7	-4
-Swimming Indoor Pools	35,619	0	pools	0	0	0
Tennis	52,940	33	courts	16	3	17
Used a Playground	300,781	43	sites	10	2	33
Visiting Gardens	34,539	4	sites	NI		
Visiting Historic Sites	92,259	8	sites	NI		
Visiting Natural Areas	76,480	13	sites	NI		
Volleyball	145,199	43	courts	1	0	42
Went Hunting	142,475	23,364	acres	21,150		2,214
Went Shooting Total	84,293	48	fields	NI		
-Target	31,867	18	fields	NI		
-Skeet or Trap	19,120	11	fields	0		
-Other	19,428	11	fields	NI		
Drive for Pleasure	439,658	na	na	NI		
Motorcycle/ATV (combined)	18,812	9	miles	6	0	3
-Driving All-Terrain Vehicle	1,336	1	miles	NS		
-Driving Motorcycle Off-Road	17,475	8	miles	NS		
Driving 4-Wheel Drive Off-Road	39,062	na	na	NI		
Walking for Pleasure	2,060,032	na	na	NI		
Other	59,622	na	na	NI		

The 2000 activity days figure is a conservative estimate of the total number of days spent at each activity. The activity days figure is based on the number of individual persons in each survey household reported as participating, multiplied by the weight factor described above, multiplied by the median number of days spent by each participant within the survey region. Demand for facilities and recreation areas to support each activity was estimated using capacity standards developed by the Department of Conservation and Recreation. Supply estimates were taken from the statewide inventory of recreational areas and facilities that is maintained by the Department of Conservation and Recreation. Need was determined by subtracting the current supply from the current and projected demand for each activity or activity cluster. The figures on need apply only to the local level (i.e. Accomack County) and therefore, does not take into account imported demand such as tourism from outside the state or local area. A local surplus of capacity, such as water or beach resources in Accomack County, is reduced by visitors from outside. Also, the inventory includes private facilities, such as picnic tables and swimming pools located on campgrounds, that are not available for use by the general public. These discrepancies should be considered when planning for recreational facilities. The Outdoor Plan points to a local need for sports fields (football/soccer and baseball), basketball courts, tennis courts, playgrounds, bike and fitness trails, and a golf course. The Plan suggests meeting recreational needs through development of a number of small community parks and one larger county park. The community parks would be 20 to 50 acres in size and serve a 3 to 7 mile area and be located close to community population centers. A County Park would be between 50 and 150 acres in size, serve a large portion of the population and be located near the center of the county. Potential facilities at these parks include playgrounds, picnic facilities, tennis courts, ball diamonds, horseshoe courts, shuffleboard courts, basketball courts, volleyball courts, football/soccer fields, walking, hiking, biking, and fitness trails, natural areas, fishing lake access, beach and swimming access, swimming pool, parking area, and a recreation center. The county should consider creating additional parks and/or expanding existing parks to meet the needs of the citizenry. Response from a newspaper survey indicated that sixty-seven percent (67%) of respondents said that there is a need for public recreational facilities in Accomack County. After this survey was conducted, and appropriate funds raised, a YMCA was built in the County.

The Accomack County Department of Parks and Recreation is also trying to develop community recreation facilities. An option being considered is the conversion of school buildings and grounds that are no longer in use into recreation centers. Gymnasiums, ball fields, auditoriums, food preparation facilities, and classroom space in former school buildings could be utilized by the Parks and Recreation Department to provide increased recreational opportunities to county residents. As the county replaces older school facilities, their use as recreational facilities should be seriously considered. Kiptopeake State Park, located between Cape Charles and the Chesapeake Bay Bridge Tunnel, was developed in response to earlier studies which identified the need for passive recreational areas (parks, trails, picnic areas, etc.), as well as increased bay and ocean access. The 1996 Outdoors Plan identifies the potential for an additional state park in the area between Occahannock and Onancock Creeks in southern Accomack County. The plan states that, "this site would offer abundant shoreline on the Chesapeake Bay and several large creeks. The excellent marshes and beaches found here could contribute greatly to the Eastern Shore's supply of accessible water-oriented recreational opportunities." The Outdoors Plan encourages the development of recreational opportunities through the private sector. Privately developed campgrounds, golf courses, tennis courts, swimming pools, marinas, and indoor recreation facilities can help meet the demand for facilities. The Plan also points out that, of 38 favored

leisure activities ranked in the 1992 Virginia Outdoors Survey, Virginians ranked visiting historic sites number 5, visiting natural areas number 11, and visiting gardens number 16. The Plan recommends an analysis of these resources by the private sector to determine if any could be made available to the public and suggests that these could be linked to bed and breakfast opportunities, farming, the seafood industry, nursery and garden center operations, historic restorations, and other land-use developments. The concept could be expanded to include farmers markets, pick-your-own operations, and craft and collectibles fairs or markets.

Beach Access: Public beach access in Accomack County is limited for people who do not have access to a boat. There are several sandy beaches on the Chesapeake Bay that are used by the public, but are actually in private ownership. In the past, owners have denied access to beaches that have traditionally been used by the public. Mason's Beach, on the Chesapeake Bay, was used by locals for years until the property changed hands and a gate was constructed across the road leading to the beach. Because this beach had been used by the public for so long, most people assumed it would always be available and many were shocked when access was denied. The Department of Environmental Quality's Coastal Zone Management Program has funding available for the acquisition of public access areas. The county should consider trying to use these funds to ensure that the public continues to have access to waterfront and beach areas.

Boat Ramps: The county has a large system of public boat ramps that vary greatly in quality and condition. The newer harbors and boat launching facilities have authorities appointed for their maintenance. There is no maintenance plan or management system in place for the majority of the ramps. Some disputes have arisen over ownership of the ramps and adjacent parking areas. The county has prepared an inventory of the boat access system, noting the ownership, condition and level of use of each. The county uses the data to plan for repair and regular maintenance.

Trails and Greenways: The Virginia Outdoors Plan recommends the development of a trail and greenways plan that links existing and proposed trails and greenways into a regional network connecting existing and proposed recreational, natural, cultural, water, business/commercial, and other resources. The proposed Heritage Trail should be a component of this system. Appropriate roads for bicycle routes should be determined and assistance from the Virginia Department of Transportation should be sought to develop these routes. A scenic bike route system could connect the county's major attractions including wildlife areas, parks, historic sites and cultural resources.

The following data and analysis is from the 2002 Virginia Outdoors Plan.

Region 22: Accomack-Northampton Planning District

The Accomack-Northampton Planning District comprises the counties of Accomack and Northampton, and the towns of Accomac, Belle Haven, Bloxom, Cape Charles, Cheriton, Chincoteague, Eastville, Exmore, Hallwood, Keller, Melfa, Nassawadox, Onancock, Onley, Painter, Parksley, Saxis, Tangier and Wachapreague. Less than 1% of Virginia's population resides on the Eastern Shore. The 2000 Census population for the region is 54,208 people. Future planning decisions are being considered that could result in more intense development. There is a need to have comprehensive plans to protect open space and recreation resources, while accommodating development. However, this region is rich in natural resources and potential for recreational opportunities. The Eastern Shore contains a significant percentage of the state's saltwater shores, including most of the ocean frontage,

which remains largely unspoiled. Wide expanses of marshlands, shallow bays and winding channels, all guarded by a chain of barrier islands with unspoiled beaches, are located on the seaward side. The Chesapeake Bay side is characterized by islands, inlets, creeks and marshlands with sandy beaches toward the southern end. The whole region is a vast incubating and feeding ground for bird and sea life, and is of vital importance to fish and wildlife interests far beyond the borders of Virginia. The variety and quantity of resources makes the Eastern Shore of Virginia an important area for the development of ecotourism opportunities. Currently, the Virginia Outdoors Foundation holds 1,726 acres in easements to protect the scenic quality of the region. Due largely to the efforts of nonprofit and private organizations, nearly all of the barrier islands of Virginia have been acquired and are being preserved in their natural state in perpetuity. Some of these islands also offer opportunities for compatible public recreation. All or part of 10 islands have been acquired by The Nature Conservancy, three islands are managed by federal agencies and one island is maintained by the state as a natural area. Two marshland areas on the bay side are managed by the state: one for wildlife management and hunting, the other as a protected natural area. The state also owns extensive wetlands between the mainland and barrier islands on the seaside for wildlife management. Kiptopeke State Park is located on the southern end of the Northampton County, and is being developed to provide recreation opportunities and management of unique habitats. Although there is abundant water and open space in the Eastern Shore Region, access to and use of much of it is very limited. For example, many of the beach areas are either privately owned or difficult to reach, as is the case with the barrier island beaches. There is a need to provide public access to these barrier island beaches; however, such access must be sensitively designed for these fragile resource areas. Recent studies also have identified significant facility needs for close-to-home types of activities. The most pressing needs are for trails for walking, jogging, bicycle and horseback riding; soccer, baseball, and softball fields; and basketball courts. While there appears to be a surplus of camping and picnic facilities, it should be noted that the majority of picnic tables and the only in-ground pool are located at commercial campgrounds, and are not available for use by local residents. Earlier studies, which identified a need for passive recreational areas (parks, trails, picnic areas, etc.), as well as increased bay and ocean access, resulted in the acquisition of Kiptopeke State Park. Located between the community of Cape Charles and the Chesapeake Bay Bridge Tunnel, it is being developed (less than 1%) to highlight the wealth of the Eastern Shore's natural heritage. It provides public opportunities for camping, picnicking, beach swimming, boating access to the bay and a variety of educational programs directed towards the natural and cultural resources of the site. Local priorities on the Eastern Shore should include the development of a number of small community parks and at least two district parks, providing game fields and courts, picnic sites, swimming and trails. Certain immediate recreational needs may be satisfied by further developing existing park facilities. A study is under way to evaluate the possibility of connecting the Eastern Shore by ferry to the Northern Neck of Virginia. Establishment of a ferry service and terminal opens the possibility of co-locating a waterfront recreational facility. In addition, there is a bike plan being developed to improve overall bicycle access and safety throughout the Eastern Shore, including a designated bicycle facility from Maryland/Virginia state line to the Eastern Shore National Wildlife Refuge at the southern end of Northampton County. The following recommendations relative to resources in the region could contribute to regional open space and/or recreational opportunities for meeting current and future needs of area residents.

Private sector. The private sector plays a major role in the provision of recreational

opportunities in the Commonwealth. Developed campgrounds, golf courses, tennis courts, swimming pools, marinas and indoor recreation facilities help meet demands identified in the 2000 *Virginia Outdoors Survey*. An example would be the opening of the YMCA at Olney in 1999, which provides its members with a 25-meter indoor swimming pool, gymnasium, exercise equipment and scheduled recreational programs. Another example is the development of two golf courses by private sector companies in Northampton County. Many needs could be met through the efforts of private enterprise, organizations, or through cooperative efforts by the private sector and units of government. Private landowners with adequate land for hunting may want to consider opening their lands on a fee basis. There may be opportunities to establish shooting ranges and related programs. Streams, rivers and the Chesapeake Bay may offer opportunities for private landowners to permit launching and retrieving of boats. They could also provide lands for picnicking, camping and education. A fee could be charged to offset costs. Another alternative might be for landowners to enter into an agreement with a unit of government to provide water access for the public. The landowner would then be covered under the *Landowner Liability Law, Code of Virginia, Chapter 29.1-509* (page 408), which could provide some liability protection. Miles of streams and thousands of farm ponds lie on private lands in the Commonwealth. Much public demand for fishing can be met if the owners of these lands will allow public access for fishing. Once again, the *Landowner Liability Law* can be helpful in lessening liability exposure if public access is formalized through an agreement with a local governing body or state agency. The 2000 *Virginia Outdoors Survey* ranked water related activities in the top 10 preferred by Virginians. Of 39 favored leisure activities, Virginians ranked visiting historic sites 5th, visiting natural areas 11th, and visiting gardens 14th. There should be an analysis of these resources by the private sector to determine if any can be made available to the public. These could be linked to bed and breakfast opportunities, farming, the seafood industry, nursery and garden center operations, historic restorations, and other land-use developments. This concept should be expanded to farmers, markets, pick-your-own operations, craft and collectable fairs and waterman activities. This region has a wealth of existing open space and recreation opportunities. Integration of private sector operations would reinforce public programs and facilities and result in economic growth.

Federal facilities. *Chincoteague National Wildlife Refuge* is one of the most-loved refuges in the entire country. More than 1.4 million people flock there each year to bird watch, photograph wildlife, walk or hike along a wild beach, utilize the 14-mile accessible trail system and participate in interpretive and educational programs. More than 320 species of birds occur on the refuge, which is also home to several threatened and endangered species. Featuring more than 14,000 acres of beach, maritime forest, and freshwater and saltwater wetlands, Chincoteague Refuge is managed for migratory birds, native plants and animals, threatened and endangered species. Chincoteague also provides the public with unprecedented opportunities to enjoy wildlife-dependent recreation opportunities including hunting and fishing. A new educational and interpretive facility is scheduled to be completed by 2003 featuring exhibits, an auditorium and a classroom. The USFWS should continue to pursue funding sources to complete the facility as planned.

Eastern Shore of Virginia National Wildlife Refuge was established in 1984 when the US Fish and Wildlife Service obtained the old Cape Charles Air Force Base. This 752-acre refuge is located at the southern tip of the Delmarva Peninsula and is a hemispherically important stopover area for migratory neotropical bird species. The USFWS, with its

southern tip partners (the Commonwealth, local governments and the private sector) are identifying critical areas for habitat conservation in Northampton County. The refuge has a state-of-the-art visitor center, interpretive trails that include an historic coastal artillery site, wildlife observation areas and a photography blind. There is big game hunting for deer during the Virginia archery and gun seasons. The refuge has an extensive environmental education program and participates in a number of local festivals including the Eastern Shore Birding Festival. It has been identified as an anchor site in the *Birdwatcher's Guide to Delmarva* and is a proposed site for the Virginia Coastal Birding Trail. 1. The USFWS should continue to work closely with the National Park Service and private partners to optimize compatible recreational opportunities at Chincoteague National Wildlife Refuge and Assateague Island National Seashore while protecting sensitive beach habitat. 2. Studies of Assateague Island National Seashore should be completed to determine where appropriate support facilities could be located while preserving the integrity of the bays, dune systems and vegetation. Development of a transit system and improved bicycle facilities to supplement vehicle access to the island's recreational resources should be considered.

State parks. Due to the extremely high demand for public access to the waters of the Commonwealth, any waterfront property that becomes available on the major tidal rivers or their tributaries in the region should be evaluated for potential acquisition and development as a regional or state park. Any site acquired and developed on these waters would also help to meet the commitments of the *2000 Chesapeake Bay Agreement*. Projects identified in approved master plans need to be funded. State park master plans must be revisited by DCR staff every five years; any significant changes not identified in the current, approved master plan, or improvements/additions costing in excess of \$500,000, must go through the public participation process. 3. Projects identified in the approved Kiptopeke State Park Master Plan need to be funded. DCR has developed a partnership with birding interests to include the state park as a site in the birding trail. 4. The potential exists for a state park in the area between Occahannock and Onancock Creeks in southern Accomack County. This site would offer abundant shoreline on the Chesapeake Bay and several large creeks. The excellent marshes and beaches found here could contribute greatly to the Eastern Shore's supply of accessible water-oriented recreational opportunities as well as provide an opportunity to site a ferry landing.

Natural Areas. The following natural area preserves are located within the district: Parkers Marsh in Accomack County and Cape Charles Coastal Habitat, Savage Neck Dunes, William B. Trower Bayshore, and Wreck Island in Northampton County. The Department of Conservation and Recreation has, as of March 2001, documented 449 occurrences of 104 rare species and natural communities in the Accomack-Northampton Planning District. Five species are globally rare and three are federally threatened or endangered. Ninety conservation sites have been identified in the district; only 32 (36%) have received any level of protection through ownership or management by state, federal and nongovernment organizations. DCR recommends that the 58 unprotected conservation sites be targeted for future protection efforts. The appropriate method of protection will vary with each site but may include placing the site on Virginia's Registry of Natural Areas, developing a voluntary management agreement with the landowner, securing a conservation easement through a local land trust, acquiring the site through a locality or local land trust, dedicating the site as a natural area preserve with the current owner, or acquiring the site as a state natural area preserve. Wreck Island Natural Area Preserve in Northampton County is owned by DCR for

the natural heritage resources occurring there. Provision of appropriate public access to the island should be considered.

Regional parks. A regional open space plan that includes recreational and conservation opportunities should be undertaken. 6. Regional parks should be acquired and developed in both Accomack and Northampton counties. Both sites should provide trails, swimming, beach access and facility development for softball and basketball. Accomack County has identified a potential regional park site near Onancock, which is centrally located and has good development potential.

Public water and beach access. The Eastern Shore's rich and plentiful water resources are its primary recreational attraction. However, public access to the region's water resources for boating and beach use is very limited and should be increased. The *Chesapeake Bay Public Access Plan* could assist in determining areas of greatest need for additional public access. The current access study in Accomack County will further refine the access opportunities for that locality. In areas where public access can be enhanced, lands should be acquired or use agreements arranged to help meet this demand. Access considerations for the region include the following: 7. The Virginia Department of Game and Inland Fisheries should continue to provide additional access for public hunting, fishing and boating on the Eastern Shore's ocean, bays and marshes. 8. The USFWS should continue to work with partners to implement recommendations contained in the Refuge Comprehensive Conservation Plan that will improve access and enhance opportunities for compatible, wildlife-dependent recreation and environmental education. 9. The Eastern Shore of Virginia National Wildlife Refuge in Northampton County should be considered as a possible access point to those barrier islands suitable for some recreational use. 10. Barrier islands acquired as natural areas could offer additional limited access to water and beaches. 11. Access to the bay has been provided at Guard Shore located in Accomack County in the vicinity of the Saxis Wildlife Management Area, which is owned and managed by the Virginia Department of Game and Inland Fisheries. [The County recommends continued cleanup and improvement to Guard Shore, as well as the Burton Shore land owned by the County.] 12. Access to the Bay should be considered at Mason Beach in the vicinity of Pungoteague Creek in Accomack County.

Scenic Rivers. The following rivers should be evaluated to determine their suitability as Virginia Scenic Rivers: 13. Machipongo River 14. Onancock Creek 15. Occohannock Creek.

Scenic highways and Virginia Byways. There has been a tremendous interest in thematic trails including Civil War trails, the Wilderness Road Trail, the Birding and Wildlife Trails, the Revolutionary War trails, the African-American Heritage Trail system, and other driving tour routes. The next logical step after the *Scenic Roads in Virginia* map would be to develop a series of regional maps or booklets that describe and help locate the resources and services found in all sections of the state. The following roads have been recommended for consideration as Virginia Byways: 16. Route 180 in Accomack County from Harborton to Wachapreague. 17. Route 605 in Accomack County from Quinby through Wachapreague to Accomac. 18. Business Route 13, Route 178, and Route 179 from Accomac to Onancock, and Route 718 from Onancock to Pungoteague. 19. Route 600 in Accomack County from Route 603 north to Route 182 in Mappsburg. 20. Route 182 from Mappsburg to Quinby. 21. Route 679, the Seaside Road, from just north of Accomac through Atlantic to the Maryland state line. 22. Route 639, Business Route 13, and Route 184 from Oyster to Cape Charles.

Trails and greenways. Local and regionally initiated trail and greenway planning is important for identifying and providing communities with these resources. The Department of Conservation and Recreation recommends that each locality develop a trail and greenway plan as part of its comprehensive plan. In this plan, an effort should be made to link existing and proposed trails and greenways into a regional greenways network connecting existing and proposed recreational, natural, cultural, water, business/commercial and other resources the community deems desirable. Both Accomack and Northhampton counties are pursuing designations of Heritage Trails. The plan should be completed and strategies developed for its implementation. The Birding Trail should be designed and implemented for the resources found on the Eastern Shore. Localities, counties and cities should also determine appropriate roads for bicycle routes, and should work with the Virginia Department of Transportation to develop these routes by adopting local comprehensive pedestrian and bikeway plans as a component of their transportation plans. The Virginia Department of Transportation can include funds for bike trail construction projects only if the bikeway plan is included in the locality's approved transportation plan. A Scenic Byway/bike route system should be formed to connect all the major attractions of the Eastern Shore. This system should link wildlife refuges, parks, historic and cultural resources and scenic areas from Cape Charles to Maryland. The following are greenway/trail proposals for this region: 23. The abandoned Penn Central Railroad from Cape Charles to Eastern Shore National Wildlife Refuge should be protected as a greenway to be a wildlife corridor, as well as a possible multi-use trail. 24. The Virginia Coastal Birding and Wildlife Trail planned by the Virginia Department of Game and Inland Fisheries with support from the Virginia Department of Conservation and Recreation should be implemented and marketed to the public. Hostels 25. Hostels should be considered for location in the following areas: Assateague Island, Cape Charles and the central portion of the Eastern Shore.

Table 22
Existing and Projected Needs
Accomack-Norhampton (PD #22)

ACTIVITY	ACTIVITY DAYS	DEMAND	UNITS	TOTAL SUPPLY	PRIVATE SUPPLY	2000 NEEDS	2010 DEMAND	2010 NEEDS
Baseball	79,153	16	fields	3	0	13	14	11
Basketball	265,214	63	goals	7	0	56	57	50
Bicycling	436,883	31	miles	NI			28	
Lake, River, Bay Use (combined)	957,750	14,684	water acres	428,684		-414,000	13,340	-415,344
Power Boating	457,442	11,026	water acres	S			10,016	
Sailing	46,104	399	water acres	S			362	
Lake Fishing	37,521	211	water acres	S			192	
Salt Water Fishing	372,533	2,095	water acres	S			1,904	
Jet Ski/ Personal Watercraft (PWC)	27,447	430	water acres	S			391	
Water Skiing / Towed on Water	16,704	523	water acres	S			475	
Camping (*)	70,518	416	sites	5,305		-4,889	378	-4,927
Tent camping	12,593	74	sites	1,699	1,699	-1,625	67	-1,632
Developed camping	57,926	342	sites	3,606	3,415	-3,264	310	-3,296
Fitness Trail use	15,419	1	mile trails	1	0	0	1	0
Fields (combined)	456,671	96	fields	7	0	89	87	80
Football	357,730	75	fields	NS			68	
Soccer	98,941	21	fields	NS			19	
Stream Use (combined)	119,500	53	stream miles	0		53	48	48
Stream Fishing	52,169	37	stream miles	S			33	
Human-powered boating	57,052	15	stream miles	S			13	
Rafting	4,934	1	stream miles	S			1	
Tubing	5,345	1	stream miles	S			1	
Golfing	92,002	3	courses	3	4	0	3	-1
Hiking/ Backpacking	45,744	23	trail miles	26	2	-3	21	-5
Horseback Riding	7,401	3	miles	4	0	-1	3	-1
In-Line Skating	79,667	6	miles	NI			5	
Jogging/Running	678,454	54	mile trails	NI			49	

S - same as combined NS - not inventoried separately NI - not inventoried (-) - indicates surplus

* - 79.6 % of 2000 Virginia Outdoor Survey respondents preferred developed campsites

Note: Demand multipliers used to create this chart are based on the findings of the Virginia Outdoor Survey as measured at the regional level. In regions with significant contrasts in population density and demographics, need results may show surpluses where none exist, especially in sparsely populated counties. Additional analysis will be required to adjust these results to local conditions.

**Existing and Projected Needs
Accomack-Norhampton (PD #22) Continued**

ACTIVITY	ACTIVITY DAYS	DEMAND	UNITS	TOTAL SUPPLY	PRIVATE SUPPLY	2000 NEEDS	2010 DEMAND	2010 NEEDS
Nature Study/ Programs	28,783	4	sites	3		1	4	1
Picnicking Away from Home	84,498	219	tables	1,065	750	-846	199	-866
Skateboarding	21,587	7	sites	NI			6	
Snow Skiing or Snowboarding	10,794	0	ski lifts	0	0	0	0	0
Softball	186,575	33	fields	12	1	21	30	18
Sunbathing/ Relaxing on Beach	307,617	22	beach acres	574	49	-552	20	-554
Swimming Outdoor Area	146,793	15	beach acres	574		-559	14	-560
Swimming Outdoor Pools	132,093	6	pools	10	7	-4	5	-5
Swimming Indoor Pools	35,619	0	pools	0	0	0	0	0
Tennis	52,940	33	courts	16	3	17	30	14
Used a Playground	300,781	43	sites	10	2	33	39	29
Visiting Gardens	34,539	4	sites	NI			3	
Visiting Historic Sites	92,259	8	sites	NI			7	
Visiting Natural Areas	76,480	13	sites	NI			12	
Volleyball	145,199	43	courts	1	0	42	39	38
Went Hunting	142,475	23,364	acres	21,150		2,214	21,226	76
Went Shooting Total	84,293	48	fields	NI			43	
Target	31,867	18	fields	NI			16	
Skeet or Trap	19,120	11	fields	0		11	10	10
Other	19,428	11	fields	NI			10	
Drive for Pleasure	439,658	na	na	NI			na	
Motorcycle/ATV (combined)	18,812	9	miles	6	0	3	8	2
Driving All-Terrain Vehicle	1,336	1	miles	NS			1	
Driving Motorcycle Off-Road	17,475	8	miles	NS			7	
Driving 4-Wheel-Drive Off-Road	39,062	na	na	NI			na	
Walking for Pleasure	2,060,032	na	na	NI			na	
Other	59,622	na	na	NI			na	

S - same as combined NS - not inventoried separately NI - not inventoried (-) - indicates surplus.

The draft 2007 Virginia Outdoors Plan suggests that local priorities on the Eastern Shore should be the development of parks. The Shore should develop a number of “small community parks” and “at least two regional parks.” These parks would provide game fields and courts, as well as picnic sites, swimming, and trails.

The following is a list of recommendations set forward by the Virginia Outdoor Plan for meeting outdoor recreation needs in the region:

- Local, state, and federal agencies should ensure that adequate supplies of recreation and open space are provided to meet demands. These areas must also be sufficiently staffed, funded, and maintained.
- Activity user groups and local parks and recreation departments should continue to educate outdoor recreation enthusiasts to be aware of the impacts they have on others. This will minimize conflicts between users as well as increase economic and resource stability.
- The population should be provided with the appropriate number and venue of opportunities to enjoy and access outdoor environments. This should be ensured by local, state, and federal government.
- Responsible use of public lands should be taught by state and local DCR and local parks and recreation departments. Suggested teachings include *Leave No Trace* and *Tread Lightly!* Skills.
- Leadership and example in maintenance and operation on behalf of conservation and outdoor ethics should be provided by natural resource agencies such as DCR.
- Safe outdoor recreation environments should be promoted by management techniques used by property owners.
- Communities and land managers need to put forth a united front against crime by partnering with local law enforcement. Less crime will encourage more outdoor activity.

Land Conservation

In Accomack and Northampton Counties, 4,200 acres have been preserved since the beginning of the Eastern Shore Land Trust in 2003. Nearly all of the barrier islands have been acquired and are now being preserved in perpetuity. Land trusts operating on Virginia’s Eastern Shore include Chesapeake Bay Foundation, Virginia Eastern Shore Land Trust, APVA Preservation Virginia, Land Trust of Virginia, The 500-Year Forest Foundation, and Virginia Outdoors Foundation.

Some general recommendations for land conservation include:

- Conservation and preservation of open space should be continually promoted through methods such as land acquisition, conservation easements, stewardship agreements, the development of agricultural and forestall districts, and the outright purchase of land.
- Land conservation and sound land use decision-making must become important considerations in all land-planning efforts as population growth hastens development pressure. Land conservation efforts must be focused and prioritized by localities, state agencies, and private organizations. A method of targeting conservation efforts, using green infrastructure land planning techniques, geographic information systems, local comprehensive plans, and decision support systems such as the Virginia Conservation

Lands Needs Assessment should be used in order to prioritize and focus these efforts.

- Partnerships between all agencies will be needed in order to meet conservation goals.

Specific recommendations for land conservation on Virginia's Eastern Shore:

- Continue **conservation efforts** with the Nature Conservancy and DCR on the seaside of Virginia's Eastern Shore for migratory bird habitat.

Green Infrastructure

Regional recommendations for implementation of green infrastructure planning include:

- Green infrastructure should be secured by local governments through planning and zoning
- Local governments should adopt and implement the green infrastructure planning model. This will ensure that the development of their community is sustainable, as well as ensure a high quality of life for future generations.
- Local and regional agencies and conservation organizations should receive information and education about green infrastructure planning including guidance on local zoning initiatives that lead to changes in community design and transportation systems.
- Sources of funding for local government green infrastructure initiatives should be identified and obtained.

Trails and Greenways

When developing an infrastructure that promotes public health, trail and greenway planning is important at the local and regional level. Some general recommendations for trails include:

- Local governments should have a trails and greenways component in their comprehensive plan. This should provide a variety of leisure trails and also promote pedestrian and bicycle transportation.
- Trail development, management, and maintenance should be funded by state, regional, and local governments in annual capital and operation budgets. The public's understanding of the connection between trails and public health should be strengthened by state, regional, and local governments. Policies should be established that support pedestrian and bicycle facilities in road construction.
- DCR should partner with the Planning District Commission to a) facilitate communications between trail providers, users, and policy makers, b) encourage the private sector to improve regional and statewide trail opportunities and support and c) focus on regional trail networks to establish a trunkline statewide trail system.
- Trail managers should provide information about their trails at the trailheads, in brochures, and on Web sites so that users can choose sections of trails based on their skill and capability level.
-

Recommendations on trails and greenways that are specific to the Eastern Shore include:

- The **Central Accomack Bicycle Loop** will connect between the Towns of Onley,

Accomack, and Onancock, along with connections to Nandua High School and Nandua Middle School

- Develop a trail connection between Kiptopeke State Park and Cape Charles Wildlife Management Area.

Blueways & Water Access (Boating, Beaches & Swimming, Pier and Bank Fishing, Natural Area, Blueways)

Despite a wealth of water and open space on the Eastern Shore, access to it is limited. Most of the beach areas for example, are either privately owned or difficult to reach, such as the barrier island beaches. Some beach access recommendations include:

- Cooperative agreements among localities and other agencies, as well as private landowners, are encouraged in order to meet the increasing need for public access to beaches and other water-related recreational activities.
- State land management agencies should identify strategies to make additional waterfront resources available for public use.
- Adequate support facilities and services, such as restrooms, concessions, etc. should be a priority for existing public beaches that may be jeopardized.

Water Trail

The Seaside Canoe/Kayak Water Trail is a guide that was developed by the Accomack Northampton Planning District Commission and the Virginia Coastal Management Program, the guide outlines 100 miles of paddling routes in the barrier island system. As a part of the water trail, Chincoteague and Wachapreague installed 6 canoe/kayak floating docks with funding from Virginia Coastal Program Funding. Water trail recommendations include:

- Encourage water trail improvements and linkages with recreational, cultural and natural resource destination resources.
- Navigable rivers should be managed as water trails.
- Regional, local governments and state agencies should work together to market water trails.
- Rest-stops and boat-in-only campgrounds along water trails should be encouraged.
- Areas that have adequate access and recreational seasonal flow levels should become numbered recommendations.
-

Water access recommendations:

- Old ferry crossings/landing sites and bridges should be considered for opportunities for water access.

Specific water access recommendations for Accomack:

- Localities should look for opportunities to develop more public access for kayaking and canoeing both Bayside and Seaside.

Historic and Landscape Resources

General recommendations for historic and landscape resources include:

- The County should make every effort to identify historic and archaeological resources within each jurisdiction that can be used for economic, tourism, recreational and educational benefits.
- Local historic attractions, societies, museums, and other tourism organizations should build partnerships with the Virginia Associations of Museums, Virginia Civil War Trails, the Association for the Preservation of Virginia Antiquities/Preservation, the Virginia Main Street Program and others to enhance local heritage tourism, educational and recreational offerings.
- Local governments and private organizations owning historic properties in the region should be encouraged to manage those properties effectively for long-term protection of the public trust and to maximize public benefit consistent with the nature of the historic property.

General recommendations to support scenic resources:

- The County should conduct a visual resources assessment as part of their green infrastructure inventory and mapping process.
- Should ensure that protection and enhancement of scenic resources, visual character and viewsheds is included in the comprehensive plan.
- Develop corridor management plans for scenic byways, blueways, and greenways to assure preservation of the scenic quality of the corridor.

Scenic Highways/Virginia Byways

These resources are a critical link for communities because driving for pleasure and visiting historic sites are in the top three recreational activities. To keep Accomack County an attractive and welcoming community, their inherent qualities must be preserved. General recommendations include:

- The County should recognize and nominate scenic roads for designation as Virginia Byways.
- The County should partner with other state, local and professional organizations to determine implementation strategies to protect the scenic assets of byway corridors.
- The following roads in Accomack County should be considered for inclusion as a Virginia Byway:
 - o State Routes 182, 178, 13, 659, 679

Scenic Rivers

In the Accomack-Northampton PDC, there are currently no designated scenic river segments. River resources may be more successfully protected by implementing the following general recommendations:

- Local government should nominate candidate streams and rivers for study and possible Scenic River designation.

- DCR should assist local government in development of planning tools that will afford special recognition and protection to Virginia's Scenic Rivers.
- The following river segments should be evaluated to determine suitability as a Virginia Scenic River:
 - o Onancock Creek (entire tributary), Occohannock Creek (entire tributary), and Machipongo Creek (entire tributary).

Watershed Resources

The Accomack-Northampton Planning District is divided into two watersheds, the Bayside Eastern Shore, and the Seaside Eastern Shore. The Bayside, drains into the Chesapeake Bay while the Seaside drains into the Atlantic Ocean. Regional and local government should protect the management of watersheds by integrating watershed management planning with local land use ordinances and comprehensive plans through DCR's Chesapeake Bay Preservation Act land use management initiative.

Environmental and Land Stewardship Education

General recommendations regarding environmental and land stewardship education include:

- Federal, state, regional and local agencies will provide citizens access to stewardship education and conservation resources.
- They will also promote the value and benefits of outdoor experiences and their relationship to environmentally literate citizenry.

Federal Facilities

In addition to the NPS and USFWS lands, the Eastern Shore also homes NASA's Wallops Station. The flight facility includes six launch pads, three blockouts for launch control and assembly buildings that support the preparation and launching of suborbital and orbital launch systems. The facility offers a well developed educational outreach program for visitors and the community.

National Parks

General recommendations for the National Park Service include continuing collaborative efforts through the Chesapeake Bay Gateways and Water Trails Program on the Bayside of the Eastern Shore to connect people to heritage, outdoor recreation, and educational opportunities.

Transportation

Transportation is integral to outdoor recreation. Recommendations relating to transportation in Accomack County include:

- Greater emphasis should be placed on providing alternatives to the use of private automobiles for daily activities. Transit systems, bicycle and pedestrian accommodations, improved community design, as well as a change in people's attitudes toward transportation alternatives will be needed for the transportation system of the

future to meet capacity needs and energy constraints.

- Priority should be given to eliminating potential transportation barriers for the public, and improving the linkages of recreation areas across major transportation corridors.
- Local government should encourage the development of a permanent process for integrating the recommendations of local public health agencies and active living into all phases of land use planning.
- Implement the Eastern Shore of Virginia Bicycle Plan adopted by Accomack and Northampton Counties in 2004.
- Town of Chincoteague Bicycle Plan adopted October 6, 1997.

Local & Regional Parks & Recreation

General recommendation for local parks and recreation departments are:

- Localities should appoint a parks and recreation commission to provide citizen leadership with regard to parks and recreation issues and concerns. Commissions have been effective in many localities to enhance park areas and recreation programs.
- Commitments to the maintenance, management, and development of local parks and recreational systems are necessary. Localities should explore alternative methods of funding, such as set-aside ordinances, fees and charges and public/private partnerships. The establishment of a “friends group,” which could possibly evolve into a “park foundation,” should be considered for the local parks and recreation department. The citizens group could be a source of volunteers, as well as a source for community support and other resources.
- Local parks and recreation departments should initiate a structured volunteer program that recruits, trains, and retains volunteers, and recognizes their contributions to parks, programs and the overall quality of life in communities.
- All localities should develop and implement hiking and bicycling plans to connect parks, schools and neighborhoods. Encouraging biking and walking within the community can enhance community health and spirit.
- Consideration by localities of the benefit of a school/park cooperative agreement could enhance the use of school and park facilities. School systems and local parks and recreation departments should cooperate in the design of new or renovated facilities. In order to increase local access, localities should consider cooperative management for the recreational use of private, corporate, state, or federally owned lands.
- All public playgrounds, including school and park playgrounds, should meet or exceed the guidelines established by the United States Consumer Product Safety Commission and published in the USCPSC Handbook for Public Playground Safety.
- Site identification, master planning and development of small community parks to serve residents as well as at least two district parks, providing game fields and courts, picnic sites, swimming, trails, nature study and environmental education.

Private Sector

The following recommendations have been made regarding the private sector of outdoor recreation:

- Encourage public outdoor recreation providers to partner with multiple private sector organizations.
- Recreational use agreements and/or easements should be encouraged for private property owners providing public recreation opportunities and to make more private lands available for recreation.
- Efforts should be made by DCR and local parks and recreation departments to make existing and potential private sector providers of outdoor recreation, especially where applicable to trails and greenways development, knowledgeable about the Virginia Landowner Liability Law.
- Local, state, and deferral outdoor recreation providers should support corporate recognition programs and improve corporate recognition for small business willing to incorporate outdoor recreation needs in an environmentally friendly manner.

Information Needs

Any discussion of land use management seems to center around the need for more and better information. As mentioned in various sections of this plan, only imperfect information is available on the topics of groundwater, water quality, causes of water degradation, etc. Lack of information makes it difficult for the governing body to make, and the public to accept, important land use management decisions. As long as the facts of an issue are debatable, it will be difficult to reach agreement on solutions. It is important that the county never stops collecting the best information available pertaining to the issues that will effect our future. Many federal, state and academic institutions are conducting research on the Shore which is relevant to the issues addressed in this plan. The county should actively seek partnerships to share and apply this information. Good information is key to sound decision making, but it is important not to let the search for the perfect data set be immobilizing. There will never be enough information to satisfy everyone. Although it may be tempting to put off making decisions due to lack of information, it can paralyze a locality's ability to act on issues. At times, the governing body will need to take action based on the best available information. The Comprehensive Plan has identified the following needs for further information:

- Scientific research should be conducted to establish safe standards for separation distances between septic systems and the groundwater table.
- Establish a system for the continuous monitoring of land use change by watershed.
- Conduct research to answer questions about the rate, volume, timing and distribution of recharge from the Columbia aquifer to the Yorktown- Eastover aquifer, saltwater movement into the Columbia and Yorktown- Eastover aquifers, suitability of paleochannels for water supply use, impact of pesticides of groundwater, and impact of agricultural nitrogen use on groundwater.
- Research the impact of runoff from land uses on water quality and aquatic life.
- Conduct a comprehensive shoreline situation report, updating erosion data and inventorying shoreline erosion control structures, docks, piers, and marinas.

- Identify most unique and sensitive habitats, i.e. those that are most in need of protection.
- Conduct a survey of Accomack County's historic resources.
- Work towards the further development of Best Management Practices for all land use.

Citizen Involvement

During the preparation of the 1997 Comprehensive Plan, one of the items for which there was general consensus at the public forums was that citizens throughout the county continue to work together cooperatively to reach decisions about land use and natural resource policies and regulations. Most forum participants were pleased with the level of involvement afforded by the forum process and expressed interest in continued participation in the planning process. The question of "what's next?" was often asked. Citizens wanted to know that a system had been established by which they could continue to participate in the decision making process.

The public forums conducted for the plan update in 2006-07 also generated enthusiastic participation. The level of concern and interest in long-range planning seems to have increased since 1997, possible due to the pressures for growth that the County has experienced in recent years.

Communication: Communication is important on all levels; between citizens and the governing body, between industries and interest groups, between industries and the governing body, between interest groups and the governing body, and amongst the general public. Improved communication can lead to improved understanding and cooperation among various stakeholders in the county.

Opportunities for Involvement: The Planning Commission's meetings are always open to the public and a public participation section is included during each meeting. Public Hearings are held in advance of the adoption of any new ordinances or ordinance amendments. In addition to these opportunities for public participation, the Planning Commission has held public forums, created citizen advisory committees, and for the 1997 Plan, conducted a newspaper survey. Public participation through the planning process for the Comprehensive Plan revision has been good, but there is always room for improvement. The Planning Commission and the Board of Supervisors should make every effort to allow and encourage citizen involvement in the decision making process. Possible options include additional forums and workshops, placement of information on the internet, the televising of meetings, and announcement of and the provision of background materials on issues up for discussion.

Implementation

Those who participated in the planning process emphasized that the county should regularly update and closely follow its Comprehensive Plan and that the plan should be implemented

through fair and effective zoning practices and well planned public facilities and services. These sentiments were expressed by the public in 1996-97, as well as during 2006-07. Throughout the planning process, concern was expressed that plans would not be followed through and properly implemented. Those concerns are founded on the difficulties experienced with implementing previous local and regional plans, limited funding and staff availability for plan implementation and enforcement of regulations, and failure to get the plans approved by the Board of Supervisors.

Regulatory Enforcement: Enforcement of new and existing land use regulations at the local, state and federal level are important to the success of the Comprehensive Plan. Any land use regulation considered for adoption should be evaluated regarding the level of enforcement required. If the governing body is unable to provide the financial resources for effective long-term enforcement of the regulation, the measure should not be adopted. The failure to enforce adopted regulations sends out a message that the need for the regulation is not important enough to provide resources for and causes a great deal of frustration for citizens who believe that protective measures are being implemented. Therefore, caution should be used at the local level to ensure necessary resources for enforcement of locally adopted regulations and agencies at the state and federal level should be pressured to adequately enforce their regulatory programs.

Inter-Governmental Cooperation: Virginia's Eastern Shore consists of two counties and 19 incorporated towns. Each of the counties and towns have their own governing body and a certain amount of responsibility for activities within their boundaries. Yet, due to the physical, cultural and economic nature of the Shore, it would be unreasonable to think that the actions of one does not effect the other. Each county and each town derives its identity from being a part of Virginia's Eastern Shore, together making a region of significance. It is therefore important to recognize the individuality of each of the counties and towns, but cooperate on regional issues, making the best use of limited resources and protecting the value of the region as a whole. It can be expected that governing bodies will continue to make differing decisions, based on their individual perceptions of what is best for their locality, yet the counties and towns should cooperate and pool resources to gather data and evaluate alternative solutions so that those decisions are based on the same level of information.

Chapter 5

Goals, Objectives, Policies, and Recommended Actions

Goals, Objectives, Policies, and Recommended Actions

Introduction:

Chapter 5 sets forth the County's long term goals, the objectives that should be pursued in striving to reach those goals, and the Policies and Actions that should be carried out in order to achieve those goals and objectives. The many policies and actions are grouped under the most relevant objective, with a set of actions for each policy. At the end of the chapter, all of the actions are consolidated into major categories with key priorities identified.

GOALS

Have a strong, viable, rural community proud and supportive of its history, diversity, bountiful resources, traditional industries, and vision for the future.

Have safe, clean, convenient, and efficient community services and facilities for transportation, recreational opportunities, government services, and disposal of wastes.

Have a balanced, safe, and desirable pattern of land use that protects and conserves agricultural land, forest land, groundwater, surface water, wetlands and other valuable resources, providing an excellent resource base for wildlife habitat, recreation, agriculture, seafood industries, and tourism.

OBJECTIVES, POLICIES, AND RECOMMENDED ACTIONS

Objective 1:

Achieve safe, efficient development, compatible with Accomack County's traditional land use pattern and resource constraints by directing development towards existing population centers.

The county should use the zoning and subdivision ordinances to direct development towards the most suitable locations. Information from the Accomack County Soil Survey, Ground Water Management Plan, Flood Insurance Study, and Shoreline Situation Report should be used to identify areas that are unsuitable or hazardous for development. The county should direct development towards existing population centers. Clustering development around designated growth centers allows for more efficient services (solid waste collection and disposal, emergency services, transportation services, water and sewer, etc.) and preserves large, unfragmented areas of land for agriculture, forestry, recreation, and wildlife habitat. Existing land use maps should be used to identify existing pockets of development.

The public benefits of a more compact pattern of residential land use are supported by much research and deliberation by the County, including the following studies, analyses and public planning sessions:

- Eastern Shore of Virginia Ground Water Supply and Management Plan, 1992, Horsley, Witten Hegemann, Inc.

- Hydrology and Analysis of the Groundwater Flow System of the Eastern Shore, Virginia, 1992, U.S. Geological Survey
- Technical Analysis and Justification for Ground Water Ordinances on the Eastern Shore of Virginia, 2001, Malcolm Pirnie
- U.S. Route 13 Corridor Plan, 1999
- Route 13 / Wallops Island Access Management Study, 2002
- Accomack Transportation Planning Workshop, November 30, 2004.
- Accomack County Buildout Analysis, 2005
- Transportation Analysis for the Comprehensive Plan, 2005
- Accomack County Planning Commission and Land Use Planning Stakeholders Group - Joint Work Session on Land Use Planning Issues and Options, October 24, 2005
- Planning Commission Work Session, November 22, 2005
- Comprehensive Plan Workshops, September 25 and 26, 2006
- Future Land Use Map Public Meetings, January 23, 24, 30, and February 8, 2007.

In addition to the above cited studies, the data and analysis contained in this Comprehensive Plan provides further rationale for the County to implement policies and regulations to achieve a more compact pattern of residential land use that will better protect the public health, safety and welfare than does the current trend pattern of scattered development. The County took important steps in that direction by adopting amendments to its Subdivision Ordinance and the Agricultural District of the Zoning Ordinance in 2006.

There are many multiple, mutually-supporting reasons for redirecting the patterns and densities of land use, including the following:

- Protection of the limited capacity of the groundwater supply, including the groundwater recharge spine, the only major source of drinking water for the County's population
- Protection of the limited capacity of the Route 13 highway corridor, the only major roadway providing access to the County from areas beyond its borders
- Maintaining an efficient, compact residential land use pattern in order to limit negative fiscal impacts of providing public services to scattered development
- Protecting the rural character and heritage of the County in order to support the tourist industry
- Protecting agricultural and forest lands to maintain available land resources, for that critical segment of the local economy
- Encouraging farmers to conserve and protect groundwater by using the shallow Columbia aquifer
- Protecting tidal wetlands to minimize shoreline erosion, flooding, and to improve surface water quality
- Protecting non-tidal wetlands to minimize flooding, maximize ground water recharge, and improve surface water and ground water quality

It is clear from the available data and analysis that the County needs to promote a shift in the pattern of future development from a scattered to a more compact pattern, due to the inherent limitations on the capacities of critical resources, including the groundwater supply and the capacity and safety of the Route 13 highway corridor, and the other resources cited above.

Further, circumstances have changed since the last update of the County's Comprehensive Plan. The County is now facing much higher development pressures than were envisioned in 1996, due in part to changes in the national and regional economies, changes in retiree settlement patterns and second-home markets, and changes in telecommunications technology that have created what is called the "distributed workforce" (workers who are able to live long distances from their place of employment due to telecom access). Looking ahead, it is critical that the County ensure that its land development regulations are in conformance with its long term goals, so that it can create the best chance of protecting the long term public health, safety and welfare, in the face of these and other such changes in circumstances.

Policies:

- 1-1 Allow new development to occur only in locations that contain soils suitable for development*
- 1-2 Direct development away from critically eroding shorelines, including shoreline setbacks on the Seaside and Bayside that adequately take into account accelerated sea level rise and increased storm surges.*
- 1-3 Encourage new residential development to occur in patterns and densities that minimize the impact on the agricultural, groundwater, surface water and fiscal resources of the County, and require new development to use innovative designs and all available technology to completely mitigate any such impacts.*
- 1-4 Encourage new residential and commercial development to occur in and around existing towns and villages, in accord with the future land use map of this Plan.*

Recommended Actions:

- 1-a Revise the Zoning Ordinance to create additional zoning districts to allow various types and densities of development to occur in a coordinated fashion.*

The county's current zoning ordinance has four zoning classifications (agricultural, residential, business, and industrial). The pattern of development should be better managed by creating additional zones which allow for a variety of commercial uses and residential densities, while protecting areas designated as important for agricultural use or environmental protection.

New "Rural Settlement" and "Village Development" districts would provide opportunities for creating new neighborhoods in proximity to existing Towns and settlements. Such districts should provide for a wide range of housing types, sizes and costs. These new districts could also conserve open land through the use of smaller lot sizes, allow community water and wastewater systems, and potentially reduce the number and length of motor vehicle trips. Expanding the area of existing Residential zoning districts, where soils are suitable for on-site septic systems, will provide additional sites for affordable housing in existing residential communities.

The new zoning district for the Village Development areas would be a “planned unit development” (PUD) district, designed to produce coordinated, mixed-use development that fits with the existing, traditional character of the County’s historic settlements. To achieve these features in the PUD district, various elements of “traditional neighborhood development” (TND) would be incorporated, including:

- Located only in designated Village Development areas, in accord with the Future Land Use Map.
- Located only in areas served by central water and sewer systems.
- Carefully designed streetscapes and street patterns, with mixed-uses, narrow, interconnected streets, pedestrian walkways, and civic sites including small parks and institutional uses
- A wide variety of housing types, sizes and costs.
- Compatibility with the County’s existing historic settlements in terms of character and scale.

1-b Revise the Future Land Use and Zoning Maps to reflect the distribution of soils suitable for septic system use.

Bojac is the soil type most suitable for agriculture and septic systems in Accomack County. The distribution of this soil is depicted in the Accomack County Soil Survey which was published by the U.S. Department of Agriculture, Soil Conservation Service in 1994. The distribution of residential land use on the future land use map should be revised, using the soil survey as a guide, to provide additional residential areas while conserving productive farmland.

1-c Amend the future land use map and zoning ordinance to maintain a low density of development outside of designated growth areas, and to focus new development within designated growth areas.

In order to ensure effective use of areas outside of development clusters for agricultural, forestry, habitat, and recreational use, development outside of designated growth areas should be low density in nature. Low density development can be achieved through large minimum lot sizes and clustering provisions to allow development on smaller lots to allow new housing while conserving farmland, forests, and open space.

In June, 2006, the County amended the existing Agricultural “A” District to increase the minimum lot size (decrease the overall intensity), and provide a clustering option within the district to allow houses to be clustered away from sensitive environmental resources, including productive farmlands. The amendments are also aimed at reducing the impact on groundwater resources by reducing the total amount of groundwater withdrawals compared to the old zoning densities, by allowing wells and drainfields to be dispersed at lower densities, and by allowing for the possibility of community wells, either initially or in the longer term. The encouragement of a clustered pattern of smaller lots at lower overall densities will also help protect groundwater recharge areas and reduce the need for residential irrigation.

In conjunction with limiting development in the agricultural areas, new growth should be

focused within designated growth areas where services can be most effectively provided. These “service areas” are essentially the areas designated for Village Development on the Future Land Use Map of this plan.

- 1-d Amend the future land use map and zoning ordinance to direct high density development away from shorelines, especially shorelines.*

The Virginia Institute of Marine Science has developed a Shoreline Situation Report for each coastal county in the state. In order to prevent property loss due to erosion and reduce the need for shoreline erosion control measures, high density development should be directed away from areas identified in the Shoreline Situation Report as high erosion areas (loss of greater than one foot per year). The future land use map and zoning ordinance should be amended in accordance with this policy.

The County’s 2006 amendments to the Agricultural Zoning District, with a 5-acre density and minimum lot size, also allows residential units to be clustered onto 30,000 square-foot lots while creating larger “remainder” lots that conserve farmland, forests, wetlands, and other environmental resources.

- 1-e Work closely and collaboratively with the incorporated Towns to coordinate land use decisions so that new development is located in accord with the future land use map to achieve the goals of the County as well as the goals of the Towns.*

The County should collaborate with the Towns to prepare detailed comprehensive plan elements for key areas adjacent to the Towns that are suitable for development, in order to achieve mutual planning goals and objectives. Top priorities for these “Area Plans” would include the Rt. 175 Corridor and the Onley/Onancock area.

- 1-f Develop a shoreline management plan to address shoreline erosion problems.*

A shoreline management plan should be developed to evaluate the shoreline erosion problem in Accomack County and evaluate the effectiveness of erosion control measures. The plan should identify areas with erosion problems, determine rates of erosion, consider adjacent land use, and evaluate the most effective means of control. The plan could be used by the Planning Commission and Board of Zoning Appeals for land use decisions and by the Wetlands Board in consideration of erosion control structure permits.

- 1-g Collaborate with local, regional, and state agencies in planning for climate change.*

Planning for climate change can help county decision makers address the problem of sea level rise, and assess potential economic opportunities in responding to changing business and industrial markets. Such efforts should be done in conjunction with other government entities, including Northampton County, A-NPDC, and the Virginia state government.

Objective 2:

Conserve unique and environmentally sensitive areas for open space, recreation and habitat protection.

The county has a wide variety of open space areas including forests, creeks, beaches, and marshland. In addition to their natural beauty, these areas are beneficial for wildlife habitat, hunting, fishing, hiking and bicycling. Undeveloped areas provide aesthetic benefits, preserve the rural character of the Shore, and can produce tourism revenue. The county should protect open space through zoning and subdivision regulations. Sensitive areas, which are often expensive and unsafe to develop, should be designated as conservation zones. Through the subdivision ordinance and zoning ordinance, developers can be encouraged to cluster development within a portion of the development tract, leaving the remainder as open space. Lowering the overall permitted densities in the rural zoning districts, and allowing clustering on smaller lots, will also allow such resources to be better protected. Lastly, the County should implement green infrastructure planning.

Policies:

- 2-1 Encourage the preservation of open space.*
- 2-2 Encourage conservation of barrier island lands, marsh land, forested areas, and creek corridors for recreation and habitat conservation.*
- 2-3 Identify and protect Accomack County's unique habitats.*
- 2-4 Encourage the creation of additional wildlife habitat.*
- 2-5 Implement green infrastructure planning.*

Recommended Actions:

- 2-a Amend the zoning ordinance to provide incentives for clustered development to preserve open space and promote a more efficient pattern of development.*

The practice of clustering involves concentrating the bulk of a site's permissible density on only a portion of the parcel or site. This permits the undeveloped portion of the site to remain in an undeveloped, natural state. Houses may be clustered, for instance, to prevent destruction of important wetlands on the parcel or maximize distance from a creek or floodplain. Clustering is often encouraged by providing density bonuses as an incentive. If developers cluster development on a certain portion of the parcel, for instance, away from an important natural resource, the developer may be given permission to increase the number of dwelling units that may be built. Clustering can lead to a more efficient pattern of development and retain the bulk of land for agricultural and open space uses. Clustering is most effective when combined with a reduction in the overall residential density permitted, especially in areas zoned for agriculture. The recent Zoning Ordinance amendment to a 5-acre density, with clustering on 30,000 square-foot lots, advances both of these strategies.

- 2-b Develop programs to encourage conservation of barrier islands, marsh land, forested*

areas, creek corridors, and other environmentally sensitive areas.

When consistent with habitat conservation goals, alternatives to fee-simple ownership, such as conservation easements or lease-back agreements, should be encouraged to keep property on the tax rolls and in productive use.

- 2-c *The county should work with the U.S. Fish and Wildlife Service and the Virginia Department of Conservation and Recreation's Natural Heritage Program to identify and protect unique habitats.*

Extensive study has been made of Eastern Shore wildlife habitats and additional studies are on-going. The county should review this data and work with representatives to identify habitat areas most in need of conservation. Areas such as marsh and islands that are unsuitable for development but have value for wildlife habitat and recreational use should be zoned as conservation/recreation districts.

Objective 3:

Implement the Comprehensive Plan through fair and effective zoning practices and well-planned public facilities and services.

Policies:

- 3-1 *Use the future land use map and the policies of this Comprehensive Plan to guide decisions regarding land use, rezoning, special exception/special use permits, and the provision of public facilities and services.*

The Board of Supervisors has legislative discretion in approving applications for rezoning, conditional use permits, and special exception/special use permits, as well as decisions regarding the location, extent, and design of public facilities and services. Exercise of this discretion should be based closely on the policies and recommendations of this Plan, in order to create a prosperous, equitable, safe and harmonious future for the citizens of Accomack County.

- 3-2 *Require a "Commission Permit" before approving new or extended public facilities.*

§ 15.2-2232 of the Virginia Code provides for the Planning Commission to determine whether proposed public facilities are in conformance with the Comprehensive Plan. The County Planning Commission should exercise this authority in order to effectively implement the Comprehensive Plan.

- 3-3 *Build upon the process initiated by the 1994 Countryside Stewardship Exchange, 1997 Comprehensive Plan visioning workshops, and the 2006 and 2007 Comprehensive Plan workshops to define values and ensure that policies, plans, projects, and regulations are aligned with the community's goals.*

Recommended Actions:

- 3-a Revise the Accomack County Zoning and Subdivision Ordinances to be consistent with the recommendations of this plan.*

The zoning and subdivision ordinances are the primary land use regulations in Accomack County and the most effective tools available for implementation of the Comprehensive Plan. These ordinances should be updated and revised as the county's needs and goals change.

- 3-b Implement and update the Capital Improvements Program consistent with recommendations of the Comprehensive Plan.*

A Capital Improvements Program (CIP) is a five-year plan to guide the construction or acquisition of capital projects. It identifies needed capital projects, estimates their costs, ranks them by priority, lists the year each should be started, and determines the best method of paying for them within the community's fiscal capabilities. State Code requires that the CIP be consistent with the Comprehensive Plan. A CIP helps a locality prioritize projects, anticipate future capital facility needs, avoid poorly planned projects, and spread out the financial impact of expensive projects. Accomack County adopted its first CIP in 2006, and adopted an updated CIP in 2007.

- 3-c Seek public input in the development of local plans and regulations.*

All plans and ordinances should reflect the community's vision for the future. The Board of Supervisors and Planning Commission should continue to seek public participation in the planning process and the development of ordinances in order to ensure that policies adopted are consistent with community goals.

Objective 4:

Recognize and protect the county's rural character, including historic resources and the character of villages and towns.

The rural quality of Accomack County, embodied by agriculture, forestry and seafood operations, scenic views, low density development, historic homes, towns and villages, and a safe, quiet life-style, is highly valued by the community. The vision statement created for the 1997 Comprehensive Plan envisions a future when Accomack County is, "still a quiet, rural community and remains the "vegetable garden of Virginia." Effort should be made to further define the elements that most contribute to the desirable rural character of Accomack County. Once the important contributing elements are identified, policies for their protection can be developed.

Policies:

- 4-1 Direct development towards areas that are consistent with Accomack County's historic pattern of development.*

- 4-2 *Support efforts to identify and preserve significant cultural resources.*
- 4-3 *Encourage the use of conservation easements to preserve significant rural and agricultural lands.*
- 4-4 *Enhance opportunities for historical and cultural education.*

Recommended Actions:

- 4-a *Develop a definition of Accomack County's Rural Character.*

The County's rural character is a unique blend of farms, forests, crossroad hamlets, rural villages, and commercial enterprises. Preserving this mix of uses in its traditional pattern is a key purpose of this plan, and will be facilitated by a common understanding among citizens of how these components shape the County's rural character.

- 4-b *Develop within the framework of the Accomack County Zoning and Subdivision Ordinances procedures and guidelines which allow for a mix of residential and commercial uses in keeping with the traditional development pattern of our towns and villages.*

Traditionally, residential and certain commercial uses were mixed within towns and villages. This pattern of development is desirable in that it places users and providers of services in close proximity to each other and it furthers the goal of concentrating development in growth areas, preventing sprawl and preserving open space. Adoption of Rural Settlement and Village Development zoning districts would encourage such a traditional and efficient development pattern.

- 4-c *Conduct a survey of historic resources in Accomack County, in cooperation with the Virginia Department of Historic Resources.*

The Virginia Department of Historic Resources has shown considerable interest in conducting a survey of historic resources in Accomack County. Grant funding which requires a 50% cash match is available from the Department of Historic Resources for this survey. The survey would identify and place Accomack County's cultural resources in historical context. This information should then be used to evaluate the needs and priorities for protection of these resources.

- 4-d *Develop incentives to encourage the use of conservation easements to preserve significant rural and agricultural lands.*

Conservation easement programs have the advantages of relatively low per acre acquisition costs and private ownership and management responsibility. Lands under conservation easements continue to pay local property taxes, although they may be at lowered market values. The use of conservation easements in areas designated for agriculture, forestry or conservation could be encouraged by allowing additional density in developments that cluster building lots and place the remainder of the land under a conservation easement.

4-e *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.

4-f *Develop local heritage interpretive opportunities.*

Museums, visitor centers, information points, maps, and guide books should be developed to promote tourism and educate visitors and residents about the Eastern Shore's unique culture. The County should follow the recommendations of Virginia's Eastern Shore Tourism Commission and the 1994 Countryside Stewardship Exchange in developing interpretive facilities and materials, including a facility in Accomack County.

4-g *Open a dialogue about growth management with incorporated towns and unincorporated villages.*

The entire community – town dwellers and county dwellers alike – must face and embrace the necessity of coordinating land use planning between the County and the incorporated towns if the character of the community is to be preserved and enhanced. Particularly to the extent that they may become future towns or future additions to towns, existing unincorporated rural development areas should also be recognized as potential or even natural locations for additional development. Where suitable soils, road access, and other appropriate conditions and resources exist, planning for the clustering of limited future development alongside existing unincorporated rural settlements would preserve and enhance the existing character of Accomack County.

Objective 5:*Conserve groundwater quality and quantity.*

Groundwater provides Accomack County's only potable water supply. Protection of groundwater quality and quantity is therefore critical. In 1992, the Ground Water Study Committee produced the *Ground Water Supply Protection and Management Plan for the Eastern Shore of Virginia* (Groundwater Plan). The plan recommends the development of a comprehensive groundwater protection and supply management strategy in an effort to maintain an adequate supply of high quality water for the future needs of the region. The following policy recommendations for groundwater protection are derived from that strategy.

Policies:**5-1** *Encourage the wise use of Accomack County's groundwater resources.*

- 5-2 *Manage potentially polluting land uses so as to minimize contamination threats.*
- 5-3 *Seek additional information on the groundwater aquifers, the recharge process, and contamination threats.*

Recommended Actions:

- 5-a *Use the latest research to clarify the location of the groundwater recharge spine boundaries and consider creation-of a groundwater protection overlay district within those boundaries.*

Future research should be conducted to identify the extent of the groundwater recharge area that was identified in the *Ground Water Supply Protection and Management Plan*.

Regulations, such as prohibiting the future siting of major polluting activities (landfills, septage lagoons, etc.) and requiring special permits based on performance standards and emergency management plans for uses such as underground storage tanks and toxic and hazardous materials, should be placed on land use within this zone.

As development occurs in an area, the amount of land covered with impervious surfaces (preventing infiltration) increases and groundwater infiltration decreases. The creation and expansion of impervious surfaces such as buildings and parking lots in the groundwater recharge spine should be limited in order to maximize groundwater recharge and minimize the effects of erosion and non-point source pollution. Impervious surface extents can be managed by regulating allowable density in the recharge area through minimum lot size requirements and establishing limits on the percentage of a development site that can be covered with impervious surfaces. Encourage the use of pervious pavement surfaces in these areas.

- 5-b *Review the potential impact of new development on groundwater in the permit process.*

Groundwater protection should be incorporated into development site plan review. Developers of projects that require conditional use permits should be required to estimate total groundwater usage and identify and mitigate potential negative impacts to groundwater quality and quantity from their development.

New water supply sources that tap the Yorktown-Eastover aquifer should be located in the central portion of the Eastern Shore peninsula. This approach will minimize both lateral intrusion from saltwater and vertical intrusion of saltwater through confining layers. New water supply sources should be screened in the upper and middle Yorktown-Eastover aquifer, avoiding the lower Yorktown-Eastover.

Screening only in the higher layers minimizes many of the problems of due to upconing of high chloride content water. Well fields rather than single wells to produce large volumes of water should be encouraged. A series of wells, each pumping a moderate amount of water, will create less upconing, less well interference, and less lateral intrusion than one or two high volume wells. New and existing water supply users should be encouraged to pump at moderate volumes on an extended basis and to use surface storage (tanks, lined ponds) rather

than pumping hard for short intervals to meet peak demands. The continual pumping of moderate volumes will allow a smaller upcone to develop and to stabilize, eliminating much of the problem of salt and freshwater mixing that occurs with intermittent pumping. A progressively enlarged mixing zone between fresh and saltwater will promote the intrusion of high chloride water into the freshwater zone. The use of water supplies from the unconfined Columbia aquifer should be encouraged in situations where water quality is of less concern. The Columbia receives considerably more recharge than the Yorktown-Eastover aquifer and, while its water quality is sometimes marginal as a potable water supply, the quality is perfectly adequate for a number of industrial, agricultural and even domestic uses. High volume users of water that do not need water of drinking quality standards should be urged to use the Columbia as a source where adequate flows can be achieved.

5-c Amend the subdivision ordinance to limit the allowable density of remotely located drainfields.

On-site septic system density is, effectively regulated through the zoning ordinance's minimum lot size requirements. There are no restrictions, however, on the allowable density of systems located on remote sites. Minimum separation distances or minimum lot size requirements for remote drainfields would limit the potential for water quality impacts from overly-dense concentrations of drainfields.

5-d Amend the subdivision ordinance to require that the location of remotely located drainfields be recorded on the subdivision plat and that proper easements to those areas be provided.

Remotely located drainfields should be recorded on the subdivision plat to ease future location of the drainfield areas. Easements should be provided for access to remote drainfields locations and these easements should be indicated on the subdivision plat.

5-e Continue to conduct research on the geology of the aquifers, nature of recharge and contamination threats.

Answers should be sought to questions about the rate, volume, timing and distribution of recharge from the unconfined Columbia aquifer to the Yorktown-Eastover aquifer, salt water movement into the Columbia and Yorktown-Eastover aquifers, suitability of paleochannels for water supply use, impact of pesticides on groundwater, and impact of agricultural nitrogen use on groundwater. Assistance for this research may be available from the US Geologic Survey, the Virginia Department of Environmental Quality, the Virginia Department of Agriculture and Consumer Services, the Office of Pesticide Management, and Virginia Tech.

5-f Amend the zoning and subdivision ordinances as necessary to adequately protect groundwater supplies and to balance the supply and demand for residential land.

5-g Continually monitor available data for all key natural systems, particularly ground and surface water quality, so that warning signs of significant deterioration and risk to the well-being of the county can be identified as early as possible.

Objective 6:

Protect high quality surface waters and restore degraded surface water-to an excellent level of

purity for aquaculture and shellfish harvesting.

Policies:

- 6-1 *Encourage and promote the use of Best Management Practices for all land uses.*
- 6-2 *Manage development so as to minimize impact on surface water quality from nonpoint source pollution.*
- 6-3 *Seek additional information on water quality within Accomack County's creeks, streams, and bays.*

Recommended Actions:

- 6-a *Encourage the use of Best Management Practices by agricultural and forestry operations to restore and protect surface water quality.*

Agricultural operations are a major source of nonpoint source water pollution. The tillage of soil permits erosion which, in turn, takes with it pesticides, herbicides and fertilizers. Intensive, nontraditional methods of cultivation, such as the practice of growing vegetable crops under plastic mulch, make intensive use of chemicals and create impervious surfaces, creating special management problems. The County should work closely with the Virginia Department of Agriculture to protect water quality.

Best Management Practices (BMPs) that can be used to manage these problems include crop rotation, conservation tillage, diversions, sediment basins and other structural practices, and containment of animal wastes. The use of nutrient management plans should also be encouraged. Nutrient management plans should include soil nutrient testing, crop productivity recommendations, animal waste management, and fertilizer use record keeping. Implementation of Forestry Best Management Practices helps to protect water quality by preventing erosion. Streamside management zones (SMZ) within 50 feet of streams and tidal marshes are mandatory. Within a SMZ 50 percent of the canopy can be harvested provided that the machines used to cut and remove the trees do not disturb the soils and create a potential erosion problem. The County should work closely with the Virginia Department of Forestry to protect water quality.

- 6-b *Adopt the water quality Best Management Practices for development on the Seaside, including shoreline vegetative buffers, stormwater management, limits on impervious surface, septic system reserve drainfields, and a septic system pumpout requirement.*

The Chesapeake Bay Preservation Act requires water quality Best Management Practices in the Chesapeake Bay Watershed. Similar requirements, including a 100-foot vegetated shoreline setback, should be adopted in the zoning ordinance to protect Seaside water quality for the seafood and aquaculture industries, tourism and recreation, and wildlife habitat.

- 6-c *Require the use of better septic system technology, and improve septic systems as technology advances, on waterfront lots to protect surface water quality.*

Improved septic system technology, such as pre-treatment, should be used on waterfront lots to protect surface water quality.

- 6-d *Continue the County's June 2006 recommendation to the State to utilize great caution in the approval of wastewater discharge permits which clearly have the potential to cause long-term and irremediable water quality impacts to any public waters.*

Because the permitting of wastewater treatment plant effluent discharge automatically results in shellfish bed closures, Accomack County has adopted a policy of no new wastewater discharge to the Seaside to protect the County's valuable commercial and recreational shellfishing industry. All new development in the County with central wastewater treatment systems should be required to use alternative effluent disposal to prevent shellfish closures. The County should work with the State to consider establishment of Shellfish Enhancement Zones.

- 6-e *Add marina, dock and pier development standards to the Zoning Ordinance.*

The zoning ordinance should provide some guidelines for density of private docks and piers and the location of commercial marinas. All new marinas should be required to provide pump-out facilities.

- 6-f *Cooperate with government and private organizations to establish a water quality monitoring network in Accomack County.*

Several federal, state and private groups monitor surface water quality in Accomack County. These groups and their areas of coverage should be identified to ensure that sufficient water quality data is available county-wide. Where monitoring deficiencies are found, the County should work with agencies to develop additional monitoring programs.

- 6-g *Continue to develop plans for the replacement of septic systems with central sewage facilities in more densely developed areas.*

Areas that have the greatest potential for future central sewage facilities should be identified, in accord with the Future Land Use Map. These should be areas with existing or potential development density to economically support a treatment facility. The pattern of distribution for these systems should reflect traditional village development. The extension of service outside designated areas should be avoided to prevent sprawl. Systems should be designed to accommodate septic wastes and septic haulers should be required to dispose in such facilities. Systems should be designed to use land application of treated wastewater.

- 6-h *Consider public/private partnerships between the County and private developers to finance new or expanded wastewater treatment systems in accord with Action 6-g. A local government entity such as a service authority should be established to manage such systems.*

- 6-i *Adopt and administer the State's model stormwater management regulations.*

As the County continues to develop, managing stormwater run-off becomes even more important, in terms of environmental quality, economic development, and public health and safety. New development and revitalization efforts should incorporate stormwater management techniques that meet these needs, while also allowing a compact, traditional development pattern in the village development areas.

Objective 7:

Establish a “business friendly” environment that promotes economic development that is compatible with the county’s adopted objectives and vision for the future.

Policies:

- 7-1 Provide incentives to bring new businesses to Accomack County and encourage additional investment by existing businesses.*
- 7-2 Support the Eastern Shore Chamber of Commerce and Virginia’s Eastern Shore Tourism Commission in their efforts to promote the Eastern Shore of Virginia.*
- 7-3 Support programs that promote entrepreneurship and assist small and medium size businesses.*
- 7-4 Support development of the Mid-Atlantic Regional Spaceport and the Wallops Research Park at the NASA Wallops Island facility, and consider NASA Wallops recommendations to address airport and launch range encroachment and safety issues, including deed notices.*
- 7-5 Minimize the net economic impact of local regulations.*
- 7-6 Encourage expansion of the “distributed workforce” in Accomack County through Broadband development.*
- 7-7 Protect the visual and functional quality of the major highway entrances to the County as “gateways” important economic development resources that should reflect and enhance the image of the County as a tourist destination.*
- 7-8 Protect the designated potential impact areas in the vicinity of the Wallops Island Regional Spaceport facility from intensive development, particularly residential development that may cause undue risk to public safety or impede the development and use of the spaceport as a major economic development resource.*

Recommended Actions:

- 7-a Obtain Foreign-Trade-Zone designation for the Accomack County Airport Industrial Park, the Mid-Atlantic Regional Spaceport, and the Wallops Research Park.*

Foreign Trade Zone designation was recommended by the economic development advisory council. Foreign Trade Zone designation exempts import taxes for goods imported at that site, providing an additional incentive for business recruitment.

- 7-b Explore local economic development incentives.*

Local incentives would serve to advertise the county’s pro-business attitudes. Local

incentives could be anything from accelerated permit processing and crime prevention programs to tax abatement for rehabilitation of commercial or industrial property.

- 7-c *Support the creation of a marketplace on U.S. Route 13 for the sale and promotion of local arts, crafts, and food products.*

Artisans and small production companies are a growing sector of the county's economy. The marketplace would provide an additional outlet for sale of their products, while also encouraging travelers to stop in Accomack County.

- 7-d *Research, and possibly establish, a revolving fund to construct industrial buildings and establish a "ready-to-build" program for new businesses in the Wallops Research Park and Accomack Airport Industrial Park.*

Available industrial buildings are a prime concern of businesses considering locating in an area. The availability of quality business facilities and approved business locations will make Accomack County more attractive to new industry. A revolving building fund for the construction of industrial and commercial facilities and a ready-to-build program which includes site preparation and permit approval are feasible options for attracting business with infrastructure.

- 7-e *Designate additional areas for industrial development, including the NASA Wallops Island facility and along the Bay Coast Railroad.*

Available industrial locations are needed for businesses serving the NASA Wallops Island facility and other Accomack County industries. The availability of suitable industrial sites with good transportation access will help Accomack County compete for new industry.

- 7-f *Consider the cost/benefit of local regulations on economic development.*

Local regulations can impact existing businesses and desirability of the area for new businesses. Regulations can also increase the desirability of a place for doing business by protecting the assets that attract customers and clients, and that support the production of goods. The county should be careful to balance these competing factors and consider the potential economic cost/benefit of any new regulations.

- 7-g *Identify and rezone suitable sites for industrial uses.*

Companies are more likely to relocate or expand to Accomack County if they can find sites that have appropriate industrial zoning in place. The County can identify and rezone such sites in advance, on its own motion, in general accord with the Future Land Use Map and other policies of this plan.

- 7-h *Protect the Gateway Entrances to the County.*

Through a variety of means, including zoning regulations, special use permit conditions, and public/private partnerships, the County can help to ensure that the visual quality of the key road entrances provide a welcoming image to visitors. Land uses should have low

intensities to reflect the County's essentially rural character, parking areas should be set back from the public right-of-way with substantial protective landscaping, and motor vehicle access points should be designed and coordinated to minimize the amount of "friction" along the major roadways. Major gateways to the County include, but are not limited to, Routes 13 and 679 (Fleming Road) at the Maryland border, and Routes 13, 178 (Belle Haven Road), and the Seaside Road (Route 600) at the Northampton County border.

Objective 8:

Achieve thriving and growing seafood, agricultural and forestry industries.

Policies:

- 8-1 Direct development away from prime agricultural lands as designated by Agricultural and Forestal Districts.*
- 8-2 Protect, restore and maintain water quality at a level that will meet the needs of seafood industries.*
- 8-3 Ensure that adequate land area is available on which to conduct viable seafood, agriculture and forestry operations.*
- 8-4 Strive to strike a balance between the needs of Accomack County's resource based industries, including agriculture, forestry and the seafood industry.*

Recommended Actions:

- 8-a Revise the future land use map and zoning ordinance to direct residential and commercial development away from land in Agricultural and Forestal Districts.*

The future land use map and zoning ordinance should be amended to direct residential and commercial development away from land in agricultural and forestal districts. The agricultural and forestal districts should be reviewed and updated every four years. The County should also develop "reverse setbacks" for residential and commercial development adjacent to land zoned Agricultural.

- 8-b Monitor the effect of recent amendments to the Zoning Ordinance to ensure that they minimize obstructions to efficient and economical production of agricultural and forestal products.*

Amendments to the agricultural zoning district in 2006 were aimed at reducing the overall amount of potential residential development in order to mitigate the potential impact on surrounding farm operations and farmland, as well as on the groundwater supply. The effect of these amendments should be monitored to ensure they are effective.

- 8-c Identify areas with existing aquaculture operations and areas particularly suitable for aquaculture.*

In order to promote aquaculture as an economically important industry in Accomack County, measures need to be taken to protect the resources necessary for viable operations. The county should work with the Waterman's Association and VIMS to identify areas in need of protection.

8-d Ensure adequate waterfront access for commercial seafood operations.

In the review of plans for waterfront developments and commercial marinas, consideration should be given to providing public waterfront access. Also, the county could designate areas on the future land use map for commercial waterfront use.

8-e Maintain use-value assessment within the county.

Use-Value assessment is a basic tool for agricultural land preservation. Consider implementation of a sliding scale of real estate tax deferral for AFD land owners who are committed to keeping their property in agriculture or forest use for extended periods as an additional incentive for preservation (i.e., greater tax benefit in return for longer period of commitment).

8-f Revitalize Agricultural and Forestal Districts (AFD) within the County.

The county has had a very successful AFD program, and the county has begun the process of reviewing and renewing these districts. The AFD program should be continued, promoted, and enhanced.

8-g Implement an agricultural protection lease agreement program within the county.

Agricultural protection leases are essentially short-term conservation easements. They may have durations as short as five years, but 10 to 20 years are recommended. Under a county-sponsored leasing program, the provisions of such easements and the compensation to the land owner could be established by the county in consideration of what is appropriate for Accomack.

8-h Promote educational efforts to develop common understanding of the role of agriculture in the local community and economy.

- 1) Work with Virginia Cooperative Extension and the Virginia Agricultural Experiment Station to implement programs to educate the non-farm community within the county on agricultural issues.
- 2) Clearly communicate support of agriculture education programs in public schools and youth programs.
- 3) Collaborate with Virginia Cooperative Extension and the Virginia Agricultural Experiment Station to educate county residents on smart growth techniques.

8-i Promote agriculture as a key economic development component in the county.

- 1) Institute an Agriculture Industry Council (AIC) to advise the Board of Supervisors on agricultural matters.
- 2) Establish a staff position within the County's Department of Economic Development to advise the AIC and to promote economic development in the county, with a focus on the agricultural industry.
- 3) Conduct a review of the present agricultural zoning ordinance to ensure that appropriate commercial activities are allowed.

Objective 9:

Achieve safe and efficient provision of community services including, recreational facilities and solid waste collection and disposal.

Policies:

- 9-1 *Encourage new development near existing communities and services to provide efficient delivery of public services.*
- 9-2 *Keep Accomack County's roadways litter free.*
- 9-3 *Reduce the amount of recyclable material that enters the landfill.*
- 9-4 *Enhance recreational opportunities for residents of Accomack County.*

Recommended Actions:

- 9-a *Continue the program to keep roadsides free from litter.*

The county should initiate and promote twice annual litter cleanups. Anti-litter educational programs should also be conducted in the county schools and at public events.

- 9-b *Continue restructuring the county's solid waste collection system.*

The solid waste collection system should be expanded to ensure that the collection of solid waste is efficient and cost effective. Locations should be designed to improve safety, ease of use, and appearance.

- 9-c *Develop an enhanced toxic waste disposal program.*

Safe methods of disposal of toxic wastes should be made readily available to county residents. The County should continue to work with the Eastern Shore of Virginia Ground Water Committee to hold an annual Household Hazardous Waste Collection for the disposal of pesticides and pesticide containers as well as other hazardous waste. A long-term goal should be year-round hazardous waste disposal at a centrally located solid waste convenience center.

- 9-d *Expand the program for the collection of recyclable materials to reduce the expense of burial of large quantities of waste in the landfills.*

The current system of recyclable collection sites should continue to be expanded upon to provide county-wide coverage. In addition, private and public service business and public service institutions should be strongly encouraged to recycle either through incentives or regulations.

9-e Develop a parks and recreation plan and acquire and develop recreational areas and facilities near population centers.

The county is developing a parks and recreation plan and should consider developing additional recreation facilities throughout the county. Facilities should be provided for monitored youth activities and open community facilities such as parks and tennis courts.

9-f Update the coastal public access plan to improve access to the Bay and Ocean, including beaches, parks and forested lands.

The coastal public access plan should be updated to identify the condition and ownership of public boat ramps, docks and piers. Additional access sites should be acquired in areas where a need is determined. Community piers should be developed to increase recreational fishing opportunities. New commercial marina facilities should be required to provide community access and community facilities.

Objective 10 - Transportation Plan:

Achieve a safe and efficient transportation system.

Policies:

10-1 Maintain and protect U.S. Route 13's capacity as a thoroughfare.

10-2 Discourage strip development along transportation corridors.

10-3 Support the development of an effective public transportation network.

10-4 Maintain a safe and efficient roadway systems through a combination of public and private improvements aimed at meeting defined roadway needs.

10-5 Encourage all new streets to be accepted into the VDOT system

10-6 Designate Transportation Improvement Areas and Urban Development Areas, to better plan for and fund public road improvements.

Actions:

10-a Implement Key Elements of the Route 13 Access Management Plan.

Accomack County should work with VDOT to implement the key provisions of the Route 13 Access Management Plan to promote the concentration of access and development at major nodes, elimination of safety problems, storm water management facilities within the

rights-of-way to protect water quality, a transit program to connect the villages and major nodes within the corridor, and coordination of tourism attractions with Route 13 signage.

10-b Revise the Zoning Ordinance to require a minimum 200 foot setback for structures located along Route 13.

Setbacks should be increased for development along Route 13 for increased safety, improved access, and to allow for future changes in the traffic pattern. The Accomack County Zoning Ordinance currently requires a 100 foot setback for development on Route 13.

10-c 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.

10-d Study the county's sign regulations and develop better standards to improve the county's appearance from the public road system, and the safety of motorists.

10-e Plan for and execute a program to enhance community safety and facilitate service delivery by improving unsafe and/or threatened transportation facilities including Route 13 and outlying roads.

10-f Carry out a countywide Transportation Needs Analysis to determine the specific needs for improvements within the 20-year policy planning horizon, as well as general needs in the 50-year conceptual planning horizon.

Objective 11 – Affordable Housing Plan:

Achieve an adequate supply of affordable housing in the county.

Policies:

11-1 Strive to reduce the amount of substandard housing in Accomack County and increase affordable housing options for residents.

11-2 Apply Objectives 1-4 for purposes of affordable housing:

Encourage new residential and commercial development to occur in and around existing towns and villages, in accord with the future land use map of this Plan.

Actions:

11-a Create an updated Housing Plan.

The county's Housing Plan should be updated to include updated information on housing conditions, an assessment of current housing assistance needs and a plan of action of meeting these needs. The county should cooperate with the Accomack-Northampton Housing and Redevelopment Corporation in development of this plan.

11-b Continue to support and fund programs that improve substandard housing and increase affordable housing opportunities.

The county should continue to support and participate in proven housing assistance programs such as the Community Development Block Grant and Rental Assistance programs and explore and cooperate in the development of additional programs that address the county's housing needs.

11-c Apply action 1-a for purposes of affordable housing:

Revise the Zoning Ordinance to create additional zoning districts to allow various types and densities of development to occur in a coordinated fashion.

11-d Apply action 4-a for purposes of affordable housing:

Develop within the framework of the Accomack County Zoning and Subdivision Ordinances procedures and guidelines which would allow for a mix of residential and commercial uses in keeping with the traditional development pattern of our towns and villages.

11-e Adopt an Affordable Dwelling Unit ordinance (ADU)

An Affordable Dwelling Unit ordinance (ADU) is a tool available to localities in accord with § 15.2-2305 of the Virginia Code. Such an ordinance would require that up to 12.5% of the dwellings in developments of 50 or more dwelling units at densities of more than one unit per acre be affordable (as defined) in return for density bonuses up to 20%.

ACTION PLAN

The Planning Commission recommends the following priorities for implementation actions:

1. Zoning Ordinance Amendments (Actions 1-a, 2-a, 4-b)
2. Groundwater and Surface Water Protection (Actions 5-b, 5-g, 6-b, 6-1, 6-f)
3. Affordable Housing (Actions 11-a, 11-b, 11-c, 11-d, 11-e)
4. Transportation (Actions 10-a, 10-f)
5. Recreation (Actions 4-e, 9-e, 9-f, 10-c)

Zoning and Regulatory Actions

Action	Responsible Agency	Completion Date	Source & Amount of Funding
1-a Revise the Zoning Ordinance to create additional zoning districts to allow various types and densities of development to occur in			

	<i>a coordinated fashion: Rural Settlement and Village Development Districts, using PUD techniques for the Village Development areas.</i>			
4- b	<i>Develop within the framework of the Accomack County Zoning and Subdivision Ordinances procedures and guidelines which would allow for a mix of residential and commercial uses in keeping with the traditional development pattern of our towns and villages.</i>			
1-c	<i>Amend the future land use map and zoning ordinance to maintain a low density of development outside of designated growth areas, and to focus new development within designated growth areas.</i>			
1-d	<i>Amend the future land use map and zoning ordinance to direct high density development away from shorelines.</i>			
2-a	<i>Amend the zoning ordinance to provide incentives for clustered development to preserve open space and promote a more efficient pattern of development.</i>			
3-a	<i>Revise the Accomack County Zoning and Subdivision Ordinances to be consistent with the recommendations of this plan.</i>			
5-a	<i>Use the latest research to clarify the location of the groundwater recharge spine boundaries and consider creation of a groundwater protection overlay district within those boundaries.</i>			
5-b	<i>Review the potential impact of new development on groundwater in the permit process.</i>			
5-c	<i>Amend the subdivision ordinance to limit the allowable density of remotely located drainfields.</i>			

Zoning and Regulatory Actions (continued)

Action	Responsible Agency	Completion Date	Source & Amount of Funding
5-d Amend the subdivision ordinance to require that the location of remotely located drainfields be recorded on the subdivision plat and that proper easements to those areas be provided.			
5-f Amend the zoning and subdivision ordinances as necessary to adequately protect groundwater supplies and to balance the supply and demand for residential land.			
6-b Adopt the water quality Best Management Practices for development on the Seaside, including shoreline vegetative buffers, stormwater management, limits on impervious surface, septic system reserve drainfields, and a septic system pumpout requirement.			
6-e Add marina, dock and pier development standards to the Zoning Ordinance.			
6-i Adopt and administer State's model stormwater management regulations.			
7-g Identify & rezone suitable sites for industrial uses.			
7-h Protect the Gateway Entrances to the County.			
8-a Revise future land use map & zoning ordinance to direct residential & commercial development away from land in Agric. & Forest. Districts.			
8-b Monitor the effect of recent amendments to the Zoning Ordinance to ensure that they minimize obstructions to efficient and economical production of agricultural and forestal products.			
8-d Ensure adequate waterfront access for commercial seafood operations.			
10-a -Implement Key Elements of the Route 13 Access Management Plan.			
10-b Revise Zoning Ordinance to require a minimum 200 foot setback for structures located along Route 13.			

11-e Adopt Affordable Dwelling Unit ordinance (ADU)			

Planning and Research

Action	Responsible Agency	Completion Date	Source & Amount of Funding
1-b Revise the Future Land Use and Zoning Maps to reflect the distribution of soils suitable for septic system use.			
1-e Work closely and collaboratively with the incorporated Towns to coordinate land use decisions so that new development is located in accord with the future land use map to achieve the goals of the County as well as the goals of the Towns.			
1-f Develop a shoreline management plan to address shoreline erosion problems.			
2-c The county should work with the U.S. Fish and Wildlife Service and the Virginia Department of Conservation and Recreation's Natural Heritage Program to identify and protect unique habitats.			
3-b Implement and update the Capital Improvements Program consistent with recommendations of the Comprehensive Plan.			
3-c Seek public input in the development of local plans and regulations.			
4- c Conduct a survey of historic resources in Accomack County, in cooperation with the Virginia Department of Historic Resources.			
5-e Continue to conduct research on the hydrogeology of the aquifers, nature of recharge and contamination threats.			
6-a Encourage the use of Best Management Practices by agricultural and forestry operations to restore and protect surface water quality.			
6-d Continue the County's June 2006 recommendation to the State to utilize great caution in the approval of wastewater discharge permits which clearly have the potential to cause long-term and irreparable water quality impacts to any public waters.			
6-g Continue to develop plans for the replacement of septic systems with central sewage facilities in more densely developed areas.			

Planning and Research Actions (continued)

Action	Responsible Agency	Completion Date	Source & Amount of Funding
7-e <i>Designate additional areas for industrial development, including the NASA Wallops Island facility and along the Bay Coast Railroad.</i>			
8-c <i>Identify areas with existing aquaculture operations and areas particularly suitable for aquaculture.</i>			
10-c <i>Develop a trails and greenways plan.</i>			
10-d <i>Study the county's sign regulations and develop better standards to improve the county's appearance from the public road system, and the safety of motorists.</i>			
11-a <i>Create an updated Housing Plan.</i>			

Operational Programs

Action	Responsible Agency	Completion Date	Source & Amount of Funding
2-b <i>Develop programs to encourage conservation of barrier islands, marsh land, forested areas, and creek corridors.</i>			
4- d <i>Develop incentives to encourage the use of conservation easements to preserve significant rural and agricultural lands.</i>			
4- f <i>Develop local heritage interpretive opportunities.</i>			
6-c <i>Encourage the use of better septic system technology on waterfront lots</i>			
6-f <i>Cooperate with government and private organizations to establish a water quality monitoring network in Accomack County.</i>			
7-a <i>Obtain Foreign-Trade-Zone designation for the Accomack County Airport Industrial Park, the Mid-Atlantic Regional Spaceport, and the Wallops Research Park.</i>			
7-b <i>Explore local economic development incentives.</i>			
7-f <i>Consider the cost/benefit of local regulations on economic development.</i>			
8-e <i>Maintain use-value assessment within the county.</i>			
5-g <i>Continually monitor available data for all key natural systems, particularly ground and surface water quality, so that warning signs of significant deterioration and risk to the well-being of the county</i>			

<i>can be identified as early as possible.</i>			

Operational Programs continued

Action	Responsible Agency	Completion Date	Source & Amount of Funding
8-f Revitalize Agricultural and Forestal Districts (AFD) within the County.			
8-g Implement an agricultural protection lease agreement program within the county.			
8-h Promote educational efforts to develop common understanding of the role of agriculture in the local community and economy.			
8-i Promote agriculture as a key economic development component in the county.			
9-a Continue the program to keep roadsides free from litter. (initiate and promote twice annual litter cleanups, anti-litter educational programs)			
9-b Continue restructuring the county's solid waste collection system.			
9-c Expand the enhanced toxic waste disposal program.			
9-d Develop a program for the collection of recyclable materials to reduce the expense of burial of large quantities of waste in the landfills.			
11-b Continue to support and fund programs that improve substandard housing and increase affordable housing opportunities.			

Capital Investments and Construction

Action	Responsible Agency	Completion Date	Source & Amount of Funding
4-e Continue the Eastern Shore Heritage Trail into Accomack County.			
6-h Consider public/private partnerships between the County and private developers to finance new or expanded wastewater treatment systems in accord with Action 6-g. A local government entity such as a service authority should be established to manage such systems.			
7-c Support the creation of a marketplace on U.S. Route 13 for the sale and promotion of local arts, crafts, and food products.			
7-d Research, and possibly establish a revolving fund for the construction of industrial buildings and establish a "ready-to-build" program for new businesses in the Wallops Research Park and Accomack Airport Industrial Park.			
9-e Develop a parks and recreation plan and acquire and develop recreational areas and facilities near population centers.			
9-f Update the public access plan to improve access to the Bay			

<i>and Ocean, including beaches, parks and forested lands.</i>			

Actions for Implementing Transportation Plan

Action	Responsible Agency	Completion Date	Funding
<i>10-a -Implement Key Elements of the Route 13 Access Management Plan.</i>			
<i>10-b Revise the Zoning Ordinance to require a minimum 200 foot setback for structures located along Route 13.</i>			
<i>10-c Develop a trails and greenways plan.</i>			
<i>10-d Study the county's sign regulations and develop better standards to improve the county's appearance from the public road system, and the safety of motorists.</i>			
<i>10-e Plan for and execute a program to enhance community safety and facilitate service delivery by improving unsafe and/or threatened transportation facilities including Route 13 and outlying roads.</i>			
<i>10-f Carry out a countywide Transportation Needs Analysis to determine the specific needs for improvements within the 20-year policy planning horizon, as well as general needs in the 50-year conceptual planning horizon.</i>			

Actions for Implementing Affordable Housing Plan

Action	Responsible Agency	Completion Date	Funding
<i>11-a Create an updated Housing Plan.</i>			
<i>11-b Continue to support and fund programs that improve substandard housing and increase affordable housing opportunities.</i>			
<i>11-c Apply action 1-a for purposes of affordable housing:</i> Revise the Zoning Ordinance to create additional zoning districts to allow various types and densities of development to occur in a coordinated fashion.			
<i>11-d Apply action 4-b for purposes of affordable housing:</i> Develop within the framework of the Accomack County Zoning and Subdivision Ordinances procedures and guidelines which would allow for a mix of residential and commercial uses in keeping with the traditional development pattern of our towns and villages.			
<i>11-e Adopt an Affordable Dwelling Unit ordinance (ADU)</i> An Affordable Dwelling Unit ordinance (ADU) is a tool available to localities in accord with § 15.2-2305 of the Virginia Code. Such an			

ordinance would require that up to 12.5% of the dwellings in developments of 50 or more dwelling units at densities of more than one unit per acre be affordable (as defined) in return for density bonuses up to 20%.			

Chapter 6

Future Land Use Plan

Introduction:

This chapter of the Comprehensive Plan outlines the desired land uses for Accomack County. A number of physical factors including roads and transportation, natural resources, proximity to incorporated and unincorporated towns, soil types, proximity to surface water, availability of potable water, adequacy of septic system and/or sewer, and historical development patterns are weighed to create the Future Land Use Plan.

County goals, objectives, and policies along with demographic information, economic factors, resource availability, and other planning documents are also major considerations in the development of the Future Land Use Plan.

In 2008, Accomack County completed a major update revision to its Comprehensive Plan. The 2008 Comprehensive Plan update modified and evolved from the 1997 Accomack County Comprehensive Plan.

The Code of Virginia requires localities to review Comprehensive Plans every five (5) years. The following key factors have occurred since the 2008 Comprehensive Plan update and influence the 2013 review:

- The 2008-2009 national economic downturn
- The release of the 2010 census data
- The visual and anecdotal evidence suggesting that the physical landscape of Accomack County has not changed significantly since 2008

Given these factors, the Planning Commission and Board of Supervisors have determined that the 2013 Comprehensive Plan review will be limited primarily to the Future Land Use (Chapter 6) section of the Plan. Chapter 6 will contain new data and information. Readers of the Comprehensive Plan are advised that the Executive Summary, Chapter 3, and Chapter 4 contain older information and statistics and may be updated in the future as time and resources permit.

Important demographic and population information from the 2010 census, as well as population projections from the Weldon Cooper Center at the University of Virginia and information from other sources indicate significantly different trends than those noted in the 2008 Comprehensive Plan.

Population and Projections:

The 2010 census data revealed a population of 33,164 people in Accomack County, which is lower compared to the population of 38,305 people recorded in the 2000 census data. The 2010 Census QuickFacts for Accomack County can be viewed at the following link: <http://quickfacts.census.gov/qfd/states/51/51001.html>

In late 2012, the Weldon Cooper Center (WCC) released population projections for the Commonwealth of Virginia and information specific to Accomack County was provided. The following shows population projections released in 2012.

2010 Census	2020 (WCC)	2030 (WCC)	2040 (WCC)
33,164	33,432	33,568	33,661

The following is a comparison between the 2030 population projections in the 2008 Comprehensive Plan and the 2030 populations based on the Weldon Cooper projections that were released in November 2012.

2030 Population Projections (2008 Comprehensive Plan)	2030 Population Projections (Weldon Cooper Center – November 2012)
46,500	33,568

Other noteworthy information from the 2010 census and 2012 Weldon Cooper population projections are as follows:

- A percentage increase of residents age 55 or over and a slightly declining birth rate in the coming decades indicates that Accomack County has an aging population.
- The Hispanic population in Accomack County is increasing.
- On a percentage basis, the White and Black populations in Accomack County are decreasing while other race populations are increasing.

The Weldon Cooper Center population projection data can be viewed at the following link: <http://www.coopercenter.org/demographics/virginia-population-projections>

Land Demand:

Based on the 2010 Census and Weldon Cooper Center population projections, no adjustments to the Future Land Use Plan Map are necessary.

Major Land Use Planning Issues:

Several key issues directly affect planning for Accomack County land use. These issues address the relationship between land development and the County's resources. These issues include agricultural and forestry land preservation, groundwater protection, natural resource preservation, physical constraints to development, central water and wastewater treatment, the character of development, and the Route 13 highway corridor – all in the context of continuing population growth.

Agricultural and Forestal Land Preservation

Agriculture and forestry are important parts of Accomack County's economy and identity. In 1997 the County had approximately 82,560 acres of land in 22 agricultural and forestal districts. In 2007, the acreage was 80,215, nearly a 2.8 percent decrease in ten years. The land in these districts is protected by state "right-to-farm" legislation which prohibits local governments from restricting agricultural uses within the districts. These districts also offer protection from conversion to other non-agricultural and non-forestal uses and interference from surrounding uses.

The pattern of development within the County can directly impact the viability of agricultural operations. Some of the most productive agricultural soils are also the most suitable for installation of septic systems. Therefore, agriculture is often in direct competition with residential development for land with prime soils. Much of the County's farmland also occupies land that would be desirable locations for waterfront home sites. Accomack County currently offers land use-value taxation on agricultural land, which bases taxes on the actual use of the land, rather than the fair-market value. This removes some of the pressure for land owners to develop agricultural land, although farm land continues to be subdivided and converted to residential use. This division of land results in pockets of residential development located in primarily agricultural areas. Fragmentation of farm land can affect a farm's viability, leaving tracts of land too small or segmented to farm efficiently. Conflicts often arise between home owners and farm operators over noise, dust, smell, chemical use, and hours of operation. The 2006 Agricultural Zoning District amendments allow clustering of residential development and provide the opportunity to buffer new residential development from intensive agricultural activity.

Groundwater Protection

Groundwater is the only drinking water source for Accomack County. In 1976 the Virginia State Water Control Board designated the Eastern Shore as a Ground Water Management Area due to findings of groundwater level declines, well interference and localized groundwater contamination. Groundwater is supplied by the Columbia and the Yorktown-Eastover aquifers. The deeper, confined, Yorktown-Eastover aquifer is the county's drinking water source. This aquifer is recharged by rainwater infiltration. The 1992 Ground Water Supply Protection and Management Plan for the Eastern Shore of Virginia identified the area that recharges the deep aquifer as strip of land that runs along the central portion of the peninsula. The Plan calls for protection of this groundwater recharge spine from contamination threats and decrease in recharge rate due to creation of impervious surfaces. In 1997, the U.S. Environmental Protection Agency (EPA) designated the fresh ground water that supplies all drinking water on the Eastern Shore of Virginia as the Columbia and Yorktown-Eastover Multiaquifer System Sole Source Aquifer. The 1999 Technical Analysis and Justification for Ground Water Ordinances on the Eastern Shore of Virginia documents the need to manage new development to protect our limited supply of ground water.

Natural Resource Preservation

The County's natural resources base, including forests, fields, marsh, creeks, bays, and barrier islands, has economic, aesthetic, and recreational value, as well as being valuable habitat for a variety of wildlife. High quality surface water is important to the seafood industry and recreational users. The marshes and bays support aquatic life that is important to the development of fisheries. Good soils are essential for productive agriculture. The barrier islands provide important habitat for shorebirds and recreational opportunities for residents and visitors. These resources, in combination, compose a natural system which is a unique asset to the Eastern Shore. Care must be taken to ensure that use of these resources does not degrade their value. Land that is not suitable for development, such as marsh land and the barrier islands, should be maintained in a natural state. Important habitat areas should be identified and the conservation of those areas encouraged. Best Management Practices should be used to lessen the impact of various land uses on natural resources.

Physical Constraints to Development

Certain conditions of the physical landscape affect the suitability, safety and desirability of parts of the County for development. The main physical constraints to development in Accomack County are soil suitability for septic systems, flood hazard, and shoreline erosion. The distribution of soils types has profound impact on the pattern of development in Accomack County. The Town of Onancock and Tangier Island are the only areas in the county served by public sewage treatment systems. Since less than half of the soil in Accomack County is suitable for septic system use, large sections of the county are virtually undevelopable.

Some areas of Accomack County experience significant amounts of shoreline erosion. Faced with an eroding shoreline that moves closer to their home each year, homeowners often resort to shoreline hardening structures such as bulkheads, riprap, breakwaters, and jetties. These structures are seldom permanent solutions to the problem and can actually increase the problem. The areas of Accomack County with the highest erosion rates are Bayside marshland and the Seaside barrier islands, which are unsuitable for development. The impact in areas with moderate to low erosion rates can be lessened through limited allowable development densities and shoreline setback requirements.

The Route 13 Corridor

The Route 13 highway corridor is a significant feature of the County's landscape. The highway runs north-south along a ridge of high land in the center of the peninsula, dividing the Shore into "Bayside" and "Seaside" segments. The highway carries traffic through the County, supporting businesses along the highway, and it carries local citizens up and down the Shore to employment, shopping and services, many of which are located within the corridor. This mix of local and through-traffic creates a dangerous situation. Traffic lights added on developed sections of the road to increase safety decrease the efficiency of the road for through-traffic. Route 13 is a major

thoroughfare and part of the National Highway System. If signals increase to the point that highway no longer functions effectively for through traffic, bypass and limited access alternatives may be sought. The Route 13 corridor should be managed to maintain its capacity to handle through-traffic in order to avoid construction of bypasses or a limited access highway which would further bisect the county and isolate existing businesses. Minimum setbacks from Route 13 should be expanded for all land uses. Increased setbacks will promote safety by improving site lines, allow room for shared entrances, reduce traffic noise, and ensure the availability of vacant land if future access roads are needed. In order to maintain the existing high speed sections of Route 13, future development should be limited to existing commercial centers such as T's Corner, Temperanceville, Nelsonia, Fisher's Corner at Route 176, Accomac, Onley, Melfa, Painter, and Belle Haven. These areas already have traffic signals and reduced speed limits to handle local traffic. Site plan review for development along Route 13 should be used to develop plans that minimize curb cuts, make use of joint entrances, and direct traffic to alternative entrances on collector roads when possible.

Municipal Wastewater:Central Accomack County

Accomack County owns and operates a wastewater collection system located in the central part of the County. The system is made up of a County-owned main (force main and gravity) and privately owned laterals. Service is provided to the Airport Industrial Park at the southern end and businesses along and close to Route 13 between Melfa and Four Corners Plaza in Onley. The line turns west just south of Four Corners Plaza and heads to Onancock.

A map of the Central Accomack Utility Service Area is found at the end of this (Municipal and Private Wastewater) section. The map indicates the County's interest in providing sewer and/or water in these areas.

Sewage treatment is provided by the Town of Onancock at its wastewater treatment by contract with the County. The current contract expires in 2019.

The County's collection system has a design capacity of 100,000 gallons per day. The current usage puts the collection system at approximately 25% of capacity at approximately 25,000 gallons per day (GPD).

Even with the planned connection of the new Riverside Hospital facility to the County's collection system, the County has plenty of collection capacity to accept additional customers. The County's treatment contract with the Town currently caps the amount treatment available at 80,000 GPD. With the imminent contract expiration, and anticipating a certain amount of sustained growth, current belief is that the County should have ready access to about 100,000 gallons of treatment capacity per day.

Given the availability of the system and the capacity to serve additional customers, new businesses, existing business which require the Department of Environmental Quality's (DEQ) approval for sewage disposal, and residential customers in close proximity should be encouraged to connect to the sewer system.

In addition to the standard reasons for encouraging connections to the County's system, there are some compelling local reasons to do so, and they are as follows:

- The County's sewage collection system is located within the identified groundwater recharge area and connections to the system are preferable to large flows of treated septic wastewater into the groundwater in this area.
- Areas along Route 13, where the sewage collection system exists, especially in the Onley area, experience high seasonal water tables. Connection to the system is a desirable alternative to conventional septic tank and drain field systems in this area, as conventional septic systems do not operate properly when inundated by ground water. Advanced septic systems are available that are better and less susceptible to these sorts of problems, but municipal wastewater solutions are anticipated to be less burdensome on individual owners/users.
- Land values along Route 13 are among the highest in the County, and septic tank and drain fields utilize land that could be used for other purposes if connected to the sewer system. This is especially important in the area where the County's collection system exists, as significant land is also required to be utilized for storm water management systems.

Town of Chincoteague

It is Accomack County's understanding that the Town of Chincoteague is investigating wastewater treatment and a collection system to initially serve the main commercial areas of the Town.

Accomack County supports the Town in its pursuit of a wastewater treatment facility and collection system located on the island. Accomack County has a vested interest in the Town of Chincoteague finding an appropriate solution for discharge of treated effluent from its wastewater treatment facility.

Other Parts of Accomack County

NASA owns and operates a wastewater treatment system at the NASA main-base. The system serves federal facilities in the main-base area and at Wallops Island. By agreement with Accomack County, the Wallops Research Park will be served by the NASA system.

At this time, there does not appear to be a need for municipally owned and operated wastewater systems beyond those already identified in this section. In the event that future municipal

wastewater treatment needs arise, it appears that small collection and treatment systems (under 100,000 gallons per day/treatment) may be adequate.

Private Wastewater Treatment Systems and Public-Private Combined Systems:

Private Wastewater Treatment Systems

Private Wastewater Treatment Systems requiring DEQ's approval should be sized and designed to service the users/development in a clearly-defined service area. The size and design of the wastewater system should correspond with the size of the existing or proposed development for which service is intended and must be constructed within the boundaries of the development. Private systems owned and operated by developers should be carefully scrutinized for quality of proposed construction, maintenance, and continuing financial viability.

The purpose of this is to assure quality infrastructure and to avoid sudden failures and shocks which may affect large numbers of citizens in the future should private ventures prove financially unstable and construction inadequate.

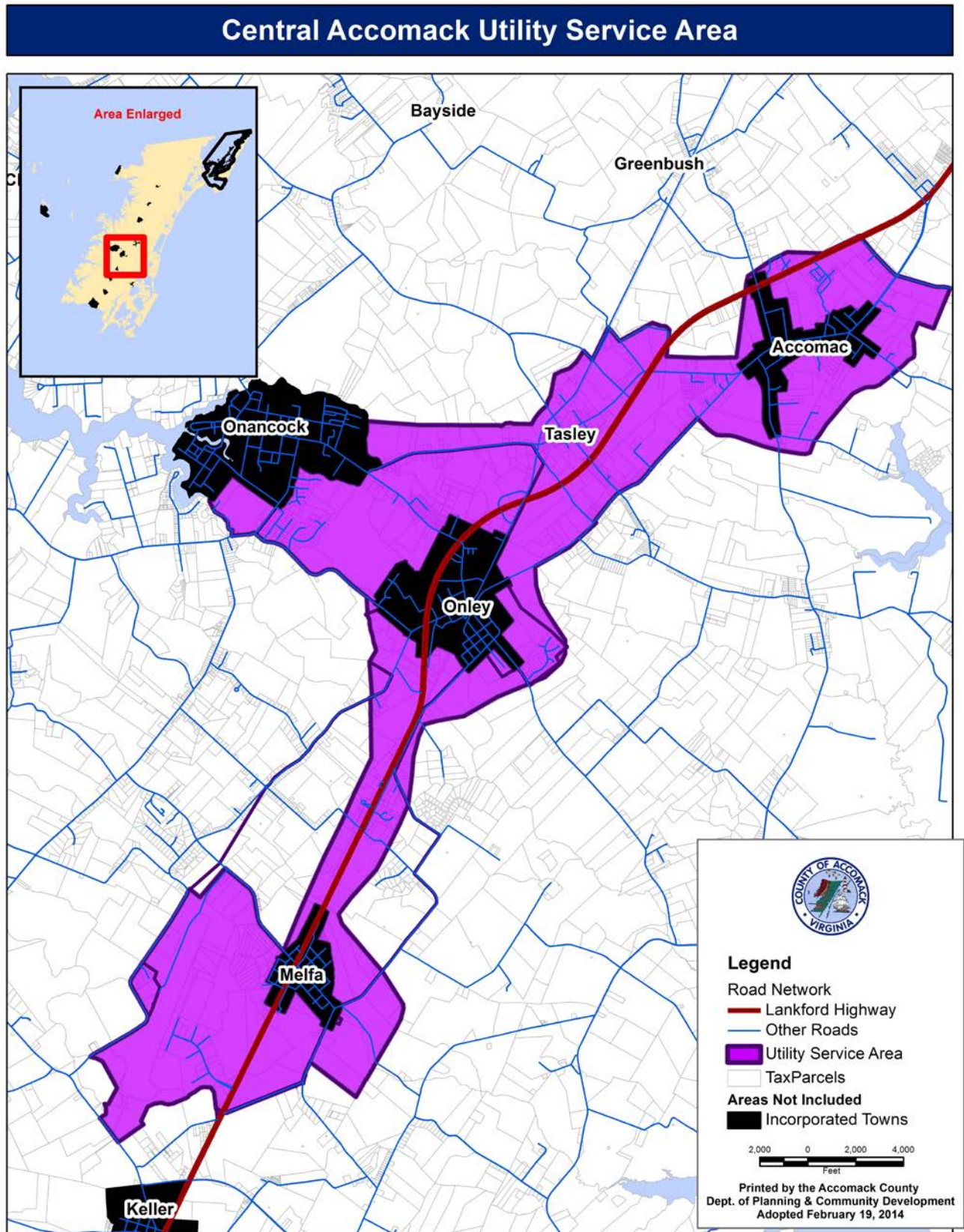
Authority Owned and/or Public-Private Combined Systems

Where it is desirable for the County to consider, an Authority Governed and/or Public-Private Combined Wastewater Treatment System may be proposed. Generally, such a system should have the majority of its ownership controlled by a municipal government (County or Town) or operations under superintending control of the same.

Municipal Water:

The County owns and operates a public water system at the Airport Industrial Park. Other municipal water systems are operated in Chincoteague, Onancock, Parksley and Tangier.

NASA operates a water system and services federal facilities in the Wallops area. NASA will provide water to the Wallops Research Park by agreement with Accomack County.



Stormwater Runoff and Management:

As of the adoption of this Comprehensive Plan update, new stormwater regulations at the State level have been adopted and local stormwater management ordinances and programs mandated.

Agricultural construction will be subject to the new stormwater regulations.

Since stormwater regulations and practices are changing, stormwater management is an emerging issue and monitoring is needed. In addition to the new stormwater regulations, the effects of stormwater runoff after heavy rain events are noteworthy, especially in recently developed parts of the County. Additional study of this matter is warranted.

Where practical, the County encourages the preservation of natural resources and use of applicable best management practices to minimize stormwater runoff and stormwater pollution. In many parts of the County, best management practices need to be designed to accommodate seasonal high water tables, flat terrain, discharge to tidal areas, and replicate or utilize natural drainage patterns.

Additional information on this subject may be found at the following websites:

<http://www.deq.virginia.gov/Programs/Water/StormwaterManagement.aspx>

http://library.municode.com/HTML/13191/level3/CO_CH106ZO_ARTXVICHBAPROVDI.html#TOPTITLE

<http://www.co.accomack.va.us/departments/planning-and-community-development/planning/stormwater-management>

<http://www.co.accomack.va.us/departments/planning-and-community-development/services-and-fees/erosion-and-sedimentation-control>

Coastal Resource Management:

The following guidance is offered relative to Coastal Resource Management:

Issue Statement

Coastal ecosystems reside at the interface between the land and water, and are naturally very complex. They perform a vast array of functions by way of shoreline stabilization, improved water quality, and habitat for fishes; from which humans derive direct and indirect benefits.

The science behind coastal ecosystem resource management has revealed that traditional resource management practices limit the ability of the coastal ecosystem to perform many of these essential functions. The loss of these services has already been noted throughout coastal communities in Virginia as a result of development in coastal zone areas coupled with common erosion control practices. Beaches and dunes are diminishing due to a reduction in a natural sediment supply. Wetlands are drowning in place as sea level rises and barriers to inland migration have been created by construction of bulkheads and revetments. There is great concern on the part of the Commonwealth that the continued armoring of shorelines and construction within the coastal area will threaten the long-term sustainability of coastal ecosystems under current and projected sea level rise.

In the 1980s, interest arose in the use of planted wetlands to provide natural shoreline erosion control. Today, a full spectrum of living shoreline design options is available to address the various energy settings and erosion problems found. Depending on the site characteristics, they range from marsh plantings to the use of rock sills in combination with beach nourishment.

Research continues to support that these approaches combat shoreline erosion, minimize impacts to the natural coastal ecosystem and reinforce the principle that an integrated approach for managing tidal shorelines enhances the probability that the resources will be sustained. Therefore, adoption of new guidance and shoreline best management practices for coastal communities is now necessary to insure that functions performed by coastal ecosystems will be preserved and the benefits derived by humans from coastal ecosystems will be maintained into the future.

Policy Statement

In 2011, the Virginia Assembly passed legislation to amend §28.2-1100 and §28.2-104.1 of the Code of Virginia and added section §15.2-2223.2, to codify a new directive for shoreline management in Tidewater Virginia. In accordance with section §15.2-2223.2, all local governments shall include in the next revision of their comprehensive plan beginning in 2013, guidance prepared by the Virginia Institute of Marine Science (VIMS) regarding coastal resource management and, more specifically, guidance for the appropriate selection of living shoreline management practices. The legislation establishes the policy that living shorelines are the preferred alternative for stabilizing eroding shorelines.

This guidance, known as Comprehensive Coastal Resource Management Plan, is being prepared by VIMS for localities within the Tidewater region of Virginia. It explicitly outlines where and what new shoreline best management practices should be considered where coastal modifications are necessary to reduce shoreline erosion and protect our fragile coastal ecosystems. This guidance will include a full spectrum of appropriate management options which can be used by local governments for site-specific application and consideration of cumulative shoreline impacts. The guidance applies a decision-tree method using a based resource mapping database that will be updated from time to time, and a digital geographic information system model created by VIMS.

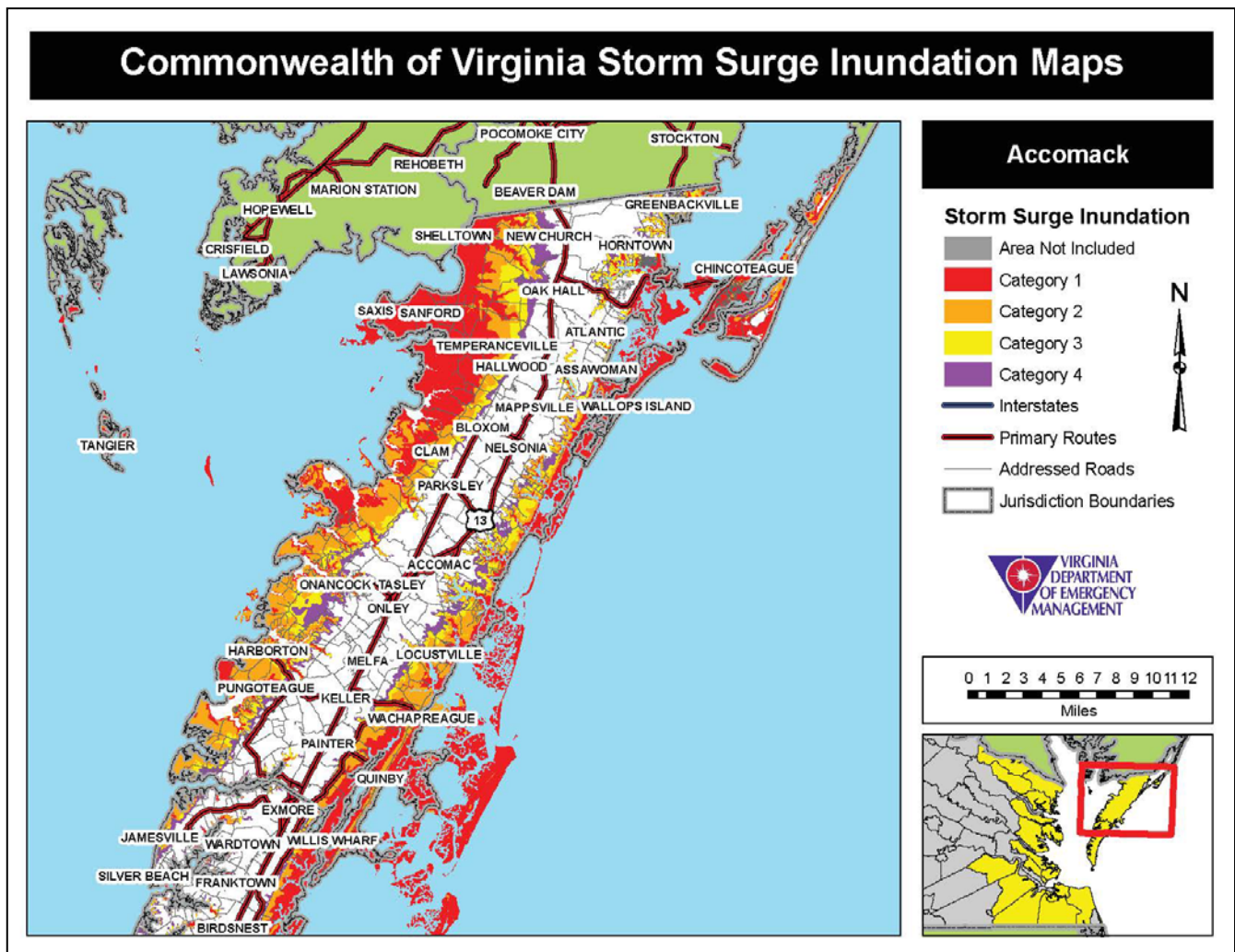
Recommendations:

- Refer to the guidance presented in the locality's Comprehensive Coastal Resource Management Plan (CCRMP) prepared by VIMS to guide regulation and policy decisions regarding shoreline erosion control.
- Utilize VIMS Decision Trees for onsite review and subsequent selection of appropriate erosion control/shoreline best management practices: <http://ccrm.vims.edu/decisiontree/index.html>.
- Utilize VIMS' CCRMP Shoreline Best Management Practices for management recommendation for all tidal shorelines in the jurisdiction.
- Consider a policy where the above Shoreline Best Management Practices become the recommended adaptation strategy for erosion control, and where a departure from these recommendations by an applicant wishing to alter the shoreline must be justified at a hearing of the board(s).
- Encourage staff training on decision making tools developed by the Center for Coastal Resources Management at VIMS.
- Follow the development of the state-wide General Permit being developed by VMRC.
- Ensure that local policies are consistent with the provisions of the permit.
- Evaluate and consider a city-wide permit to expedite shoreline applications that request actions consistent with the VIMS recommendation.
- Seek public outreach opportunities to educate citizens and stakeholders on new shoreline management strategies including Living Shorelines.
- Follow the development of integrated shoreline guidance under development by VMRC.
- Evaluate and consider a locality-wide regulatory structure that encourages a more integrated approach to shoreline management.
- Consider preserving available open spaces adjacent to marsh lands to allow for inland retreat of the marshes under rising sea level.
- Evaluate and consider cost-share opportunities for construction of living shorelines.

Sustainability:

Surface water (Atlantic Ocean, Chesapeake Bay, ponds, creeks, branches, guts, ditches, and wetlands) is a significant part of the County's landscape. With the amount of surface water evident, there is local interest in sea level rise/recurrent flooding, hurricane impacts/storm surge predictions, flooding due to Nor'easters, and flooding due to deferred ditch maintenance.

The following map which relates to storm surge is provided for informational purposes and in part, forms the basis for hurricane evacuations:



Broad Constraints versus Site-Specific Constraints:

The various important constraints to development in the County, such as poor soils for septic systems, and Agricultural and Forestal Districts (AFDs) can be viewed from two perspectives:

- 1) Broad constraints that apply generally to a large area
- 2) Site-Specific constraints that vary in intensity within the bounds of a specific tract of land or smaller area.

Land use policies should provide guidance for both of these perspectives. Areas with severe and consistent constraints should have generally restrictive policies applied to them (for example discouraging rezonings and infrastructure expansions), whereas areas with variable constraints in which some sites or portions of sites have few constraints while others nearby have severe constraints, could have more permissive policies. Further, some areas have inherent conflicts between opportunities and constraints, such as portions of the Route 13 corridor that fall within the spine groundwater recharge area. In these cases, site-specific policies may be applied that allow for some development while simultaneously ensuring that some land is also protected.

In general, the greater the constraints to development a property has, as shown on the land use analysis maps of this plan, the greater the restrictions the County will impose for on-site development of the property.

Character of Development (traditional patterns, human scale, pedestrian access, etc.):

Many of the county's community development and preservation goals can be achieved or enhanced if new development occurs in a compact, traditional pattern, similar to the pattern that exists in the County's existing historic towns and villages. This pattern would feature generally interconnected street networks, mixed uses in the core areas, relatively narrow neighborhood streets, a variety of lot sizes and building sizes, generally deep lots, a variety of front setbacks in residential neighborhoods, and houses typically featuring sitting porches as the most prominent element of the front facade, rather than garage doors. This concept is particularly important and relevant in the expansion areas of existing towns and villages, such as around Onancock and Onley.

Future Land Use Analysis - Opportunities and Constraints:McHarg Analysis

Accomack County is located on a narrow peninsula, with various environmental and public facility resource constraints that have a generally linear overall pattern. This geography lends itself to a "McHarg" analysis of land use opportunities and constraints. This type of analysis is named after its inventor, the planner and landscape architect, Ian McHarg, author of the classic planning book *Design With Nature*.

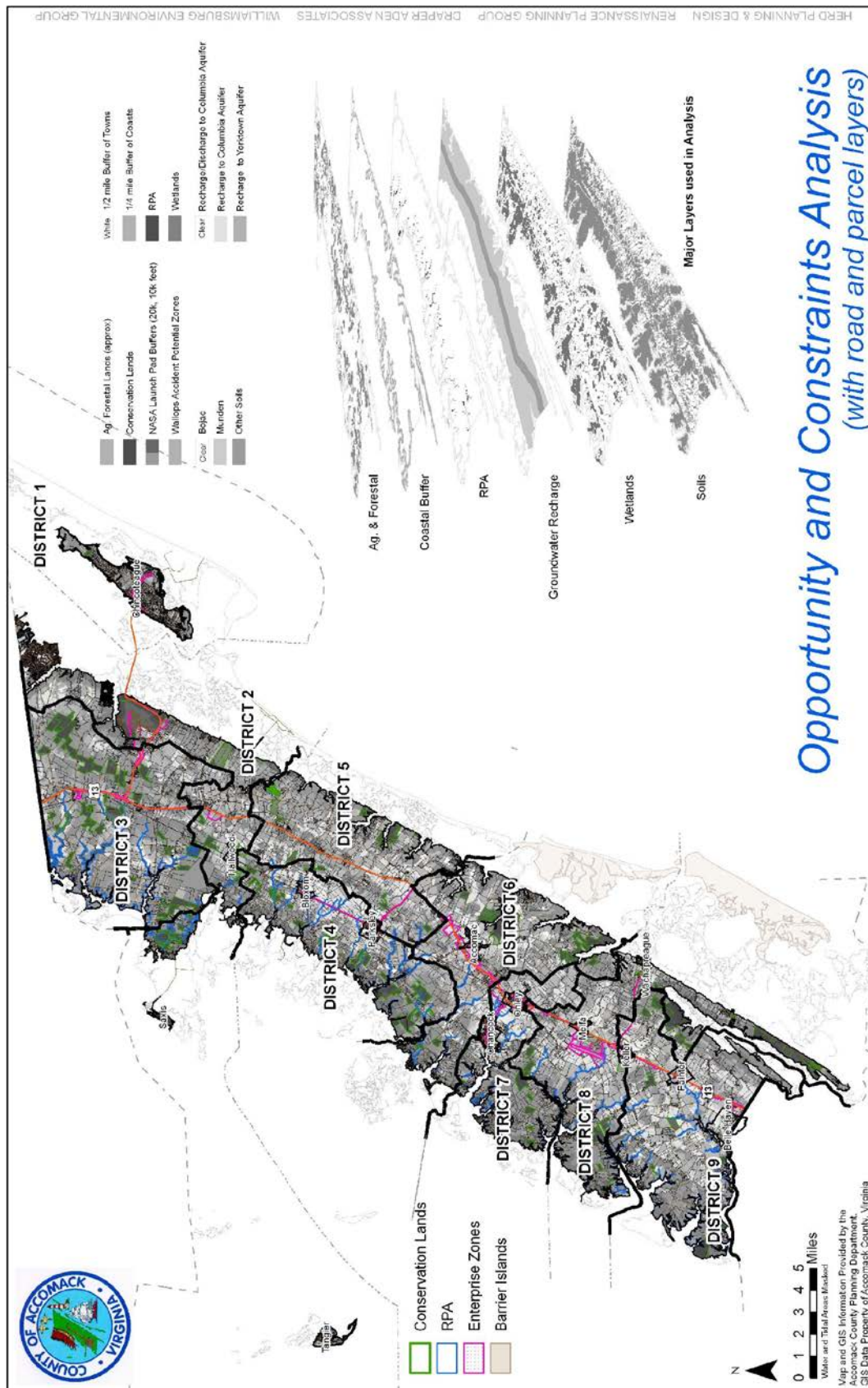
In this type of analysis, the major kinds of opportunities and constraints for human settlement are mapped. The maps are then overlaid on top of one another. When combined together into a single, multi-layer map, these overlays visually indicate the variations in levels of constraints for development between various areas. The resulting map shows the most suitable areas for future development.

This process was carried out in October, 2006, using the County's Geographic Information System data. The key factors or data layers that were incorporated into the McHarg layers as constraints and opportunities were the following and mapped in gray tones:

- Agricultural and Forestal Districts (AFD)
- Coastal Buffer (1/4 mile setback)
- Conservation lands (lands under easement)
- Chesapeake Bay Resource Protection Areas (RPA)
- Groundwater recharge spine (recharge to Columbia and Yorktown aquifers)
- Wetlands
- Soils (Bojac, Munden, others)
- Proximity to existing towns (within ½ mile radius)
- NASA launch pad buffers (20,000 and 10,000 feet)
- Wallops Airport Accident Potential Zones
- Existing Zoning (mapped as color layer)

In the initial analysis, each of these factors were given essentially equal or proportional weight in terms of importance. During the course of the Planning Commission review, some layers were examined individually, such as Bojac soils and Agricultural and Forestal Districts, in order to consider circumstances in which one factor might overwhelm all other considerations in terms of its importance as an opportunity or constraint to development. The McHarg Analysis is summarized on Map 6-A. *Please note that the election districts on Map 6-A on the following page reflect the 2001 election districts, not the 2011 election districts.

Map 6-A



Public Input:

In addition to the GIS data, consideration was given to the input received from citizens at the public workshops in September 2006, regarding land suitability for development and conservation. At these workshops, a total of 15 small workgroups of citizens, representing a wide spectrum of viewpoints and geographic areas, brainstormed their ideas for the future land use pattern in the County, looking 20 to 30 years into the future. The amount of agreement among the groups was striking. The major themes that were broadly shared by the citizens at these meetings were:

- Concentrate development around existing towns and villages
- Provide for large lots (low density development) close to the water/shorelines
- Provide for smaller lots (higher density development) close to services (towns and villages)
- Cluster businesses on Route 13
- Preserve wetlands, groundwater, and agriculture.

The Draft Future Land Use Map was presented at a series of four public meetings in January and February 2007, and revisions were subsequently made based on public discussion and comments. Ideas and issues discussed at these meetings included:

- Affordable Housing
- Economic Development
- NASA
- Subdivisions/Existing Development
- Apply Chesapeake Bay Preservation Act to the Seaside
- Need for better Stormwater Management and Erosion and Sediment Control Ordinances
- Zoning Districts
- Zoning Ordinance Review
- Land Use Value Tax
- Tax Assessment
- Water Quality/Shellfish
- Agriculture/Seafood/Forestry
- Wastewater Treatment
- PUD (Planned Unit Development)
- Population/Carrying Capacity of the County
- Sea Level Rise
- Alternative Energy
- Waterfront Protection
- Public Safety
- Public Access
- Conservation Areas

- Drainage
- Infrastructure: Water & Sewer, Roads, Schools, Trash, Fire & Rescue
- Roads/Route 13
- Enterprise Zone
- Ground Water
- Septage Lagoons
- DEQ Policies
- Mobile Home Parks/Substandard Housing
- Poverty Map

Future Land Use Plan Concept:

The following narrative is a description of the concept for Accomack County's land use plan. The plan is illustrated through the Accomack County Future Land Use Map. Components of the future land use plan are based on:

- 2010 Census and Weldon Cooper population projections as of October 2013,
- Growth and change indicators identified in the inventory section of this plan,
- Studies done by the Planning Commission in recent years,
- Input from citizens at large during the plan update process, described above,
- The "McHarg" analysis described above, and
- The policies set forth in Chapter Five.

It is important to note that many land areas in the County are suitable for more than one use, and thus, "trade-offs" must be weighed and judgments made as to priorities. An example is the conflict between the opportunity for development along the Route 13 corridor due to its good access, and the fact that it is also generally the most important area for groundwater recharge, a constraint to development. Another example are areas bordering the shorelines, which need to be preserved in order to maintain water quality for local water-related businesses, yet are also places where many people wish to live, due to the scenic quality and water access.

Overall guidelines for the future land use recommendations are generally consistent with those of the 1997 Comprehensive Plan, and are as follows:

- Because Accomack County has adopted Agricultural and Forestal Districts which recognize designated land as, "land which requires conservation and protection of food and other agricultural and forestal products and as such is a valuable natural and ecological resource," land in Agricultural and Forestal Districts should be designated as Agricultural on the Future Land Use Map, except for certain areas that may be particularly suitable for other types of uses in the long-term;

- Because most development occurring in Accomack County is dependent on septic systems for waste disposal and because the Health Department has identified Bojac soils as the soil type which will best support septic systems, areas which are not located in Agricultural and Forestal Districts and in which Bojac is the predominant soil type should be among those considered for future development.
- In order to encourage development which is in character with historic and existing development patterns, location and density of development should be in keeping with the pattern of development around villages and towns and should conform to the comprehensive plans of incorporated towns where applicable. Similarly, land along the Route 13 and Route 175 corridors generally offers good opportunities to accommodate future development. However, one of the major conflicts for land use designations is the fact that the Route 13 corridor generally coincides with the groundwater recharge area. Thus, some trade-offs in priorities must be made.
- Because of the importance and sensitivity of water resources to the County's economy, areas bordering the Bayside and Seaside shorelines, areas bordering creeks, and areas of wetlands, are not as suitable for development as most other areas.
- Because of the importance of groundwater to the County's future, the groundwater recharge spine is an area that should also be preserved to the extent feasible.

Land Use Categories:

Land use categories were developed for the 1997 Comprehensive Plan to promote a balanced, safe and orderly pattern of development. These categories reflect traditional land uses as well as the goals, objectives and policies of the 1997 plan, and remain appropriate as an organizing framework for the updated plan.

These categories are used to develop revisions and updates to the Accomack County Zoning Ordinance and Subdivision Ordinance, and in decisions regarding rezoning and special permit approvals. However, these categories are not intended to be an all-inclusive list of districts for zoning ordinance revisions. Any additional categories or sub-categories that promote the stated goals, objectives and policies of this plan may be developed and proposed.

The general location of the land use categories described below are depicted on the Future Land Use Map. The Future Land Use Map designates the most desirable locations for various types of future development. A good deal of development has occurred over time in areas that have been determined to be undesirable for future development based on the criteria provided above. It is recognized that this existing development shall continue to exist in these areas and it is not proposed that areas currently zoned for a particular use be rezoned to a lesser use category. However, in areas where the existing zoning or pattern of use is inconsistent with that designated in the future land use plan, further extension of that use should be discouraged and development

in surrounding areas should be consistent with that proposed in this plan.

Conservation Areas

The purpose of Conservation Areas is to preserve and protect Accomack County's areas of ecological importance on which development of any intensity would be damaging or unsafe. Areas that should be in the conservation district include marshland and the undeveloped barrier islands. Allowable uses in the Conservation Area would include docks and piers, duck blinds and wildlife observation platforms constructed in accordance with the rules and regulations of the Virginia Marine Resources Commission and the Accomack County Wetlands Board.

The County's target outcome for the Conservation Area in the long-term is to have no new development through regulations and conservation easements.

Agricultural Areas

The purpose of Agricultural Areas is to provide an area for the production of agricultural and forestry products. Regulation of this area should minimize obstructions to the efficient and economical production of these products. Examples of the types of primary uses allowed in this district are agricultural and horticultural uses such as raising of crops, nurseries, orchards, vineyards, raising of livestock, forestry, poultry houses, sawmills, game preserves, and aquaculture operations. Residential uses would include housing for property owners, family of property owners, and those employed full-time on the property. Examples of secondary uses allowed in this area are single-family dwellings, accessory dwellings, cluster development, seasonal farm labor housing, public safety facilities, and other public uses.

The County's target outcome for this area in the long-term is to have as little new non-farm development as possible, through zoning regulations, Agricultural and Forestal Districts, cluster development, conservation development designs, and conservation easements. The target density for individual, developed properties in this area would be no greater than approximately one dwelling per five to ten acres, on average, and a far lower overall density. While a five to 10-acre density would, in theory, still exceed the ideal amount for these areas in the very long term, it would be low enough to limit the most serious and immediate impacts of residential development on natural resource systems, especially if carried out in a clustered pattern using conservation design techniques.

However, even a 10-acre average density would be excessive if it occurred on every farm. Further, at current growth rates such a level of development would not occur for several decades. It is therefore critical that the county continually monitor the rate, location, and impact of all rural residential development activity. The county's number one planning objective is to "direct development towards existing population centers." Development patterns should be measured against this objective on an annual basis. If the county observes a multi-year trend of increasing rates of rural subdivisions combined with decreasing amounts of land in Agricultural and

Forestal Districts, and/or in agricultural production, it should revisit the zoning regulations for residential development in the rural areas. Rezoning to higher intensities should not be approved in this area.

Rural Settlement Areas

The purpose of the Rural Settlement area is to facilitate rural residential growth complementary to and in the vicinity of existing residential villages and hamlets that dot Accomack County's countryside. Examples of secondary uses allowed in this area are accessory dwellings, cluster development, public safety facilities, and other public uses. Clustering options could be provided to allow smaller individual lot sizes if a portion of the development site is set aside as open space. New rural settlement areas should be located along, but not necessarily fronting, existing roads with adequate capacity, on soils with good septic suitability, and/or adjacent to existing settlements or subdivisions.

The County's target outcome for this area in the long-term is to blend new development with existing development in clustered, rural residential development that reflects and perpetuates the County's existing, historic land use pattern. Cluster development and conservation development designs are encouraged to blend with existing settlements. The target density for this area would be approximately one dwelling per two to three acres, on average. Rezoning to higher intensities should not be approved in this area.

Residential Areas

The purpose of Residential Areas is to allow for new residential development in existing communities for those who chose to live on moderately sized lots. Examples of secondary uses allowed in this area are home occupations, public safety facilities, and other public uses. New Residential Areas should be located adjacent to existing residential areas located outside of flood zones that have roads with adequate capacity and soils with good septic suitability.

The County's target outcome for Residential Areas in the long-term is to provide medium density residential development that reflects the surrounding area. The target density for this area would be approximately one dwelling per acre, on average. Rezoning to higher intensities should not be approved in this area.

Village Development Areas

The purpose of Village Development areas is to allow for a mix of residential and commercial uses in keeping with the traditional development pattern of Accomack County's villages and towns (subject to wastewater treatment capability). These areas should be compact, with interconnected street networks, parks, sidewalks and a mix of uses, convenient to both motor vehicles and pedestrians.

The County's target outcome for Village Development Areas is for the vast majority of future residential development to be located there, and that they be the major location of future neighborhood commercial and institutional development. Depending upon the mix of uses and the availability of central water and wastewater treatment, overall residential densities would be planned to be in the range of one-half to one acre per dwelling, on average, including a variety of lot sizes and dwelling types; thus net densities may be four dwellings per acre or higher. Rezonings to higher intensities, including Planned Unit Developments (PUD) should be encouraged in this area, provided that the policies of this plan are met, including the features listed above.

Development within designated Village Development Areas should occur in a pattern that blends with and complements the existing, traditional pattern of streets and lots within the historic areas. This would include generally narrow streets, a mixture of lot sizes and building types, generally narrow, deep lots, as well as walkways and on-street parking within the public right-of-way.

It is critical that new development, including the extension of central wastewater treatment systems, be phased such that development will generally extend outward from the existing core of existing towns and villages. As development occurs, it is also critical that all streets and walkways be interconnected into a loose, grid pattern in order to disperse traffic, provide multiple routes between destinations, and create a pedestrian-friendly streetscape.

In those places where a Village Development Area abuts the Route 13 corridor, it is essential that motor vehicle access be managed so as not to impede the efficiency and safety of Route 13. New development in such areas must keep new access points to Route 13 to an absolute minimum, must coordinate entrances and crossings with adjacent properties, and must provide necessary turn-lanes and any other safety measure that are appropriate to the specific site.

Multiple-family housing developments should generally be located in or near incorporated towns. Village Development areas are appropriate locations for apartments, condominiums, townhouses, and similar types of developments designed to satisfy rental and for sale market needs.

To the extent possible, multiple-family housing developments should be in close proximity to goods and services for the convenience of residents and to afford residents of the developments with transportation alternatives to personal vehicles, such as walking, biking, or using other transportation forms. Where appropriate, sidewalks, lighting, and other amenities should be provided.

The Planning Commission has identified a need for additional market rate multiple housing options for people working in the education, medical, and aerospace professions.

Planned Unit Developments in Village Development Areas should achieve the following:

- Promote mixed use developments.
- Generally be consistent with, and developed in accord, with the Village Development purpose, targets, and development types outlined above.
- That the development is of appropriate size and scale for the Eastern Shore of Virginia.
- That phasing of the development is linked to market conditions conducted by an analyst selected by the County and paid for by the applicant.
- That the PUD complements nearby development.
- Be designed and constructed to create a sense of place where building placement, sidewalks, trees, landscaping, parks, and other amenities are connected in a manner to encourage human interaction.

Commercial Areas

The purpose of Commercial areas is to provide appropriate locations for a broad range of business activities which may be characterized by heavy traffic, noise, or other factors that could be considered a nuisance to residential uses. Examples of primary uses allowed in Commercial areas would include large-scale office complexes, banks, large-scale restaurants, theaters, large-scale retail stores, gas stations, service garages, recreational centers, warehouses and wholesale stores, funeral homes, large hotels and motels, public safety facilities, and other public uses.

The County's target outcome for this area is that it be the location of large scale, intensive commercial enterprises, but that such development be clustered at key access points on Route 13 or Route 175, with managed access, and street connections to adjacent properties. Future commercial development must be required to provide adequate stormwater management and ground water protection, and should be held to reasonable standards with regard to the aesthetics of site design, architecture, landscaping, and lighting to minimize adverse impacts on the surrounding community.

Industrial Areas

The purpose of Industrial Areas is to provide a suitable location for industrial activities with minimized interference from or impact to adjacent land uses. Examples of allowable uses would include light manufacturing, food preparation and processing, bottling plants, electronics production, metal fabrication, garment manufacturing, recycling facilities, inter-modal transportation of goods, warehousing facilities, public safety facilities, and other public uses. Industrial Areas should be located near adequate transportation facilities, including highway, railroad, and waterway access points.

The County's target outcome for this area is that it be the location of large-scale, intensive industrial enterprises, with managed access, buffers and other regulatory controls to protect adjacent properties, and adequate stormwater management and groundwater protection.

Amount of Land Designated:

The total amount of land designed on the Future Land Use Map for each of the land use categories is shown in the table below. This total acreage is larger than the estimate of actual land demand, mainly due to the designation of substantial areas as “residential” which are aimed at reducing development pressure on the agricultural and conservation areas, and “rural settlement” areas, which are expansions of existing rural neighborhoods. In addition, some properties within each of the designated categories are either already developed or will not likely become developable in the foreseeable future. The “extra” total acreage suggests that the County needs to monitor development within the village development areas, including phasing development so it occurs as incremental extensions outward from the existing historic cores of each village area.

Acreage of Future Land Use Areas

Rural Settlement Area	3,002 Acres / 11 sites
Rural Settlement Area B	1,424 Acres / 5 sites
Residential Area	2,443 Acres / 11 sites
Village Development Area	5,141 Acres / 23 sites
Village Development Area B	1,821 Acres / 7 sites
Commercial Area	887 Acres / 9 sites
Industrial Area	1,997 Acres / 15 sites
Agricultural Area	182,243 Acres
Conservation Area	69,545 Acres

Criteria for Evaluating Development Proposals to Implement the Land Use Plan:

Proposals for development, including applications to rezone property to a more intensive zoning district, will be evaluated from the site specific viewpoint as well as from the overall viewpoint of the entire designated Future Land Use Area.

In making decisions about any proposal for development within any particular Future Land Use Area, the county will seek to achieve the proper balance or mix of land uses within the area, particularly with regard to the Village Development Areas. Because the Village Development Areas are depicted as general locations for a mix of urban uses, the county will monitor the balance of approved uses over the course of time. Thus, the approval of a particular use at a particular time within a Village Development Area does not mean that the same type of use will necessarily be approved later on an adjacent site, because a key purpose of this future land use area is to have the appropriate balance of uses and not necessarily all of one type.

Applications to rezone property will be judged in light of all of the goals, objectives, and policies of this comprehensive plan, with the following criteria serving as primary factors. Failure to meet any one or more of these criteria may be sufficient basis to deny a rezoning. The relative importance given by the Board of Supervisors to each criterion will depend on the specific case,

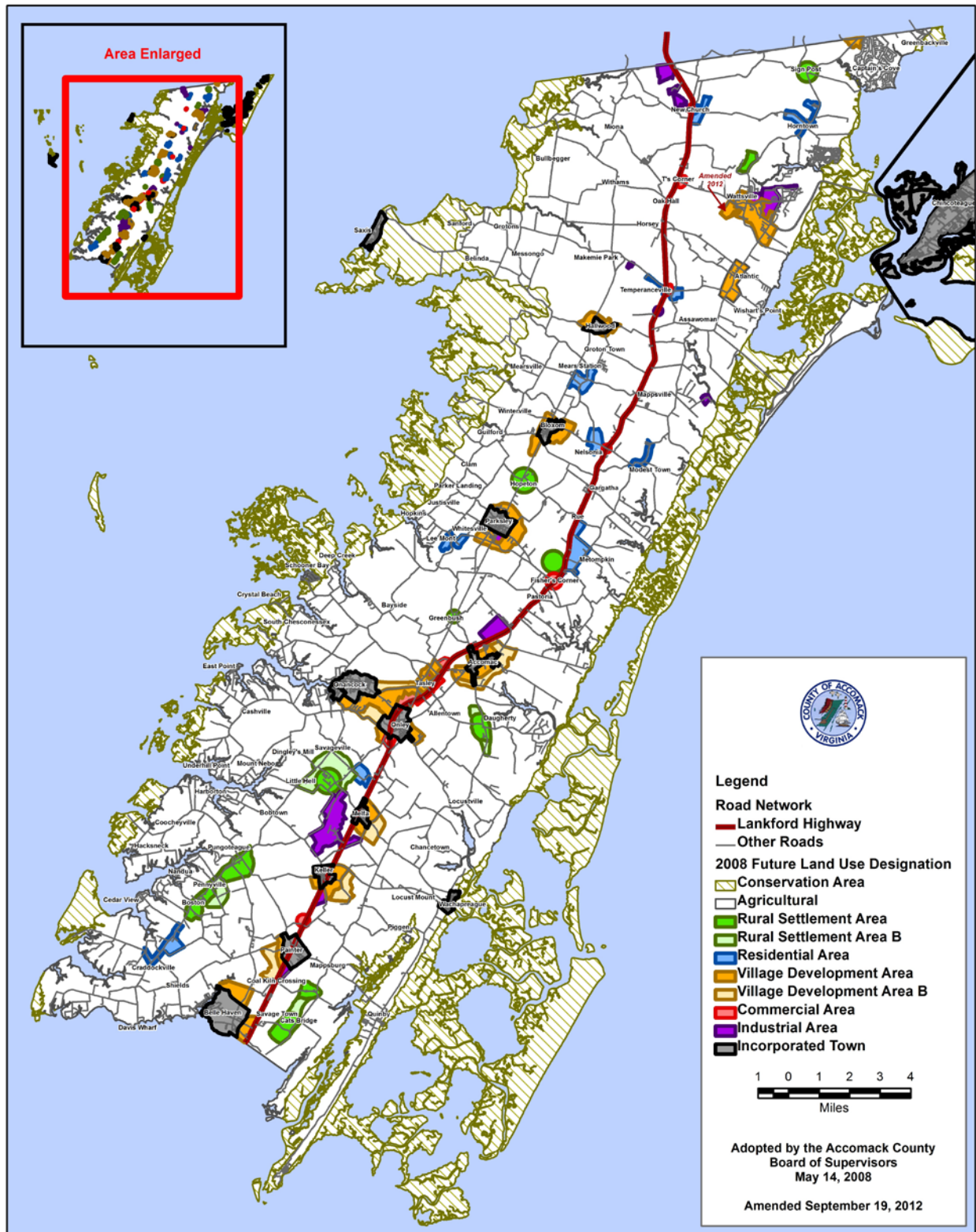
and the purposes of zoning as set forth in §15.2-2283 will also apply.

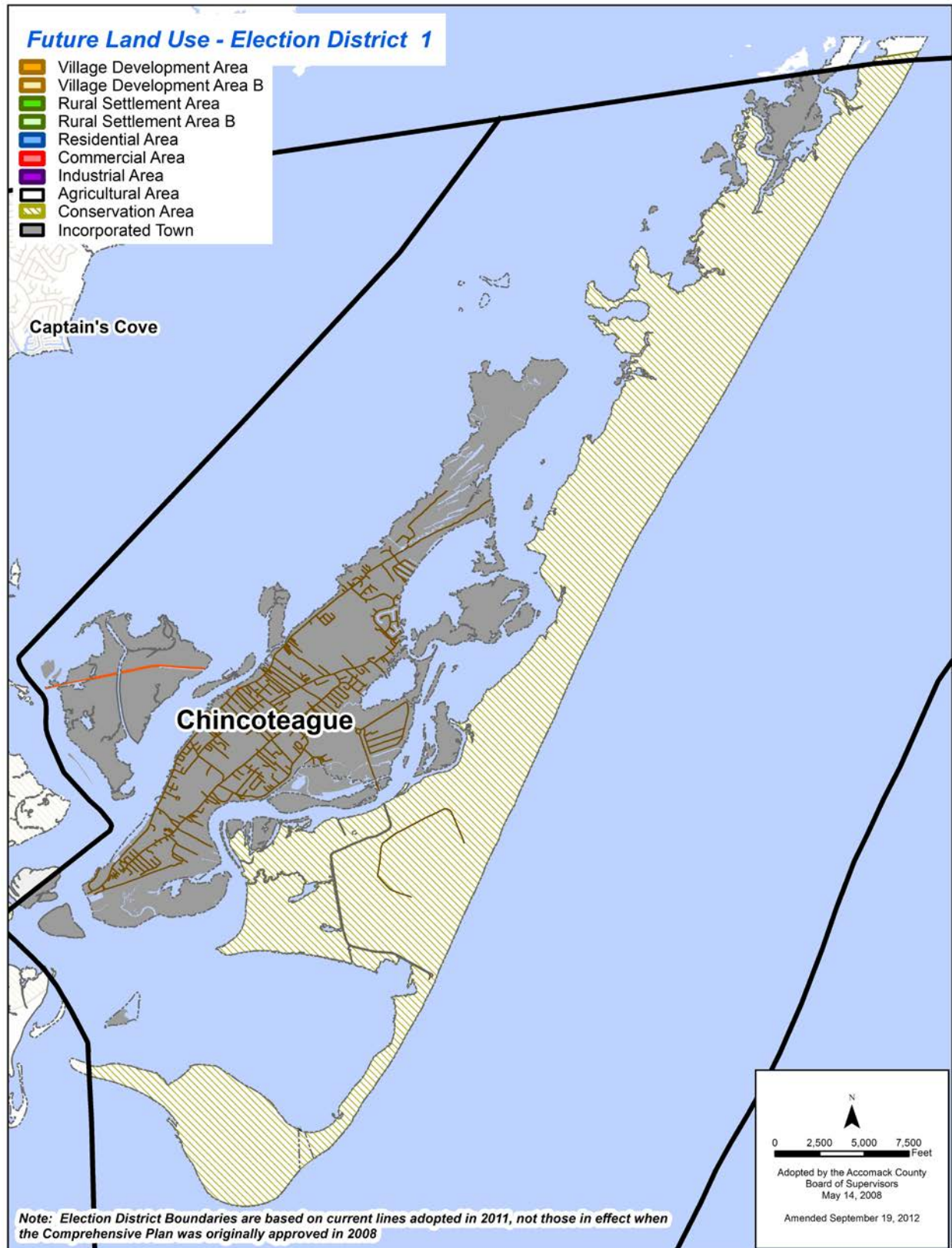
1. *Location* – the location of the proposal in relation to the Future Land Use Map designations (Chapter 6) and the location policies in the text of the plan (Chapter 5).
2. *Supply of zoned land* – whether or not the County currently has sufficient zoning capacity in the appropriate locations for the proposed uses, in relation to the projected land demand analysis contained herein.
3. *Adjacent uses* – whether the proposed uses are compatible with current and planned adjacent uses. (Consideration of proffered conditions to mitigate any incompatible aspects would also be a factor, as indicated in criterion #6).
4. *Public facility capacity* – the existing and planned capacity of water, wastewater treatment, roads (including traffic safety as well as capacity), schools, parks, emergency services, etc. (in the long term, the County should establish performance standards for public service delivery).
5. *Environmental impact mitigation* – whether the environmental impacts of the proposed uses can be adequately mitigated by the applicant.
6. *Proffered conditions* – whether the conditions proffered by the applicant are sufficient to mitigate all of the impacts caused by the development to a reasonable degree.
7. *Overall pattern of future development in the Future Land Use Area* – whether there is already a sufficient amount of land planned or approved for the proposed use, in which case the county may choose not to approve a rezoning that would add to that existing supply of zoned land.
8. *Density* – the density or intensity of proposed development on the site, as well as what the effect would be on the density of the overall area.
9. *Land use mix* – the mix of land uses on the site and what effect the proposed use would have on the overall land use mix in the area.
10. *Public input* – relevant factual information provided by the public that is received before or as part of a public hearing that would have an adverse impact on the health, safety, and welfare of the residents.

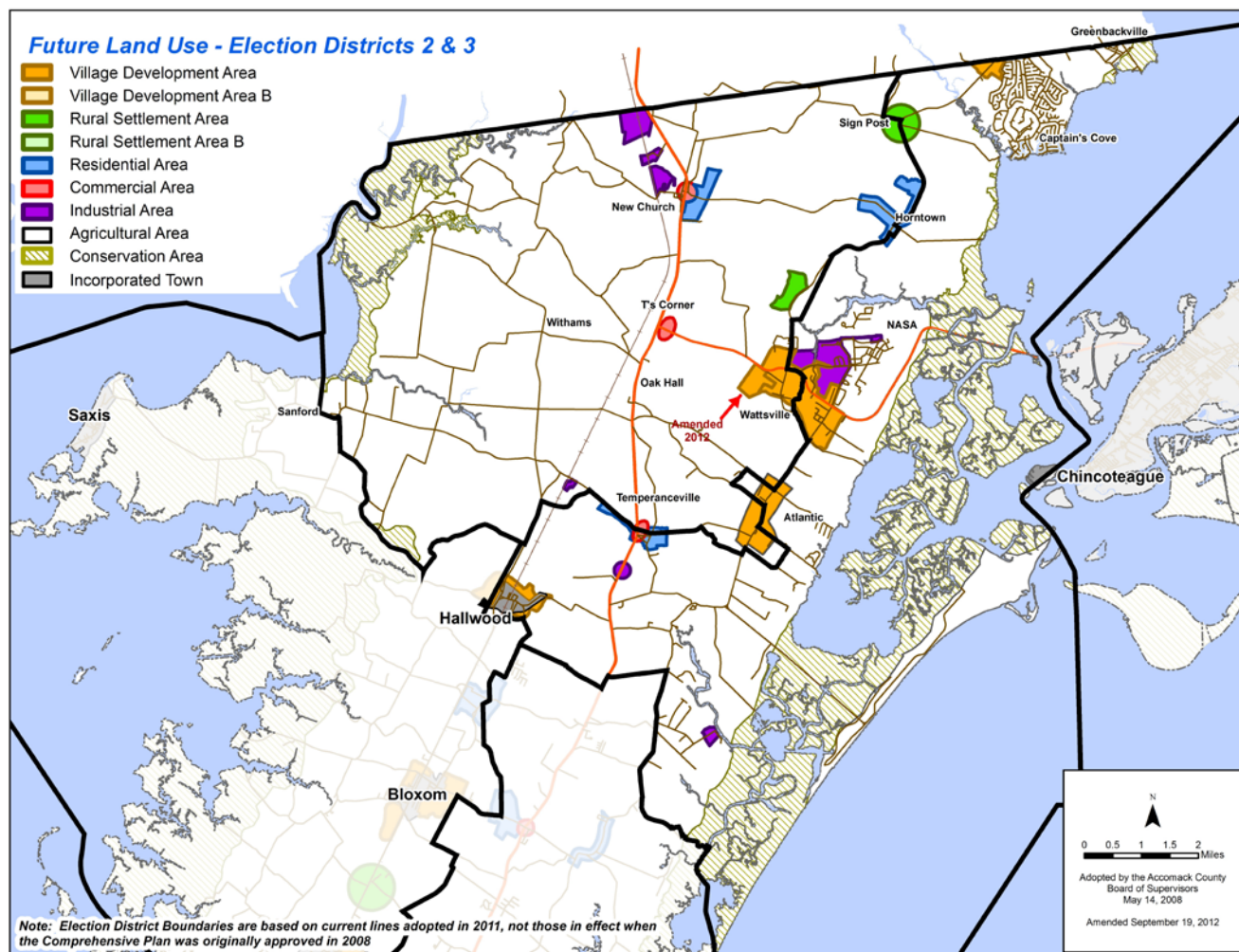
Future Land Use Maps:

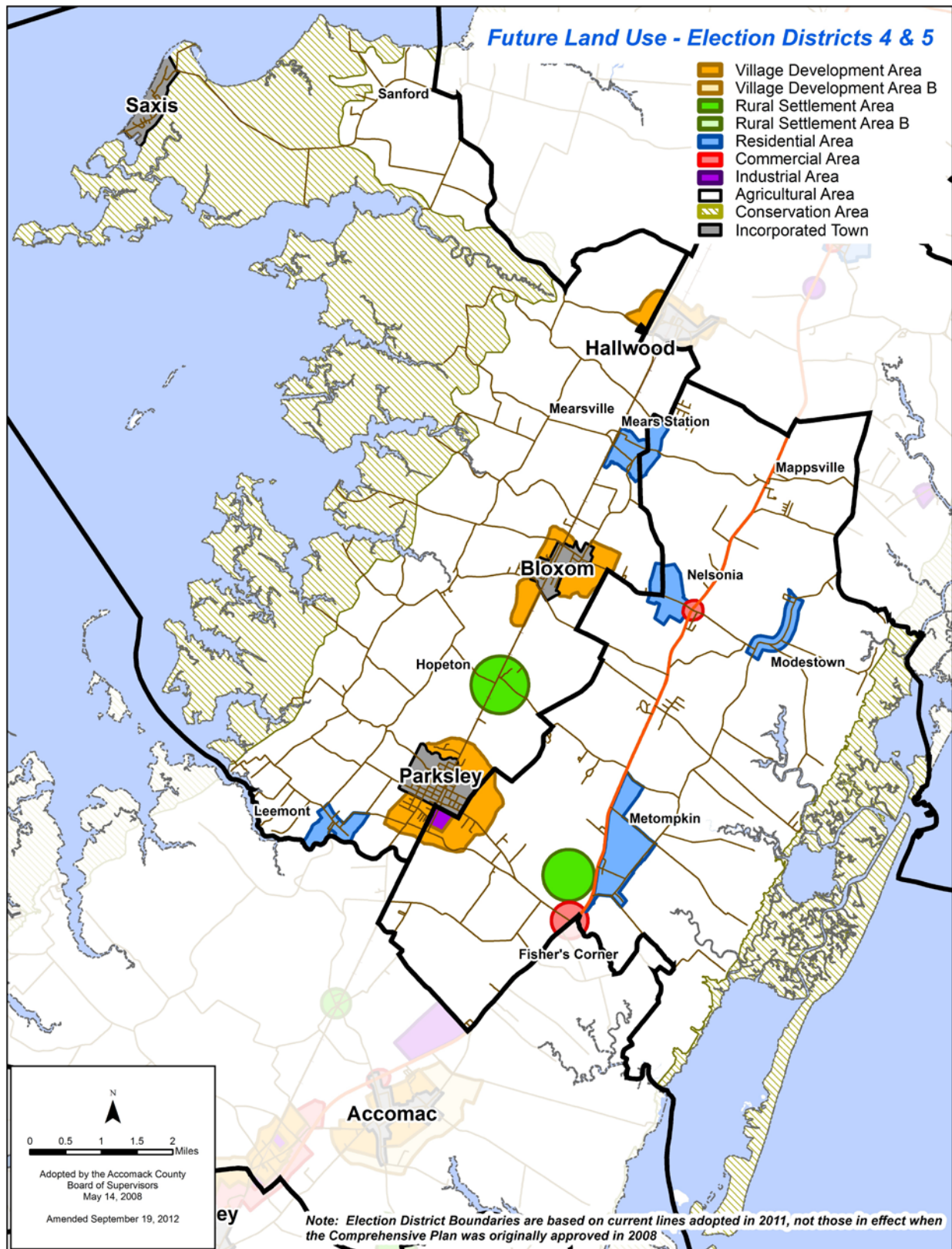
The following Future Land Use Maps show the 2008 Future Land Use Plan Maps, which have been updated to include the 2011 election district boundaries and to reflect the 2012 Future Land Use Amendment.

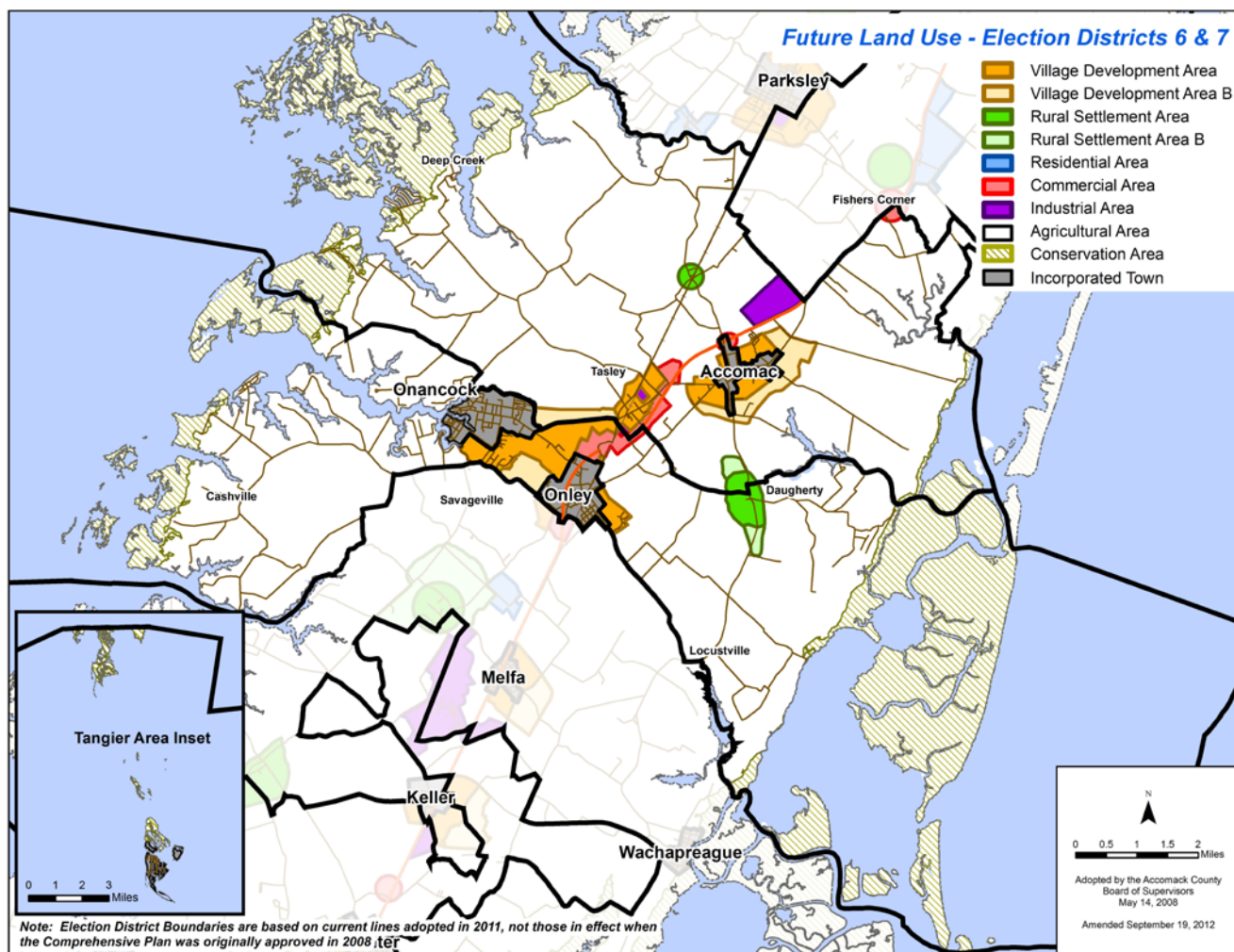
Accomack County 2008 Future Land Use Map (As Amended in 2012)

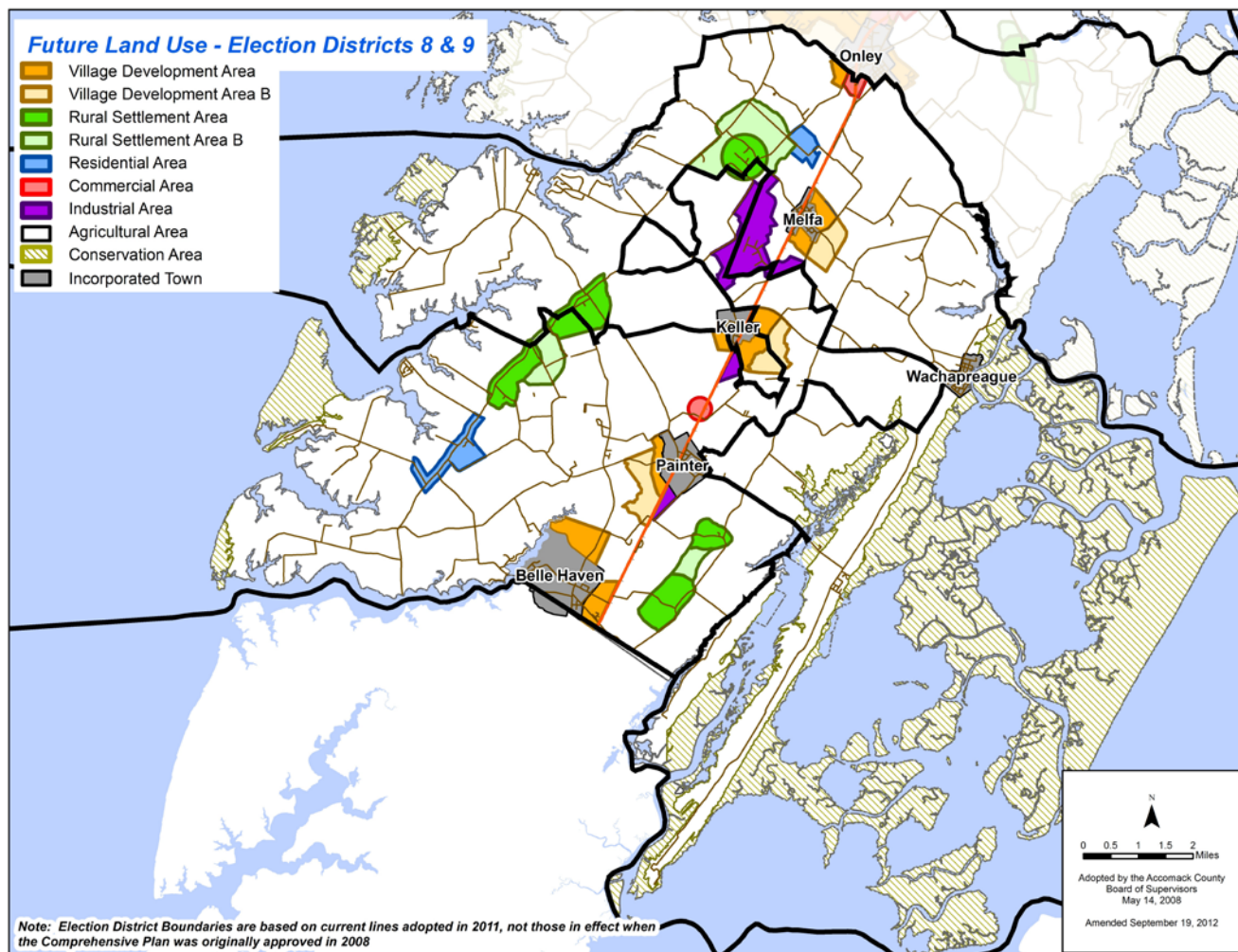












Appendix A

Results of Joint Work Session of the Planning Commission and Land Use Planning Stakeholders Group, on Land Use Planning Issues and Options

October 24, 2005, Elizabeth B. Waters, facilitator

Introduction

A major goal in Accomack County's 3-Year Strategic Plan is to "revise the county's comprehensive plan and zoning ordinance to strengthen the county's ability to guide and manage growth and development". In September 2005, the Board of Supervisors appointed a Land Use Planning Stakeholders Group to assist the Planning Commission and the Board in their work to accomplish this goal, building on the work already underway by the Planning Commission. The Stakeholders Group includes representatives of a wide range of range of civic and business interests in the county and it will be an important sounding board for the Commission and the Board as they develop land use plan and zoning changes to take to the public at large.

An initial joint work session was held for members of the Planning Commission and the Stakeholders Group on October 24, 2005, in the Shore Bank Conference Room in Accomack County. The purpose of the session was to identify land use issues the county needs to address during the update of its land use plan and zoning ordinance and possible ways to accomplish this.

Participants said that some of the development problems the county is living with are the result of earlier plans and ordinances that have been changed, but there are a number of concerns that have not been addressed. These concerns need to be addressed to manage the increased growth pressures the county is experiencing. There was a general view expressed by the participants throughout the discussions that this planning process needs to focus on what is best for the county as a whole, not provide benefits to a few special interests. The following is a summary of issues and possible solutions identified during the session.

Issue Identification

During the first portion of the discussion, participants identified assets, goals and problems that need to be taken into account as planning and zoning options are developed and considered.

Natural, Cultural and Economic Assets

- Natural resources: groundwater, open space, wildlife, etc. need to be protected.
- Historic resources need to be identified, preserved and promoted.
- Agricultural land needs to be preserved.

- The Wallops facility needs to be protected from residential and commercial encroachment.
- Existing towns and communities need to be strengthened.

Goals for Planning/Zoning Changes

- Preserve the rural lifestyle, farming, seafood, and aquaculture activities, etc. that give the Shore its distinct identity.
- Encourage development that will provide jobs and housing for young people.
- Protect landowner's rights.
- Preserve the economic value of property.
- Ensure that the safety of Route 13 is preserved.
- Preserve and enhance agricultural profitability.
- Increase affordable and "starter" housing so local people can have adequate housing and begin to build equity.
- Preserve existing business and employers.

Problems that Need to be Addressed

- The county lacks appropriate, enforceable zoning regulations.
- Zoning around existing towns is not adequate and this pushes people out into agricultural areas.
- It's too easy for development to come into agricultural areas. These areas lack adequate roads for residential development and it often creates conflict among users.
- There is a countywide lack of affordable housing. Almost all of the new housing being built is out of reach for moderate income and first-time buyers. Most of it is second home development being marketed to people from outside the county and there is not enough decent housing for the local labor force.
- Increases in entrances and exists along Route 13 are threatening the safety of that corridor.
- Ways have to be found to balance preservation and growth in the county.
- The community needs to agree on the definitions of historic and natural resources in order to identify them and plan to protect them.
- The county needs to decide how much it wants to encourage and develop tourism. There may be conflicts between tourism-focused businesses and traditional agricultural and seafood activities. Too much tourism growth may tax the roadway system. On the other hand, many tourism focused activities like farmer's markets, pick your own farms and eco-tourism are good matches with the Shore's rural character.
- The best farmland is also the best land for development and something needs to be done to balance these competing demands.
- Expansion around existing towns is difficult because the soils are not suitable for septic systems and centralized wastewater treatment facilities are not available.
- There is competition for developable land, there isn't space for everything and the county has to set priorities.

- Residential development often costs more for services than it generates in taxes, although this depends on the size of the house and the type of services needed.

Possible Approaches to Address Problems and Goals

After identifying many of the major issues the county faces, participants identified a number of approaches that might help the county deal with these different problems, goals and concerns. They recognized there are limits on what counties are allowed to do in Virginia, but even within those restrictions there are many tools to manage growth that the county needs to consider.

At this early stage no attempt was made to reach agreement on specific approaches, but participants did suggest that this process should try to identify plans, ordinances and review processes that:

- enable long-time residents to continue to live and thrive in the county;
- welcome new residents and businesses in ways that protect the character and natural resources of the county while contributing to its vitality; and
- protect the rights of farmers and other landowners to use and benefit from their land.

Many options were identified that the county can consider during the update of its land use plan, zoning and development review processes. They have been divided into four major categories below. These ideas can serve as a starting point for further research and discussion.

Development Patterns

- Concentrate new development in and around existing towns and communities. They are well situated, have good access and this will help revitalize these communities.
- Identify ways for larger new developments to reproduce the attractive village concept that is already found throughout the county.
- Encourage more commercial development in existing villages to serve residents and attract tourists.
- Use Planned Unit Developments (PUDs) with their own sewage treatment plants so development can occur in areas with poor soils for septic systems.
- Review and update soil suitability maps, flood zone areas, etc. to determine the most appropriate locations for future development.
- Take account of the sole source aquifer in deciding where development should take place and how much. The cumulative water demand of all new developments needs to be tracked over time.
- Take account of the county's agricultural and forestal districts in deciding where to encourage future development.
- Make zoning changes recommended in the US Route 13 Corridor Plan to improve the safety and aesthetics of new development in the corridor.

Affordable Housing

- Adopt incentives to encourage developers to produce creative affordable housing options.
- Designate areas for well-designed trailer parks that include requirements for landscaping, maintenance, etc. This is often the only kind of housing local workers can afford.
- Develop PUD regulations that call for combining single family, duplex and triplex units that look similar but allow for a range of housing costs.
- Create a zoning ordinance that encourages affordable housing proffers.
- Consider adopting some property tax relief provisions for low-income homeowners.

Subdivision Regulations

- Limit the amount of prime agricultural land that can be easily subdivided.
- Change some land from agricultural to rural residential category while keeping other land in agricultural designation.
- Require clustering in new subdivisions to protect open space.
- Protect groundwater quantity and quality by requiring “Best Management Practices” (BMPs) for all new developments. Some BMPs like stormwater retention ponds can be assets to new developments.
- Consider a special section of the subdivision ordinance that applies to mobile homes and establishes requirements for the design of these parks.

Development Process

- Create a clear, easily enforceable zoning ordinance.
- Revisit the current requirements to subdivide land to be sure the process is in the best interests of the county and landowners.
- Consider requiring re-zonings for all conversions of agricultural land into residential use.
- Make all revisions to the development process easy to understand and easy to execute.

Next Steps

The county is in the process of hiring a consultant to work with the Planning Commission, the Board and the public at large to identify various approaches and techniques available to manage growth and to update their land use plan and ordinances. In the months ahead, research will be done and additional public workshops will be held to help citizens and decision-makers gain a better understanding of the different approaches and techniques so they can reach consensus on which of these approaches and techniques are best for Accomack County. Throughout this process, the Land Use Planning Stakeholders group will play an important role in helping the Planning Commission and the Board identify the best solutions for the county.

Summary of Results of Public Forums for Updating the Accomack County Comprehensive Plan

Milton Herd, AICP, and Vlad Gavrilovic, AICP, Facilitators

First Forum on September 25, 2006 at Nandua High School Cafeteria

General Discussion

Are there any statistical forecasts of growth?

Various growth projections have been compiled, including the Cooper Center (UVA) (official forecast). County staff can provide specific data files. [Official forecast is average 0.65% annual growth during next two decades; recent trend rate would be between 1% and 2% average annual].

Would village residential category be on sewer or septic?

Not determined – want to hear public comments. Mainly, village residential would be generally smaller lots/higher density than rural residential.

What is status of Wallops sewer opportunity?

County is currently negotiating – will probably be limited to industrial / commercial uses

Concern that good soils are not an issue if you use central utilities.

Wachapreague was considering expansion but they need sewer system in order for commercial to expand – but – hard to find environmentally appropriate location for it.

How would central sewer be financed?

- 1 – by users/future rate payers
- 2 – special service district (incremental tax on real estate within the district)
- 3 – general county funding assistance
- 4 – private central systems

Would TDRs be appropriate? [transferable development rights program]

Yes, it's an option to be considered [recent state legislation permit localities to do TDR, although the mechanics of successful implementation are complex]

Concern over insurance for new homes on coastline – who pays?

Has anything been planned on alternative corridors for Rt. 13?

- 2002 study recommends bypass from Route 175 to Temperanceville
- In 2006 General Assembly approved study for new interstate highway on Shore
- No funding has been available for major improvements to Rt. 13

Is “central sewer” a mass drainfield or a central [discharge] plant?

This is still an open question.

Can we recommend that no discharge be put into streams when considering central sewer? Concern over impacts of discharge.

Would it be beneficial to have separate district to protect aquifer recharge spine?

Yes, potentially – please note that in the small groups

Results of Small Group Exercises

Group 1

Circled around existing village to be future village residential (1/2 mile radius)
Included existing towns as village residential
Rural residential from Bloxom to Greenbackville – commercial should be included in village residential
Industrial in existing industrial park
Preserve “necks” on both coasts
Green between concentrations of development along Rt 13 – protect groundwater

Group 2

Need EMS service for district 9
Growth should be close to towns
Need town sewer/water systems
Large lots close to water
Follow up 1997 plan and use it
Interim ordinance to stay

Group 3

New growth should be on 316, not on 13 from Tasley to Bloxom
Need growth around NASA
Need nice park in mid-County with ballfields, skate park, picnic, lake
Preserve cemeteries and historical sites
Businesses on 13 clustered at traffic lights – no strip development
Need master drainage plan for county – lost trees in Wachapreague

Group 4

Need to look at “what should be there” not “what is there now”
Village residential could also mean mixed uses

Group 5

Keep Bayside/Seaside as Conservation
Keep industrial off recharge spine
Light Industrial and business around existing towns
Some new development in larger Towns – Belle Haven, Accomac, Parksley
AG land shouldn’t be fragmented
Affordable Housing should be done by NGO’s (Habitat and VESHEEC) – not by county
Sewer in waterfront towns but no discharge in creeks
Developers should give proffers to offset costs

Group 6

Rt 13 should be commercial
Industrial around Tysons and Peaker Plant and Perdue and Melfa Industrial Park
Village Residential:

Oak Hall
Temperanceville
Mappsville
Modest Town
Nelsonia
Parksley
Greenbacksville
Accomac
Onancock
Melfa
Keller
Pungoteague
Belle Haven
Craddockville
Atlantic

Group 7

Should enact zoning similar to Worcester and Northampton (1 per 20 acres)
Leave coastal edge with very little development
Overlay to protect recharge spine
Concentrate development along existing towns
Locate commercial/industrial in industrial park
Protect sensitive area between Chincoteague and Wallops

Group 8

Concentrate development around existing sewer in Onancock
Need sewer around Wattsville and Atlantic to reduce septic tanks
Need commercial/industrial around NASA
Sewer will allow smaller lots and slow development in Ag areas with larger lots
Need sewer around Wachapreague / Quinby / Parksley / Bloxom to protect surrounding farms and expand businesses.
Consolidate commercial / industrial – don't spread it on Rt. 13.

Common Themes

Implementation is Key Issue
Building on 1997 Plan
Inherent conflicts on central sewer vs. environmental protection and market for waterfront uses vs. need to protect waterfront

Other Comments

Can't adequately locate new growth without showing existing subdivisions – recommend maps at a scale showing each election districts

Need to provide more boat access – especially if growth is to be pulled away from waterfront
Rt 13 is a “death trap” – we can at least close the crossovers.

Recommend “land banking” – use transfer tax to purchase easements

Need to learn from planning efforts in Washington State.

Concern that population will double in 20-30 years.

Look at Outer Banks for example of what could happen Accomack.

Need to consider what kinds of new business will be attracted here – not conducive to large plants like Tysons/Perdue any more.

Recommend transfer tax to provide funds for affordable housing and open space

Look at home businesses or the “distributed work force” for future job growth.

Second Forum on September 26, 2006 at Arcadia High School Cafeteria

Results of Small Group Exercises

Group 1 – Heinrich

Focused on FLU areas that need enlargement
Industrial at Peaker Plant, Melfa airport
Commercial – 175 toward Chincoteague, areas to south
Village Residential – county line road near Belle Haven/Exmore
Behind Nandua HS to Onancock – rural res
Parksley to North – village residential to Bloxom, add to the east
Ches Bay Act needed on seaside
Q – what about future sea level rise?

Group 2 - Terry

Didn't do maps
Focused on principles
Conservation/ag – more is better
Tax incentives and aquaculture – focus conservation area to protect
Rural residential – low density to protect aquifer – 1 unit per 10 acres
Rural Village – one to four units per acre
PUD – seaside
Commercial – cluster. Limit ribbon (strip)
Industrial – focus in existing areas

Group 3

Rural residential
No industry in natural areas
Need better commercial development on Rt 13 – aesthetics
Melfa industrial park – need jobs for poverty areas in south Accomack
Disagreement on lot sizes – land value [impacts]
New development on spine and away from shores

Group 4

Put development where it already is, based on soils
Onley – Onancock – Tasley – Accomac: development area to preserve rural character outside;
May actually become a small city in the middle of the county

Group 5A – Ron Wolff

Protect groundwater
Protect coastal bays
Expand village residential around incorporated town – one-mile radius
Rural residential – 1 to 3 miles beyond
One mile buffer along seaside with large lots – 3 acre to 20 acre lots
No overboard sewage discharge
Use decentralized WWT & above ground systems in poor soils
Need some small dots in outlying areas
Sewer – Onancock, NASA Wallops ____ Park
Disagreement on lot sizes close to water
Need pre-treatment of septic within one mile of the water
Debate on EMS vs. development on long necks – people’s choice to live there

Group 5B – Stirling

Preserve white areas on map
Look at existing developed areas and natural areas
Peaker Plant – industrial
Expand existing commercial areas
Confine development to Onancock, Parksley
Rural res around them
Larger lots near water, bayside
Rural residential on seaside
Res and commercial development Onancock – Onley, Accomac – Parksley
Density down on seaside
Higher density in or near towns
Lower density to preserve agriculture – ag is 50% of local economy
Rt 13 – cluster and manage access
Stricter septic requirements near shorelines to protect water and groundwater
Map mostly green, but a lot of rural residential
Encourage growth on seaside
Residential between ESCC golf course and Onancock

Group 6 – Greg Lassiter

Small group / long conversation
Threats to bayside – pollution ____; need BMPs for ag and commercial
Rural res and Rural village on good soils

Accomack County Comprehensive Plan Appendix B: JLUS EXECUTIVE SUMMARY

What is a joint land use study (JLUS)?

There are many positive interactions between a military installation and the local jurisdiction. However, the activities of either can have unintended impacts on the other. Changes in military operations may increase noise, dust or safety concerns on the surrounding areas, while new residential or commercial development may restrict the military's ability to operate or train. Determining compatible development patterns on and around the installation is needed to protect the long-term, viable relationship between the installation and the local community.

A Joint Land Use Study (JLUS) is a project that brings local officials, military installation officials and the community together, in a collaborative effort, to discuss current and future needs, and to identify and promote compatible land use development patterns that are mutually beneficial to the military installation, the county and towns, and the citizens. Their findings, results, and recommendations are produced in a JLUS report.

Why was the Accomack County, VA JLUS initiated?

In 2010, the Navy conducted an internal encroachment study for Navy missions and operations at NASA Wallops Flight Facility (WFF) in Accomack County, Virginia. The study was conducted to determine if any non-Navy activities were impeding the performance of Navy operations. The study recommended that a JLUS be undertaken to further explore existing and future land use compatibility issues associated with Navy missions at the WFF. As JLUS initiatives typically involve communities around military installations, this JLUS is unique, as it involves Navy and other Department of Defense (DOD) organizations that operate as tenants at WFF, a NASA (non-DOD) facility.

Funding for the JLUS was provided by the DOD Office of Economic Adjustment (OEA) with the purpose to engage NASA, the Navy and Accomack County in ongoing collaborative efforts to preserve the mission capabilities of the Surface Systems Combat Center (SCSC) in its current strategic location as a primary tenant onboard WFF. NASA, Navy, and other DOD and Federal agencies onboard or operating from WFF are valuable assets to Accomack County, just as there

is great value in the location and facilities of WFF for the federal agencies. The partnership between NASA and the Navy has a particularly long history, and it is the desire of NASA, the Navy, and Accomack County to continue and preserve this arrangement.

The encroachment study also noted the lack of an Air Installation Compatible Use Zone (AICUZ) study for the Navy's use of the WFF airfield. The AICUZ Program is a planning tool developed and used by DOD to assist in compatible development analysis with respect to potential impacts from noise and accident potential. While the AICUZ Program is not formally applicable to other federal agencies such as NASA and consequently Wallops Flight Facility, its applicable APZ layout and noise zones were among several factors considered for this study, since the majority of current flight operations at WFF are DOD.

What are the primary goals of this JLUS?

The outcome of the collaborative efforts involved in development of this JLUS is to provide a planning tool for Accomack County. This planning tool includes recommended actions and strategies to inform future County policy-making decisions regarding compatible land use in order to accomplish the following primary goals:

- Protect the health, safety, and welfare of Accomack County residents living or working in potentially impacted areas surrounding the installation.
- Sustain the economic vitality of the Accomack County community.
- Promote a cooperative land use planning process where Accomack County collaborates with NASA, Navy and other DOD and Federal agencies onboard or operating from WFF to safeguard their mission capabilities, and in doing so, retain their critical economic value to the County.



Accomack County Comprehensive Plan Appendix B: JLUS EXECUTIVE SUMMARY

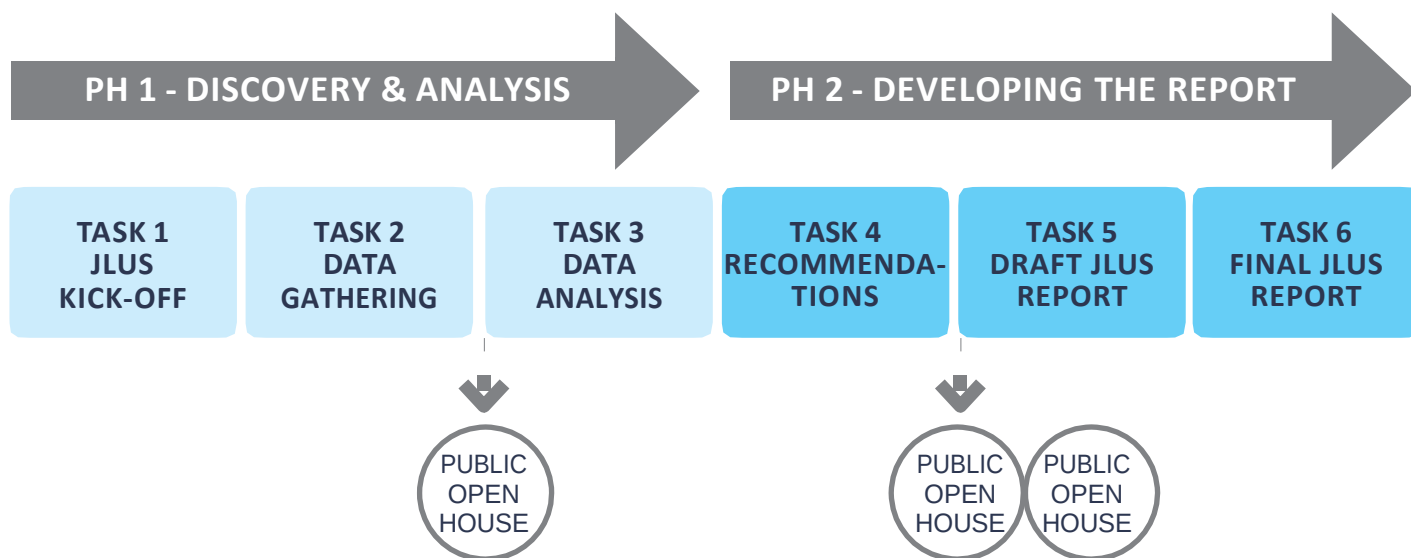


Figure. ES.1 - JLUS Development Process

- Ensure engagement of local private property owners in the land use planning process.

How was this JLUS conducted and who was involved?

Figure ES.1 depicts the JLUS development process.

A wide range of participants represented various stakeholder organizations and agencies as follows:

- Elected officials, Planning Commissioners, and staff for Accomack County and the Town of Chincoteague
- The Navy/SCSC and other DOD officials (including OEA representatives) and military installation personnel
- NASA WFF officials
- Local, regional, and state planning regulatory agencies, as well as land and water management agencies
- Environmental advocacy organizations
- Non-governmental organizations (e.g., Eastern Shore Defense Alliance)

- Other special interest groups
- Public landowners and other interested persons

Guiding committees included the Policy Steering Committee (PSC) and the Technical Advisory Committee (TAC). The PSC, comprised of various executive-level personnel, provided overall direction for the development of the JLUS (including approval of recommendations and the Draft and Final JLUS Reports) and is ultimately responsible for the document. The TAC consisted of local subject matter experts in installation planning and operations, local planners, community staff, local business and professional representatives, town and neighborhood representatives and others. This committee worked closely with the consultant, providing expertise in the development of the JLUS documentation.

The Accomack County community was brought into the process by means of three public information meetings, the JLUS website, and three published brochures. Those brochures are:

- An Informational Brochure to engage the public early in the JLUS process
- A Findings Brochure, identifying the incompatible land use issue discovered of the project team's research and the analysis results

Accomack County Comprehensive Plan Appendix B: JLUS EXECUTIVE SUMMARY

- A Recommendations Brochure, identifying proposed solutions and strategies to address existing and potential future incompatible land uses

What are the primary findings of this study?

As joint land use studies have been conducted in recent years, approximately 24 potential impact factors/issues have been identified, not all of which apply to each specific study. Of the broad range of potential issues, the Accomack JLUS project team identified a total of five for exploration and analysis, plus general recommendations. These five issues, plus general recommendations, are depicted by the following icons:



Three of the analyzed issues helped shape the overall operational footprint, where the potential conflicts exist between WFF operations and the surrounding Accomack County communities. Figure ES.2 depicts this WFF overall operational footprint, reflecting the three predominant issues - Aircraft Accident Potential Zones, Aircraft Noise Zones, and Rocket Range Hazard Area.

• **Aircraft Accident Potential Zones**

The Department of Defense (DOD) provides guidance for land use and population density at its air installations and in communities surrounding these installations. Considering public safety with respect to the potential for an accident, this guidance suggests land uses considered compatible with aircraft operations. Accident Potential Zones (APZs) are the areas where the greatest potential for aircraft accidents exists based on historical accident data, and the type and mission of the aircraft in use. See Figure ES.3, where the clear zones (shown in red), located immediately beyond the runways present the highest risk. Further from the end of the runway the risk diminishes in APZ 1 (orange) and diminishes further in APZ 2 (yellow). It is important to note that while APZ mapping is based on statistical evidence for the specific aircraft and mission,

accidents can occur outside the mapped APZs. The latest APZ mapping reflects changes since the publication of the 2008 Accomack County Comprehensive Plan. The clear zones have remained virtually unchanged; however the APZ1 & APZ2 zones have increased and cover just over 2,000 additional acres. This is due to the 2013 addition of Navy E2/C2 aircraft operations since the current APZ mapping is based on aircraft-specific data. Accomack County will ultimately determine if it wishes to adopt DOD APZ guidance.

Since the completion of the existing land use analysis phase of this study in May, 2014, site clearing and roadway construction at the WRP commenced and is nearing completion. This has the effect on the Existing Land Use mapping (refer to Appendix "F") of changing some areas shown as "Forestry" to "Undeveloped". However, since no buildings or structures have been completed at this time, the effect on the analysis with respect to land use compatibility is negligible.

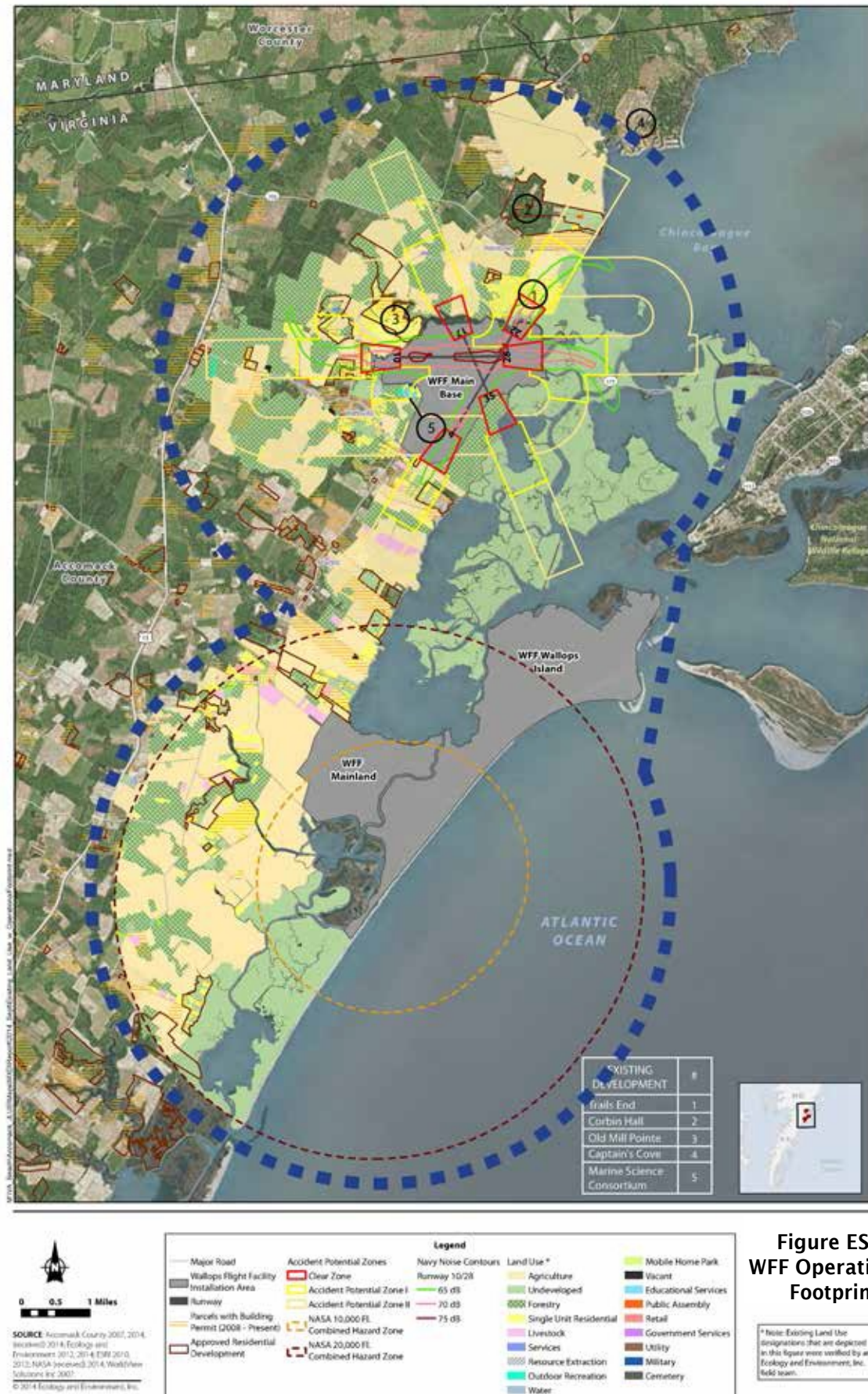
• **Aircraft Noise Zones**

The DOD air installation guidance also covers aircraft noise. Noise is unwanted sound measured in decibels. Noise contours, or the areas of various noise levels are described in "decibels DNL." DNL is a term to represent the average sound level generated by all aviation-related operations during a 24-hour period. Below the threshold of 65 decibels DNL, noise is considered relatively low. For example residential uses are not suggested in areas where aircraft noise is expected to exceed 65 decibels DNL, while recreational activities are not discouraged unless the noise exceeds 75 decibels DNL. Warehousing, agriculture, forestry, and fishing are considered compatible. The mapping of expected noise levels shown in Figure ES.4 is based on acoustic modeling. However, given variables such as weather, actual flight paths, etc., actual noise levels/locations may vary. Accomack County will ultimately determine if it wishes to adopt DOD aircraft noise guidance.

• **Rocket Range Hazard Area**

The rocket launches at WFF Wallops Island are not only a major catalyst to bring Government, academia and industry business and economic development to the Wallops area, but are also an attraction for both tourists and residents alike. Yet, these types of operations are inherently hazardous. As such, NASA develops and implements

Accomack County Comprehensive Plan Appendix B: JLUS EXECUTIVE SUMMARY



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Figure. ES.3 - WFF Accident Potential Zones

Accomack County Comprehensive Plan Appendix B: JLUS EXECUTIVE SUMMARY



Figure. ES.4 - WFF Aircraft Noise Zones

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Figure. ES.5 - WFF Rocket Range Hazard Area

Accomack County Comprehensive Plan Appendix B: JLUS EXECUTIVE SUMMARY

mission-specific safety plans to ensure the protection of both members of the public and their property for all of its launches. As shown in Figure ES.5, the Rocket Range Hazard Areas consist of concentric rings (arcs) centered on the two current and one future planned orbital launch pads. The smaller arc, at 10,000 feet, is NASA's planning level estimate for the area potentially requiring the most stringent controls, including clearing the zone of all people prior to launch, to protect the safety of the public and for the ability to launch. The actual hazard area requiring clearance is defined for each launch based on the specific hazards of that launch and historically have not exceeded 9,000 feet for Antares and Minotaur launches. The larger arc, at 20,000 feet, depicts an area that may be susceptible to range hazards that are largely dictated by atmospheric conditions on launch day. In contrast to the 10,000 foot arc, the 20,000 foot arc would not likely require complete clearance, rather select areas within it could require special consideration, such as ensuring that large groups of people are not present or that building occupants are not in front of single-pane windows at launch. NASA coordinates all hazard area information with local law enforcement officials, and those officials are responsible for any notification and evacuations that may be necessary to protect the safety of the public. The 10,000 and 20,000 foot arcs depict NASA's best estimate of the extent of launch hazard areas required for current planned and future missions. Recently the validity of these areas and the hazards experienced have been verified by the actual events and lessons learned from the ORB-3 rocket mishap October 28, 2014.

What are the Recommendations deriving from this study?

The following 15 recommendations and strategies were endorsed by the project leadership to address the five land use issues facing Accomack County, the Navy and NASA. They address both existing and future potential incompatible land uses.

SHORT TERM RECOMMENDATIONS



Establish an Accomack-Wallops Working Group.



Amend/Update the Accomack County Comprehensive Plan to incorporate information contained in this study.



Pursue available grants and/or supplemental funding sources for JLUS recommendations implementation.



Establish a process for mitigating existing incompatibilities within the WFF aircraft clear zones.



Establish a collaborative review process for requests relating to development of commercial wind turbines, cell towers, radio frequency emitters or structures.



NASA and/or Navy notify Accomack County and Working Group of offshore energy development to identify potential operational interference.

SHORT-TO-MID-TERM RECOMMENDATIONS



Establish a Rocket Range Hazard notification area and provide notifications of hazards associated with rocket launches.

MID TERM RECOMMENDATIONS



Establish a WFF Aircraft Operations Overlay District and amend the Accomack County Zoning Ordinance and Subdivision Ordinance for compatible land use in Clear Zone, APZ 1, and APZ 2, and other affected areas.



Adopt measures for early and full real estate disclosure with respect to properties located within aircraft accident potential and noise zones.

Accomack County Comprehensive Plan Appendix B: JLUS EXECUTIVE SUMMARY

Pursue Commonwealth of Virginia legislation to amend 55-517/55-519 (Required disclosures) to include military aircraft operations on non-military airfields.



Provide information regarding incentives for retrofits to windows on existing buildings within the Rocket Range Hazard Area.



Encourage the application of noise attenuation measures within the aircraft noise zones as part of the permitting process for new construction.

LONG TERM RECOMMENDATIONS



Develop a plan for mitigating and/or accommodating the effects of recurrent flooding, storm surge events, and sea level rise for the Navy, NASA, and Mid-Atlantic Regional Spaceport (MARS)/VCSFA facilities on WFF Wallops Island.



Develop a plan for mitigating and/or accommodating the effects of recurrent flooding, storm surge events, and sea level rise for the coastal areas of Accomack County within the study area.

ON-GOING RECOMMENDATIONS



Provide an annual update to the Accomack County Board of Supervisors regarding JLUS implementation progress.



Update the Accomack County GIS database with JLUS Report data following adoption by the County Board of Supervisors.



Accomack County Comprehensive Plan Appendix C: JLUS RECOMMENDATIONS RECOMMENDATIONS & STRATEGIES

This chapter of the Joint Land Use Study provides the project leadership's recommendations and strategies for addressing existing and potential future incompatible land uses between the WFF operations and the surrounding Accomack County community.

Recommendations and strategies are identified and discussed for each of the five major compatibility issues presented in Chapter 4. Additionally, recommendations and strategies of a general nature are provided. A total of fifteen recommendations are developed and identified with respect to category (communications, plans, regulations, legislation, etc.). The recommendations provided here include a range of options for the community to consider for implementation should it desire to do so.

Recommendations are discussed in order of anticipated time frame required for successful accomplishment.



Aircraft Accident
Potential Zones



EMI & Radar
Interference



Range Hazard
Area



Coastal
Resiliency



Noise Zones



General
Recommendations

5.1 SHORT - TERM RECOMMENDATIONS

5.1.1 Establish an Accomack-Wallops Working Group (AWWG)



• Context

The intent is to provide an advisory body to support and track implementation of the JLUS recommendations and ongoing County-WFF-based agencies collaborative strategies and actions. Establishing this group highlights the need for ongoing collaborative efforts between the County, NASA, the Navy, other DOD and VCSFA officials, and the other agencies/organizations for the long term. The current collaborative relationship between WFF and the County will be enhanced by being given more structure. The new structure would be an effective forum for communication, development, and mitigation efforts for collaborative compatibility planning into the future. The AWWG would serve as a two-way communications forum, dealing with County Development and Wallops Operations matters. Development plans in areas surrounding WFF, WFF mission operations changes, and other related matters would be communicated and potential impacts addressed collaboratively. The AWWG would provide advisory level input and support to the County Planning Commission and Board of Supervisors.

• Action

Accomack County is to take the lead role in implementing this recommendation. In addition to the County, the AWWG would have resource partners including: NASA, DOD, the Navy, VCSFA, Town of Chincoteague, DOI/USFWS, and A-NPDC. Other entities or agencies could be brought into discussions as applicable (e.g., Chamber of Commerce, business groups, realtors, property owners, etc.). Because a working relationship already exists between the County and primary partners, establishing the AWWG to further cultivate the working relationships is considered easily attainable in the short term.

An example of AWWG usefulness in addressing compatibility issues would be coordinating a public forum to give local residents with properties in or close to APZs the opportunity to have the appropriate agencies provide responses to their specific questions.

This recommendation is timely, given the heightened interest at both the local and state level in retaining federal and military activities in an era of reduced federal spending. The economic impact, particularly in Coastal Virginia, is significant. This is evident at the state level, with the creation of the Commission on Military Installations and Defense Activities (CMIDA) in March, 2013. The Commission's 2013 Initial Report outlines 20 recommendations - two of which are "Encourage Joint Land Use Studies" and "Mitigate Effects of Encroachment". (CMIDA 2013).

Accomack County Comprehensive Plan Appendix C: JLUS RECOMMENDATIONS

5.1.2 Amend/Update the Accomack County Comprehensive Plan to incorporate information in this study.



- **Context**

This action captures pertinent information from the JLUS Report for incorporation in the Accomack County Comprehensive Plan update. The update would make use of such JLUS Report information as the updated aircraft APZ and noise contour data, updated rocket launch range hazard data, EMI and radar interference data, and associated mapping. The updated data would serve to enhance County planning efforts with respect to land use compatibility in areas surrounding WFF well into the future.

- **Action**

Accomack County would have the lead role, with the support of resource partners from the various groups represented in the AWWG. A critical resource document is the Commonwealth of Virginia Senate Bill 1029 (2013) that requires local planning commissions to consult with military installation officials when locality development plans may have adverse effect the installation. Much of the information in this study relates directly to information in the County's Comprehensive Plan. For instance, updating the WFF APZ information, including AICUZ noise zones, adding a discussion of EMI concerns, etc. could all be included in the Comprehensive Plan update.

5.1.3 Pursue available grants and/or supplemental funding sources for JLUS recommendations implementation



- **Context**

The ability to obtain grants or other supplemental funding will greatly assist in implementing the JLUS recommendations. For implementation to be effective for many of these recommendations and strategies, this kind of assistance will be necessary. This is especially true given the limited resources and the realities of the County's available budget, programs and grants. Some valuable resources that can be considered are OEA Economic Adjustment, and the Catalog of Federal Domestic Assistance (CFDA).

- **Action**

This effort would be spearheaded by the AWWG, tapping the varied experience and contacts available from the agencies represented on this group. Assuming establishment of the AWWG takes place in the very near future, implementation of this recommendation is feasible in the short term.



5.1.4 Establish a process for identifying County strategies to address incompatibilities within the WFF aircraft clear zones



- **Context**

In seeking to promote compatible land use in the areas surrounding the WFF, both existing and potential future land uses should be addressed. This recommendation addresses existing incompatibilities in the clear zones for which a structured process for mitigation is needed. The process would include developing a clear zone strategic action plan that identifies and prioritizes critical incompatible properties, on parcel-by-parcel basis; developing strategies to address the existing incompatibilities; and recommending appropriate actions to discourage operational encroachment. Examples of this strategic action plan include Encroachment Action Plans (EAPs), Clear Zone/APZ Master Plans, etc. There are approximately 75 acres located within the aircraft operational clear zones.

Accomack County Comprehensive Plan Appendix C: JLUS RECOMMENDATIONS

- **Action**

NASA, DOD, and Accomack County are all critical resource partners for this effort. The lead role for implementing this recommendation will be determined by the AWWG. The DOD Instruction 4165.57 Air Installations Compatible Use Zones (AICUZ) and current NASA guidance will be used as technical resources for this initiative. Implementation of this recommendation involves establishment of a process for addressing incompatibilities, not the actual accomplishment of mitigation of existing incompatibilities. This will provide guidance and support for the potential mitigation to the appropriate partner organizations responsible for implementation. This is the basis of considering this to be a short term effort.

For graphical depiction of the clear zones with reference to existing incompatible land use, see Figures 2.14 (p. 35), 4.6 (p. 67), and 4.7 (p. 69). See Appendix F for magnified depiction of impacted areas.

5.1.5 Establish a collaborative review process for requests relating to development of wind turbines, cell towers, radio frequency emitters or structures



- **Context**

This recommendation is intended to discourage the permitting of structures that may cause electromagnetic or radar interference that would adversely impact DOD or NASA mission operations on or associated with the WFF. It is also intended to encourage compatible siting for such development by recommending alternative compatible sites. To effectively determine compatible sites, a collaborative effort between the County, NASA, the DOD, and the Town of Chincoteague will be needed. A change in forms/questionnaires for requestors represents a likely help to identify potential RF emitter sources. As these requests are received, three primary factors considered are power level, frequency and height. Airport overlay districts are typically used by the FAA for approval of requests for developments with potential impact on aircraft operations.

- **Action**

The anticipated lead role is the AWWG, with critical support from the following resource partners: DOD, NASA, Accomack County, and the Town of Chincoteague. The primary resources, however, for reviewing energy development requests will continue to be the established NASA processes for proposal reviews and the DOD Siting

Clearinghouse. This recommendation is intended to establish a process to enhance communications. Therefore, assuming near future establishment of the AWWG, implementation is anticipated in the near term.

5.1.6 NASA/Navy notify Accomack County and AWWG of offshore energy development to identify potential operational interference



- **Context**

The intent of this recommendation is to ensure Accomack County is kept apprised of offshore energy development requests as DOD and NASA seek and support useful opportunities for offshore energy developments, while discouraging initiatives that would adversely impact DOD and NASA mission operations at or associated with WFF.

- **Action**

The lead role for this coordinative effort would be the AWWG, with DOD, NASA, Accomack County, and the Town of Chincoteague as resource partners. The established NASA policy and the DOD Siting Clearinghouse are the primary resources for this recommendation as they are tasked to review alternative energy requests, each via their own independent formal processes for proposal reviews. The DOD process is delineated on the DOD Siting Clearinghouse website. Short term implementation is anticipated since the primary enabling action required is the establishment of the AWWG.

Accomack County Comprehensive Plan Appendix C: JLUS RECOMMENDATIONS

5.2 SHORT- TO MID-TERM RECOMMENDATIONS

5.2.1 Establish a range hazard notification area and provide notifications of hazards associated with rocket launches



- **Context**

This recommendation aims at providing an effective tool for increasing awareness and for enhancing notifications of potential rocket launch hazards in the range hazard area. Rocket launches at WFF Wallops Island are inherently hazardous and to meet NASA's range safety criteria, the risk to persons and property must be within acceptable limits. Potential hazards include (1) Within the 10,000 feet arc, debris and direct blast in the event of rocket launch failure on the launch pads or immediately after launch and (2) within the 10,000 feet arc, but also the 20,000 feet arc, dissipated toxic propellant vapors and shattering of windows due to overpressure from a launch failure near the pad.

Safety notifications are a key strategy to mitigating these potential hazards. NASA's existing, robust notification process would be enhanced and would involve three components as follows:

1. **Real Estate Disclosure:** Involves notification when real estate transactions occur for properties located within the range hazard area. These notifications would be provided by the County and would address the potential hazards and impacts associated with rocket launch events. As there are no known precedents to date with respect to rocket launch facilities, Virginia enabling legislation requiring full real estate disclosure may be pursued by NASA and the County as a next step.
2. **Building Permits/Future Construction:** Involves notification of potential hazards within the range hazard area and suggests recommended construction materials and methods to help mitigate those hazards. This notification would occur when applications are submitted for building permits.
3. **Launch Emergency Notification System (ENS):** Involves pre-launch notifications to people within the range hazard area. NASA would work with the County to coordinate and utilize the County's Code Red notification system, and work with them to take advantage of future notification technologies.

An additional (or next) step for mitigating the impact of rocket launch hazards would be to amend the existing

County Zoning Ordinance and Subdivision Ordinance. This option encourages compatible land use within the rocket launch hazard area, using the County's zoning and subdivision ordinances. This step would also require enabling legislation, as there are no known precedents around other NASA launch facilities where compatible land uses are defined and/or regulated within the range hazard area.

- **Action**

Accomack County would assume the lead role for implementation, with NASA as a critical resource partner. Several resources (documents, agencies, systems, etc.) needed for implementation are as follows: NASA Range Safety Manual; Accomack County Comprehensive Plan; the potential to integrate with County Code Red Notification System; and the Virginia Commercial Space Flight Authority (VCSFA). Because the resources required to implement are available, efforts to utilize them effectively to accomplish the intended notifications are expected to make implementation possible for the mid-term, and possibly in the short-term.

For magnified graphical depictions of the range hazard area and the land uses within it, see Appendix G map series.

5.3 MID-TERM RECOMMENDATIONS

5.3.1 Establish a WFF Aircraft Operations Overlay District and amend the Accomack County Zoning Ordinance and Subdivision Ordinance for compatible land use in Clear Zone, APZ 1, APZ 2, and other affected areas.



- **Context**

This recommendation serves to establish an effective tool for managing development in areas surrounding WFF with respect to public safety and population density issues. It would enhance the ability to provide specific compatibility guidance for land development within the overlay district and implement other JLUS recommendations. This district would be comprised of all areas within the County's jurisdiction that lie within the WFF Main Base airfield operational footprint, including clear zones, APZ 1 and APZ 2; and potentially areas outside the currently mapped accident potential zones if sufficient rationale exists to warrant inclusion. This district would be distinct from the existing Airport Overlay District in that it relates

Accomack County Comprehensive Plan Appendix C: JLUS RECOMMENDATIONS

specifically to safety and population density as well as WFF aircraft operations encroachment issues. Establishing this overlay district would encourage compatible land uses by utilizing both DOD AICUZ guidance (as shown in Table 5.1) and NASA guidance as resources.

• **Action**

Accomack County would take the lead role in implementing this recommendation, with DOD and NASA as primary resource partners whose subject matter expertise is invaluable. The primary technical source documents that would inform/guide this effort are the DOD Instruction 4165.57 Air Installations Compatible Use Zones (AICUZ) and current NASA safety guidance. Additionally, implementation of this recommendation would provide a valuable tool for pursuing compatible land use in the future, providing an incentive for accomplishment. These two factors support an anticipated mid-term time frame for accomplishment.

For graphical depictions of APZs with reference to existing zoning and future land use, see Figures 4.8 (p. 71), 4.9 (p. 75), and Appendices E and F.

Table 5.1 provides a general reference summary of compatible land uses in APZs.

Table 5.1 DOD-Recommended Land Uses for APZ
DOD Recommended Land Uses for APZ:

CLEAR ZONE	APZ 1	APZ 2
Agricultural (non-livestock)	Agricultural	Agricultural
	Heavy Industrial	Heavy Industrial
	Recreational/ Parks	Recreational/ Parks
	Forestry	Forestry
		Commercial
		Personal Services
		Residential (Single Units, detached)

Note: Public gathering places are discouraged in APZs

5.3.2 Adopt measures for early and full real estate disclosure with respect to properties located within aircraft accident potential and noise zones. Pursue Commonwealth of Virginia legislation to amend 55-517/55-519 (Required disclosures) to include WFF aircraft operations on the WFF Main Base airfield



• **Context**

Currently state legislation addressing military air installations is not applicable to WFF since it is not a military installation. The intent of this recommendation is to enable the applicability of AICUZ data as guidance for the WFF Main Base Airfield in order to facilitate appropriate requirements for real estate disclosure. The guidance would be based on both NASA and DOD/Navy AICUZ guidance for these zones as presented in the JLUS Report and consistent with the proposed WFF Aircraft Operations Overlay District.

This recommendation specifically includes action to pursue special legislative enablement for the applicability to WFF Main Base of military notification requirements per Virginia Statutes 15.2-2200, 15.2-2201, 15.2-2204, and 15.2-2211, revised 2013 (3,000-foot boundary notification). This could be accomplished by redefining “military air installations.” The critical issue is notification with respect to the WFF airfield for which the preponderance of operations involves military operations, although it is classified as a non-military airfield.

• **Action**

Accomack County and NASA would share the lead role for implementation, with the DOD as a resource partner. The following Virginia legislation applies:

Because implementation of this recommendation requires state-level legislative action to enable its enforceability, a short-term attainment is not possible. Mid-term accomplishment is, however, a possibility only because this is not just a local issue, but much broader, and could receive supportive attention.

For graphical depiction of APZs and noise zones, see the following: Figures 2:14 (p. 35), 2:15 (p. 37), 4.8 (71), 4.9 (75), 4.14 (p. 93), and Appendix F.



• **Action**

Accomack County would take the lead role, with NASA as primary technical resource partner. Resource documents include the Accomack County Comprehensive Plan and NASA's Range Safety Manual. A further resource agency is the VCSFA. A mid-term accomplishment is viewed as possible since the recommendation involves research and communication of findings, not actual installation of potential retrofits.

For magnified graphical depictions of the range hazard area and properties located under the arcs, see the Appendix G map series.

5.3.4 Encourage the application of noise attenuation measures within the aircraft noise zones as part of the permitting process for new construction



• **Context**

This recommendation supports the promotion of compatible land use in the areas surrounding the WFF with respect to noise. The means of doing so is via the permitting process by notifying requestors of potential noise impacts for properties within the 65 decibels DNL or greater noise contours.

• **Action**

Accomack County would assume the lead role, with support from DOD and NASA as technical resource partners. The technical information resources that would be communicated to requestors are the DOD Instruction 4165.57 Air Installations Compatible Use Zones (AICUZ) and NASA guidance. Mid-term accomplishment is viewed

5.3.3 Provide information regarding incentives for retrofits to windows on existing buildings within the range hazard area



• **Context**

Incentives for property owners to install replacement windows capable of withstanding the effects of rocket launches would be a valuable resource. Currently there are no known incentives. This recommendation involves research of viable solutions and incentive sources. Findings would be communicated to property owners within the rocket launch range hazard area. Ultimately this supports land use compatibility within the range hazard area and simplifies NASA's pre-launch notification efforts.

Table 5.2 DOD-Recommended Land Uses for Noise

75-79 db DNL	70-74 db DNL	65-69 db DNL
Agricultural	Agricultural	Agricultural
Industrial	Industrial	Industrial
Commercial	Commercial	Commercial
	Recreational/ Parks	Recreational/ Parks
	Schools	Schools
	Hospitals	Hospitals
		Forestry

Note: Residential is discouraged for noise zones 65 db DNL or greater

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as probable, since it depends primarily on technical data support from DOD and NASA involving precedent noise attenuation measures used in similar JLUS locations nationwide.

For graphical depiction of the noise contours associated with WFF Main Base airfield operations, see Figure 4.13 (p. 91) and Figure 4.14 (p. 93).

Table 5.2 provides a general reference summary of compatible land uses in aircraft noise zones. Detailed guidance is provided in Appendix E.

5.4 LONG TERM RECOMMENDATIONS

Although the two recommendations included in this time frame are expected to experience full implementation in the long term, it is vital to their realization that communications and collaborative planning for their future implementation begins now, with ongoing efforts, until sufficient information is provided to serve as the basis of their formulation.

5.4.1 *Develop a plan for mitigating and/or accommodating the effects of recurrent flooding, storm surge events, and sea level rise for the Navy, NASA, and MARS/VCSFA facilities on WFF Wallops Island*

• Context

Numerous groups/initiatives are aggressively exploring the impacts of recurrent flooding, storm surge events and sea level rise on coastal areas. The findings to date indicate serious challenges to the resiliency of these coastal areas. This recommendation encourages the use of the findings, conclusions and recommendations of the various pertinent studies to formulate a coordinated mitigation plan. This plan is vital to ensure integration of County, NAVY/SCSC, NASA, USFWS, and NOAA mitigation planning initiatives. The mitigation plan would take into account the latest data available (flood maps, sea level rise, etc.). The plan will incorporate concrete mitigation actions and even potential contingency actions, such as relocation plans for the Navy, NASA, MARS/VCSFA and other agency facilities located on WFF Wallops Island. The mitigation plan will also incorporate planning actions for transportation and other critical infrastructure critical to WFF operations.



• Action

NASA, Accomack County and the A-NPDC would coordinate the implementation of this recommendation. Critical partners in the effort are the Navy, the DOD, MARS/VCSFA, and MACRI. Resource studies, legislation or agencies/groups such as the following would be valuable:

- Virginia Subpanel on Recurrent Coastal Flooding MACRI / Climate Adaptation Science Investigation Update
- Virginia Senate Bill 964
- Executive Order 11988 (Federal)
- Executive Order 13690 (Federal)
- The Navy's Task Force Climate Change
- Recurrent Flooding Study for Tidewater, Virginia, Center for Coastal Resources Management, VIMS
- Eastern Shore of Virginia Climate Adaptation Working Group
- Recurrent Flooding Study for Tidewater, Virginia, Center for Coastal Resources Management, VIMS

Implementation is expected to be attainable in the long term for the reasons provided in the previous recommendation.

5.4.2 *Develop a plan for mitigating and/or accommodating the effects of recurrent flooding, storm surge events, and sea level rise for the coastal areas of Accomack County within the study area*

• Context

The previous recommendation focused on federal facilities located on WFF Wallops Island. This recommendation has the same intent with respect to Accomack County coastal areas within the study area. As with the previous recommendation, this recommendation uses the results of the ongoing studies in forging a well-coordinated plan for addressing the impacts of recurrent flooding, storm surge events, and sea level rise on coastal Accomack County. This plan is vital to ensure mitigation planning initiatives cover Accomack County coastal areas within the study area.

As with the previous recommendation, the mitigation plan will take into account the latest data available (flood maps, sea level rise, etc.). The plan will incorporate concrete mitigation actions for affected coastal areas in the study area. The planning actions should also incorporate mitigation plans for transportation infrastructure critical to local residential and business accessibilities.



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- **Action**

The coordinative role for implementation would belong to Accomack County and A-NPDC, with support from the following partners: The Town of Chincoteague, MACRI, USFWS/DOI, TNC and NOAA. Resource studies, legislation or agencies/groups such as the following will be valuable:

- MACRI/Climate Adaptation Science Investigation Update
- Accomack-Northampton Planning District Commission
- Virginia Subpanel on Recurrent Coastal Flooding
- Virginia Senate Bill 964
- Recurrent Flooding Study for Tidewater, Virginia, Center for Coastal resources Management, VIMS
- Eastern Shore of Virginia Climate Adaptation working Group

Implementation is expected to be attainable in the long term for the reasons provided in the previous recommendation.

5.5 ON-GOING RECOMMENDATIONS

5.5.1 *Provide an annual update to the Accomack County Board of Supervisors regarding JLUS implementation progress*



- **Context**

In order to continue to engage the public in efforts to maintain land use compatibility in areas surrounding WFF following completion of this JLUS, the intent of this recommendation is to provide (at a minimum) annual JLUS implementation status via the public forum of the Accomack County Board of Supervisors meetings.

As an extension of the JLUS public participation plan, this effort represents an attempt to enhance continued connectivity with the community for implementation actions for JLUS recommendations. As JLUS implementation issues come before the Board of Supervisors, the information would be accessible to the public, since these meetings are open to the public.

- **Action**

Implementation would be an ongoing effort led by the Accomack County Planning Department. Resource partners in this effort would include Navy/SCSC, DOD, NASA, VCSFA & other agencies participating with the AWWG. Additionally, the Accomack County official website is an available communication medium for JLUS implementation status. Implementation is intended to take place regularly as an ongoing versus one-time effort.

5.5.2 *Update the Accomack County GIS database with JLUS Report data following adoption by the County Board of Supervisors*



- **Context**

The intent of this recommendation is to enhance the County's tools for monitoring land use changes in the WFF operational footprint. Spatial data developed for the JLUS Report is valuable for foreseeable future land management in the WFF operational footprint. Updating the Accomack County GIS database with the JLUS Report land use data set and APZ and noise zone updates is a useful start. Further, maintaining this database for the region into the future will provide an ongoing resource for data collection and updating of GIS data, enabling accurate analysis for the County, WFF activities, and the AWWG. Most importantly, continued sharing of GIS data between the JLUS partners will assist in monitoring future land use changes, their impacts on compatibility, and the consistent communication of this information.

- **Action**

Accomack County has the lead role in implementation, with DOD and NASA as resource partners. Though near-term implementation actions are feasible, the intent of this recommendation is to provide a continual sharing and updating of data.

APPENDIX C

Five Year Update Amendment

The Following Sections were Updated or Added thru this Amendment:

<u>SECTION</u>	<u>STATUS</u>	<u>PAGE</u>
Executive Summary – Vision for the Future	Updated	C-2
Chapter 6 – Demographics	Updated	C-2
NEW SECTION – Education	Added	C-3
NEW SECTION – Trends in Agriculture/Rural Counties	Added	C-8
NEW SECTION – Economic Development	Added	C-11
Chapter 6 – Coastal Resiliency	Updated	C-17
Chapter 6 – Review of Future Land Use Map (FLUM)	Added	C-20

Adopted by the Board of Supervisors

On October 17, 2018

Vision for the Future (Executive Summary)

Accomack County is a rural place, consisting of a mixture of agricultural, forestal, coastal, commercial, residential and industrial land uses. We desire economic development that is compatible with and adds value to our rural economy. Economic growth is market appropriate for the Eastern Shore and is located along Lankford Highway (Route 13) and Chincoteague Road (Route 175) so that the undeveloped agricultural, forestal and coastal areas of Accomack County are preserved. The areas surrounding existing towns and villages are appropriate locations for a traditional development pattern of residential and light commercial growth in a manner consistent with the existing character of each town or village.

Our history, culture, geography, location, and people define who we are and what we value.

Demographics (Chapter 6)

The 2010 census data revealed a population of 33,164 people in Accomack County, which is lower compared to the population of 38,305 people recorded in the 2000 census data. **The U.S. Census QuickFacts for Accomack County, which contains updated estimates through July 2017, can be viewed at the following link:**

<https://www.census.gov/quickfacts/fact/dashboard/accomackcountyvirginia,US/PST045217>

In July 2017, the Weldon Cooper Center (WCC) released population projections for the Commonwealth of Virginia and information specific to Accomack County was provided, which are shown below. The WCC data shows the population remaining relatively static except in the year 2040, where it projected a decline of over 20% from its prior projections in November 2012.

2010 Census	2020 (WCC)	2030 (WCC)	2040 (WCC)
33,164	33,775	30,369	26,615

The following is a comparison between the 2030 population projections in the 2008 Comprehensive Plan, the Weldon Cooper projections that were released in November 2012 and were adopted as part of the 2014 Amendment to the Comp Plan, and the Weldon Cooper projections that were released in July 2017.

2030 Population Projections (2008 Comprehensive Plan)	2030 Population Projections (Weldon Cooper Center – November 2012)	2030 Population Projections (Weldon Cooper Center – July 2017)
46,500	33,568	30,369

Other noteworthy information from the 2010 census and 2012 and 2017 Weldon Cooper population projections are as follows:

- A percentage increase of residents age 55 or over and a slightly declining birth rate in the coming decades indicates that Accomack County has an aging population.
- The Hispanic population in Accomack County is increasing.
- On a percentage basis, the White and Black populations in Accomack County are decreasing while other race populations are increasing.

The Weldon Cooper Center population projection data can be viewed at the following link:
<http://www.coopercenter.org/demographics/virginia-population-projections>

Based on the 2010 Census and the 2012 and 2017 Weldon Cooper Center population projections indicating a consistent projection for the next 20 plus years, no adjustments to the Future Land Use Plan Map are necessary.

EDUCATION

Accomack County Public Schools

Our Mission: The Mission of Accomack County Public Schools is to provide a safe, engaging student-centered environment where all learners are challenged, encouraged, and supported to maximize growth and be prepared for further education, citizenship and work.

Our Vision: Accomack County Public Schools will be a community of diverse learners where all members are valued, challenged, and expected to grow.

Our Goals

Goal 1: Ensure students graduate with the knowledge and skills to be successful in further education and the workforce.

Key Strategies:

Engage all students in authentic, rigorous work.

Expand opportunities for students to explore and pursue career opportunities.

Ensure students enter the 9th grade with the knowledge, skills, necessary support, guidance, and a plan to succeed in a course of study leading to further education and entry into the workforce.

Ensure students connect what they have learned with new learning by aligning the curriculum vertically.

Goal 2: Close gaps in achievement.

Key Strategies:

Use observational and student growth data to improve teaching and learning for all membership groups.

Implement a learning community model to improve collaboration, effectiveness, and student outcomes.

Ensure inclusion model and English-language learner support structures are effectively implemented.

Respond to instructional audit recommendations, ensuring identified practices are in place.

Goal 3: Recruit, develop, and retain high quality teachers, administrators, and support staff.

Key Strategies:

Expand and enhance recruiting efforts.

Develop, implement and refine a three-year induction program for novice teachers.

Identify professional development priorities, aligning processes and resources.

Research, identify, and implement additional strategies to improve retention in critical need areas.

Implement performance-based evaluation systems for all employees.

Goal 4: Institute a continuous improvement process to ensure effectiveness and competitive performance.

Key Strategies:

Establish and implement a well-defined process for universal strategic planning at the division, department and school levels, including performance measures.

Conduct program and department audits.

Goal 5: Establish efficient, transparent systems for the allocation and alignment of resources to support the division's vision, mission, and goals.

Key Strategies:

Develop and implement division-wide staffing formulas for all departments.

Benchmark, analyze, develop, and implement revised compensation model.

Plan use and allocation of operational and grant funds in an integrated manner.

Eastern Shore Community College

Eastern Shore Community College (ESCC) is a member of the Virginia Community College System (VCCS) and serves the residents of Accomack and Northampton Counties as a two-year institution of higher education. Originally a branch of the University of Virginia, the institution joined the Virginia Community College System in 1971. The college was accredited and granted membership in the Southern Association of College Schools Commission on Colleges (SACSCOC) in 1973 and moved to its current location in Melfa on approximately 115 acres in 1974.

The current academic and administration building includes classrooms, laboratories, a bookstore, a lecture hall, administrative offices, a student lounge, and a Learning Resources Center/Library. However, space is limited and the ability to expand course offerings is restricted; therefore, ESCC broke ground on a new \$20 million academic and administration building in fall 2017. This project will allow the ESCC to expand its program offerings and provide for a Technical Programs Innovation Lab to better meet the changing demands of local business needs for training and certifying individuals in technical fields.

The Business Development and Workforce Training Center opened in January, 2009 and houses Workforce Development Services including: occupational trade areas, allied health programs, industrial technology programs and employer training programs. The Workforce Development Program is able to develop customized contracted training for an organization or business; offers classes in general business basics (computer program usage, bookkeeping), and provides classes

or on-line access to classes that are required to obtain state certifications in the building trades which otherwise would require travel to the Hampton Roads region over multiple weeks for this certification.

Eastern Shore Community College offers associate degree programs, certificate programs and career study certificate programs. Currently, there are (5) associate of applied science degrees (AAS), (5) associate of arts and sciences degrees (AA&S), these degrees are commonly referred to as the “transfer degree” programs, (5) certificate programs and (9) career studies certificate programs (CSC) from which to choose a field of study.

Below is the enrollment for 2010 – 2016 by program and indicating participation by each academic year by Full Time Participants (FTE) as well as all part-time or casual participants (HC). This information supports the need for maintaining the ESCC as an option for continuing education for our residents and provides the ability for our residents to pursue certification and employment goals in fields that require supplemental training and certification, particularly in the building and trades industry and the medical support industry.

ENROLLMENT BY PROGRAM TYPE: CURRICULUM ENROLLMENT

CURRICULUM	FALL 2016		FALL 2015		FALL 2014		FALL 2013		FALL 2012		FALL 2011		FALL 2010	
AA & S	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE
Business Admin	28	17	33	23	44	31	43	29	40	28	60	38	45	35
Education	24	16	21	14	32	21	29	18	40	25	40	28	36	27
General Studies	70	43	67	46	84	52	99	60	118	72	132	82	154	104
Liberal Arts	65	45	74	53	69	45	71	49	85	62	100	77	66	53
Science	82	47	93	52	108	69	131	79	110	66	126	77	139	83
Sub Total	269	168	288	188	337	218	373	235	393	254	458	304	440	302
AAS	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE
Info. Systems Tech.	2	1	2	1	6	2	6	3	4	2	7	5	3	1
Management	26	13	29	15	32	18	40	25	33	21	34	22	42	29
Management-IST	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Early Childhood Ed	27	16	29	17	37	19	55	32	65	37	57	35	44	31
Electronics Tech	20	14	23	15	21	14	18	12	33	20	26	18	22	17
Sub Total	75	44	83	48	96	53	119	72	147	89	137	89	128	92
CERTIFICATES	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE
Electronics	1	0	2	1	5	4	4	3	2	1	1	0	3	2
Industrial Main.Tech	11	7	12	7	16	11	16	12	16	11	10	8	8	5
Medical Assisting	33	24	34	26	30	18	34	18	51	32	45	31	61	42
Practical Nursing	30	16	38	22	58	31	58	29	47	30	69	44	60	35
Welding	9	5	9	5	16	8	18	12	11	6	11	7	15	8
Sub Total	84	52	95	61	122	72	130	74	135	86	155	103	167	159

CAREER STUDIES CERTIFICATES (CSC)	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE
Early Childhood Dev.	-	-	-	-	2	1	-	-	1	0	7	2	3	1
Electricity (new 2014)	3	2	-	-	3	2	-	-	-	-	-	-	-	-
HVAC	4	2	3	1	9	5	7	3	8	3	18	7	16	6
Long-Term Care Assistant	7	4	11	5	16	7	13	4	12	5	15	6	10	4
Med. Admin. Office Specialist	1	0	-	-	-	-	2	1	5	3	4	2	-	-
Med. Code.& Bill Specialist	3	1	14	6	2	0	5	2	1	0	3	1	2	1
Small Business Manage.	1	0	1	0	1	0	1	1	1	1	1	1	1	1
Welding	3	1	4	2	4	2	10	6	8	4	4	3	3	1
Sub Total	23	10	33	14	37	18	39	18	40	19	54	24	38	15

ESCC also partners with the local secondary school systems on the Eastern Shore to offer high school students who are college-bound to enroll in selected courses for college credit; this category is known as dual enrollment and the participation rate is provided below for 2010-2016. The level of students accessing this program has remained relatively consistent and is funded as part of the operating costs of the local school system.

UNDUPLICATED DUAL ENROLLMENT BY HIGH SCHOOL: ANNUAL

HIGH SCHOOL	2016- 17	2015- 16	2014- 15	2013- 14	2012- 13	2011- 12	2010- 11	2009- 010
Arcadia HS	78	89	105	54	77	127	100	71
Chincoteague HS	29	11	18	5	23	5	42	3
Nandua HS	99	108	92	74	75	78	65	77
Tangier Combined	3	6	-	3	-	8	0	4
Sub Total: ACCOMACK County	209	214	215	136	175	218	207	152
Northampton HS	20	12	38	34	36	41	42	38
Broadwater Academy (private)	30	30	39	37	42	80	82	76
GRAND TOTAL	259	256	292	207	253	339	331	266

For 2016/2017, there were 929 students enrolled at ESCC. Of that total, 325 were enrolled in transfer programs (AA&S), 269 were enrolled in Career and Technical programs (AAS) or the certificate programs and the career studies certificate programs (CSC), and 334 students were enrolled as unclassified. Additionally, there were 259 high school students (unduplicated) enrolled in the dual enrollment program. Below is the enrollment for the last ten years between those seeking an associate's degree (Annual FTES) versus all other part-time or casual participants. There has been some decline of participants in both categories, which may be reflective of the

declining population of the Eastern Shore or could be attributable to other causes such as cost or interest. The county will need to work closely with the ESCC to monitor and understand the participation rates and ensure that the ESCC remains viable to the community.

Academic Year	Unduplicated Headcount	Annual FTES
2016-2017	929	382
2015-2016	987	417
2014-2015	1,131	489
2013-2014	1,142	511
2012-2013	1,338	591
2011-2012	1,381	640
2010-2011	1,461	688
2009-2010	1,446	662
2008-2009	1,332	577
2007-2008	1,215	542
2006-2007	1,106	486
2005-2006	1,103	444

The breakdown of the type of student is useful in examining how best to approach and ensure the ESCC is meeting the needs of our community. The table below shows an increasing participation from individuals with military service and a consistent option for first time college participants.

STUDENT TYPE

TYPE	Fall 2016	Fall 2015	Fall 2014	Fall 2013	Fall 2012	Fall 2011	Fall 2010
Returning	443	542	562	626	681	721	705
New	243	186	248	192	265	250	300
Transfer	19	17	29	39	44	51	47
First Time in College	136	131	146	157	167	205	195
Military	50	68	79	77	84	25	29

ESCC is an essential component of the county's educational system, providing first-time entry into college for some as well as increasing preparedness for those looking at a four-year degree program. It also develops workforce training, dependent upon the needs of the business community and employment needs of our residents. The county needs to continue working with the ESCC to determine the effectiveness of its program offerings and assist as a conduit to its business community to determine what skills, certification or training are needed to ensure the employee base is available for growth and expansion of our businesses.

TRENDS IN AGRICULTURE/RURAL COUNTIES

We have looked nationally and statewide and are not seeing any obvious trends that have not already been identified by the County and considered as part of the County's future development. There are several areas that the County has been actively engaged in the planning, development, and execution of either directly by a government entity or through approval of a third party proposal; these areas are still growing and reacting to the needs of the community.

Broadband Service:

In terms of future trends, the expansion of high-speed broadband services is essential to every community in the United States in order to remain competitive economically and provide the quality of life services that is becoming the expected norm in terms of high-capacity, 24/7 availability to the internet for shopping and entertainment purposes as well as for business purposes which include entrepreneur and home-based businesses.

The role of technology and its deployment throughout the county should be detailed further since it will play a role in the economic development, education, health care and housing issues of the county.

Health Care Services:

The expansion of broadband services to all areas of the county will also be critical in meeting the health care needs of its community since the future and face of health care delivery is in rapid flux due to the restructuring of the health care system at the federal level. Many rural localities have been faced with the closure of their local hospital due to ever-increasing operational costs against a declining population service area. While a new hospital has relocated to Accomack County, the challenges facing the continuation of that service are still the same challenges facing all rural hospitals – declining population base, loss of funding from federal and state government thru the health care system, and increased costs in providing more technologically driven health-care.

The County's demographic projections for the 50 and older population segment remains consistent at about 15,700 people for the next thirty years; however, this age group becomes a larger percentage of the total population during this same projection time frame, projected at 31.7% of the total population in 2020, 47% of the total population in 2030, and at 46.9% of the total population in 2040. There is currently one private assisted living facility, the Hermitage on the Eastern Shore in Onancock with 35 beds, and one publicly-assisted facility, Shore Health & Rehab Center in Parksley with 136 beds. However, in 2017, the Arcadia Nursing Home & Rehab Center closed, thereby removing 60 beds that had previously served this market. The county may be adequately served by the medical facilities currently available but it will require monitoring by the County and its health care professionals to continue to assess the demand and need for assisted living care facilities.

One area that has not been fully tapped is residential development and services targeted at the 50 and older age bracket. The establishment of Riverside Shore Memorial Hospital in Accomack County provides an opportunity to ensure the Comp Plan supports the growth of medical industries that complement the operations of the hospital and also encourages housing development and associated amenities that meets the need of this type of consumer who is physically active but may have need for access to medical services in the near future.

Alternative Energy Sectors:

There are growth opportunities in certain sectors; however, they may conflict with other values and community priorities. These areas are in the green energy sectors for wind and solar farms.

The County has approved two solar farm projects: Eastern Shore Solar (shown to the right), a 2,859 acre property comprised of 44 parcels on Withams Road in Oak Hall with the developed project acre of 965 of an 80 megawatt solar farm; and Sun Tech, a 600 acre property near Tasley for a 20 megawatt solar farm. These large utility scale solar farms are allowed by special use permit by the County, are governed by Permit by Rule by the Virginia Department of Environmental Quality, and are desirable by the traditional energy sector companies to assist in diversification of their energy portfolio. The County will need to evaluate the dedication of formerly active agricultural land to a 30 year lease for solar farm development against other community priorities to determine its position on additional utility scale solar projects.



On January 5, 2017, Accomack County removed utility scale solar and wind projects from consideration in the Agricultural Zoning District. There were several reasons for this action; however, one of the primary reasons was the local tax revenue implications caused by Virginia Code §58.1-3660 which has exempted 80% of the assessed value of utility scale “certified pollution control equipment facilities” greater than 20 megawatts ; solar energy equipment and facilities are included in the definition of “certified pollution control equipment facilities”. This law does have a sunset clause for the 20 megawatt or greater projects with the exemption ending for projects that have not begun construction as of 1/1/2024.

Agriculture

Accomack County has an extensive history with agriculture including the large-scale production of poultry and crops.

The 2018 Annual Poultry report contains information concerning the number of poultry houses, the economic contributions of the poultry industry to the general economy of the County and addresses the environmental components of the poultry industry to the County. Said report can be viewed at: <https://www.co.accomack.va.us/home/showdocument?id=9090>.

Large scale crop industries farmed in Accomack County include tomato production, soybean production, and corn as feeder crop. According to Agriculture Census Data 2012, the Crops Sale in Accomack County totaled \$59,778,000 or 35% of all agricultural sales with livestock sales making up the rest at \$112,419,000.

The Poultry Industry has transitioned from smaller grower operations to larger-scale, high density growing operations and this was experienced in Accomack County starting in July 2014

through December 31, 2017 where 240 new larger poultry houses were approved. This information is detailed in the Annual Poultry Report, referenced above. Most of the broiler chickens produced in Accomack County are processed in the Perdue and Tyson processing plants located in the county.

Smaller, family farms are declining and their land and operations are being absorbed by larger, national farming corporations. The 2012 Agriculture Census Data shows that the number of farms declined from 248 farms in 2007 to 226 farms in 2012, a decline of 9% which is greater than the national average which saw a decline of only 4% during this same time frame.

ECONOMIC DEVELOPMENT

Economy & Economic Growth

The Top 10 employers for Accomack County as of the Quarterly Census of Employment and Wages (QCEW) for the third quarter (July, August, September) 2017 are the following:

1. Perdue Products
2. Tyson Farms
3. Accomack County School Board
4. Riverside Regional Medical Center
5. County of Accomack
6. National Aeronautics & Space Administration
7. LJT Associates, Inc.
8. Wal Mart
9. Eastern Shore Community Services
10. Eastern Shore Rural Health System

Wallops Governmental Complex & Wallops Related Private Sector Businesses:

The Wallops Governmental Complex: includes NASA Wallops (including contractors), National Oceanic and Atmospheric Administration (“NOAA”), NAVY Surface Combat Systems Center (“NAVY SCSC”), Coast Guard, Virginia Commercial Space Flight Authority (“Virginia Space”) and Wallops Research Park – The Wallops Governmental Complex is a major employer in Accomack County with an estimated 1,725 employees. NASA Wallops, NAVY SCSC, NOAA, and the Coast Guard are US Government entities with facilities on the NASA Main Base and Wallops Island. Their websites are listed below.

NASA Wallops: <https://www.nasa.gov/centers/wallops/home>

NAVY SCSC: <http://www.navsea.navy.mil/Home/SCSC.aspx>

NOAA: <https://www.wcda.noaa.gov/>

Coast Guard: <https://www.atlanticarea.uscg.mil/Our-Organization/District-5/District-Units/>

As part of the \$4.094 Trillion 2018 Federal Budget, military spending is increasing by 9%, with some of that increased military spending coming to Accomack County through NAVY SCSC who is adding over 60 new personnel.

Virginia Space is located near the NASA Main Base gate on Atlantic Road. Locally, Virginia Space manages and operates the Mid-Atlantic Regional Spaceport (MARS) on the southern portion of Wallops Island and the UAS runway and facilities located on the north end of Wallops Island.

After many years of planning and discussion, the Wallops Research Park construction began in 2014 and was completed in 2016. The park is open for business. For more information about the Wallops Research Park, visit <https://www.co.accomack.va.us/businesses/wallops-research-park-information>.

Wallops Related Private Sector Businesses: Over the past 10 years or so, there has been an ebb and flow with the number of business that have located in the County with ties and/or support for the Wallops Governmental Complex or that locate in the County due to the proximity and opportunity of the Wallops Governmental Complex. Companies like Orbital, SRS and others have located in Northern Accomack County due the Wallops Complex.

There has been significant Federal, State, and Local government investment in the Wallops Complex over the past 10 years. It is anticipated that the government investment will create Wallops' related, private sector investment and job creation.

4 - Corners Area – Hospital/Retail & Commercial center – expect growth here, especially for national names.

Within a part of the Town of Onley and the County is an area locally referred to as the “4-Corners” area. The traffic signal on Rte. 13 and Market and Main St is the center of the 4-Corners area. The 4-Corners area is the largest retail and commercial hub in the County. Riverside Shore Memorial Hospital and its 300 employees relocated to this area and the hospital opened in February 2017. Numerous local businesses and nationally recognized chain stores and restaurants are located along Rte. 13 here.

Municipal sewer and limited water service is available in this area. A planned ‘northern spur’ will serve the Chesapeake Square shopping center and nearby properties. Discussion about expanded water service is currently underway.

It is anticipated that this area of the County will continue to grow and expand incrementally over time.

Tourism:

Tourism has played a significant role in the County’s economy for decades, especially in the northern end of the County. The county, by its geographic location, has been able to lay claim to several assets that tourism benefits from: beach access, water access, fishing access, and wildlife access. Due to the limited transportation access to the Eastern Shore, development has not been rampant similar to other coastal locations. In particular, Chincoteague Island and Assateague Island have a naturalized coastal location which has developed a localized economy geared toward servicing a tourism clientele. There is a strong partnership with the U.S. National Park Service, U.S. Fish & Wildlife Service and the Department of Natural Resources who oversee Assateague Island which offers visitors to the region access to an expansive beach, wildlife, dunes, and wetlands for public outdoor recreational use and enjoyment. Chincoteague is home to many campgrounds, rental properties, several hotels, restaurants and shops that cater to the seasonal visitor.

The growth of Wallops/NASA has led to an ancillary branch of tourism – those interested in learning about and observing rocket launches – and is allowing growth of the tourism season beyond the naturally warmer spring, summer and fall months to fall throughout the year.

The County is a member of the Eastern Shore of Virginia Tourism Commission which is focused on developing, promoting and marketing the tourism resources and advantages of the two counties (Accomack and Northampton). This authority provides several regional marketing resources and guides and is gaining strength in providing a social media presence.

Traveler spending as reported by the Virginia Tourism Corporation continues to increase for Accomack County. From 2012 to 2016, the number of individuals employed in a tourism related position increased by 17% with a greater increase on actual payroll expenditures by almost 28% during that same time frame.

Travel Economic Impacts	2012	2013	2014	2015	2016
Employment⁽¹⁾	1,892	1,968	2,043	2,103	2,214
Expenditures⁽²⁾	\$163,393,774	\$169,903,203	\$180,681,609	\$185,206,622	\$196,143,807
Payroll⁽³⁾	\$33,302,816	\$35,458,230	\$37,480,566	\$39,355,082	\$42,552,965

Source: Virginia Tourism Corporation

NOTES:

⁽¹⁾Employment represents the estimates of direct travel-related employment in the locality.

⁽²⁾Expenditures represents the direct spending by domestic travelers including food, accommodations, auto transportation, public transportation, incidental purchases, entertainment/recreation and travel generated tax receipts.

⁽³⁾ Payroll represents the direct wages, salaries and tips corresponding to the direct travel-related employment.

Continued efforts need to be made to ensure sufficient guest services are provided to meet the demand and growth of the tourism industry for Accomack County, include lodging, dining, and entertainment opportunities. Chincoteague Island is home to the area's first water park which is opening June 2018 and will be monitored to determine if this type of manufactured entertainment venue achieves support from the seasonal as well as the year-round residential marketplace.

Agriculture – Agriculture has a major presence in Accomack County. According to the 2012 Census of Agriculture, approximately 77,389 acres of land, which is 26.57% of the total land in the County, is actively farmed. The County's major crops produced are Corn and Soybeans. For 2017, the County is the top producer in the state for crop for grain, soybeans, and winter wheat, according to the 2017 Virginia Agricultural Statistics Annual Bulletin. The value of each crop, based upon the cost per bushel at time of harvest is shown below:

TYPE	# of Bushels	Cost Per Bushel	TOTAL VALUE
Crop for grain	2,803,000	\$4.00	\$11,212,000
Soybeans	1,205,000	\$9.40	\$11,327,000
Winter Wheat	772,000	\$4.75	\$ 3,667,000

As reported in the 2012 Census of Agriculture, the number of farms in the County is 226, a decrease of 9% from the 2007 Census of Agriculture and the average farm size in the County is 342 acres, a decrease of 10%. However, the total market value of products sold, as reported in

the 2012 Census of Agriculture, is \$172,197,000 which is split between crop sales constituting 35% of sales and livestock sales constituting 65% of sales. The market value of products sold increased by 13%, or \$19,157,000, from the 2007 Census of Agriculture. The number of people employed as seasonal farm workers for 2012 is 791.

Large scale agriculture, especially given its symbiotic relationship with the poultry industry in the County, looks to continue to be a primary economic driver for the County for the future.

Significant portions of the County are forested, with many areas managed for pine production. Local demand for forest products is not strong at the present time. A custom sawmill is operating outside Wachapreague, and efforts to attract additional sawmills are underway. It is hoped that a sizable sawmill in the County will better utilize the forest resource and benefit forest landowners.

It is possible that forest land assessment values may start to decline if market demand for local forest products does not increase.

Aquaculture:

The marine industry has always had a strong role in the economy and life of Accomack County. However, it is a transitioning industry with the expansion of aquaculture. Aquaculture is the farming of aquatic organisms such as fish, crustaceans, and mollusks through the cultivation of freshwater and saltwater populations under controlled conditions.

Although a respectively smaller group of the employed population work in fishing and aquaculture, it is a culturally invaluable trade. In the year 2000, there were 599 commercial licenses and zero aquaculture permits issued by the Virginia Marine Resources Commission (VMRC). In 2010 VMRC issued 475 commercial licenses, but also 153 oyster aquaculture permits and 116 clam aquaculture permits, revealing an increase in the number of individuals who make their living working on the waterways of the Eastern Shore.

Poultry:

Poultry is a major industry in Accomack County. The Perdue Processing plant in Accomack and employs approximately 1,850 people. The Tyson Complex in Temperanceville employs approximately 1,430 people. Valley Proteins is located at the Perdue plant. The combined direct employment at the processing plants creates the employment sector on the Eastern Shore of Virginia. There are numerous other indirect jobs such as, truck drivers, contractors, and others that are supported by the poultry processing plants.

The County saw a surge in the number of poultry houses between 2014 to the present time (2018). County Planning staff estimates that there were 284 poultry houses in Accomack County prior to 2014. As of January 1, 2018, 194 new Poultry Houses had been constructed since 2014 and there are 28 poultry houses still under construction.

County Planning Staff has been developing Annual Poultry Reports since 2016. The 2018 report is the most comprehensive yet and covers a wide variety of topics and can be found at the following link: <https://www.co.accomack.va.us/home/showdocument?id=9090> or by visiting the County website (Planning Department page) at www.co.accomack.va.us.

Airport & Industrial Park:

In Melfa, the County owns and operates a municipal airport and an industrial park.

The Accomack County Airport covers an area of 100 acres which contains one runway designated 3/21 with a 5,000 x 100 ft. (1,524 x 30 m) asphalt surface. For the 12-month period ending September 30, 2009, the airport had 14,056 aircraft operations, an average of 38 per day: 84% general aviation and 8% air taxi and 9% military. At that time, there were 23 aircraft based at this airport: 22 single-engine and 1 multi-engine. According to the 2011 Virginia Airport System Economic Impact Study, the Accomack County Airport generated \$2.3 million in aviation-generated economic spending impact in the county along with 32 aviation-related jobs.

The adjacent 360 acre industrial park has over 120 acres that have been improved with streets, centralized water and sewer and is currently home to the following companies: Truss-Tech, Inc., Blue Crab Bay Company, Shore Ice, Luminary Air Group, Lucas Underground, and the Eastern Shore Chamber of Commerce. Adjacent to the park at the northern end of the airport runway is the Eastern Shore Farmer's Market and the Robert S. Bloxom Eastern Shore Agricultural Complex. The park is continuing to seek additional tenants and recently connected the Industrial Park with a new road connection from within the park to the adjacent Eastern Shore Community College and the Workforce Development Center.

Other Areas in County Where Growth is Anticipated:

In the New Church area, two companies have located: KmX Chemical Corporation and Coastline Chemicals. KmX recently invest \$2.075 million to expand its solvent reclamation facility. Coastline Chemicals blends and packages antifreeze and recently completed the expansion of a rail spur to the site as well as the installation of a distillation tower & equipment and additional storage tanks.

With the addition of this rail spur to the area and easy access to Route 13, this area is positioned to offer ancillary services to complement these recent industry expansions.

Rte. 13 & Natural Gas

The Delmarva Pipeline Company reiterated its intent to construct a natural gas pipeline that would serve parts of Maryland and Accomack County. As currently proposed the natural gas pipeline would extend south from the Maryland/Virginia State line to the Perdue plant on Rte.13 in Accomac.

The availability of natural gas via pipeline provides a reliable and affordable energy source for large industrial type users of energy such as the Commonwealth Chesapeake energy facility, Tyson Processing plant and Perdue & Valley Protein plants.

In the event that the gas pipeline is constructed and operational along Rte. 13, it is anticipated that new processing/manufacturing facilities will locate in this area as there is ample developable land and good transportation access for truck traffic.

Once the pipeline timetable and construction become certain, the Planning Commission should review the Future Land Use Plan to ensure that it recognizes the potential economic growth that could occur once the natural gas pipeline becomes a reality.

T's Corner:

The area of Accomack County located at the juncture of Route 13 and Route 175 (Chincoteague Road), known as T's Corner, is a commercial growth center for the County in providing services for the traveling public, seasonal visitors and year-round residents. There are currently the following businesses: grocery store, several fast-food restaurants including chain brands, gas station/convenience store, banks, laundromat, and storage units. The area is zoned as General Business which stretches as far north as Oak Hall and as far south just before Temperanceville.

T's Corner has several vacant parcels that could be developed for commercial interests based upon market demand of the varied nature of the clientele of this region.

Growth in Exmore along Rte. 13/Belle Haven

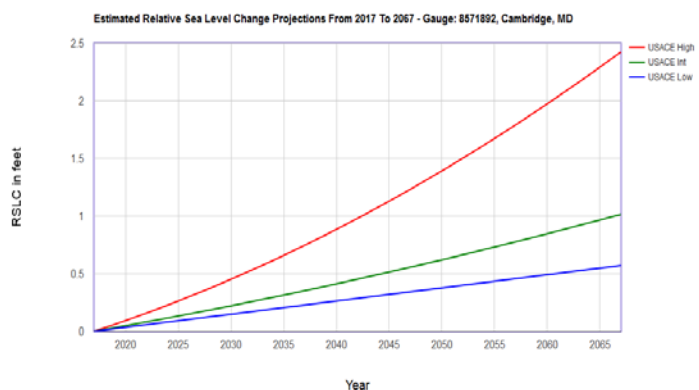
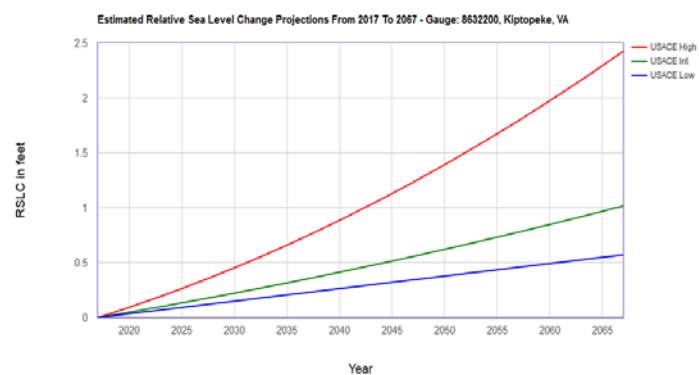
Commercial growth along Rte. 13 has occurred in the Town of Exmore within Northampton County, notably Family Dollar and Dollar General in the past few years. The Accomack County line and that portion of the Town of Belle Haven in the County have land available that is suited for additional commercial growth. Lack of municipal sewer and market support for additional commercial growth in this part of Accomack County are key factors regarding growth along Rte. 13 in this area.

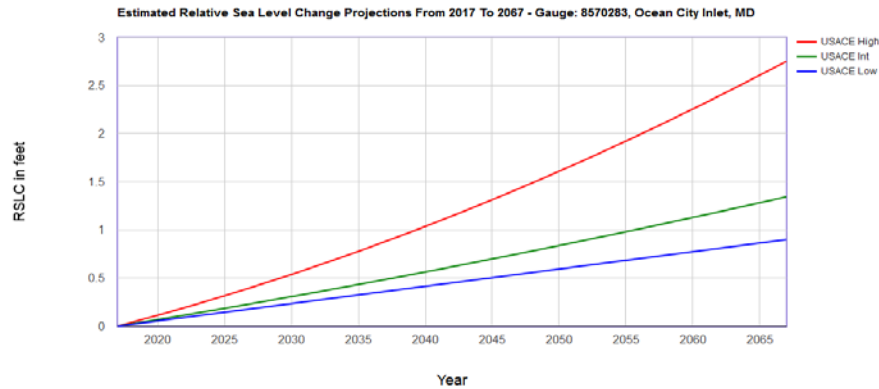
COASTAL RESILIENCY

As a locality that is adjacent to both the Atlantic Ocean and the Chesapeake Bay, examination of the impact of sea level rise to our locality and the implementation of various waterfront management land tools is essential to developing a proactive position to help reduce any coastal erosion/loss of land/loss of marshland/loss of wetlands.

There are numerous agencies that are studying this issue and developing projections for coastal communities. While there may not be a direct reporting site in Accomack County, there are several nearby reporting sites that examination of their data will allow the county to extrapolate certain projected conclusions to assist in determining how the County should proceed.

From National Oceanic and Atmospheric Administration (NOAA), the three data sets to examine are: For Kiptopeke State Park (located at the southern end of Northampton County near the beginning of the Chesapeake Bay), Cambridge, Maryland (located to the north of the county on the inner reaches of the Chesapeake Bay) and Ocean City Inlet (located to the north of the county in Maryland on the Atlantic Ocean). These three data sets with a projected impact from current year of 2017 to 2067 and using both the low, intermediate and high projection estimates, show a consistent estimated relative sea level rise (RSLC) in the low level of .5 feet to a high level of 2.5 feet on the Chesapeake Bay side to a slightly higher projection of .9 feet up to 2.75 feet for the Atlantic Ocean side.





Beyond the sheer consideration of sea-level rise to Accomack County, it is also relevant to look at wave attenuation and its impact on marshland which may have a greater impact to our coastline preservation.

The County needs to be mindful of the impact of sea level rise on various facets of the county, including loss of developed land, loss of environmentally buffering land, loss of revenue from a tax base perspective as well as from an economy perspective. Based upon the above projections from NOAA using a low to high range of estimated relative sea level change, several other agencies have done projections on tax base and economy.

For Accomack County, NOAA offers the following flood exposure snapshots based upon the listed data sources.

Flood Exposure Snapshot

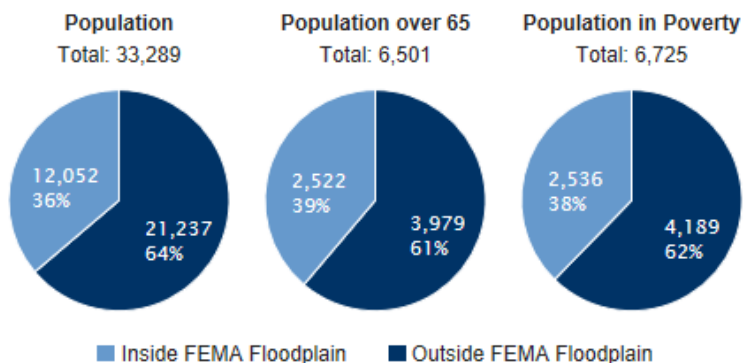
COASTAL COUNTY SNAPSHOTS
coast.noaa.gov/snapshots/

Accomack County, Virginia

People + Floodplains = Not Good
High-Risk Populations + Floodplains = Even Worse

The more homes and people located in a floodplain, the greater the potential for harm from flooding. Impacts are likely to be even greater when additional risk factors (age, income, capabilities) are involved, since people at greatest flood risk may have difficulty evacuating or taking action to reduce potential damage.

Based on [2009-2013 American Community Survey 5-year Summary File data](#).

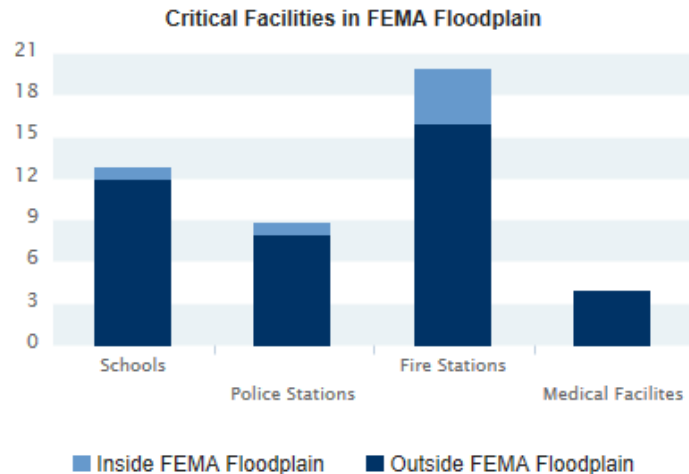


Community Infrastructure + Floodplains = Bad News

13% of critical facilities in Accomack County, Virginia, are within the floodplain.

Hospitals. Roads. Schools. Shelters. These facilities play a central role in disaster response and recovery. Understanding which facilities are exposed, and the degree of that exposure, can help reduce or eliminate service interruptions and costly redevelopment. Incorporating this information into development planning helps communities get back on their feet faster.

Based on [USGS Structures Database](#).



The Virginia Institute of Marine Sciences (VIMS) has developed several tools for use to determine site specific solutions and are to be utilized by the County in analyzing a specific area of the County and implementing best management practices to address shoreline conditions. These are listed in the box below as a hyperlink.

Undefended Shorelines & Failed Defense Structures

- [Undefended Shoreline Decision Tool User Manual – 2010](#)
- [Undefended Shoreline Decision Tool Diagram](#)

Currently Defended Shorelines

- [Currently Defended Shoreline Definitions](#)
- [Structural Integrity Guidance](#)



Existing Bulkheads



Existing Marsh Sills



Existing Revetments



Existing Offshore Breakwaters



Existing Groins

For shorelines with multiple structure types – refer to each structure type decision tool, consider the shoreline condition, structural integrity and remaining life expectancy, and the level of protection provided by each type.

VIMS has also completed the [Accomack County Shoreline Situation Report](#) which is intended to be utilized as an element of our GIS program and intended to be the interactive mapping tool to be used in conjunction with the tool box above to develop the best management practices on a site specific basis for our locality.

Coastal Resiliency Planning & Next Steps

It is now generally accepted that water levels are increasing relative to ground level on the Eastern Shore. Given the sizeable land mass of the County, particularly on the Bayside of Accomack County that is less than 10 feet above sea level, additional review and analysis of data is warranted. Staff has data based on modeling that shows recurrent flooding due to water level rise, under a number of scenarios.

The recommended next step is to review the modeled data and identify the number of structures and properties affected. After appropriate review, action items are a likely outcome. Examples of such action items are advisory statements for new construction and planning for voluntary relocation of residents.

Review of Future Land Use Map (FLUM)

There are no proposed alterations to the Future Land Use Map as part of this review & update of the Comprehensive Plan. There have been areas identified that shall be examined and considered for the next update in five years. The Planning Commission and staff will develop a workplan, including a timeframe, for the following areas:

- Wattsville Village Development
- Route 13 Corridor Overlay District
- Mappsville
- Tasley
- Captain's Cove
- Trail's End
- Land Use designation changes under the APZs and clear zones identified in the Joint Land Use Study
- Examination of Current Public Water & Sewer Systems: areas served and possible expansions of said systems.

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