2006 COMPREHENSIVE PLAN

NORTHUMBERLAND COUNTY, VIRGINIA

Adopted June 8, 2006

2006 Comprehensive Plan

Northumberland County,
Virginia

Adopted June 8, 2006

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TABLE OF CONTENTS

CHAPTER 1
ANALYSIS OF PHYSICAL AND ENVIRONMENTAL CONDITIONS

A. INTRODUCTION 1
B. PHYSICAL FACTORS THAT INFLUENCE OR CONSTRAIN DEVELOPMENT 3
1. Existing Development 4
a. Land Use 4
b. Subdivisions 7
2. Topography, Physiography and Hydrography 9
a. Topography and Physiography 9
b. Hydrography 11
3. Prime Agricultural Soils 13
4. Soil Suitability for On-Site Sewage Treatment 16
5. Shrink-Swell Factors 20
6. Flood Prone Areas 21
7. Wetlands and Natural Habitat Areas 25
a. Wetlands 25
b. Natural Habitat Areas 28
8. Historic Resources 28
9. Chesapeake Bay Protected Areas 31
C. ANALYSIS OF CONDITIONS RELATED TO POTABLE WATER SUPPLY 35
1. Groundwater 35
a. The Hydrological Cycle 35
b. Groundwater Aquifers 35
c. Potable Water Supply (Wells) 36
d. Potential Contamination Sources 38
e. Programs Addressing Point and Non-Point Pollution Sources 41
f. Major Planning Issue Concerning Water Supply 44
2. Principal Watersheds 46
3. Soil Conditions 49
a. Water Table 49
b. Highly Erodible Soils 51
c. Steep Slopes 51
d. Soil Permeability 53
D. ANALYSIS OF SHORELINE CONDITIONS 56
1. General Shoreline Conditions 56
2. Shoreline Erosion 59
3. Marshlands 62
E. ACCESS TO STATE WATERS 63
1. The Chesapeake Bay Area Public Access Plan 63
2. Shoreline Land Use 65
3. Effects of Underwater Grasses 65

TABLE OF CONTENTS

CHAPTER 1
ANALYSIS OF PHYSICAL AND ENVIRONMENTAL CONDITIONS (CONTINUED)

4. Factors Influencing the Establishment of New Access Points 66

CHAPTER 2
ISSUES, GOALS AND STRATEGIES

PHYSICAL AND ENVIRONMENTAL ISSUES 2
1. Use and Development of Land 2
2 Topographic Conditions that Limit Development 3
3. Soil Suitability for Septic Tanks 4
4. Structural Quality of Soils 5
5. Flood Prone Areas 6
6. Wetlands and Natural Habitat Areas 7
7. Historic and Archeological Resources 8
8. Chesapeake Bay Protected Areas 9
9. Groundwater Supply 10
10. Water Pollution Sources 11
11. Watersheds 12
12. Soil Conditions 13
13. Shoreline Conditions 14
14. Access to Public Waters 15
COMMUNITY DEVELOPMENT ISSUES 16
1. Demographics, Economics and Housing 16
2. Transportation and Recreation 18
3. Public Facilities 20

CHAPTER 3
LAND USE PLAN

A. PURPOSE OF THE LAND USE PLAN 1
B. COMPONENTS OF THE LAND USE PLAN 2
1. Policies for the Rural Uplands 4
a. Agricultural and Forested Areas 4
b. Residential 5
c. Commercial/Industrial 7
2. Policies for the Rural Low Shelf 8
3. Policies for the Shoreline Conservation Area 9

TABLE OF CONTENTS
CHAPTER 3
LAND USE PLAN
(CONTINUED)

4. Policies for Villages 11
a. Framework for Village Policies 12
b. Callao 14
c. Lottsburg 17
d. Heathsville 19
e. Burgess 22
f. Wicomico Church 25
g. Reedville 27
h. North Kilmarnock 30
i. Lilian 32
j. Village 34
5. Policies for Special Areas 36
a. Historic and Archeological Resources 36
b. Highway Corridor Overlay District 37
c. Reservoir Areas 41
C. HOW TO USE THE LAND USE PLAN 43

CHAPTER 4
PUBLIC FACILITIES AND SERVICES

A. INTRODUCTION 1
B. HIGHWAYS 1
1. Major Roads Identified 3
2. General Road Plan 6
a. Four-Lane Primary 6
b. Two-Lane Primaries 8
c. Feeder Secondary Roads 8
3. Planned Highway Improvements by VDOT 8
4. Public Transportation 9
5. Northumberland County Bicycle Facilities Plan 9
C. RECREATIONAL AREAS AND FACILITIES 13
1. Existing Recreational Sites and Opportunities 13
a. Athletic Fields 13
b. State Facilities 13
c. Chesapeake Bay Access 13
d. The Northumberland Family YMCA 18
e. Golf Courses 18
2. Conclusions Regarding Recreational Facilities 18
D. PUBLIC BUILDINGS AND SCHOOL FACILITIES 21
1. Administrative Offices 23
2. Other Public and Quasi-Public Facilities 23

TABLE OF CONTENTS
CHAPTER 4
PUBLIC FACILITIES AND SERVICES
(CONTINUED)

3. School Facilities 24
E. WATER SUPPLY AND SEWAGE DISPOSAL 27
1. Water Supply 27
2. Sewage Disposal 30
F. OTHER PUBLIC AND QUASI-PUBLIC SERVICES 32
1. Emergency Services 32
2. Solid Waste Services 35
3. Animal Shelter 36
4. Emergency Preparedness 36
5. Marine Research and Educational Facilities 37
G. HEALTH, HOUSING AND HUMAN SERVICES 37
1. Health Services 38
2. Provision for the Elderly and Persons with Disabilities 38
a. Auxiliary Grant Program 38
b. Adult Services of the Northumberland Department of Social Services 39
c. Bay Aging 39
d. Northern Neck Disabilities Services Board 40
e. Emergency Services 41
3. Other Social Services Programs 41
4. Housing 44
5. Comprehensive Community Health, Housing and Social Services Plan and Implementation Strategy 45
H. STRATEGY FOR DEVELOPING PUBLIC SERVICES 46
1. Public Services Reference 46

CHAPTER 5
WATER QUALITY AND SHORELINE PROTECTION PLAN

A. INTRODUCTION 1
B. POLICIES RELATIVE TO DEVELOPING AND USING LAND WITHIN PHYSICAL CONSTRAINTS 3
1. Development within or Near Existing Development 3
2. Development within Areas with Topographic Constraints 4
3. Development within Areas Where Soils Will Not Support Conventional On-Site Sewage Disposal 4
4. Development within Areas Where Soils Have Poor Structural Qualities 6
5. Flood Prone Areas, Wetlands and Natural Habitat Areas 7
6. Chesapeake Bay Protected Areas 8
7. Protection of the County's Groundwater Supply 8
a. Protection of Water Quality 9

TABLE OF CONTENTS
CHAPTER 5
WATER QUALITY AND SHORELINE PROTECTION PLAN (CONTINUED)

b. Water Quantity: Protection of Supply Availability 12
8. Watershed Protection for the Bay 14
9. Tidal Shoreline Preservation 15
10. Policies Concerning the Use if Tidal Waterfront Areas while Preserving Sensitive Environmental Areas 16
11. Intensively-Developed Shoreline Areas 16
12. Managing Potential Conflicts between Land Use and Water Quality Protection 17
13. Soil and Tidal Water Conservation Policies 18
C. MAJOR REGULATORY ELEMENTS OF THE WATER QUALITY PROTECTION PLAN 19

CHAPTER 6
IMPLEMENTATION AND WORK PLAN

A. INTRODUCTION 1
B. PROCESS 1
C. IMPLEMENTATION AND WORK PLAN 1
1. Chapter 3 Land Use Planning – Implementation and Work Plan 3
2. Chapter 4 Public Facilities and Services – Implementation and Work Plan 6
3. Chapter 5 Water Quality and Shoreline Protection Plan – Implementation and Work Plan 7

APPENDIX A
THE ECONOMY AND DEMOGRAPHICS OF NORTHUMBERLAND COUNTY

APPENDIX B
NORTHUMBERLAND COUNTY COMMUNITY PLANNING PROCESS FOR A COMPREHENSIVE COMMUNITY HEALTH, HOUSING AND SOCIAL SERVICES PLAN AND IMPLEMENTATION STRATEGY

MAPS AND FIGURES

Map/Figure Page

1.1 2004 Existing Development 1:6
1.2 Major Subdivisions 1:8
1.3 Topography: (Elevation) 1:10
1.4 Hydrography Streams, Rivers Ponds 1.12
1.5 Prime Agricultural Soils 1.15
1.6 Sewered Areas 1.17
1.7 Soil Suitability 1.18
1.8 Shrink Swell Potential 1:22
1.9 Floodplains: FEMA 100 and 500 Year Floodplains 1:24
1.10 Wetlands: National Wetlands Inventory 1:26
1.11 National Historic Registry Historic Resources 1:30
1.12 Chesapeake Bay: 100 Foot Resource Protection Area 1:34
1.13 Potential Reservoirs with Existing Building Footprints 1:45
1.14 Watersheds: Hydrologic Units 1:47
1.15 Depth to Seasonal High Water Table 1:50
1,16 Erosion Index of Soils 1:52
1.17 Soil Permeability 1:55
1.18 VIMS Shoreline Situation Report: Map Plate Index Map 1:57
1.19 Shoreline Erosion 1:61
1.20 Public Water Access Sites 1:64
3.1 Future Land Use Map 3:3
3.2 Future Land Use Plan – Callao and Vicinity 3:16
3.3 Future Land Use Plan – Lottsburg and Vicinity 3:18
3.4 Future Land Use Plan – Heathsville and Vicinity 3:21
3.5 Future Land Use Plan – Burgess and Vicinity 3:24
3.6 Future Land Use Plan – Wicomico Church and Vicinity 3:26
3.7 Future Land Use Plan – Reedville and Vicinity 3:29
3.8 Future Land Use Plan – North Kilmarnock and Vicinity 3:31
3.9 Future Land Use Plan – Lilian and Vicinity 3:33
3.10 Future Land Use Plan – Village and Vicinity 3:35
4.1 Daily Traffic Volume 2003 ..... 4:5
4.2 Existing Road Conditions 4:7
4.3 Bicycle Trails of Northumberland County 4:12
4.4 Recreational Areas and Facilities 4:20
4.5 Schools and Other Public Buildings 4:25
4.6 Community Public Water Systems 4:29
4.7 Sanitary Sewerage Facilities 4:31
4.8 Fire Districts 4:33
4.9 Rescue Districts 4:34

Appendix A: See List of Tables and List of Figures in the front of the Appendix

PREFACE

Northumberland County is in the enviable position of being in the Northern Neck of Virginia which has not yet experienced rapid, largely uncontrolled development.

Growth pressures up and down I-95 and in other counties of Virginia have created extensive unplanned growth, overtaxing of public facilities and service deficiencies of governmental jurisdictions. As a result of watching these problems develop elsewhere, the leaders of Northumberland County are dedicated to avoiding the many financial and social problems associated with unplanned and unmanaged growth and sprawl.

Growth is inevitable and should be encouraged. But it must be guided in such a manner as to benefit existing and future residents and businesses in the County and to retain the features than have made the County so unique and such a desirable a place to live and work.

Development must occur in such a manner that will not burden the County residents or businesses.

Given its proximity to Richmond and Northern Virginia, its rural character and its extensive shoreline, Northumberland County will continue to attract retirees, part time residents and the businesses and services that support them.

To address all the above circumstances, Northumberland County residents and officials have developed their Vision for the future of the County:

VISION

Taking advantage of its distinctive history, location, and natural environment, Northumberland County will preserve its rural character and its maritime heritage while fostering economic growth and the well-being of its citizens. Economic growth will occur that provides jobs, supports agricultural and water-based activities and provides services to the retired community. Residential, commercial, and industrial development will be supported that enhances the social and economic life of the County and conserves its natural resources. It will become a model of planned waterfront residential and village business development that ensures the quality of life of its residents while attracting desirable new growth.

The education system will continue to improve so as to play a key role in helping children succeed and to become this County's future leaders. The government will continually strive to be fiscally sound and firmly responsive to meet the social needs of all members of the community.

Attainment of this vision will be supported by the following planning principles:

- Maintain the desired rural character of the County through open space preservation while providing sufficient designated growth areas to accommodate expected demand for business and residential growth.

- Seek sufficient economic growth by attracting businesses that will supplement the jobs generated by residential development to provide new jobs for the County residents.

- Ensure that a balance is maintained between residential, commercial and industrial development and available public services and facilities to include schools, utilities, recreational areas and general governmental services needed to accommodate planned growth.

- Encourage residential development that meets the housing needs of County residents at all income levels as well as providing a range of home site areas and a variety of housing styles.

- Ensure that development is done in an environmentally sensitive, planned manner that preserves sensitive features such as floodplains, wetlands, dunes, beaches and natural topography.

- Develop the individual village infrastructures to support near and long term growth of the villages as the commercial hubs of the County.

- Provide for both near term and long term water supply needs by providing alternative sources at a rate that matches the foreseeable needs of a growing County.

- Pursue resources to assist the disadvantaged and disabled in business development, employment opportunities, health care, and housing.

- Support the County in the efforts of retaining open space, rural character and preserving the County's historic resources that provide valuable information about the proud history of the County and its residents which is essential to sustain our tourism industry.

- Monitor development trends both within and outside of the County so as to be proactive in the solution of problems and assure County officials stay informed of issues affecting the County in order to respond appropriately.

GOALS, OBJECTIVES AND STRATEGIES

In addition to the County Vision Statement, goals are identified in Chapter 2 of the Comprehensive Plan for the future development of Northumberland County to help achieve

the County's vision. Each goal is followed by a series of objectives and strategies that should be undertaken by the County. Chapter 3 contains the Land Use Plan, Chapter 4 addresses Public Facilities and Services and Chapter 5 contains the Water Quality and Shoreline Protection Plan. An Implementation and Work Plan establishing priorities for selected major work items is presented in Chapter 6. By following the recommended strategies and an achieving the stated objectives, the County can progress toward attainment of its goals and the vision in an orderly and efficient manner.

CHAPTER 1 [1]
ANALYSIS OF PHYSICAL AND ENVIRONMENTAL CONDITIONS

A. INTRODUCTION

A Comprehensive Plan for Northumberland County should have two broad objectives. First, it should identify long-range and strategic community needs of the County's growing population and second, it should provide a planning framework designed to guide physical change which comes in response to such growth.

The Virginia Code (starting with Title 15.2-2223) authorizes all local governments to prepare and administer comprehensive plans and related regulatory functions. Comprehensive Plans are mandated for all of Virginia's local governments by these statutes; and it is also a requirement that they be reviewed every five years (Title 15.2-2230). Tools for implementing the comprehensive plan include a subdivision ordinance, and a zoning ordinance. The subdivision ordinance is mandated by the general planning statutes. Zoning was first mandated by the Chesapeake Bay Preservation Act (1989) but the County has had a zoning ordinance (authorized by the general planning statutes) since 1974. Regulations adopted pursuant to the Chesapeake Bay Act establish the following planning requirements for comprehensive plans of communities under their jurisdiction.

- **Physical Constraints to Development**: which addresses those natural geographic qualities which seriously limit the potential for development.

- **Protection of Potable Water Supply**: which is concerned about protecting the existing and potential supply of drinkable water within the community.

- **Shoreline Erosion Control**: which focuses on the loss or potential loss of shorelines due to erosion caused by wind, waves and boat wakes.

- **Access to Waterfront Areas**: which deals with access and potential access to areas for private as well as public use.

- **Redevelopment of Intensely Developed Areas and Other Areas Targeted for Redevelopment**: which focuses on opportunities to reduce pollution through conversions of existing development.

This chapter of the Comprehensive Plan focuses on current physical and environmental conditions that may influence or limit the future use of land. The conditions examined include both natural and man-made conditions which for purposes of analysis are grouped into the categories as listed above. They reflect the planning emphasis of the Chesapeake Bay Preservation Act, with the exception of the category "redevelopment of intensely developed areas." No areas in Northumberland County meet the Chesapeake Bay Act criteria as intensely

[1] Filename = Chapter_1_ Final

developed.

These analyses will be used in later chapters as follows: In Chapter 2, environmental issues and strategies will be organized around these four topics; in Chapter 3, the structural framework of the Future Land Use Plan and land use policies will flow from the analysis plus the issues of Chapter 2; and in Chapter 5, Water Quality Preservation Plan, a strategy for meeting the requirements of the Chesapeake Bay preservation laws and regulations, will be organized around the same topics. Also included as Appendix A to the Plan Report will be a study of the Economy and Demographics of the County which provides the basis for growth projections upon which the plan is based.

The format used throughout the Comprehensive Plan will follow the same five criteria of the Chesapeake Bay Preservation Act. Another important factor in selecting the format for this Chapter is the requirements of the Virginia Statutes concerning comprehensive plans for local communities. In this regard, the analyses should provide a thoroughly researched basis for determining need and formulating the substance of the comprehensive plan.

The Northern Neck Planning District Commission's (NNPDC) work in revising this Chapter is predicated on prior work performed by the County, which is hereby acknowledged. The NNPDC has provided certain maps of physical conditions that were originally established in the Virginia Geographic Information System (VIRGIS).[2] Through a series of electronic steps, these maps were converted to the form in which they appear in this Chapter. The County also provided the NNPDC with a digital file of a previous draft of the physical analysis section of the Comprehensive Plan.[3] Where applicable, much of that original text is used here.

Maps displayed in this Chapter were produced by the Northern Neck PDC using ESRI's ArcView 3.2 desktop GIS software.[4] They include a combination of maps prepared from VIRGIS sources and original maps prepared for this Plan by the NNPDC.

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[2]Northumberland County uses data from the Virginia Geographic Information System (VIRGIS) developed by Virginia Tech and maintained by the Northern Neck Planning District Commission.

[3]File name of County's work is: "Chapter_1.doc", and was downloaded from Northumberland County's website, http://www.co.northumberland.va.us.

[4]ArcView 3.2 is proprietary desktop mapping software created and marketed by Environmental Systems Research Institute (ESRI). VIRGIS data has previously been converted from its native DLG3- Optional format to ESRI ArcView Shapefile format by the NNPDC. VirGIS Raster Layers (elevation, erosion index) were imported using ESRI's Spatial Analyst extension for ArcView.

B. PHYSICAL FACTORS THAT INFLUENCE OR CONSTRAIN DEVELOPMENT

Many factors can influence the type as well as the timing of development and most of these are related to markets and economic conditions. Early in the life of this Nation, most of the population relied on agriculture of one type or another for both employment and to meet their needs for foods and services. After the beginning of the industrial revolution, towns and urban places became more important as jobs and trade centers. As jobs were generated by industries, markets for housing, trade and services were generated as people moved from rural areas to urban places in order to be close to their work. This pattern resulted in mass migration to towns, cities and metropolitan areas during the last century. As a result the rural areas lost population for most of the first three-fourths of the 20th century.

But certain areas appear to have a capacity to attract people for recreation or retirement based on the natural resources of the community itself and the quality of life. Some such communities have become magnets for retired persons and great centers of tourism which, in and of themselves, function as job centers. Although still very much a rural community, Northumberland County has attracted a large retirement population as evidenced by the large amount of building that has been taking place along the County shorelines. It went through a long period of declining population, but for a decade or more the County is again experiencing growth, this time from the attraction of the County itself. With more miles of buildable shoreline than any other county in Virginia, Northumberland has an asset that has become a growth generator. Waterfront development accounts for three out of four residential lots in the County and most of the new residential structures built in the past decade. A demographic and economic study (Appendix A) conducted as part of the research for the comprehensive plan suggests that the County will see much more of this type of development during the next decade. However, there is a fixed amount of shoreline in the County, and each year, as more waterfront residences are constructed, that resource is reduced.

Certain parts of the County have already proved to be desirable as building sites, and since "success builds upon success" one might expect these areas to attract more development. The most suitable sites for waterfront development have already been developed, which forces new development into less suitable, more environmentally sensitive areas. The factors below need careful attention whenever new development is proposed, either waterfront or inland. In the following pages some of the most significant conditions that will influence or constrain development are dealt with in detail. They include:

1. Existing development
2. Topography, physiography and hydrography
3. Prime agricultural soils
3. Soil suitability for on-site sewage treatment
4. Shrink-swell soil factors

5. Flood-prone areas
6. Wetlands and natural habitat areas
7. Historic resources
8. Chesapeake Bay protected areas

Each of these topics is discussed briefly below. Where information is available, major physical features that would affect potential development are shown with a map. The narrative provides related descriptive information and significant observations as to how the conditions may influence planning policies.

1. Existing Development

Existing development has a powerful influence on future land use patterns because future development in rural communities almost always comes either as an extension of existing development or on new land but rarely as a replacement of existing buildings. Developers are encouraged to reuse/renovate existing building, as this makes good economic sense while at the same time preserving open space in the county. For purposes of planning for one or two decades, one might consider the existing development pattern as a fixed feature. This section reports on existing land use and existing subdivisions with a special analysis of shoreline subdivisions included.

a. Land Use

Figure 1.1 gives a graphic picture of existing development in Northumberland County in 2004. This map was developed from E911 data obtained from the County Office of Building and Zoning in July 2004. The E911 data contains all addressable structures in the County.[5]

- Residential Structures: This category includes all dwellings that are not included in the other two categories below. As mentioned in the footnote, all addressable structures are included. This use is illustrated by round green dots on the Existing Development Map (Figure 1.1). There are a total of 12,163 structures in this category shown in this illustration.[6]

- Business/Commercial Structures: All commercial-type structures are included such as retail stores, offices, convenience stores, personal and business service shops, as well as industrial and marine structures. They are shown on the map as a round red dot. There are a total of 415

[5]Addressable buildings include garages, sheds, boathouses and other accessory structures, as well as commercial/industrial buildings, single and multifamily residences. The numbers of structures listed below may seem high; however, all are ground-truthed by the office of Building and Zoning. In addition, abandoned buildings are included in the data.

[6] The 2000 Census reported 8,057 Total Housing Units in the county. This number is reasonable if one assumes that one-half of all residential structures have additional addressable accessory structures, which would make the total very close to the observed 12,163 E911 structures.

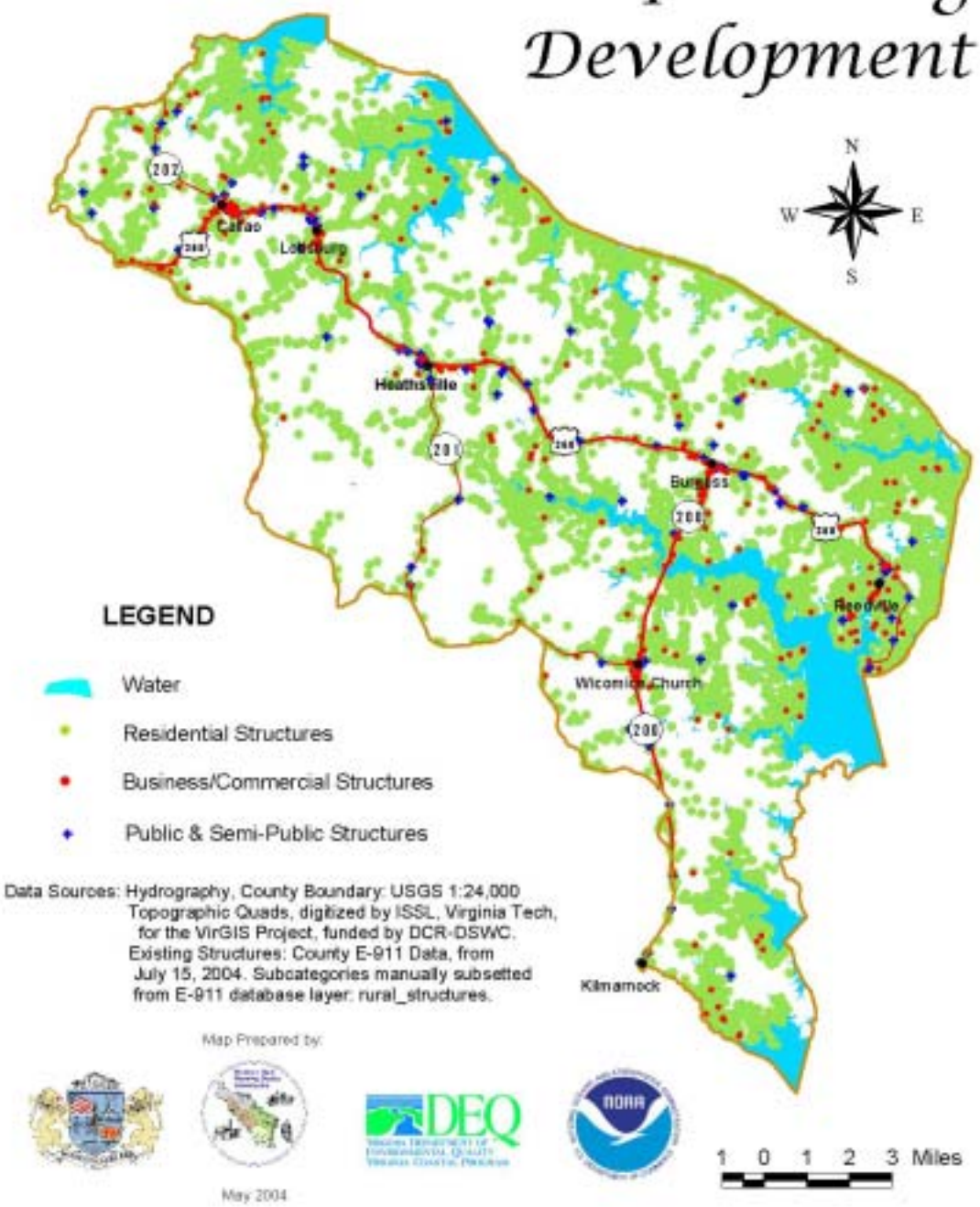
commercial structures indicated on the map. These structures were manually coded from the "Name" field in the E911 rural structures database.

- Public/Semi-public: This is a mixed category which includes mostly county buildings or facilities, schools, churches, and civic organization structures. There are 120 structures in this category and they are shown on the map by a blue cross. These structures were also coded from the E911 database.

This map illustrates the primary characteristics of development in Northumberland County. It is concentrated along existing roads and along the waterfront. Residential development appears along all roads while most of the commercial development is located along the primary highways. A concentration of commercial development within several villages is especially visible from this map. While it appears there are substantial commercial structures along the waterfront, it is often a home-based business such as sign making or a tree service company. On the other hand, charter boat operations and seafood structures are water-dependent uses and are also shown.

The largest single category of land use is for agriculture and forestry as illustrated by the large amount of white area on the map. Farming and forest uses have remained fairly untouched by development at this stage, except for conversions of land to development along the various waterfronts.

Figure 1.1


2004 Existing Development
N
W
E
S
Callao
Lottsburg
Heathsville
Burgess
Reedville
Wicomico Church
Kilmarnock
LEGEND
Water
Residential Structures
Business/Commercial Structures
Public & Semi-Public Structures
Data Sources: Hydrography, County Boundary: USGS 1:24,000 Topographic Quads, digitized by ISSL, Virginia Tech, for the VirGIS Project, funded by DCR-DSWC. Existing Structures: County E-911 Data, from July 15, 2004. Subcategories manually subsetted from E-911 database layer: rural_structures.
Map Prepared by:
May 2004
DEQ
NOAA
1 0 1 2 3 Miles

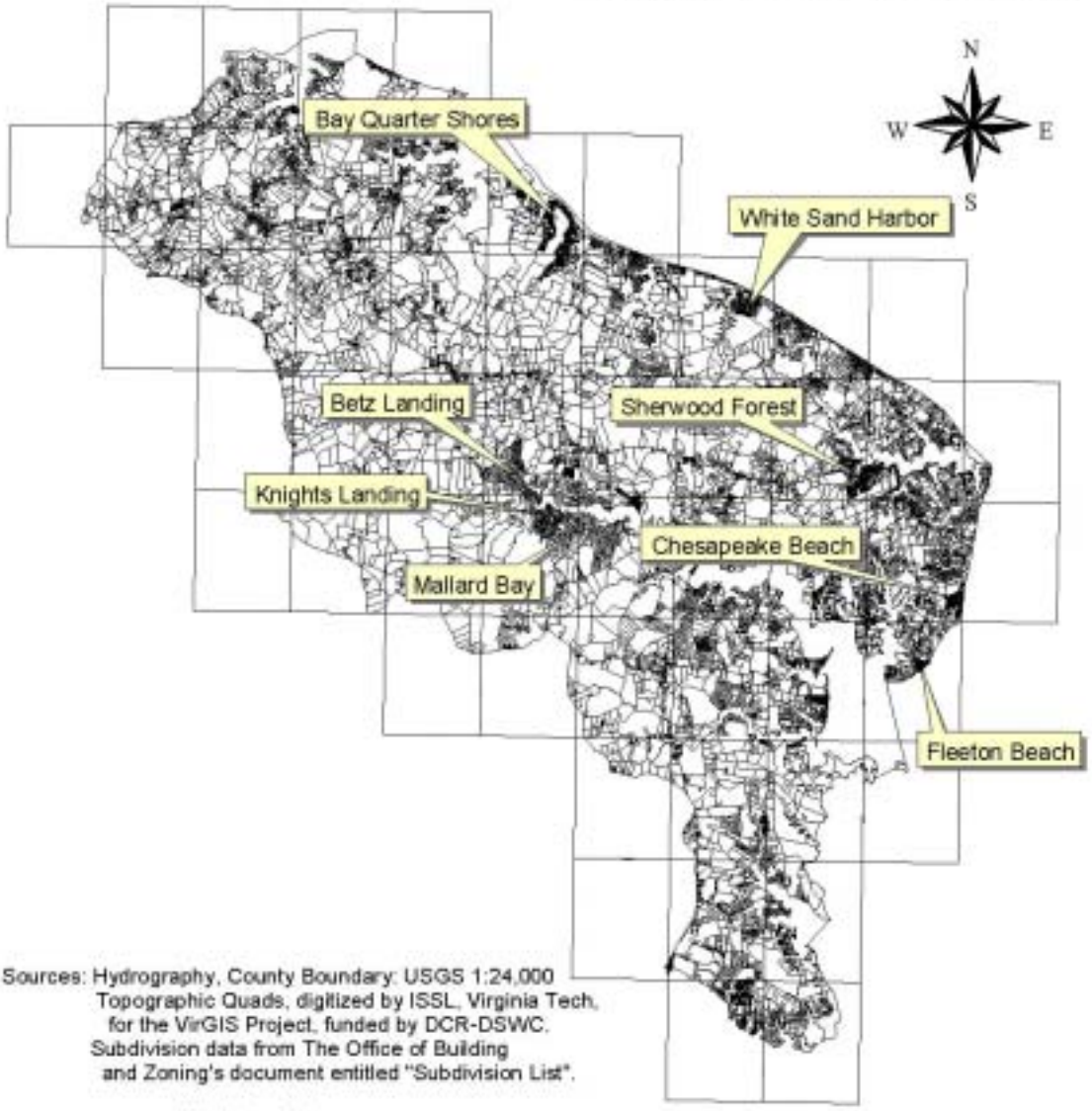
b. Subdivisions

New subdivisions are important in evaluating development potential because once subdivision lots are recorded and streets developed to serve them, as a practical matter, the landscape of that land is changed forever. This may account for the fact that subdivision ordinances were one of the first planning tools mandated by state legislation. Subdivisions have played an important part in the development of Northumberland County during the last two decades, particularly development along the waterfront. While data are available on individual subdivisions, there is no inventory of subdivisions and waterfront vs. non-waterfront properties. Anecdotal evidence indicates more than three-fourths of all subdivision lots occurring in waterfront developments. Figure 1.2 provides a graphic representation of the location of major waterfront subdivisions located within the County. There is no one specific concentration of subdivisions on any of the rivers or creeks; they are dispersed along the shorelines throughout the County.

It appears that in many of the larger subdivisions, only a small share of the lots is actually on the waterfront; the remaining are inland lots. And while the majority of the waterfront lots have been developed with homes, most of the inland lots are still vacant. These vacant lots that are already platted can be developed quickly, and could impact the demand for services in the County if the majority are developed. There is some evidence that development of the interior lots is progressing.

Figure 1.2

Major Subdivisions



Data Sources: Hydrography, County Boundary: USGS 1:24,000 Topographic Quads, digitized by ISSL, Virginia Tech, for the VirGIS Project, funded by DCR-DSWC. Subdivision data from The Office of Building and Zoning's document entitled "Subdivision List".

Map Prepared by:

May 2004

1 0 1 2 3 Miles

2. Topography, Physiography and Hydrography

a. Topography and Physiography

The topography and physiography of lands can greatly influence surrounding natural resources. The amount and rate of runoff and groundwater discharge which ultimately reaches water bodies are influenced by the size, shape, and topographic, physiographic and hydrographic characteristics of a watershed. Typically, runoff rates and the potential for erosion increase as slopes increase.

Elevation levels within Northumberland County range from sea level to approximately 170 feet. Although Northumberland County lies within the Coastal Plain region, the County contains three physiographic sub-regions which vary from flat coastal lands to hillier areas. The fluvial river terrace sub-region includes tidal marsh areas along major rivers and creeks and some adjacent lands which range from 10 to 50 feet above sea level. The low marine terrace sub-region ranges from 10 to 15 feet above sea level and typically lies between the fluvial river terrace and the upland. The fluvial river terrace and low marine terrace physiographic sub-regions comprise a band of level terraces along most of the Chesapeake Bay and the lower portion of the Potomac River. The coastal plain upland sub-region includes the inland plateaus as well as the cliffs along the two major rivers in the County, with elevations ranging from 90 to 170 feet above sea level. Figure 1.3 is a map showing the topography (elevations) of the County.

A conspicuous feature of Northumberland County's topography is an escarpment known as the "Suffolk Scarp". This feature which runs along the entire eastern coast of Virginia is located approximately two to three miles inland and is marked by a sharp drop in elevation at about 50 feet above sea level.

Figure 1.3 illustrates the principal topographic characteristics of the County. In particular, this map delineates clearly the Suffolk Scarp. The area between the "drop-off" and the shoreline of the Potomac River and Chesapeake Bay occupies nearly half of the County's total area and almost all of the area in demand for new development. Other maps and/or data appearing later in this Chapter will show that much of the area that lies seaward from the Suffolk Scarp is disadvantaged by poor percolation. In addition to the difficulty finding soils that are suitable for septic tanks, much of the land along the internal rivers and streams have slopes in excess of 15 percent. There is the problem of increased soil erosion in cases where slopes are both "steep" and "highly erodible". Careful attention should be given to ensure that new development is adjusted to these sensitive features of the soil and topography. *(Highly erodible soils will be discussed in more detail in B.3.b.)*

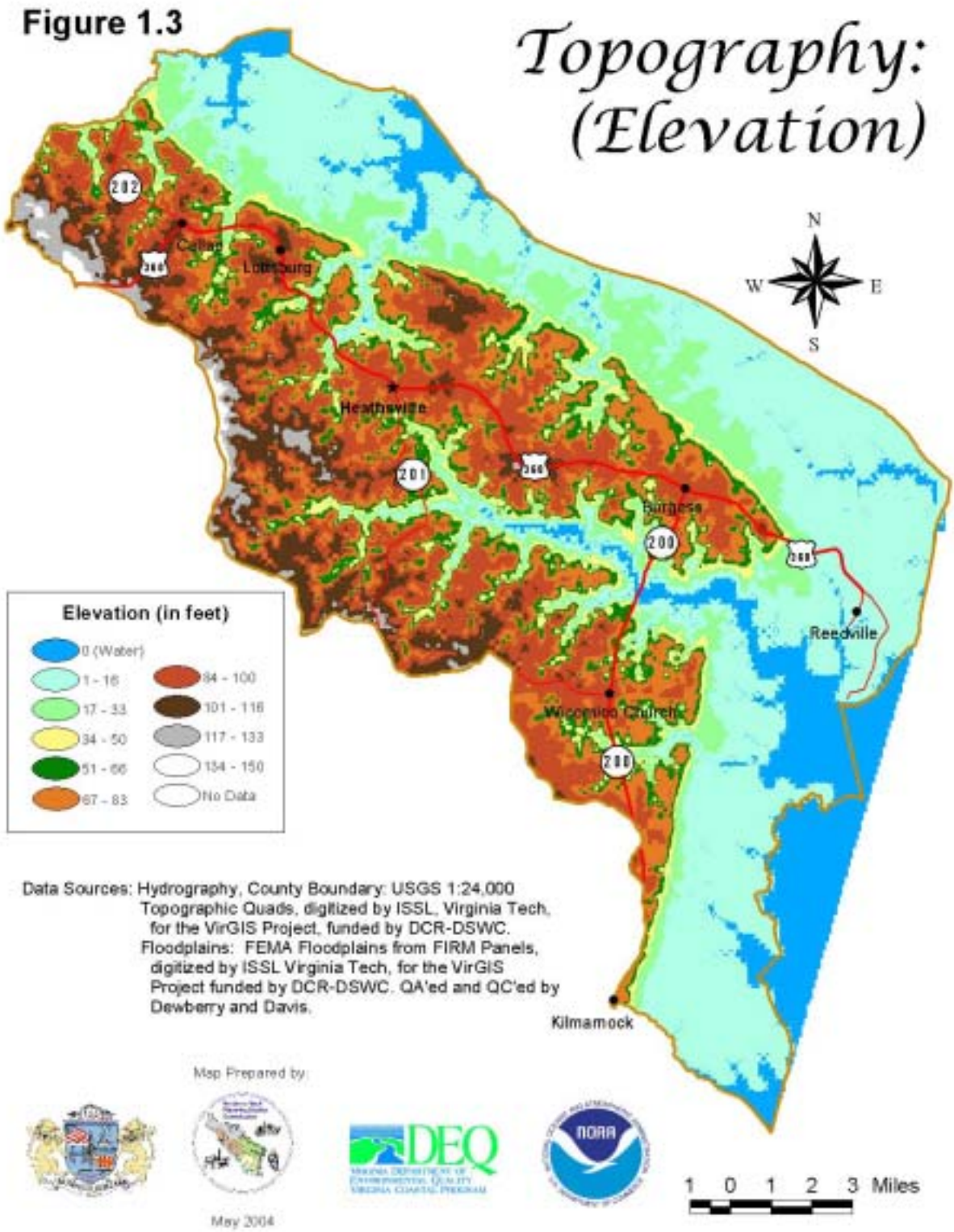


Figure 1.3
Topography: (Elevation)
N
W
E
S
Callao
Lottsburg
Heathsville
Burgess
Reedville
Wicomico Church
Kilmarnock
202
200
Elevation (in feet)
0 (Water)
1 - 16
17 - 33
34 - 50
51 - 66
67 - 83
84 - 100
101 - 116
117 - 133
134 - 150
No Data
Data Sources: Hydrography, County Boundary: USGS 1:24,000 Topographic Quads, digitized by ISSL, Virginia Tech, for the VirGIS Project, funded by DCR-DSWC.
Floodplains: FEMA Floodplains from FIRM Panels, digitized by ISSL Virginia Tech, for the VirGIS Project funded by DCR-DSWC. QA'ed and QC'ed by Dewberry and Davis.
Map Prepared by:
DEQ
NOAA
May 2004
1 0 1 2 3 Miles

b. Hydrography

Figure 1.4 presents the hydrography of the County – the locations of the streams, rivers and ponds. Northumberland County has an abundance of streams that channel water towards the rivers and eventually the Chesapeake Bay. The density of streams in the county is highest in the upland area, where the topography of the land creates headwater streams. As the land descends to the rural low shelf, the streams become less dense, as there is little topography that generates stream confluence.

Almost anywhere in Northumberland County, you are not far from a stream. Whether it is a small ephemeral stream, a larger perennial stream, or a free flowing tidal creek or river, you seldom have to travel more than a mile in any direction to encounter flowing surface water. Most streams begin in the gullies and ravines in the upland that are forested. The streams then join with other first order streams to create second order streams and so forth, ever growing in size and volume. The larger rivers in the county, progressing from north to south are the Yeocomico, Glebe, Coan, Little Wicomico, (all draining into the Potomac) the Great Wicomico, Indian Creek and Dividing Creek (which drain into the Chesapeake Bay).

Nearby streams can be polluted by careless persons. Citizens need to be aware that some of the actions they routinely do could harm stream health. Over-fertilizing lawns, careless handling of automotive fluids, and other day-to-day activities can pollute nearby streams and groundwater. Care is needed to minimize human impacts to surrounding surface and ground water.

Figure 1.4

Hydrography:
Streams, Rivers, Ponds
N
W
E
S
Callao
Lottsburg
Heathsville
Burgess
Reedville
Wicomico Church
Kilmarnock
LEGEND
Primary, Secondary Roads
Shoreline, Perennial Stream
Intermittent Stream
County Boundary
Data Sources: Hydrography, County Boundary: USGS 1:24,000
Topographic Quads, digitized by ISSL, Virginia Tech,
for the VirGIS Project, funded by DCR-DSWC.
Map Prepared by:
May 2004
DEQ
NOAA
1 0 1 2 3 Miles

3. Prime Agricultural Soils (Prime Farmland)

Prime Agricultural Soils have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. They have the combination of soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in an economic manner if it is treated and managed according to current farming methods. In general, prime farmland has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, an acceptable level of acidity or alkalinity, an acceptable content of salt or sodium, and few or no rocks. Its soils are permeable to water and air. Prime farmland is not excessively eroded or saturated with water for long periods of time, and it either does not flood frequently during the growing season or is protected from flooding. Figure 1.5 presents the prime agricultural soils of Northumberland County.

All of the soil qualities that make for high agricultural production are also desirable characteristics for building sites. Thus, these soils are more likely to be built upon because of their suitability for supporting foundations and conventional septic systems. In addition to the favorable soil characteristics, these lands have been previously cleared of trees, shrubs and vegetation so that the land can be cultivated. Therefore, there are no costs associated with land clearing. A developer or landowner can begin construction as soon as the land changes ownership, putting additional developmental pressure on prime farmland.

Why should we be concerned with the loss of Prime Farmland?

> Food is produced on prime farmland more efficiently and with less soil erosion, resulting in less pollution from sediment, nutrients and pesticides. When prime land is lost, it not only takes more non-prime land to produce the same amount of food, but also results in lower returns per unit of production input. This means either higher domestic prices or fewer products to sell. In addition, if these areas are lost to production, more marginal lands may be cultivated, which could pollute nearby streams with sediment and phosphorous.
>
> The United States is a food-exporting country. Loss of prime farmland, as mentioned above, eventually reduces our export potential or forces into production land previously considered marginal. Much of this marginal land should remain in forage or forestry production to prevent the land resource from being damaged. Often this marginal land is adjacent to the prime farmland. When this land is in forage or forestry, it acts to absorb any nutrients that do flow off the cultivated land. When this marginal land is pressed into production, the buffer action is lost, and pollution can be transmitted to nearby water bodies.
>
> Loss of agricultural land to urban development, by and large, is irreversible. When cropland is diverted to forestry, forage production or recreation uses, the land can be easily returned to intensive crop production, if need be. However, when the land is developed (converted to urban or suburban land use or subdivided), it is impractical, if not impossible to bring such land back into production again. Policies may be established to protect desirable agricultural land and at the same time provide the property owner the

ability to take advantage of rising property values using open space concepts as discussed in Chapter 3.

Prime farmland is a component of healthy economy. The County has policies in place that can protect prime farmland so as to keep agricultural production at a high level (and generate taxable income), and reduce pollution at the same time. Deferred land use value taxation allows landowners that have their land in agricultural and forest production to pay less tax, so as to increase their return on investment. If the landowners develop the property, then they have to pay back the difference between the deferred tax amount and the standard tax amount for the prior five tax years. This policy helps keep farmland in production and may slow the conversion of farmland to residential property in the county.

Figure 1.5

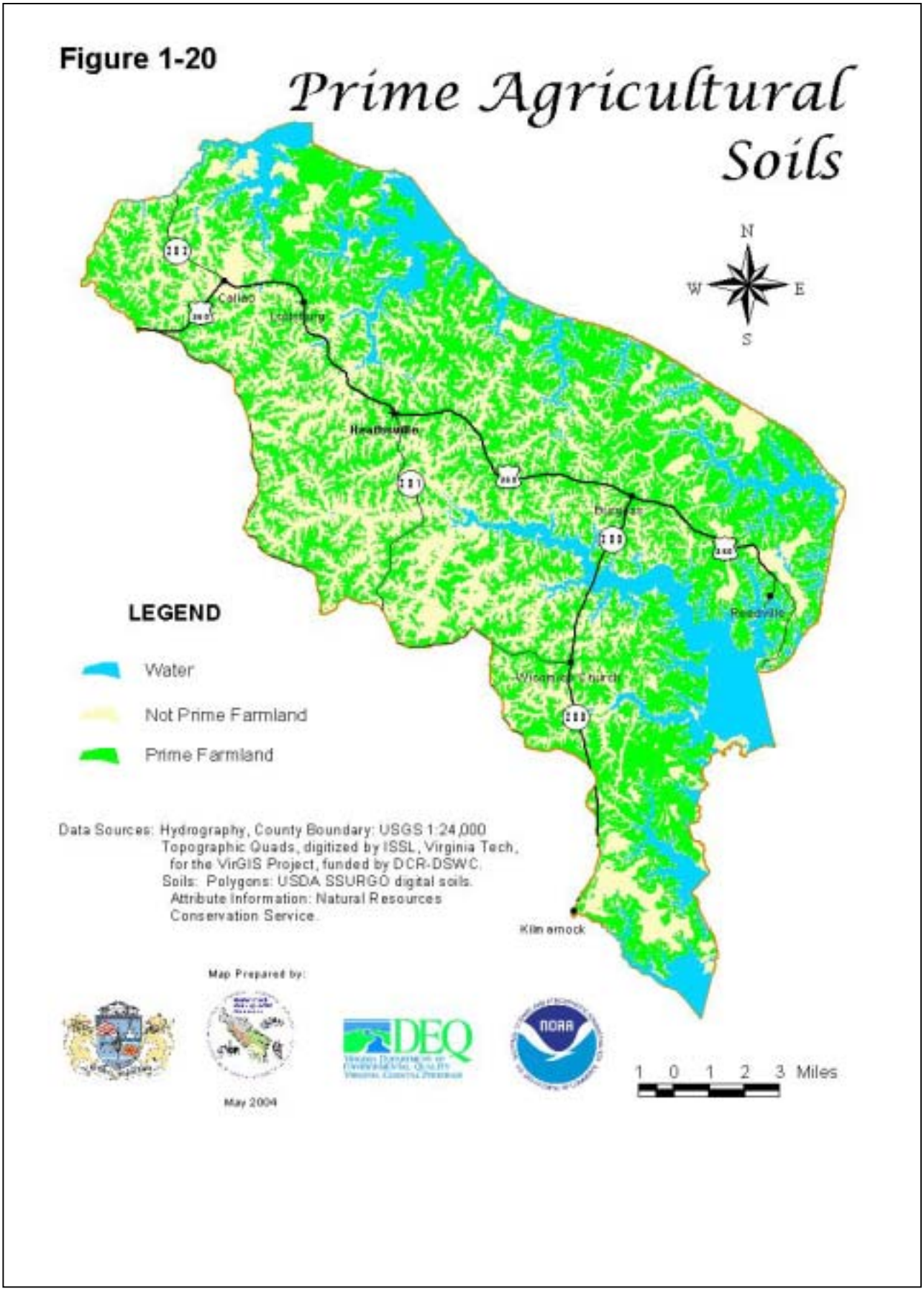


Figure 1-20
Prime Agricultural Soils
N
W
E
S
Callao
Heathsville
Burgess
Reedville
Wicomico Church
Kilmarnock
LEGEND
Water
Not Prime Farmland
Prime Farmland
Data Sources: Hydrography, County Boundary: USGS 1:24,000 Topographic Quads, digitized by ISSL, Virginia Tech, for the VirGIS Project, funded by DCR-DSWC.
Soils: Polygons: USDA SSURGO digital soils. Attribute Information: Natural Resources Conservation Service.
Map Prepared by:
May 2004
DEQ
NOAA
1 0 1 2 3 Miles

4. Soil Suitability for On-Site Sewage Treatment

One of the most important factors to consider in determining soil suitability for development in rural areas is the suitability of the soil for sewage disposal through the use of septic drainfields. Because Northumberland County is not serviced by a public sewage system (except for Reedville, Fleeton and Callao in 2005, see Figure 1.6, Sewered Areas Map), careful consideration must be given to the design, construction, and maintenance of septic tank systems or other on-site sewage disposal systems located on questionable sites such as those in flood prone areas, on steep slopes, or with poorly-drained soils.

Figure 1.7 Septic Suitability, illustrates those areas within the County that have characteristics which are generally unsuited for establishing septic tank drain fields. This map is a composite of factors from the United States Department of Agriculture's (USDA) Soil Survey that limit the soil's capacity to accept septic tanks. Locations of high water tables, steep slopes, flood prone areas, and soils with inappropriate permeability rates were combined to determine areas in the County where soils are suitable to support septic systems. The county soil surveys are to be used as a planning tool, and as such, have limitations. No doubt, areas of suitable soils for septic tanks occur within the areas coded as "poor".

Most of the problem areas are in the low lying area spanning a two-to-three mile band that roughly parallels the Chesapeake Bay and the Potomac River shorelines. This area is characterized by elevations lower than 50 feet above sea level. In addition, there are a large number of smaller problem areas that run throughout the County. These are mostly located along streams and include stream banks and other steep slopes. The latter is a problem not only for septic tanks but also as a source of soil erosion. Erosion can result when unstable soil is disturbed particularly if the slope is steep.

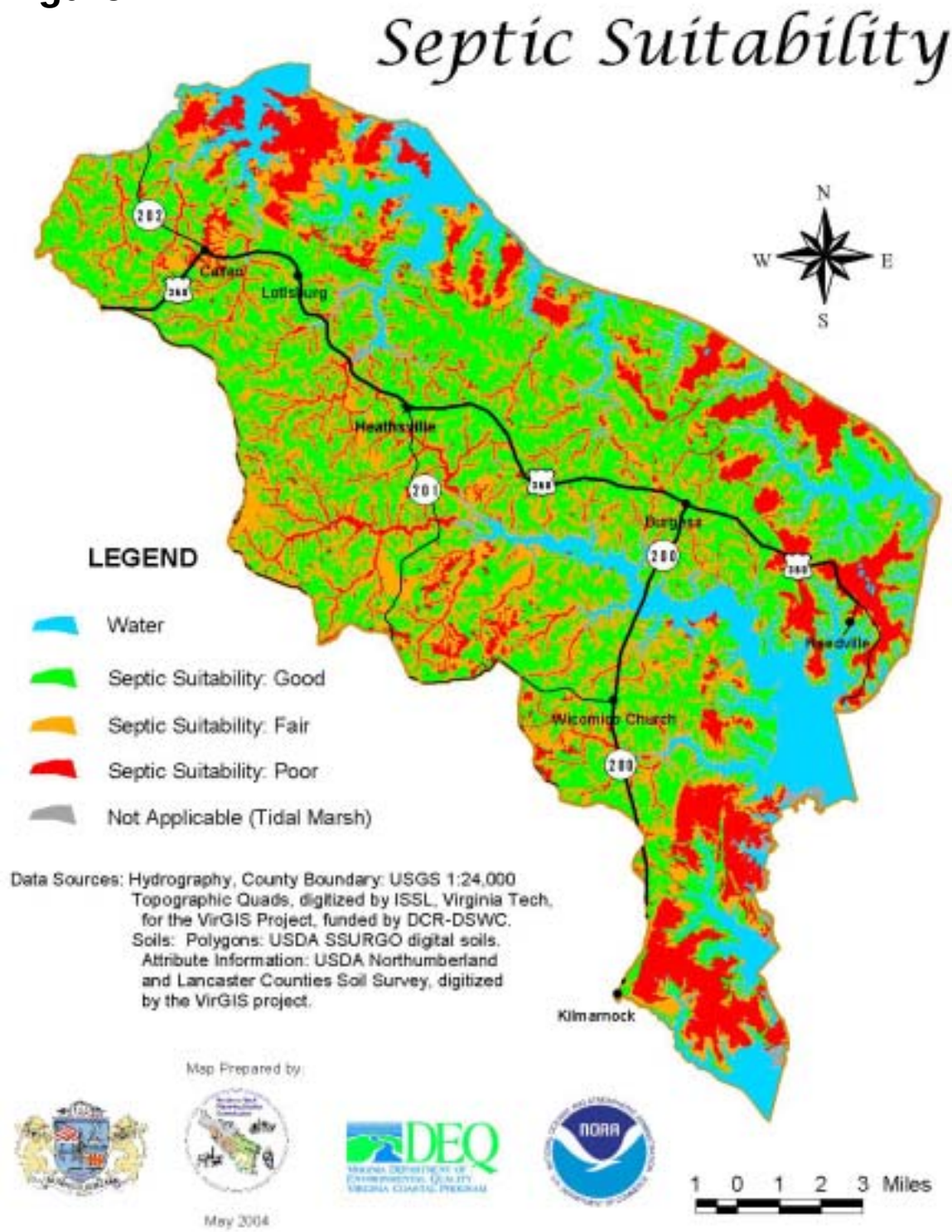
Despite the conditions noted above, it can be observed from Figure 1.7 that most of the land area within the shelf area between the Suffolk Scarp and the shorelines may have acceptable soils for septic tanks. Nevertheless, this is an area where caution should be used in selecting sites where on-site sewage disposal is necessary.

Some clay and silt soils in the County are poorly suited for sewage disposal because their low permeability characteristics limit the rate which water moves down through the soil. An example of this situation occurs in Callao, where Beltsville soils contain fragipan, a dense soil layer beneath the surface which contributes to water quality impacts and presents a risk to human health. Soils with extremely low permeability may cause septage to rise to the surface, and obvious risk to human health. The state standard is that a permeability of less than 0.6 (0.6 inches of percolation per hour) is unacceptable for septic tank fields.

Figure 1.6

Sewered Areas
N
W
E
S
202
Callao
360
Lottsburg
Heathsville
201
360
Burgess
200
360
Reedville
Wicomico Church
200
Kilmarnock
LEGEND
Water
Areas Served by Public Sewer
Data Sources: Hydrography, County Boundary: USGS 1:24,000
Topographic Quads, digitized by ISSL, Virginia Tech,
for the VirGIS Project, funded by DCR-DSWC.
Sewered Areas: Virginia Department of Health,
Division of Shellfish Sanitation, modified
with Northumberland County Staff input,
(Fleeton extension and Callao region).
Map Prepared by:
May 2004
DEQ
NOAA
1 0 1 2 3 Miles

Figure 1.7


Septic Suitability
N
W
E
S
Callao
Lottsburg
Heathsville
Burgess
Reedville
Wicomico Church
Kilmarnock
LEGEND
Water
Septic Suitability: Good
Septic Suitability: Fair
Septic Suitability: Poor
Not Applicable (Tidal Marsh)
Data Sources: Hydrography, County Boundary: USGS 1:24,000 Topographic Quads, digitized by ISSL, Virginia Tech, for the VirGIS Project, funded by DCR-DSWC.
Soils: Polygons: USDA SSURGO digital soils. Attribute Information: USDA Northumberland and Lancaster Counties Soil Survey, digitized by the VirGIS project.
Map Prepared by:
May 2004
DEQ
NOAA
1 0 1 2 3 Miles

At the other end of the range, highly permeable soils are also unsuitable for installation of septic systems, because the effluent moves through it too fast to provide adequate treatment, having the potential to contaminate groundwater. State standards establish "6.0 inches per hour" as the maximum permeability acceptable for septic tank installation.

In summary, most of the development that is likely to occur within the County in the near future, given the large number of subdivision lots in scattered subdivisions, will require septic tanks - the only viable option for sewage disposal in these areas. The ability to install septic tanks will depend entirely upon the suitability of the soil for drain fields. The determination of whether the soil is acceptable for drain fields is to be made by the Health Department on a case-by-case basis. "Percolation", as the process for the ground accepting the outflow from septic tanks, refers to the rate that the water will pass through the soil while it is saturated. If percolation occurs too fast, then the septic tank fails because the drainage passes through the soil too quickly. If it occurs too slowly then the drainage may pass horizontally through the soil untreated and contaminate the underground water supply.

In 2000, the State passed more stringent separation distances between septic absorption fields and the first occurrence of groundwater (the water table aquifer). At the same time, recent developments in technology have given rise to engineered residential septic systems that are allowed by the Health Department in areas previously deemed “undevelopable” due to soil conditions. Most rely on some type of secondary treatment to treat and disinfect the septage before releasing it into the ground. The cost of these systems is approximately three times the cost of a conventional septic system. There are systems that use peat moss to filter, systems that use low pressure to ”dose” the field, and others that use oxygen pumped into a chamber to treat septage. Regardless of the technology, a maintenance agreement between the company that installs the system and the property owner should be required, as these systems must be maintained properly to protect groundwater. Regular reporting to the Health Department of the results of the inspection by a qualified inspection company should also be required.

Every effort should be taken to minimize threats to groundwater in the County, particularly because the County relies entirely on groundwater for its potable water. The groundwater of the surficial aquifer can be protected by increased vertical separation between a drainfield and the water table. Such separation provides adequate biological treatment, minimizing contamination of surface and ground water. In 2000, the State passed more stringent separation distances between septic absorption fields and the first occurrence of groundwater (the water table aquifer). This law grandfathers existing septic systems to the old distance, provided they do not fail. However, if the conventional system fails, the new regulations take precedence.

Percolation and depth to groundwater testing should be completed prior to subdividing or platting land to ensure that purchased lots have primary and reserve sewage disposal areas on site. Homeowners should be encouraged to use water conservation devices to ease the load on septic systems. In addition, purchasers of land need to be aware that many developers have been creating reserve septic system drainfields to comply with the Chesapeake Bay Preservation Act that will only accept expensive engineered secondary treatment systems. While these small reserve drainfields may be due to site limitations, those who purchase land for residences need to know the economic consequences if the primary septic system fails. It is also important for

homeowners to understand that conventional septic systems have a lifespan of 25 to 30 years and that all, given enough time, will eventually fail. The best way to extend the life of a conventional septic system is to reduce the hydraulic load on the system and have it inspected or pumped every five years. Low flow water fixtures are the easiest way to reduce the hydraulic load on the system, while at the same time conserving potable groundwater. Garbage disposals should be avoided because they greatly increase the load of solids on the septic system.

5. Shrink-swell Factors

Shrink-swell is the potential for volume change in a soil with a loss or gain in moisture. Volume changes occur mainly because of the interaction of clay minerals with water which varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of change in soil moisture content influence the amount of swelling of soils in place.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special engineering designs must be used to compensate in such conditions.

Figure 1.8 illustrates the general shrink-swell potential of Northumberland County's soils using a four-step classification.

- Moderate to high shrink-swell soils (the lowest quality) are present within the area between the shoreline and the Suffolk Scarf, but this type of soil is not the dominant class even in this area which otherwise has some soil qualities that are adverse to development.

- Low shrink-swell soils are present throughout the County but more dominant in the lower-lying areas of the high lands south and west of Routes 360 and 200. Low shrink-swell soils are more common in the drainage and stream basins of this portion of the County.

- Moderate to low shrink-swell is also found throughout the County and most commonly along the ridges between creeks and swales. Several points should be observed: (i) that most of the roads built by the Virginia Department of Transportation are located along the ridges where the better classes of soil are found; (ii) that almost all existing development occurs adjacent to existing roads which also have the advantages of the good soils; (iii) because of the distance between the tops of the ridges and the creeks and drainage ways that follow the valleys, development of this type has the least detrimental impact on water quality; and (iv) despite these advantages, the areas most in demand are in the lowlands where few of these conditions are present.

- The last category, none, is not significant because very little of the land area of the County is classified in this manner.

Overall, the county soils are within an acceptable range as to shrink-swell qualities, and this condition should not present any barrier to development that cannot be compensated for by engineering design.

6. Flood-prone Areas

Floodplains are low-lying land areas adjacent to rivers, streams, creeks, and other water bodies that are subject to periodic flooding when precipitation causes the volume of water to exceed the capacity of the waterway. Left in an unaltered, undeveloped state, floodplains can serve important natural, recreational, and historical functions.

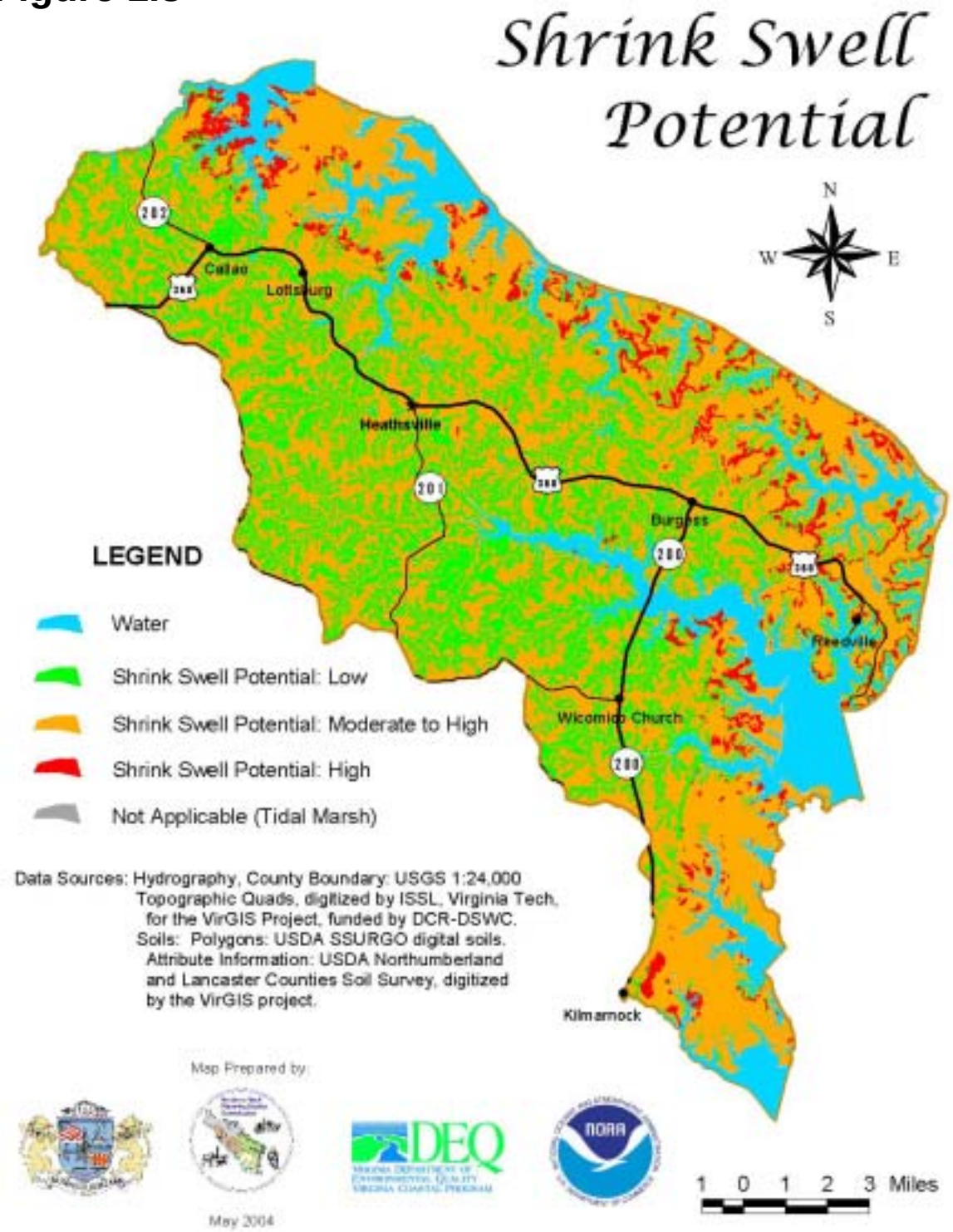
There are a multitude of factors, such as topography, geographic orientation of the shoreline, depth and duration of flooding, and rate of water rise, which affect damages caused by a flood. The amount of flood damage is also affected by the extent of development within a floodplain since development can interfere with many of the natural functions floodplains serve.

According to Northumberland County's Flood Insurance Study, the coastal areas of the County are vulnerable to tidal flooding from major storms such as hurricanes and northeasters. These types of storms produce large amounts of precipitation, high winds and low atmospheric pressure that cause large volumes of water to impinge against the shore. The topography of the area flooded, rate of rise of floodwaters, depth and duration of flooding, exposure to wave action, and extent to which structures have been placed in the floodplain determine the amount and extent of damage caused by any tidal flood.

Northumberland County has experienced major storms and flooding since early settlement of the area. The most recent severe storm occurred in September of 2004 when winds from tropical storm Isabel in excess of 65 miles per hour pushed tides eight feet above normal levels and destroyed bulkheads, boathouses, and other waterfront structures in the Northern Neck and other areas along the Chesapeake Bay and Potomac River.

Congress established the National Flood Insurance Program in 1968. This program enables property owners to purchase federally backed flood insurance within communities which implement floodplain management measures to reduce flood risks to new development. Regulations of the National Flood Insurance Program specify requirements that must be included in local ordinances if a community wishes to participate in the program. Requirements of the program include regulation of buildings and other development in floodplain areas. The Federal Emergency Management Agency (FEMA) establishes flood risk data for insurance rating and floodplain management in addition to conducting Flood Insurance Studies and Maps for localities. The Flood Insurance Rate maps define flood hazard areas, or areas subject to inundation at 100-year and 500-year intervals. A 100-year flood zone has a one percent (1.0%) chance of being inundated in any given one-year period, whereas the 500-year flood zone has a two-tenths of one percent (0.2%) chance of being flooded in the same one-year period.

Figure 1.8


Shrink Swell Potential
N
W
E
S
Callao
Lottsburg
Heathsville
Burgess
Reedville
Wicomico Church
Kilmarnock
LEGEND
Water
Shrink Swell Potential: Low
Shrink Swell Potential: Moderate to High
Shrink Swell Potential: High
Not Applicable (Tidal Marsh)
Data Sources: Hydrography, County Boundary: USGS 1:24,000 Topographic Quads, digitized by ISSL, Virginia Tech, for the VirGIS Project, funded by DCR-DSWC.
Soils: Polygons: USDA SSURGO digital soils. Attribute Information: USDA Northumberland and Lancaster Counties Soil Survey, digitized by the VirGIS project.
Map Prepared by:
May 2004
DEQ
NOAA
1 0 1 2 3 Miles

FEMA has completed Flood Insurance Rate Maps (FIRMs) for Northumberland County, which are on file in the Office of Building and Zoning in the County Administration Building (old courthouse). The FIRMS are also in digital form in the County Geographic Information System (GIS). Figure 1.9 depicts FEMA FIRM 100 year and 500-year floodplains within the County.

FEMA's Flood Insurance Study determined that all development in the County's floodplains is subject to water damage. Some flood-prone areas are subject to high velocity wave action which may cause structural damage and severe erosion along the shoreline. Due to the exposure afforded by the expanses of open water (fetch) on the Chesapeake Bay and the Potomac River, the northern and eastern sections of the County are most vulnerable to wave damage.

There is considerable development in Northumberland County that is located within the 100-year floodplain shown on the Floodplain Map. It includes full-time dwellings, seasonal cottages, businesses and industries. This is understandable, given that most of the existing development within the County occurred before the flood zone maps were first prepared pursuant to a 1968 federal law. Even today an owner still has the option of building within a floodplain; however, most dwellings that are financed with insured loans are required by the mortgage insuring agency to purchase flood insurance, and/or raise the lowest habitable floor above the 100-year flood elevation.

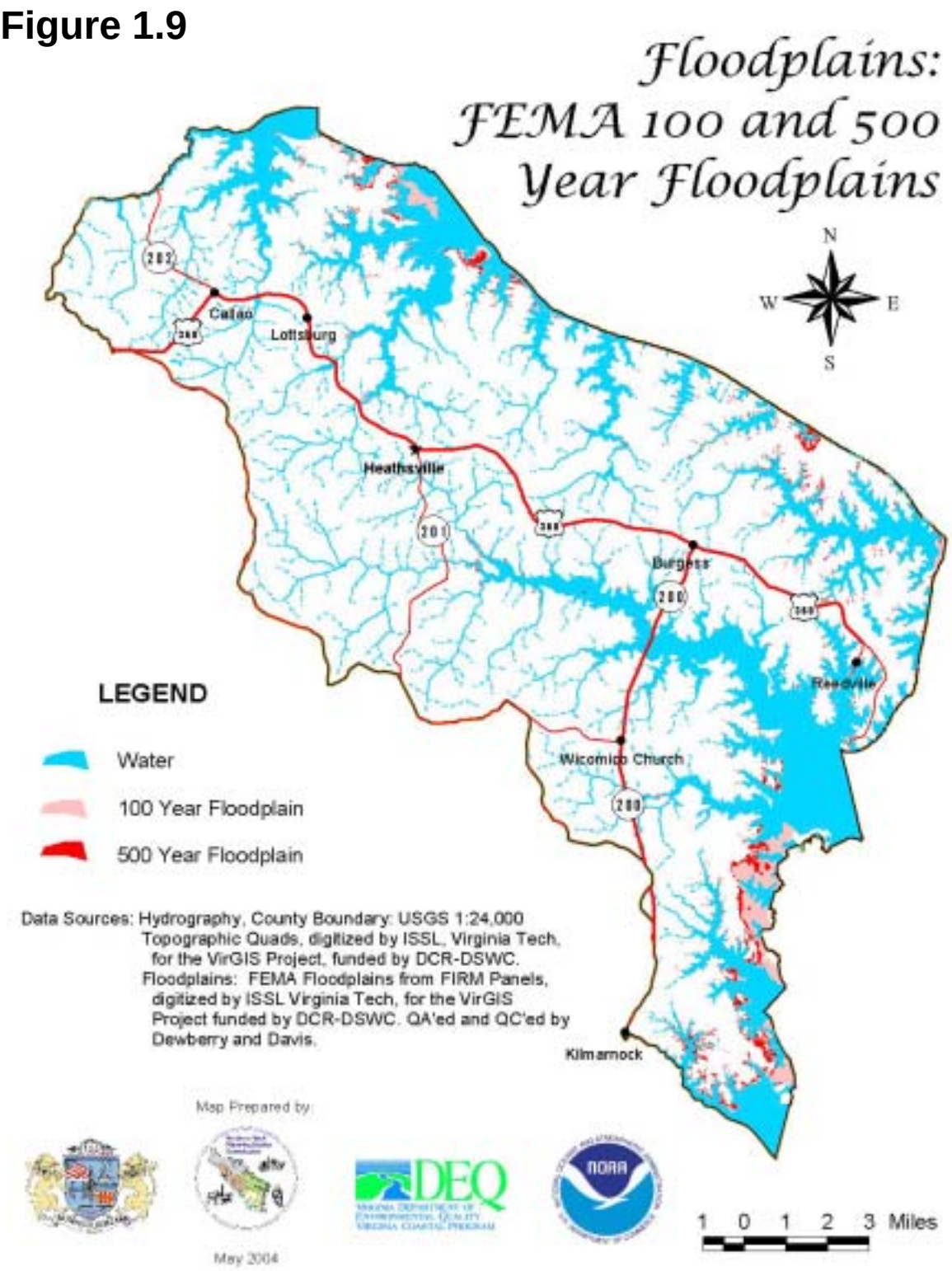
Pressure for future development in the County's floodplains is expected to continue as long as an abundant supply of lots along the shorelines is available. That, however, is rapidly changing. The low mortgage interest rates in 2003 spurred a boom in waterfront development in the County. The amount of shoreline is dwindling, (examine Figure 1:1 2004 Existing Development), as the price of available land increases.

Structural and natural elements that afford some protection against flooding include bulkheads, seawalls, jetties, and sand dunes. The regulatory flood protection measures are included in various codes and ordinances which regulate some aspect of development within floodplains, including: State Uniform Building Code, County's Floodplain Management Ordinance, Subdivision Ordinance, and Chesapeake Bay Preservation Ordinance.

The County's Floodplain Management Ordinance was enacted in May 1989. The general provisions of the ordinance include regulation of uses, activities, and development which will cause unacceptable increases in flood heights, velocities, and frequencies; restriction or prohibition of certain uses, activities and development within areas subject to flooding; requirement of protection or flood proofing for all uses, activities, and development in flood prone areas; and protection for individuals buying lands and structures unsuited for intended purposes because of flood hazards.

The County's Subdivision Ordinance requires those who subdivide land to provide information needed to determine if improvements such as drainage plans and flood control devices are necessary to develop the property. If improvements are necessary, the subdivider must provide plans with a surveyor's or engineer's statement that such improvements will be adequate for property development when properly installed.

Figure 1.9


Floodplains:
FEMA 100 and 500
Year Floodplains
N
W
E
S
Callao
Lottsburg
Heathsville
Burgess
Reedville
Wicomico Church
Kilmarnock
LEGEND
Water
100 Year Floodplain
500 Year Floodplain
Data Sources: Hydrography, County Boundary: USGS 1:24,000
Topographic Quads, digitized by ISSL, Virginia Tech,
for the VirGIS Project, funded by DCR-DSWC.
Floodplains: FEMA Floodplains from FIRM Panels,
digitized by ISSL Virginia Tech, for the VirGIS
Project funded by DCR-DSWC. QA'ed and QC'ed by
Dewberry and Davis.
Map Prepared by:
May 2004
DEQ
NOAA
1 0 1 2 3 Miles

The County's Chesapeake Bay Preservation Act Ordinance limits development to within 100 feet of tidal waters connected with continuous flow. The 100-foot setback is created as a pollutant filter buffer strip, but can serve as a flood buffer also. In addition, the 100-foot setback also protects homeowners from the effects of shoreline erosion. All in all, the Bay Act requirements help protect both the Bay from pollution and the homeowner from natural forces.

7. Wetlands and Natural Habitat Areas

a. Wetlands

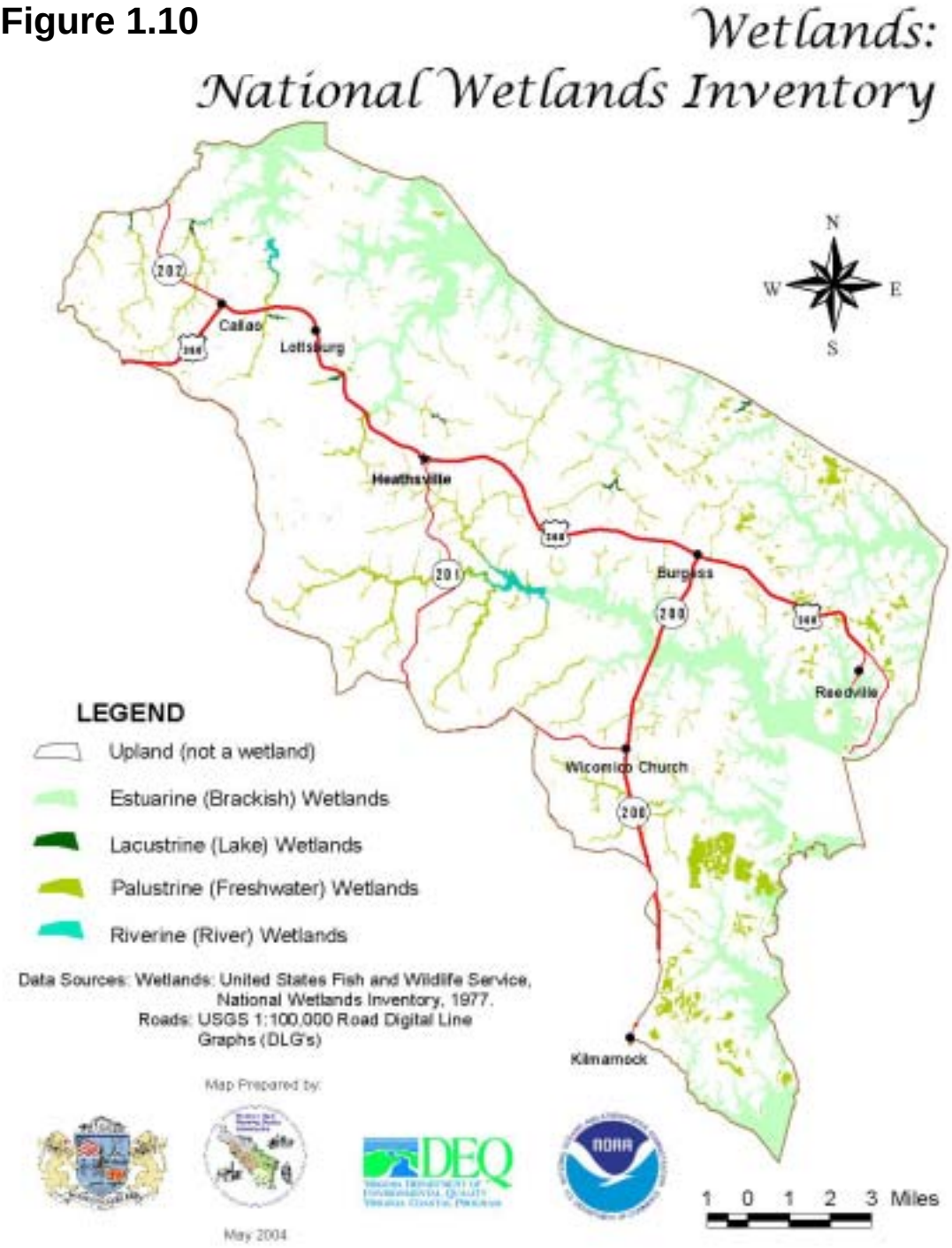
Wetlands are transitional areas between dry uplands and wet downland areas such as streams, rivers, bays, and other bodies of water. Often referred to as swamps, bogs, pocosins, and marshes, wetlands serve as a natural water filter for wastes and sediments, a barrier and an absorber of floodwaters, a buffer and stabilizer of the shoreline from coastal erosion, a recharge area for groundwater, and an important breeding and nesting ground for many important species of fish, bird, and plant life. Wetlands are often referred to as the "nurseries of the Bay". Wetlands also serve as valuable sites for recreation, open space, and education.

Wetlands are classified as either tidal or nontidal. Tidal wetlands are vegetated marshes, nonvegetated beaches, sandflats, and mudflats which receive regular tidal flooding by salt or brackish water. Tidal wetlands in the County are generally located along the bottomlands of major drainage streams subject to tidal action. Saltwater and freshwater marshes are typified by anaerobic mineral soils vegetated primarily by grasses, while mudflats and beaches do not support aquatic or terrestrial vegetation, but nonetheless are valuable to many species of benthic organisms and wildfowl.

Nontidal wetlands, which may be adjacent to tidal marshes as well as farther inland, are beyond tidal influences, and are either continually or seasonally saturated by fresh water from either surface runoff or groundwater saturation. Due to seasonal and yearly variations, these types of wetlands are not as easily recognized, since there may not be any surface evidence of the presence of water during certain times of the year. To delineate the extents of these wetlands, experts use plant species, soil characteristics and other factors to separate wetland areas from upland areas.

According to the National Wetland Inventory, there are 1,560 acres of tidal wetlands in Northumberland County. Some of the larger marsh areas include approximately 157 acres in Dameron Marsh, 125 acres in Barnes Creek, and 85 acres on Hughlett Point. See Figure 1.10 for additional wetland locations in the County.

Figure 1.10


Wetlands:
National Wetlands Inventory
N
W
E
S
Callao
Lottsburg
Heathsville
Burgess
Reedville
Wicomico Church
Kilmarnock
LEGEND
Upland (not a wetland)
Estuarine (Brackish) Wetlands
Lacustrine (Lake) Wetlands
Palustrine (Freshwater) Wetlands
Riverine (River) Wetlands
Data Sources: Wetlands: United States Fish and Wildlife Service, National Wetlands Inventory, 1977.
Roads: USGS 1:100,000 Road Digital Line Graphs (DLG's)
Map Prepared by:
DEQ
NOAA
May 2004
1 0 1 2 3 Miles

For years, wetlands were considered undesirable wastelands and breeding grounds for mosquitoes which should be filled, drained, or altered. Consequently, millions of acres of wetlands were lost to a number of drainage and land-filling projects in order to convert them to agricultural lands or development sites. Wetlands are extremely vulnerable to physical and hydrologic changes such as dredging, filling, and water pollution, and lose their ability to perform natural functions when they are filled or drained. It has been estimated that between the mid 1950s and late 1970s, 11 million acres of wetlands were lost nationwide. During this period, Virginia lost approximately 57,000 acres of freshwater vegetated wetlands to agricultural conversion, channelization, forestry, pond, lake, and reservoir construction and other development. During the early 1970s, the science community began to realize the significant functions and importance of wetlands and as a result, a number of federal, state, and local regulations evolved to manage and protect both tidal and nontidal wetlands.

- Federal Regulations: Sections 401 and 404 of the Clean Water Act are the primary federal regulations which affect development on wetlands. Before a wetland can be filled or disturbed, a 404 permit must be obtained from the U.S. Army Corps of Engineers.

- State Regulations: The Commonwealth of Virginia began to regulate wetlands in the early 1970s, with the passage of the Virginia Wetlands Act of 1972. The purpose of this act was to ensure that wetlands of primary ecological significance shall not be altered or unreasonably disturbed. The following areas were exempted from this Act: agricultural, silvicultural, and horticultural activities; cultivation and harvest of shellfish and worms for bait; maintenance and repair of roads and railways; outdoor recreational activities that do not disturb wetlands; construction and maintenance of noncommercial piers, boat houses, and fences constructed so as to preserve tidal flow, construction of navigational aids; maintenance of man-made drainage ditches; governmental activities; and activities undertaken pursuant to emergency decrees.

  In June 1998, the US Supreme Court ruled that the Army Corps of Engineers did not have the authority to regulate draining of non-tidal wetlands not connected by surface flow. This precedent called the “Tulloch Ruling” opened the door to destruction of thousands of acres of non-tidal wetlands. To close this loophole and to protect the State Water Control Board’s mandate of “no net loss” of wetlands, legislation was introduced and passed in 2000 that requires landowners to get a state permit to drain any non-tidal wetland. The Virginia State Water Protection Permit now states that it is unlawful to “new activities to cause draining that significantly alters or degrades existing wetland acreage or functions”. This important State law effectively ended the practice known as “Tulloch Ditching”, and affords a level of protection to non-tidal wetlands.

- Local Regulations: The Virginia Wetlands Act gave local governments authorization to establish local wetlands boards to exercise jurisdiction and review and issue permits for development on wetlands. In addition to establishing wetland regulations and wetlands board pursuant to the Virginia Act, Northumberland County adopted a Chesapeake Bay Preservation Area Ordinance that establishes a Resource Protection Area consisting of any wetlands plus a 100-foot vegetated buffer strip located landward from wetlands. Other regulations in Northumberland County that protect wetlands include the Floodplain

Ordinance, Erosion and Sediment Control Ordinance, and Subdivision Ordinance.

Figure 1.10 above illustrates United States Fish and Wildlife Service National Wetland Inventory wetland locations within the County; although this map only shows polygon wetlands (most streams also have linear (line) wetlands associated along their entire length). The County has on file a hard copy of the National Wetland Inventory, as well as a digital copy on the County's GIS System. That source should be used for specific wetland locations and configurations, although field conditions and delineations take precedence over any map product.

The predominant locations for wetlands are along the many streams which flow into the rivers that comprise its more than 556 miles of shoreline, according to data in Virginia Institute of Marine Science, Comprehensive Coastal Inventory, Center for Coastal Resource Management's report Northumberland County Shoreline Situation Report. In that report, compiled in June 2003, 45 miles of eroding marshes and 246 miles of stable marsh buffers were observed and recorded. More information can be found on Northumberland County's Shoreline on the Internet at: http://ccrm.vims.edu/gis/northumberland.html

b. Natural Habitat Areas

There are many sites within the County which are known to be a natural habitat resource for rare, threatened or endangered species which have been inventoried as part of a state or federal natural heritage program. Information for locating these sites can be found on an annual map created by the Department of Conservation and Recreation's Division of Natural Heritage Program entitled Natural Heritage Resources - Northumberland County. Due to the sensitive nature of natural heritage resources, that map is not shown in this plan. A hard copy of that map is on file at the Office of Building and Zoning, and is used to screen site plans to see if they impact rare, threatened or endangered species. If development should occur within the vicinity of these areas, the County should examine each project so that development does no harm to the protected natural habitat site. Persons proposing development should be required to identify the protected areas in detail on the site plans submitted for review by the County.

8. Historic Resources

The Virginia Department of Historic Resources is responsible for identifying and mapping known resources of historical and archaeological significance. In many communities throughout Virginia, this agency has sponsored the performance of in-depth surveys to identify both the location and historical context of buildings and sites of historic importance. VDHR has not completed an in-depth study of sites for Northumberland County, although it maintains an incomplete record of about 120 possible historic sites and buildings that have been identified over a period of time. New projects, such as highway widenings, now require a survey of possible historic sites that are likely to be affected by the project. Should a countywide survey of possible historic sites be undertaken by VDHR, it is likely that 500 or

more sites would be identified. In these surveys VDHR locates every building or site that is more than 50 years old.

Figure 1.11 depicts the general locations of sites that have been placed on the National Register of Historic Places (http://www.nationalregisterofhistoricplaces.com/VA/Northumberland/state.html). The list includes the following sites:

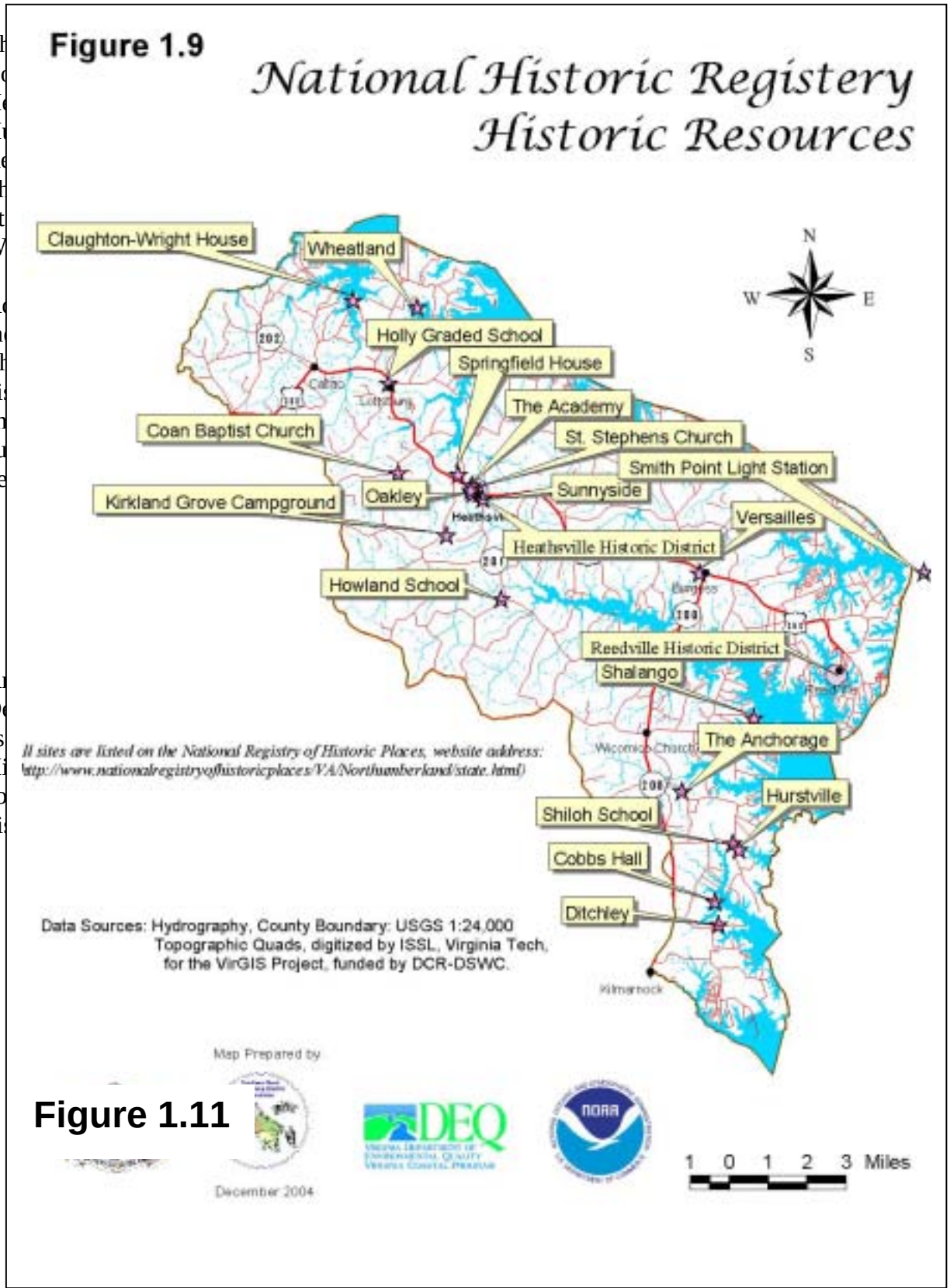


Figure 1.11

The County may wish to continue the development of its historic resources through a comprehensive survey available through VDHR although the local government is usually required to provide matching funds for the survey. With a complete survey of historic sites, Northumberland would be in a position to prepare a Historic Preservation Plan as a future addendum to the Comprehensive Plan.

9. Chesapeake Bay Protected Areas

The Chesapeake Bay Preservation Act was adopted by the Commonwealth of Virginia to improve the quality of the water that enters the Chesapeake Bay. The Act established a cooperative state and local government program to protect water quality of the Bay and its tributaries and requires localities in Tidewater Virginia to incorporate general water quality protection measures into their comprehensive plan, zoning ordinance, subdivision ordinance, and erosion and sediment control ordinance. The Act also established the Chesapeake Bay Local Assistance Board and Chesapeake Bay Local Assistance Department.

The Division of Chesapeake Bay Local Assistance Board serves all local governments located within the Tidewater region of Virginia. The Board is comprised of nine citizens appointed by the Governor to oversee implementation of the Act and develop regulations for the designation of Chesapeake Bay Preservation Areas and for land use management in these areas.

The Division of Chesapeake Bay Local Assistance, housed in the Department of Conservation and Recreation, is the state agency that provides administrative staff to the Board in carrying out the requirements of the Act. In addition, the Division provides technical advice to local governments.

Subsequent to the adoption of the Act, the Chesapeake Bay Local Assistance Board adopted the Chesapeake Bay Preservation Area Designation Management Regulations on September 20, 1989, to improve water quality of the Bay through proper land use management strategies. The Regulations require Tidewater localities to define and protect Chesapeake Bay Preservation Areas; lands which if improperly developed may result in substantial damage to the Bay and its tributaries. These localities were required to adopt zoning regulations and establish a zoning district map delineating Chesapeake Bay Preservation Areas. Northumberland County's Chesapeake Bay Preservation Area Ordinance, patterned after a model ordinance provided by CBLAD, and became effective September 20, 1990. Chesapeake Bay Preservation Areas are classified into two categories: Resource Protection Areas (RPA's) and Resource Management Areas (RMA's). The RPA is more restrictive of allowable uses than the RMA.

- RPA's consist of lands at or near the shoreline which possess intrinsic water quality. The regulations define RPA's as tidal wetlands, nontidal wetlands connected by surface flow and contiguous to tidal wetlands, tributary streams, tidal shores, and other lands which provide for the removal, reduction, or assimilation of sediments, nutrients, and potentially-harmful or toxic substances in runoff or groundwater discharge entering the Bay and its tributaries. A buffer area not less than 100 feet in width must be located

adjacent to and landward of RPA's and along both sides of any tributary stream. The only permitted uses in RPA's are redevelopment of existing uses, water dependent uses such as piers, public utilities, railways and roadways, water wells, passive recreation uses, and historic preservation or archaeological activities.

- RMA's, as established by Northumberland County, contain all areas of the County that are not classified as Resource Protection Areas. The RMA includes lands that have the potential to cause significant water quality degradation if improperly used or developed. Any use permitted under the County's zoning ordinance is permitted in the RMA, provided, all development meets performance criteria set forth in the Bay Act Regulations. Thus, all lands within the County are either in the RPA or the RMA.

- Intensely Developed Areas (IDA's) are areas of concentrated development within the RPA where development has severely altered the natural state of the area such that it has more than 50 percent impervious surfaces, public sewer and water is constructed and currently serves the area, and housing density is equal to or greater than four dwelling units per acre. Although some of the designation criteria may exist in certain areas of the County, there are no areas of concentrated development which meet all IDA criteria; therefore, Northumberland County has not designated any areas as IDA's.[7] IDA designation is optional on the part of the County.

In addition to defining Chesapeake Bay Preservation Areas, the Chesapeake Bay Preservation Area Designation and Management Regulations established Land Use and Development Performance Criteria to minimize non-point source pollution from stormwater runoff, minimize erosion and sedimentation, and maximize rainwater infiltration to reduce the introduction of nutrients and toxics and groundwater discharge of pollutants entering state waters affecting the Chesapeake Bay. Any use, development, or redevelopment of land in Chesapeake Bay Preservation Areas must meet several performance criteria to the satisfaction of the reviewing local government. The criteria include the following:

- preservation of indigenous vegetation
- minimization of land disturbance
- use and maintenance of best management practices (BMP's)
- minimization of impervious cover
- a plan of development review process and erosion and sediment control measures for development exceeding 2,500 square feet
- control of stormwater runoff and its quality

[7]Reedville is the only area that was considered, but it fails to meet the density requirement of four dwellings per acre which is part of the criteria for an IDA. See also Chapter 5 under "Policies relative to Intensely-Developed Areas.

- requirement of a soil and water quality conservation and nutrient management plan for lands upon which agricultural activities are being conducted within the RPA

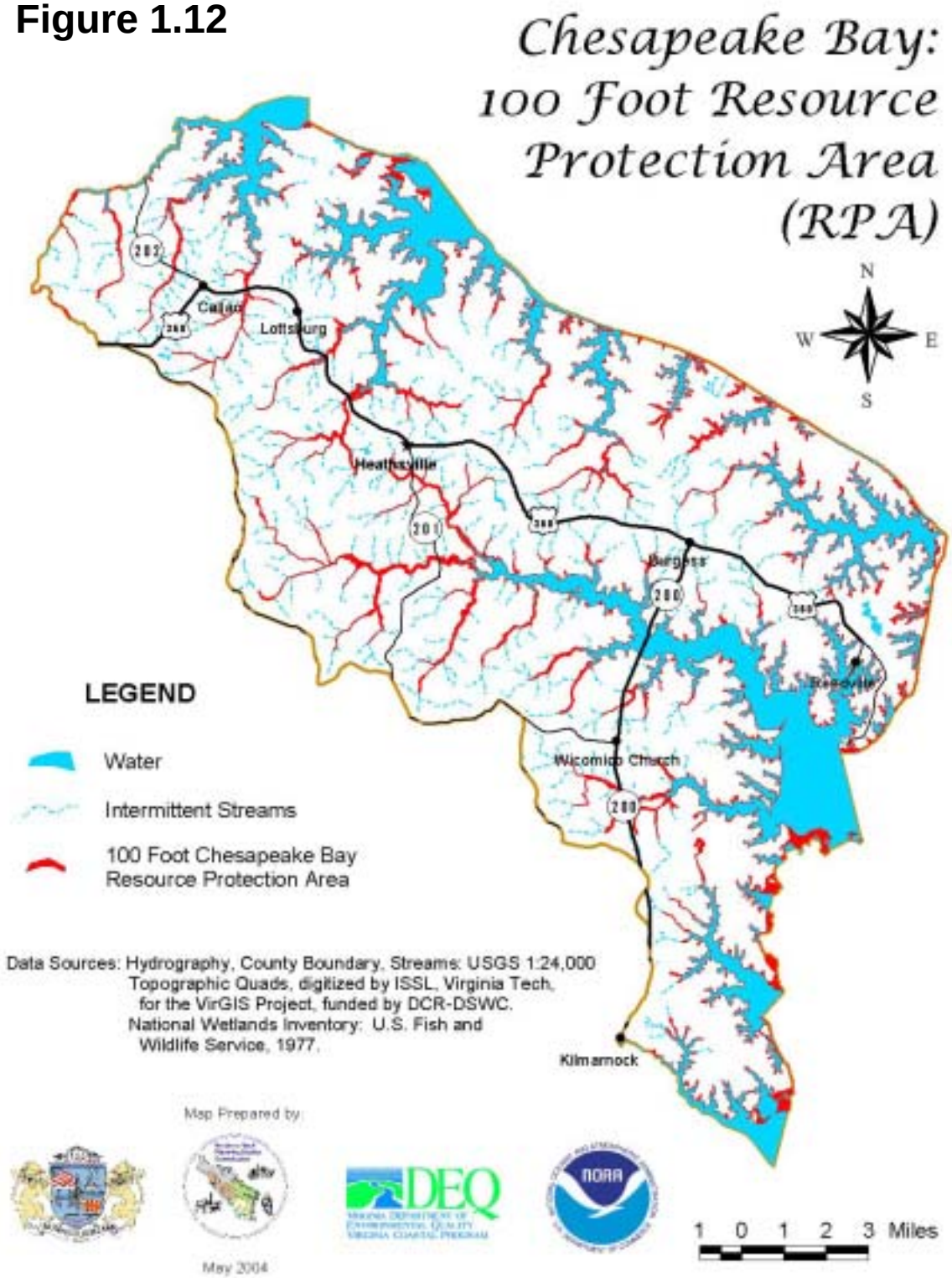
- requirement of all wetland permits prior to any land disturbance

- the inspection and pump-out (if necessary) of on site sewage treatment systems at least once every five years

- requirement of a reserve sewage disposal site equivalent to the waste treatment capacity of the primary drainfield for new development

Figure 1.12 shows the Chesapeake Bay 100 foot Resource Protection Areas delineated for the County.

Figure 1.12


Chesapeake Bay:
100 Foot Resource
Protection Area
(RPA)
N
W
E
S
Callao
Lottsburg
Heathsville
Burgess
Reedville
Wicomico Church
Kilmarnock
LEGEND
Water
Intermittent Streams
100 Foot Chesapeake Bay
Resource Protection Area
Data Sources: Hydrography, County Boundary, Streams: USGS 1:24,000
Topographic Quads, digitized by ISSL, Virginia Tech,
for the VirGIS Project, funded by DCR-DSWC.
National Wetlands Inventory: U.S. Fish and
Wildlife Service, 1977.
Map Prepared by:
May 2004
DEQ
NOAA
1 0 1 2 3 Miles

C. ANALYSIS OF CONDITIONS RELATED TO POTABLE WATER SUPPLY

1. Groundwater

a. The Hydrologic Cycle

Water resources are often described in the context of a hydrologic cycle, which is the cyclical movement of water within the environment from atmosphere to land to sea to atmosphere again. Precipitation, infiltration, evaporation, and transpiration are the main mechanisms which move water from one location to another. Precipitation in the form of rain, snow, or hail can be intercepted by vegetation, infiltrate into the ground, or runoff into surface waters. Plants that intercept precipitation absorb moisture and transpire water molecules back into the air. Infiltrated water moves underground in storage areas between underground layers of rock or sediment, known as aquifers. Water not infiltrated eventually runs into depression areas, such as puddles, streams, lakes, rivers, and oceans. As exposed surface waters evaporate into the atmosphere, the hydrologic cycle continues.

b. Groundwater Aquifers[8]

Groundwater occurs during the hydrologic cycle when water moves into and through the earth's surface. In Northumberland County groundwater is stored in layers of permeable sand and gravel called aquifers. Three aquifers comprise the underground water supply for Northumberland County: the surficial (water table) aquifer; the Brightseat-Upper Potomac aquifer; and the Chickahominy-Piney Point aquifer. All of the aquifers slope downward from the Fall Line in the west to the Chesapeake Bay in the easy.

- The water table aquifer: the uppermost aquifer system is close to the surface and is accessed by shallow wells. These shallow wells are the least expensive to construct. The water table aquifer is the most vulnerable of all the aquifers to contamination. The water table (unconfined) aquifer consists generally of fine sand and shells to depths reaching 80 feet or more and yields approximately 5 to 20 gallons per minute of moderately soft water that is generally satisfactory for domestic use. This aquifer is a significant and sustainable source for minor supplies of domestic groundwater in Northumberland County, supplying groundwater to farms, institutions, residences and other small users in the region.

- The Chickahominy-Piney Point aquifer is the shallowest artesian aquifer. The top of the aquifer is situated at approximately 350 feet below sea level in the vicinity of Reedville where the aquifer is approximately 140 feet thick. In the Callao region this aquifer is less than 100 feet thick, and its top occurs at a depth of

8 Reference USGS Professional Paper 1404-C

approximately 200 feet below sea level. . The Chickahominy-Piney Point aquifer yields 5 to 20 gallons per minute of moderately soft water with acceptable fluoride and sodium concentrations. It is a good source of potable water for moderate suppliers. This aquifer once served as a reasonable source of water for residents of the Northern Neck, but it has been superseded in importance by the deeper Brightseat-Upper Potomac aquifer system. Because of both quantity and quality problems, it is highly unlikely that this aquifer will ever be counted again to serve as a major source of groundwater for the Northern Neck.

- The principal artesian aquifer underlying the County is the Brightseat-Upper Potomac aquifer. At Reedville the top of this aquifer is situated at a depth of 658 feet below sea level. The total thickness of the water-bearing sands of this aquifer at this locality exceeds 220 feet. The aquifer thins gradually westward, and its top rises to a depth of approximately 530 feet below sea level in the vicinity of the Westmoreland County line. The Brightseat-Upper Potomac aquifer yields from 40 to 840 gallons per minute of soft, sodium-bicarbonated water, with slightly higher than normal chloride values in the southeastern most tip of the County. High sodium contents of greater than 200 parts per million are typical south of Wicomico Church.

In a report prepared in the late 1970s by the then Water Control Board (now the Department of Environmental Quality [DEQ]), it was concluded that under (then) current and projected rates of utilization, that groundwater should adequately meet the needs of Northumberland County through the year 2020.[9] However, that was 1978. The water levels in the major aquifers have been dropping 1.1 feet a year over the past few decades and the rate of decline in the vicinity of West Point, VA and in southern Maryland is approximately 3.5 ft/yr – in the same aquifers that supply Northumberland County. At the current rate of population growth and urban development, the critical Brightseat-Upper Potomac aquifer will be severely impaired by mid century. See Section 3.B of the Appendix.

c. Potable Water Supply (Wells)

Almost all developed sources of potable water in Northumberland County are supplied by wells. According to the 1990 Census, individual wells supplied potable water to 5037 households in the County and public or private systems supplied an additional 1754 households. Generally, three types of wells are found in the County: dug wells, drilled wells, and driven wells.

- Dug wells: range in depth from 8 to more than 80 feet, tap into the water table aquifer, and the yield and quality of water from them varies considerably. At low elevations, some dug wells yield brackish water when pumped heavily. Dug wells tap into the upper water table aquifer which is vulnerable to contamination from surface and sub-surface contamination sources. Health officials suggest that these wells be monitored carefully,

9 [9]State Water Control Board, Groundwater of the Northern Neck, Planning Bulletin 307, circa 1978

especially the grout on the well casing, and when necessary replaced with wells meeting current standards. In 1990, Northumberland County was one of the top ten localities in the Commonwealth having the most dug wells (2,211).

- Drilled wells: tap artesian (pressurized) water and range in depth from 300 to 900 feet. Deep drilled wells supply almost all of the water used by moderately heavy users including residential communities and industries. Homeowners, industries, and farmers favor them since they provide a substantial supply of good quality water. Oftentimes homeowners will replace a failing dug well with a drilled well for a more reliable potable water source.

- Driven wells: range in depth from 10 to 20 feet and are located primarily at lower elevations. Driven wells are not considered important water sources, since they generally yield low quality or brackish water, and are not very common.

Although many residents and businesses in Northumberland County have their own wells, a number of denser developed areas are served by privately owned central water systems, which generally obtain water from the deepest aquifers. Blundon and Hinton Water Company operates a community water system in Reedville, serving more than 400 residents with current withdrawals of about 30,000 gallons per day. The Virginia Department of Health rates the system's capacity at 200,000 gallons per day. The system consists of three deep wells and two elevated storage tanks; however, only two wells are presently in service. Only about five percent of the water from the Blundon and Hinton system is used for residential purposes, the rest of the water is used for industrial purposes.

There are other industrial and residential users which pump relatively large quantities of water; however, records are not available for systems that: do not pump at least 10,000 gallons per day; are not metered; or the Department of Environmental Quality does not keep records on them. The Virginia Department of Health, Office of Water Programs, regulates public water supply systems that serve 25 or more people, or which have more than 15 connections for 60 days or more a year. Public water supply systems consist of:

34	Community systems, which serve towns, and subdivisions
6	Non-transient non-community systems which serve schools, municipal buildings, factories, and offices
20	Transient non-community systems which serve hotels, restaurants, and recreational areas

(Data gathered from the Virginia Department of Health, Office of Drinking Water: http://www.vdh.state.va.us/dw/ListingWaterworks_Owners.asp, 12/30/04).

According to year 2000 figures from the USGS, total groundwater withdrawals from the Northern Neck region approximate 4.6 million gallons per day. Withdrawals are divided

fairly evenly between domestic and industrial use, with most industrial uses devoted to washing seafood at processing plants. Presently, Reedville and the Town of Kilmarnock in Lancaster County are the major local water-demand centers affecting Northumberland County's water supply although most of Kilmarnock's demand is in Lancaster County.

Large users located outside the County affect the County's available water supply. The primary deep aquifer serving Northumberland County, the Brightseat-Upper Potomac has no surface recharge area; consequently, any major water consumer that accesses this supply may alter the pressure within the aquifer and therefore the quantity and possibly the quality of water. With the County situated between two major "cones of depression" one to the southwest, the West Point paper mill, and one to the north, southern Maryland, the future of the groundwater supply of the County will be determined chiefly by the amount of pumpage in those two regions and not by water use by Northumberland County residents. Currently, groundwater is being pumped from the artesian aquifers in these two pumping centers faster than it can be recharged (as evidenced by the continual decline of water levels in artesian wells). Because of the unique hydrogeologic environment of the Northern Neck, in which the natural groundwater circulation is measured in thousands, even tens of thousands, of years, the artesian aquifers are for all intents and purposes being "mined" of their groundwater. A continuation of this water mining will lead eventually to a water supply crisis in much of Coastal Virginia"..

d. Potential Contamination Sources

Potential groundwater contamination sources include landfills, lagoons, and other waste facilities. The Northern Neck Groundwater Quality Management Plan (NNGQMP), created in 2003 by the Northern Neck Planning District Commission outlines these potential contamination sources in detail, with map products that support text. The plan is available on the NNPDC website for download at: http://www.nnpdc17.state.va.us. When their locations are known these sources are generally permitted and monitored (point sources) but some groundwater pollutants such as pesticides, fertilizers, and road de-icing chemicals (non-point source pollution) are more difficult to monitor. The State's Groundwater Protection Steering Committee has assigned top priority to the following sources of groundwater contamination. Northumberland County is susceptible to contamination of its groundwater from most of these sources.

Underground Storage Tanks: Contamination of groundwater from underground storage tanks has increased steadily in recent years. Reports indicate that there are thousands of such tanks in use in the State, as well as a substantial amount of unused and abandoned tanks. All underground storage tanks eventually leak. Many contain petroleum products or other substances which have the potential to contaminate groundwater if leakage should occur. Groundwater pollution by petroleum products stored in underground tanks is a very serious problem that is relatively common and often occurs in the vicinity of gasoline service stations. In Northumberland County, the prevalence of underground heating oil tanks installed in the past is particularly troublesome. When homeowners upgrade their

heating systems, they often switch from oil-fired furnaces to electric heat pumps. Due to cost concerns, many homeowners choose not to remove or properly decommission their underground storage tanks. Since residential heating oil tanks fall below the capacity threshold, and thus are not required to be registered with DEQ, there is no way to inventory or catalog the extent of this problem. The NNGQMP has a map of known leaking underground storage tanks in Northumberland County.

In Virginia, the Underground Storage Tank Program requires newly installed underground storage tanks to meet design, construction, and monitoring standards to prevent leaks and overflows and have corrective action plans with a detailed mitigation strategy in the event of a spill. The Department of Environmental Quality operates a Pollution Response Program (PREP), which investigates reported cases of groundwater contamination resulting from leaking underground tanks. The Department of Environmental Quality has an interactive GIS web-mapping site that allows users to zoom into their area of interest and examine up to date sites of leaking underground storage tanks. The website address is: http://www.deq.virginia.gov/tanks/imapping.html. Once there, click on the drop down list and choose "What's in my Backyard". The interactive web-mapping server will load, and you can zoom to your area, and turn on the leaking underground storage tank map layer.

The Northern Neck Groundwater Quality Management Plan also has maps from the Northern Neck Emergency Operations Plan, Annex A1: Hazardous Material Response Plan that shows major gasoline and diesel fuel storage tanks sites in Northumberland County and their relative capacities.

Landfills: Various types of substances found in landfills have the potential to contaminate groundwater. Contaminants such as chemicals and fertilizers, hazardous waste, paint, varnish, and other materials may move through the ground and pollute the water table and deeper aquifers. The Virginia Department of Waste Management's regulations contain specific landfill design requirements and standards to prevent groundwater contamination. The NNGQMP has a map of historical landfills in Northumberland County. The Tri-County Landfill (which is located off Rt. 600 near Lara and is non-operational) is the only known historical landfill in the County and monitoring wells are in place to check for possible contamination (by the VDEQ). Monitoring should continue into the foreseeable future to protect the groundwater of surrounding areas.

Lagoons and Holding Ponds: Lagoons and holding ponds often contain liquid waste produced by coal-fired power plants, rendering plants, fertilizer production operations, sewage treatment facilities, and other commercial activities which produce wastes that can infiltrate into the ground and contaminate groundwater. The NNGQMP includes a map of the two known sewage lagoons in Northumberland County. One is currently in use for sewage at the Northumberland High School in Heathsville and the second is closed and near the

end of Dungan Road off Coan Stage Road near Heathsville

Septic Systems: Septic systems are considered a major threat to groundwater resources and are the leading contributor to the total volume of waste discharged directly into the ground. Nitrate contamination, household chemicals, septic cleaners, and wastes disposed of in underground absorption systems may pollute groundwater. Although many large mass drainfield systems serve clusters of houses, schools, and commercial facilities in Northumberland County, the most common problem associated with on site septic systems is contamination of individual wells. The NNGQMP has a map of properties in Northumberland County from the NNNPDC Septic System Inventory that are served by septic systems, along with the type of septic system.

Groundwater contamination of the surficial aquifer can occur when septic systems are installed at sites where the soil or sediment is sp permeable that wastewater percolates too rapidly or where the soil or sediment is saturated. The extent of potential contamination is determined by construction and maintenance procedures as well as the density of septic systems in an area. Consequences of failing septic systems in highly concentrated areas can be far more serious than individual failures.

The Virginia Department of Health is the agency responsible for regulating household septic systems and mass drainfields in the Commonwealth. The Department's primary concern has been protection of public health from surface ponding of sewage caused by soils which do not percolate and contamination of private wells from adjacent septic systems. The Virginia Department of Environmental Quality is responsible for the approval of commercial and industrial septic systems. While these systems are governed by the general requirements of a No-Discharge Program, no separate criteria or program exists for permitting these facilities.

Pesticides and Fertilizers: The most common chemical pollutant in the groundwater of the surficial aquifer is contamination from pesticides and fertilizers and is a complex problem. Although these chemicals are widely used and offer numerous benefits in farming, forestry, and lawn maintenance, their use is difficult to monitor and regulate. Contamination from pesticides and fertilizers in groundwater is dependent upon the rate of application, decomposition rate, water solubility of the substance, nature of the soil, and depth to groundwater. Although contamination from pesticides and fertilizers generally extends over a wide area at very low concentrations, increases may build up over years of use. The most common pollutant in the shallow groundwater aquifer in the Northern Neck is dissolved nitrates, and in many cases the level approaches the EPA’s Maximum Contaminant Level (mcl) of 10 mg/liter. No doubt, septic systems contribute a substantial part of this load, in addition to chemical fertilizer application (both agricultural and residential).

The problem of groundwater contamination by pesticides and fertilizers has been addressed by a number of federal and state regulations. Maximum contaminant levels for approximately a dozen pesticides were adopted by the Environmental Protection Agency under the Safe Drinking Water Act. The Federal Insecticide, Fungicide, and Rodenticide Act and the Toxic Substances Act contain provisions which authorize the EPA and the Commonwealth to protect groundwater from pesticide contamination.

In 1989, Virginia passed the Pesticide Control Act which established a Pesticide Control Board with broad regulatory powers and authorized the Virginia Department of Agriculture and Consumer Services to regulate the registration, labeling, handling, and use of pesticides for certification of private and commercial applicators classified for restricted use. Although there are no specifications for application rates of fertilizer and lime sold in Virginia, these materials are required to be registered. Farmers within the 100 foot Chesapeake Bay Resource Protection Area are required to have a nutrient management plan that gauges the amount of fertilizer the soil needs in each field needs by soil testing. These plans, if followed properly, will minimize agricultural fertilizer over-application. The NNGQMP has a map of showing the pesticide and nitrate leachability of soils in Northumberland County.

Hazardous Waste: The disposal or spilling of toxic and hazardous materials is another potential source of groundwater contamination. The federal legislation which regulates the identification and clean up of sites containing hazardous wastes is the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Presently, no sites have been identified in Northumberland County. Virginia's Department of Waste Management is the agency responsible for maintaining the State's Comprehensive Response Compensation and Liability Information System list. However, there are hazardous waste sites in neighboring counties. The NNGQMP has a map showing those sites on the Northern Neck peninsula.

e. Programs Addressing Point and Non-point Pollution Sources

(1) Pollution Discharge Elimination System Permits

Any "point source" of pollution discharging into waters of the United States requires a National Pollution Discharge Elimination System (NPDES) permit. Industries and waste water treatment plants which discharge pollutants into State waters are required to hold a Virginia Pollution Discharge Elimination System (VPDES) permit. Point sources of pollution are pollution sources which are traceable to a single point, such as an industrial waste or municipal sewage discharge pipe. The Virginia Department of Environmental Quality (DEQ) regulates point source pollution dischargers by regularly monitoring the effluent of permit holders. A list of current point source dischargers in Northumberland County includes the following:

POINT SOURCE DISCHARGERS, 2004 - NORTHUMBERLAND COUNTY

VPDES Discharger	Receiving Stream
Public	
Callao Shops & Apartments	Lodge Creek
Northumberland High School	Crabbe Mill Stream
Reedville Sanitary District	Cockrell Creek
Town of Kilmarnock	Dividing Creek
Industrial	
Omega Protein, Inc.	Cockrell Creek/Ches. Bay
Lake Packing Co., Inc.	Coan River

(2) Pollution Abatement Permit Program

Many other land uses activities that do not discharge directly into State waters have the potential to contaminate both surface water and groundwater through indirect discharges. Among such activities are the following types of uses:

- Storage of materials in pits
- Ponds and lagoons
- Sewage treatment plants
- Large commercial animal raising activities
- Application or disposal of sludge (animal or industrial waste)
- Recycling of wastewater
- Confined Animal Feeding Operations (CAFO's)

Virginia's Pollution Abatement (VPA) Permit Program regulates and monitors activities in this class to ensure that groundwater sources are protected. Active Pollution Abatement Permits (December, 2004) within Northumberland County included the following activities: Lake Packing Co., Inc., and James E. Headley Oyster Company.

(3) Mining Permits

Activities associated with industrial, manufacturing, and mining can contaminate groundwater and surface water, however, these are mostly associated with the use of water for coal mining. Declining groundwater levels, reduced surface water recharge, diminished water quality and instream flow, extensive cones of depression, and saltwater

intrusion may result from heavy groundwater and surface water usage and pumpage. Mining practices have the potential to affect the movement and recharge of groundwater, lower the water table, and disrupt aquifers. Again, most of these negative externalities are related to coal mining, not surface pit sand and gravel mining, which is the only type of mining occurring in Northumberland County today. As of December 2004, there were twenty-six sites in Northumberland County with mining permits. Of those twenty-six sites, eighteen sites mine sand, two sites mines gravel, and the final six sites mine sand and gravel. A total of 116 acres in the County are permitted for mining activities, while 75 acres are presently disturbed due to current or previous mining activity. Forty-five acres in the County have been reclaimed after mining activities cease. The above data was gathered from the Department of Mines, Minerals and Energy's report and online data found at:
http://www.mme.state.va.us/Dmm/Forms%20Index/Regular%20Forms/DMMPEPR17.pdf.

(4) Non-point Sources of Pollution

Non-point sources of pollution exist in every community. This category includes any pollutant whose point of generation cannot be traced to any identifiable facility and whose exact point of entry into the water course cannot be defined. Origins of non-point sources as classified by the Department of Environmental Quality identifies the following classes: agriculture, forestry, construction, urban development, resource extraction, land treatment, disposal and hydrologic modifications.

With the passage of the Clean Water Act in the 1970's point sources of pollution came under permitting and regulations. Today, point sources are mostly in compliance with permits, and the majority of uncontrolled pollution that is entering the nation's waterways is of a non-point source type. This type of pollution is most difficult to assess and control. The Clean Water Act set in place a mechanism to clean up waterways that are impaired. Every two-year's states report to the EPA those waters that do not meet federal clean water standards, and this report is called the 303(d) list. This list is often referred to as a "dirty waters" list. States must study the impairments, and formulate a clean up plan. The study of what is causing the pollutant specific impairment is called a Total Maximum Daily Load (TMDL) Report. The study seeks to determine the Total Maximum Daily Load of a specific pollutant that can be assimilated by the waterbody before clean water standards are violated.

TMDL's in Northumberland County are all a result of non-point source pollution. The County has fifteen TMDL Studies for impaired water body segments that will be completed by DEQ before 2005. All fifteen segments are shellfish impaired waters, that is, the federal standard for fecal coliform bacteria concentration in waters used for harvesting of shellfish had been violated (exceeded). One TMDL study has been completed in Northumberland County, which covers the Coan and Little Wicomico Rivers. Nine of the fifteen segments are contained in this study. The Coan River Final Shellfish TMDL report can be downloaded at:
http://www.deq.virginia.gov/tmdl/apptmdls/shellfish/coanfc.pdf. The Little Wicomico Final Shellfish Report can be found at:

http://www.deq.virginia.gov/tmdl/apptmdls/shellfish/wicomico.pdf.

All warm-blooded creatures generate fecal coliform bacteria, so some of the bacteria levels could be from wildlife populations. The TMDL took samples of the bacteria, and used bacterial source tracking to determine the type of animal that deposited the bacteria. At almost all stations in both watersheds, humans accounted for the majority of the fecal coliform bacteria. All human fecal bacteria are considered "controllable" by the EPA, so the reduction in the total fecal coliform load must come by reducing the human portion of the fecal coliform load. Probable sources of the human fecal bacteria are failing septic systems, straight pipes, and pollution from boaters. There are currently no State funds available for TMDL implementation (i.e. finding the sources and fixing the problem), so the impairments will likely continue.

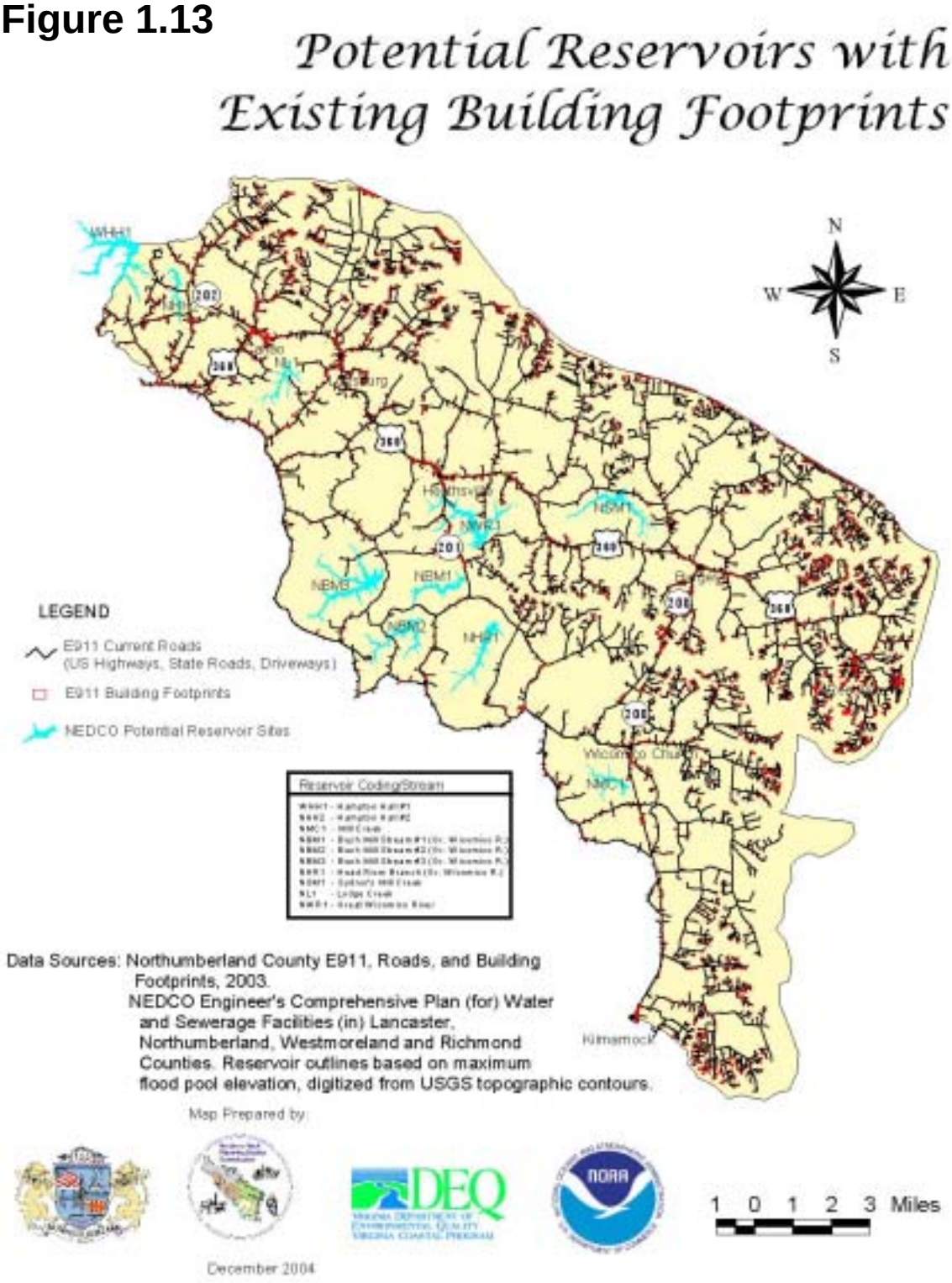
f. Major Planning Issue Concerning Water Supply

The major planning issue regarding potable water supply are to provide for sustainable supplies of water and to protect the groundwater sources from contamination.

The County is not able to limit groundwater withdrawals under current Virginia Law, so that is not an option for reducing the demand on groundwater resources. The County can, however, investigate the possibility of surface impoundments (reservoirs) within the jurisdiction. In 1969, the Northern Neck Development Commission (NEDCO) prepared a report for the newly formed NNPDC, entitled Engineer's Comprehensive Plan (for) Water and Sewerage Facilities (in) Lancaster, Northumberland and Richmond Counties. In the report, 43 reservoirs were located; drainage acres, total volume, and daily sustainable yields were calculated throughout the Northern Neck. Nine reservoir sites are identified in Northumberland, with one on the border of Westmoreland and Northumberland Counties (Hampton Hall Creek). At the request of the County Planning Commission in 2003, the NNPDC used Geographic Information Systems (GIS) to digitize the flood elevation of the reservoirs and determine if the reservoirs impacted any existing structures in the County. Using E911 data of building outlines, the two data sets were overlaid. None of the reservoirs impacted any existing buildings, but two houses were within 50 feet of the inundation. (See Figure 1.13) The County should consider limiting development in the proposed reservoir footprints so that the option of constructing surface impoundments is still viable, should the demand for groundwater exceed supply.

Another way to reduce the demand on groundwater resources is to reduce the total amount of water used by the average citizen. Low flow plumbing fixtures; as well as judicious use of potable water can reduce the amount of groundwater consumed and lessen the load on septic systems. The County should encourage citizens to use these devices and to think

Figure 1.13



about saving water in their daily routine. For tips on how to reduce the amount of water

used in everyday activities go to: http://www.wateruseitwisely.com/100ways/nw.html.

The most vulnerable aquifer is the surficial aquifer, which is closest to the surface and the first to become affected if contaminants pass through the soil. Areas of considerable concern are where the soil is less acceptable for septic tanks and where the elevations are lowest. The areas where most of these conditions are found are the lowlands along the shorelines which are also the area most in demand for development. Future development should be encouraged to make greater use of the lower aquifers, particularly the upper artesian aquifer for water supply. The protection of the artesian aquifers against excessive usage is a matter that should be given high priority in future planning. The county encourages periodic testing of individual wells to ensure that a satisfactory quality of water is maintained. To help in this effort, the County should promote increased awareness of the water testing program that is presently available to county residents from the local Health Department.

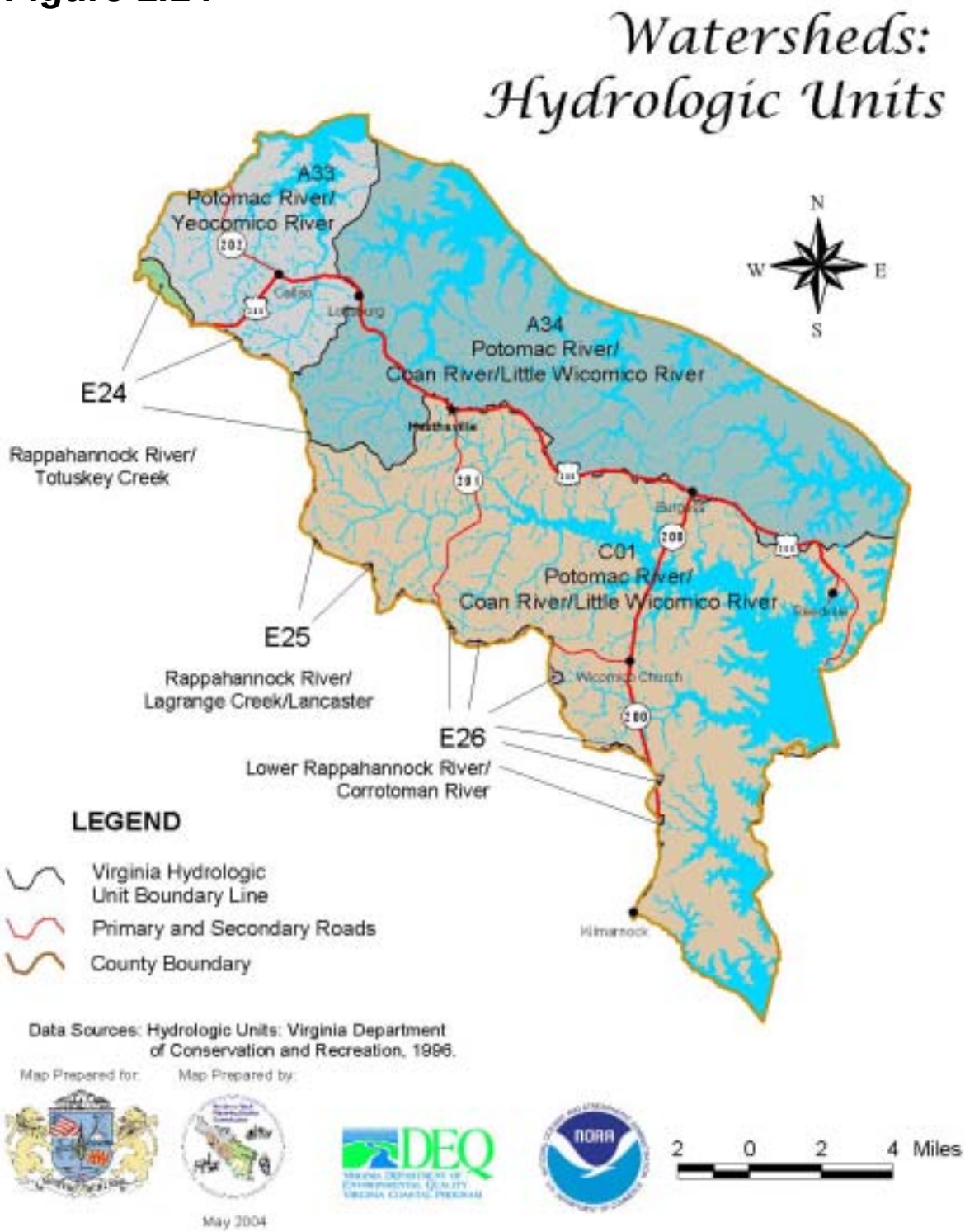
For ways to protect wells from contamination, such as wellhead protection and other measures allowed under Virginia Law, as well as Source Water Protection Program (SWAP) potential pollution data see the Northern Neck Groundwater Quality Management Plan (NNGQMP) created by the Northern Neck Planning District Commission in 2003. The plan is available on the NNPDC website for download at: http://www.nnpdc17.state.va.us.

2. Principal Watersheds

The drainage of Northumberland County flows either to Potomac River or directly into the Chesapeake Bay through the many rivers, streams and creeks that penetrate into the County and form its impressive long shoreline. A very small portion (less than 2 acres) of the County drains into the Rappahannock River, and these areas occur along the southern border of the County, adjacent to Richmond and Lancaster Counties. Figure 1.14 Watersheds: Hydrologic Units shows the principal watershed areas as established by the Virginia Department of Conservation and Recreation, and are referred to as hydrologic units. “Hydrologic Units” are conglomerations of smaller watersheds and are identified by significant rivers or creeks but include the lesser rivers and streams that flow into those named. Hydrologic Units are also coded with an alpha numeric coding system, “A” is the code for the Potomac, “E” is the code for the Rappahannock, and “C” is the code for the Chesapeake Bay. The sequential numbers begin at the headwaters (low numbers) and increase as you go downstream. Thus, “A34” is downstream of A33”.

The table below provides a brief summary of each of the watershed areas, giving the approximate land area occupied by each and highlights of events in each watershed. Some factors are common throughout the County and may not be mentioned in the summaries. For example, septic tank and underground tank failures constitute an on-

Figure 1.14


Watersheds:
Hydrologic Units
A33
Potomac River/
Yeocomico River
A34
Potomac River/
Coan River/Little Wicomico River
C01
Potomac River/
Coan River/Little Wicomico River
E24
Rappahannock River/
Totuskey Creek
E25
Rappahannock River/
Lagrange Creek/Lancaster
E26
Lower Rappahannock River/
Corrotoman River
N
W
E
S
LEGEND
Virginia Hydrologic
Unit Boundary Line
Primary and Secondary Roads
County Boundary
Data Sources: Hydrologic Units: Virginia Department
of Conservation and Recreation, 1996.
Map Prepared for:
Map Prepared by:
May 2004
2 0 2 4 Miles

PRINCIPAL WATERSHEDS NORTHUMBERLAND COUNTY		
WATERSHED IDENTITY	APPROX LAND AREA (SQ MI)	PRINCIPAL FEATURES & ISSUES
A. Yeocomico River (part of Hydrologic Unit A33)	25	Watershed shared with Westmoreland County; includes West and South Yeocomico Rivers, and their tributaries; significant activities: agriculture, seafood industries, business activities in and near Callao, shoreline residential development. Potential pollution sources: golf courses, sewage treatment facility at Callao Shops and Apartments[10], several seafood processing plants, recreational areas and marinas, commercial uses handling oil products.
B. Coan River/The Glebe and Kingscote Creek (part of Hydrologic Unit A34)	28	Watershed includes named bodies of water and tributaries; significant activities: agriculture, seafood industries, shoreline residential development, commercial marinas, and development in and near Lottsburg, Heathsville and Lewisetta. Potential pollution sources: failing septic systems, industrial waste sites, sewage treatment facility, commercial marinas, seafood processing plants. One site has an active VPDES permit[11].
C. Potomac River: Coan River to Ginny Beach (part of Hydrologic Unit A34)	29	Watershed drains all streams within named area directly into the Potomac River. Significant activities include: agriculture, shoreline residential development, seasonal dwellings and/or campsites, and shoreline residential development. Existing or potential pollution sources: activities around boat ramps and docking areas.
D. Little Wicomico River (part of Hydrologic Unit A34)	15	Watershed includes Little Wicomico River and all tributaries. Significant activities: seafood industries and sports boating and fishing; part of Burgess commercial area; shoreline residential development; campgrounds; some agriculture. Potential pollution sources: industrial waste, private and commercial boat facilities, seafood processing, failing septic systems.
E. Cockrell Creek (part of Hydrologic Unit C01)	3	Watershed contains all of Cockrell Creek and tributaries. Significant activities: Town of Reedville-residential development; a large seafood industrial complex; commercial marine facilities. Potential pollution sources: seafood industries, town's sewage treatment plant, public boat landings, failing septic systems, marina pollution.
F. Chesapeake Bay: Gaskins Pond to Cockrell Creek (part of Hydrologic Unit C01)	3	Watershed includes several ponds and streams which drain directly into the Chesapeake Bay. Significant activities: Chesapeake Beach and Fleeton Beach developments - seasonal dwellings; shoreline residential development. Potential pollution sources: failing septic systems, boat facilities and usage.
G. Great Wicomico River (part of Hydrologic Unit C01)	58	Watershed includes Great Wicomico River basin and all tributaries. Significant activities: business areas at Burgess, Wicomico Church and Heathsville; extensive shoreline residential development; agriculture; campgrounds and agriculture. Potential pollution sources: Tri-county landfill, sewage treatment plants at schools, campgrounds, marine and boat activities.
H. Ches. Bay: Mill Creek to Dividing Creek (part of Hydrologic Unit C01)	16	Watershed includes several creeks and streams within named area flowing into the Chesapeake Bay. Significant activities: Wicomico Church business area; agriculture; shoreline residential development (Mill Creek). The least developed of the watershed areas with no major pollution threats.
I. Dividing Creek (part of Hydrologic Unit C01)	10	Watershed includes Dividing Creek and tributaries. Significant activities: agriculture, seafood, moderate shoreline residential development. No major pollution threats.
J. Indian Creek (part of Hydrologic Unit C01)	6	Watershed includes all tributaries of Indian Creek plus Henrys and Barnes Creeks. Significant activities: Kilmarnock, shoreline residential development, marinas, some agriculture, golf course. Potential pollution from Kilmarnock (Lancaster County), marina pollution

[10] The Callao Shops and Apartments sewage treatment facility will be upgraded in 2005 to serve the Callao region. The retrofit and associated increase in number of sewage connections will increase sewage effluent volume released into Lodge Creek (Yeocomico River).

[11] Pollution Discharge Elimination System (VPDES) permit, issued by the Department of Environmental Quality for wastewater or industrial waste discharges, see page 1:33 for a list of VPDES dischargers in the county and the affected waterbody.

-going threat of pollution.

Planning issues related to watersheds should focus on the discharge of water that eventually finds its way into the underground water system or into one of the rivers and eventually into the Chesapeake Bay. The focus of strategy should be on ways of reducing pollutants in surface runoff and groundwater as well as minimizing the amount of such water that actually reaches the Bay. One of the ways to reduce water and pollutants entering the Bay is through three-story vegetated buffers along all streams, in which mature trees are the most important component.

These are the same issues that are addressed by the Chesapeake Bay Preservation Zoning Regulations of the Resource Protection and Resource Management Areas. Drainage issues are also addressed by the Best Management Practices Handbook, Planning Bulletin 522, Va. Water Control Board, 1981. [12]

3. Soil Conditions

This section discusses various qualities of the soil with emphasis on soil conditions that may affect the quality of water in the aquifers, creeks, rivers and eventually the Chesapeake Bay.

a. Water Table

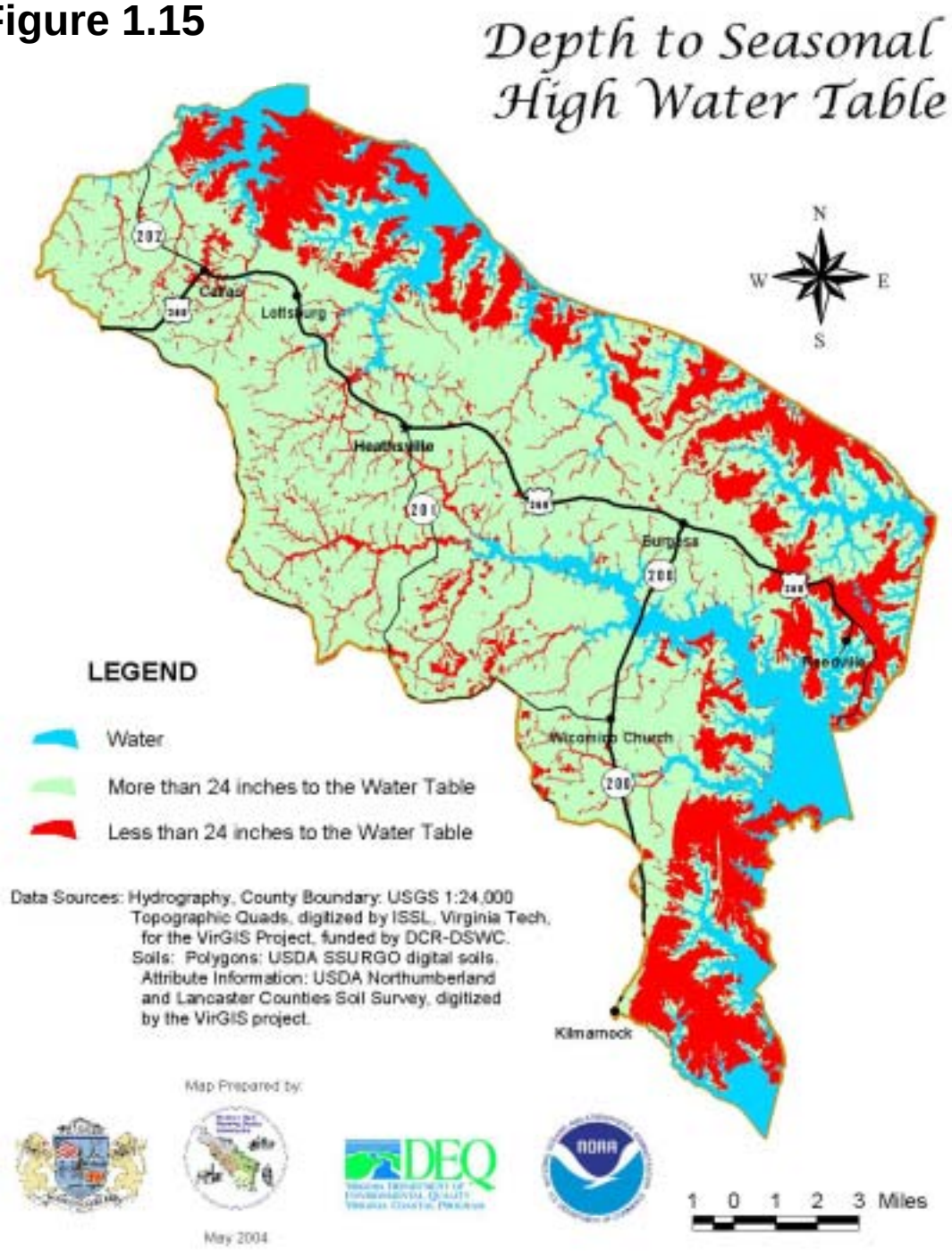
Figure 1.15 maps the water table patterns in Northumberland County in terms of its depth below the surface. Twenty-four inches is taken as the dividing point; therefore, the water table is shown either as being 24 inches or more from the surface or 24 inches or less. The results are not surprising in that the predominant areas of high water table are in the lowest parts of the County near the shorelines.

The high-water pattern is quite pronounced within the area between the line previously described as the "Suffolk Scarp" (Refer to Topographic Conditions) and the shorelines of the Potomac River and Chesapeake Bay. That pattern runs from the County line at Kilmarnock then generally parallels Route 200 until it passes Route 360 near Burgess. From there, the escarpment runs approximately parallel to the Potomac River shoreline about two to three miles inland of that river.

One observation that can be made from this pattern is that, even though most of the high water table may be found in these low areas, some areas nearest the shorelines appear to have a lower water table than the general pattern of the high water table area. This has made it possible for more development to occur immediately adjacent to the shorelines while much of the higher ground nearby is unsuitable for septic tanks (Figure 1.5). Today, however, with the advent of alternative secondary treatment septic systems, the water table is less of a limiting factor than once was true. The potential for pollution from these engineered systems always exists, especially if the systems are not properly

[12] Now the Department of Environmental Quality.

Figure 1.15


Depth to Seasonal High Water Table
N
W
E
S
Heathsville
Burgess
Kilmarnock
LEGEND
Water
More than 24 inches to the Water Table
Less than 24 inches to the Water Table
Data Sources: Hydrography, County Boundary: USGS 1:24,000 Topographic Quads, digitized by ISSL, Virginia Tech, for the VirGIS Project, funded by DCR-DSWC.
Soils: Polygons: USDA SSURGO digital soils. Attribute Information: USDA Northumberland and Lancaster Counties Soil Survey, digitized by the VirGIS project.
Map Prepared by:
May 2004
DEQ
NOAA
1 0 1 2 3 Miles

maintained by professionals.

The high water table is also present to a lesser degree in the portion of the County south and west of the "Suffolk Scarp" line, but in the areas south and west of Routes 360 and 200 the high water tables are found mostly along the bottom lands and stream basins that penetrate into these otherwise higher elevations.

b. Highly Erodible Soils

Soils that are classified as "highly erodible" present a particular concern in the protection of water supply. Erodibility refers to the capacity of soils to be carried from the surface to streams with storm runoff. When this happens, surface impurities are carried into state waters increasing pollution and presenting dangers to marine life.

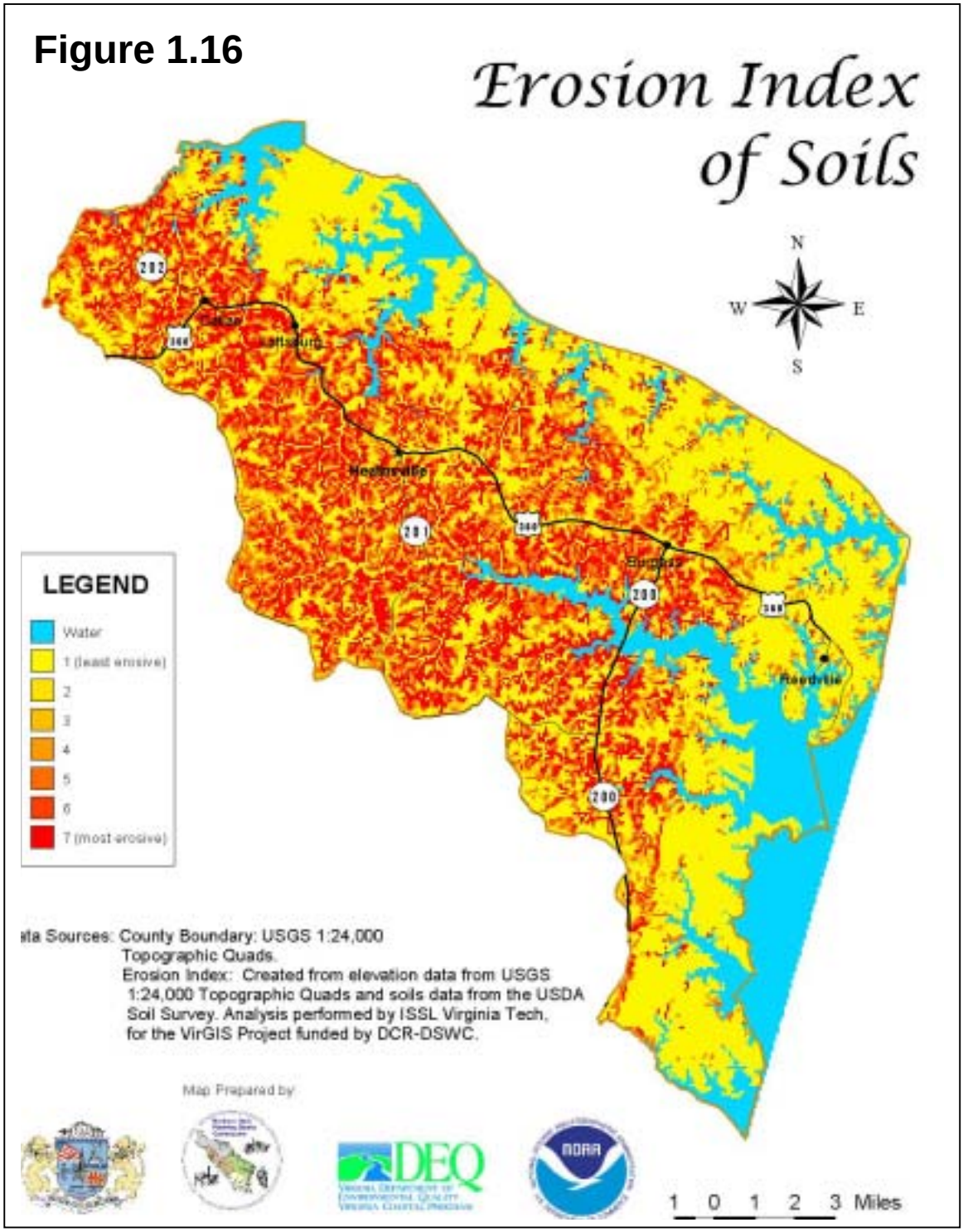
Areas that are particularly vulnerable to erosion may be found around construction sites, tilled fields and other places where disturbed soil may be exposed to water or wind.

The State has determined that an erosion index of 8.0 or more is high enough to warrant precautions. When such areas are combined with steep slopes, the threat of severe erosion is increased considerably. Since most of the steep slopes in Northumberland County are along streams, there is always a threat of erosion in these areas if the slopes are disturbed. In addition, erosion from cultivated farm areas and intensely developed residential areas can carry large amounts of chemicals into public waters. See Figure 1.16 for an erosion map.

Part of the State's strategy for establishing RPA’s and RMA’s in the Chesapeake Bay regulation in the Zoning Ordinance is to reduce the impact of erosion on state waters. The RPA and its associated buffer strip functions as a strainer for water discharging into public waters. The RMA extends protection further by requiring performance standards to be maintained.

c. Steep Slopes

Topographic landforms and corresponding slopes are environmental features that have always required careful consideration in determining appropriate types of land development and use. This was demonstrated earlier in this Chapter by the topographic representation shown on Figure 1.3, which found that nearly all of the state highway roads are located along the tops of ridges. And for reasons of access, all development is likewise located along the roads or very close to them. Other maps illustrated that the level ridge tops also contain the best drained soil. In a cursory examination of the road pattern, one might conclude that they were located randomly, but on closer examination the rationale of their locations relative to topography is obvious. For one thing, excessive slopes seem to have been avoided.



Slopes are also a major consideration in land use planning for several reasons. The first is

evident in the pattern of highways. Steep slopes present more engineering problems than moderately sloped or nearly flat land and consequently increase the cost of development. Historically, developers like highway engineers, have sought out land with the fewest construction problems for establishing subdivisions except in cases where amenities offered such significant market advantages that the higher development costs were acceptable. In Northumberland County, both types of development are present but perhaps the more dominant type are those with amenities such as water access. The profit potential of prime waterfront property is taking priority over immediate development costs.

Development on slopes can also present environmental liabilities contributing to excessive soil erosion and resulting in stream pollution. Where certain types of sandy soil which is located on a steep slope is disturbed during construction, the remaining soil can become very unstable, and start to erode. Because many such conditions exist along streams and shorelines, the preferred sites for building homes, these sites are extremely vulnerable to erosion during construction. The erosion problem has been reduced considerably, with the establishment of the Chesapeake Bay RPA which in many cases includes steep slopes when they are adjacent to shorelines and adjacent wetlands. The County's erosion and sedimentation control ordinance also establishes another layer of protection by requiring erosion control mechanisms around construction sites. The establishment of the Department of Conservation’s Responsible Land Disturber Program in July 2001, also helps to reduce sedimentation by minimizing excessive land disturbance.

When discussing slope three classes of slopes are included: less than six percent; between six and 15 percent; and greater than 15 percent. The steeper slopes can be seen to form a pattern along the stream beds in the upland parts of the County. Within that area there is very little development in the areas of steep slopes; it is lined along existing roads.

In the lowland part of the County, slopes become a secondary issue because in these low lying areas other physical conditions such as poor soils and high water table present a greater constraint to development.

As a planning issue, land with slopes greater than 15 percent (15 feet fall per 100 feet) should be avoided wherever possible and if developed at all, extensive care should be taken to ensure that the site work does not leave unstable banks. Land with slopes greater than 20 percent should be avoided altogether.

d. Soil Permeability

Figure 1.7 (see Section A.4.) displays areas of the County that are unsuitable for septic tanks. That map is based on several factors that affect the soil's ability to be used for sewage disposal. Among these are wetness, slope, and texture of soil particles. One of the soil's principal determinants of acceptability is its permeability, an index that describes the rate at which water passes from the surface to lower layers when the soil is thoroughly wet. Soils which have a very high infiltration rate such as sandy or gravely

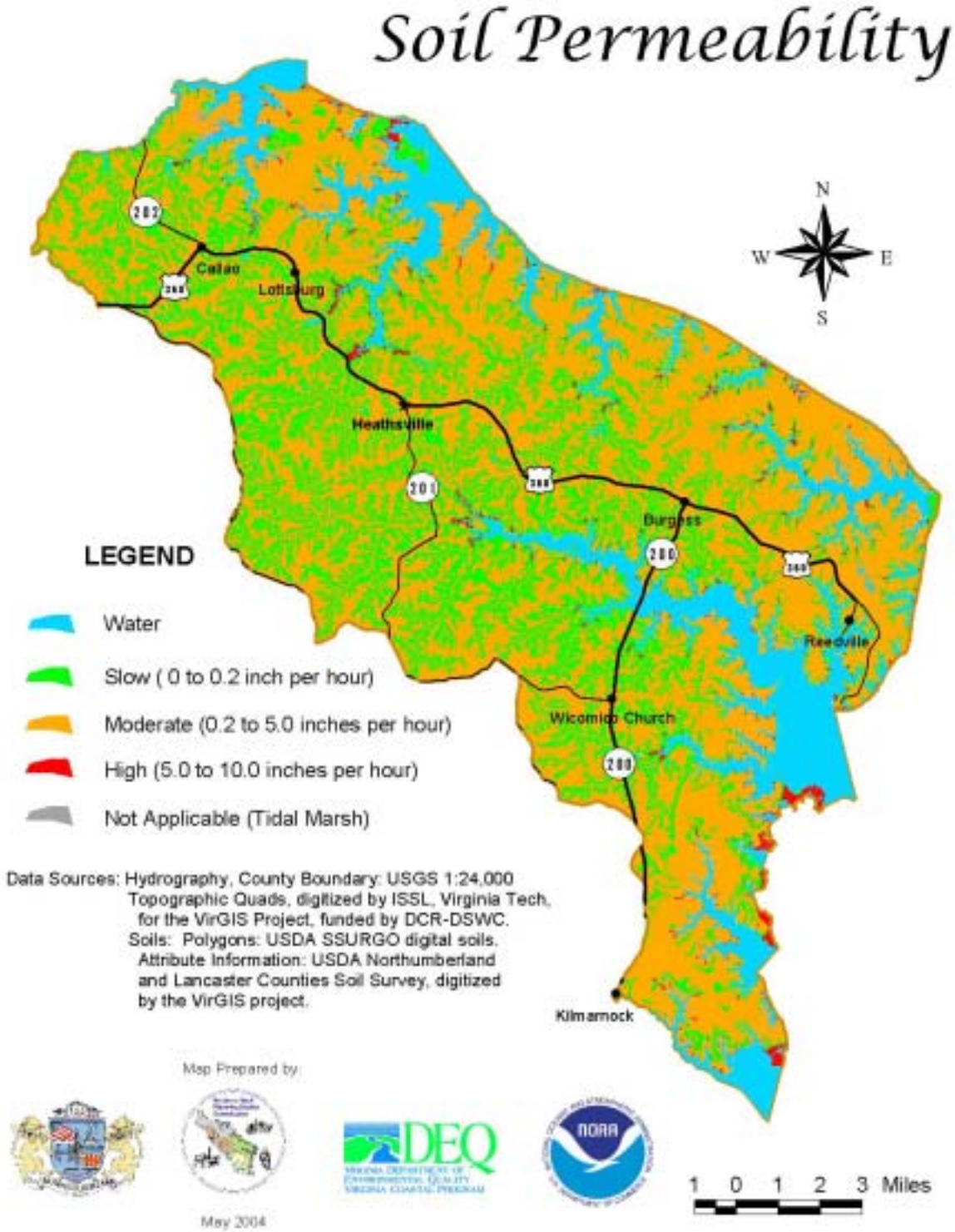
soils are said to have high permeability whereas those with a low infiltration rate are said to have low permeability. Figure 1.17 shows the soil permeability in the County.

The scale established by the State measures infiltration in terms of how many inches per hour will pass through the soil under thoroughly wet conditions. A permeability factor of 0.6 inches per hour or less is regarded as inadequate for septic tank drain fields. In addition, because these soils have a low percolation rate, more of the surface water that falls during precipitation is carried off the site, a condition that also promotes erosion.

High permeability presents another type of problem for septic tanks and the underground water supply. In order for septic tanks to function properly, the effluent must remain in the upper soil long enough for oxidation to destroy anaerobic bacteria and inorganic substances like ammonia and hydrogen sulfide. When the effluent passes through too quickly impurities can enter and pollute the underground water supply. The state standards establish six inches per hour as the maximum acceptable permeability rate for septic tank function.

Therefore, soils with ratings outside the 0.6 through 6.0 range should normally not be used for conventional septic tank fields. Today, with the advent of alternative septic systems, conditions that would previously not support septic systems are now open to development. The expense of the alternative septic systems may deter some from adopting the new technology; however, when compared to the current cost of waterfront property, the expense is negligible.

Figure 1.17


Soil Permeability
N
W
E
S
Callao
Lottsburg
Heathsville
Burgess
Reedville
Wicomico Church
Kilmarnock
LEGEND
Water
Slow (0 to 0.2 inch per hour)
Moderate (0.2 to 5.0 inches per hour)
High (5.0 to 10.0 inches per hour)
Not Applicable (Tidal Marsh)
Data Sources: Hydrography, County Boundary: USGS 1:24,000 Topographic Quads, digitized by ISSL, Virginia Tech, for the VirGIS Project, funded by DCR-DSWC.
Soils: Polygons: USDA SSURGO digital soils. Attribute Information: USDA Northumberland and Lancaster Counties Soil Survey, digitized by the VirGIS project.
Map Prepared by:
May 2004
DEQ
NOAA
1 0 1 2 3 Miles

D. ANALYSIS OF SHORELINE CONDITIONS

1. General Shoreline Conditions

A comprehensive Northumberland County Shoreline Situation Report was published in 2003 by the Center for Coastal Resources Management (CCRM), Virginia Institute of Marine Science (VIMS), College of William and Mary. The report is part of the Comprehensive Coastal Inventory, which was funded in part by the Virginia Coastal Program of the Virginia Department of Environmental Quality. The Coastal Program is funded in part by the National Oceanic and Atmospheric Administration. This inventory contains a wealth of detailed information at an unprecedented level of detail for all 556 miles of shorelines within the County. The report can be found on the VIMS website: http://ccrm.vims.edu/gis/northumberland.html. The report is separated into a text portion with 38 pages, and a map portion. In addition, the map and tabular data can be downloaded for query and manipulation in a Geographic Information System.

The Shoreline Situation Report states that the shorelines of Northumberland County extend for 555.98 miles.[13] The study identified 10 separate riparian land use conditions that existed at the time of the survey (2002):

- 249.07 miles (44.9 percent) of the area along shorelines overall is still in forests
- 187.16 miles have a riparian land use of Residential (33.6%)
- 59.74 miles in scrub-shrub riparian land use (10.7%)
- 36.73 miles in agricultural land use (6.6%)
- 11.52 miles in commercial land use (2.1%)
- 8.65 miles have a riparian land use of grass (1.6%)
- 2.06 miles were bare (0.4%)
- 0.77 miles were paved (0.1%)
- 0.18 miles were timbered (0.03%)
- 0.11 miles were industrial (0.01%)

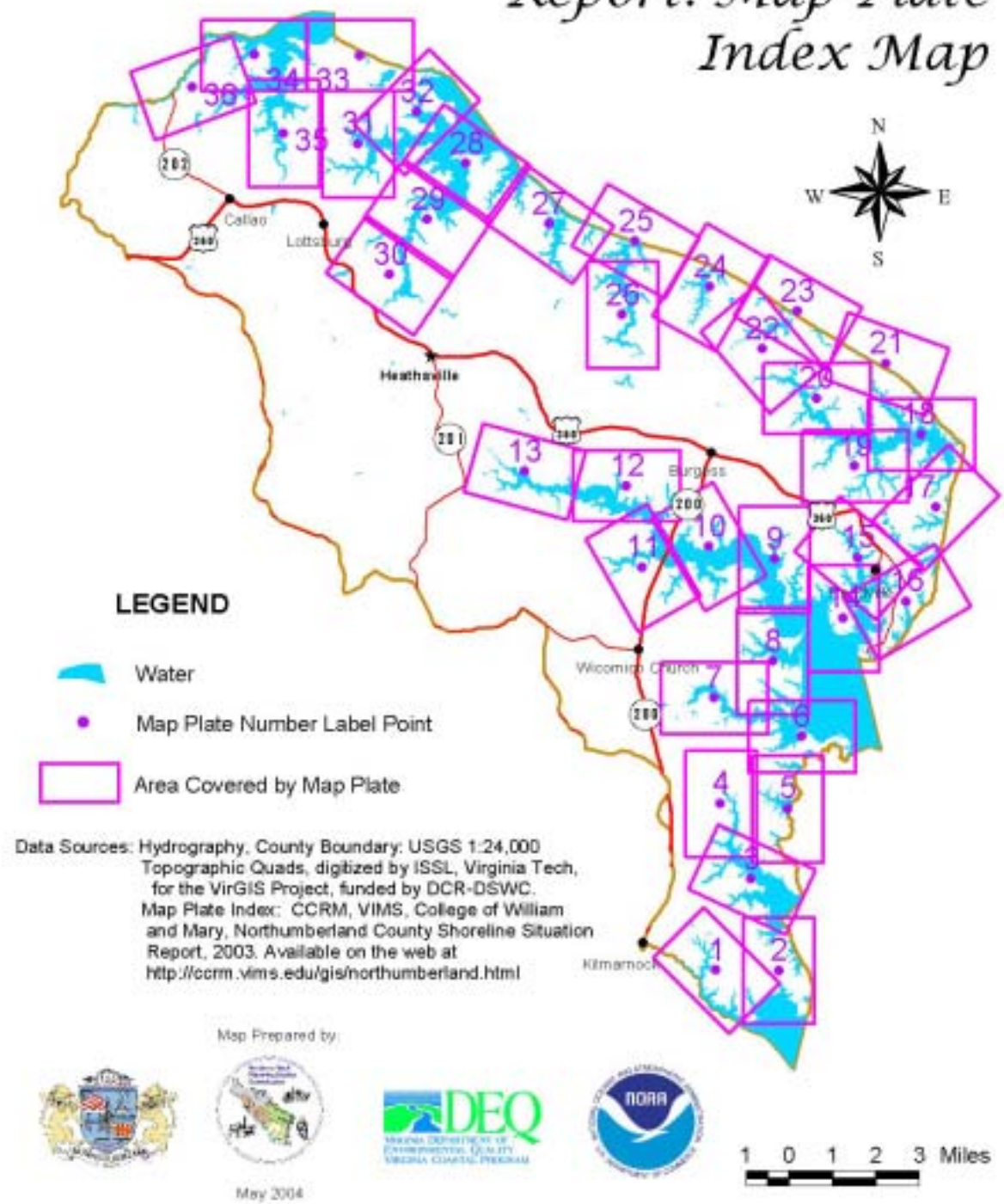
The VIMS Shoreline Situation Report is organized into map plates, for a better understanding of how the data is presented, and index map (Figure 1.18) shows the various map plates, that correspond to the map image products available on the VIMS website address listed above.

Figure 1.18

rveyed for Northumberland County, of which 124.04 were remotely surveyed.

Figure 1.16

VIMS Shoreline Situation Report: Map Plate Index Map



It is significant that 33.6 percent of shoreline is in residential land use. One gets an image of much less development by a visual inspection made only from the roads. When one visually inspects the county from the water, it seems much more developed. There is still time to preserve and protect portions of the shoreline. Conservation easements should be encouraged for those landowners who want to preserve their shoreline for future generations. It is encouraging that almost 45 percent of the shoreline is still in forest. However, everyday, more waterfront houses are being built that reduce the available natural shoreline.

The Northumberland County Shoreline Situation Report contains in addition to the riparian land use conditions, bank height and buffer condition, as well as shoreline features which include shoreline structures. Below is a summary of significant shoreline features mentioned in the report.

- There are 2,563 docks that line the shoreline. In addition, there are 324 boathouses, 130 private boat ramps, and 27 marinas. In addition, the report noted 52 “dilapidated docks” along the waterfront.

- Shoreline erosion control structures were also numerous. 91 groin fields, 19 jetties, and 6 breakwaters were recorded. Traditional shoreline hardening accounts for 14.4% of the total shoreline, with 26.08 miles of bulkheads and 54.19 miles of riprap.

Additional data from the VIMS report are included in Section 3 of Appendix A..

Several issues arise from this analysis. First, since one-half of the shoreline still remains undeveloped as defined above, , there is a significant opportunity for the County to establish development policies for the shoreline which promote conservation and protection against erosion. Second, more than half of the residential units of the County are on waterfront locations. This suggests an ever-increasing demand for such properties, as both open land and forests are subject to conversion to residential development.

In addition to shoreline characteristics, another recent study (April 2003) by the Center for Coastal Resource Management at VIMS, examined sand dunes in Northumberland County. The study can be found on the Virginia Institute of Marine Science’s website online at:

http://www.vims.edu/physical/research/shoreline/docs/locality/Northumberland/northumberland_dune_inventory.pdf

The study identified 59 unique dune sites in the County. The study was done in the few months prior to Hurricane Isabel, so most likely some of the dunes have been modified by that storm event. Most residents of the county are not aware that the County has any dune systems. Examination of the dune systems immediately after Isabel noted that although some dunes were reduced in size, they functioned as energy absorbing features reducing shoreline erosion and inland flooding. Dunes are important habitat and should be protected to the maximum extent allowed by law.

The most serious shoreline erosion threats come from the actions of strong winds and high surf produced by "noreasters" and hurricanes. The primary targets of these winds and waves are the exposed banks of the Potomac River and the Chesapeake Bay. The next topic addresses this issue in more detail.

2. Shoreline Erosion

Figure 1.19 shows areas that have been identified by the Virginia Institute of Marine Science with erosion problems. Not much of the County's shoreline particularly that exposed directly to the Potomac River and Chesapeake Bay has escaped erosion to some extent. The protected inlets and rivers, not a small amount of the total, are relatively safe from direct erosion from northeaster storms and wave action in the Potomac River and Chesapeake Bay. It is within these protected areas that maximum results can be achieved through planning to reduce potential shoreline erosion. In 1977, Northumberland County ranked second among Tidewater counties in loss of acres of shoreline for the past one hundred years. Net loss was 3,270 acres, or an average erosion rate of 1.1 feet per year. Average shoreline erosion rates can be misleading since erosion occurs sporadically in response to storm events.

Shoreline erosion rates are determined by four principal factors: storm frequency; storm type and direction; resulting wind tides, current, and waves; and storm intensity and duration. Other forces which cause increased levels of stormwater runoff and shoreline erosion are human activity, grading, upland runoff and vegetation removal. Shoreline erosion must be considered recognizing that sea level is rising about 2mm/year and the Northern Neck of Virginia is subsiding about 2mm/year, resulting in an effective rise in sea level of 4mm/year or about 1.5 inches per decade. Shoreline erosion has a significant impact on water quality and natural resources. Recent studies have indicated that shoreline erosion is responsible for millions of pounds of nitrogen and phosphorus entering the Chesapeake Bay each year and is also responsible for an estimated 15 to 20 percent of sediment entering the Bay.

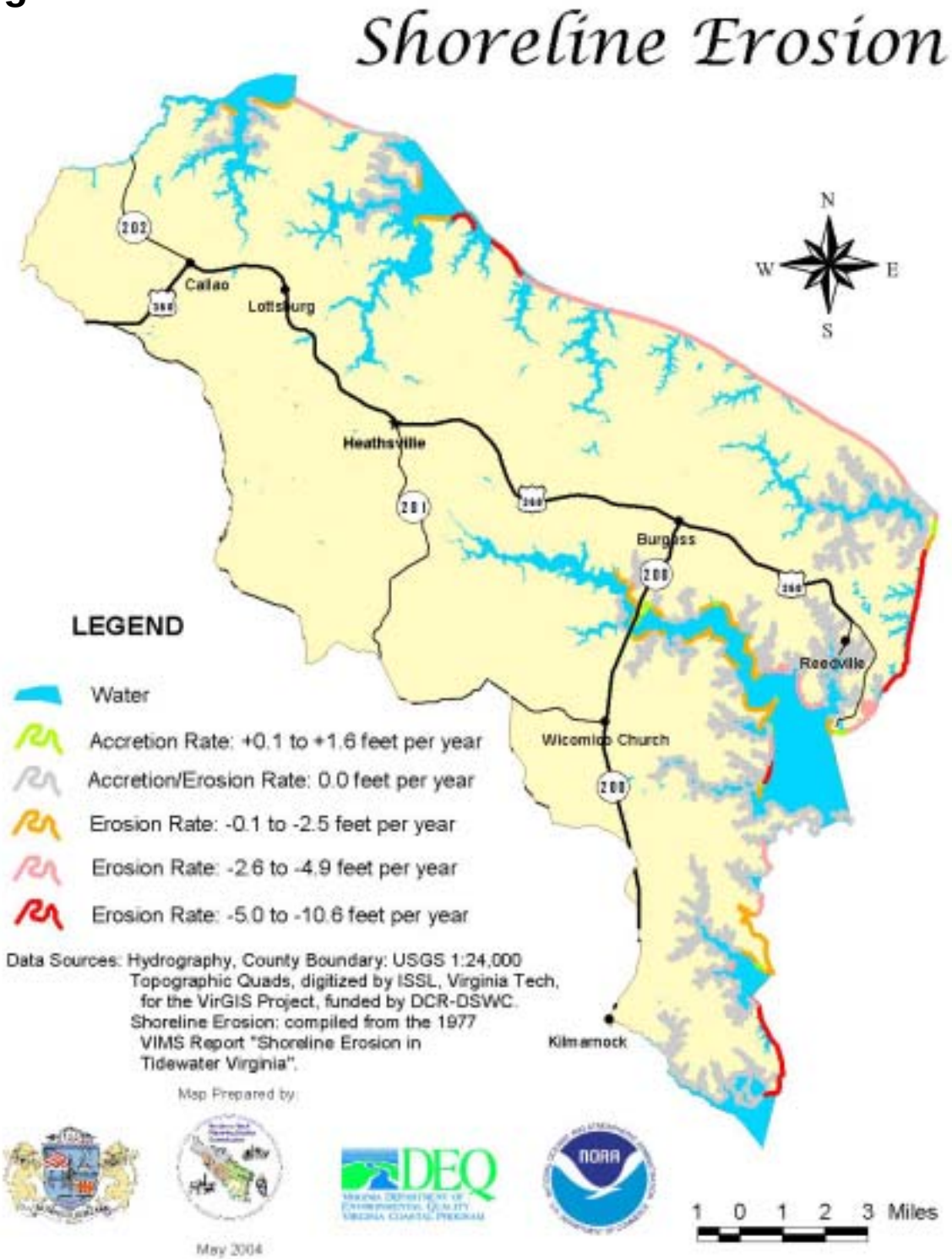
In 1989, Northumberland County contained approximately 25 miles of artificially stabilized shoreline to combat erosion. As of 2003, that numbers had increased to 80.27 miles of hardened shoreline. Many shoreline landowners have installed structures such as groins used in conjunction with bulkheads or riprap to reduce or prevent erosion. This technique has met with some success in combating erosion on the shorelines that are exposed to heavy wave and wind action. A shoreline protection program should also contain a variety of techniques controlling erosion in addition to structures. Alternatives that have been used include:

- Protection of low energy shorelines by planting grasses, shrubs and vines, along with fiber matting or coconut logs to stabilize beaches, banks, and shorelines while the vegetation establishes itself

- Replacement of sand on recreational beaches although this does not control shoreline erosion and at best is a temporary solution

- Development of off-shore erosion control structures such as breakwaters and artificial islands to modify wave action, reduce deep water wave energy, and promote beach nourishment.

Figure 1.19


Shoreline Erosion
N
W
E
S
202
Callao
360
Lottsburg
Heathsville
201
360
Burgess
200
360
Reedville
Wicomico Church
200
Kilmarnock
LEGEND
Water
Accretion Rate: +0.1 to +1.6 feet per year
Accretion/Erosion Rate: 0.0 feet per year
Erosion Rate: -0.1 to -2.5 feet per year
Erosion Rate: -2.6 to -4.9 feet per year
Erosion Rate: -5.0 to -10.6 feet per year
Data Sources: Hydrography, County Boundary: USGS 1:24,000
Topographic Quads, digitized by ISSL, Virginia Tech,
for the VirGIS Project, funded by DCR-DSWC.
Shoreline Erosion: compiled from the 1977
VIMS Report "Shoreline Erosion in
Tidewater Virginia".
Map Prepared by:
DEQ
NOAA
1 0 1 2 3 Miles
May 2004

3. Marshlands

Marshlands provide a considerable defense of the shoreline against erosion in addition to their function as a nursery ground for aquatic life. VIMS classifies marshes into three categories: fringe, extensive and embayed.

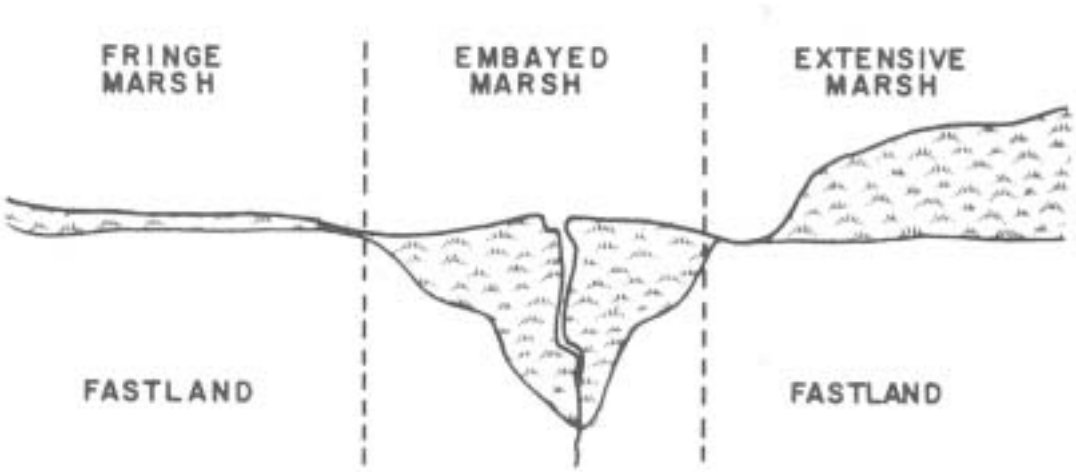
Fringe marsh is defined to be less than 400 feet in width and runs in a band parallel to the shore.

Extensive marsh is that which has extensive acreage projecting into an estuary or river. This type of marsh has the highest value for wildlife.

Embayed marsh is a marsh which occupies a reentrant or drowned creek valley.

The following sketch illustrates these three types of marshlands. The fringe marshes have maximum values as a buffer to wave erosion of the fastland. The seaward margins of most marshes are undergoing erosion as a result of rising sea level. Citizens should be encouraged to manage marshes by clearing them of debris, pruning back overhanging vegetation to provide as much sunlight as possible, and allowing the marsh to move progressively landward in response to rising sea level.

A GENERALIZED ILLUSTRATION OF THREE TYPES OF MARSH



E. ACCESS TO STATE WATERS

Many objectives of the Chesapeake Bay Protection Program focus on improving the quality of potable water and preserving habitats for marine life within the Bay and its tributaries. In addition, the program also emphasizes a desire to improve public access for recreational and commercial purposes. The thought process is that when people enjoy the richness and beauty of the Bay, then they will be more likely to take steps to protect it, or reduce their impact on the Bay. Therefore, it may be stated that there is a dual focus of the Chesapeake Bay program relative to access: to increase recreational opportunities while protecting the water quality and natural resources of the Bay. This section examines factors that may influence the establishment of new public or private access points to the Bay or its tributary tidal streams.

1. The Chesapeake Bay Area Public Access Plan

In 1990, the Chesapeake Executive Council published its report titled The Chesapeake Bay Area Public Access Plan which included a report for every county within Virginia and in the adjoining states that were covered by the program. That study identified major existing access facilities ranging from state-operated boat ramps to commercial marinas. Figure 1.20 depicts the general locations of the waterfront access facilities in Northumberland County. They are grouped on this map into four categories:

- Fishing piers, Great Wicomico River Public Fishing Pier
- Boat Ramps, including state as well as private ramps. In addition to the public boat launch ramps, many, if not most, of the marinas also have boat launching ramps in addition to boat slips. However, marinas usually charge for the use of their launch facilities, whereas public ramps are for the most part free to use.
- Swimming Beaches: There is one public (free) beach (Vir-Mar Beach) identified in the inventory. Also, many of the member-only community associations have private recreational areas that include beaches.
- Natural Area Preserves.

There are also several natural habitat areas some of which provide limited access for purposes of observation and nature study. The State has two three nature preserves, one upstream on the Great Wicomico River, Bush Mill Stream, one at the mouth of Dividing Creek, Hughlett Point, and Dameron Marsh which is located mid-point on the Chesapeake Bay shore in the County. Each of these sites has some potential for public access. Bird (and wildlife) watching, and hiking are passive recreation activities that are allowed at these preserves.

Figure 1.20

Public Water Access Sites
Lodge Landing
Forrest Landing
Vir-Mar Beach
Rowes Landing
Cedar Point Landing
Bush Mill Stream Preserve
Cooper Landing
Shell Landing
Great Wicomico Public Fishing Pier
Cranes Creek Landing
Dameron Marsh
Hughlett Point
N
W
E
S
Heathsville
Kilmarnock
LEGEND
Boat Ramp
Natural Area Preserve
Swimming Beach
Fishing Pier
Data Sources: Hydrography, County Boundary: USGS 1:24,000 Topographic Quads, digitized by ISSL, Virginia Tech, for the VirGIS Project, funded by DCR-DSWC. Water Access Points - Northumberland Land Use Office.
Map Prepared by:
May 2004
1 0 1 2 3 Miles

The Public Access Plan cites a need to increase access to public beaches and to upgrade public boat ramps. Marshes and wetlands are also suggested as resources to extend opportunities for the public to enjoy the shoreline and waterfront for both recreational and educational purposes. The concern for more and improved public access to public waters also came from community workshops. It was observed in the workshops that the present level of facilities is inadequate to serve county residents as well as summer visitors.

The previous Comprehensive Plan pointed out the lack of public water access points in the County for citizens. The County is blessed with 14 power boat ramps; however, there are very little opportunities for those citizens who want to bank fish, crab, launch canoes and/or kayaks, and most of the sites suffer from inadequate parking. The County does have VirMar Beach, a small (250 ft) long beach area on the Potomac River for fishing, crabbing, swimming and/or picnicking. The Northumberland County Planning Commission has been working for over five years towards improving public water access for Northumberland County citizens. To that end, Northumberland County, with the assistance from the Northern Neck Planning District Commission submitted a grant application for a public fishing pier on the Great Wicomico River to The Virginia Department of Environmental Quality's Coastal Program (funded by the National Oceanic and Atmospheric Administration) in 1999. To secure matching funds, the County submitted another grant application to the Virginia Marine Resources Commission's Recreational Saltwater Fishing Fund in 2000. Both grants were awarded, and the County now has a public fishing/crabbing pier to serve its citizens.

2. Shoreline Land Use

If the water-related industries and marinas are added to the residential development discussed above, one may observe that considerable development exists along the shoreline of Northumberland County. Despite this seemingly abundance of access, there is little opportunity for citizens who do not own waterfront property or a trailered boat to access the recreational opportunities offered by the Bay and its tributaries. The County will continue to work to help provide land-locked citizens with areas to access and enjoy State waters.

3. Effects of Underwater Grasses

These grasses were once abundant mostly in the shallow waters of protected coves and creeks and may hold the secret to improving the Chesapeake Bay. They are usually found in "low energy zones" of coves and creeks which are not subject to the severe tidal and wind action more prevalent in areas such as the southern shore of the Potomac River. Areas of submerged vegetation as identified by VIMS are shown on their website at: http://www.vims.edu/bio/sav/index.html. To view SAV coverages, click on the year you are interested in next to "Field Observations and a First Look at Aerial Photography". Underwater grasses grow prodigiously in shallow protected waters where they become nurseries for fin and shellfish as well as habitats and refuges for waterfowl. Underwater grasses, called submerged aquatic vegetation (SAV), not only filters surface water as it enters the streams but it also acts as a buffer against tidal action. For shorelines in low energy locations, underwater grasses have

been found to form a quite adequate defense against shoreline erosion. The SAV beds are truly the "nurseries of the Bay", a place where larval stages of shellfish and other juvenile species can find protection, and habitat. Grasses now occupy only about 10% of the area they once occupied, and until water clarity can be improved, they are unlikely to expand.

4. Factors Influencing the Establishment of New Access Points.

The Virginia Marine Resources Commission has established criteria for establishing new Marinas. Some of the more "desirable" of these are summarized below:[14]

- Water depth must be greater than three feet from mean low water.
- Site must not interfere with shellfish production.
- Wave height and current to be very low.
- Channel does not require frequent dredging; when dredging is required, a suitable disposal site is available; marina must be within 50 feet of navigable water depth.
- The tidal exchange shall be adequate to maintain water quality.
- No encroachment upon wetlands; habitat areas (endangered species); submerged aquatic vegetation; or existing recreational use.
- Shoreline stabilization is required without use of artificial structures.

The Virginia Department of Health, Division of Shellfish Sanitation, is the agency responsible for approving or condemning certain water bodies for the taking of shellfish. Condemnation of oyster grounds due to unsatisfactory pollutant levels continues to render the available oyster grounds in the County off limits. Shellfish may be harvested from most condemned areas; however, they must first be relayed to approved waters for 15 days before marketing. Relaying is only allowed when the water temperature is above 50 degrees.

Rivers and creeks that do not meet shellfish harvesting water quality standards occur in the majority of the rivers in the County and are continuously changing. Creeks that currently have some section closed to shellfish harvesting include the Yeocomico and Coan Rivers, Presley, Cod, Hull, Cubbit, Hack Creeks, Little Wicomico River, Owens and Gaskins Ponds, Taskmakers and Cockrell Creeks, Great Wicomico River, Mill, Ball, Cloverdale, Dividing and Indian Creeks. To examine the current extent of the closure areas, visit:
http://www.vdh.virginia.gov/OEHS/Shellfish/Northumberland.asp.

[14]See page VI-82, Local Assistance Manual for complete list of criteria.

In summary, there is a need to provide more public access to the Chesapeake Bay and its tributaries but there is also an equally important need to do so in a way that does no harm to the quality of the Chesapeake Bay.

CHAPTER 2
ISSUES, GOALS AND STRATEGIES [1]

Community planning uses such terms as issues, goals, strategies, plans, and policies. Each of these has a specific meaning within the framework of the Comprehensive Plan. An **issue** is defined as a matter of community concern to the community. It may be based on a community need that is not being met, a specific problem that needs to be addressed, or a new opportunity for improving the community. A **goal** is a statement that expresses the community's intent to deal with an issue. A goal is a broad statement indicating the general direction the community would like to move in order to deal with a specific issue. Goals become informal policy of the local government once they are adopted. A **strategy** deals with how the community plans to proceed in pursuing each goal. Chapter 6 includes the Implementation and Work Plan describing specifically what will be done to achieve the major goals.

This Comprehensive Plan for Northumberland County also contains a Land Use Plan, a Public Facilities and Services Plan and a Water Quality and Shoreline Protection Plan. The Virginia Statutes establish the broad requirements of a comprehensive plan, that it: (1) be general in nature; (2) relate to physical development or potential for such development; and (3) address the broad (comprehensive) needs of the community.

This section focuses on defining issues upon which the Comprehensive Plan for Northumberland County is based. The issues came from a combination of several areas of analysis, including:

1. Issues deriving from the Land Use Plan, the Public Facilities and Services Plan and the Water Quality and Shoreline Protection Plan that may not have been specifically addressed in those chapters.

2. Issues related to the economics and demographics of the County which were derived from the economic and demographic analysis presented in the report on Economy and Demographics which appears in the Comprehensive Plan as Appendix A.

3. Physical and environmental issues from Chapter 1 Physical and Environmental Conditions.

4. Issues raised during the public hearings and deliberations of the Planning Commission and written and email communications with County citizens.

5. Issues contained in the 1996 Plan which are still relevant today.

. The organization and structure of this Chapter is the same as for the 1996 Comprehensive Plan.

[1]Filename= Chapter_2_Final

PHYSICAL AND ENVIRONMENTAL ISSUES
1. Use and Development of Land

ISSUES	GOALS	STRATEGIES
Existing development, the locations of roads and development along shorelines establish the general land use patterns of Northumberland County. • Residential development appears along both primary and secondary roads. • Commercial development is focused mostly along primary highways but also clustered around several villages. These hubs must continue to define the future business centers of the County. • Newer upscale residential development is located near and on the shorelines while more modest residential developments, including mobile and manufactured units, are found throughout the other rural areas of the County. • Industrial development, mostly marine and seafood-related, is located along the waterfront. Future development will likely continue to follow these same patterns as growth simply extends itself from patterns already established. This presents an opportunity to focus planning strategy on managing development to achieve a balanced community while preserving the rural and environmentally sensitive qualities of the County.	A. To provide a framework for managing future development of the County in a way that promotes opportunity for its citizens while directing growth to areas best able to accommodate growth. B. To provide a framework to manage growth along major highways and along the waterfront that considers the environmental and social constraints.	1. Strengthen the "Village Concept" in the land use plan to encourage clustering of higher intensity land uses, including small businesses and industries, in order to provide public services and utilities more efficiently, to retain the rural nature of the County and better meet the needs of the citizens of the County. 2. Establish development guidelines designed to direct growth to areas with few or no physical constraints while promoting the preservation of croplands, forests and sensitive environmental areas. 3. Establish guidelines to manage the growth along the shoreline to balance the shoreline development and the environmental considerations. 4. Establish guidelines designed to limit commercial sprawl on highways between villages and thereby retain the rural character of the County. 5. Establish architectural design guidelines for structures in villages and on the highways between villages to generally reflect the traditional forms found in the Northern Neck and also to complement surrounding structures on adjacent parcels
Many forests and croplands located near shorelines are expected to eventually be converted to subdivision development as market demand for more waterfront lots forces prices of land upward. Some farmland has been preserved by using areas immediately next to the shoreline for dwellings while leaving cropland in service. This open space technique is a creative method of continuing the use of productive croplands and forests while making use of the shorelines for residences and water-based activities.	C. To preserve the agricultural and rural characteristics of the County. D. To reduce the adverse impact of development on shorelines and sensitive environmental areas.	1. Establish guidelines that promote land use and development practices designed to preserve the rural character and qualities of the County. 2. Establish site planning guidelines for subdivisions along shorelines including how they interface with agricultural and forestry lands.

PHYSICAL AND ENVIRONMENTAL ISSUES 2. Topographic Conditions that Limit Development		
ISSUES	GOALS	STRATEGIES
Topography becomes a planning issue when steep slopes and unstable soils occur together. Steep slopes in and of themselves impact on development costs and for that reason developers are likely to avoid them where possible. Because water runs off steep slopes more rapidly than it does on level land, excessive slopes can increase the erosion rate. In combination with unstable soils, steep slopes cause serious soil erosion. If not mitigated, an increase in sediment and other pollutants may enter public waters. Steep slopes in Northumberland County occur mostly along stream banks where the impact of erosion is of greatest concern. Stormwater run-off can cause erosion and contaminate the County's waterways and the Bay. Methods applicable to other parts of Virginia for stormwater management are not effective.	A. To reduce soil erosion on steep slopes particularly along creek and stream banks. B. Establish a system of storm water control that mimics the pre-development hydrology.	1. Adopt land use policies with incentives and restrictions that encourage developers to avoid building sites located on steep slopes. Through techniques such as cluster development, protective easements or other arrangements, the policies should provide incentives and a mechanism for preserving forests, agricultural activities, dunes and other environmental features. 2. Where development on slopes cannot be avoided, policies may require that mitigating engineering solutions be installed to reduce disturbance of the slopes. The Erosion and Sediment Control Ordinance and Chesapeake Bay Preservation Act Regulations are major tools in implementing this strategy. 3. Use site design techniques that store, infiltrate, evaporate, and detain runoff such as Low Impact Development, LID (where applicable).

PHYSICAL AND ENVIRONMENTAL ISSUES 3. Soil Suitability for Septic Tanks		
ISSUES	GOALS	STRATEGIES
The suitability of the soil for septic tank drainfields is essential to development in most of Northumberland County. There is a public sewerage system serving the Reedville and Fleeton areas and a system is being installed in Callao. Several other high-impact uses (schools, for example) have on-site wastewater disposal systems. But the ability to develop residential and other less intensive land uses depends upon the ability of the soil to percolate satisfactorily and the adequacy of engineered systems. There is a high concentration of soils of poor quality for septic tanks located in the low-lying area seaward of the Suffolk Scarp (see Figures 1.3 and 1.7). Some poor soils are found in the upland regions of the County but these are mostly along stream beds and banks. Such areas are generally restricted from development by RPA regulations. The County contains a combination of large low-lying areas that have soils unsuited for septic tank fields, and as much, or more, area with acceptable soils for that purpose. While potential future growth should be the primary target for development strategies, much of the existing development in Northumberland County occurred before the Chesapeake Bay Regulations took effect. Because of this, lots that existed prior to those regulations may not have adequate space for an alternate septic tank field.	A. To guide development so that it avoids the problems of building on soils unsuitable for septic tank drain fields.	1. Within areas not served by public sewers, use innovative land planning techniques as incentives to encourage preservation of areas that are otherwise unsuited for development.
	B. To avoid building beyond the capacity of good soils to the detriment of the shallow underground water supply.	1. Establish through zoning, appropriate density regulations and other planning requirements to ensure that development does not exceed the capacity of the land. 2. To prevent contamination of the shallow aquifers and the ground water, continue to require (subdivision regulations) that each lot be tested for percolation as well as require adequate separation between the disposal field and the water table.
	C. To expand opportunities for sewage disposal for owners of residences and small commercial places in cases where inadequate back-up drain fields are unavailable.	1. Work with the Health Department to develop alternate acceptable strategies and technologies for sewage disposal systems 2. Continue the policy of providing/expanding public sanitary sewers services to the villages with higher concentrations of residential and business uses where economically viable. 3. Educate citizens to maintain septic systems by reducing water usage, minimizing the use of garbage disposals and pumping the septic tank every five years.

PHYSICAL AND ENVIRONMENTAL ISSUES 4. Structural Qualities of Soils		
ISSUES	GOALS	STRATEGIES
Shrink-swell defines a soil's potential for volume change when subjected to a loss or gain in moisture. Volume changes occur mainly because of the interaction of clay minerals with water. The amount of change varies with the amount and type of clay minerals in the soil. The size of the load and the amount of change in soil moisture content may affect the amount of swelling of soils in place. Overall, most of the County's soils have shrink-swell qualities that are acceptable for most likely building purposes. A few areas have moderate to high shrink-swell characteristics that may require special engineering attention. In the uplands there should be few limitations to building because of shrink-swell although marginal conditions are likely to be present in the drainage valleys and near creek beds.	A. To inform the community of the potential problems that may result from building on certain soils. B. Limit development in areas subject to shrink-swell conditions	1. Advise builders and developers of the need to examine shrink-swell qualities of soils before committing to buildings or roads on a specific site. Make information that is available to the County, such as soil surveys, available to individuals and developers. 2. Include requirements for evaluating shrink-swell soil qualities; water table; soil permeability and other factors in the plan review process. 3. Because most of the areas with shrink-swell problems are in the same area as soils with poor septic tank qualities, additional restrictions should be considered when locating buildings within the sensitive area seaward of the Suffolk Scarp.

PHYSICAL AND ENVIRONMENTAL ISSUES
5. Flood-Prone Areas

ISSUES	GOALS	STRATEGIES
Floodplains are low-lying land areas adjacent to rivers, streams, creeks, and other water bodies that are subject to periodic flooding. The County has experienced major storms and flooding since early settlement of the area. A major storm occurred in November, 1985, when tides five feet above normal destroyed bulkheads, boathouses, and other waterfront structures. Through the National Flood Insurance Program, property owners may purchase federally-backed flood insurance. Flood Insurance Rate maps define areas subject to inundation at 100-year and 500-year intervals. Northumberland County has considerable development located within the 100-year floodplain (Figure 1.9). It includes full time and seasonal dwellings, as well as businesses and industries. Most of this development within the floodplain occurred before the flood zone maps were first prepared. An owner still has the option of building within a floodplain although most owners who finance or refinance must purchase flood insurance. The County's present regulations require that any building constructed within the floodplain have a finished floor elevation no lower than the 100-year flood interval. Pressure for future development in the County's floodplains is expected to continue as long as undeveloped areas along the shorelines exist. The planning issue that arises is how far should the County try to go in regulating development in these vulnerable areas?	A. To promote maximum safety and to protect life and property from potential storm and flood damages. B. To meet the requirements as well as the intent of the Chesapeake Bay act to prevent contamination of the Bay	1. Provide awareness and instructions to citizens advising of the potential dangers of establishing new buildings within flood-prone areas. 2. In cases where the use of flood-prone areas is acceptable, establish performance guidelines for new development within identified floodplains that limit the types of land uses that may be established in floodplains. 3. Continue to administer the County's Floodplain Management Ordinance and review it from time to time to ensure that it is in conformity with the latest FEMA guidelines and the Chesapeake Bay Act. 4. Continue to administer the County's Subdivision Ordinance and Soil and Erosion Control Ordinance to provide, where needed, flood control devices and other improvements necessary to protect property from flooding. 5. Restrict establishing wastewater disposal systems and utilities in or adjacent to areas subject to frequent flooding.

PHYSICAL AND ENVIRONMENTAL ISSUES
6. Wetlands and Natural Habitat Areas

ISSUES	GOALS	STRATEGIES
Wetlands are transitional areas between dry uplands and bodies of water. They serve as: (1) a natural water filter for wastes and sediments; (2) a barrier and absorber of floodwaters; (3) a buffer and stabilizer of shoreline from coastal erosion; (4) a recharge area for groundwater; and (5) a breeding and nesting ground for many species of fish, birds and plants. Wetlands may be either tidal or nontidal. Tidal wetlands consist of vegetated marshes, nonvegetated beaches, sandflats, mudflats and the like that are regularly flooded with tidal waters. Nontidal wetlands may be adjacent to, or located beyond, tidal influences. They are classified as "wetlands" because they are saturated with freshwater continually or seasonally. There are 1,560 acres of tidal wetlands in Northumberland County located primarily at the heads of streams (Figure 1.10). They occupy about 88 miles of shoreline. In addition, there are about 400 miles of streams above the tidal flow that have contiguous wetlands. Wetlands of both types are protected by federal, state and local laws. Natural Habitat Sites are habitat areas for rare, threatened or endangered species inventoried as part of a natural heritage program. Eighteen sites have been identified most of which are also in marsh or wetland areas. These areas are also protected by federal laws. The planning issue related to both wetlands and habitat areas concerns identification of the areas and coordination of projects to avoid development within them. Site-specific planning should provide data on any protected areas and during reviews the County should determine that approvals of other agencies having jurisdiction are obtained before development plan approvals.	A. To protect official wetlands, natural habitat areas and other sensitive environmental areas and natural resources from loss or degradation by development. B. To meet the requirements as well as the intent of the Chesapeake Bay act to prevent contamination of the Bay.	1. Maintain a current inventory of all Natural Heritage Sites for Zoning Department review when processing development plans. As part of the process, require developers to obtain assurances from other agencies having jurisdiction to the effect that habitat sites will not be disturbed. 2. Continue to administer the Chesapeake Bay Act regulations. Require developers to delineate and protect wetlands and natural habitat areas as part of the submission requirements of development or subdivision plans. 3. Establish incentives to encourage individuals to participate in the preservation of natural habitat areas, the scenic values of the County's shoreline and other environmentally-sensitive areas. 4. Continue to administer the wetlands regulations through the local Wetlands Board. 5. Educate citizens about the importance of maintaining tidal marshes by pruning back overhanging limbs and removing debris so as to maximize light penetration, and remove invasive *Phragmites australis*.

PHYSICAL AND ENVIRONMENTAL ISSUES
7. Historic and Archeological Resources

ISSUES	GOALS	STRATEGIES
With its history dating back to the 17th century, Northumberland County has many buildings and sites that are historically significant. Seventeen sites are on the National Register of Historic Places (Figure 1.11). The Virginia Dept. of Historic Resources (VDHR) has identified about 120 other sites that have some historic significance according to their criteria. No comprehensive survey to identify all of the historic resources has been performed by VDHR. For this reason sites carried in their current inventory are incomplete. A complete survey of the County would likely include all buildings more than 50 years old. Also, there could be several hundred additional sites added to the inventory. Two historic districts have been established: at Reedville and at Heathsville. With two historic districts in place and 18 places on the National Register, Northumberland County is has the basics to establishing an impressive program of historic preservation. To take this program further the County could sponsor a county-wide survey in order to establish a complete inventory of historic resources.	A. To acknowledge the importance of preserving places of known historical and archeological significance by establishing county policies designed to protect designated places from loss or degradation by development. B. To develop an Historic Resources Management Plan as a future element of the Comprehensive Plan. C. To be able to emphasize Historical Resources as a tourist and resident attraction.	1. Identify additional sites that may be eligible for the Federal and State Registers and prepare documentation for nominating them to the registers. 2. Perform a county-wide inventory of historic and archeological sites. A resource for both technical and financial assistance is administered by the Virginia Department of Historic Resources. 3. Identify an appropriate organization as responsible for County-wide historical preservation and planning. 4. Integrate the strategy of historic preservation with the plans to increase tourism

PHYSICAL AND ENVIRONMENTAL ISSUES
8. Chesapeake Bay Protected Areas

ISSUES	GOALS	STRATEGIES
Northumberland County was among the first counties to adopt the model Chesapeake Bay Preservation Ordinance provided by CBLAD. That ordinance established a Resource Protection Area (RPA) to include: tidal wetlands; nontidal wetlands connected by surface flow and contiguous to tidal wetlands; tidal shores; and a 100-foot vegetated buffer. The ordinance also established a Resource Management Area (RMA) covering all remaining territory within the County's jurisdiction. Development is allowed in the RMA after meeting performance standards set out in the ordinance. The ordinance was recently updated to reflect recent changes to the Chesapeake Bay Act.	A. To protect the natural resources of the Chesapeake Bay and its tributary streams by managing development and use of the watersheds and shorelines to reduce the quantity of pollutants entering state waters. B. To meet the requirements as well as the intent of the Chesapeake Bay act to prevent contamination of the Bay	1. Continue to administer the performance standards and regulations of the zoning ordinance in the RPA and RMA. 2. Continue to coordinate the efforts of the County with those of CBLAD and other State agencies concerned with water quality protection. 3. Continue to monitor and enforce the requirements of the County ordinance related to the Bay Act.

PHYSICAL AND ENVIRONMENTAL ISSUES 9. Groundwater Supply		
ISSUES	GOALS	STRATEGIES
Groundwater is available from three aquifers. The "surface water aquifer" can provide from five to 20 gallons per minute (7,200 - 28,800 gallons per 24-hour day) from shallow wells. It is a marginally satisfactory source of water for residential and most small business uses. Most water users can obtain good-quality water from deep wells extended into the artesian aquifers located 300 to 900 feet below the surface. However in the south eastern area of the County, near seawater, the deep aquifer has high sodium content. The increased amount of sodium in the water can also result from the pressure drop caused by very large water withdrawals at a single point. Reduced pressure in the aquifers permit the mixing of sea water with that in the aquifers. Large water users outside the County significantly affect the long term (50 – 70 year) water supply available and should also be monitored. The deep artesian water supplies are unsustainable in the long run and the surficial water aquifer cannot by itself supply sufficient water for the villages and industrial users. Reservoirs can provide a sustainable public water supply for part of the County as well as create waterfront property, enhance recreation in the form of kayaking, canoeing and fresh water fishing, and provide water for irrigation of vegetables, vineyards, nurseries, etc. For the long term, multiple sources of fresh water must be available to serve the County residents and businesses. A study was performed in 1969 for the Northern Neck Planning District Commission to determine feasibility of and location of reservoir sites. Current pressures on the fresh water supply make it incumbent to revisit the conclusions and recommendations of that study.	A. To protect the water supply in the surficial water aquifer from pollution originating in surface uses of the property. B. To assure a sustainable long term fresh water supply for the County. C. To protect the potential reservoir sites from development that would preclude their availability when needed.	1. Monitor septic tanks with emphasis on replacement or repair of failing systems. Enforce the 5 year mandatory pump out of septic tanks when the County sewage disposal system has sufficient capacity. 2. Require sufficient separation between a septic tank field and the water table to protect against aquifer contamination. 3. Cooperate with the Virginia Department of Environmental Quality to locate defective underground storage tanks, replacing them with tanks of approved materials. 4. Establish an Interstate program of conservation, education and regulation to protect the artesian aquifers 5. Develop and implement a long term program to provide reservoirs and other sources of fresh water to reduce dependency upon the existing deep aquifers 6. Ensure that no development takes place in valleys that may be flooded for reservoirs, or that inappropriate development takes place on property that may become reservoir waterfront.
Several County water systems have been developed using the deeper aquifers, the largest of which is at Reedville. Public water systems that serve 25 or more persons and have 15 connections for 60 or more days per year are regulated by the Virginia Department of Health. Currently, there are 60 public water systems in Northumberland County.	A. To discourage extremely large withdrawals from the lower aquifers in such amounts as to cause a pressure drop thus allowing sea water to infiltrate into the aquifer. B. To prevent pollution of surface aquifers and public water supply sources through a program of wellhead protection.	1. Establish water preservation guidelines and restrictions to cover very large withdrawals from the deep aquifers, particularly those close to the shore. 2. Delineate wellhead protection areas for active public water supply wells. Establish limitations on the types of land uses allowed within the protected area and develop a contingency plan for dealing with accidents.

PHYSICAL AND ENVIRONMENTAL ISSUES 10. Water Pollution Sources		
ISSUES	GOALS	STRATEGIES
Potential sources of pollution include the following: underground storage tanks, landfills, lagoons and holding ponds, sludge application, septic systems, pesticides and fertilizers and hazardous wastes. The Virginia Department of Environmental Quality monitors point and non-point pollution sources through two programs. "Pollution Discharge Elimination System (VPDES) Permits" are required for any "point source" of pollution discharging into state waters. "Point sources" are sources that can be traced to a single point such as an industrial waste or sewage discharge pipe. In 2005, DEQ reported 2 active industrial SPDES permits and four public permits. In addition, other land uses that do not discharge directly into state waters can contaminate both surface and ground water and are monitored through the "pollution abatement permit program." This program is focused on large operations such as commercial livestock raising, sewage treatment plants, sludge disposal sites, lagoons and the like. Two (2) pollution abatement permits were active at the beginning of 2005. Mining is another source of potential pollution. In December 2004, there were 26 active mining permits for sand and/or gravel in Northumberland County. Mining has the potential to lower the water table, and thereby disrupt the surficial aquifers. Methods and requirements for reclamation of a site upon completion of a mining operation are issues.	A. To protect the underground water, surface water, and runoff from pollution resulting from all sources of pollution. B. To protect surface and underground water from pollution by large commercial or institutional operations.	1. Monitor the application of pesticides and agricultural chemicals through a "nutrient management plan"[2] and Best Management Practices. 2. Continue the County process for handling, storage, transporting and siting of hazardous materials and wastes. This process also provides for disposal of mattresses, refrigerators and other bulk wastes. 3. Establish County policies governing the location, installation and operation of large commercial activities including: animal raising, sludge disposal, lagoons, landfills, and similar activities through zoning permits and other local regulations. 4. Coordinate and cooperate with the Department of Environmental Quality in the administration of pollution abatement permits. 5. Establish polices and guidelines concerning the use and reclamation of land for mining.
Non-point sources of pollution or those that cannot be traced to a single source or point are always threats to both ground and surface water. Non-point pollution may come from a variety of sources such as: agriculture, forestry, and developed areas.	A. See watershed goals	1. See watershed policies

[2]Oversight by the U. S. Soil Conservation Service.

PHYSICAL AND ENVIRONMENTAL ISSUES
11. Watersheds

ISSUES	GOALS	STRATEGIES
Watersheds determine how stormwater (any precipitation) moves on the surface, at what rate it is absorbed into the ground, where the runoff enters major rivers and, eventually, the Chesapeake Bay. Along with surface water, pollutants may be infiltrated into the groundwater supply while excess runoff carries them to the rivers and Bay. While many specific points of pollution can be identified and regulated (previous topic), there are numerous sources of pollution which cannot be identified by specific sites. It comes from roads, croplands, construction sites, overflowing septic tanks and, in short, any locations used by people. These "non-point" sources are of major concern in the protection of both ground water and the Chesapeake Bay. Consequently, the management of watersheds is an important element in the protection of the water supply and also the Bay. In Chapter 1, ten major watersheds were identified which range in area from three to 58 square miles. All but two (which drain directly into the Chesapeake Bay) define the drainage area of major rivers or creeks. Within each watershed numerous smaller watersheds may be defined. The planning issues related to watersheds concern the level of pollutants that could enter the water supply or the Bay with surface water as their carrier. The focus of issues and the strategy for dealing with them must therefore address methods of reducing not only the amount of runoff but its quality as well. Because all of Northumberland County's territory has been included in either the Chesapeake Bay RPA or RMA, the approach to managing the watersheds can be linked to the same performance standards used in the Resource Management Area. Timber cutting, particularly clear cutting, and reforestation has an impact on erosion because of the large amount of land that is disturbed during cutting and removal. Silvicultural activities are exempt from the Chesapeake Bay Preservation regulations and Best Management Practices have been carried out only as a voluntary program.	A. Achieve a significant reduction in the amount of impurities reaching the County's underground water supply from surface water. B. Achieve a reduction in the amount of runoff from stormwater and a significant reduction in the impurities that the stormwater carries to state waters. C. To eliminate soil erosion and incremental runoff resulting from silvicultural activities. D. Achieve a reduction in the amounts of nutrients, nitrate and phosphate that discharge into waterways via the groundwater by increasing the number of deep-rooted trees in the RPA.	1. Apply performance standards of the RMA and strengthen them for individual watersheds if necessary to deal with special conditions in more intensely-developed areas. 2. Support the State Water Control Board in their efforts to improve the quality of waters of the Bay. 3. Require the use of Low Impact Development techniques where applicable to control the runoff from storm water. 4. Make use of the Best Management Practices as established by the Department of Environmental Quality 5. Establish review standards and requirements for all major developments, including activities which require state-issued Pollution Abatement Permits, for eliminating the impact of such uses on the water quality. 6. Coordinate County policies with the Department of Agriculture's Nutrient Management Program to encourage NMPs to be established on all farms. 7. Require the use of Forestry Best Management Practices for Water Quality in Virginia (Va. Dept of Forestry, 1989) in connection with timber harvesting and removal from forest stands within the County. 8. Ensure compliance with the RPA requirements of the Chesapeake Bay Act.

PHYSICAL AND ENVIRONMENTAL ISSUES
12. Soil Conditions

ISSUES	GOALS	STRATEGIES
The water table in the areas of the County lying seaward of the "Suffolk Scarp" is quite close to the surface (Figures 1.3 and 1.15). In these areas the water table is less than 24 inches from the surface. In the remainder of the County, the water table should not present a limitation to development because the areas affected are mostly along stream beds and banks. A high water table exposes the surficial aquifer to potential pollution from surface seepage, failing septic tanks and other pollutants that enter the soil. When combined with soils that have a high permeability there is a particular problem with undigested sewage entering the underground water system even when septic tanks are working normally. The increasing use of engineered systems in areas otherwise unsuitable for normal drain fields creates additional problems when the systems are not properly maintained. Soils with high erodibility also contribute to river and bay pollution when soil particles containing impurities are carried by stormwater runoff into public waters. Construction sites are the source of potential soil erosion but any activity that disturbs the natural surface vegetation, including farming, is a potential source of soil erosion. Erosion is particularly a problem when slopes are steep where the soil is unstable. A simple break in the natural vegetation or dune may initiate erosion that continues indefinitely. The planning issues regarding soils cover a wide range of space, but generally the issues are focused on the need to avoid extensive ground disturbance and poorly designed structures in areas where soils are extremely sensitive to erosion. And when such soils are disturbed, there is a great need to protect the site with erosion and sedimentation prevention devices.	A. To protect the underground water quality through the management of development. B. To protect state waters from pollution resulting from avoidable soil erosion. C. To reduce the amount of development on highly erodible soils, particularly where slopes are excessive.	1. Manage development so as to minimize the use of land with high water tables and poor soils for septic tanks use. 2. Establish development policies that limit development on slopes greater than 15 percent and prevent development where slopes are 20 percent or greater. 3. Establish zoning and subdivision policies to provide incentives that encourage the use of innovative land planning techniques. The incentives should be designed to discourage development of areas with poor soils, high water tables, steep slopes or areas with other environmental constraints. 4. Establish policies for monitoring and controlling maintenance of engineered systems. 5. Require erosion and sedimentation prevention devices where river or bay pollution from development are likely

PHYSICAL AND ENVIRONMENTAL ISSUES
13. Shoreline Conditions

ISSUES	GOALS	STRATEGIES
The shoreline conditions report (Northumberland County, VIMS, 2002) identified 556 miles of shoreline[3] in Northumberland County which were distributed as follows: • Agriculture 37 miles • Bare 2 miles • Commercial 12 miles • Forest 249 miles • Grass 7 miles • Industrial < 1 mile • Paved 1 mile • Residential 187 miles • Scrub-shrub 60 miles • Timbered < 1 mile These data indicate that most of the shoreline is still in its natural state with considerable opportunity to take advantage of conservation measures. Boat houses and piers are the dominant feature of those portions of the shoreline that are used for residences, averaging five- boat facilities per mile overall (6 per mile in Great Wicomico River). Shoreline erosion is evident along the entire (exposed) portion of the shoreline (Figure 1.19) where VIMS reported erosion was occurring at rates of two feet per year or more. Erosion is unquestionably greater in the shorelines exposed directly to northeaster storms. See the Appendix for additional data on erosion. The major issue raised by shoreline erosion and alterations of shorelines is that these actions increase the amount of sediment being deposited into the Chesapeake Bay. Little can be done to change the natural storm patterns and to a large extent the community must live with this natural change in its boundaries over time. Conservation measures, however, may help delay the damage from natural causes and County intervention should prevent damage from non-natural causes. A major defense to slow the rate of shoreline erosion is actions that protect existing marshes and promote their extension.	A. To reduce the causes of shoreline erosion. B. To promote the growth of marshes and other natural barriers to erosion. C. To protect the shorelines which are vulnerable to extensive erosion from future buildings and construction. D. Verify the VIMS shoreline data and determine the likely impact of further possible development.	1. Preparation of guidelines or restrictions in the Subdivision Ordinance to improve the shoreline resistance to erosion. 2. Promote through incentives greater erosion protection along shorelines where the known rate of erosion is excessive. Such protection might be structural (i.e., bulkheads) or regulatory (i.e., additional zoning setbacks). 3. Establish standards for construction which modifies the shoreline, such as: bulkheads, piers and boat houses. 4. Promote the use of vegetation as an alternate to construction for the control of shoreline erosion. 5. Continue to administer and improve enforcement of requirements of the Chesapeake Bay RPA regulations to preserve marshlands, wetlands and other sensitive environmental features from erosion or destruction. 6. Educate citizens about the importance of maintaining tidal marshes by pruning back overhanging limbs and removing debris so as to maximize light penetration, and remove invasive Phragmites *australis.* 7. Perform a “build-out” analysis of the shoreline to determine the potential impact of development following current regulations.

[3]This figure is derived from summing individual page totals of the Shoreline Inventory report.

PHYSICAL AND ENVIRONMENTAL ISSUES
14. Access to Public Waters

ISSUES	GOALS	STRATEGIES
Access to the Chesapeake Bay and to the numerous rivers and creeks that form the 556-mile shoreline of Northumberland County is one of the County's major resources for both residents and visitors. Existing access is provided from the major rivers (see Figure 1.20) and includes: bank and pier fishing, boat launching ramps, commercial marinas, private community marinas and public beaches. The need to improve public access to state waters is one of the major goals of the Chesapeake Bay Program. That program emphasizes the desire to improve access for boat-related activities, swimming, crabbing and fishing and access to natural wildlife areas. The Public Access Plan (Chesapeake Bay Program) emphasizes a need to increase public access and to upgrade public boat ramps. Marshes and wetlands are resources to extend opportunities for the public to enjoy the shorelines and waterfront areas. There is an ongoing desire for improved access to the waterfront for local citizens as well as for extended facilities to support tourism.	A. Improve existing public boat ramps and increase the number of access points for general public and visitor use. B. Increase the use of shorelines to promote the growth of compatible economic development and tourism. C. Increase public water access to take the pressure off shoreline development and encourage attractive, affordable housing inland. D. Improve water access by adding or upgrading appropriate facilities	1. Continue the County program to develop additional public boat ramps and more fishing piers. Existing facilities should also be upgraded with better boat-handling facilities, piers and ample boat trailer parking. 2. Identify areas and appropriate zoning where the shoreline could be developed with facilities for economic use and tourism, including resort motels/boatels and similar enterprises. (See Strategy No. 6 below under 1. Demographics, Economics and Housing) 3. Identify places where visitors may access public waters for swimming, fishing and boating. Improve beach facilities. 4. Establish waterfront “parks” with picnic tables, sanitary facilities and boat ramps and piers. Land Conservation organizations should be encouraged to actively pursue this strategy through conservation easements and other tax incentives. 5. Establish a sufficient number of canoe/kayak launching facilities so that a “trail” would be created, allowing individuals not only to launch and return to a variety of sites, but to “tour” the County by water.”

COMMUNITY DEVELOPMENT ISSUES
1. Demographics, Economics and Housing

ISSUES	GOALS	STRATEGIES
The year-round population of Northumberland County increased slowly between 1990 and 2000 with the dominant increase in the 65 plus age group. The County's young population is leaving the County while the older, retired population is growing. There are limited provisions and services for the truly elderly and persons with disabilities including health services. There are no hospitals or nursing homes in the County and few clinics.. During the summer months, the population peaks as seasonal residents and week-end visitors come to the County. This adds to the economy as well as increases the services required of local government. Among the issues that relate to the demographic trends are the types of jobs available to residents. Seasonal jobs no longer dominate the local economy although some employment peaks during the summer and fall and slacks off during winter and spring. Many workers commute to surrounding counties. The economy could be improved by the addition of more year-round jobs. There is an apparent market for more retail establishments, since the County is lagging other counties significantly in retail sales. The demand is even greater during the peak tourist days and months. The County has many natural recreational and cultural assets that can be used to improve the job market and reverse or reduce the out-migration of workers. Many of these are addressed in materials published by the County Economic Development Commission and the web page of the Northern Neck Tourism Council. The County has a number of sites included in the state-designated Enterprise Zones. This inclusion affords certain tax and other incentives to eligible businesses Some small growth is being experienced in and near the villages, particularly at Callao, Heathsville and Burgess. But there are limitations to the type of business or industry that can be accommodated in Heathsville or Burgess because neither of these villages has a sewer system. There is ample sewer capacity at Reedville, but there is little indication that new businesses are attracted to that area. The Callao sewer project should be completed in 2006 The major growth has been in waterfront property. The attractiveness of the County's shoreline property has resulted in a surge of shoreline subdivision development since 1995 and in new homes along the waterways of the	A. Provide necessary health and social services for the elderly and disabled persons with those with special needs. B. To increase efforts to promote economic development to bring new businesses and jobs to the County C. To increase tourism and thereby increase jobs and income to the County D. For statement on villages, see Issue No. 1 under Physical and Environmental Issues.	1. Promote provision of transportation, education, recreation, and medical services by both public and private sources. Continue expansion of the Public Library services. 2. Perform a comprehensive community assessment to determine the health, housing and social services needs of County residents. Incorporate the results of the assessment into a complementary Community Plan and program to this Comprehensive Plan. 3. Recognize that the primary population growth and source of income to the County is from the retired community and emphasize growth to reflect this demographic component. 4. Evaluate the locations of Enterprise Zones to be compatible with the “Village” strategy. Focus on Callao with the new sewer system.. 5. Promote and attract jobs in occupations that are active during the winter and spring to increase year-round employment, especially jobs related to tourism, and support to the retired community in order to retain the workforce in the County. 6. Pursue a Marine Educational and Research facility to be located in the County 7. Establishing a "waterfront development and conservation district" where the focus will be on developing combination residential/ commercial/ recreational enterprises in selected areas compatible with the

COMMUNITY DEVELOPMENT ISSUES
1. Demographics, Economics and Housing

ISSUES	GOALS	STRATEGIES
County. Because of this development, higher property values may influence the conversion of farms and forests to waterfront subdivisions. This is likely to increase the cost of housing county-wide as demand for construction services increases. In other matters related to housing, there are very few rental housing units for full-time residents and new housing is oriented toward waterfront communities. Some housing units still lack complete plumbing and other basic equipment and are marginally acceptable as shelter. Approximately a third of the housing units in the County are over 40 years old.	E. To ensure that older housing units and mobile units comply with modern health and safety standards. F. Provide affordable housing for the younger aged families.	environment. 7. Support the efforts of the EDC and the NNTC to bring business and tourists to the County. 8. Continue the enforcement of building and safety codes. 9. Pursue programs to provide plumbing for housing units without this service and incorporate the programs into the Community Plan and program identified in item 2 above. 10. Investigate programs to aid in providing multi-family affordable housing and incorporate the programs into the Community Plan and program identified in item 2 above. .

COMMUNITY DEVELOPMENT ISSUES
2. Transportation and Recreation

ISSUES	GOALS	STRATEGIES
HIGHWAYS: Except for a few roads that are in private ownership, highways in Virginia counties are owned and maintained by the State. The amount of traffic on any given road determines the priority given by VDOT for improving the road, whether primary or secondary. Primary roads are planned and funded through a VDOT Division while secondary roads (those numbered 600 or higher) are handled within a Region. Primaries serving the County include U.S. 360, and State Routes 200, 201 and 202. Of these U.S. 360 provides circulation through a central corridor running the entire distance of the County. Route 200 extends this corridor south from Burgess to Kilmarnock and Route 202 extends it to the northwest from Callao. Transportation issues focus on: a need to continue the improvement of U.S. 360 to four-lane status for its entire distance through the County; maintain the quality of Routes 200, 201 and 202; and to establish a network of feeder roads sufficient to provide good circulation throughout all parts of the County. The NNPDC in 2003 sponsored the development of a Transportation Corridor Protection Plan to address issues of public health, safety and welfare along the major roadway corridors. This Plan recommended certain corridor protection policies and provided a model Highway Corridor Overlay District.	A. Maintain a network of public roads consisting of corridor routes which carry most of the traffic; feeder (secondary) roads which move traffic from the corridors to different parts of the County and; service (secondary) roads to provide access to subdivisions and individual properties; and bikeways. B. Develop and implement a process whereby the County is proactive in defining secondary road improvements C. Incorporate the elements of the model Highway Corridor Overlay District into the County Ordinances	1. Designate U.S. 360; and VA Route 200 as the primary corridor routes. 2. Improve U.S. 360 to four lanes from Heathsville to Burgess and from Lilian to Reedville. 3. Implement the plan for a designated system of regional bike trails to support this mode of transportation and recreation. 4. Use the Planning Commission to solicit public input into the road improvement planning process. . 5. Ensure subdivision roads are built to VDOT standards. 6. Consider traffic flow and impacts in the review of new subdivision requests. 7. Include a Highway Corridor Overlay District in the rework and upgrading of the County zoning ordinances.
RECREATIONAL AREAS AND FACILITIES Recreation in Northumberland County comes from a combination of natural, public and private sources. Water, as was noted in Chapter 1, offers a primary source of recreation. Along more structured lines, a mixture of recreational opportunities is offered through County and private resources. Major facilities include recreational sites at all of the public schools, water-related activities including marinas, boat launching areas, swimming and fishing areas charter boat operators and ferry operators to areas in the Bay and tributaries. There are three major conservation areas owned by the State which have potential for development for limited recreational use (see Table 4.1 and associated discussion). There is a need for more public access to the recreational opportunities offered by the Chesapeake Bay and its tributary rivers and streams. This	A. Expand the opportunities for active and passive recreation throughout the County. B. Expand public access to the Chesapeake	1. Establish an ongoing program for the identification, acquisition, and implementation of existing and potential recreational areas and facilities. 2. Provide additional boat ramps and piers including upgrading of some existing ramps and piers to improve access the Chesapeake Bay for fishing and other water sports. 3. Expand fresh and tidal water fishing opportunities; including those fresh water fishing opportunities associated with the development of reservoirs for

COMMUNITY DEVELOPMENT ISSUES 2. Transportation and Recreation		
ISSUES	GOALS	STRATEGIES
observation comes from studies of the Chesapeake Bay access resources and from comments of community leaders and citizens. Access for fishing - both for boat launching and pier/bank fishing - and beaches for swimming are cited as major needs.	Bay, to tidal waters and to non-tidal waters.	potable/irrigation water. 4. Encourage and support charter boat operators, ferries and other users of the Bay in the attraction of visitors to the County.

COMMUNITY DEVELOPMENT ISSUES 3. Public Facilities		
ISSUES	GOALS	STRATEGIES
COUNTY OFFICES AND FACILITIES After completing the new courthouse and new library in 1996, the County was in a good position to meet most of its public building needs. The existing courthouse was reconfigured to meet the needs of County offices. The Library, constructed by private effort near the courthouse, complements the complex of public facilities in Heathsville. Population growth and demand for services are currently straining these facilities.	A. To maintain Heathsville as the governmental center of the County. B. To utilize the existing courthouse for the most effective purposes. C. To support the Library in its mission to serve the community	1. Improve the capability of the existing courthouse to serve as an emergency center to coordinate responses to hurricanes and other disasters. 2. Encourage community support of the Library in its plans for expansion.
SCHOOLS The centrally-located Elementary School opened in 1996. It was designed for 750 students and currently approximately 650 are enrolled. Based on population projections this school will meet the needs for educational facilities in this age group for the foreseeable future. A study was performed in 2004 to investigate the facility needs of the Middle School and the High School. The Middle School does not meet the current needs for technology and special programs and the internal environment and classrooms are inadequate for quality education. Modernization and increases in size are required. The High School was renovated in the late 1980s. Currently, the temporary, mobile classrooms need to be replaced with modern permanent classrooms. Population projections show the current enrollment to remain approximately constant or very slow growth. However, the required educational programs have been changing and more classroom space is required to meet these changing needs.	A. Provide adequate and modern facilities to facilitate learning in the County schools. B. Maintain facilities to keep pace with technology and other special educational needs	1. Evaluate the proposed options of renovation or replacement the Middle School and proceed with the selected option. 2. Develop and implement plans to replace the mobile classrooms at the High School and to add additional classrooms to meet the changing requirements. 3. Develop an integrated plan for the County-owned parcel to consolidate all the schools at a single “campus” and include other facilities such as an acoustically satisfactory auditorium and a sports complex with an indoor swimming pool for use by students and by the community outside of school hours.
WATER AND SEWER The potable water supply for the County is provided by wells, both the shallow and deep aquifers, and there does not appear to be any shortages projected for the next decade or two, although a problem exists in later decades. (This is addressed in Chapters 1, 2, 4, and 5). Areas where development activity is expected to be concentrated should generally be	A. To assure an adequate long term water supply for all County users including large-scale developments, sites for economic development, and existing villages.	1. Establish requirements in the subdivision ordinances for developers to provide adequate water supply and sewer facilities for any large-scale development.

COMMUNITY DEVELOPMENT ISSUES 3. Public Facilities		
ISSUES	GOALS	STRATEGIES
considered for a community water system. This applies particularly to large-scale residential developments and major business or industrial uses. The public sewerage system located in Reedville was recently expanded to include Fleeton. A new system is being installed in Callao to solve the problems of poor soils which limited future development and was causing problems with existing systems. New development during recent years has clustered either near the villages or along the shorelines. When public sewers can be shown to be financially feasible, commercial development of Heathsville, Burgess and other villages would be greatly assisted by their addition. .	B. To safeguard against over-use of water supply in the aquifers by any one user. C. To provide sewer facilities to villages and areas where economically feasible.	2. Avoid the establishment of industries that use such large quantities of water that the loss of pressure in the aquifer threatens salt infiltration or other contaminants unless those industries can be sustainably supplied with water from other sources. 3. Continue to evaluate the feasibility of providing sewer to villages with greatest growth potential. Continue to monitor availability of grants from state and/or federal sources for projects that meet their criteria.
HEALTH, HOUSING AND SOCIAL SERVICES The County has unmet needs in the area of Health, Housing and Social Services: • The County has a number of residents who are at or below federal poverty levels and/or unemployed, are disabled and a disproportionate number of the population who are over sixty-five and are a burden on the local health care system. Currently approximately 25% of the population is over 65 years of age and by 2010 the number is expected to exceed 30%. • Housing is a major issue in the County. There is a shortage of safe, healthy living places for low income persons in our area. There are still a large number of homes in the County without indoor plumbing and a number of homes where the houses are literally falling down around the people living in them. While not all are in poor repair, over a third of the 8,000 houses in the County are over 40 years old. • The County has a large number of under-funded social programs supported by a combination of paid and volunteer staff.	A. Identify resources, services, and gaps in services. to determine the community's relative health and welfare. Identify what additional or reinforced services are needed, what should be the priorities and a plan of action to improve the situation. B. Community health, housing and social services should be planned and implemented in a manner that reflects a community-based, comprehensive approach that best meets the needs of citizens.	1. Plan and implement a comprehensive planning process which represents a collaborative approach involving people from all sectors of the community. All forms of diversity should be represented and the process should be a very public, deliberative one. 2. Implement a Comprehensive Community Health, Housing and Social Services Program

COMMUNITY DEVELOPMENT ISSUES 3. Public Facilities		
ISSUES	GOALS	STRATEGIES
OTHER SERVICES Emergency services are provided by volunteer agencies. The present level of resources may be inadequate to support desired services as the County population continues to increase and the numbers of elderly needing assistance increases. Refuse disposal is provided under contract and the level of resources required may need to be increases as the population continues to increase. It is important that the County have the communications and Internet services comparable to that available elsewhere in Virginia. This is essential to attract and retain business and to provide essential personal emergency services. At present large areas of the County are without Internet broadband due to the lack of infrastructure and have marginal cell phone services.	A. Assure the present level and quality of services is maintained as the County grows and the demographics change B. Provide 100% coverage of the County area for reliable cell phone service. C. Make high speed broadband internet service available to all residents of the County	1. Evaluate the ability of the volunteer organizations to maintain their current level of service over the next 5-10 years. 2. Improve the Emergency Response capability of the County as recommended in the study performed after Hurricane Isabel. 3. Encourage and facilitate increases in cell phone coverage. 4. Encourage and facilitate wireless broadband systems in the County.

CHAPTER 3[1]
LAND USE PLAN

A. PURPOSE OF THE LAND USE PLAN

The Land Use Plan is that component of the Comprehensive Plan that establishes policies on the future use of land. Subsequent to the review and update of this Comprehensive Plan it is crucial that Northumberland County subsequently update its zoning and subdivision ordinances to insure well-planned land use in the future. The beauty, heritage and rural character that have attracted hundreds of people and their families to Northumberland in recent decades will continue to draw hundreds more in the future. It is therefore crucial that the County use this plan to establish the policies, standards and priorities that, along with timely changes to zoning ordinances, will determine the future landscape and character of this County.

The Land Use Plan contains a combination of maps, policies and guidelines. First, a "Future Land Use Planning Area Map" is presented which identifies the four major land use areas and also delineates several potential development conditions that may be expected over a period of time. Included also are more detailed Future Land Use Plans for each of the individual designated villages.

Accompanying the Land Use Planning Area Map is a set of general development policies for each classification shown on the Plan. After the Land Use Plan has been adopted by the Board of Supervisors, it has the following clearly defined functions:

1. It represents the vision community leaders have for future use and development of land within the County. That vision is expressed in this chapter of the Comprehensive Plan and its accompanying land use policies.

2. The Land Use Plan serves as a guide to any change in character of individual properties as they change from one use to another over time.

3. It provides a rational basis for establishing and modifying zoning and other land use and development regulations.

4. It provides a broad set of policies that can be used in making public and private decisions on projects that come before the government.

5. It becomes a valuable tool of communication between citizens and the local government on matters concerning land use and development.

[1]Filename = Chapter_3_Final

B. COMPONENTS OF THE LAND USE PLAN

The first step in developing a land use plan for Northumberland County is to identify a set of components that can be used as building blocks to define the fundamental structure of the plan. Each component has these qualities - it identifies special areas that can be delineated on the land use map and it establishes one or more general development or use policies for each area so designated. This section establishes five building blocks of the general Land Use Plan as follows[2]:

1. Rural Uplands: that area of the county that lies landward from the topographic feature known as the "Suffolk Scarp" (see Figure 1.3) and which generally is above 50 feet in elevation above sea level.

2. Rural Low Shelf: the remainder of the County lying seaward from the Suffolk Scarp and generally lies between zero and 50 feet above sea level.

3. Shoreline Conservation Area: an area extending from the edge of tidal waters 1,000 feet inland. This area overlaps both the Rural Low Shelf and the Rural Uplands in many places.

4. Villages: areas of concentrated development that have become commercial hubs or areas of distinctive community identity.

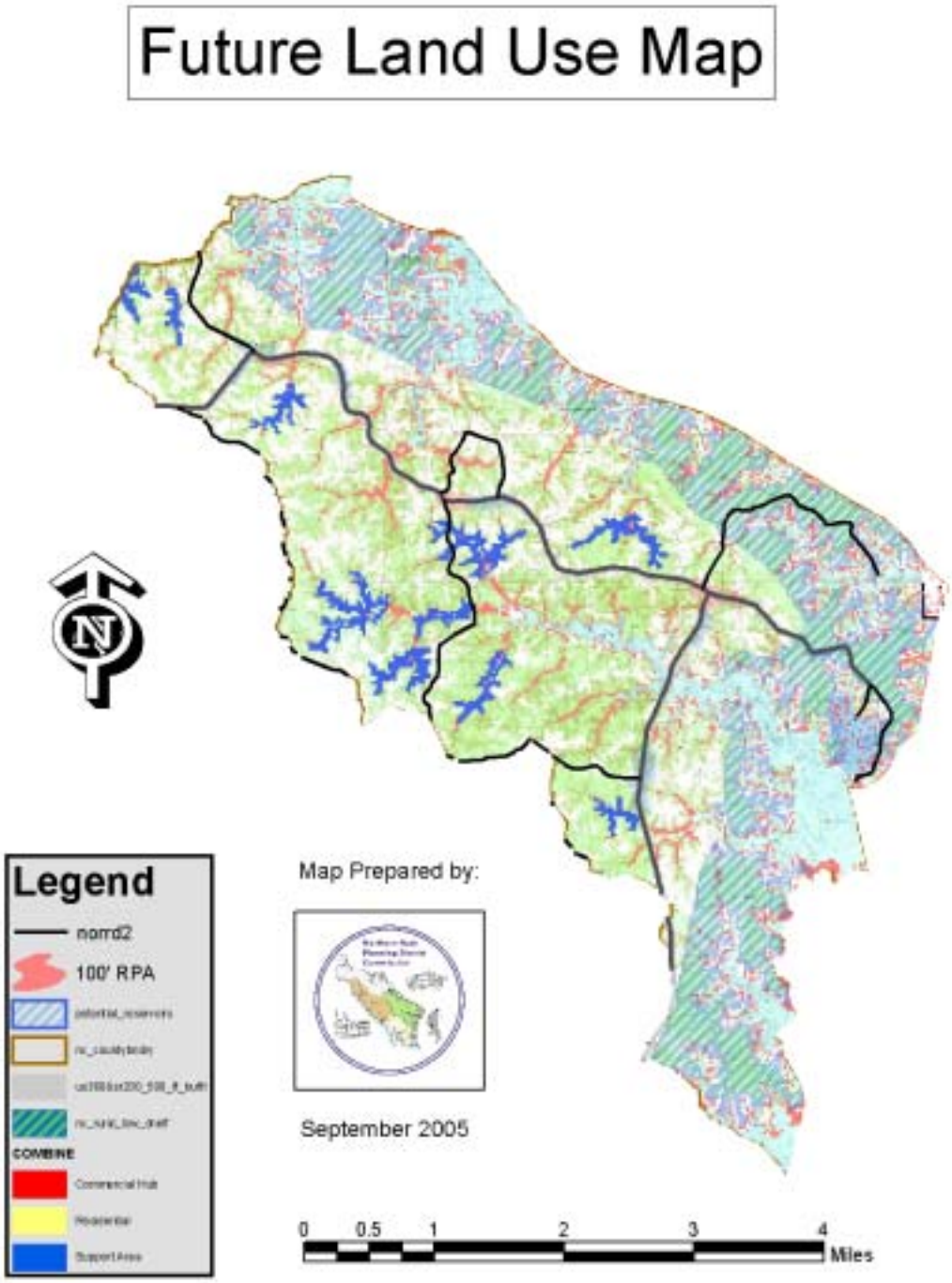
5. Overlays: areas of particular interest with special land use considerations including shoreline development, transportation corridors and reservoirs.

The remainder of this section suggests general development policies that would be appropriate for each of these five areas. In addition to the specific policies stated below, all policies applicable to a Resource Protection Area, RPA, or Resource Management Area, RMA, under the Chesapeake Bay Act and its implementing ordinances apply.

Figure 3.1 presents these Land Use Planning Areas that are each discussed in the subsequent sections.

[2]The protection of the Chesapeake Bay and other water quality issues are addressed in Chapter 5.

Figure 3.1


Future Land Use Map
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Map Prepared by:
September 2005
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Miles

1. Policies for the Rural Uplands

Rural Uplands are that area of the county that lies landward from the topographic feature known as the "Suffolk Scarp" (see Figure 1.3) and which generally is above 50 feet in elevation above sea level.

a. Agricultural and Forested Areas

Rural uplands are the portion of the County occupied by various open uses, such as forests, parks or farms. All but one village is located in the rural uplands. Much of the area is zoned for the specific purpose of facilitating existing and future farming operations, conservation of water and other natural resources, reducing soil erosion, protecting watersheds and reducing hazards from flood and fire. To ensure the success of such goals, it is necessary to maintain as low a density of development as possible. The character of this area should remain agricultural in nature, with industry or commercial business allowed in it when it will benefit the area without degrading the environment. Industry and commercial business should be focused in and around the villages and their support areas.

Agricultural areas are areas that are cultivated for crops or cleared for that purpose. Agricultural lands occupy about a third of the total area of Northumberland County - more than 60 square miles. **Forested lands** include lands used for growing timber commercially and woodlands that are part of family farms or other acreage. Forested lands comprise over half of the acreage of the County, nearly 101 square miles.

Recommended policies for agriculture and forested lands are as follows:

(1) Agricultural and forested lands should be managed and conserved to preserve the quality of these resources. The potential degradation of water quality through improper operation should be minimized. Agriculture and farming operations are to be conducted under a program designed to minimize water pollution. This policy may be implemented through:

(a) Best Management Practices: that promote an effective method of controlling point and non-point pollutant levels consistent with the State's environmental quality goals.

(b) Nutrient Management Practices: that provides optimum nutrient application rates, times and methods based on soil analysis results and expected crop yields.

(c) Soil and Water Conservation Plans: designed to reduce soil erosion and to prevent excessive levels of nutrients and pesticides from entering the groundwater and Chesapeake Bay.

(2) Conservation Easements should be encouraged to protect farmland, forests, riparian zones, natural areas and historic sites. These easements ensure current owners that usage of their property according to their wishes is guaranteed into perpetuity and provide financial benefits to landowners who protect their land.

(3) The County will cooperate with the Virginia Department of Environmental Quality in the monitoring and enforcement of "Pollution Abatement Permits" including the 100 foot buffer for large animal raising operations.

(4) Land used for commercial raising of animals on a large scale should be in accordance with prevailing County policies and should be prohibited where adjacent to streams

(5) Conversion of forest lands into non-forest uses should minimize removal of existing forests. Commercial and industrial sites should be selected in areas most compatible with these policies such as village commercial hubs and support areas and areas identified for industrial parks.

(6) Where commercial forests are cut for sale, clear-cutting of timber as an alternative to selective cutting is the preferred method of forest management. This provides a healthy regeneration of the forest.

(7) New incentive programs should be developed and existing incentive programs utilized to assist property owners in retaining farmland and forests and in some situations in returning farmlands to forests.

b. Residential

Residential development in the Rural Uplands is a mixture of farm dwellings, random lots along public roads, and small subdivisions. Permanent dwelling types include both conventionally built single-family units and manufactured housing units established as permanent housing. In addition, there are a large number of "single-wide" mobile homes. While most of the latter are located on individual lots, some are in mobile home parks.

Recommended policies for residential development in the Rural Uplands are as follows:

(1) A primary farm dwelling that is located on the same farm is considered to be part of the farming use and is not subject to most residential development policies.

(2) Subdivisions known as "family subdivisions" should conform to the requirements of Va. Code Section 15.1-466, 12.

(3) Protecting Agricultural and Forested Lands

Residential subdivisions should be allowed conditionally with the goals of protecting agricultural and forested lands and maintaining as low overall density of development as possible.

In order to protect existing farmland and forests while permitting desirable development, there should be a requirement that the property owner place a significant portion of the original parcel into open space. This standard should apply for all parcels or collections of parcels above some minimum value.

The location of the parcel(s) identified as the protected space should preserve core operating farms when feasible. The subdivision lots and road(s) should not divide, segregate or restrict the existing or future agriculture or forestry or related uses and activities within the preserved parcel(s).

A preferred minimum residential lot size should be established that is consistent with preserving open space in an agricultural and forested environment, and it is recommended that Open Space Site Design principles[4] be followed for the residential parcels.

(4) Providing Green Space for Residential Subdivisions

For subdivisions below the minimum established above for agricultural and forested lands, the protected space should be a significant portion (e.g. 20 – 50% as defined in the Zoning Ordinance) of the original subdivision open space and treated as common property. Open Space Site Design principles using clustering should be followed which allow the same number of houses to be built in a less land consumptive manner in a density-neutral approach. Lot sizes should remain as required for A-1 zoning.

Protected land for multiple family dwellings and condominiums should be based on the total number of units and the A-1 zoning minimum as if the units were individual houses.

(5) Large residential subdivisions should be planned to the extent possible so new lots front on new streets. Cul-de-sac streets and reverse-frontage lots should be required as alternatives to using a major highway for access to residential lots[5].

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4 Randall G. Arendt, *Conservation Design for Subdivisions: A Practical Guide for Creating Open Space Networks*, Island Press, 1996

5 This policy would reduce the number of new subdivision lots established along public roads and result in safer access to the residential units and a reduction in driveway cuts into major roads. The number of lots that would trigger this policy should be very small, perhaps three lots.

(6) New residential subdivisions established on existing secondary roads should provide more than the minimum frontage and additional area if necessary to minimize traffic hazards resulting from direct access of driveways to heavily-traveled roads.

(7) Subdivisions developed along the banks or shores of non-tidal streams that empty into tidal streams should be developed under the same performance standards as those that apply to the Resource Protection Area including application of Low Impact Development, LID[7], principles for water run-off where feasible.

c. Commercial/Industrial

Industrial sites are best located in areas which have facilities that are designed to serve industry and where they do not cause adverse impact to adjoining uses. Industrial sites must have access to good public roads; have adequate water supply and wastewater disposal capability. At present, the only areas equipped with both utilities are the Callao and Reedville areas although Burgess should also be considered a candidate for industrial sites or parks. Industrial sites should be located in the Enterprise Zones or industrial parks near villages. Smaller industries and "cottage industries" are planned to locate in village commercial hubs in the County and where soils and water supply are favorable. Heavy water users should be discouraged unless they are associated with a reservoir or other renewable resource for their water supply.

Wherever the business is located in the County, roadside signs and lighting should conform to the requirements established for the Highway Corridor Overlay District discussed in Section B.5. (B) below.

The designated location for retail and service businesses that are intended to serve a large sector of the County's population and which are likely to generate considerable traffic is in the areas designated as village commercial hubs and, if permitted, in their support areas.

Country stores and convenience stores intended to serve only a local community within the County are expected to be located at random locations throughout the Rural Uplands and preferably near intersections of feeder roads to the residential communities to be served.

2. Policies for the Rural Low Shelf

7 Prince Georges County, MD, *Low Impact Development Design Strategies*, Department of Environmental Resources, June 1999, 150 pages; also U.S. Department of Defense, *Design: Low Impact Development Manual*, United Facilities Criteria UFC 3-210-10, 25 October 2004, 105 pages.

This area lies seaward of the Suffolk Scarp but overlaps the Shoreline Conservation Area, the next classification. The official name of this type of area is "the low marine terrace." It ranges generally from 10 to 15 feet above sea level but may extend in places up to 50 feet. Development in the area is now and is expected in the future to be similar to that in the Rural Uplands described above. A few waterfront subdivisions have streets and lots that extend into this area but most of the waterfront development falls within the Shoreline Conservation Area.

This shelf has extensive areas where the soil is unsuited for septic tanks (Figure 1.7); a high shrink-swell ratio (Figure 1.8); and a high water table (Figure 1.15). As was the case with the Rural Uplands, agricultural and forested lands should be protected and open green space provided within residential subdivisions. Because of the high water table, streams and the underground water supply are more vulnerable to pollutants than in the higher lands. Development should be done carefully in areas with poor soils as well as areas with steeper slopes.

MOST POLICIES FOR DEVELOPMENT AND USE OF LAND ON THE RURAL LOW SHELF ARE THE SAME AS THOSE DESCRIBED FOR THE RURAL UPLANDS. ADDITIONAL POLICIES OR EXCEPTIONS FOLLOW:

(a) Land usage is intended to be a general mix of low-density residential and agricultural. Residential development should be dispersed or arranged in clusters to avoid excessive linear development along existing road frontage.

(b) Development near streams should avoid steep slopes, avoid excessive removal of natural vegetation and maintain riparian buffers as required by the Chesapeake Bay Act.

(c) Lot sizes should reflect the need to provide both primary and reserve septic fields and engineered systems should be discouraged in the Rural Low Shelf unless reliable inspection and maintenance procedures are in place.

(d) Large water users should be discouraged unless they are able to recycle the water or dispose of waste-water in an environmentally acceptable manner. Large water users should develop water supply plans that minimize adverse effects on the artesian aquifers.

(e) Large scale commercial raising of animals should be prohibited in residential areas of the Rural Low Shelf due to the risk of pollution.

(f) Except for country stores and convenience stores, commercial and industrial sites unrelated to marine activities should not be established in this area.

(g) Large subdivisions should be served by a public water system supplied from deep wells and a community sewage system.

3. Policies for the Shoreline Conservation Area

The Shoreline Conservation Area extends approximately 1,000 feet from the sea level waterline and stretches the full distance of the County's shoreline. This strip contains an area of approximately 100 square miles and contains nearly all of the subdivisions previously identified as "shoreline subdivisions" (Figure 1.2). Not all of this strip is developable because it contains much of the Chesapeake Bay Resource Protection Area as well as significant areas subject to tidal flooding.

Use of the County shoreline of 556 miles must be planned and used judiciously. Currently about 55% (306 miles) is forest and shrub/scrub, 34 % (189 miles) is residential, 8% (44 miles) is agriculture and grass, and a little over 2% (11 miles) is commercial/industrial. The remaining 1% is various small uses[8]

This area is host to most of the planning issues the County will face during the coming decade and beyond. First, it is the area where the most demand for upscale single family housing has occurred and is likely to occur during the next decade and beyond. Second, it is the area where demand for condominiums and other multi-family housing and supporting commercial establishments is likely to occur. Third, there are physical conditions (high water table, poor percolation, shrink-swell soils, gradually rising water levels and shoreline erosion) that present serious constraints to subdivision development and increasing population density. Planning policies must therefore focus on how desirable new development can be accommodated while avoiding serious problem areas and protecting environmentally-sensitive areas.

Policies for development and use of land within the Shoreline Conservation Area are consistent with those described for the Rural Uplands and Rural Low Shelf. However the importance and uniqueness requires specific policies tailored to this resource and therefore a Shoreline Development and Conservation Overlay should be developed to provide guidance and direction to the development of this resource. The policies and features to be included in this Overlay follow:

(a) Residential subdivisions should be allowed conditionally with the goals of protecting agricultural and forested lands, preserving the natural beauty, wetlands, dunes, beaches and other natural resources along the shoreline and adjacent lands and maintaining as low a density of development as possible.

(b) Minimum lot sizes and maximum density of single family homes, of multifamily buildings and condominiums, shall be established as shall the minimum spacing of condominium buildings.

(c) New subdivisions should be planned to minimize shoreline erosion resulting from construction and use of property. Shoreline erosion reduction measures that

8 See Appendix A, Section 3 for more detail

employ vegetation are preferred over structural features. Subdivisions should utilize principles of Low Impact Development, LID, for controlling storm water runoff where feasible.

(d) New subdivisions should be planned, whenever feasible, to provide public access to the Chesapeake Bay including beaches, boat ramps, fishing points and other water-oriented recreational activities. The establishment of community facilities on the water for the common use of the residents within subdivisions should be encouraged as a means to reduce the number of individual boat houses and piers.

(e) In order to protect existing farmland and forests while permitting desirable development, there should be a requirement that the property owner place a significant portion of the original parcel acreage into open space or forest. This standard should apply for all parcels or collections of parcels above some minimum value of acreage.

The location of the parcel(s) identified as the protected space should preserve core operating farms and forestland where possible. The subdivision lots and road(s) should not divide, segregate or restrict the existing or future agriculture or forestry or related uses and activities within the preserved parcel(s).

A preferred minimum residential lot size should be established that is consistent with preserving open space in an agricultural and forested environment and also that protects the sensitive low lands from environmental degradation. It is recommended that Open Space Site Design principles[9] be followed for the layout of residential parcels..

(f) Providing Green Space for Residential Subdivisions

For subdivisions below the minimum acreage or value established in paragraph (e) above for agricultural and forested lands, the protected space should be a significant portion (e.g. 20 – 50% as defined in the Zoning Ordinance) of the original subdivision open space and treated as common property. Open Space Site Design principles using clustering should be followed which allow the same number of houses to be built in a less land and shoreline consumptive manner in a density-neutral approach. Lot sizes should remain consistent with R-2 zoning and consider potential long term septic system problems.

Green space and protected land for multiple family dwellings and condominiums should be based on the total number of units and the R-2 zoning minimum as if the units were individual houses.

Condominium building sizes should be constrained to structures that architecturally fit with their surroundings and do not exceed county height

9 Op. Cit. Randall G. Arendt

restrictions.

(g) Performance standards of the Chesapeake Bay RPA should be enforced without exception and continue to apply to all subdivisions developed in the Shoreline Conservation Area and adjacent to all flooded land associated with designated reservoirs.

(h) New water-oriented enterprises that help the economic development of the County and support tourism, sports fishing, commercial fisheries or other water-related activities are encouraged to be established at sites where they can be accommodated by deep water and appropriate access.

(i) Future development should include private and public sewage and water systems rather than individual septic systems and wells.

4. Policies for Villages

Villages are the key locations along major highways where commercial, public and residential uses are concentrated. Nine locations are identified for recognition in the Land Use Plan as villages: Village, Callao, Lottsburg, Heathsville, Lilian, Burgess, Wicomico Church, Reedville and North Kilmarnock. All are on the primary transportation corridor.

Each village has a different makeup and arrangement of uses but most of them have features in common. Six are located at major crossroads; Reedville is at the intersection of highway and water commerce; North Kilmarnock is an extension of the Town of Kilmarnock and Village is an extension of the town of Village located primarily in Richmond County..

Villages serve as focal points in the County where both commercial and public services are grouped. Three villages, Callao, Heathsville and Burgess, are more strategically located to play a dominant role for business and institutional service centers. These three are identified as being the primary commercial hubs in the County. Callao and Burgess are dominant because they are at major road intersections along Northumberland County's primary commercial corridor (Route 360). Heathsville is important because it is the county seat and the location of the public library, a major supermarket and schools.

Village, Lottsburg, Lilian and Wicomico Church are located at less dominant intersections and their roles are to serve a more local community-related purpose. Village is a community located in both Richmond and Northumberland County that sits astride Route U.S. 360. North Kilmarnock (that portion of Northumberland County along Route 200 that lies outside the corporate boundary of Kilmarnock) is simply a planned extension of the that town into Northumberland County. This village has the potential for becoming a retail hub because of the large market within Kilmarnock and vicinity.

Reedville has unique characteristics that set it apart from the other village centers. It is located at another type of crossroad, one where water and land commerce meet. While this is a classic location for a town with a full mix of commercial, industrial and residential development, Reedville has developed primarily as a residential community with some small supporting businesses. It is located near the largest commercial employer in the County: Omega Protein.

a. Framework of Village Policies

As a first step in identifying policies for villages, it is important to recognize some features that all have in common and the direction in which growth should be channeled.

(1) Villages are more intensely-developed areas than the remainder of the County and each one has the potential of serving as a "town center" for a part of the County. Three of the villages: Callao, Heathsville and Burgess are planned to be the primary commercial hubs of the County. The other villages are designated as support areas for the surrounding residential communities and servicing some through traffic on the main transportation corridor..

(2) A "commercial hub" marks the primary identity of Callao, Heathsville and Burgess and most of the commercial and governmental services are currently found within these hubs. It is planned to continue this arrangement. The commercial hubs are intended to be zoned for general business purposes.

(3) The County has designated certain areas adjacent to commercial hubs as “support areas”. In the three principal villages these are located immediately beyond the commercial hubs and are mixed business and residential. In the smaller villages, these are considered residential support areas since they focus on providing services to the immediate surrounding areas and some through traffic on Route 360 and Route 200. The Support Area is intended to be zoned to permit the location of small general businesses in areas now zoned agricultural or residential- general. Support Areas on the water are intended to permit the location of small businesses in areas on tidal waters currently zoned agricultural or residential- waterfront. Beyond the support areas, the land use is a mixture of farms, forests and occasional residential development. The areas surrounding the villages have the potential for development as extensions of the villages. Residential uses are also part of the village structure but they currently consist mostly of older homes and are located in support areas or outside the village proper. Most of the new residential development of the County has been established outside the villages in waterfront communities.

(4) In addition to and frequently overlapping both the commercial hubs and the support areas are “Enterprise Zones” which are part of an economic development program established by the State of Virginia. Various economic incentives are provided to prospective businesses bringing new employment to the County and locating in these Zones. These Zones and parcels should be reviewed and changed as necessary once the Land Use Plan is approved. The purpose is to make the planned Enterprise Zones and parcels consistent with and compatible with the Land Use Plan. One important principle is that they not contribute to sprawl along the main transportation arteries and that a clear edge be maintained between the village support areas in this plan and the countryside.

At present the existing 2002 Enterprise Zones are not relevant to County land use planning and should not drive the planning, but the program can be used as a tool to assist in directing development into areas consistent with the Plan. Applications for Enterprise Zone grants, when received, should be reviewed for consistency with the approved Land Use Plan.

(5) One of the important reasons to identify villages and their support areas is to control sprawl along the primary highway corridors in order to retain the rural character of the County. A clear edge should be maintained between the villages and the countryside. Growth should be channeled into the existing village areas.

(6) A limiting factor to future growth of the commercial hubs in Heathsville and Burgess is the absence of public sewerage systems.. Individual septic systems offer only limited capacity for major commercial development or expansion of existing development.

(7) Areas designated as "commercial hubs" and "support areas" for villages are intended as a guideline to future development within the village areas. The areas so designated are intended to be interpreted as planned zoning districts, subject to further analysis and review and the normal zoning change process of the County.

(8) Residential subdivisions located within village support areas, and any redevelopment should be designed using the concepts of Traditional Neighborhood Development, where applicable, which include the following features:[10]

- Compact form that encourages walking
- Streetscape designed for pedestrians

10 Edward T. McMahon, *Better Models for Development in Virginia*, (Arlington, VA The Conservation Fund, September 2001) pg.51

- Buildings set close to the sidewalk
- Narrow connected streets
- Neighborhood parks and open spaces
- Mix of housing types and price ranges
- Architecture that reflects the nature of the County and/or village
- Compatible non-residential uses, including neighborhood retail.

(9) One goal of this Land Use Plan is to nurture small businesses and focus them in commercial hubs and support areas where a critical mass can develop to support a multi-functional community. Maximum lot sizes should be considered for commercial hubs and support areas to preclude encroachment by stores that would drive-out existing small businesses.

(10) The villages should also be the focal point for identifying areas suitable for an industrial park. The County should investigate whether or not a specific area or areas should be so designated and if so what should be the approximate boundaries. Locations adjacent to the villages of Callao and Burgess appear to be the most promising and to be consistent with the planned and expected growth patterns.

The remainder of this section addresses each village in turn. Each Village Plan should place emphasis on improved village infrastructure. Each village plan includes the need for improved traffic flow, parking, inter-village bus transportation, roads, walkways, bike paths, parks, community recreation facilities, sewage, public restrooms, fire protection, internet availability, and other infrastructure in order to encourage long term village development. Cross streets with trees and sidewalks and pathways are also part of the desired infrastructure. Local civic organizations and citizens should plan and sponsor this local development.

b. Callao:

Callao is a commercial area located at the intersection of U.S. Route 360 and VA Route 202. It is the commercial gateway to Northumberland County from the north and west. The area contains more than 40 business places showing a mix that is common to the downtown areas of many communities. They include both retail and service businesses. In addition, there is a post office, fire station, rescue squad, a former elementary school building and site, and a nearby public golf course serving the village. Residential development extends along all four legs of the streets that intersect at Callao. The village is served by a private central water system and a new central sewerage system.

As a gateway village to Northumberland County, Callao should become the dominant business center for the north and western part of the County.

Specific goals for the development of Callao are as follows:

(1) Callao should be designated as the "north and western gateway" to Northumberland County.

(2) Develop plans for a sustainable water supply that includes a reservoir developed on Lodge Creek.

(3) Parking arrangement and traffic flow within the commercial hub is to be improved to minimize conflict between through traffic and parked traffic.

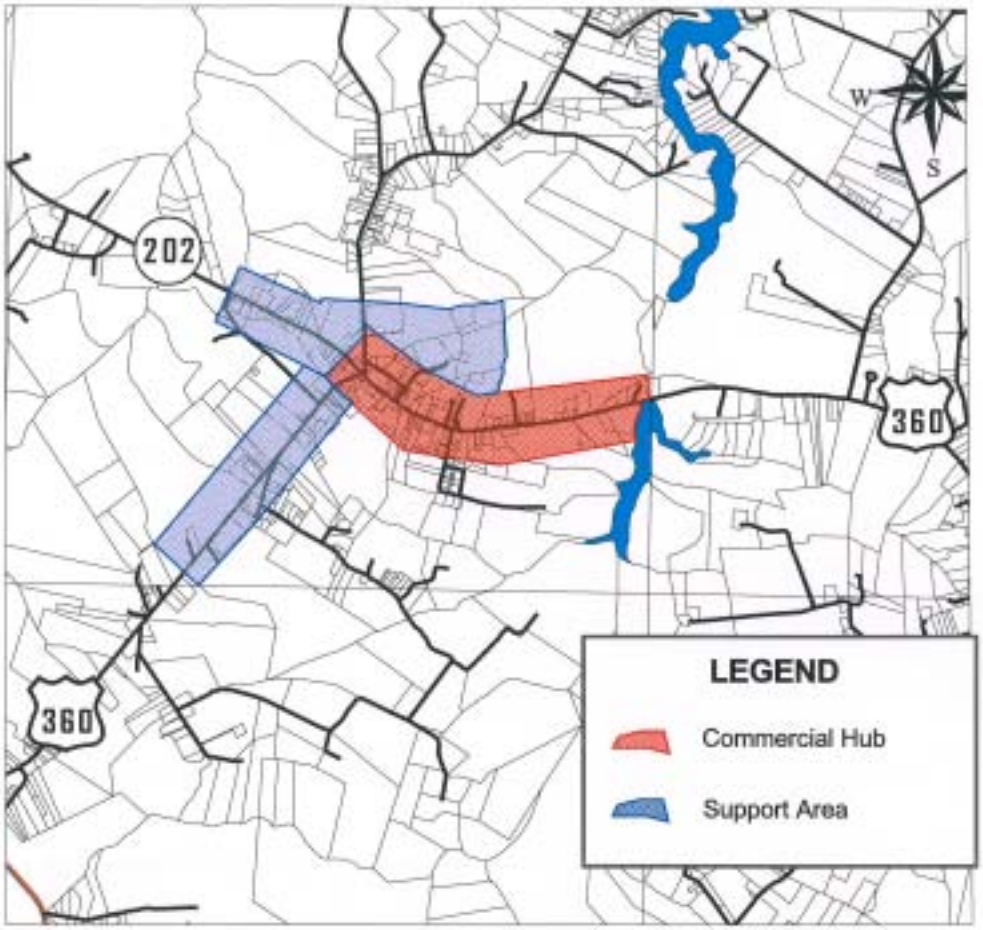
Traffic problems within the commercial area are complicated by the use of head-in parking in front of the businesses. While this arrangement represents a convenience for the users of the businesses which should not be overlooked as a desirable feature, the interference between parking and periodic heavy traffic creates an unsafe situation for both moving vehicles and pedestrians.

As more land is needed for development, there is an abundant supply all around the town center and the area designated on Figure 3.2 as the commercial hub. The commercial hub contains the areas served by the new sewage system.

Figure 3.2 presents the Future Land Use Plan for Callao and vicinity.

Figure 3.2

Future Land Use Plan Callao and Vicinity



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Map Prepared by:

August 2005

Data Sources: Hydrography, County Boundary: USGS 1:100,000 DLG's. Commercial Hubs & Support Areas: Modified from the 1996 Northumberland Comp. Plan.

c. Lottsburg

Lottsburg is located about three miles east of Callao on U.S. Route 360. While there is no strong retail core in Lottsburg, this village contains a number of uses that serve both the immediate and larger neighborhoods. The main focus of the village lies between where Route 614 enters from the north and exits to the south. Several business establishments consisting of a major building supplier, a restaurant, convenience store, office and automobile shop are found in Lottsburg. A group of public uses, including a post office, school board office, solid waste facility, VDOT service facility and a church, are also located within the area of the village. In addition, the Holly Graded School is a significant historic site that is listed in the National and State Registers of Historic Places.

Lottsburg has only limited potential for growth as a major commercial area because of its close proximity to Callao and Heathsville both of which have stronger commercial bases. The support area around Lottsburg has demonstrated potential for development with selective facilities that serve countywide markets. The School Board office and a major building supplier provide a core employment base that could be expanded by other major employers. Lottsburg is not designated as a commercial hub but as a significant support area. Growth is planned to occur within the support area to limit sprawl along Rt. 360.

Specific goals for Lottsburg are as follows:

(1) Promote the village as an employment center with emphasis on businesses and services that serve county-wide markets or serve public services.

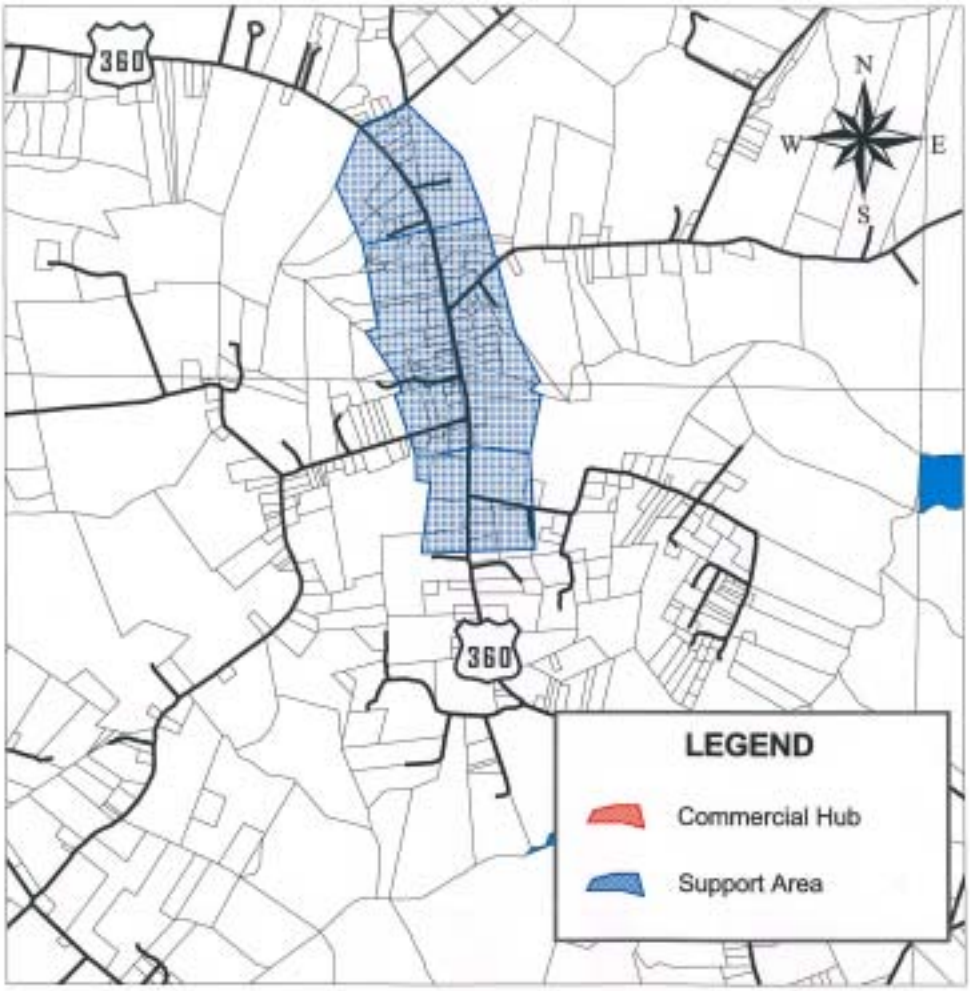
(2) Utilize historic Holly Graded School to promote the village as part of a county-wide historic tour.

(3) Promote the addition of more service businesses such as those serving the agricultural and building industries of the County.

Figure 3.3 presents the future land use plan for Lottsburg and Vicinity

Figure 3.3

Future Land Use Plan Lottsburg and Vicinity



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Map Prepared by:

August 2006

Data Sources: Hydrography, County Boundary: USGS 1:100,000 DLG's. Commercial Hubs & Support Areas: Modified from the 1996 Northumberland Comp. Plan.

d. Heathsville

Heathsville is the County Seat and primary center of governmental services for Northumberland County. The "commercial hub" contains many businesses and public offices and the Northumberland Public Library and the Extension Service. Businesses range from small shops, banks, food stores, offices, used cars, architects, computer services, newspaper office, to contractor's offices. The Old and New Courthouse and Sheriff's office are the predominant public offices located within this hub. Social Services and Health offices are located within the support area in addition to the Northumberland County High School. Other commercial development within this village includes a Food Lion grocery and a Family Dollar store. These developments, together with existing commercial development within and near Heathsville, enhance the county seat as a major commercial growth site.

Heathsville has many older buildings of historical significance including the Rice's Hotel and Hughlett Tavern that have undergone restoration and renovation and the historical Heathsville Forge Blacksmith Shop has recently been completed Other historic landmarks that are on the historic registers include St. Stephen's Church and Springfield (Figure 1.11). An historic district has been established and approved for the federal register for the Heathsville area.

A private water system serves Heathsville but there is no central sewer system in the area. Although soils are reasonably satisfactory for septic tanks, the development of the village into a larger commercial complex is limited until a public sewerage system is established.

Specific goals for Heathsville are as follows:

(1) Designate Heathsville as a major village center with a commercial hub..

(2) Seek funding for a public sewerage system to serve the central commercial hub.

(3) Utilize historic Rice's Hotel and Hughlett Tavern and the Blacksmith Shop to promote Heathsville as part of a county-wide historic tour.

(4) Provide for residential growth within the proximity of the village as well as beyond the commercial hub and support area.

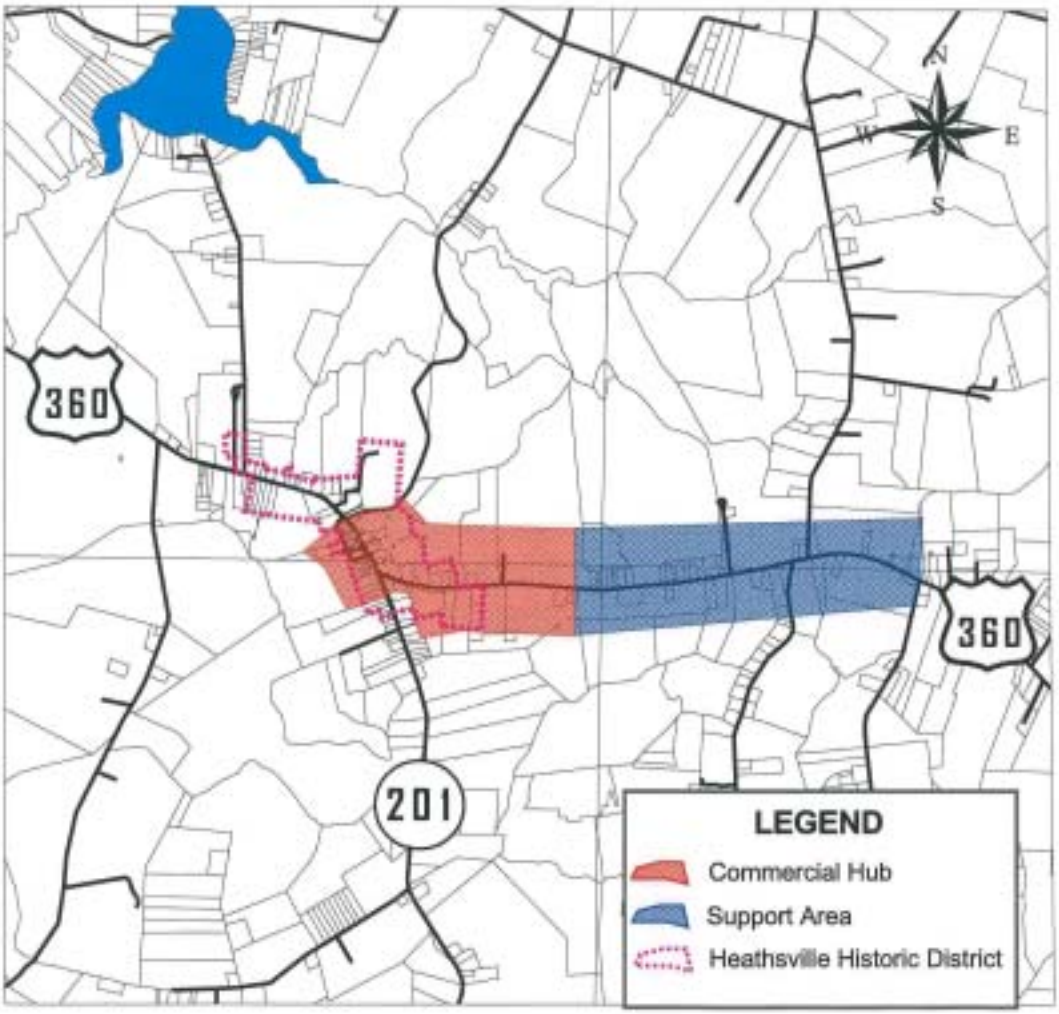
(5) Develop plans for a sustainable water supply that includes a reservoir developed on Crabbe Mill Stream.

Figure 3.4 presents the Future Land Use Plan for Heathsville and vicinity. The area along Rt. 360 west of the commercial hub is all residential and the plan is to

keep it that way. All commercial growth and the primary support area growth is planned to occur east of the Rt. 201 intersection between the large grocery store and the school complex.

Figure 3.4

Future Land Use Plan Heathsville and Vicinity



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Map Prepared by:

April 2006

Data Sources: Hydrography, County Boundary: USGS 1:100,000 DLG's. Commercial Hubs & Support Areas: Modified from the 1996 Northumberland Comp. Plan.

e. Burgess

Burgess is to the east of Northumberland County what Callao is to the west: the major commercial hub.. It is a commercial village located at the intersection of U.S. Route 360 and VA Route 200. The area contains more than 25 business places which include both retail and service businesses. The mix of uses is varied as might be found along the main street of any small town. The variety of businesses currently includes:

dry cleaning	medical office	marine sales/service
banks	office park	restaurants
hardware store	cabinet shop	auto repair/gas
convenience store	medical supply	accounting service
thrift store	air conditioning shop	medical offices
tire repair	boat repair	

There is also a post office, the former Fairfield Elementary School building and site and several churches within the village area.

Burgess is more spread out than the other villages. Its core "commercial hub" is located at the intersection of U.S. 360 and VA 200 and includes relatively intensive commercial development near that intersection. But strip development along Route 200 is also quite extensive and for that reason has been added to the support area of this village.

The absence of public sewer is a limiting factor on controlling the growth of this area at this time. That is perhaps owed to the existence of better soils in this area plus the fact that development extends along both sides of more than a mile of primary highway frontage in addition to its Route 360 frontage. If public sewers were available a more focused commercial development within the commercial hub near the 360/200 intersection would be possible.

Specific goals for Burgess are as follows:

(1) Designate Burgess as the eastern commercial hub in Northumberland County.

(2) Promote a more focused commercial development in the designated commercial hub.

(3) Improve the visibility of the intersection to better identify Route 200 as it is approached from Route 360 (both directions).

(4) Promote a public sewerage system to serve the central commercial hub.

(5) Provide for residential growth within the proximity of the village beyond

the commercial hub.

(6) Develop plans for a sustainable water supply that includes a reservoir developed on Syndors Mill Creek.

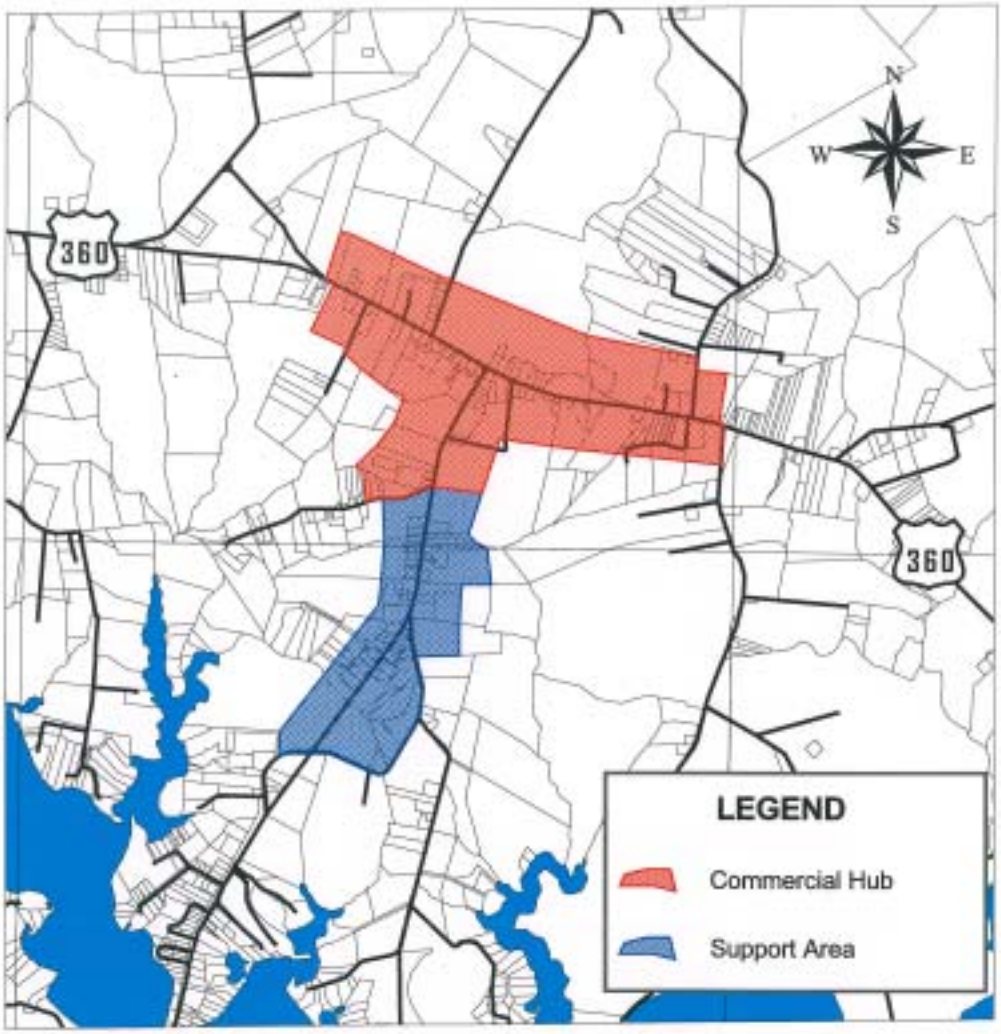
(7) Maintain a sharp boundary between the support area down Rt. 200 and the residential areas south of the support area.

(8) Evaluate the area around Burgess north of Rt. 360 as a candidate for an industrial park.

Figure 3.5 presents the Future Land Use Plan for Burgess and vicinity. The commercial hub area represents the areas of considerable commercial development and the support area is a mixed commercial and residential area.

Figure 3.5

Future Land Use Plan Burgess and Vicinity



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Map Prepared by:

August 2005

Data Sources: Hydrography, County Boundary: USGS 1:100,000 DLG's. Commercial Hubs & Support Areas: Modified from the 1996 Northumberland Comp. Plan.

f. Wicomico Church

Wicomico Church is located about five miles south of Burgess on VA Route 200. Located about halfway between Kilmarnock and Burgess, the main focus of the village is on community service to the area lying south of the Great Wicomico River and north of Kilmarnock. Existing commercial development includes one convenience store, several small retail stores, real estate office, electric and plumbing shop, Kubota Tractor dealer, machine shop and marine repair service. Public uses include three churches.

Because of its location between two strong commercial areas (Kilmarnock and Burgess), Wicomico Church has not developed as a strong business center and is therefore not planned for commercial hub development. Except for the tractor dealer and real estate office, the village serves mostly a neighborhood function. But the existence of several established churches makes the village a popular place of assembly for community activities.

Specific goals for Wicomico Church are as follows:

(1) Promote the village as the primary supply and service center for the area south of the Great Wicomico River. The potential for additional growth is linked to the rate of development on several of the creeks extending into the County's shoreline from the Chesapeake Bay and the Great Wicomico River.

(2) With the cooperation of the churches that are located within the village, Wicomico Church can function as a "community center" for the southern portion of the County.

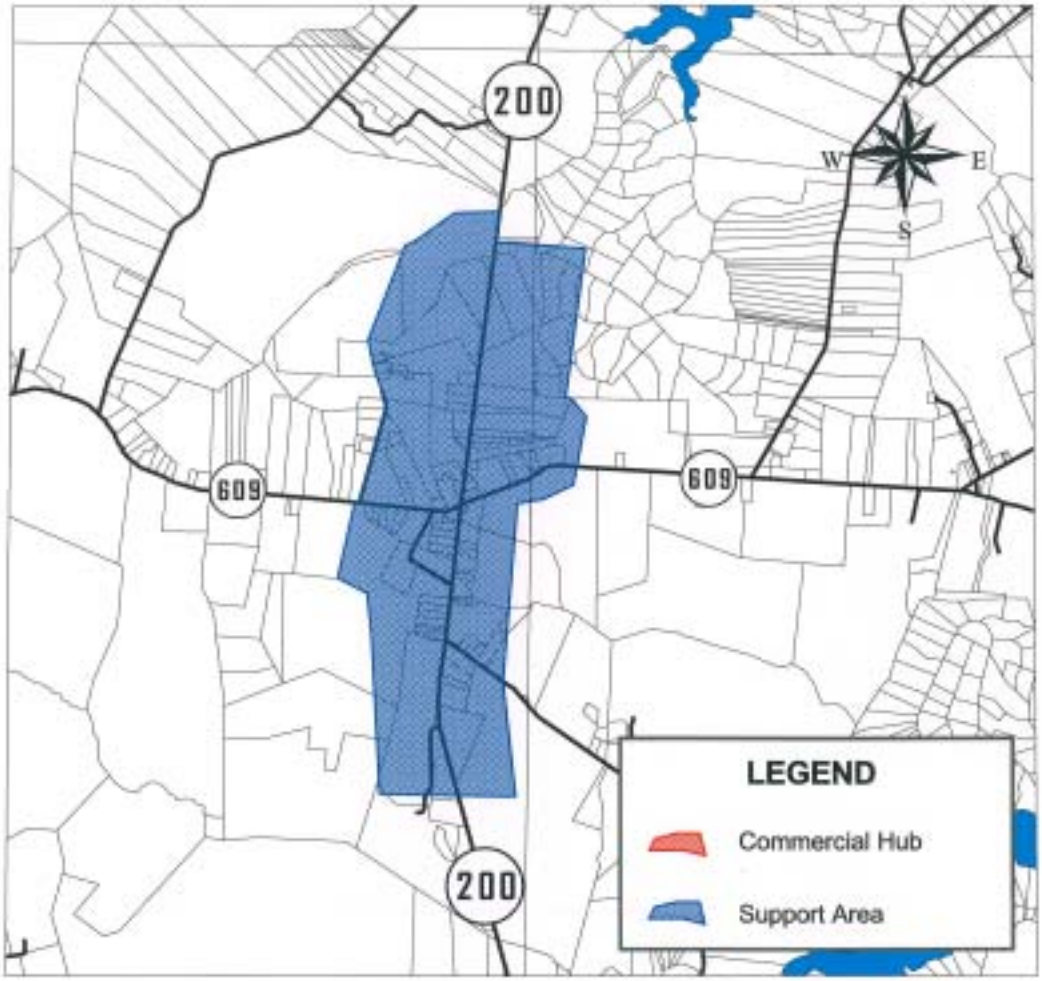
(3) Add other public community services as they can be provided (i.e., branch library or bookmobile, fire/rescue facilities, etc.)

(4) Develop plans for a sustainable water supply that includes a reservoir developed on Mill Creek.

Figure 3.6 presents the Future Land Use Plan for Wicomico Church and vicinity. It is designated solely as a residential support area.

Figure 3.6

Future Land Use Plan
Wicomico Church and Vicinity



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Map Prepared by:

August 2005

Data Sources: Hydrography, County Boundary: USGS 1:100,000 DLG's.
Commercial Hubs & Support Areas: Modified from the 1996 Northumberland Comp. Plan.

g. Reedville

It has been mentioned that Reedville is a different kind of community than the other eight villages. This is an old village which was built around water-related and fishing industries and marine operations. The land use is mostly residential but many private homes have been converted to bed and breakfast establishments which are very popular during the summer months.

The main peninsula that first established Reedville is designated as a Historic Area and is registered on the National Register of Historic Places. The historic district starts at Crowder Street and runs to the water containing lots on both sides of Route 644.

The area covered by the Reedville Future Land Use Plan contains all lots between Routes 360/657 and the branches of Cockrell Creek that border on each side of Reedville. The tax map of this area shows 248 lots. The area covered by these lots is 218 acres. The average density is 1.14 lots per acre. The highest density found in any one block was four lots per acre.[13]

Reedville is planned to remain primarily residential including the small businesses that are permissible in residential zoning. No commercial hub is planned.

Cockrell's Creek

The area on both sides of Cockrell's Creek is planned to become a mixed waterfront business-residential support area as shown in Figure 3.7. Arguably the county's most valuable resource is the harbor represented by Cockrell's Creek. Few counties in the country, much less the state, have a deep-water harbor with the potential of the Reedville area. Development of this resource must consider value to the county and its citizens. The part of the Cockrell's Creek area shown on the map needs re-development to support its Bay heritage as well as support the existing water-related activities of the area. It also should complement and enhance the village of Reedville and the communities of Fairport and Fleeton. The area is expected to be amenable to residential re-development combined with marinas and other water-related businesses. It is also near the location of the County's largest commercial employer: Omega Protein.

13 A small area of Reedville located within the area formed by Route 657, South Avenue, Morrison Avenue and Route 644 contains smaller lots (69 lots on 117.25 acres, an average of 4 lots per acre). This calculation was done as a test of one of CBLAB's criteria for Intensively Developed Areas, or IDAs. The criterion requires a density greater than four dwelling units per acre. This test demonstrates that in the worst case situation, there is no area in Northumberland County that has a density greater than four dwelling units per acre; therefore, it is concluded that Northumberland County has no Intensively Developed Areas as defined by CBLAD criteria.

Specific goals for Reedville are as follows:

(1) Within the Historic District establish guidelines for retaining the original "town character" in buildings as they are modified, constructed or reconstructed.

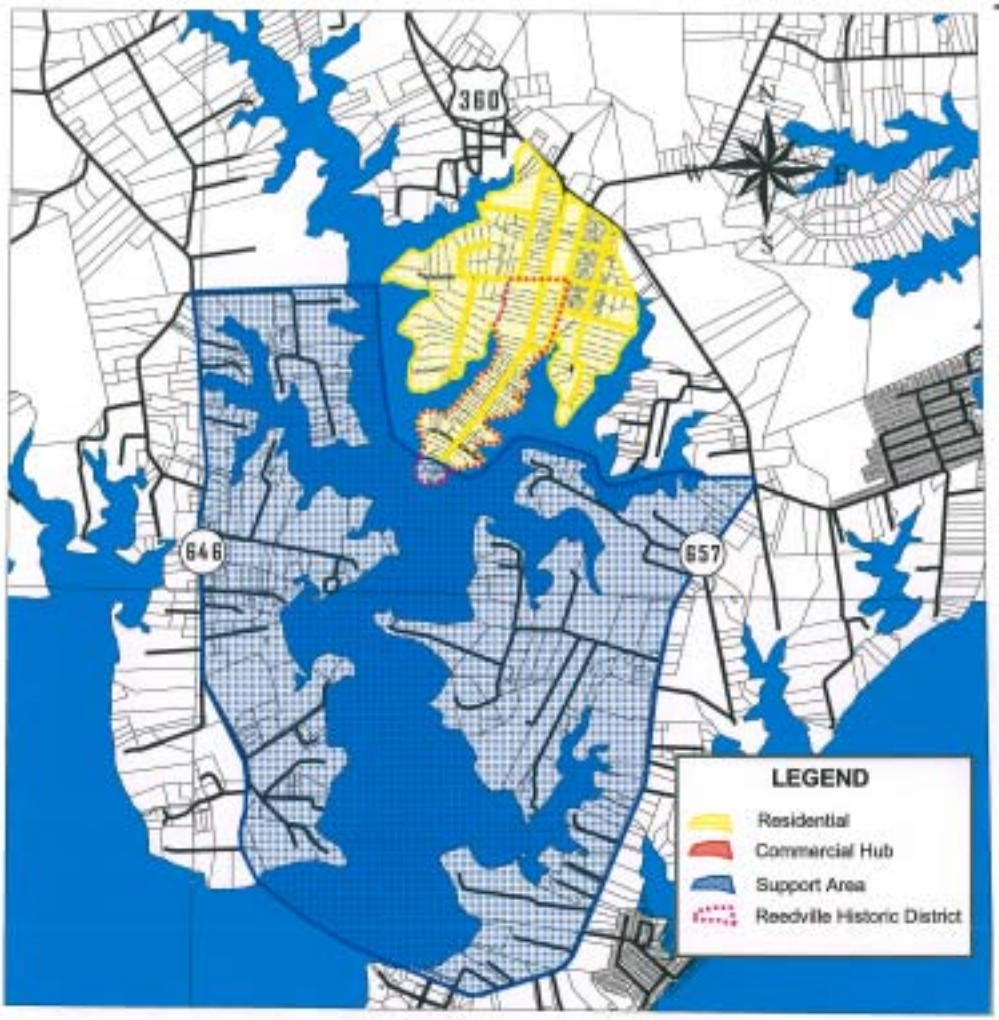
(2) Within the areas designated as residential, include the establishment of "bed and breakfast" inns within the definition of "residential."

(3) Promote the area on Cockrell's Creek as a specially zoned water-based mixed business and residential support area.

Figure 3.7 presents the Future Land Use Plan for Reedville and vicinity. Both sides of Cockrell's Creek as well as the tip of Reedville are planned as Waterfront Support Areas.

Figure 3.7

Future Land Use Plan Reedville and Vicinity



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Map Prepared by:

November 2006

Data Sources: Hydrography, County Boundary: USGS 1:100,000 DLG's. Commercial Hubs & Support Areas: Modified from the 1996 Northumberland Comp. Plan.

h. North Kilmarnock

The village of North Kilmarnock is on the border with Lancaster County on the south.. Because of its proximity to a substantial market area, both resident and tourist, the potential exists for the establishment of a major village in this area and the long term plan is for North Kilmarnock to develop around a small commercial hub. Subject to availability and agreement of the Town, the area has perhaps the earliest potential to be served by public sewer which is very important, almost essential, to the development of a substantial business complex.

In addition to its commercial potential, the North Kilmarnock Village also could be developed as a planned residential community. It offers perhaps the best opportunity in the County for the development of a modern planned unit development mixed with residential, recreational and commercial facilities.

Specific goals for the North Kilmarnock Area are as follows:

(1) Development within the area is to be guided by a comprehensive land development plan and economic plan consistent with present day trends for planned communities.

(2) Such development should be undertaken in coordination with the Town of Kilmarnock.

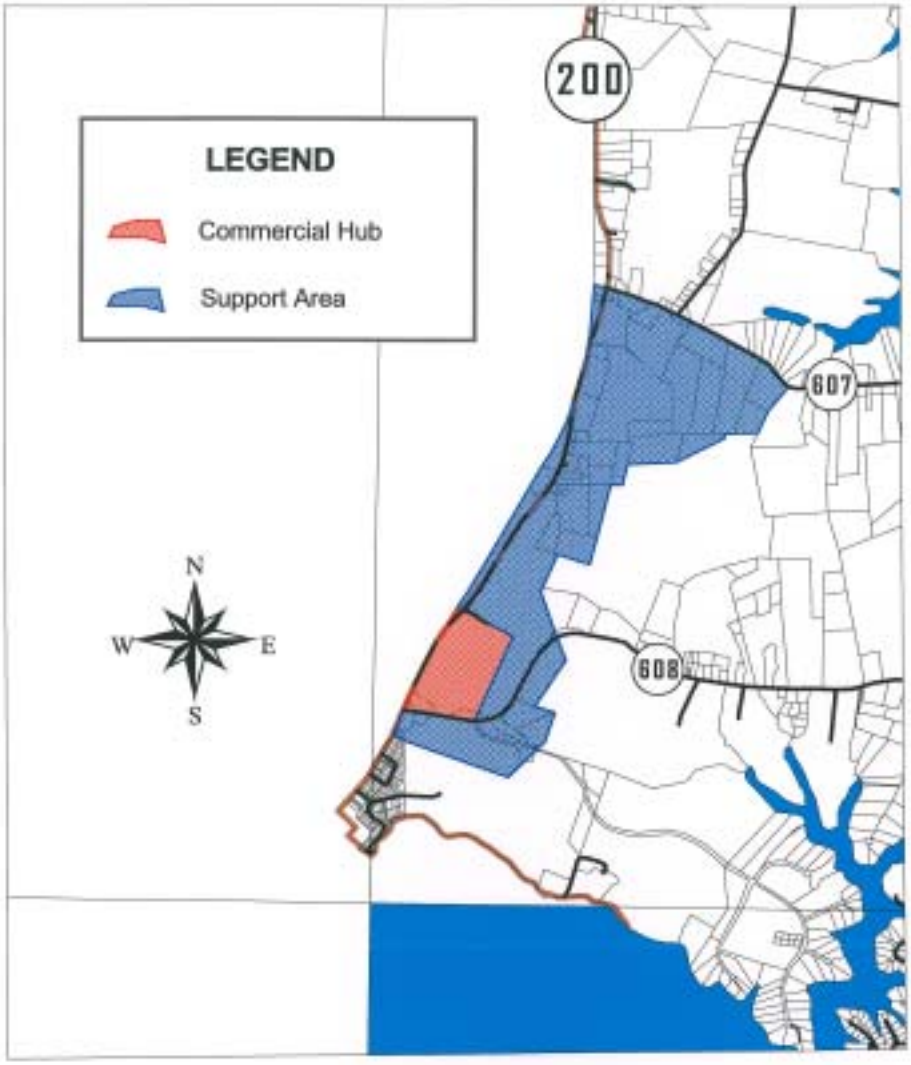
(3) The primary focus of development should be in two areas: (i) to establish a substantial job base within the County within the framework of the goals and policies of the Comprehensive Plan and (ii) to expand residential opportunities for both existing and new residents.

(4) The concept of such a planned community is not limited to a single site development; a comprehensive approach might consider various groupings of uses such as focusing the more intensive uses along the major highway while locating residential components in more remote rural or waterfront areas.

Figure 3.8 presents the Future Land Use Plan for North Kilmarnock and vicinity.

Figure 3.8

Future Land Use Plan
North Kilmarnock and Vicinity



1000 0 1000 2000 Feet

Map Prepared by:

August 2005

Data Sources: Hydrography, County Boundary: USGS 1:100,000 DLG's. Commercial Hubs & Support Areas: Modified from the 1996 Northumberland Comp. Plan.

i. Lilian

Lilian is located about 4 miles from Reedville on US Route 360 at the intersection of VA Route 646. Located between Reedville and Burgess, the focus of this village is on community service to the local area, to traffic on Route 360 and traffic to Lilian Lumber 2 miles down Route 646. Because Burgess is planned for a major commercial hub, Lilian is planned to remain a support area for the local community.

Specific Goals for Lilian are as follows:

(1) Continue to act as the primary supply and service center for the neighboring community.

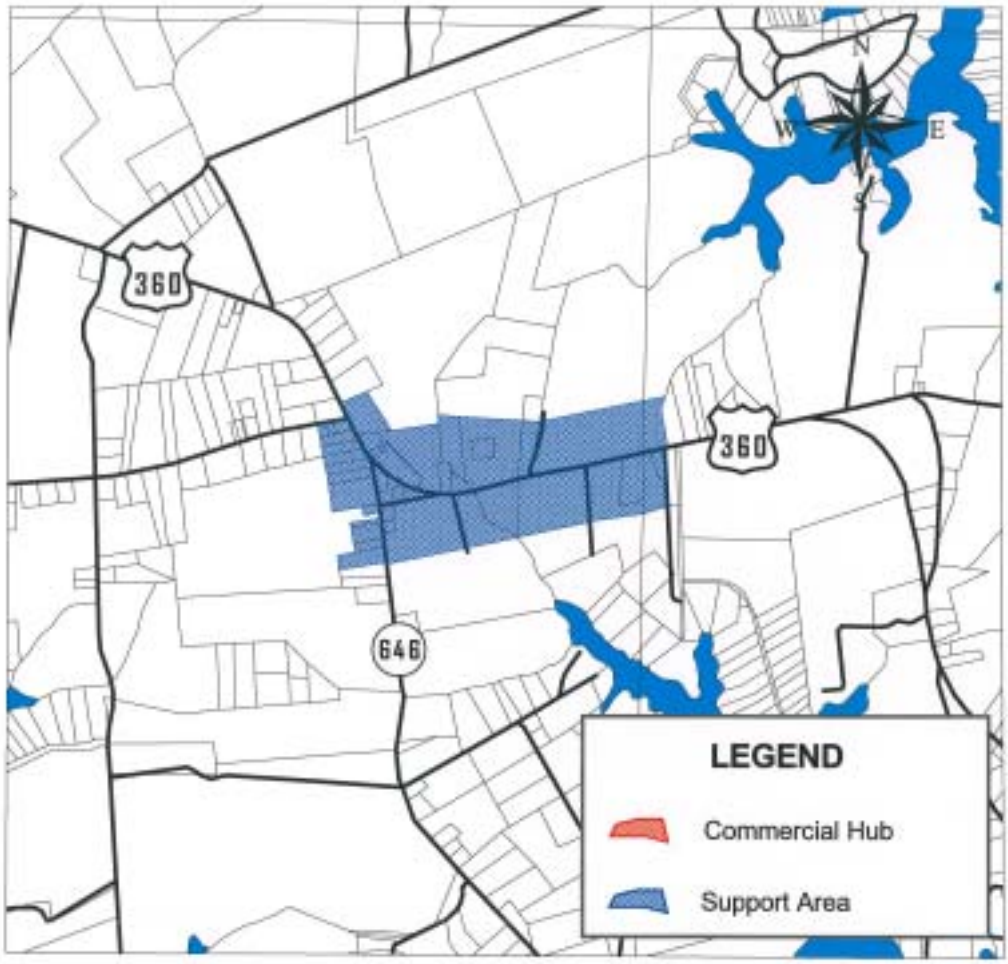
(2) Encourage small businesses to locate in the support area.

(3) Maintain a clear edge of businesses in the support area of Lilian and prevent sprawl along Route U.S. 360.

Figure 3.9 presents the Future Land Use Plan for Lilian and vicinity.

Figure 3.9

Future Land Use Plan
Lilian and Vicinity



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Data Sources: Hydrography, County Boundar
USGS 1:100,000 DLG's.
Commercial Hubs & Support A
Modified from the 1996
Northumberland Comp. Plan.

August 2005

j. Village

Village is located on Route U.S. 360 at the Richmond County line and State Route 600. The focus of the village is on the local community, serving traffic on Route 360 and also as a commercial hub near the geographic center of the Northern Neck. Richmond County has also designated Village as a village in their Comprehensive Plan

Located in Village is a restaurant, real estate office, cleaning service, service station, convenience store, marine sales and a roadside stand for farm produce.

Village does not have a clearly defined area for a Commercial Hub within Northumberland County. Therefore the commercial area of Village is identified as a support area.

Specific goals for Village are as follows:

(1) Work with Richmond County to coordinate development within the village.

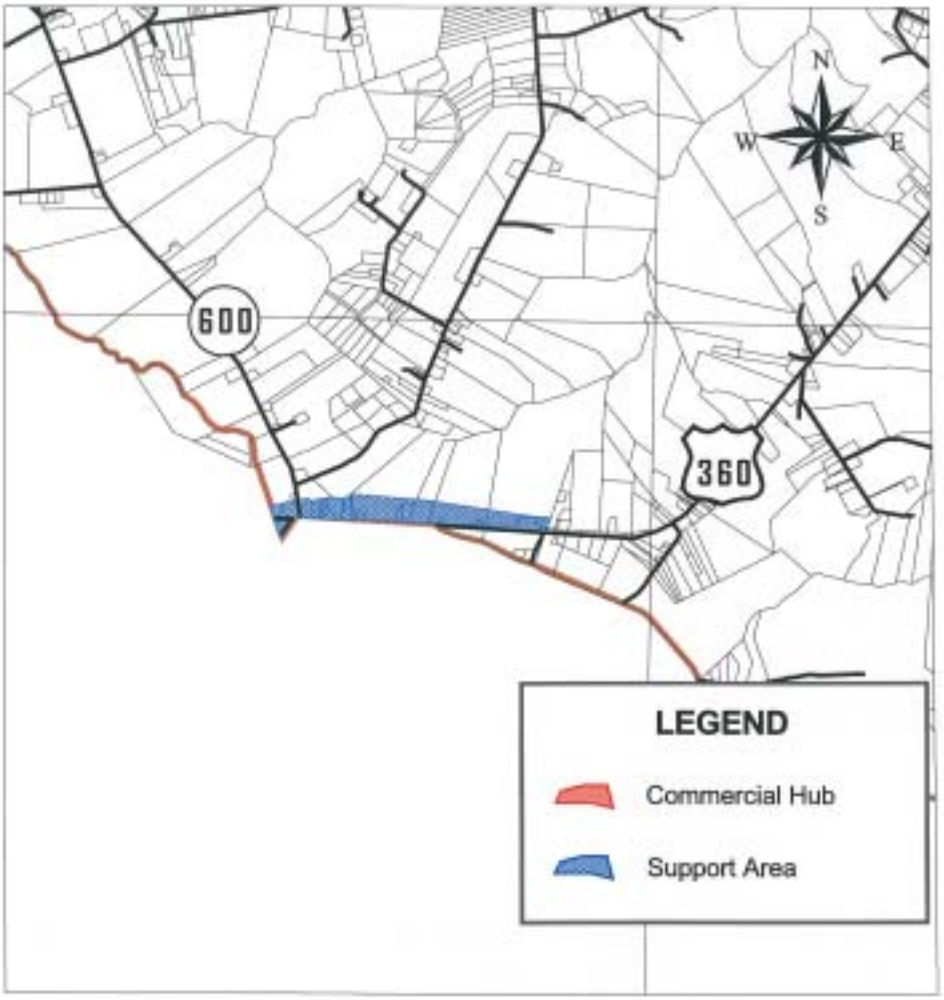
(2) Continue to act as the primary supply and service center for the neighboring community.

(3) Encourage small businesses to locate within the support area.

Figure 3.10 presents the Future Land Use Plan for Village and vicinity.

Figure 3.10

Future Land Use Plan
Village and Vicinity



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Map Prepared by:

August 2005

Data Sources: Hydrography, County Boundary: USGS 1:100,000 DLG's.
Commercial Hubs & Support Areas: Modified from the 1996 Northumberland Comp. Plan.

5. Policies for Special Areas

There are three categories of elements of the County that require special attention for land use planning:
(a) The Historical and Archeological Areas;
(b) The Highway Corridor down the spine of the County; and
(c) The Areas identified for Reservoirs.

Each of these is discussed in detail in the sections below

a. Historic and Archeological Resources

Thirteen sites within Northumberland County are designated as "Historic Landmarks" and are listed in the Virginia Landmarks Register and the National Register of Historic Places. Two of these sites, Heathsville and Reedville, have been designated as "Historic Areas." These sites are identified in Figure 1.11 and listed and further discussed in Section 7 of Chapter 1.

Additional sites of historic interest have been identified in connection with surveys done in advance of state highway projects. VDOT is now required to identify sites that potentially have historic significance whenever a major project is in the planning stage. Sites that are identified are recorded in a data base held by the Virginia Department of Historic Resources. If a particular site meets certain requirements, it may be "nominated" for the National Register of Historic Places. Once a site is accepted and recognized as an historic landmark, it is then protected by law from destruction or significant modification. The primary focus of this plan relative to historic and archeological sites is on those facilities that are accepted for the National Register at present or in the future.

Policies for historic and archeological sites are as follows.

(i) No development should be permitted that would result in the removal or modification of an established historic landmark or a building within a historic district except within the policies established in Section 15.1-503.2 of the Virginia Code.

(ii) Continue the identification of historic and archeological sites by completing a county-wide inventory as provided through the Virginia Department of Historic Resources. Based on the findings of that study, prepare a historic resources management plan as a component of the Comprehensive Plan.

b. Highway Corridor Overlay District

(1) Introduction

The major corridors of Route 360 and Route 200 serve two functions in the County: as a major thoroughfare through the County and as local streets. Each of the highways functions as a main street at numerous places, even though they are not always called "Main Street". All of the villages have developed along this corridor.

Shallow building setbacks, on-street parking, and frequent intersecting streets and driveways give these areas their small localities character, and foster significant pedestrian activity. As the thoroughfares transition to local streets, the roadway cross-sections and lane configurations also change.

The conflicts between facilitating through transportation and encouraging pedestrian activity in villages raise difficult issues in planning for long-term regional transportation needs. Efforts to facilitate the movement of through traffic have the potential to degrade pedestrian safety and accessibility in village areas. Furthermore, conventional solutions such as highway widening and bypasses may erode small town character. At the same time, pedestrian and traffic calming improvements could potentially degrade the functionality of these major thoroughfares. The goal is to plan solutions that serve both needs.

(2) Corridor Protection

The purpose of a Highway Corridor Overlay District, HCOD, is to protect the major roadway corridor in the County in a manner to be compatible with both needs outlined above.

As the area’s transportation lifelines, the primary corridors along Routes 360 and 200 warrant special attention and protection. These roadways dramatically affect the County and Region's quality of life, impacting safety, mobility, economic prosperity, and community character. They should be seen as valuable and limited resources that demand ongoing management and evaluation.

From a vehicular standpoint, the major corridors provide access to work, shopping, schools, and hospitals. Unmanaged development has the potential to degrade the capacity, function, and safety of the roadways, negatively impacting access and mobility. Although long-term highway capacity is not a major issue for the majority of the Northern Neck, certain areas will experience congestion within 20 years as discussed in Chapter 4.

Furthermore, side-friction in the form of unmanaged access could dramatically reduce the ability of major roadways to carry people, goods, and services. Also, roadway geometry in certain locations (especially where the roads transition into small localities) raises operational concerns that will be exacerbated by even moderate increases in traffic. The lack of funding for major improvements makes effective corridor management even more important.

These thoroughfares should be seen as economic development tools, to be marketed as safe and efficient linkages. Degradation of these facilities, in the form of unmanaged access, could severely impact the ability of the County and the Northern Neck to attract and retain viable businesses. In addition, because heritage tourism is becoming a primary component of the County's economic development strategy, safe and efficient access to historic and recreational sites is critical. Corridor protection thereby supports regional economic initiatives.

Finally, as primary gateways and highly visible travel-ways, these corridors dramatically impact community character. Visitors and residents alike are left with lasting impressions of the Northern Neck based on the aesthetic quality of the roadways. Although certain roadway sections display the negative characteristics of a commercial strip, the corridors remain primarily rural and small town in nature. The County has an opportunity to preserve this character and to address existing deficiencies associated with non-conforming areas.

(3) Corridor Protection Policies

Corridor protection involves both roadway techniques and land use techniques and requires coordination between County officials and the Virginia Department of Transportation. This section discusses both access and land use policies, and establishes a framework for collaboration.

(i) Access Management Policies

Although traffic volumes are expected to increase over time, and while certain road segments will experience congestion, highway capacity on most corridor sections is not expected to be an issue into the foreseeable future. The primary concern for maintaining the safety and efficiency of travel in the corridors therefore becomes access to existing and future land uses in the corridors. Access management techniques include a broad range of treatments designed to provide highway access while preserving the safety, function, and efficiency of roadway corridors. Since these involve the highway right-of-way, they are the responsibility of VDOT. The following list identifies some common considerations and techniques used for access management:

- Turn Lanes
- Driveway Spacing and Consolidation

- Corner Clearance
- Sight Distance
- Crossover Spacing and Consolidation
- Median and Crossover Width
- Inter-Parcel Connection
- Local Road Connections
- Correcting Existing Access Deficiencies

Each of these items has a recommended VDOT specification to improve or maintain access. The County should work with VDOT to undertake an access management plan and program to identify specific roadway improvements to be made by VDOT in the Corridor and to set standards for the future.

(ii) Land Use Management Policies

Along with effective access management, several important County land use policies will help protect the County's transportation artery. These policies will positively impact the aesthetic quality of development, and will also promote corridor safety by minimizing potential distractions associated with cluttered signs, inadequate setbacks, and glaring lights. The following items are to be considered recommended guidelines for inclusion in the Highway Corridor Overlay District.

Setbacks

The proximity of development to roadways has a direct impact on safety and visual quality. To encourage development at desired locations while maintaining corridor integrity, the County should adopt standards for setbacks. These standards should apply not only to principal structures, but also to all site development, such as outbuildings, parking areas, and gasoline station canopies. On rural highway segments, standards for front, side and rear yards should also be implemented.

In the villages, traditional shallow setbacks should be required for buildings; parking should be placed to the rear of lots in these areas.

Signs

Unmanaged signs not only cause visual clutter and distract drivers; they also compete with each other to the detriment of all. The County should update standards to manage the location, size, and number of signs on all County roads. On rural roads, monument-type signs should be favored over pylon-type signs, and all signs should include complementary landscaping. In addition, the standards should require that signs complement the material, color, and style of the building in which the business is located. In towns and villages, on-structure signs and small freestanding signs should reflect the pedestrian scale of these areas.

Lighting

Inappropriate lighting can impede driver visibility, erode corridor character, and create a nuisance for adjacent properties. The County should adopt standards to manage exterior lighting sources on all County roads including but not limited to:

- lighting for parking, access drives, and walkways;
- gasoline station canopy lighting; and
- internally and externally illuminated signs.

In general, lighting should not direct glare on adjacent roadways or parcels, and should not exceed some specified limit at property lines. Lighting other than security lighting should be subject to time-of-day restrictions.

Landscaping

Well designed and maintained landscaping is a critical part of corridor protection. Preservation of existing vegetation and of large trees in particular, can dramatically improve development quality and help maintain roadway character. The County should adopt standards for preserving, planting, and maintaining vegetation as part of site development.

Architecture

The County's character is defined in part by the traditional/rural nature of its buildings. New development and redevelopment should incorporate elements that reflect these styles.. In addition to implementing basic standards, the County should consider commissioning architectural surveys to provide additional detail and guidelines and develop Architectural Guidelines for buildings located in Commercial Hubs, Support Areas and Historical Districts.

Viewsheds

The proposed access management and land use policies will apply to the corridors in an overlay fashion, setting standards for development throughout the County. In addition to this approach, the County should pursue a viewshed analysis to identify critical areas that warrant preservation and protection based on their visibility, defining features, and contribution to local character.

Retrofitting

While the proposed standards apply in a straightforward manner to new development, managing the redevelopment of built-up areas will prove more difficult and will require coordination over time. The County should adopt standards for bringing non-conforming sites closer to compliance as redevelopment occurs. These standards should encourage redevelopment while establishing thresholds for compliance.

(4) Highway Corridor Overlay District

A Highway Corridor Overlay District (HCOD) should be established for the purpose of protecting the County's major roadway corridors, which directly impact the public health,

safety, and welfare. As the transportation lifelines of the community, these routes provide access to schools, jobs, and other destinations. They also facilitate the provision of emergency services, and foster tourism and economic development. As resources made possible through public investment, such roadways warrant protection in order to preserve their safety, capacity, and function. Finally, as visible elements of the County, they require management to protect and enhance community character.

The HCOD should apply to Routes U.S. 360 from the County Line in Village to Reedville and Route 200 from the intersection with Route 360 in Burgess to the County line at North Kilmarnock. Any development abutting these routes and requiring site plan or subdivision approval should be subject to these requirements. The HCOD should also apply to redevelopment, which should include measures to bring non-conforming sites into compliance in accordance with the final ordinance.

Large developments consisting of multiple parcels (including but not limited to shopping centers and business parks) should be treated as individual development projects and should be included in the HCOD. Logical extensions of such developments should also be subject to the HCOD regulations, regardless of whether they abut the highway.

To ensure adequate coordination with the Virginia Department of Transportation (VDOT), the County should seek comments from the Residency Administrator or his/her designated representative on the proposed roadway, driveway, and circulation systems.

To translate the corridor protection policies into law, the County will need to amend its zoning ordinances to include specific standards for access and land use management. The available model ordinance, in the form of a Highway Corridor Overlay District (HCOD) should be reviewed, modified to meet the unique County environment, and adopted.

c. Reservoir Areas

In Chapter 1, Physical Conditions, Section B.1.f there is a brief discussion of the Engineering study of reservoirs in the County accompanied by Figure 1.13 identifying the potential reservoirs with existing building footprints.

In Chapter 4, Public Facilities and Services, Section E.1 there is a further discussion of the water supply and identification of specific potential reservoirs in the context of the County's responsibility to assure an adequate fresh water supply.

In Chapter 5, Water Quality and Shoreline Protection Plan, Section B.3 there is a discussion of the overall situation regarding availability of fresh water and the recognition that reservoirs are a necessary source of fresh water and a recommendation regarding the importance of starting to bring the reservoirs on-line.

There are at least five important points to be recognized:

1. Artesian aquifer groundwater is a finite resource. The continued reliance of

groundwater drawn from the artesian aquifers will lead to the impairment the aquifer system by mid-century and to the eventual loss of the aquifers as a productive source of water. Usage data on the aquifer are included in the Statistical Appendix.

2. Reservoirs are one of the important potential sustainable sources of water and a desirable source of water for centers of population and for industry when the aquifer becomes impaired. Shallow wells will continue to provide another sustainable source for citizens not within economic distance of a reservoir. Desalinization systems may be necessary for many citizens with waterfront property not near reservoirs and unable to utilize shallow wells.

3. Land prices will continue to increase and the cost of land acquisition for reservoir sites will become increasingly expensive with the passage of time.

4. Development will continue and the choice of reservoir sites will become more limited and more difficult to sequester or reserve with the passage of time.

5. Reservoirs would be economic engines today even if not used immediately for water supply. Shorelines of reservoirs would increase in value significantly and provide jobs and economic opportunities for recreation facilities and fishing, restaurants, and inns.

From a point of view of land use planning the County should limit and control development by establishing a Reservoir Overlay District at the proposed reservoir footprints so that the option of constructing surface impoundments remains open. As discussed in Chapter 4, the most promising sites are as follows:

Site	Serving	Acres	Million gallons/day
Lodge Creek	Callao	118	1.05
Mill Creek	Wicomico Church	163	0.35
Sydnor's Mill	Burgess and points east	328	0.48
Crabbe Mill	Heathsville	310	0.56

As a minimum, the area identified for these four sites, plus an area of 800 feet landward of these sites when the reservoirs are full should be included in the Reservoir Overlay District. Large local ponds should also be considered as potential reservoir sites.

Reservoir sites and adjacent property should be permitted to develop only as consistent with maintaining a future public water supply

The policies for building in the Reservoir Overlay District should be as follows:

1. No construction to be allowed in the areas designated for the reservoirs including

supporting infrastructure such as spillways.

2. Construction in the 800 foot area around the reservoirs should follow the Chesapeake Bay Act restrictions without exceptions.

C. HOW TO USE THE LAND USE PLAN

Although the Land Use Plan is only one component of the Comprehensive Plan, it is very important because of its long-range influence on the use and development of both privately and publicly-owned land. Its impact is greatest on privately-owned land because almost all of the County's area is in that category. The land use plan is also an important document with respect to the environment, particularly when read in context with the Water Quality Protection Plan which is the subject of Chapter 5. Functions of the Land Use Plan and general guidelines for its use are summarized in the following comments.

1. The first reason for the Land Use Plan's importance is that it establishes official long-range policies for the use and development of land for the entire County. According to Virginia statutes (Va. Code Section 15.2-2223) which authorizes counties to do planning, the Comprehensive Plan focuses on the physical development of the territory and it is for the purpose of:

> "...guiding and accomplishing a coordinated, adjusted and harmonious development of the [County] 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"

Among the specific components of the comprehensive plan authorized under this section is the following specific authority for a land use plan:

> "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, recreation, public service, floodplain and drainage, and other areas."

The Code requires that each community have a comprehensive plan, that it be reviewed every five years and updated as found necessary.

2. The Land Use Plan serves as a framework for establishing land use regulations which are the local laws that govern the use and development of land. The Land Use Plan and associated policies provide guidelines for preparing or updating Zoning and Subdivision Ordinances. The Zoning Ordinance establishes how land may legally be

used and the Subdivision Ordinance establishes requirements for subdividing land into lots and recording them in appropriate places. Both the land use plan and land use regulations should be reviewed together periodically and updated as appropriate. The Zoning Ordinance should be updated to be compatible with this Land Use Plan.

3. The Land Use Plan is used in making decisions on requests by property owners for a change in use of their properties. In many cases, a change in use requires a policy change (rezoning) by the governing body. The Land Use Plan should be one of the standard sources used during a rezoning process.

4. County-wide, the current zoning is out-of-date and not consistent with the Land Use Plan. The process for updating the existing zoning to incorporate the village/support area concept is as follows: first for each request to be reviewed to determine if the parcel is located in a village or support area. If so, the requested uses should be compared to the permitted or conditional uses in the village or support area and if affirmative, the re-zoning would normally be approved or conditioned. By this process, as development proceeds, it will be in accordance with the Land Use Plan. If the proposal is for rezoning a parcel not in a village or support area, then the Planning Commission and Board of Supervisors should follow the appropriate policies for the various areas of this Land Use Plan.

5. After the Land Use Plan has been adopted by the Board of Supervisors it gains a legal status according to Section 15.1-456 of the Code. This Section provides that after the Board adopts a comprehensive plan, or part thereof, unless a feature is shown on the adopted plan, it must be reviewed by the Planning Commission. The Commission then determines whether that feature is substantially in accord with the adopted plan.

6. As a final item, the Land Use Plan should be interpreted to include a Water Quality Protection Plan (see Chapter 5) which is designed to address issues of the Chesapeake Bay preservation. This element of the plan is required by the Chesapeake Bay Preservation Act as established in the Regulations of the Chesapeake Bay Local Assistance Board.

CHAPTER 4[1]
PUBLIC FACILITIES AND SERVICES

A. INTRODUCTION

The first three chapters focus on developing a framework for future growth of Northumberland County. The first chapter examines physical and environmental conditions that influence or limit potential development. Chapter 2 identifies goals and strategies designed to deal with important issues that were defined by the physical analysis, demographic studies and input from the community. Chapter 3 is a core element of the Comprehensive Plan, the element that establishes a framework plan of future land use. The Land Use Plan is an instrument for guiding overall growth although its main focus is to establish County policies and guidelines for development that occurs through private investment.

The current chapter focuses on that phase of the plan which is primarily represented by public investment. Its focus is on the provision of public facilities and services. In combination, the Land Use Plan and the Public Facilities and Services elements comprise the nucleus of the Comprehensive Plan for Northumberland County as envisaged by the Virginia Statutes. Public services covered in this chapter are provided by a combination of state, county and private agencies. The level of detail for any one subject area is general because of a requirement of the Virginia Law which stipulates that the Comprehensive Plan

> "... shall be general in nature, in that it shall designate the general or approximate location, character and extent of each feature shown on the plan ..."

The Public Facilities and Services Plan is intended to provide guidance to the County by enabling it to anticipate additional public services that will be needed in future years. To private as well as public agencies that operate separately from the County government, the plan will provide policies and guidance concerning the County's intent to provide services of a particular type.

B. HIGHWAYS

Northumberland County is served by a network of primary and secondary public roads that are maintained by the Virginia Department of Transportation. Route U.S. 360 is a federal primary road while all other public roads, primary and secondary, are state roads. Although there are a few residential streets that are privately owned, the State's policy is to operate and maintain the public road system within counties. This policy applies throughout the Commonwealth of Virginia. New secondary roads may be built as part of a private development and brought into the state system if they are planned and constructed to VDOT standards and meet the service requirements for state-maintained roads.

[1]Filename= Chapter_4_Final

While the State gives a high priority to traffic considerations when planning improvements to existing public roads, the County may influence the timing of improvements. Road widening, bridge replacements and other major improvements to the existing system may be offered as priorities of the County during periods when VDOT is preparing its plans for highway improvements.

Table 4.1 presents the year 2000 VDOT traffic counts for Route U.S. 360 and Route 200 and forecasts for 2020.

Table 4.1 Average Daily Traffic Volumes, Routes 360 and 200

From	To	2000	Forecast 2020	Number Of Lanes	Practical Capacity (vpd)	V/C Ratio
Route U.S. 360						
Northumberland/ Richmond CL	SR 202	4,900	7,300	4	32,000	0.23
SR 202	Route 614	7,700	11,400	2	12,000	0.95
Route 614	SR 201	6,200	9,200	4	40,000	0.23
SR 201	SR 200	4,400	6,500	2	12,000	0.54
SR 200	Route 646	4,700	7,000	4	40,000	0.18
Route 646	Route 657	3,900	5,800	4	40,000	0.15
Route 657	Route 644	940	1,400	2	12,000	0.12
Route 200						
US 360 Burgess PO	Route 609	4,200	6,200	2	12,000	0.52
Route 609	Northumberland/ Lancaster CL	4,200	6,200	2	12,000	0.52
Reference: NNPDC Transportation Corridor Protection Plan, Tables 1 and 3.						

These data show the only bottleneck in the County is in Callao although a similar situation exists in Heathsville at the intersection of Route 201 at the curve on Route U.S. 360. In both places the solutions are dependent upon VDOT. There are no current plans to bypass either village due to the low overall traffic volume.

The Board of Supervisors has concentrated on pressing VDOT to complete bringing Route U.S. 360 up to four lanes but that does not seem likely in the near future. There are no plans to address the bottlenecks until the four lane upgrade project is complete. There are two state plans for roads, one for the primary system and one for the secondary system. Each system has its own planning cycle and in order for the County to introduce its planning priorities it must do so at the proper time within each planning cycle.

Each year VDOT prepares its own capital improvements programs. One program is prepared for

improvements to primary highways and another for secondary roads. There is an opportunity for the County to express its priorities in each of these plans. Primary highways are planned and constructed through the District Engineer's Office. The County may make recommendations to the District Engineer at yearly hearings held for the purpose of discussing future improvements.

Improvements to secondary roads are handled by VDOT through a Six-Year Plan with local planning being coordinated through the Resident Engineer. The opportunity also exists for the County to make its priorities known when the Resident Engineer discusses planned secondary road improvements with the Board of Supervisors at a yearly meeting. By identifying its own roads that warrant improvement in the Comprehensive Plan, Northumberland County should be able to work many of its own priorities into the State's six-year plan for secondary roads.

This section of the comprehensive plan focuses on the potential need for improving a network of roads that best meets the circulation needs of different areas of the County.

1. Major Roads Identified

The clearest picture of which roads carry the predominant traffic in Northumberland County comes from an inspection of 24-hour traffic volumes. VDOT prepares traffic counts on most state roads on a continuing basis. Figure 4.1 illustrates graphically the amount of traffic currently (2003) on specific roads. This map shows by the width of the line roads that have more than 500 vehicles per 24 hours.

- Primary routes U.S. 360 and 200, both of which carry in excess of 4000 vehicles per day (VPD) form the central corridor of the County. Route 202 is also an important primary that connects Northumberland to Westmoreland County. These three primary roads not only provide primary circulation within the County's economic corridor but they also connect the County with Westmoreland, Richmond and Lancaster Counties.

- Secondary roads, shown on the map with traffic flow above 500 VPD, extend traffic service from the primary routes to areas with concentrations of residential development, farm or marine activities. Some observations are appropriate for specific roads.

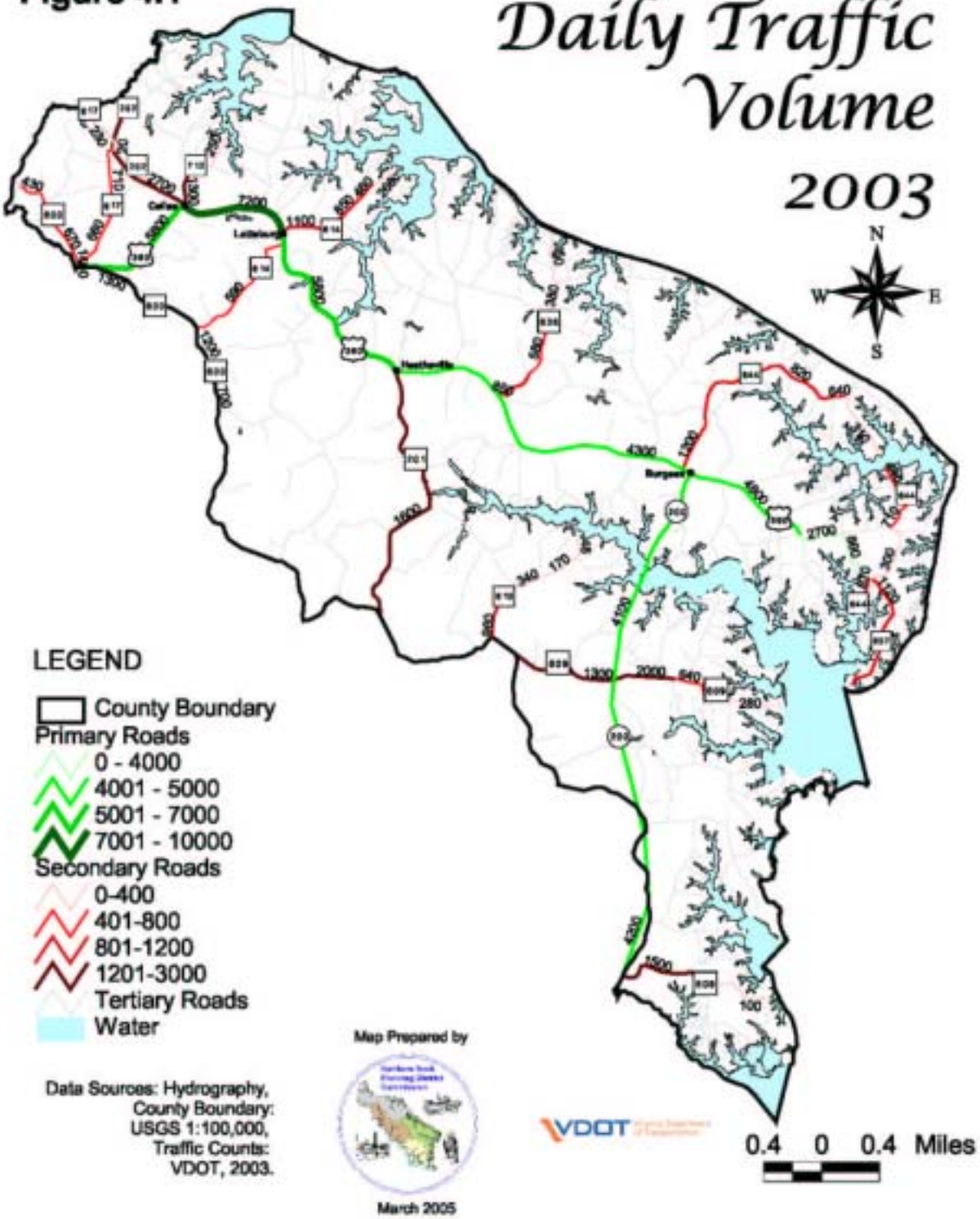
- Route 201 has traffic volumes that are below that normally expected on a Primary Road, but instead carries traffic at about the same level as a secondary road. This is a reflection of its physical condition because the distance from Heathsville to Kilmarnock over the 201/3 combination is about the same as it is over U.S. 360 and 200. Traffic naturally follows the routes of better roads; therefore, the 360/200 combination from the central part of the County south to Kilmarnock is the preferred route.

- Route 617 from Hyacinth to Village appears to be a "shortcut" from Route 201 to 360. Drivers often select roads of less quality if they can gain a

substantial distance saving. That seems to be the case with this route.

- Most of the other roads with traffic above 500 VPD serve major areas of development or serve as corridors through rural areas. In general, these are the roads that are likely to continue to serve as feeder roads to developing areas and will warrant a higher priority for improvements.

Figure 4.1


Daily Traffic Volume
2003
N
W
E
S
LEGEND
County Boundary
Primary Roads
0 - 4000
4001 - 5000
5001 - 7000
7001 - 10000
Secondary Roads
0-400
401-800
801-1200
1201-3000
Tertiary Roads
Water
Data Sources: Hydrography, County Boundary: USGS 1:100,000, Traffic Counts: VDOT, 2003.
Map Prepared by
March 2005
VDOT
0.4 0 0.4 Miles

2. General Road Plan

The General Road Plan for Northumberland County is presented on Figure 4.2.., The public roads in Northumberland County are classified and identified as follows:

This plan is part of the Comprehensive Plan and serves as a guide to the County for purposes of identifying the County's own priorities for road improvements in future years. The plan includes identification of currently planned improvements by VDOT discussed below and recommendations from County residents. For purposes of this plan, public roads in Northumberland County are classified and identified as follows:

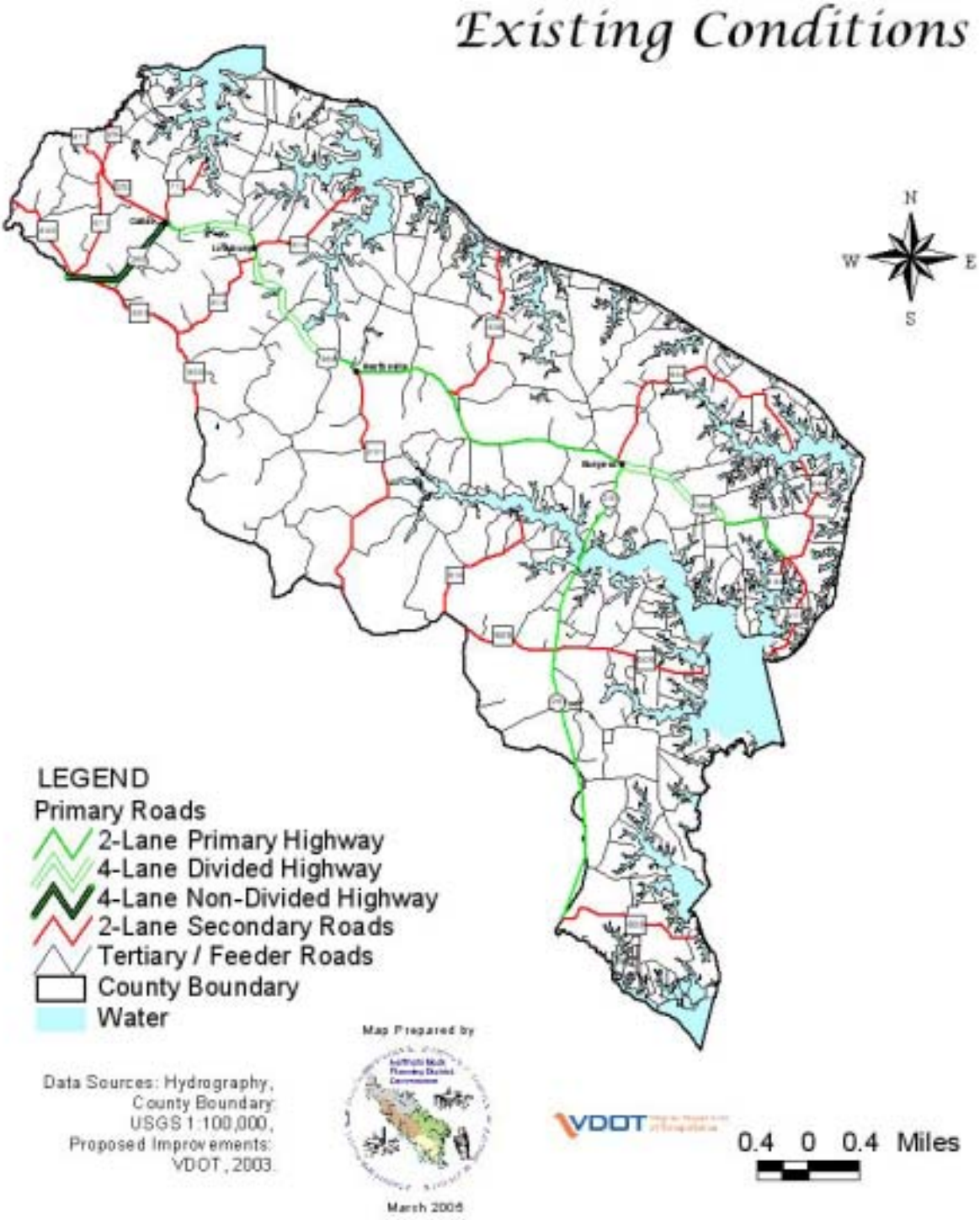
a. Four-lane Primary

U.S. Highway 360: This is the central traffic corridor of the County which serves nearly all traffic moving into, through and out of the County. It now has four lanes except for the segments through Lottsburg, between Heathsville and Burgess and between Lilian and Reedville. The County's primary strategy for this road includes completion as a four-lane road in order to establish a safe and efficient traffic corridor through the entire County. The County plans to continue to request 4-laning in the Pre-allocation funding of VDOT.

Where 360 passes through villages, it is necessary to coordinate improvements with the local need for traffic management in order to minimize interference between local and through traffic. This is in particular a factor in Callao, Lottsburg and Heathsville where on-street parking competes with through traffic. Within the villages that have not yet developed to the extent of experiencing traffic and parking interference, this issue should be addressed by including off-street parking requirements in the zoning ordinance and coordinating access to parking areas through site plan review. See the Section on the Highway Corridor Overlay District in the Land Use Plan, Chapter 3.

Further improvement in the function and safety of this road may be accomplished by reducing the number of access points. This is also addressed in the Highway Corridor Overlay District in Chapter 3.

Figure 4.2


Existing Conditions
N
W
E
S
LEGEND
Primary Roads
2-Lane Primary Highway
4-Lane Divided Highway
4-Lane Non-Divided Highway
2-Lane Secondary Roads
Tertiary / Feeder Roads
County Boundary
Water
Map Prepared by
Data Sources: Hydrography, County Boundary: USGS 1:100,000, Proposed Improvements: VDOT, 2003.
March 2005
VDOT
0.4 0 0.4 Miles

b. Two-lane Primaries

VA 200: This route links U.S. 360 at Burgess to Kilmarnock and from there via Route 3 to locations south of the Rappahannock River. It carries just slightly less traffic than U.S. 360 and serves as an extension of the central corridor that runs through the County. The 360/200 corridor serves all villages and constitutes an "economic corridor" within the County and also links the County with outside markets. Past improvements such as the improved bridge over the Great Wicomico River are consistent with the economic importance of Route 200. Accordingly, it warrants a major position in the comprehensive plan.

VA 202: This primary links Route U.S. 360 at Callao to Route 3 at Templeman. It is a more direct route to Northumberland County from the north and west than Route 3 via Warsaw and Kilmarnock. Yet it has been reported that traffic to Northumberland County from the west often uses the longer Route 3 via Warsaw rather than VA 202.

VA 201: This road, although classified as a primary, provides a much lower level of service than Routes 200 and 202. In terms of traffic using it and its alignment, 201 is more like a secondary road than a primary. Unless it is improved to standards similar to 200 or 202, the road will likely continue to serve at the level of a secondary feeder road. This plan continues to designate 201 as a primary, although the major priorities of the County may be better served by continuing to upgrade the corridor primaries.

c. Feeder Secondary Roads:

These are secondary roads that serve as feeder roads to developed areas and primary circulation throughout rural areas of the County. They are identified on the Highway Plan as feeder secondary roads and should be high on the VDOT list for maintenance and improvement.

3. Planned Highway Improvements by VDOT

The planned highway improvements are based on a six-year plan presented and updated annually by VDOT to the Board of Supervisors in November of each year.. Public input has been invited by VDOT at that time. This process should be improved to provide for more community input and therefore it is recommended that the Planning Commission hold a widely publicized public hearing each summer to solicit input from the community regarding road needs. The results of this hearing will be presented to the BOS the following month and, after review, subsequently transmitted to VDOT as the County's recommendations regarding the 6-Year Plan.

4. Public Transportation

At present Bay Transit provides an "on-demand" service throughout the County. A fixed route system is being investigated between major villages and towns in the Northern Neck. The County should monitor and support these investigations as part of a long range strategy to encourage fixed route systems including the villages in the County. This system is also discussed in Section G below.

5. Northumberland County Bicycle Facilities Plan

Non-roadway improvements such as bike lanes, sidewalks and greenways perform a vital community function by linking residential areas with non-residential areas such as businesses, schools, and historic or scenic sites. Links between residential areas may also be beneficial. In some instances, bikers, walkers and joggers may need to share the same facilities. However, the potential for user conflicts can be great in certain areas and in those instances it is preferable to create separate bikeways and sidewalks. If necessary, a wider joint use facility may be constructed with a narrow grass median or pavement striping to separate users.

Bicycle facilities should be promoted in subdivisions, on the county-designated Bicycle Trails and especially in more developed areas such as Reedville, Heathsville and the other villages. Priorities should be construction of bicycle facilities within developed areas prior to their extension outside of such areas unless a compelling connection to a recreation area or other public facility is deemed more important.

Bikeways are generally at least five (5) feet wide and are developed in three configurations:

Separate (Class I) - Separate and distinct from roadways. This configuration is generally the safest and most desirable but also the most expensive.

Separate Lanes (Paved Shoulders or Class II) - Paved shoulder adjacent to roadways. Pavement is marked with bicycle symbols and/or text. Roadway signs may also be provided for additional notice where warranted. This configuration is safe and convenient for most cyclists. Added benefit is recovery room for drivers that may need to swerve to avoid obstacles and prevention of road edge deterioration caused by vehicles leaving the roadway temporarily.

Shared Roadway (Class III) - Roadway signs only to alert motorists of designated bikeway routes and remind them to share the roadway as legally required. This configuration is the cheapest and easiest option to establish bikeways, but their use is only recommended for experienced cyclists or average to below average cyclists on roads with good sight distances and low traffic volumes.

While some people may believe bicycle use is just for children, safer facilities could encourage more people to use this form of transportation. In addition, certain persons would be able to safely ride a bike to work or other destinations near or far because they like to or they have to due to income limitations or license loss.

Bike paths and sidewalks should be considered in the design of improved and new road projects. Bikeways and sidewalks provide room for vehicles and people to safely coexist along heavily traveled roads. Construction of sidewalks and bikeways concurrent with road improvements is much easier and cheaper than retrofitting an existing road. Small projects such as painting bike lane stripes on existing roadways with sufficient pavement width could provide a useful start in providing facilities and getting motorists accustomed to dealing with bicycles in a more formal fashion. Additional smaller projects include the identification of existing and potential edge of pavement and sight distance problems that could be corrected through relatively minimal work such as asphalt patching, compacted gravel, minor grading or vegetation trimming.

The bicycle transportation goal of the County is to have an efficient transportation network that reinforces the goals of the Comprehensive Plan and offers alternatives to automobile dependency.

This goal should be implemented through a regional approach, using the Northern Neck Bicycle Trails plan with suitable segments for use by bicyclists, pedestrians and horse riders. The County should continue to participate in this strategy by working with the Northern Neck Planning District Commission as the transportation planning body for the region.

In addition, the strategy should include identification of bikeways and/or pedestrian facilities within major developments and encourage or require the construction of sidewalks and\or bike lanes as part of new subdivisions or commercial developments.

The strategy also includes the following:

- Emphasize primary highways and portions of roadways on the designated Bicycle Trails in establishing priorities for funding the provision of bicycle facilities throughout the County.

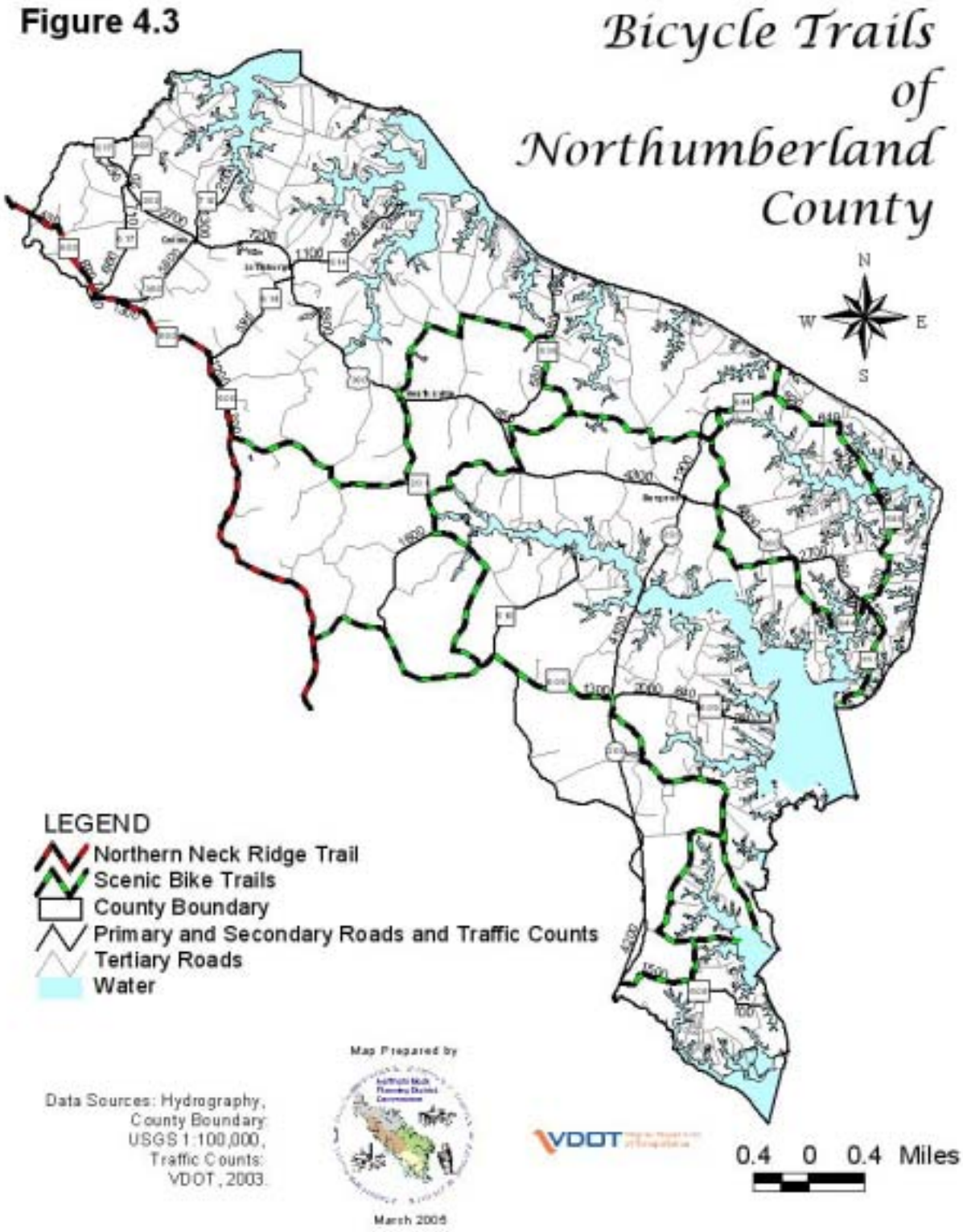
- Pursue the identification and correction of existing and potential edge of pavement and sight distance problems along bike routes designated as Signs Only.

- Pursue the installation of Share the Road signs along the designated Bicycle Trails to remind motorists of Virginia traffic laws and encourage safe habits

where automobiles, trucks and bicycles utilize the same roadways.

Figure 4.3 on the following page identifies the designated Bicycle Trails.

Figure 4.3


Bicycle Trails of Northumberland County
N
W
E
S
LEGEND
Northern Neck Ridge Trail
Scenic Bike Trails
County Boundary
Primary and Secondary Roads and Traffic Counts
Tertiary Roads
Water
Map Prepared by
Data Sources: Hydrography, County Boundary: USGS 1:100,000, Traffic Counts: VDOT, 2003.
March 2005
VDOT
0.4 0 0.4 Miles

C. RECREATIONAL AREAS AND FACILITIES

1. Existing Recreational Sites and Opportunities

Recreational opportunities in Northumberland County consist of a mixture of public and private facilities and programs, both land and water oriented. Some of the more significant facilities are illustrated in Figure 4.4 and identified below.

a. Athletic Fields.

The only county-operated athletic park is located adjacent to the Northumberland Middle School. It offers little league level baseball at the present time. The site contains two acres. School sites perhaps offer the most opportunities for active recreation, since each school has its own recreational area.

b. State Facilities.

State facilities include three large conservation areas. The Hughlett Point Natural Area Preserve contains about 204 acres. Facilities include parking, trails, a woodland boardwalk, wildlife viewing platforms, and interpretive signs. A second state-owned site, the Bush Mill Stream Natural Area Preserve, containing 103 acres is located near Howland off Route 624. The Department of Conservation and Recreation, Division of Natural Resources, has developed the Bush Mill site with a small parking area, scenic trails and overlooks and interpretive signs. The third site is Dameron Marsh Natural Area Preserve off VA 605 which extends into Chesapeake Bay. It is the largest wetland on the western side of Chesapeake Bay. Facilities include a walking trail and boardwalk, a wildlife viewing platform, and a small parking area. These were established as conservation areas under the control of the Department of Conservation and Recreation.

c. Chesapeake Bay Access.

In the Chesapeake Bay Area Access Plan (1990) both public and private areas for accessing public waters in Northumberland County were identified. Thirty access points were examined of which 14 are publicly owned and the remaining 16 are private. The private facilities include both commercial marinas and membership associations. The two tables on the following pages identify the major features of each of these sites.

Table 4.1 gives a listing of public sites together with the specific recreational opportunities available at each site. The most dominant activities are (i) fishing that is available at all but two of the sites and (ii) trailer boat launching facilities available at about half of the facilities. Beach access by the public is available at Vir-Mar Beach. Hughlett Point Nature Preserve and Kohl's Island. Kohl's Island incorporates Smith Point itself and a beach to the west of where the Potomac River empties into the Chesapeake Bay, is owned by the Virginia Outdoors Foundation. No public access by land exists, or is planned and access can only be gained by boat. One of the concerns continually expressed by citizens was a need for more access to beaches. Greater beach access would also support the tourist business of the County as well as serve the needs of county residents. While it is true that many residents have access to the beach from waterfront homes or from membership associations, other residents of the County do not have the same access to the waterfront. Another concern is access to public picnic tables and restrooms.

The Chesapeake Bay Access Plan indicated that "numerous beaches exist along protected shorelines. These beaches are often informal access areas, located on private property. Many receive heavy use by those familiar with the area and can be reached only by boat. They should be evaluated to determine suitability for future development for public use", according to that plan another resource for access to the Bay are tour boats and charter fishing boats, the latter being available from numerous private sources in Northumberland County and throughout the Northern Neck

The County would also like to have public water access to take the pressure off shoreline development and encourage attractive, affordable housing inland.

Table 4.1
PUBLICLY-OPERATED PUBLIC ACCESS FACILITIES TO THE CHESAPEAKE BAY
Northumberland County

SITE IDENTIFICATION	Trailer Boat Landing	Marina (No. of Slips)	Fishing (Pier or Bank)	Beach (Swim-ming)	Nature Study Area	Picnic Area	Camping Area
Hampton Hall Creek Landing Hampton Hall Creek			X				
Lodge Landing, Lodge Creek	X		X				
Forrest Landing, Coan River	X		X				
Rowes Landing, Coan River	X		X				
Vir-Mar Beach, Potomac River				X	X	X	
Shipping Point Landing, Little Wicomico River			X				
Shell Landing, Cockrell Cr.	X		X				
Cranes Creek Ldg., Cranes Cr.	X		X				
Cedar Point Ldg., Great Wicomico River.	X		X				
Coopers Ldg.,Gr. Wicomico R.	X		X				

Table 4.1
PUBLICLY-OPERATED PUBLIC ACCESS FACILITIES TO THE CHESAPEAKE BAY
Northumberland County

SITE IDENTIFICATION	Trailer Boat Landing	Marina (No. of Slips)	Fishing (Pier or Bank)	Beach (Swim-ming)	Nature Study Area	Picnic Area	Camping Area
Sampsons Wharf	X		X				
Great Wicomico Fishing Pier, Wicomico River.			X			X	
Hughlett Point				X	X		
Bush Mill Stream Natural Area Preserve, Bush Mill Stream					X		
Dameron Marsh Natural Area Preserve, Chesapeake Bay					X		

Source: Modified from Chesapeake Bay Area Public Access Plan, 1990; and Planning Commission Members.

Northumberland County Public Water Access Improvement Project[2]

The 1996 Northumberland County Comprehensive Plan pointed out the lack of public water access points in the county for citizens. The County has 14 power boat ramps; however, there are few opportunities for those citizens, who want to bank-fish, crab, launch canoes and/or kayaks. The county does have Vir-Mar Beach, a small (250 ft) long beach area on the Potomac River for fishing, crabbing, swimming and/or picnicking.

The Northumberland County Planning Commission has been working for over five years towards improving public water access for Northumberland County citizens. To that end, Northumberland County, with assistance from the Northern Neck Planning District Commission submitted a grant application for a public fishing pier on the Great Wicomico River to The Virginia Department of Environmental Quality's Coastal Program (funded by the National Oceanic and Atmospheric Administration) in 1999. To secure matching funds, the County submitted another grant application to the Virginia Marine Resources Commission's Recreational Saltwater Fishing Fund in 2000. Both grants were awarded, and the County now has a public fishing/crabbing pier to serve its citizens on the south side of the Great Wicomico River Bridge.

However, there are still many opportunities to increase access to state waters within Northumberland County, especially to increase handicap accessibility, and to provide adequate parking for cars and trailers. This plan seeks to address those opportunities.

One goal that might increase tourism and recreational opportunities would be to establish

2 More detail including details of improvements, maps and cost estimates are included in Northumberland County Public Water Access Improvement Project – 2004, Grant Application to the Jesse Ball DuPont Foundation, James W. Stone, Secretary Northumberland County Planning Commission.

a sufficient number of canoe/kayak launching facilities so that a “trail” would be created, allowing individuals not only to launch and return to a variety of sites, but to “tour” the County by water.

Four planned improvements to public water access sites will fulfill some of these needs for individual natural, water dependent, recreational opportunities, while emphasizing handicap accessibility. Two sites are existing powerboat launching ramps (Coopers Landing, and Rowes Landing), the other two sites are new water access points (Hampton Hall Creek and Great Wicomico River)..

Coopers Landing

Coopers Landing is a public power boat launch facility in the upper reaches of the Great Wicomico River at the end of State Route 707, owned by the County of Northumberland. There is one active concrete launch ramp and a second ramp unsuitable for launching power boats but suitable for canoes, kayaks and/or car top boats. The Landing gets considerable use from recreational bank fishermen and crabbers. A 72 x 8 foot fishing pier is planned for this site between the two launch ramps to augment the existing 30 inch launching walkway.

Rowes Landing

Rowes Landing is an existing powerboat launch ramp, at the end of State Route 601 in Heathsville, with a gravel turnaround, concrete boat ramp, and small fixed boat launching pier, owned by the County of Northumberland. Due to several recent bad winters, ice has lifted several pilings on the east edge of the existing pier, causing the pier decking boards to be higher on the right side of the pier than the left side. The proposed improvements are to correct the problems with the pier; then to add a 10 foot by 6 foot floating canoe/kayak launch platform, on the opposite side of the pier from the boat launch ramp so as not to interfere with the powerboat launching function of the site

Hampton Hall Creek

The Hampton Hall Creek site is a former public water access site on Route 202 adjacent to the border of Westmoreland and Northumberland County. This public water access site was abandoned many years ago. The plan is to reinstate this site as a public water access point, and construct a canoe/kayak/car top boat launch facility.

A floating pier with a fixed 30 foot by 6 foot entrance deck, and 20 foot by 6 foot moveable ramp and 10 foot x 6 foot floating launch platform is planned to be built adjacent to the access road's turnaround. The floating deck should be very near the surface of the water, making entering and exiting a kayak easy. Vegetation around the kayak launch should be cleared to afford bank-fishing opportunities for land-based anglers.

The County owns the land, and the old roadbed is still intact that terminates at the edge of Hampton Hall Creek.

Great Wicomico River

A new public water access site adjacent to the newly improved Great Wicomico River Public Fishing Pier, under the Rt. 200 Bridge is planned. The planned canoe/kayak launching pier site is located on land owned by the Virginia Department of Transportation (VDOT), however, the County of Northumberland has obtained written permission from the Warsaw Residency of the Virginia Department of Transportation for the construction of a canoe/kayak launching platform at the site. The canoe/kayak launching pier should be very basic. The existing shoreline is a gently sloping sand beach, which is very conducive to launching human powered watercraft. The pier should be an 8 foot by 10 foot ramp connecting to a 12 foot by 16 foot floating platform. The floating platform should be close to the water surface that should allow easy entry for those persons launching kayaks.

As Table 4.1 illustrates, there are two public beaches in the County, Hughlett Point and Vir-Mar Beach at the end of Route 806 near Hacks Neck. Vir-Mar Beach is only 250 feet long, has no improvements and the beach is not protected from sea nettles.

Table 4.2 lists 12 marinas that provided 725 boat slips in 2004. These are commercial marinas available to the public and offering not only boat storage but fuel, food sales, restrooms, and boat repairs. There are many additional “membership” marinas available that provide access to a limited clientele. Many of these are controlled by Homeowners Associations. Northumberland County's unique location at the mouth of the Potomac River near the middle of the Chesapeake Bay makes this one of the more popular destinations for recreational boating and fishing.

Table 4.2
PRIVATELY OPERATED ACCESS FACILITIES TO THE CHESAPEAKE BAY
Northumberland County

SITE IDENTIFICATION	Trailer Boat Landing	Marina (No. of Slips)	Fishing (Pier or Bank)	Beach (Swim-ming)	Nature Study Area	Picnic Area	Camping Area
Coan River Marina, Coan R.	X	63					
Lake Francis Marina, Kingscote Cr.	X	34					
Olversons Marina, Lodge Cr.	X	229					
Lewisetta Marina	X	26					
Krentz Marina,	X	35					
Cockrell’s Marina	X						
Smith Pt. Marina/Campground, Slough Cr.	X	115					X
Gaps Marina, Slough Cr.		26					

Table 4.2
PRIVATELY OPERATED ACCESS FACILITIES TO THE CHESAPEAKE BAY
Northumberland County

SITE IDENTIFICATION	Trailer Boat Landing	Marina (No. of Slips)	Fishing (Pier or Bank)	Beach (Swim-ming)	Nature Study Area	Picnic Area	Camping Area
Buzzards Point Marina, Cockrell Cr.		59					
Horn Harbor Marina, Campground & Restaurant, Gr. Wicomico R.	X	30					X
Ingram Bay Marina	X	50					
Smith Point KOA		20					X
Glebe Point Campground		18					X
Reedville Marina		20					

Source: Modified from the Chesapeake Bay Public Access Plan, 1990 and Virginia Department of Health, 2005

d. The Northumberland Family YMCA

The Northumberland Family YMCA is a program-based YMCA currently operating from the County facility near the old Courthouse. They operate several programs through a partnership with the Northumberland County Public Schools. These include After School Care, Summer Day Camp, and various sports activities at the three schools in the County. Recognizing the growing need for family recreational opportunities, the YMCA has begun planning for a full facility, possibly to be collocated on the County property adjacent to the Middle and Elementary Schools. Upon completion this facility should house a full health and wellness center, group exercise center child watch center and an indoor pool,

e. Golf Courses

Three golf courses are located within Northumberland County. Indian Creek golf course is part of a group of recreational facilities offered by the Indian Creek Yacht and Country Club. The Village Green golf course is located on Route 360 just west of Callao. Quinton Oaks golf course is also located within the County outside Village and off Route 600.

2. Conclusions Regarding Recreational Facilities

Northumberland County's major recreational offering is its access to 556 miles of shoreline of the Chesapeake Bay and its tributary rivers and creeks. Sport fishing, recreational boating and sailing also provide a stimulus for summer tourism thereby contributing greatly to the economy of the County through marine sales and operation of marinas, including repairs and fuel sales. In addition, the boats that are based permanently in the County provide a significant contribution to the tax base. It should be a major policy of the County to promote the development of quality boating facilities for

both public and commercial use. In the same sense, public beaches may also contribute to the economy of the County while providing a major recreational service for local citizens. One needs only to look at the growth of other communities along the East Coast to see that public beaches attract significant investment that satisfies a market for recreation. The growth of sport and recreational boating, combined with expanded beaches and controlled beach front development, offers a substantial opportunity for the growth of Northumberland County's economy.

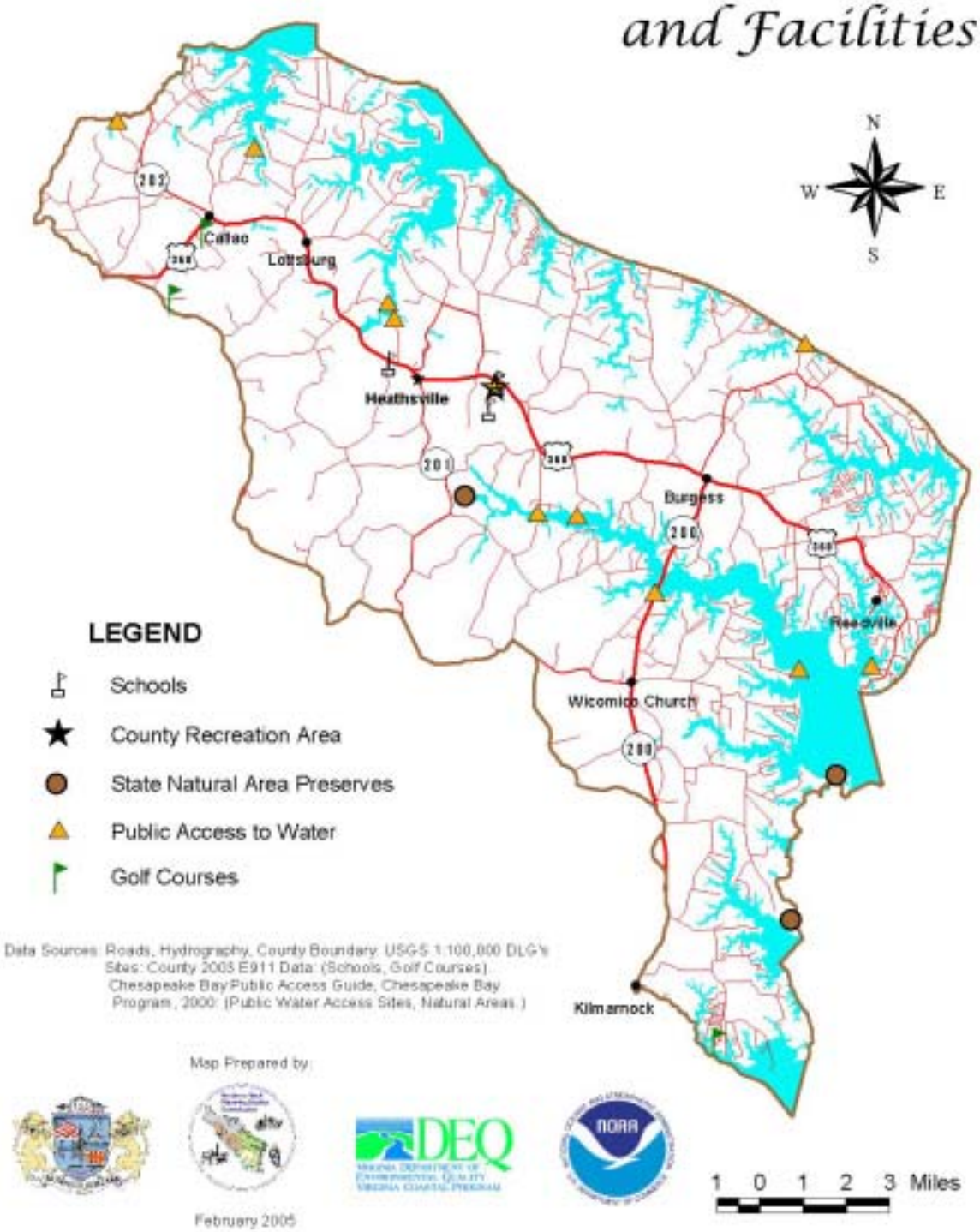
Vir-Mar Beach facilities were removed in the mid-1990s due to misuse and the difficulty in providing security. The County should explore the re-establishment of picnic and rest room facilities at Vir-Mar Beach.

In the area of public recreation the focus of recreational planning should be on services that serve the local population of all ages. At the present public recreation that is offered is limited by the amount of land available. This includes a single public playfield at the Middle School and use of school sites whenever they are not in use by the school program.

The County should plan to have a public park oriented toward children and young adults. The neighborhood-type park should have tennis courts, a jungle gym, basketball court and other amenities and be located off the water. Consideration should also be given for a comparable public facility oriented toward the retired community.

Figure 4.4

Recreational Areas and Facilities



As future plans are made for recreational facility development, the following general standards that have been used in other parts of Virginia as well as nationally may be helpful. These standards have been found to provide a satisfactory number and distribution of recreational facilities in typical communities.

a. Baseball and softball fields: Baseball is played in almost all communities and by nearly all ages. . Fields that are designed for youth baseball can also be used for adult softball since both use the same base spacing. The major difference is that softball requires a little longer pitching distance and longer outfield. A rule of thumb for ball fields in a community is at least one ball field for every 6000 persons. Considering the demographics, two should be sufficient for Northumberland County, but because of the distance between upper and lower parts of the County others may be required in order to provide service to all parts of the County.

b. Basketball: This is another popular activity among youth. Schools may provide enough basketball courts to meet this need if they are spaced throughout the community appropriately. Both the Callao and Fairfield school sites have basketball courts. The general standard for basketball courts is one court for every 500-1000 persons.

c. Tennis: The demand for tennis depends upon the importance of this game to each locality. There is a state standard that suggests one tennis court for every 2000 persons. At least one court should be available at the Middle School and two at the High School..

d. Swimming Pools: The state standard suggests a swimming pool for every 10,000 persons. At present a public swimming pool is not available in Northumberland County for swimming lessons and competitive activities and adult recreation. The planning for the Middle School should include the option for a pool to be shared with the High School.

Future efforts to provide opportunities for recreation in Northumberland County should be focused on establishing a basic infrastructure of facilities similar to and in the amounts suggested above. The next step is to secure sites for the facilities with the facilities themselves being added as funds are available. .

D. PUBLIC BUILDINGS AND SCHOOL FACILITIES

This section addresses the public buildings used for the County administrative offices and courts related uses, the Sheriff's department, and the buildings used for the County school system. The location of each of these facilities is indicated in Figure 4.5. Information on the County administrative office needs was obtained through discussions with County officials and department heads. Information on the County school buildings was obtained from material provided by the Superintendent of Schools to the Board of

Supervisors.

The Northumberland County Library, which has facilities for public meetings, is an important contribution to public services to the County residents as is the Fisherman's Museum located in Reedville.

1. Administrative Offices

County administrative offices, courts facilities, sheriff's office and other government functions are centrally located in Heathsville in or near the courthouse. With the completion of the new courts facility for the General District Court, the Circuit Court, Clerks of both courts, and the Juvenile and Domestic Court Services units, their space and facility requirements outlined in the last version of this Comprehensive Plan have been met for the foreseeable future.. These are located in a separate building behind the existing courthouse.

The Commissioner of the Revenues and the Treasurer's requirements for additional office space were met when the court clerk relocated from the first floor of the courthouse to the new facility. The existing courthouse building needs to be renovated to add an elevator and provide handicap access to the basement areas which meets the Americans with Disabilities Act. Social Services, Health, , and the Cooperative Extension Service have sufficient space in their existing locations and should not likely experience significant growth in the foreseeable future.

The Sheriff's building was expanded to accommodate the needs of the new E-911 emergency dispatch system. The movement of dispatchers to the 911 space made additional office space available for use as desk space for some of the deputies. More space is required to accommodate current and future communications equipment and computer systems.

Participation in the Regional Jail has eliminated the requirement to accommodate inmates in the Sheriff's building.

2. Other Public and Quasi-Public Facilities

The Northumberland Public Library located on U.S. Route 360 in Heathsville is available to the public and is a valuable resource. The Library is open 62 hours a week, including Saturdays and some evenings.

The Library is an important aspect of life in Northumberland County. Library attendance in 2004 was approximately 32,000 and has been growing at a rate of 5% or greater per year. 35% of the County population holds library cards. The card catalog is also available online.

The collection consists of approximately 35,000 books and materials and provides free internet broadband access through the Library computer center and also offers high speed wireless WiFi service to patrons with laptops.

There is a planned balance in the collection between the user demographics and the classes of items. Additional emphasis has been given to audio books and videos to meet the needs of the older population and the disabled. A children's librarian focuses on pre-school and elementary school children and a new "Homework Center" focuses

on Middle and High School students.

The Library is a very busy place and lack of additional space is becoming a problem. The Library Long Range Plan and the Expansion Plan both address the needs of the future and expected growth in the County.

3. School Facilities

Schools are provided in Northumberland County School system by a Board of Education through the office of the Superintendent of Schools. The Board, together with its administrative staff is responsible for providing a system of public school facilities and an educational program of high quality. The population range from which most of the school enrollment comes has remained almost constant since 1980 and state estimates suggest this trend should continue for the next 10 to 15 years. Following are the estimates of population for the age group 0 to 19 for the last three decennial censuses and projections by the Virginia Employment Commission for the next two census years (Refer to Table 2.1, Appendix A).

YEAR	1980	1990	2000	2010	2020
Population	2485	2305	2491	2804	3356

Demographic trends show that although population growth has been occurring in Northumberland County, most of the growth is occurring in the adult population. The analysis referred to above reports that the age group from 20 to 44, customarily referred to as the "childbearing age" is projected by the state to remain constant at approximately 3000 persons through 2010. In addition, the older population is growing not only demographically but by the attraction of Northumberland County as a place for retirement. These forecasts point to an era of little growth potential for school enrollment.

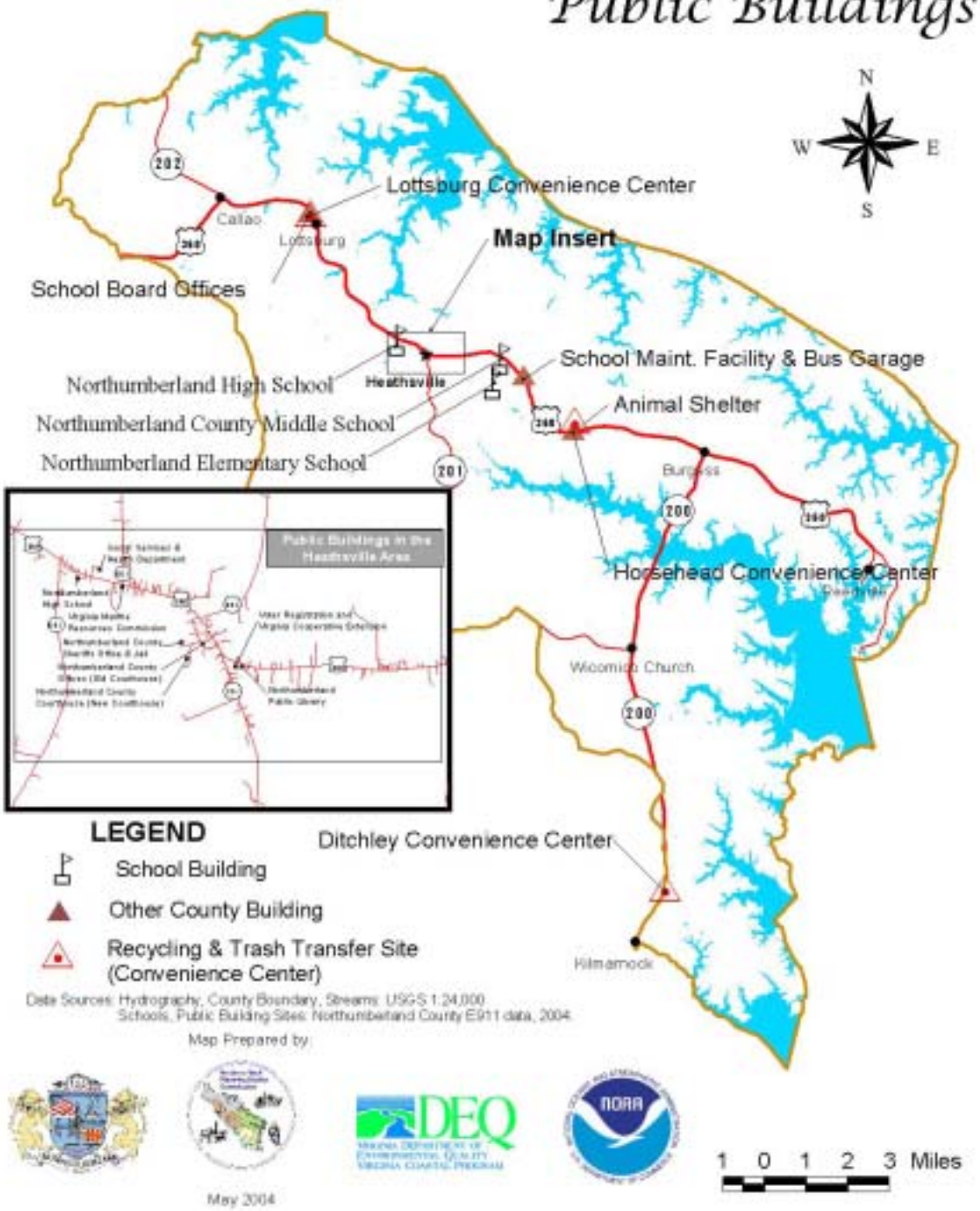
The County opened the Northumberland Elementary School in 1996. This facility replaced the elementary schools at Fairfield and Callao. Northumberland Middle School and Northumberland High School continue to serve the upper grades. The school system projects that school membership in the next five to ten years should remain fairly steady. The schools are identified in Figure 4.5 and described in the following paragraphs:

- Northumberland Elementary School

  This elementary school is designed for an enrollment of 750 students from preschool to kindergarten through the fifth grade. Its design features some of the latest technology, including pre-wiring for computer networks in each classroom area. School system projections indicate that the elementary school enrollment should remain steady or gradually increase in the future; therefore it should have sufficient capacity until growth patterns in young families increase. Current enrollment is approximately 650 students.

Figure 4.5

Schools and Other Public Buildings



May 2004

- Northumberland Middle School

  This facility is the oldest in the school system and it is currently accommodating about 370 students. There is a space shortage at this facility which has required the conversion of the stage area and the shop to classroom space. Temporary classroom units are also in use due to the lack of classroom space. This facility is scheduled for (replacement or renovation) **(Decision expected to be made prior to approval of this Comp Plan and wording will be changed accordingly**.)

- Northumberland High School

  The 2005 high school enrollment is about 450 students which exceeds the basic classroom capacity of the building. Trailers are being used for classroom space. The current available space is inadequate at this time to meet present and future program requirements. Significant issues exist regarding the alternatives for meeting the educational needs of the High School. These were discussed during the decision on the Middle School and included renovation versus relocation near the Middle School and the feasibility of co-locating the three schools at some point in the future.

Overall, the present school system's capacity appears to be fairly evenly matched with the number of students. The educational needs at the Middle School have been resolved and the focus is shifting to resolving the problems at the High School. And with little growth foreseen in enrollment, future school planning can focus on matching the facilities with the education needs of the community.

An analysis of recreational space suggests that the playfields could increase the opportunities for full-time recreation. The buildings present other opportunities such as the current use of offices for the School Board. The current strategy which was discussed during the decision to renovate or replace the Middle School is to take aggressive action to convert these buildings for various uses including: economic enterprises, housing, community service buildings, community colleges and the like.

There are educational and economic advantages as well as benefits to the community to co-locate the high school on the property along Academic Lane near the Middle School. The resulting campus could include an acoustically satisfactory auditorium as well as a sports complex with a gymnasium, indoor pool, playing fields and tennis courts as outlined previously in Section C above. A detailed analysis and plan should be prepared to ensure there is sufficient usable space to accommodate these concepts and accommodate future growth.

In addition, under the assumption other facilities may be added to the property owned by the County where the Middle School and Elementary School are currently located,

planning should include consideration of the eventual use of the total property for the uses outlined in the paragraph above. Therefore, the planning should consider the total parcel as a unit including integrated water and sewage systems, roadways, parking, underground utilities and the use of Low Impact Development principles for stormwater control. Space and capacity should be set aside for those facilities not included in near term plans.

E. WATER SUPPLY AND SEWAGE DISPOSAL

1. Water Supply

An examination of water sources is presented in Chapter 1 as part of the analysis of environmental conditions. That chapter identified groundwater as the present source of potable water supply for Northumberland County. Water comes from three aquifers: the surficial or water table aquifer, the Chickahominy-Piney Point aquifer (the so-called "intermediate artesian aquifer"), and the Brightseat-Upper Potomac aquifer (the so-called "principal artesian aquifer"). Today most large water users take ground water from the Brightseat-Upper Potomac artesian aquifer, and it is anticipated that this aquifer will experience the most development in the next decade or so. Numerous households, however, that are not on a community water system; take water from the water table aquifer, the one closest to the surface.

State surveys have indicated that the aquifers should provide an adequate supply of potable water to the County well into the 21st century. However, it appears certain that continued withdrawal of artesian water at current rates, causing water level declines of 1.1 feet/year, are ultimately not sustainable. Currently, declining water levels in the artesian aquifers of Northumberland County are caused predominantly by ground water withdrawals by large water users in Southern Maryland and the West Point (King William County) region. In the future, increasing economic and residential development in Northumberland County will place additional stress on the ability of the artesian aquifers and accelerate water level decline. Data on these users and the rates of decline are provided in Section 3 of Appendix A.

The Health Department classifies water systems as community, transient or non-transient water systems. A community water system is one that serves 14 or more houses or 25 or more persons for at least six months per year. A transient public water system is a class that is used by motels, restaurants and similar uses. A non-transient system is the same as a community water system but is used less than six months per year.

The Three Rivers Health District listed 54 public water systems in Northumberland County in 1995. These were distributed among the above three classes as follows: 28 community water systems; 8 transient systems; and 18 non-transient systems.

Figure 4.6 illustrates the locations of most of the major public water systems currently in

service. The map displays 36 systems including the community systems and some non-transient systems such as public schools and systems serving larger employers.

Future needs over the next 20 years and beyond for potable water are a significant planning issue for Northumberland County as discussed in Chapter 1. There appears to sufficient groundwater in the deeper aquifers for the next several decades. Eventually, the artesian aquifers will cease to supply an adequate quantity of potable water and alternative supplies will be required.

If large-scale development of the type that is developing in many communities along the Mid-Atlantic States comes to Northumberland County, or to nearby communities using the same aquifers (as is already happening in Maryland to the detriment of both artesian aquifers) water supply will become a more immediate problem.

Such development, however, may be regulated and required to provide its own water system in scale with need. It would be prudent on the County's part, however to have an alternative source of potable water supply. This is particularly true because of the County's proximity to sea water. Major withdrawals even in the upper reaches of the lower aquifers combined with pressure from sea water would modify adversely the quality of water available in the aquifers.

A long-range strategy of surface impoundments is prudent.

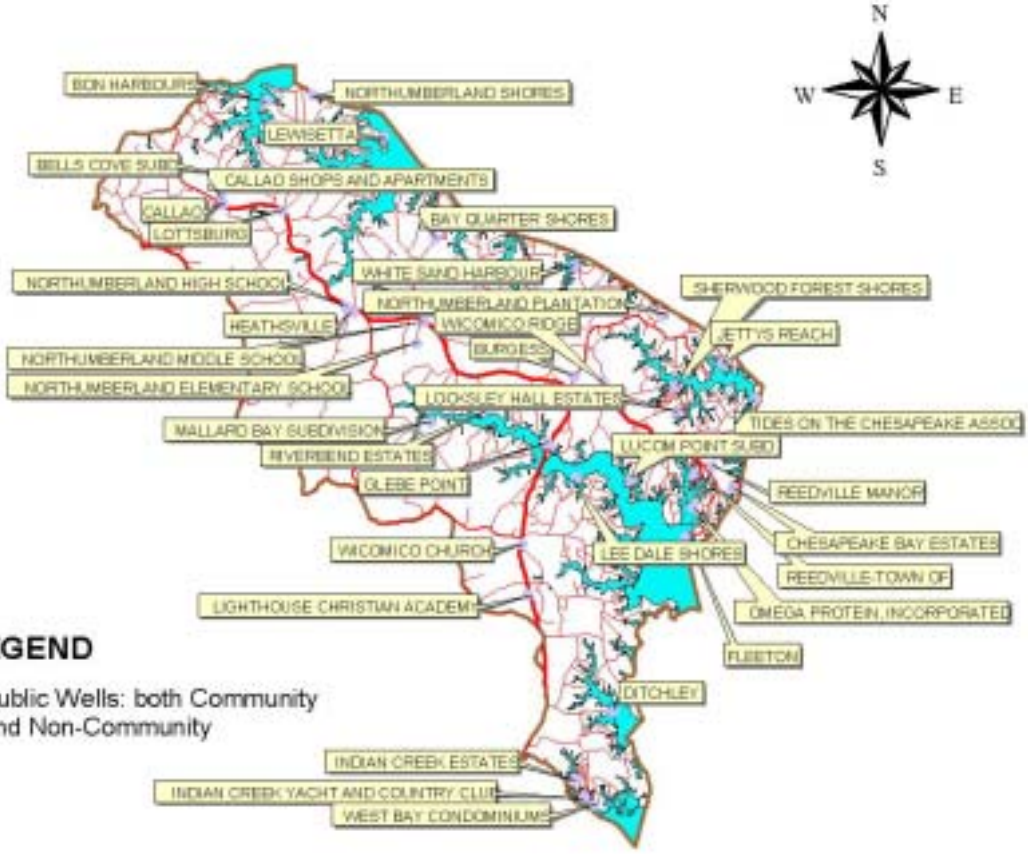
The 1969 report prepared for NNPDC by Martin, Clifford and Associates identified nine (9) reservoir sites in Northumberland County. All these sites should be permitted to develop only as consistent with a future public water supply. The sites of greatest potential include:

Site	Serving	Acres	Million gallons/day
Lodge Creek	Callao	118	1.05
Mill Creek	Wicomico Church	163	0.35
Sydnor's Mill	Burgess and points east	328	0.48
Crabbe Mill	Heathsville	310	0.56

These four reservoirs could provide 2.4 million gallons/day, enough to serve 24,000 people assuming typical water usage of 100 gallons/day/person. These four reservoirs should provide abundant water for the foreseeable future recognizing that some citizens not easily served by a public supply will remain on either artesian or shallow wells. Because most of the population of the county is in the northeast, and that is where growth is likely to be highest, it will ultimately be necessary to connect the reservoirs. It would be advantageous to Lancaster County to utilize Mill Creek reservoir and the two adjacent counties should coordinate planning.

Figure 4.6

Community Public Water Systems



Data Sources: Roads, Hydrography, County Boundary: USGS 1:100,000 DLG's
Well Locations: Virginia Department of Health (VDH), Source Water Assessment Program (SWAP) GIS Data, February 2003.

Map Prepared by:

March 2005

2. Sewage Disposal

The general mode of sewage disposal in Northumberland County is the septic tank; the exceptions are at Fleeton, Reedville and Callao where a public sewerage system been established. The systems are operated by the Reedville Sanitary District which is governed by the County Board of Supervisors. The Sanitary District was originally designed to serve the town of Reedville but it was expanded in order to extend coverage to the Blackberry Community Development Project Area, Fleeton and Callao.

Figure 4.7 shows sanitary sewage facilities in the Reedville and Callao areas. Also shown on this map are the general locations of the pumping stations and the treatment plants. The Reedville plant is located across Cockrell Creek near the Omega Protein Facilities, which is also served by the Reedville system.

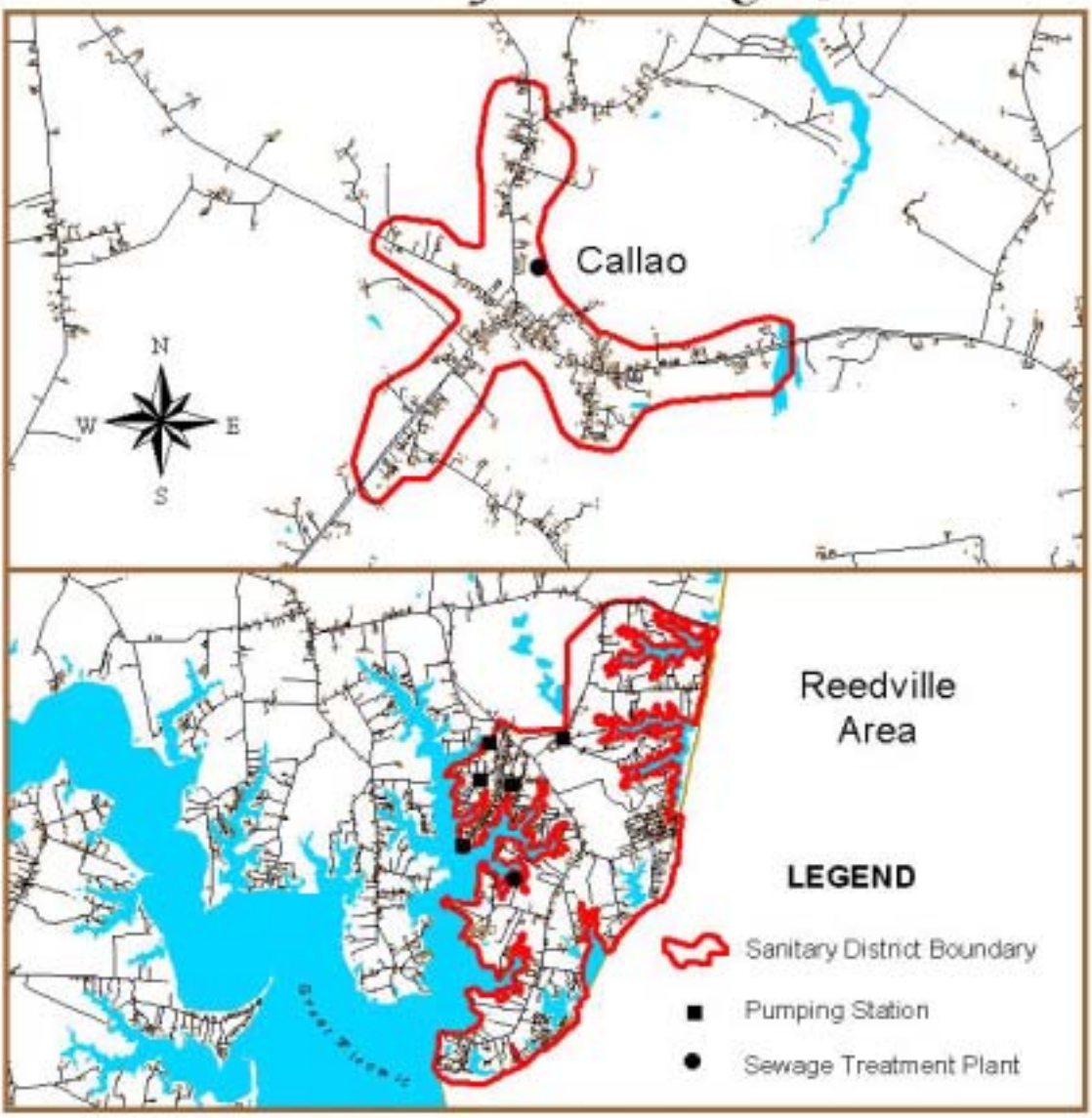
With the addition of the Fleeton community, the system is presently operating at a high percentage of its total capacity. The Reedville treatment plant is designed to treat 200,000 gallons per day and the Callao plant 60,000 gallons per day.

Other areas of the County show signs of developing into active commercial areas even without sewers. There are signs of growth at Burgess and at Heathsville, and in the long-range picture these areas would likely experience more development if sewer systems were available.
But there is the constraint of economic and financial feasibility. The Fleeton expansion at Reedville and the Callao sewer system received grants of 75% of the construction costs leaving the remainder to be borrowed by the County and the debt serviced by the monthly fees. In general, future expansions of the existing systems are encouraged where there is no financial impact on current patrons caused by the expansion.

There is a problem in the lower end of the County at the Indian Creek community. Soil problems and other constraints have led the County to apply for a grant to install a community sewer system similar to Callao. The available options are very limited should the grant application be rejected.

None of the other villages of the County appear to meet the current requirements for similar grants because of the low population densities. The monthly rates would have to be too high even with a comparable percentage of the funding in grants. Nevertheless, the potential exists in these areas for commercial development and the establishment of new jobs. This is sufficient reason to continually monitor and examine the feasibility of establishing sewer systems at each location, and when determined to be feasible and cost-effective, to actively pursue them.

Figure 4.7 *Sanitary Sewerage Facilities*



Data Sources: Hydrography, County Boundary: USGS 1:24,000 Topographic Quadrangles.
Roads, Building Footprints: Northumberland E-911 data.
Sewered Areas: Virginia Department of Health, Division of Shellfish Sanitation, modified with Northumberland County Staff input, (Fleeton extension and Callao region).

Map Prepared by:

February 2005

2 0 2 4 6 Miles

Upgrades of existing facilities to reduce the discharge of nitrate and phosphate to local waterways should be planned. New facilities should be designed with state-of-the-art nutrient reduction technology. Upgrading the Reedville plant to reduce nutrient discharge and to accept septic pump-out should proceed simultaneously in order to realize cost savings. At least one of the current sewage systems should be adapted to accept septic system pump-out.

F. OTHER PUBLIC AND QUASI-PUBLIC SERVICES

1. Emergency Services

Emergency services are available in Northumberland County through volunteer fire departments and volunteer rescue squads. Communications are coordinated through the Sheriffs office. Figures 4.8 and 4.9 identify the locations of fire and rescue facilities within the County and the area served by each facility.

Fire departments serving Northumberland County include the following fire stations:

- The Callao Volunteer Fire Department: serves the northern part of the County to Horsehead.

- The Fairfield Volunteer Fire Department: serves the eastern portion of the County approximately from Horsehead to the Chesapeake Bay and the southern portion to about one mile below Wicomico Church. This fire company's main station is in Reedville with a sub-station located on Route 200 between Burgess and Glebe Point.

- The Kilmarnock Volunteer Fire Department: serves the remainder of the County from the point served by the Fairfield Company to the county line (shaded area on Figure 4.8).

- The Upper Lancaster County Volunteer Fire Department serves a small portion of Northumberland County between Mill Creek and Route 615 (county line).

Figure 4.8

Fire Districts

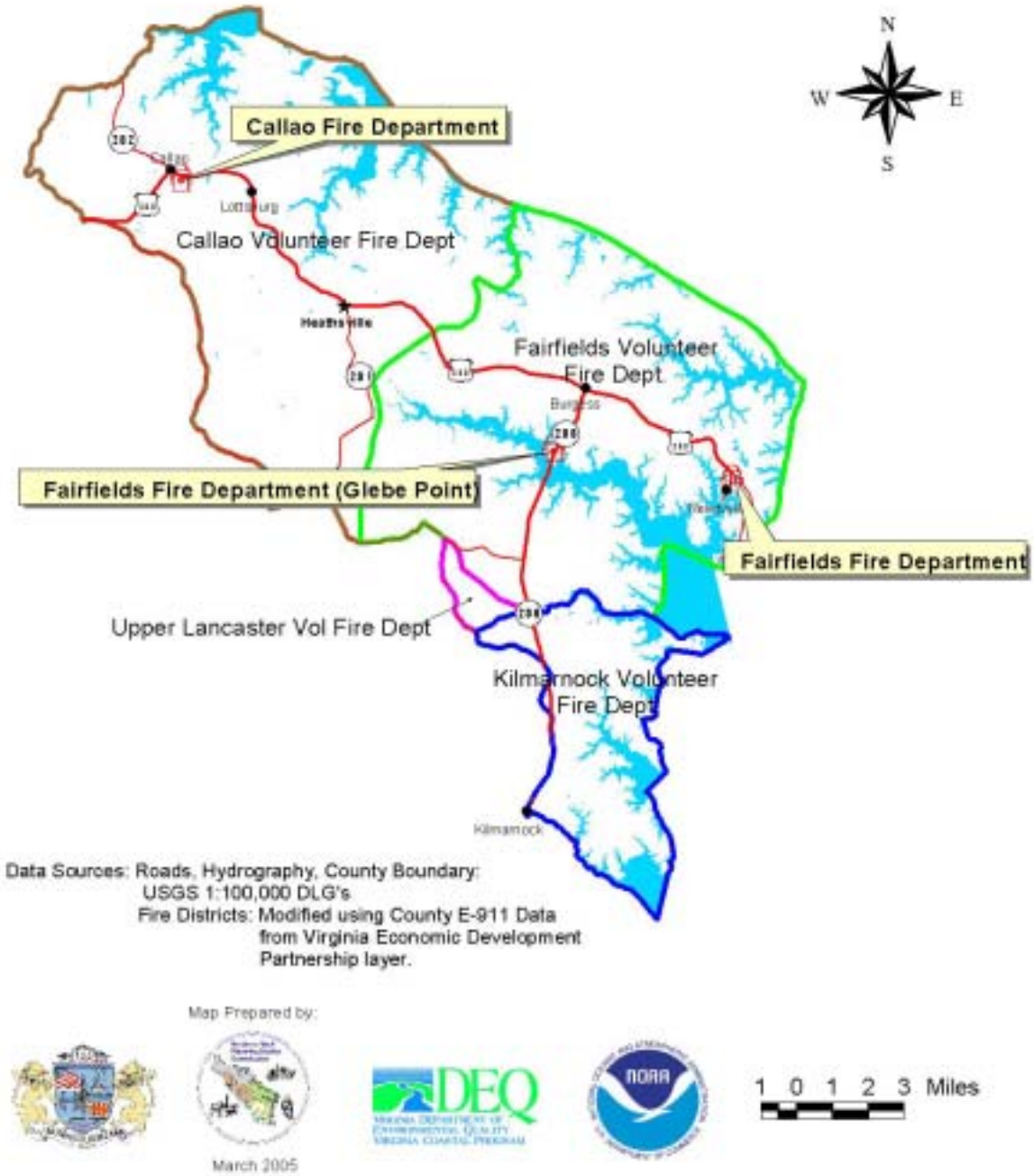
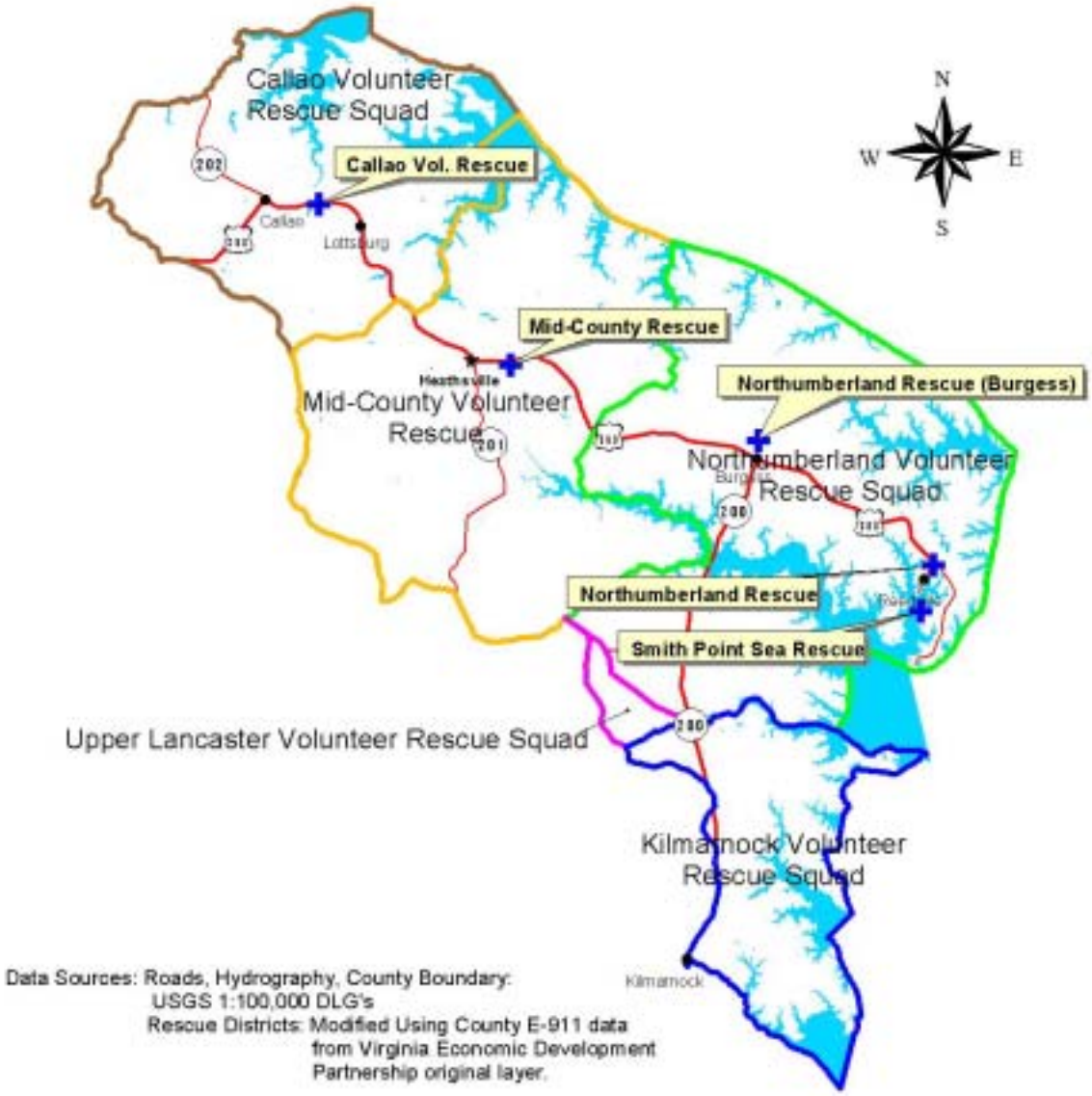


Figure 4.9

Rescue Districts



Data Sources: Roads, Hydrography, County Boundary:
USGS 1:100,000 DLG's
Rescue Districts: Modified Using County E-911 data
from Virginia Economic Development
Partnership original layer.

Map Prepared by:

March 2005

1 0 1 2 3 Miles

Rescue squads serving Northumberland County are:

- The Callao Volunteer Rescue Squad serves the western part of the County from the county line to the Coan River.

- The Mid-County Volunteer Rescue Squad located just east of Heathsville serves the area from the Coan River to an area marked approximately by Horse Head, Hull Creek, Great Wicomico River and Browns Store.

- The Fairfield Volunteer Rescue Squad serves approximately the same area as the Fairfield Fire Department and also operates through a main station at Reedville and a sub station at Burgess.

- The Kilmarnock Volunteer Rescue Squad serves the southern tip of the county from just below Wicomico Church, the same area served by the Kilmarnock Fire Department. The portion of the County served by the Lancaster Volunteer Fire Department is provided with Rescue Service by the Kilmarnock Rescue Squad.

- Smith Point Sea Rescue, operated by volunteers, provides a search and rescue service.

At present these services are provided by all-volunteer organizations, there are no paid personnel. As indicated in the demographics, the County contains an aging population and it is to be expected that an increasing number of calls will be for rescue squad services to transport persons to hospitals. This will place a further strain on personnel, especially if the volunteers are drawn away from their places of employment. The County needs to encourage and support recruitment of volunteers.

The volunteer rescue squads and fire departments need to perform a coordinated analysis and plan to address the changing demographics. This includes investigating the need for additional Fire Substations in villages such as Heathsville.

2. Solid Waste Services

The solid waste system serving Northumberland County consists of three solid-waste collection stations which provide facilities for citizens to dispose of their refuse and recyclables into appropriate bins. The bins are then transported to a land fill in another jurisdiction by a private contractor. The locations of the collection stations (Convenience Centers) are shown on Figure 4.5. They are located as follows:

- Lottsburg on land which was part of a school site; now beside the School Board offices.
- East of Horse Head on U.S. 360.
- On Route 200 between Wicomico Church and the County line.

A typical solid waste collection site occupies about an acre and contains the following:

- Container with compactor that can be transported by truck.
- Spare container
- Recycle box (1 or 2)
- An attendant is stationed at each site.

While the present sites offer a solid waste disposal system, including recycling, in different parts of the County, concern was expressed in meetings of a need to have a more visible program for disposing of household wastes which are classified as hazardous. Typical wastes in this category include old motor oil, paint cans, and household or garden pesticides and anti-freeze.

3. Animal Shelter

A fenced animal shelter has been built on the property currently used for solid waste disposal on U.S. 360 near Horsehead. This facility can house 20 dogs and a recent expansion provides space for cats. It is operated by volunteers and managed by the Animal Warden who is supervised by the Sheriff.

4. Emergency Preparedness

Hurricane Isabel hit Northumberland County on Thursday September 18, 2003 and caused extensive damage to trees and the power grid and also caused water damage from storm surge along the rivers. For many reasons, a combination of preparedness, effective support systems, strong community support and good fortune, there were no deaths attributed to the storm and minimal injuries.

The State and Federal policy is that a disaster is a local event and each jurisdiction must take care of itself for at least 72 hours and not rely on the State or Federal organizations. When all local resources have been expended to resolve a particular problem, then localities may look to the State for assistance. When all State resources are expended, then the Federal government will provide assistance.

The County performed a "Lessons Learned" analysis and developed a set of recommendations after Hurricane Isabel and has initiated a program to increase preparedness and response in several key areas:[3]

- Management and Organization – formalize several informal working relationships to ensure all relevant personnel understand their roles in the process;
- Facilities – provide necessary emergency facilities and logistic support to the County Administrator in his role of Emergency Coordinator;

3 Kenneth D. Eades and Gregory T. Haugan, *Lessons Learned – Hurricane Isabel*, December 17, 2003

- Communications – improve communications between all emergency service organizations and between governmental entities; improve communications with the public;
- Shelters – ensure that existing shelters in the schools and other facilities are staffed and equipped to accommodate expected demand, investigate the possibility of adding additional shelter space; and
- Power – ensure that emergency generators are available and operational to support the shelters and communications needs

Shelters with emergency power should be planned as a part of any new school construction.

5. Marine Research and Educational Facilities

Northumberland County is located at mid-bay and would provide an excellent location for marine research and educational facilities for the region. The County currently cooperates with VIMS in research in the County waters and is a sponsor of the Marine Trades program of Rappahannock Community College. These activities and others should be combined into an integrated effort and plan.

G. HEALTH, HOUSING AND HUMAN SERVICES

This Health, Housing and Human Services section of the Comprehensive Plan describes the needs and available services. Emphasis is placed on meeting the provisions for the Elderly and Persons with Disabilities in accordance with HB 2407.

Services are currently available in the following areas:

1. Health Services;
2. Provisions for the Elderly and Persons with Disabilities;
3. Other Social Services Programs; and
4. Housing.

Each of these services is described in more detail below. While the list appears extensive, it is not clear that the funding and other resources match the needs.

A final paragraph is included that provides for the development of a Comprehensive Community Health, Housing and Social Services Plan as a complementary plan to this Comprehensive Plan in order to assist in matching services to the need.

1. Health Services

The County has a number of residents who are at or below federal poverty levels and/or unemployed and a disproportionate number of the population who are over sixty-five and are a burden on the local health care system. Currently approximately 25% of the population is over 65 years of age and by 2010 the number is expected to exceed 30%.

Northumberland County has no public medical facilities other than the services of the Northumberland County Health Department which is a component of the ten-county Three Rivers Health District. These limited services are available to the citizens of the County, with fees based on a sliding scale based on income. Northumberland County is one of nine counties in the District that is designated as "Medically Under-Served". There are several private doctor and dentist offices and clinics in the County.

Services outside the County are provided by Rappahannock General Hospital, RGH, in Lancaster County which provides significant health care to the county and is linked to Chesapeake Medical Group in Heathsville. Also, Riverside Tappahannock Hospital provides support from Essex County and is linked to Dr. Lewis's clinic in Burgess. Because of high medical liability costs and a relatively small number of patients, RGH has recently discontinued its maternity ward activities.

The Northern Neck Free Health Clinic in Kilmarnock provides health care to persons in the Northern Neck and Middlesex County who can not reasonably be expected to pay for such care.

The County should work toward bringing medical facilities, nursing homes and assisted living facilities into the County.

2. Provisions for the Elderly and Persons with Disabilities

The County has an aging population and it is expected to continue as more retired persons move into the area. This section describes the services available.

a. Auxiliary Grant Program

Financial assistance is available for certain needy aged, blind or disabled persons who reside in adult care residences or adult family care homes. The money received, plus other income, is used by the person to pay for care provided by the home. Individuals who get money from the Auxiliary Grant Program also get a Medicaid card to use for medical bills.

b. Adult Services of the Northumberland Department of Social Services

(1). Adult Protective Services

This program receives and investigates complaints and reports concerning the abuse, neglect, or exploitation of those over age 60, disabled individuals over age 18, and their families, when necessary. Intervention may involve in-home services, counseling, transportation, day care, sheltered employment, legal proceedings, and meal provision.

(2) Home-Based Services

The Home-Based Service provides home-based services for those over age 60, disabled individuals over age 18, and their families when necessary. The goals include the maximization of self-sufficiency, the prevention of abuse and neglect, a reduction and delay in premature or unnecessary institutionalization, and aid (when such a placement is appropriate).

(3) Screenings

This service provides screenings for nursing home and adult home residential placements and for community-based home care.

c. Bay Aging

Bay Aging is a non-profit organization that works at the community level to assure the delivery of efficient and appropriate services to older persons. Bay Aging's goal is to provide support to help older citizens remain as independent as possible -- for as long as possible. The organization serves 10 counties in the area including the Northern Neck and Middle Peninsula. It is funded by a combination of Federal, State, and Local governments and by donations.

Bay Aging provides four primary services: Adult Day Services at Senior Activity Centers; Meals on Wheels; Bay Transit and a Housing Program.

The Senior Activity Center for Northumberland is located in the Old Fairfields Elementary School in Burgess. The Senior Center is a community focal point which offers the opportunity for socialization through supportive and challenging group programs. It is available to individuals age 60 and over who function independently...

Adult Day Care Program is located at Bethany United Methodist Church in Reedville. The Northumberland program is licensed by the Department of Social Services and is an approved Virginia Medicaid provider The Center provides various activities, opportunities to socialize, a change of scenery, physical and mental exercises and health monitoring. The latter involve the use of trained nurses to help families understand health care needs and identify conditions that need medical attention. Meals and transportation are provided.

Meals on Wheels uses dedicated volunteers to deliver hot lunches to individuals age 60

and over who are homebound due to illness or disability and are unable to prepare nutritious meals.

Bay Transit is a public transportation system for all people of all ages that serves the entire Northern Neck and Middle Peninsula. It is a "dial-a-ride" system that operates from 6 am to 6 pm Monday through Friday.

The Housing Program works through the Department of Social Services who provides space one day per week for a representative of Bay Aging to meet with applicants from Northumberland County for their housing assistance services. Primary assistant is through the Indoor Plumbing and Rehabilitation Program, the Virginia Water Project and the emergency Home Repair Project. This complements the Section 8 housing assistance offered through the Northumberland Social Services.

d. Northern Neck Disabilities Services Board

Formed on September 21, 1999, the Northern Neck Disability Services Board (NNDSB) is a partnership of disabled consumers, local governments and businesses working to extend existing services and create new services for individuals of the Northern Neck with physical and/or sensory disabilities through administration of the Rehabilitative Services Incentive Fund.

The NNDSB provides disabled consumers with increased transportation, education and employment opportunities, accessible and affordable housing and medical services. The NNDSB also continues to improve awareness of existing and new programs through quarterly meetings, local media, related organizations and direct contact with individuals in need.

Duties of the NNDSB:

- Develop and make available for public comment an assessment of local needs and priorities of people with physical and/or sensory disabilities, updated every three years;
- Provide information and resource referral to local governments regarding the Americans with Disabilities Act;
- Administer the Rehabilitative Services Incentive Fund and serve as a catalyst for the development of public and private funding sources;
- Exchange information with other local boards regarding services to persons with physical and/or sensory disabilities and best practices in the delivery of services; and,
- Provide such other assistance and advice to local governments as may be requested.

The NNDSB administers the Rehabilitative Services Incentive Fund (RSIF) which is a grant allocated by the Department of Rehabilitative Services to promote investment in

meeting the needs of individuals with physical and/or sensory disabilities. The RSIF grant is used to increase service capacity through expanding existing services or creating new services.

Through the NNDSB and the County match, local service providers (SAIF Water Committee and Bay Aging) have provided home repairs and modifications for accessible housing, emergency services, education on disability issues and increased awareness of existing and new programs for disabled consumers.

The NNDSB performed a Triennial Needs Assessment in 2003 for the Northern Neck, however it was not sufficiently definitive to provide a basis for firm action.

The NNDSB shall support the needs assessment described in Section 5 below by providing input on needs and priorities of people with physical and/or sensory disabilities in Northumberland County. These data should be a comprehensive update of the Triennial Needs Assessment performed in 2003 but following the methodology of Appendix B and provide input as required to support the planning described in Section 5 below.

e. Emergency Services

With an aging population it will be increasingly difficult for the volunteer emergency services to meet the needs of the citizens of the County. See Section F.1 for a discussion of this issue.

3. Other Social Services Programs

Below is a listing of other programs administered by the Northumberland Department of Social Services. Some of these also assist the elderly and persons with disabilities but that is not necessarily their primary focus. The Northumberland Department of Social Services provides a broad range of services to the citizens of the County,

(a). TANF - Temporary Assistance for Needy Families Program and TANF-UP

TANF provides temporary financial assistance to families with children who have financial need. The TANF program is the cornerstone of Virginia's Welfare Reform initiative. The TANF program initiative has time limited benefits, a strong work requirement, and a social contract that sets out the responsibilities of and expectations for recipients of public assistance and the government.

(b). Aid to Dependent Children - Foster Care (AFDC-FC)

Financial aid is provided for the care of children eligible for assistance that have been removed from their homes and placed in custody of the Department of Social Services.

(c). General Relief (GR)

The General Relief program provides limited financial assistance for those appealing

Supplemental Security Income, SSI, maintenance determinations. General Relief includes limited medical care for the indigent, burial of the indigent, and other emergency services.

(d). State and Local Hospitalization (SLH)

State and Local Hospitalization provides direct payment to hospitals for individuals, who do not qualify for Medicaid and who are unable to pay for required medical services. The payments are limited to the total of the County's funding allocation from the State. This program will pay for limited hospitalization, outpatient surgery, and emergency room visits. Inpatient and outpatient doctor visits are not covered.

(e). Medical Assistance (Medicaid)

The federal/state-financed Medicaid program provides medical care for specified needy persons. The Social Services Department determines eligibility for Medicaid, according to criteria established by the Department of Medical Assistance Services, which administers the program.

Medicaid makes direct payments to health care service providers for eligible individuals and families who are unable to pay for needed medical services. Medicaid pays for a variety of medical services including prescription drugs, doctor visits, nursing facility care, and hospital care.

(f). Family Access to Medical Insurance Security (FAMIS)

The FAMIS program provides health insurance for eligible low-income children who are not eligible for Medicaid. The eligibility determination for this program was transferred in August, 2002, to a State Central Processing Unit. However, the option for applicants again to go through the local departments of social services was reinstated to better facilitate the process, and the program has been renamed Family Access to Medical Insurance Security (FAMIS).

(g). Food Stamp Program

The federal Food Stamp Program supplements the food budgets of low-income households to help assure needy persons a nutritionally adequate diet. Eligibility is determined by financial need, household size, and non-financial criteria such as student and work registration.

(h). Fuel/Cooling Assistance Program

Eligible low-income households receive federal assistance with their home heating bills. Faulty or hazardous heating systems may also be repaired in households eligible for fuel assistance. Eligible low-income households that also have a member meeting age or medical vulnerability criteria may receive assistance with home cooling bills. Air conditioners or fans may be repaired or provided under certain conditions.

(i). Child Protective Services

This program receives and investigates complaints and reports concerning the abuse, neglect, or exploitation of children, and provides preventive action where there is a threat of harm. Services are available 24 hours a day to handle emergency situations.

(j). Foster Care Services for Children

The Foster Care program provides counseling, supervision, and supportive and rehabilitative services to, or, on behalf of children who are committed or entrusted to local boards of social services.

(k). Employment Services

The Employment Services program provides services to recipients to assist them in retaining, regaining, or securing full or partial employment.

(l). Day Care Services for Children

This program provides services of day care in approved facilities for a defined portion of a 24-hour day, to enable parents to be employed or to provide services when they must be away due to an emergency. Services may also be provided for children needing protection.

(m). Other Social Work Services

1) Adoption Services - provides services and registries to bring together children and families for permanent placements.
2) Family Services - provides counseling, educational information, monitoring (for protective services cases), and referrals to other resources for families with special needs.
3) Interstate foster care - provides monitoring and supportive services for foster children placed in our locality by another state.
4) Home Studies - provides assessments of suitability of homes for placement of children when ordered by the court.
5) Emergency Services - provides assistance with food, shelter, utilities, and clothing in crisis situations; assists the Red Cross in the operation of shelters.
6) Other Social Services Programs

(n) Child Abuse and Sexual Assault Investigation Team

A unique program in Northumberland County is the Child Abuse and Sexual Assault Investigation Team that consists of the Office of the Sheriff, the Office of the Commonwealth Attorney and the Department of Social Services. These three organizations have put together a team of trained investigators and social workers that work together to investigate and resolve claims of child abuse.

(o). Community Support

Northumberland County is very fortunate to have a strong network of support for a variety of emergency services and human services from non-profit organizations and volunteers. Some of the support comes from individuals and small informal groups, some is from individual churches or other structured community organizations, and some is from networks of churches, such as the Interfaith Service Council and Church Resource Services.

Some of the emergency services provide individuals in crisis in the community assistance with utility bills, food, clothing, or rent. The Department of Social Services relies heavily on collaboration with community organizations to assist with these services when the individuals do not qualify for government funded programs for such assistance.

Some groups provide summer or after school programs for youth while they are not in school and have no other structured supervised settings. Some provide organized recreational activities available on a county-wide basis. Some work to improve housing, water and sanitary systems or other conditions that affect quality of life.

Northumberland County is, also, very fortunate to have a very active and capable chapter of the American Red Cross, managed and operated entirely with volunteers, who operate emergency shelters for the County in addition to other types of disaster assistance. In addition, the County's emergency services response for fire and rescue is provided by all volunteer groups.

4. Housing

Affordable housing is a major issue in the County. There is a shortage of safe, healthy living places for low income persons in our area. There are still a large number of homes in the County without indoor plumbing and a number of homes where the houses are literally falling down around the people living in them. While not all are in poor repair, over a third of the 8,000 houses in the County are over 40 years old.

Currently there are limited resources available to assist low income persons with housing problems. There are various volunteer groups that help with repairs, the Bay Aging Agency provides an indoor plumbing program, the SAIF Water Program helps with wells and water; Habitat for Humanity helps build new homes and the Northumberland Department of Social Services provides "Section 8" housing assistance.

The Section 8 program consists of two elements: rental housing subsidies for eligible low-income families within the allotment of vouchers provided to the locality by the Virginia Housing Development Authority (VHDA); and self-sufficiency services which provide assistance in developing and achieving plans of self-sufficiency that include goals of transitioning from subsidy assistance to financially independent housing. As a further element of assistance, the County should provide some property tax relief for low income households.

A needs assessment of the adequacy of the housing in the County should be performed in order to quantify the problem as a first step in establishing a more comprehensive community plan to address the problem. (See Section 5. below.) Once the needs assessment is complete, the County may qualify for a Virginia Community Development

Block Grant, VCDBG, for housing rehabilitation. Housing activities are eligible for VCDBG assistance to improve the living conditions of low- to moderate-income (LMI) persons. VCDBG funding may be used to rehabilitate LMI-occupied housing units or in support of the development of new housing units which will be occupied by LMI persons.

In addition, once the housing needs analysis is complete, the Board of Supervisors should establish an affordable housing policy, strategies and implementation program. The objectives should be to support affordable housing for those who live and/or work in the County. In particular, the County should provide guidance, resources and incentives to the nonprofit and for-profit development and financing communities to increase the supply of affordable housing (both rental and homeownership) for households with incomes below the median income of the County. "Affordable Housing" in general terms means safe, decent housing where housing costs do not exceed 30% of the gross household income. In addition affordable housing is defined, for purposes of the proposed policy as those houses affordable to the forty percent of the County population that have household incomes at or below 80% of the County median income.

This policy and related strategies and recommendations should be developed by a proposed Northumberland County Housing Committee or equivalent organization to be established after completion of the needs assessment.

5. Comprehensive Community Health, Housing and Social Services Plan and Implementation Strategy

The topics described in paragraphs 1 - 4 above (Health Services; Provisions for the Elderly and Persons with Disabilities; Other Social Services Programs; and Housing) all relate to the "community" and the needs of the people as opposed to the physical attributes of the County and how the County develops and uses its physical assets as is detailed in the other chapters and sections of this Comprehensive Plan..

As such, a *Comprehensive Community Health, Housing and Social Services Plan and Implementation Strategy* (Community Plan) needs to be developed as a complementary Plan to the Comprehensive Plan and follow a similar public hearing and community involvement process as was used for this Comprehensive Plan, but with a more proactive community involvement as discussed in Appendix B. The Community Plan, when approved by the Planning Commission and by the Board of Supervisors would be appended to the Comprehensive Plan as an amendment..

This Community Plan is based on a typical community assessment process and model used by communities nationwide that identifies resources, services, and gaps in services. It includes "well-being" factors (when compared to other localities) to determine the community's relative health and welfare. Finally it determines what additional or

reinforced services are needed, what should be the priorities and a plan of action to improve the situation.

The typical community assessment process is a lengthy process, and it is expected to take several months to carry out the process correctly. The usual approach is to assign responsibility to the Community Policy and Management Team (CPMT) or for the Board of Supervisors to name a Primary Contact Person, PCP. It should be noted that this task is broader than the normal duties of the Director of Social Services which is why the Chair of the CPMT or a PCP is recommended.

Northumberland County has developed needs analyses and performed community assessments in the past but they have not been as comprehensive as is proposed herein. They typically focus on specific problems such as the recent study on Promoting Safe and Stable Families.

The Virginia Department of Housing and Community Development has a Community Development Block Grant program which can be used as one source to provide funds to support the community needs assessment program that is proposed. Alternatively, the same process using all volunteer labor reporting to a County or Social Services official such as the process currently used to update this Comprehensive Plan can be used.

Appendix B to this Comprehensive Plan presents in more detail the proposed process for developing the Community Plan.

H. STRATEGY FOR DEVELOPING PUBLIC SERVICES

1. Public Services Reference

The following table provides a quick reference to the public services covered in this Chapter of the Comprehensive Plan. Because services are provided by a combination of different public and private sources, planning for their development must be done in coordination with several other agencies.

The County is directly responsible for providing resources for construction of schools, county offices, sewage disposal facilities, solid waste stations, reservoirs and public recreational sites. The State provides for highways and support services through the Health Department and VPI Extension. Still other services (emergency services and recreation are in this category) are provided by private enterprise or not-for-profit organizations. The strategy for implementing the public elements of the Comprehensive Plan involves coordinating County projects with those provided by the State and other

groups, private or public.

SUMMARY - PROVIDERS OF SERVICES	
Type of Facility	**Agency or Level of Government Responsible for Providing Service**
Highways, Public	Primary Highways: VDOT[4], District Engineer's Office, Fredericksburg
	Secondary Roads: VDOT, County Resident Engineer's Office
	Bus Service: Bay Transit
Recreational Facilities	Recreational Programs: Northumberland YMCA
	State: Construction and operation of public boat ramps
	Commercial marinas; charter fishing boats; campgrounds; community associations
Water Supply	Community water systems: public and privately owned and operated
Sewage Disposal	Private septic tank except in Reedville, Fleeton and Callao where public sewerage systems are operated
County Office and Operational Buildings	County: Administrator's office
Schools	Northumberland County School Board
Social Services	Northumberland Department of Social Services
Health Services, Septic Systems	Health Department of Northumberland County
Emergency Services	Volunteer Rescue Squads, Fire Companies, County Officials, Sheriff
Solid Waste Services	Private Contractor

[4]Virginia Department of Transportation

CHAPTER 5[1]
WATER QUALITY AND SHORELINE PROTECTION PLAN

A. INTRODUCTION

Water quality in both saltwater estuaries and in our sources of drinking water is of paramount importance to our futures here in Northumberland County. Bay, river and stream water quality will determine the fecundity of our shores for gamefish, menhaden, crabs and oysters – and the health of our fishing industry. Both the shallow and deep aquifers, that currently supply primary sources of drinking and household water, are being threatened by over-use and contamination. Shoreline protection through protection of our riparian buffers is also an issue in an environment where tremendous quantities of various harmful chemicals are being released via ground water into the bay daily and large expanses of shoreline are being eaten away by erosion. Our waterfront is a very real economic advantage for our County. Both our fishing industry and our tourist industry are absolutely dependent on a healthy water related environment. In fact, our basic quality of life depends on careful stewardship of our once-abundant water resources and we must actively protect them for future generations.

The purpose of this Chapter is to define a broad set of policies for Northumberland County which promote the objectives of the County and the Commonwealth of Virginia to preserve the quality of waters of the Chesapeake Bay and related state waters within the County. Referred to here as the **Water Quality Protection Plan**, this Chapter has been prepared to comply with Section 10.1-2109 of the Virginia Code which in part states:

> Counties, cities and towns in Tidewater Virginia shall incorporate protection of the quality of state waters into each locality's comprehensive plan consistent with the provisions of this chapter.

Under the powers of that code section, the Chesapeake Bay Local Assistance Board, CBLAB, was authorized to prepare Regulations which provided guidelines to localities for preparing plans for the protection of the quality of state waters. Among the provisions of those guidelines which are published in the Local Assistance Manual are five objectives of such plans.

They state that *in conjunction with other state water quality programs, local programs shall encourage and promote:*

- *protection of existing high quality state waters and restoration of all other state waters to a condition or quality that will permit all*

[1]Filename = Chapter_5_Final

reasonable public uses and will support the propagation and growth of all aquatic life, including game fish, which might reasonably be expected to inhabit them

- *safeguarding the clean waters of the Commonwealth from pollution;*
- *prevention of any increase in pollution;*
- *reduction of existing pollution; and*
- *promotion of water resource conservation in order to provide for the health, safety and welfare of the present and future citizens of the Commonwealth.*

In addition to supporting the water quality objectives presented above, the County supports additional objectives to assure that sufficient quantities of water remain available to meet the future needs of the County and also that our shorelines are protected. This chapter is designed to further these objectives within the framework of the physical conditions identified in Chapter 1 and goals and strategies of Chapter 2. The Board of Supervisors recognizes that there may be situations where the requirements of one element of the Comprehensive Plan appear to duplicate, overlap or even supersede another plan element. When addressing a specific planning issue, the Board of Supervisors and the Planning Commission will give appropriate consideration to all applicable elements of the Comprehensive Plan.

Policies are organized below around the following topics related to developing and using land:

- Development within or Near Existing Development;
- Development within Areas with Topographic Constraints;
- Development within Areas where Soils will not Support Conventional On-Site Sewage Disposal
- Development within Areas where Soils have Poor Structural Qualities;
- Flood prone Areas, Wetlands and Natural Habitat Areas;
- Chesapeake Bay Act Protected Areas;
- Protection of the County's Groundwater Supply;
- Watershed Protection;
- Shoreline Preservation;
- Use of Waterfront Areas while Preserving Sensitive Environmental Areas;
- Intensively Developed Areas;
- Managing Potential Conflicts between Land Use and Water Quality Protection; and
- Soil and Water Conservation Policies.

Through the following policies, the Board of Supervisors of Northumberland County will promote the laws, policies and regulations promulgated by the state and federal governments which are designed to enhance the quality of water entering the Chesapeake Bay through tributaries located within the County.

B. POLICIES RELATIVE TO DEVELOPING AND USING LAND WITHIN PHYSICAL CONSTRAINTS

1. Development within or Near Existing Development

Existing development presents both constraints to and opportunities for further development. Constraints come from the fact that once a major use is established for a property, as a practical matter that use is permanent. There is a very low probability that the facilities erected will be removed and replaced by other uses. The opportunity for development comes from the fact that after an area is partially developed it sets community characteristics which in turn often attract additional development.

Policies for development in areas within or near existing development are as follows:

(a) Villages with greater potential for growth may be considered for installation of public sewerage systems and water supply as development reaches a point where the services are financially feasible.

(b) New residential development is to be directed to areas where soils and topography are acceptable for development.

(c) Development shall be done in such a way as to preserve farmlands, forests, natural resources, historic features and other environmentally-sensitive areas.

(d) Residential development shall be planned using conservation techniques where lot size reductions are permitted if the reductions are compensated by open space, riparian buffers or other amenities. .

(e) Large residential developments should be dispersed throughout the County in order to avoid creating intensively-developed concentrations of development which could eventually require public utilities or other services. This strategy also promotes the preservation of agricultural and forest lands and reduces the threat of making excessive demands on state waters at any given point.

2. Development within Areas with Topographic Constraints

Land which has slopes in excess of 15 percent (15 feet drop per 100 feet horizontal) is generally classified as having steep slopes for planning purposes. Lands in this category are generally regarded as a deterrent to development but the extent that steep slopes have this effect depends upon the market demand within each community. Normally, developers will avoid steep land because it presents more problems and usually leads to higher costs than development on flatter land. Adding to the difficulty of development, when steep land is combined with soils that are highly erodible, the probability of erosion and costs of erosion control are increased significantly. If the land is located near tidal waters or potential reservoir sites, the resulting erosion can be a serious threat to water quality as well as to the stability of the shoreline. Policies concerning development of steep slopes are:

(a) Development of land with slopes greater than 15 percent but less than 20 percent shall be permitted provided the proposed development shall have met strict site plan review requirements, and appropriate soil erosion protection and BMPs[2] are observed. This policy is for the purpose of reducing the potential for erosion or other damage to the underground water supply, to streams, shorelines or sensitive-environmental areas.

(b) Development of land within the range of 20-25 percent will have the same requirements as slopes of 15-20 percent, and in addition the developer will be required to provide appropriate engineering features necessary to assure that these slopes will be permanently stabilized. It is preferred that lands with slopes of more than 25 percent should remain undisturbed, however if they must be disturbed, then they should be stabilized. Subdivisions may be laid out so as to arrange lots in a manner that avoids these slopes. Cluster development and open space planning are tools for accomplishing this objective.

(c) When development is planned on steep slopes, additional land area over the minimum required by regulations may be required in order to: (i) avoid conflict between water supply and sewage disposal locations; (ii) avert infiltration into the water-table aquifer; or (iii) minimize shoreline erosion.

3. Development within Areas where Soils will not Support Conventional On-Site Sewage Disposal

The research data in Chapter One identifies general soil conditions which are known to have characteristics unfavorable to on-site sewage disposal. (Figure 1.5).The most critical criteria for this determination are:

- The percolation capabilities of the soil, which should be neither too slow nor too fast. If percolation is too slow the system will not function properly, and if it is

[2]Best Management Practices as defined by the Virginia Department of Environmental Quality.

too fast the effluent may enter the groundwater without being properly treated; and

- A high water table which determines the suitability for a conventional septic system drain field. In areas where the water table is less than 36 inches, drain fields could actually be below the water table and ineffective during periods when the water table saturates the soil where the drain field is located. If the water table does come in contact with the drainfield, pathogens and other pollutants could be directly discharged into the groundwater, possibly entering nearby residents' shallow wells. This situation also arises when the seasonal water table rises closer to the ground surface during the increased rainfall of winter months

The current Health Department regulations are:

(A) Septic drain fields are limited to those areas with a soil permeability of not less than 5 minutes per inch of water movement or more than 120 minutes per inch.

(B) Drainfield trench bottoms disposing of septic tank effluent must be 36 inches above seasonal water table indicators. Drainfield trench bottoms disposing of secondary effluent must be 24 inches above seasonal water table indicators.

C) Sewage disposal system location is determined by the Chesapeake Bay Preservation Act where it applies, but no instance can a sewage disposal system be installed closer than 70 feet of any stream or its adjoining wetland that flows into state waters. .

The County should seek changes in Health Department regulations to provide for enforcement of engineered systems inspections and reporting. Since engineered systems are used in areas that are often low and naturally wet and environmentally sensitive, the rules and requirements of the County and the Health Department regarding acceptable installation and maintenance should be reviewed to establish appropriate policies that will protect the environment from catastrophic failures.

General policies for areas that do not support conventional on-site sewage disposal are:

(a) Engineered systems may be used in areas where soil percolation does not meet the requirements outlined above if approved by the Health Department. These systems are designed to be site specific.

(b) Individual engineered systems require regular maintenance and should be inspected regularly by a Certified Inspector in accordance with the frequency and procedures in the manufacturer's specifications. These reports should be the responsibility of the individual owner to provide to the Health Department.

(c) Major subdivisions or other large-scale developments shall not be permitted in areas where soils are known to be unsuitable for on-site sewage disposal unless the development is connected to a public or private sewerage system or an acceptable engineered system is provided. These systems shall be inspected regularly by a Certified Inspector in accordance with the frequency and procedures in the manufacturer's specifications and the reports provided to the Health Department.

(d) In subdivisions or other large-scale developments with mass remote drain fields, the Health Department may require a dilution area adjacent to the drain field to reduce nitrate loading.

(e) In cases where the Health Department has issued an operation permit, these systems, whether residential or non-residential, shall include a water conservation plan that includes water-saving devices such as low volume toilets and water-saver shower heads. In addition to reducing the hydraulic load that needs to be treated by the sewage disposal system, this also reduces the demand on groundwater resources in the County, preserving potable groundwater for future uses. To reduce the amount of solids that enter the sewage system the use of garbage disposals is discouraged.

As a general policy it is desirable to require a 100 foot riparian buffer consisting of mature trees with a ground cover of shrubs and grasses between drain fields and the nearest water taking into consideration the use of the property.

4. Development within Areas where Soils have Poor Structural Qualities

The primary structural quality of soil is its potential for volume change when subjected to a loss or gain of moisture. This is called "shrink-swell" characteristics. Volume changes occur mainly because of the interaction of clay mineral with water, and the amount of change varies with the amount and type of clay minerals in the soil.

Northumberland County's soils generally do not have serious problems with shrink-swell but there are some locations on the low rural shelf (Figure 1-8) with "moderate to high" characteristics. Moderate identifies soils with shrink-swell in the range of 3 to 6 percent while "high" is in the 6 to 9 percent range. Policies for areas with moderate to high shrink-swell characteristics are as follows:

(a) County officials will advise builders of the need to have the soils examined and require engineering reports to demonstrate that soils under building foundations will support the intended load.

(b) The Subdivision Ordinance should include requirements that the shrink-swell, soil permeability, water table and other factors be evaluated as part of the plat review process.

(c) Approvals of site plans, subdivision plats or other documents proposing the use of land where soil characteristics are unfavorable for development will be withheld where soils are unsuitable for development and where no compensating actions are proposed to compensate for the condition(s).

5. Flood Prone Areas, Wetlands, and Natural Habitat Areas

Flood prone areas addressed in this Plan have a probability of flooding once every 100 years. Such areas are referred to as the 100-year flood plain. This floodplain overlaps the Chesapeake Bay Resource Protection Area and is subject to a separate set of regulations. Development in floodplains is not as restricted as it is in the Chesapeake Bay RPA, but floodplains are highly sensitive areas and their development should be avoided.

Tidal wetlands and natural habitat sites lie along the shoreline or at the headwaters of various rivers and streams although some are found on the tributary streams (Figure 1-10). Both wetlands and habitat sites provide a natural resource for certain rare, threatened or endangered species. These areas are protected by federal laws and may not be disturbed or altered to accommodate man-made activities.

Policies for flood prone areas, wetlands, and natural habitat areas are as follows:

(a) Residential subdivisions or other developments involving buildings designed for human occupancy must meet County requirements establishing that the required height of any occupied floor area of a building shall be above the 100-year floodplain level. Other uses not covered by RPA and County regulations that may be permitted within the floodplain shall be guided by the performance standards of the Federal Emergency Management Administration.

(b) Point sources of pollution are not to be established in or designed so that they discharge waste into flood prone areas.

(c) New lands that may from time to time be delineated as "wetlands" or "habitat sites" are subject to the same conditions as land that currently lies within the Resource Protection Area.

(d) Public access areas developed to increase the recreational use of public waters and other natural resources of the State are to be planned within the framework of the performance standards of the Resource Management Area and/or the Resource Protection Area, as the case may be.

(e) The 100-year flood zone, wetlands and habitat sites shall be identified on proposed plats or development plans.

6. Chesapeake Bay Protected Areas

The overlap between the Chesapeake Bay Act Protected areas and wetlands, habitat areas and 100-year flood zones has been noted. In most cases all of these conditions are contained within the Resource Protection Area and its 100-foot buffer strip. As an overlay zone in the County's zoning regulations, the RPA places restrictions on the use of affected lands within the RPA. These regulations offer considerable protection from uses that would be harmful to the natural habitat of aquatic life and water fowl in addition to protecting the waters of the Chesapeake Bay and its tributaries.

Policies for the Chesapeake Bay Protected Areas are to:

(a) Continue to identify the RPA on individual development plans and subdivision plans submitted to the County for review and approval with specific RPA boundaries defined by engineering studies or surveys.

(b) Continue to administer the performance standards of the Chesapeake Bay Ordinance.

7. Protection of the County's Groundwater Supply

The residents of Northumberland County obtain their drinking water chiefly from three sources: (from shallowest to deepest) the surficial (water table) aquifer, the Chickahominy-Piney Point artesian aquifer, and the Rappahannock artesian aquifer system (made up of the Aquia, Brightseat, and Upper Potomac aquifers)[3]. The surficial aquifer serves as a water supply for domestic water users who utilize shallow, large-bore wells. This aquifer is the one most vulnerable to pollutants from failed septic tanks, leaking storage tanks, agriculture runoff, agriculture pollution by infiltration and a variety of other point and non-point sources of pollution.

The deeper, artesian aquifers increasingly provide water for domestic, commercial, and public water systems. These aquifers are less vulnerable to pollution from surface sources than the surficial aquifer, but they are limited ultimately in the quantity of water available for withdrawal.

Currently there is a requirement that if a subdivision has more than 14 lots on one well, it must be established as a public water supply subject to Health Department regulations. However, there are subdivisions in the County that are currently served by unregulated, private wells where no periodic testing is required.

The water-supply management strategy of the County has two goals:

1) Protect the surficial and artesian aquifers from pollution; and
2) Ensure the long-term availability of potable water from the diverse sources of surficial and artesian aquifers, desalinization, and reservoirs.

3 Reference USGS Professional Paper 1404-C

The first goal secures safe and sanitary water for the residents of the County, and the second goal provides for an adequate supply of water.

a. Protection of Water Quality

The County recognizes that the Virginia Department of Environmental Quality and Health Department monitor the installation of systems for withdrawals of groundwater. Monitoring of water quality, especially nitrate concentrations in shallow wells and sodium and chloride concentrations, as well as water levels in artesian wells should be increased. The County intends to maintain liaison with and cooperate with these agencies to identify potential groundwater pollution problems.

Policies for the protection of potable water from pollution are included in the following sections. Additional measures may be implemented in accordance with state mandates for water supply planning currently being promulgated.

(1). Surficial Aquifer (Conventional Shallow Wells)

Individual wells in this aquifer are subject to many types of contamination problems, some of which are addressed below. The State is requiring the Counties of the Northern Neck to develop water supply plans which must address many of the problems. Current problems and concerns such as contamination, capping, testing and education are planned to be addressed on a regional basis.

(a) Buffers should be required around shallow wells to avoid contamination.

(b) In cooperation with the Department of Environmental Quality, the Virginia Department of Health and the Department of Conservation and Recreation, the application of agricultural chemicals shall be monitored to ensure that they follow an approved nutrient management plan and Best Management Practices.

(c) Malfunctioning sewage disposal systems present a health hazard to the water supply; appropriate action should be initiated to remedy the problem

(d) Proper capping of a conventional well is essential to preserve the safety of drinking water. It is also necessary to secure the safety of our children. The County recommends the sealing of all well caps to prevent intrusion of contaminants. For shallow bored wells this can be done with methods that allow for access to service the plumbing. Although more a safety issue than a water quality issue, the County should continue to actively publicize and enforce the requirement that all abandoned wells be capped.

(e) The policy which requires each residential development site to provide an

adequate septic tank drain field, plus a reserve drain field, both acceptable to the Health Department, shall be continued. However, the County should discourage the identification of reserve drain fields that are smaller than required for conventional systems unless an engineered system is initially installed.

(f) The County will cooperate with the DEQ in locating and causing the replacement of defective underground storage tanks.

(g) Areas around wellheads used for public and private water supplies shall be protected from land uses that could contribute to the pollution of the aquifers.

(h) Non-point pollution sources will be reduced by requiring buffers between the sources of pollution and the sources of potable water

(i) The County will consult with the State Health Department regarding its requirement to abandon shallow wells when an artesian well is dug. This county has special needs. First, artesian water is high in sodium and may one day be unavailable. Second, water can be obtained from a shallow well by hand; during power outages, but not from an artesian well.

(j) Point sources of pollution are to be addressed by upgrading existing point sources of pollution to ameliorate threats to the water systems and by imposing strict controls on the establishment of new point sources. Specific policies for point sources are:

(i) Existing underground fuel-storage tanks made of unprotected steel are to be replaced immediately after any finding that they have been or are leaking. As these and other tanks intended for storage of hazardous or polluting materials are added or replaced, the new or replacement tanks shall be constructed of materials sufficient to protect against future leakage.

(ii) When major public facilities such as waste water disposal facilities, landfills or sewage treatment plants are constructed, they shall be designed and constructed with appropriate protective devices to assure that they will not create a hazard to the underground water supply, watersheds or other environmentally-sensitive areas.

(iii) Known sources of pollution with emissions in excess of what is permitted by applicable state and local regulations are to be upgraded or replaced to bring any point source pollution deficiencies into compliance.

(iv) New commercial and/or industrial uses to be established within the County shall be constructed so as to produce no net increase in: pollutants to water or air; storm water discharge; chemical contaminants of any type; or any other condition that will be detrimental to state waters.

(v) Increase the knowledge of citizens concerning the advisability of testing individual wells on a regular basis.

(vi) Establish specific policies for the handling and disposal of hazardous materials and for seepage from large trash piles.

(vii) The County shall cooperate with the Virginia Department of Health's program to provide reimbursement for a monitor and water testing relative to biosolids/sewage sludge land applications.

(2). Artesian Aquifer

Policies regarding the quality of the water from the deep artesian aquifer are as follows:

(a) The high sodium content in our artesian aquifers can exacerbate health conditions and damage household plants and flowers. The County in cooperation with the NNPDC shall develop ways of making this information widely available to county residents. (*Sodium levels range from 110 to 185 milligrams per liter in the county. The United States Environmental Protection Agency recommends no more than 20 mg/l for persons whose health requires the limitation of sodium intake.)*

(b) All artesian wells should be capped with a secure seal to prevent contamination. The County in cooperation with the Health Department should initiate a program to ensure this occurs.

(c) Subdivisions may have either a single public water supply or multiple wells with up to 14 connections on each, subject to Health Department approval.

(3). Other Water Quality Policies

(a) Continue to work with the Bureau of Shellfish Sanitation and the Department of Environmental Quality to survey and monitor the health of shellfish growing areas in County waters and take necessary actions to support this industry.

(b) Monitor the technological progress in the development of desalinization

systems as a future economically viable source of potable water.

(c) Residents should be asked to notify the County if they know the location of abandoned wells such as those used by former sawmills, former owners or land users.

b. Water Quantity: Protection of Supply Availability

The basic water-supply policy is to stress a diversity of public and private water sources including the surficial aquifer, the artesian aquifer and reservoirs. Specific policies for providing an adequate supply of potable water from each of these sources are addressed in the sections below.

(1). Surficial Aquifer

Because conventional wells are supplied by the infiltration of rain and snow melt, they are a renewable source of water. Protection and preservation of these wells is an important part of insuring that water will be available to future generations in the County.

There are many older wells remaining in the county which were hand dug. During times of drought these wells may run dry whereas wells dug by machine have proven to be successful even during drought.

To this end the County:

(i) Prohibits the installation of hand dug wells and requires well drillers to provide enough depth in a well to allow an adequate water supply when the water table drops, and to inform the owner and the Health Department of the amount of water in a newly dug well; and,

(ii) Requires any well driller failing to submit the required state well completion form to the Health Department within the time frame allotted by state regulations be reported to the Department of Professional and Occupational Regulations.

(2). Artesian Aquifer

Because our artesian aquifers are rapidly being drawn down by industry and suburban development outside our region, particularly the Middle Peninsula and Southern Maryland, it is imperative that the County provide a well researched and coordinated effort to insure that drinking water will be available to future generations. Two members of the Rappahannock Aquifer System—the Bright Seat and the Upper Potomac aquifers--do not have a land surface source for recharge. Excessive draw down of these aquifers can have catastrophic effects for Northumberland County.

(a) NNPDC in cooperation with the Planning Commission shall work to identify solutions to the decline in groundwater levels in the artesian aquifers and present them in the upcoming State mandated water supply plan. . They shall identify potential partners in implementing those solutions and recommend structured liaison with partners including the Virginia Department of Environmental Quality and the Virginia Department of Health and Maryland organizations as applicable.

(b) For large water users, a groundwater withdrawal plan shall be submitted as part of the documentation for new subdivisions and commercial places, and such plans shall have the approval of appropriate state agencies. Major water withdrawals shall be made from the lower aquifers or from reservoirs. Public hearings may be required for commercial operations at the discretion of the County Planning and Zoning Administrator or by state agencies.

(c) Because of the threats to the artesian aquifer systems of the County from the enormous pumpage in southern Maryland and West Point and vicinity (see Appendix A Section 3); because of the weaknesses in the availability of hydrogeologic knowledge; and because of the governmental lack of attention to water problems in the region, it is important to have the Virginia Department of Environmental Quality incorporate the Northern Neck into the Virginia Coastal Plain groundwater model. The VA DEQ should designate the Northern Neck a Groundwater Management Area as a step towards protecting the groundwater resources from serious harm.

(d) Set up a monitoring system on a well in the County, to monitor well water depth, the level sodium/saltwater intrusion and other parameters as is being measured in Montross and Kilmarnock.

(3). Reservoirs

Because a water shortage is likely in the near future the County should plan for reservoirs as one of the sources of potable water.

(a) Current recommended sites should be protected from potential sources of contamination and development (See Chapter 3).

(b) The County should update the existing engineering study and develop a detailed economic and financial plan and schedule to bring at least one of the five proposed reservoirs on line in the 2010 – 2015 time period. This will provide the ability to expand the system of reservoirs as the supply from the current deep aquifer is depleted or becomes too saline.

(c) Other policies are addressed in Chapters 3 and 4.

(4). Other Water Supply Sources

Other sources such as rainwater harvesting should be considered and promoted as the available technology exists to make this a sanitary source of drinking water.

8. Watershed Protection for the Bay

The protection of the watersheds involves groundwater protection (discussed in the preceding item) and prevention of pollution in the Chesapeake Bay. The protection of the Bay is served by reducing the amount of runoff and groundwater discharge. Less runoff means less soil erosion and consequently fewer pollutants entering the Bay by maintaining a 100 foot RPA. Clearly, the preferred land use practices are those that reduce the amount of surface water and groundwater reaching the major rivers and Chesapeake Bay.

Policies for the protection of watersheds include:

(a) Any development or use of land shall be done in such a way as to preserve the integrity of the existing watershed, and in general drainage facilities may not be designed to change the course of water from one watershed to another.

(b) Sites intended for new development shall be designed in such a way that their post-development performance meets the criteria set forth by CBLAB and other state agencies in the following areas:

(1) soil erosion and sedimentation
(2) rainwater infiltration
(3) nutrients used
(4) indigenous vegetation

(c) Enforcement of RPA and RMA regulations designed to filter runoff through buffers and to manage development so as to minimize storm water runoff is to be continued. The use of riparian buffers bordering waterways so as to intercept groundwater discharge should be encouraged as a minimum. However the preferred method is to use principles of Low Impact Development, LID[4], to reduce storm water runoff in the first place, and to promote infiltration of storm water into the ground instead of conveying it off site.

(d) Support and expand the continuation of the Tidewater Resource Conservation and

4 Op. Cit. Chapter 4

Development Council (RC&D) testing program to evaluate the waters of the upper Great Wicomico River.

9. Tidal Shoreline Preservation

Shoreline erosion documented by VIMS in its Shoreline Situation report is significant within Northumberland County. Particularly affected are the shorelines exposed to the Chesapeake Bay (Figure 1-17). VIMS reported that erosion was taking place at rates of two feet or more per year in just about all of the County's shoreline that is exposed directly to the Potomac River and the Chesapeake Bay. Greater rates of erosion have occurred as a direct result of northeaster storms and hurricanes.

In April 2003 VIMS published a Northumberland County Dune Inventory. Approximately 6.3 miles of dune shore consisting of 59 separate dunes were identified in the County. These are on the Chesapeake side and the Potomac River Side of Smith Point. Dunes reside in areas of sand accretion and stability, such as around tidal creek mouths, embayed shorelines, in front of older dune features, as washovers, as spits and against man-made structures like channel jetties or groin fields.

Dunes act as a reservoir of sand which can buffer inland areas from the effects of storm waves and, in the process, act as natural levees against coastal flooding. Dunes are protected under the Coastal Primary Sand Dune Protection Act of 1980 and, where they occur, are valuable assets in shoreline preservation.
While shoreline erosion of exposed shorelines is almost entirely a result of natural events such as waves, rising sea level and land subsidence, there are some actions that can be taken both by individuals and through County policies that can mitigate or delay the adverse effect of shoreline erosion.

Dunes also are important habitat for many species and should be preserved in their natural state. Secondary dunes are also important, in case of depletion of the primary dunes; they become the first line of defense from erosive storm surge. Secondary dunes should also be preserved intact as much as possible.

Some of the actions that can be taken are identified below:
.

(a) Tidal marsh areas are to be protected and expanded through enforcement of wetlands regulations and through the addition of wetlands to the inventory as they are delineated in detail as part of the review process.

(b) Vegetation as an alternative to structures is to be promoted as erosion prevention mechanisms. A list of plants suitable for brackish or estuarine systems is given in Chapter IV of the CBLAB's Local Assistance Manual (p.VI-65).

(c) Shoreline protective measures should be planned for each subdivision rather than relying on individual owners to provide their own protection. Independent structures may often have adverse effects on adjoining properties. Also, wherever possible, vegetative approaches to erosion control are preferred over structures

(d) Establishing No Wake zones in narrow creeks, near marinas and near large wetlands.

10. Policies Concerning the Use of Tidal Waterfront Areas while Preserving Sensitive Environmental Areas

State and County policies regarding use of waterfront areas favor additional use of the Chesapeake Bay and its major tributary rivers for recreational use. A study of shoreline access is presented in the Chesapeake Bay Area Public Access Plan which covers all of the states which border on the Chesapeake Bay and its major river tributaries. While it is one policy of the Commonwealth of Virginia to encourage responsible additional recreational use of the rivers and the bay, it has other policies which are designed to protect the shorelines from harmful erosion together with the sensitive marshes and wetlands which border tidal waters. Accordingly, the following policies are established by Northumberland County to promote the use of selected waterfront areas for additional public recreation:

(a) The County plan for water access outlined in Chapter 4 shall be implemented. .

(b) The regulations of the RPA will be expanded to establish or expand performance standards for piers, boat houses and other structures designed to serve boat traffic.

(c) Alternate techniques to the use of bulkheads and rip-rap for protecting shorelines will be offered through the use of vegetation and other natural devices

(d) Restroom facilities should be considered for busy public water access locations during boating season, e.g. Shell Landing, Lodge Creek, and Crane’s Landing.

11. Intensively-Developed Shoreline Areas

Northumberland County does not have an area that would be classified as intensively developed. The most intensively-developed area within the County is in Reedville which has a residential density that averages 1.14 lots per acre. This is considerably under the criterion of four dwellings per acre that is required to qualify as an intensively-developed area by CBLAB's criteria.

The following policies are for the purpose of providing guidelines for development within the village areas:

(a) All development within the villages will be subject to review and approval on an

individual project basis. This review shall include the proposed site plan and the use of property to assure that new development, including redevelopment of existing uses, is consistent with policies established to protect state waters as well as to promote the goals of the County for economic development and to serve the public health, safety and general welfare of the County.

(b) Management of storm or other water discharged from each site shall be performed in a manner that the run-off meets the requirements as to quantity and nutrients of the Resource Management Area of the Zoning Ordinance.

(c) Public sewerage facilities installed in the villages or in major new developments shall be designed and constructed consistent with the State's and County's objectives to protect state waters.

12. Managing Potential Conflicts between Land Use and Water Quality Protection

The major focus of potential conflicts between land use and water quality quite naturally lies in those areas where the population is concentrated but also occur on agricultural lands.. Among the specific areas more subject to potential conflicts and the possible causes of such conflict are the following:

(a) Chemicals and other nutrients used on agricultural lands can percolate into the groundwater of the surficial aquifer and be carried into creeks by groundwater discharge and runoff. These contribute to reduction in water clarity and reduction in important underwater grasses. It has been known for over 30 years, since the first Army Corps of Engineers study of Chesapeake Bay, that agricultural practices are the major source of pollution of the Bay. In our setting, with little or no urban runoff and effective wastewater treatment plants, it constitutes most of the nitrate and phosphate pollution of our local waterways Future adverse uses can be reduced through use of erosion control plans, nutrient management plans and integrated pest management. Best Management Practices and the establishment of permanent forested buffers in the Bay Act are programs designed to reduce the adverse impact on water quality as a result of agricultural operations.

(b) On-site sewage disposal for residential and limited commercial use, if not properly installed and maintained, can result in both contamination of ground water and in case of extreme failure of raw effluent being carried via runoff to creeks which flow to the Chesapeake Bay. . The Bay Act requirement to inspect septic systems and to pump septic tanks every five years, if necessary, will help improve groundwater quality. The Health Department issues all sewage disposal system construction permits and inspects them. This, in general, is focused on new construction which along with the time of property transfer is the best time to initiate new requirements. A regional septage disposal system should be planned as a solution to the problem of individual Counties in the Northern Neck not

having adequate disposal capability

(c) Development of land which abuts tidal waters increases the probability of shoreline erosion as well as diminishing the amount of protective marshlands and wetlands. This potential conflict is addressed by a strategy that discourages the use of property in a way that is potentially detrimental to water quality both in open streams and in the aquifers. The strategy includes: installation of erosion control structures or plantings that have a demonstrated ability to decrease shoreline erosion; and septic tank and underground fuel storage tank monitoring and/or replacement as necessary to prevent pollution of state waters and related actions.

(d) Use of modern land planning techniques as a means of preserving open space, including agricultural lands and forests, will minimize the impact of residential development on the environment and on state waters. Such techniques may include: planned unit development, cluster subdivisions with open space preservation, historic landmarks preservation, density zoning and the like. The objective in using these techniques is to permit a similar level of development as would normally be permitted but to improve the efficiency of land utilization.

It is important for the County to provide information to the residents about various means to protect water quality and how each property owner can contribute. Each of the four areas above should be addressed as a minimum and could be distributed in conjunction with approval of building or land disturbance permits. The above items should be considered in preparing the regulations to implement the Shoreline Development and Conservation Overlay discussed in Chapter 3.

13. Soil and Tidal Water Conservation Policies

Under the new Chesapeake Bay Agreement – Chesapeake 2000, Virginia and the other Chesapeake Bay states and the District of Columbia have agreed to improve water quality sufficient enough to protect the living resources of the Bay and to remove the Bay and its tributaries from the EPA list of “Impaired Waters” by the year 2010. Unlike point sources, where treatment technologies can achieve specified nutrient reductions, non-point source controls are much more difficult to implement and maintain. These non-point source pollution controls encompass multiple strategies and must be placed on land by thousands of landowners, land managers, local governments, and others. An ambitious interstate program is planned.

The non-point source approach under the coordination of the Virginia Department of Conservation and Recreation is to refocus available tools, to steer new resources to Virginia’s strongest non-point control programs, and to push them to maximize reductions across the landscape. These efforts will focus on seven programmatic areas:

1. Agricultural Best Management Practices (BMP) acceleration;

2. Expansion of Nutrient Management Planning and implementation efforts to include urban and mixed open lands;
3. Consolidation and strengthening of the Virginia Storm water Management Program;
4. Enhanced implementation of the Virginia Erosion and Sediment Control Program;
5. Strengthen implementation of the Chesapeake Bay Preservation Act;
6. Enhancement of NPS Implementation Database Tracking Systems; and
7. Enhance outreach, media, and education efforts to reduce pollution producing behaviors.

The policy and plan of Northumberland County is to support the Northern Neck Soil and Water Conservation District in the implementation of these programmatic areas and to work jointly to develop specific strategies and plans to address these issues.

C. MAJOR REGULATORY ELEMENTS OF THE WATER QUALITY PROTECTION PLAN

1. Chesapeake Bay Act - **The Resource Protection Area Regulations:** established in the Chesapeake Bay program will be continued. These regulations provide immediate protection to all tidal wetlands along the shores of streams and to known non-tidal wetlands adjacent to tidal wetlands. As a practical matter, the protected areas extend to most of the major and minor creeks and branches that run throughout the County. This protection area includes a buffer area around all previously defined wetlands which acts as a vegetative *strainer* to pollutants that may otherwise be carried to streams and wetlands by surface runoff and groundwater discharge.

2. Chesapeake Bay Act - The **Resource Management Area Regulations:** The strategy in the RMA (all area not in the RPA which includes the remainder of Northumberland County) is to allow development but under a set of performance standards which are designed to reduce the quantity of potential pollutants that reach the RPA. This is done by application of Best Management Practices of the State Water Control Board and more intensive review of all building applications.

3. **Subdivision Ordinance**: provides the requirements that must be met by developers for establishing a subdivision. This Ordinance references and incorporates sections of the Chesapeake Bay Act.

4. **The Zoning Ordinance**: offers another tool which will enhance the County's capability of managing development. In addition to the RPA and RMA, the overall zoning ordinance strengthens the ability of the County to manage development. A separate ordinance contains floodplain regulations.

5. **County-wide Land Use Policies**: are proposed to upgrade over a period of time specific point sources of pollution that either contribute or could contribute to further

degradations of the Chesapeake Bay. The general policies are as follows as regards water quality:

(a) Public and private sewage treatment plants shall be located, constructed and operated in a manner so as to insure against possible contamination of the Bay through operational error or natural disaster. State-of-the-art nutrient removal should be installed in all facilities and upgraded as better technology becomes available.

(b) Solid waste landfills, public or private, must comply with the strictest of safety and health requirements and include all state and federal standards.

(c) Underground tanks used for storage of chemicals or petroleum products should be monitored according to state requirements. Replacement of faulty tanks with approved materials shall be done within a reasonable time.

(d) Land development in areas that are sensitive to erosion and land developed along shorelines or in any other environmentally-sensitive area should be monitored carefully through the administration of site plan review and enforcement of RPA/RMA regulations.

(e) Land development for subdivisions is to be encouraged to be designed to preserve open space using innovative land development techniques which promote the preservation goals of this plan. .

CHAPTER 6
IMPLEMENTATION AND WORK PLAN[1]

A. INTRODUCTION

The Implementation and Work plan provides a description of the major work items that need to be performed to implement the recommendations and guidance of this Comprehensive Plan. This Chapter does not include a work plan for all the possible action items from the preceding chapters but focuses on the most critical. In many aspects, the County is proceeding in the directions established in the 1996 version of the Plan and the County is doing very well. Many of the differences between this Plan and the previous version are a result of current and projected demographic and economic changes in Northumberland County and the desire to provide direction to future growth to retain the current character of the County and work toward the vision stated in the Preface.

B. PROCESS

The implementation of nearly all aspects of this plan requires actions of the Board of Supervisors. This involves updating County ordinances in accordance with the policies of this Plan, providing authorization or direction to the staff to perform work or expend resources, authorizing coordination with other governmental entities or establishing special boards, commissions or study groups. The Board of Supervisors is also involved in all authorizations for expenditure of County funds. In most cases the Comprehensive Plan recommends policy and the specific details of the policy implementation are left up to the Board and possibly further public hearings.

Many Board actions are based on recommendations or staff work performed by or overseen by the County Administrator and his staff.

Except where otherwise identified, the County Planning Staff has the initial responsibility for performing the work identified in each task in the Work Plan presented in this Chapter.

C. IMPLEMENTATION AND WORK PLAN

The Table that follows is organized by the three primary Chapters of this Plan: Chapter 3 Land Use Planning; Chapter 4 Public Facilities and Services and Chapter 5 Water Quality and Shoreline Protection Plan.

Chapter 1 *Analysis of Physical and Environmental Conditions* and Appendix A *The*

[1] FILENAME = Chapter_6_Final

Economy and Demographics of Northumberland County do not include items that require implementation or action since they describe the overall background for the Comprehensive Plan.

This Chapter 6 provides the specific plans to implement the highest priority strategies outlined in Chapter 2 *Issues Goals and Strategies*. The highest priority items are also discussed in succeeding chapters. Specific paragraphs of Chapters 3, 4 or 5 are referenced.

The items in the Implementation and Work Plan below are ranked by priority within each Chapter to reflect the urgency as well as logical sequencing and simple work load planning. There is no attempt to set priorities across the major chapters, i.e. a land use action item vs. a water quality action item.

It is expected that each of the work items in this Chapter will be completed prior to the next major update of the Comprehensive Plan, scheduled for 2010.

1. Chapter 3 Land Use Planning – Implementation and Work Plan

CHAPTER 3 LAND USE PLANNING – IMPLEMENTATION AND WORK PLAN					
No.	ITEM RANK	CHAP 3 REF		WORK DESCRIPTION	
3-1	1.			Perform a "Build-out" analysis of the County waterfront property to determine the availability for and impact of development.	
3-2	1			Perform a "Build-out" analysis for the major villages	
3-3	1			Update the digital version of the Zoning Map and add the overlays for the villages including Commercial Hubs and Support Areas; add the Reservoir overlay and the Highway Corridor Overlay.	
3-4	1	B.2.(f) B.4.a (2) B.4.a.(3) B.4.a.(9) B.4.g.(1) B.4.g.(2) B.4.g.(3) C.2		Update the Zoning Ordinance to define "Support Areas" including Waterfront Support Areas. Concurrently, review all permitted and conditional uses and their definitions.	
3-5	1	B.4.a (7) C.2		Relate zoning areas to the Commercial Hubs and Support Areas in the Village Maps in the Comprehensive Plan via a revision to the Plan.	
3-6	1	B.1.b(3); B.3.(a) & B.3.(d)		Modify the Zoning Ordinance and Subdivision Ordinance to control large residential subdivisions to protect agricultural and forested lands using selected and relevant Open Space and Conservation Site Design principles and requirements to provide open space. (See also Chapter 5.B.1.(c) &(d))	
3-7	1	B.1.b(4); B.3.(e)		Modify the Zoning Ordinance and Subdivision Ordinance to control smaller residential subdivisions to provide green space using selected and relevant Open Space Site Design principles and requirements to provide open space.	
3-8	1	B.4.a		Update the Zoning and Subdivision Ordinances to define acceptable and expected	

CHAPTER 3 LAND USE PLANNING – IMPLEMENTATION AND WORK PLAN					
No.	ITEM RANK	CHAP 3 REF		WORK DESCRIPTION	
		B.4.h C.2		features of planned communities considering a mix of homes including condominiums and other types of multiple-family dwellings.	
3-9	1	B.3.		Modify the Zoning and Subdivision Ordinances to establish a “Shoreline Development and Conservation Overlay” to assure development of the many miles of waterfront is accomplished consistent with the County vision.	
3-10	1	B.1.b(7) B.3.(b) Chapter 5: B.8(c)		Modify the Zoning and Subdivision Ordinances to work toward application of selected and relevant Low Impact Development principles in villages and in subdivisions where run-off may contaminate streams.	
3-11	1	B.2.(g) B.3.(h)		Modify the Subdivision Ordinance to work toward large subdivisions to be served by public water systems and community sewage systems. (See also Chapter 5.B.1.(a))	
3-12	1	B.4.a.(8) B 4.h (4) Chap 4: B.5		Modify the Subdivision Ordinance to require the design of new subdivisions located within villages to follow selected and relevant concepts of Traditional Neighborhood Development.	
3-13	2	B.5.(B)(3)(b)		The County should update standards for signs and lighting throughout the County	
3-14	3	B.5.(B)(4) B.4.g (1) B.5.(B) (3)		Modify the Zoning Ordinance to add a Highway Corridor Overlay District in accordance with the guidelines in section B.5.(B).	
3-15	4	B.5.(C) Chap 3: B.7.B.3		Modify the Zoning Ordinance to add a Reservoir Overlay District in accordance with the guidelines in section B.5. (C).	
3-16	5	B.4.a.(4)		The Economic Development Commission should take the lead to redefine the 2002 Enterprise Zones to bring them into and make them consistent with the Comprehensive Plan as a revision to the Comprehensive Plan. Work with the County Planning Staff, the NNPDC and State as required to implement the recommended changes once approved by the Planning Commission and Board of Supervisors.	
3-17	6	B.4.a Last Paragraph		The Planning Commission and citizens should prepare a set of “Village Plans” as described in the last paragraph of B.4.a and include the features of Section B.4.a.(8)	

CHAPTER 3 LAND USE PLANNING – IMPLEMENTATION AND WORK PLAN					
No.	ITEM RANK	CHAP 3 REF		WORK DESCRIPTION	
3-18	7	B.5.(A)(b)		Promulgate a resolution requesting that the County Historical Society (or other willing organization such as the Tourism Council) develop a complete inventory and database of historic and archeological sites to be used for tourism promotion and/or zoning decisions. Based on the findings, prepare a Historic Resources Management Plan as a component of the Comprehensive Plan.	

2. Chapter 4 Public Facilities and Services– Implementation and Work Plan

CHAPTER 4 PUBLIC FACILITIES AND SERVICES – IMPLEMENTATION AND WORK PLAN					
No.	ITEM RANK	CHAP 4 REF		WORK DESCRIPTION	
4-1	1	E.1, also Chapter 5: B.7.B.2(a)		The Board of Supervisors should assign a lead and supporting persons for a County Water Supply Working Group to respond to the State requirements for water supply plan; and to work with the NNPDC and other organizations to establish a long-range strategy for assuring adequate quantities of water for Northern Neck residents and businesses.	
4-2	2	G.5		The Board of Supervisors should assign a lead and supporting person to develop the Comprehensive Community Health, Housing and Social Services Plan and Implementation Strategy.	
4-3	2	C.1.c.		The Planning Commission should identify available resources and recommend to the Board of Supervisors a plan to implement the recommendations of the Northumberland County Public Water Access Improvement Project at Rowes Landing, Hampton Hall Creek, Coopers Landing and the Great Wicomico River.	
4-4	3	D.3 Last Paragraph. C.2. a,b,c		The County Planning Staff, in cooperation with the School Board or the Superintendent should explore options for the usable space at the current Middle School- Elementary School complex to determine the ability to accommodate the recreation and campus concepts and accommodate future growth.	
4-5	4	F.5		The Economic Development Commission should identify and define feasible regional marine research and educational sites and facilities to be located in Northumberland County and coordinate and cooperate with the County Planning Staff, VIMS, NNPDC and others as required to implement the concept.	

3. Chapter 5 Water Quality and Shoreline Protection Plan– Implementation and Work Plan

CHAPTER 5 WATER QUALITY AND SHORELINE PROTECTION PLAN – IMPLEMENTATION AND WORK PLAN					
No.	ITEM RANK	CHAP 5 REF		WORK DESCRIPTION	
5-1	1	B.4(b) and B.4(c)		The Zoning and Subdivision Ordinances should be reviewed and modified to include requirements that the shrink-swell, soil permeability, water table and other factors be evaluated as part of the plat review process and approvals withheld or conditioned where soils are unsuitable for development.	
5-2	1	B.5		The Zoning and Subdivision Ordinances should be reviewed and modified as necessary to be compatible with the policies for flood prone areas, wetlands, and natural habitat areas outlined in Chap 5 Section B.5.	
5-3	1	B.7.A.1 B.7.A.2 B.7.B.1		The Subdivision Ordinance should be reviewed and modified as necessary to be compatible with the policies for protection of potable water and providing and adequate supply of potable water as presented in Chapter 5 Sections B.7.A.1.; B.7.A.2 and B.7.B.1	
5-4	2	B.7.B.2(c)		The Water Supply Working Group supported by SAIF should work with DEQ and the Northern Neck Soil and Water District to have the County included in the DEQ Virginia Coastal Plain Groundwater Model and along with the rest of the Northern Neck be included in the Eastern Virginia Groundwater Management Area. Also, it should establish the specifications and procedures for a water monitoring station in the County. The monitoring system should be set up on the artesian aquifer to monitor well water depth, the level sodium/saltwater intrusion and other parameters as is being measured in Montross and Kilmarnock.	
5-5	3	B.7.B.3		The Planning Commission, supported by the Water Supply Working Group should encourage NNPDC (with support from the County) to update the existing engineering study and develop a preliminary economic and financial plan and schedule for the proposed reservoirs.	

CHAPTER 5 WATER QUALITY AND SHORELINE PROTECTION PLAN – IMPLEMENTATION AND WORK PLAN					
No.	ITEM RANK	CHAP 5 REF		WORK DESCRIPTION	
5-6	4	B.3.		The Health Department regulations should be modified to require enforcement of engineered systems inspections and reporting in order to implement the policies outlined in Chapter 5 Section B.3	
5-7	5	B.7.A.1.(j)(5)		The County should encourage the Health Department to proactively work to increase the knowledge of citizens concerning the advisability of testing individual wells on a regular basis.	
5-8	6	B.7.A.3.(b)		The County should coordinate an on-going program wherein residents should be asked to notify the County if they know the location of abandoned wells such as those used by former sawmills, former owners or land users	

VISION

Taking advantage of its distinctive history, location, and natural environment, Northumberland County will preserve its rural character and its maritime heritage while fostering economic growth and the well-being of its citizens. Economic growth will occur that provides jobs, supports agricultural and water-based activities and provides services to the retired community. Residential, commercial, and industrial development will be supported that enhances the social and economic life of the County and conserves its natural resources. It will become a model of planned waterfront residential and village business development that ensures the quality of life of its residents while attracting desirable new growth.

The education system will continue to improve so as to play a key role in helping children succeed and to become this County's future leaders. The government will continually strive to be fiscally sound and firmly responsive to meet the social needs of all members of the community.

APPENDIX A

2006

TECHNICAL REPORT

On

THE ECONOMY AND DEMOGRAPHICS OF
NORTHUMBERLAND COUNTY, VIRGINIA

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First revision of
1996 Plan –
Last change or print date:
July 17, 2006

Updated from the 1996 edition by
Gregory T. Haugan, PhD

FOREWORD

This Appendix was initially prepared by PMA: Community Planning Consultants of Newport News, Virginia for the 1996 Comprehensive Plan for Northumberland County.

This version is an update and rewrite using the framework established by PMA with changes to the tables, figures and text based on current statistical data. In several cases the tables and figures are changed because the baseline data changed or are no longer available or to improve consistency. New tables and figures have been added to present a more complete picture of the County.

The original PMA text and analyses are retained where still relevant.

The data contained herein were updated initially in late 2003 and again in late 2004 and late 2005.

This Appendix will again be updated in selected areas when further data become available during Spring of 2006 in time for the public hearing planned for June of 2006. All major data have been updated from the 1996 version and further updating will have no impact on any conclusions or decisions made on the basis of this Appendix.

TABLE OF CONTENTS

APPENDIX

Section Page

INTRODUCTION....6
SECTION 1: THE COUNTY'S ECONOMY....9
A. An Overview....9
B. Total Employment Summary....10
1. Distribution of "Covered" Employment....12
2. Covered Employment (Social Security)....14
C. Employment Details....15
1. Agriculture, Fishing and, Forestry....15
a. Agriculture....15
b. Forestry Data....18
c. Commercial Fishing....23
d. Agriculture, Forestry and Fishing Summary....24
2. Construction....24
3. Manufacturing....26
4. Wholesale Trade....27
5. Retail Trade....28
6. Transportation and Utilities....31
7. Finance, Insurance and Real Estate....32
8. Services....33
9. Government: Federal, Military, State....34
10. Local Government....35
D. Employment, Income and Economic Profile....36
SECTION 2: POPULATION....43
A. Trends and Projections....43
B. Age Distribution....45
C. Geographic Distribution of the Population....47
D. Other Population Characteristics....50
E. Housing....50
F. Historic Places....52
SECTION 3: SHORELINE AND WATER SUPPLY....55
A. Shoreline....55
B. Water Supply - Aquifer Status....59

ILLUSTRATIONS

LIST OF TABLES

Table 1.1 Labor Force Data 11
Table 1.2 Annual Average Covered Employment 12
Table 1.3 Occupations of Employed Residents 13
Table 1.4 Industry Employment 14
Table 1.5 Bushels Harvested 17
Table 1.6 Value of Seafood Catch 19
Table 1.7 Residential Building Permits and Construction Costs 21
Table 1.8 Retail Sales for Selected Years 24
Table 1.9 Retail Sales – Northern Neck 25
Table 1.10 Taxable Sales – Northern Neck Plus Essex County 15
Table 1.11 Fall Membership Northumberland County 31
Table 1.12 Individual Sources of Income by Year 32
Table 1.13 Per Capita Sources of Income by Year 33
Table 1.14 Place of Work Profile – Earnings and Income 33
Table 1.15 Place of Work Profile – Employment and Average Earnings 34
Table 1.16 Top 50 Employers - 2004 35
Table 2.1 Population Projections by Age Groups 40
Table 2.2 Other Population Characteristics 44
Table 2.3 Selected Characteristics of Housing Units 45
Table 2.4 Year Structure Was Built 45
Table 3.1 Riparian Land Use 45
Table 3.2 Bank Data 45
Table 3.3 Bank Cover 46
Table 3.4 Buffer Conditions 46
Table 3.5 Structures along Shores 47

LIST OF FIGURES

Figure 1.1 Employment in Agriculture, Forestry and Fishing 15
Figure 1.2 Farmland and Cropland 16
Figure 1.3 Census Count of Farms 16
Figure 1.4 Employment in Construction 20
Figure 1.5 Manufacturing Employment 22
Figure 1.6 Wholesale Trade 23
Figure 1.7 Retail Trade Employment 23
Figure 1.8 Retail Sales 25
Figure 1.9 Transportation and Utilities Employment 27

Figure 1.10 Finance, Insurance and Real Estate Employment 28
Figure 1.11 Services Employment..... 29
Figure 1.12 Government: Federal, Military, State 30
Figure 1.13 Local Government Employees 30
Figure 1.14 Total Personal Income and Retirement Income 32
Figure 2.1 Population Trends and Projections 38
Figure 2.2 Population: 2000 Census Block Groups 42
Figure 2.3 Population: 2000 Census Block Persons 43

APPENDIX[1]

THE ECONOMY AND DEMOGRAPHICS OF
NORTHUMBERLAND COUNTY, VIRGINIA

INTRODUCTION

Northumberland County, whose name came from a British noble house of the same name, was formed in 1648[2] as a subdivision of York County. At that time the County's area covered all of the combined territory now contained in Northumberland, Lancaster, Westmoreland and Richmond Counties. One of the area's first settlers, Colonel John Mottram, established a plantation known as "Coan Hall" near the mouth of the Coan River. Colonel Mottram later represented Northumberland County in the House of Burgesses. Within a few years of its establishment, Northumberland County was subdivided to form the other counties of the Northern Neck.

The county government as it is known today first began to take shape after Virginia adopted a new Constitution in 1869. That constitution established a government with an elected "Board of Supervisors" replacing a system of local government in which all of the County's governmental powers were vested in the Circuit Court. A previous constitutional amendment in 1851 provided for the election of certain local officers (appropriately called constitutional officers) to be elected by county voters. Today's county government operates essentially under the form of government just described.[3]

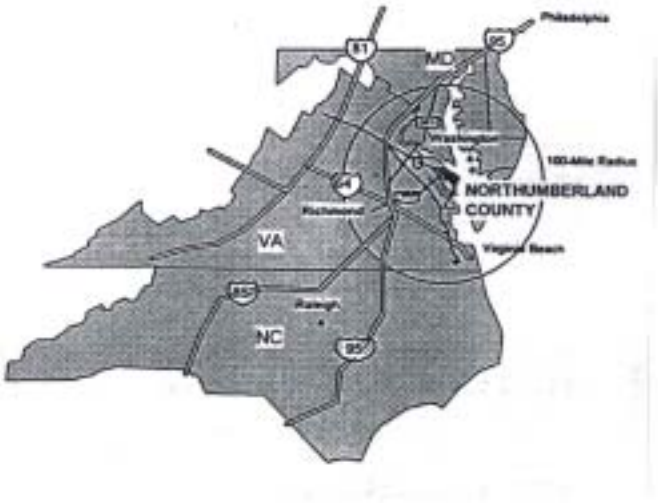
During its early years, the economy of Northumberland County, as for most of the Southern Colonies, was based on agriculture, tobacco being the principal crop. The orientation of the local economy was mainly toward other communities that could be reached by water transportation because there was no viable transportation linkage to major cities in Virginia. Several steamship lines served ports in Northumberland County which connected the economy to other ports on the Chesapeake Bay. This changed when automobile travel became the principal travel mode in the 20th century. By 1926 the Downing Bridge, across the Rappahannock River at Tappahannock, opened commercial routes to Richmond, and later the Robert O. Norris Bridge linked the Northern Neck with Middle Peninsula and Hampton Roads communities.

Route 360 forms the principal internal transportation corridor within the County as well as links the County to Richmond and other market areas to the west. Route 202 connects to Route 3 to provide a corridor to Northern Virginia and the District of Columbia. It also connects to Route 301 and then to Baltimore.

[1]Filename = Appendix.2005
[2]Virginia Historic Landmarks Commission.
[3]Source: the County Administrator's Manual.

While Northumberland County is to some extent isolated from the rest of the State, it has a number of advantages due to its location among which is the following:

- The County is within less than two hours' ground transportation from all points of Virginia's "urban corridor" which has been documented as that area of the State where most of the future growth is likely to occur.



- At the upper end of the urban corridor lies Metropolitan Washington, D.C. and immediately to the north thereof are Baltimore, Philadelphia, and other large cities of the Northeast Corridor.

- The many miles of waterfront property have made the County attractive to private developers and private citizens seeking second homes or retirement homes.

- The opportunities for recreational sports and fishing encourage a large increase in population during the summer months.

In order to assess the future potential of the County to benefit from its location and environmental advantages, the County's economic and demographic characteristics are presented in substantial detail in this report. The analysis consists of two parts:

First, the economy is examined from a standpoint of employment. Trends are presented for each of several business/industry groups along with forecasts of potential employment within each group for the next two decades. Employment is perhaps the best indicator of the economy of most communities because employment translates into income which has a multiplier effect within the business community. A community's economy is fueled by three sources: (i) employment in businesses and industries that sells their products beyond the County line, therefore bringing new money into the community; (ii) employment in businesses and services which primarily serves a local need for goods and services; and (iii) income from sources not related to current employment such as retirement income. Attempting to predict details of an economy is prone to error given the various fluctuations of the national and state economies. But past growth gives a clue as to where change is taking place, and it is the objective of analysis to identify the areas of change and how such change may play out in future years.

The second area examined in this report is population growth. Population growth in many

communities can almost be linked mathematically to employment. That is to say, for a population as a whole, only a certain percent works for monetary compensation, and the remainder of the population depends on the part with income for support. In communities where a predictable ratio between employment and population can be established, the major factor in predicting future growth lies in predicting future employment. In communities where a significant number of persons are retired and not in the potential work force, their economic impact is not related to employment, but to their retirement incomes and population growth may depend upon the availability of attractive retirement property and related services. For this reason, this Appendix associates economic and population growth very closely for one segment of the population and investigates the size and changes in the retired community and other population groups to estimate the overall population growth.

In Northumberland County, there are several unique factors that affect growth. A major factor in the past has been the availability of attractive water-front land. First, the growth of the past decade has been almost entirely from persons establishing homes within the County, mostly in prime water-front locations. Most of such persons are retired and fit into the second pattern of the economy as described in the previous paragraph. Because they bring with them their own assets and income, the related job expansion is to provide services for this group. Second, there are a number of baby-boomers looking forward to retirement and are purchasing waterfront lots and building weekend homes for eventual retirement and full time residents. Third, there is another population that is present in the County only during certain periods of the year. Although it is difficult to put quantitative numbers on vacationers who come to the County during weekends, holidays and throughout the summer months, they are known to make a substantial contribution to the economy of the County. The second and third groups overlap. Fourth, there are a substantial number of persons living in Northumberland County who commute to work outside the County and a lesser number of others who come into the County for work.

In summary, there are three population groups in Northumberland County: those who live here year-round and depend on regular employment for support; those who come during the summer and weekends for recreation; and those who came to the County just to live and retire in its excellent environment.

This Appendix is organized into three sections. The first addresses the County's economy and overall potential for growth of Northumberland County's economy using various indices of business activity. The second section examines demographic trends and projects probable population growth to year 2020 and the third includes data on the shoreline and water supply to support the material in Chapter 1.

SECTION 1: THE COUNTY'S ECONOMY

A. An Overview

During the early-to-mid 1900s, Northumberland County lost both agricultural employment and population. This mirrored trends nationwide as rural populations moved to urban areas seeking job opportunities. The County has a renewed growth; however, but during the last three decades and today the traditional industries of fishing, agriculture, and food processing, boat building and boat repair have not shared in this growth. The most rapidly growing new “industry” is a combination of tourism and retirement.

Seasonal housing represents 23 percent of the total housing stock in the County, and this market combined with the influx of retirees has stimulated growth in construction, real estate and insurance, services, retail and communications, transportation and utilities employment. The unique characteristics of Northumberland County's economy and population result in the economy "booming" in the summer and fall months with stability provided by a substantial year-round retirement community.

The County is first out of all Virginia communities in the proportion of its population that is 65 years of age or older (26.2%); and it also has the highest median age of any county in Virginia at 50.1 years. Conversely, the proportion of young adults and children is comparatively low. Growth is accounted for by in-migration since vital statistics report that deaths outnumber births almost 2:1 with an annual difference of a net loss of approximately 100 persons. With comparatively fewer children to educate and increasing property values, the County's taxes remain low and enhance its attractiveness to retirees.

Low interest rates during the 1990s and especially in the early 2000s stimulated home construction nationally as well as locally; this market not only is cyclical but very sensitive to interest rate changes. Although higher interest rates may slow the rate of construction of new homes temporarily, tax laws still favor ownership of both first and second homes. The latter market comprises a large share of home construction within Northumberland County as does retirement homes.

The remaining part of this Appendix examines trends and projects potential growth in employment and year-round population of the County. Employment projections are based on extensions of trends in the various sectors of the economy. They are "base-line" projections. Although they assume growth according to historic trends, they do not include estimates of additional employment that might be added as a result of new basic businesses or industries being established in the County or within commuting distance. Population projections are based on trends in past population growth.

B. Total Employment Summary

In reviewing employment figures reported here, the reader is apprised of some of the limitations on the data that have been used to perform these analyses:

- Most statistics for employment forecasts are derived from past employment reported by employers on Social Security Tax forms. Employment based on Social Security reports are referred to as "covered employment". Because many jobs are not covered by the Social Security Tax Act, there are gaps in the information using this source.

- These gaps are especially significant when it comes to reporting employment in agriculture, forestry and fisheries, because this employment historically is a very important part of Northumberland County's economy. These categories employed a reported 331 persons (about ten percent of the total residents employed) at the time of the 1990 census and dropped to 188 in year 2000. In addition, jobs in food processing manufacture and boat building and repair depend on agriculture, forestry and fisheries.

- Full employment data are reported only at the 10-year Census intervals, the latest being in 2000. The U. S. Census reports employment of individuals living within the County regardless of where they are actually employed.

- Another potential problem with employment data whether from the Census or from Social Security reports is that agencies handling data are not allowed to publish data if the data would disclose details of any one firm's business. But despite the weaknesses in certain data, there are enough employment data available to enable a reasonably reliable analysis to be made for planning purposes and the trends are unmistakable.

- Many County residents commute to jobs outside the County. The 2000 Census reported that 2,254 county residents lived and worked in the County and another 2,561 county residents commuted to work outside the County. Of the 2,561 out-commuters, seventy percent worked in other Northern Neck counties or in Essex County. Others worked in the Richmond City area, the Northern Virginia - DC area, or elsewhere. Residents from other communities also commuted to jobs within Northumberland County. The 2000 Census reported 777 in-commuters, 606 of whom came from other Northern Neck counties and Essex County.

- The dollar figures for all years are presented in current-year dollars. This means for a true comparison year to year, the data should be converted to constant-year dollars. Where this might be significant, it is mentioned in the text.

The following Table 1.1 presents the current seasonal fluctuation of employment of county residents. The unemployment rate ranged from a low of 3.3 percent in July 2005 to a high of over 6.3 percent in January 2005 –lower than 2004 and much lower than 2003. (Note: 10 years ago the range was from 5.6% to 22.9% or more than double that of today.)

The second part of Table 1.1 presents some very interesting trends. First, over the past ten years up until 2004 the civilian labor force of County residents (not jobs in the County) has remained almost constant, only increasing about 3% overall while the population has increased about 16%; however, the labor force increased significantly in 2004 and again in 2005, matching the overall county population growth rate. More data are required to determine if this trend will continue.

Table 1.1A
Labor Force Data - Monthly

Monthly Statistics					
Year	**Month**	**Civilian Labor Force**	**Employment**	**Unemployment**	**Unemployment Rate (%)**
2005	October	6,472	6,267	205	3.2
2005	September	6,464	6,245	219	3.4
2005	August	6,568	6,343	225	3.4
2005	July	6,649	6,435	214	3.2
2005	June	6,583	6,342	241	3.7
2005	May	6,509	6,259	250	3.8
2005	April	6,552	6,287	265	4.0
2005	March	6,502	6,179	323	5.0
2005	February	6,468	6,095	373	5.8
2005	January	6,495	6,083	412	6.3
2004	December	6,180	5,916	264	4.3
2004	November	6,100	5,880	220	3.6
2004	October	6,114	5,915	199	3.3
2004	September	6,074	5,852	222	3.7

The seasonal variation in unemployment has been diminishing significantly over the past few years.

Table 1.1B
Labor Force Data - Annual

Annual Statistics				
Year	**Civilian Labor Force**	**Employment**	**Unemployment**	**Unemployment Rate (%)**
2004	6,019	5,747	272	4.5
2003	5,417	5,117	300	5.5
2002	5,332	5,016	316	5.9
2001	5,261	4,989	272	5.2
2000	5,384	5,143	241	4.5
1999	5,303	4,906	397	7.5
1998	5,138	4,693	445	8.7
1997	5,262	4,695	567	10.8

Annual Statistics				
Year	**Civilian Labor Force**	**Employment**	**Unemployment**	**Unemployment Rate (%)**
1996	5,188	4,530	658	12.7
1995	5,292	4,631	661	12.5
1994	5,341	4,665	676	12.7
1993	5,350	4,616	734	13.7

SOURCE: LAUS Unit and Bureau of Labor Statistics, Virginia Nov 2005

The County unemployment rate has been steadily decreasing and the size of the work force living in the County has increased at the approximate same rate as the total population. The increase in County population has been approximately evenly split between retirees and persons adding to the work force.

1. Distribution of "Covered" Employment

Table 1-1 above is total employment as defined by the Virginia Employment Commission. It is different from covered employment which is based on Social Security data as mentioned earlier. As reported by the Virginia Employment Commission, the distribution of employment in Northumberland County for jobs covered by the Social Security Act is presented in the following table for selected years.

Table 1.2
Annual Average Covered Employment
Selected Years 1987 - 2003

	1987	1988	1990	1992	1994	1996	1998	2000	2001	2003#
Agriculture	D	D	31	35	49	47	37	37	48	
Mining	0	0	0	0	0	0	0	0	0	
Construction	166	244	219	228	201	213	261	301	300	
Mfg- Total	716	637	580	872	746	790	698	609	570	
Mfg - Dur	135	141	154	129	120	133	112	115	123	
Mfg-Nondur	581	541	426	743	627	657	586	493	447	
Transportation	117	105	110	119	146	105	114	165	149	
Trade-Wholesale	75	74	79	78	67	78	59	61	59	
Trade-Retail	311	327	304	321	329	409	417	389	432	
Fin.,Ins., R.E.	75	76	104	103	96	84	96	90	79	
Services	188	224	302	301	364	408	464	574	577	
Gov-State	12	12	13	27	22	16	22	26	25	
Gov-Local	271	284	307	317	363	355	388	435	444	
Gov-Federal	37	39	38	32	32	33	31	39	28	
Nonclassifiable	1	0	0	0	0	0	2	0	0	
TOTAL	**2,123**	**2,187**	**2,091**	**2,431**	**2,404**	**2,536**	**2,589**	**2,724**	**2,710**	
Employment of all County Residents as reported by U.S. Census			4,192					4,894		

Note: "D" = Protected from disclosure of any one firm's business
#: to be updated when available

Source: VEC Table ES-202 for Selected Years

Census employment figures for 1990 and 2000 are included at the bottom of Table 1.2. They illustrate the difference between covered employment reported by the Virginia Employment Commission (VEC) for jobs in the County and total employment of County residents as recorded by the Census. The Census reported that from 1990 to 2000 Northumberland County experienced an increase in employment that averaged 1.7 percent per year. VEC's employment figures indicate a 2.7 percent per year average increase for the same year period, 1990-2000 for in-county jobs.

The major increases in County jobs over the past 10 years have occurred in four areas: Construction, Retail Trade, Services, and Local Government (which includes the schools) – Three of these areas are related to growth in the retirement community.

The next table shows how employment of county residents was distributed among the major occupational classes as reported by the U. S. Census and which classes gained or lost employment during the 1990s. These data present the occupations of County residents; some of these jobs are located in surrounding counties. The first three classes represent white collar occupations.

Table 1.3
Occupations of Employed Residents, 1980, 1990 and 2000*
Projections for 2010 and 2020

OCCUPATIONAL CLASS	1980	1990	2000	2010	2020
Management, Professional, and Related Occupations	554	697	1,470	1,500	1,550
Service Occupations	451	564	802	950	1,100
Sales and Office Occupations	732	1,116	1,140	1,190	1,220
Farming, Fishing and Forestry Occupations	368	331	188	190	190
Construction, and Maintenance Occupations	847	870	608	710	850
Production, Transportation, and Material Moving Occupations	603	614	686	750	850
Total Employed in/out County	3,555	4,192	4,894	5,291	5,760
Population - Actual or Forecast	9,828	10,524	12,259	14,300	16,000
Percent Employed	36.17%	39.83%	39.92%	37.00%	36.00%

*Persons 16 years and older, residing in the County
Source: U.S. Census 1980, 1990, 2000, Table DP-3

Table 1.3 presents the dramatic changes that have occurred over the past 20 years in the work force in the County. White collar jobs as illustrated in the first three categories have increased significantly from 49% in 1980 to 57% in 1990 to the current 70%.

Construction trades have decreased since 1980 in numerical terms; they still are decreasing as a percentage of the work force being currently at approximately 30% but are in process or rebounding as new construction increases.

Projections are based on working backwards from the VEC projections of total population for years 2010 and 2020. It is assumed the percent employed will decrease due to the aging population and continued in-migration of retired persons attracted to the waterfront properties.

Growth is expected in two areas: (1) increases in construction, retail trade, and transportation and utilities related directly to population growth; and (2) growth in services related to these demographic changes.

This table, like the previous table, shows employment growth over the past 10 years is related to growth in the retirement and professional communities

2. Covered Employment (Social Security)

Examined next are jobs actually located within Northumberland County as opposed to the preceding analysis which examined employment patterns of all employed residents of the County. Details of each major employment sector are examined as a basis for projecting future growth potential of each sector. This analysis was performed by first establishing a baseline of employment trends for each employment category using data reported by VEC, (Social Security covered employment). A baseline is projected separately for each industry group shown in Table 1.4 including employment in farming, fishing and forestry. Additional data are included for this latter category to provide additional insight into trends.

Table 1.4
Industry Employment 1980, 1990, 2000 and
Projections for 2010 and 2020

INDUSTRY/YEAR	1980	1990	2000	2010	2020
1. Agriculture, Forestry, Fishing, Hunting	571	366	393	390	390
2. Construction	201	453	512	600	700
3. Manufacturing	936	617	679	670	670
4. Wholesale Trade	74	108	91	100	100
5. Retail Trade	318	428	524	610	710
6. Transportation and Public Utilities	61	163	225	270	300
7. Finance, Insurance, Real Estate	152	277	304	360	400
8. Services	711	669	1,004	1,300	1,440
9. Government: Federal, Military, State	92	109	111	120	120
10. Local Government	284	310	438	445	450
Total Employed in County	3,400	3,500	4,281	4,865	5,280
Population - Actual or Forecast	9,828	10,524	12,259	14,300	16,000
Percent Employed	34.60%	33.26%	34.92%	34.00%	33.00%

Source: Bureau of Economic Analysis, Reports CA25

The population forecasts were made by VEC and the changes in percent employed are consistent with the decrease in the percentage in working population as compared to the baseline year 2000.

The trend in percent employed was used to determine the approximate size of the workforce. These numbers do not include any significant change in the make-up of the industries in the County. Obviously, should a large company move into the County or if there is some other significant change in the demographics, the projections would need to be changed. At present, there are no significant changes on the horizon and no reason to expect any significant change in the trends.

Note that the numbers of total persons employed in the County in this table are lower than the numbers for the occupations listed in the previous table; the difference is due to more persons having jobs outside the County than those coming in to the County to work.

C. Employment Details

The following sections address each employment category of Table 1.4 above along with a graphic representation of the trends and the rationale used for the forecast.

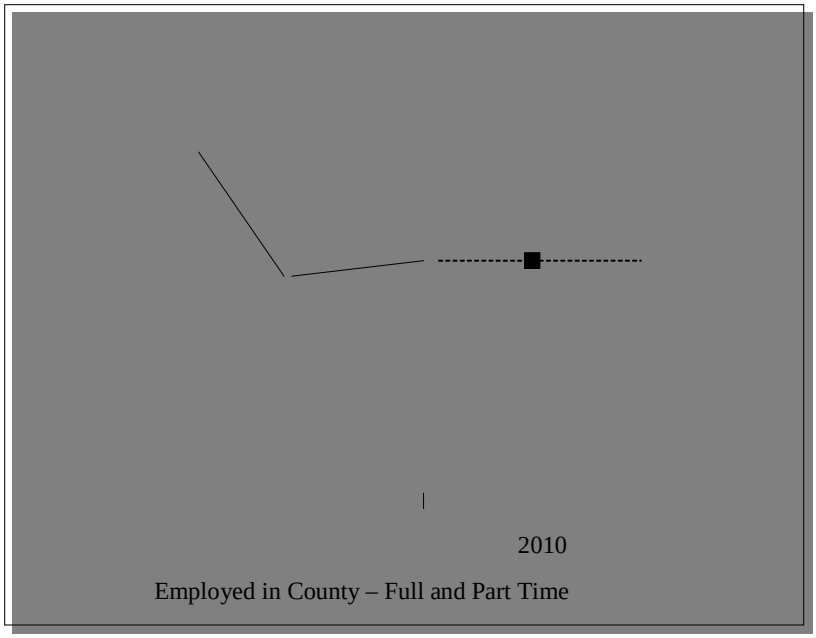
1. Agriculture, Fishing and, Forestry

The Agriculture, Fishing and Forestry category is analyzed in much more detail because of the historic role of these industries in the economics of the County.

a. Agriculture

Figure 1.1 presents the data of Table 1.4 in graphic format. After the large drop between 1980 and 1990, the employment stabilized at approximately 390 persons where it currently remains. Looking into the future of these industries in the County, there is no reason to believe there will be a significant change up or down over the next 10 to 20 years. There will be pressure to develop farmland, especially along waterfront and the highways and adjacent to villages. Once farmland is converted into residential lots, the process is irreversible.

Figure 1.1
Employment in Agriculture, Forestry and Fishing



The next two Figures support the assumed level trend by presenting some of the independent variables that drive employment in this sector.

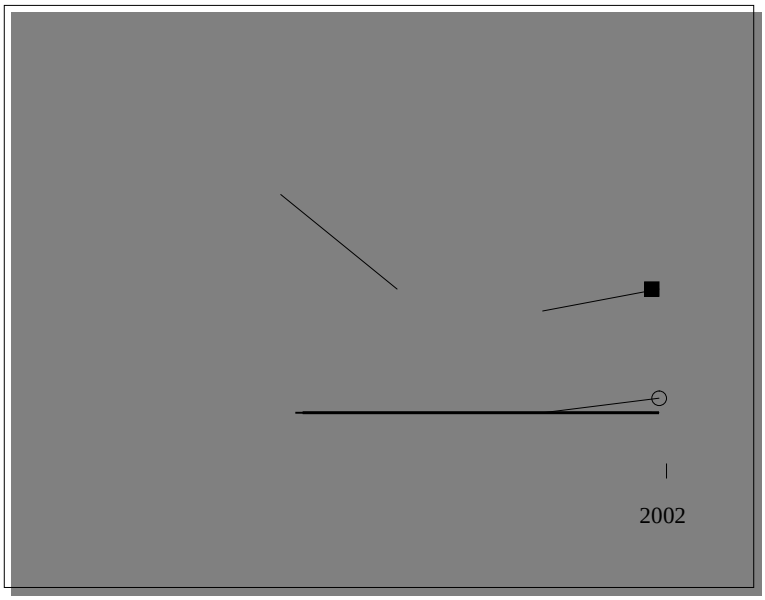
The amount of land in farms increased to 40,141 acres in 2002 from 38, 151 acres in 1997 (there were 41,290 acres in 1992). The average size of farms was 323 acres in 1992, 313 acres in 1997 and 314 acres in 2002.

The number of full time farms decreased from 76 farms in 1992 to 74 farms in 1997 and increased to 83 in 2002.

The market value of agriculture products sold increased 21 percent from 1992 to $9,645,000 in 1997 then dropped to $7,408,000 in 2002. Crop sales accounted for 98 percent of the market value and livestock sales for 2 percent. The market value of agriculture products sold as an average per farm increased 27 percent from $62,206 in 1992 to $79,056 in 1997 then decreased to $57,876 in 2002.

Government payments to 74 farms were $711,000 in 2002. The net cash income from operations in 2002 was an average of $13,488 per farm.

Figure 1.2
Farmland and Cropland



SOURCE: 1997, 2002 Census of Agriculture, County Profile;

Figure 1.3
Census Count of Farms

SOURCE: 1997, 2002 Census of Agriculture, County Profile

Between 1974 and 1997 the production of grains actually increased except for corn although it has been increasing since the low point in 1987. The production of wheat increased more than 90 percent and soybeans in 1997 were comparable to 1974 although production varied widely in intervening years. The ten years between 1992 and 2002 have seen relatively stable harvests comparable to the 1974 levels although the mix of corn and wheat has changed.

Table 1.5
Bushels Harvested

	1974	1987	1992	1997	2002
Corn	1,218,419	626,531	1,029,812	1,192,488	901,284
Wheat	352,706379,983	571,608	672,903	625,428	
Soybeans	419,246333,296	544,034	424,084	398,351	
TOTAL	**1,990,371**	**1,339,810**	**2,145,454**	**2,289,475**	**1,925,063**

SOURCES: Census of Agriculture, 1974, 1992, 1997, 2002

In addition, in 2002 there were 28 farms producing 136,457 bushels of barley on 1,760 acres down from 33 farms producing 152,426 bushels on 1,929 acres in 1997.

Livestock production has decreased dramatically. The inventory of cattle and calves in 2002 was 537 (on 25 farms) and in 1997 it was 604, less than half of the 1,366 inventory in 1974. Other livestock and poultry are produced in insignificant quantities.

The contribution of the agriculture sector to the economy of the County has remained relatively stable since 1974. The biggest change is the number of farms which has been reduced dramatically. This sector is expected to hold steady over the next several years or decline further as farmland with waterfront is developed.

b. Forestry Data

Approximately 58 % of Northumberland is forested, (approximately 72,200 acres out of 123,100 acres, (101/194 sq mi.). Virginia as a whole is 62% forested. Forestry data specific to Northumberland County has a high variance because they are based on interpolation of regional data. The following are general, conservatively estimated trends of forestland change for Northumberland County compared to the whole Northern Neck.[4]

4 Information from Mr. Richard Steensma, Forester, and Tidewater Resource Conservation & Development Council, Forestry Committee

1) Northumberland County has gained approximate 2% in overall forestland cover since 1991; which may include wooded home lots, and/or working forest for future timber growth and wildlife habitat. The Northern Neck has remained relatively unchanged.

2) Northumberland harvesting volumes in cubic feet and board feet of pulpwood and saw timber has remained steady if not declined slightly in the past ten years. The Northern Neck conversely has shown a 45-50% gain in volume harvested.

3) As forestland grows and ages, pulpwood size trees change classification categories and become saw timber. Pulpwood sized forests have decreased in acreage to reflect increased acres of saw timber stands. In Northumberland County, saw timber sized forests occupy approximately 45% of the forest landscape, while pulpwood acreage accounts for 25%, seedlings and saplings grow on 30%. The Northern Neck collectively has 43% of its forest acreage in saw timber, 25% in pulpwood, and the remaining 32% in seedlings and saplings.

4) Overall Northumberland County has grown more timber than it has harvested in the past ten years. With timber changing from pulpwood to saw timber, more worth should be associated with that growth. The rate of harvesting and re-growth of the forestland has been on the order of 1% per year.

5) The mix of forest type is 28% pine, 63% hardwood and 9% mixed as shown on the figure below. In general throughout the Northern Neck, forest type acreage remains the same, though tulip poplar as an individual species has quadrupled in relative abundance in the 1 to 5 inch Diameter at Breast Height (DBH) since the last Forest Inventory & Analysis (FIA) of 1992.

All forest statistics are from FIA 1992 and FIA 2001, measured and compiled by the Virginia Department of Forestry and the US Forest Service.

The economic impact of forestry on Northumberland County is shown in the following tables.

Forest Industry Economic Values – 1999

Economic Output - Dollars	Direct	Indirect	Induced	Total
Northumberland County	4,992,359	1,318,013	907,617	7,217,990
Northern Neck PDC	115,957,044	60,105,397	35,474,486	211,536,925

Employment	Direct	Indirect	Induced	Total
Northumberland County	28	13	13	54
Northern Neck PDC	577	526	570	1,673

DEFINITION OF TERMS

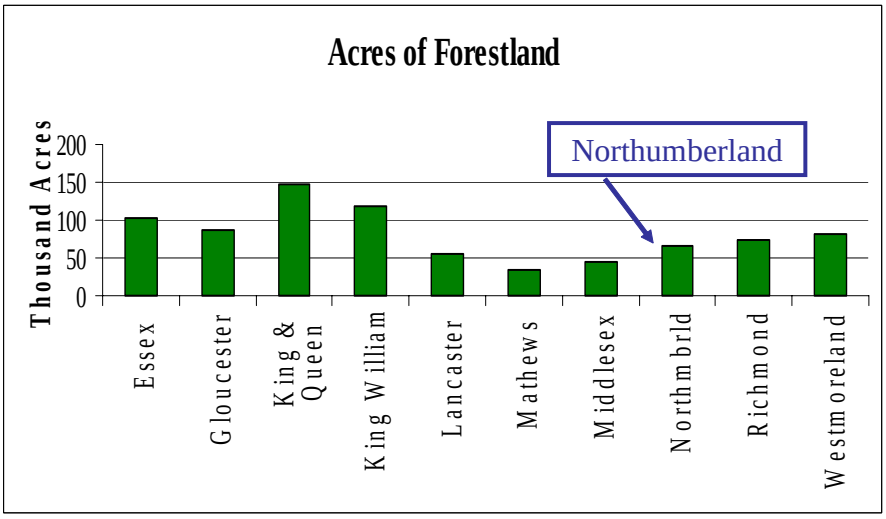
Direct Effects: Impact directly related to the selected industries production.

Indirect Effects: Additional impacts derived from businesses providing products or services to the selected industries.

Induced Effects: Additional impacts derived from employee spending.

Total Industry Output: Total value of production of goods and services by the industry for a given time frame.

Additional forestry data are included in the following tables and figures.

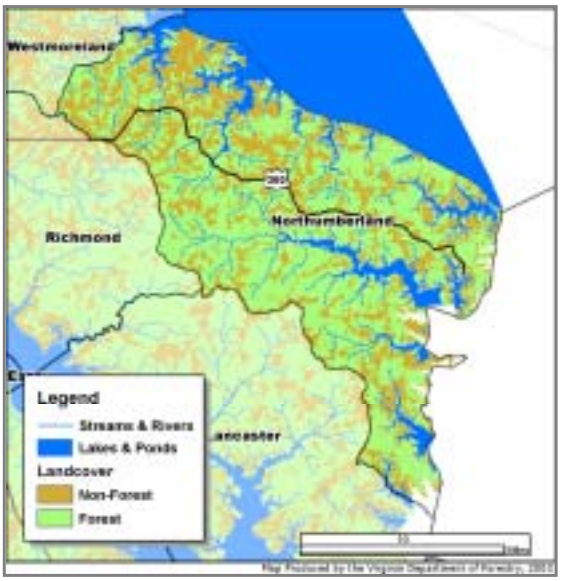


Forest Cover

Northumberland County

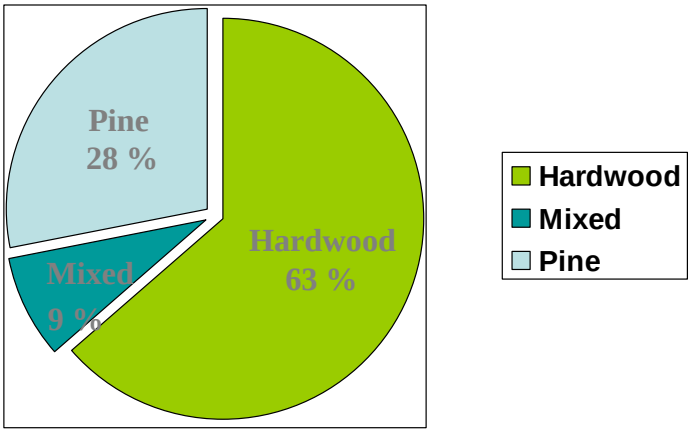
- **124,416 acres total land**
- **64,873 acres are forested**
- **52% forested**

- Virginia is 62% forested

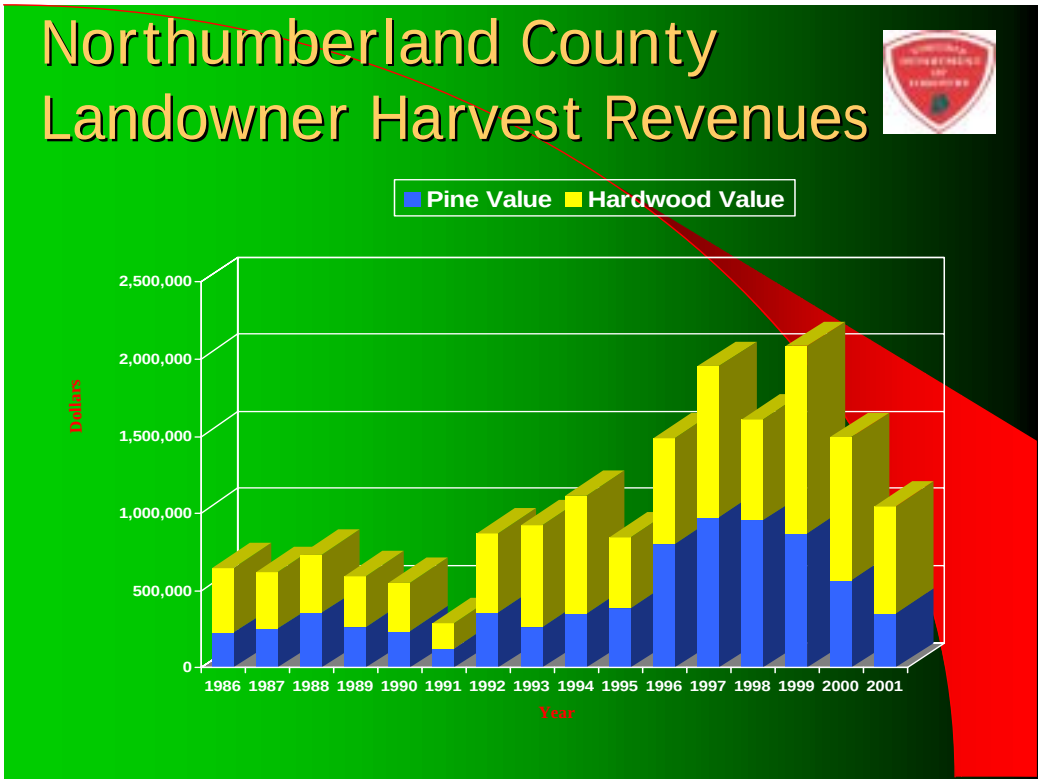


The Forest Resource

Northumberland County Forest Types



Hardwood plus Mixed is 72 %



Silviculture is a significant renewable resource contributor to the Northern Neck economy but has an almost insignificant impact on employment. Maintaining forests is important for environmental quality and to maintain the character of the County.

c. Commercial Fishing

Commercial fishing in Northumberland County represents a strong part of the local economy although it is not a major contributor to employment. The general health of the fishing industry in recent years is indicated by the data in the following table.

Table 1.6
Value of Seafood Catch, Northumberland County#

	1990	1994	1996	2000	2002
Alewife	$5,115	$3,059	$5,669	$2,433	$5,359
Blue Crab	1,179,223	1,743,581	1,664,763	1,424,398	1,720,702
Bluefish	48,369	24,343	19,143	11,432	34,757
Clams	NA	91,475	182,260	124,459	50,235
Croaker	2,204	134,230	594,871	790,322	576,375
Flounder	25,802	95,981	113,827	129,027	135,880
Menhaden[5]	*220,000*	*432,630*	*354,819*	*334,621*	396,797
Oysters	115,229	9,747	34,489	55,081	10,872
Sea trout	14,706	73,565	137,219	88,223	89,310
Spot	20,077	103,302	72,595	86,277	182,817
Striped Bass	81,402	78,070	280,900	336,898	274,953
Other Species	45,063	155,708	301,595	185,668	169,949
TOTAL	**$1,757,190**	**$2,945,691**	**$3,762,150**	**$3,568,839**	**$3,648,006**

#: Table to be updated later in 2006
SOURCE: Virginia Marine Resources Commission

Except for the menhaden industry (information in table is not complete, see footnote), the seafood catch reported in Northumberland County by the Virginia Marine Resources Commission is dominated by blue crab which had a value in 2002 of slightly in excess of $1.7 million dollars. That was up nearly 50% from 1990 but varied in intervening years. In 1990 oysters were in second place but valued at only about 10 percent of the blue crab catch. Oysters have been in short supply for many years and they are no longer a significant factor. The biggest newcomer since 1990 is Atlantic croaker, although most

5 Menhaden processed in the County generates the most local fisheries jobs, but information on that catch is not published because of protection from disclosure of an individual business' information. Menhaden not processed in the County is included in these statistics.

other species, except bluefish have increased significantly..

If the general health of the Chesapeake Bay is able to improve as a result of conservation efforts and implementation and enforcement of stricter requirements regarding runoff, it should have a positive effect on the fishing industry.

d. Agriculture, Forestry and Fishing Summary

In summary, employment in the category of Agriculture, Forestry and Fishing within Northumberland County, decreased by a significant percentage between 1980 and 2000, (from 571 to 393) mostly because of declines in the farming and lumber industries. Fisheries employment remains strong although with the recognition that much of the employment in this sector is seasonal and the traditional oystering has almost disappeared.

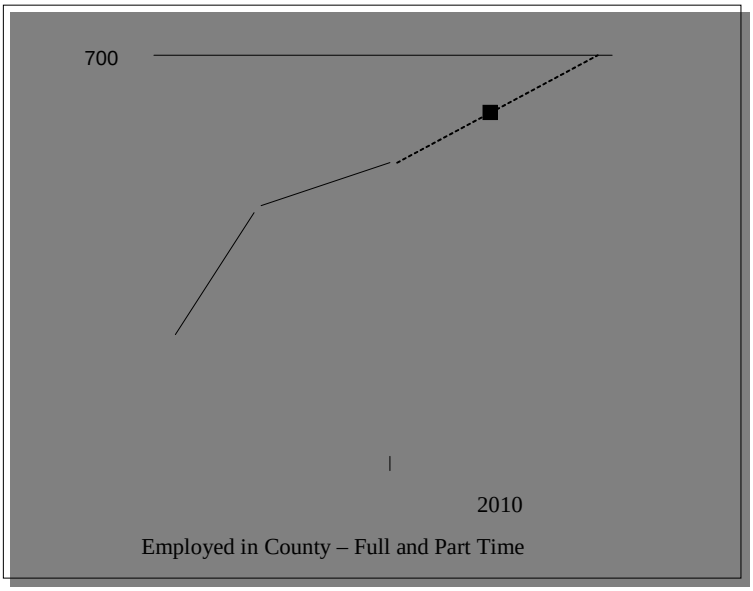
Although there will be pressures on farmers to sell property for development as the demand for retirement homes and a vacation home continues, there is no reason to expect a major decrease in the amount of farmland available, unlike counties elsewhere in the State. The demand is for waterfront property. Weighing these factors, employment projections would expect to stabilize at approximately 390 jobs or 8% of the work force. . There is also no reason to anticipate any significant change in the status quo as the determinants of farm land, numbers of farms, size of forests and fishing industry all remain relatively constant. It is possible that as the Bay water quality improves, the size of the fish catch will also increase which would have a positive impact on employment and offset a probable steady erosion of farming jobs. Note again, the data are for covered jobs; there is a lot of part time employment in this sector that is not recorded.

Fishing and Agriculture historically have been important sectors of the County economy. They currently provide employment for approximately 10 % of the County workforce and less than that percentage of total value added to the County economics.

2. Construction

The construction business has seen a dramatic increase in growth in the past few years.

Figure 1.4
Employment in Construction



Construction employment more than doubled from 201 workers in 1980 to 453 by 1990 then increased more slowly to 512 in 2000. The period saw dropping interest rates that especially stimulated home construction across the nation and several new, large recreational and retirement communities were started in the County in the early 1990s. Construction has remained strong in the County with builders having increasing backlogs and shortages of skilled construction workers making manufactured homes attractive. Federal tax laws still favor ownership of both first and second homes. Northumberland County's waterfront property continues to attract Baby Boomers looking for retirement locations and those who can afford new homes.

The rate of growth from 1990 to 2000 is expected to continue and the forecast is based on job growth approximately matching the rate of population growth in the County.

The following table shows the County's recent history of residential building permits, average value and estimated costs of construction.

Table 1.7
Residential Building Permits and Construction Costs
Northumberland County

YEAR	No. of SINGLE DWELLINGS	No. of MODULAR HOMES	AVERAGE VALUE*	TOTAL CONSTRUCTION COST ($000)
1985	117	N/A	$71,795	N/A
1990	321	N/A	$137,550	N/A
1995	99	44	$111,327	$21,557,078
2000	93	32	$184,814	$36,116,614

YEAR	No. of SINGLE DWELLINGS	No. of MODULAR HOMES	AVERAGE VALUE*	TOTAL CONSTRUCTION COST ($000)
2001	130	38	$159,046	$36,583,036
2002	129	50	$197,167	$49,941,955
2003	145	46	$216,505	$58,636,484
2004	172	78	$230,446	$74,283,869

* This includes only single family dwellings.

Reference: County Data Base, County Planning Commission Annual Reports

The data in Table 1.7 shows a strong demand for new houses in the County which supports a continuing strong construction labor market. The data also indicate the size of the homes is increasing as the average value is also increasing. This supports the assumption that the rate of increase in jobs in construction will approximate the population growth rate. The numbers of new homes is relatively small compared to other parts of Virginia so it is unlikely to attract significant numbers of new workers.

New dwelling construction accounts for only about 70 - 75% of the construction costs in the table above. The remainder is for docks, sheds, remodeling, expansions, etc.

The projection of approximately 17% growth over the 10 year period from 2000 – 2010 as compared to the actual 13% growth between 1990 and 2000 appears consistent with the growth in increase in building permits. The expected growth in the labor market in the County between 2000 and 2010 is expected to be 13% total.

Many factors could affect future local construction jobs: interest rates, tax laws, national economic health, regional employment, lumber prices, and the number of persons who buy homes for retirement within the County. However, high growth is expected to continue in the construction sector.

3. Manufacturing

Manufacturing employed nearly 1000 persons in 1980 then dropped dramatically to approximately 617 in1990. It has since risen to 679 persons in 2000 and is expected to remain close to that figure for the foreseeable future. About eighty percent of the manufacturing employees are engaged in seafood processing or boat building and parts. Other manufacturing in the County includes lumber (which has been declining), feed and fertilizer, and printing and publishing. Over the past ten years, food processing employment has fluctuated and lumber production has declined. The following graph shows trends since 1980, and projections for employment in 2020.

Figure 1.5
Manufacturing Employment

Trends and Projections

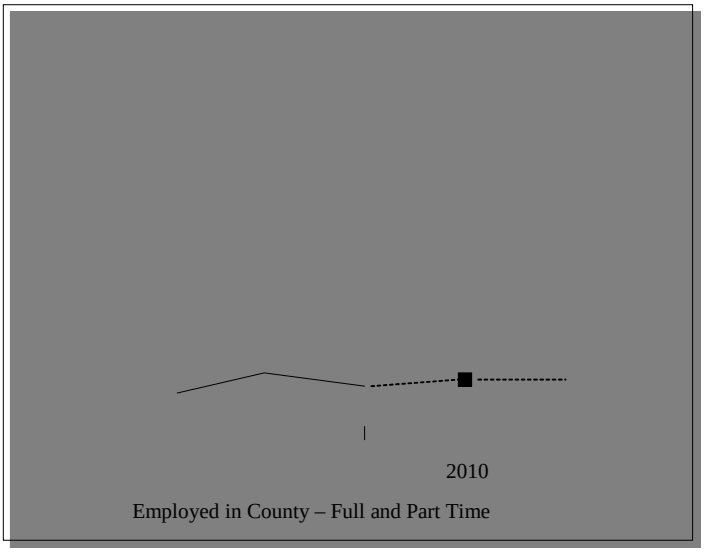
If light manufacturing firms find the County attractive, this segment has the potential to increase significantly, however, without evidence of this occurring, the projections are for employment in this sector to remain stable.

4. Wholesale Trade

Wholesale trade employment has been at about the same level for the past twenty years and is included in the projections at the same level as shown in the Figure below.

Figure 1.6

Wholesale Trade



5. Retail Trade.

There has been constant growth in retail trade employment in the County at a rate that exceeds population growth. The increase in population during the summer months is one explanation.

Figure 1.7
Retail Trade Employment

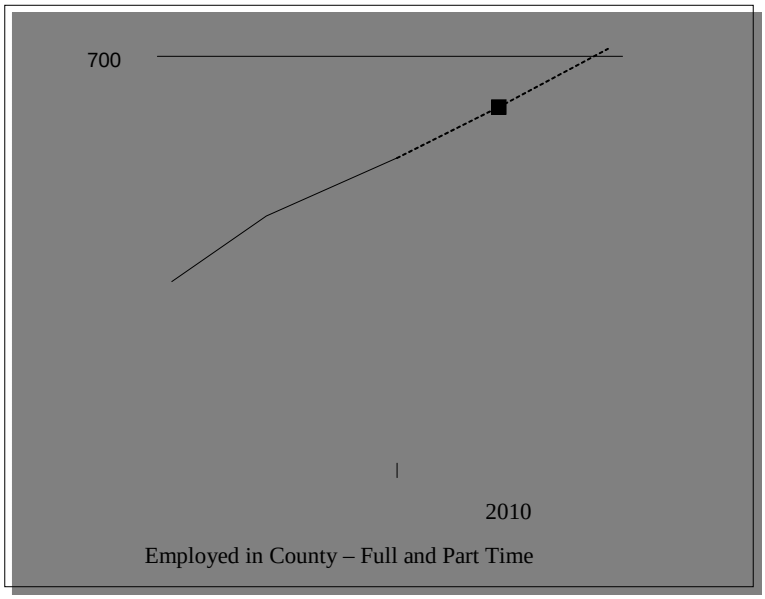


Table 1.8
Retail Sales for Selected Years
($000)

GROUP	1993	1996	2000	2002
Apparel	0	116	0	0
Automotive	$5,132	$5,740	$5,564	$5,193
Food	$8,904	$9,286	$19,938	$20,962
Home Furnishings	$260	$132	$153	$137
General Merchandise	$1,049	$1,254	$1,069	$1,402
Fuel	N/A	N/A	N/A	N/A
Bldg. Materials, Hardware	$5,565	$4,104	$8,751	$8,578
Machinery, Equip, Supplies	$543	$722	$594	$503
Miscellaneous	N/A	$4,742	$5,500	$6,611
Hotels, Motels, Camps	$367	$433	$439	$364
Alcoholic Beverage	$488	$474	$561	$317
Misc. and Unidentifiable	$12,039	$10,660	$3,911	$4,971
TOTAL	$34,348	$37,664	$46,479	$48,940

The table above presents retail sales for selected years based on deposits of sales tax revenues. Because statistics are not presented when it is possible to identify the specific company, many categories are not comparable since the values are included in the bottom category: “Misc. and Unidentifiable”. This applies to all groups.

Nevertheless, the table provides some useful information and trends.

The “Miscellaneous” group consists of antique shops, books, florists, nurserymen, gifts, flea markets, shoe repair, beauty shops, music instructors, banks, auctioneers etc.

The table below presents the bottom line of the table above in graphic form. In general, the growth of retail sales has approximately doubled the population growth rate. The number of firms reporting has stayed approximately constant at 325.

Some of the significant changes are increases in restaurant spending, building materials and hardware – all reflecting the increase in construction and movement of retired persons to the County.

Figure 1.8
Retail Sales

Table 1.9 below presents the retail sales of the four counties in the Northern Neck.

Table 1.9
Retail Sales - Northern Neck ($000)

Locality	1985	1990	1995	2000	2002	Distribution 2002
Lancaster County	$56,184	$80,010	$86,824	$106,881	$115,230	40.27%
Northumberland	$21,792	$31,134	$37,431	$46,479	$48,940	17.10%
Richmond County	$56,980	$42,116	$50,421	$58,867	$57,306	20.03%
Westmoreland County	$36,714	$45,355	$55,070	$60,619	$64,688	22.61%
Total Northern Neck	$171,670	$198,615	$229,745	$272,845	$286,165	

The largest percentage growth from 1985 to present has been in Northumberland County although the total dollar value is the smallest.

Northumberland County loses retail sales to all the surrounding counties, except Westmoreland County. Lancaster and Essex County draw sales from the rest of the Northern Neck. Essex has the Wal-Mart; and Lancaster has motels, various restaurants and numerous small shops in Kilmarnock, White Stone and Irvington.

The following table compares sales in Northumberland County with those in other Northern Neck communities and provides per capita data for the totals.

Table 1.10
Taxable Sales – Northern Neck Counties plus Essex, 2002
($000)

GROUP	Northumberland	Lancaster	Richmond	Westmoreland	Essex
Apparel	$0	$2,742	$639	$61,962	$2,347
Automotive	$5,193	$6,172	$3,804	$2,950	$4,502
Food	$20,962	$31,847	$7,261	$35,271	$17,672
Home Furnishings	$137	$2,159	$1,857	$372	$2,829
General Merchandise	$1,402	$3,525	$5,225	$3,787	$7,814
Fuel	N/A	N/A	N/A	N/A	$3,759
Bldg. Materials, Hardware	$8,578	$10,137	$5,500	$7,132	In M&U
Machinery, Equip, Supplies	$503	$2,759	$3,228	$433	$2,981
Miscellaneous	$6,611	$18,144	$6,544	$9,381	$5,067
Hotels, Motels, Camps	$364	$9,375		$1,131	$1,442
Alcoholic Beverage	$317	$838	$244	$326	$356
Misc. and Unidentifiable	$4,971	$27,529	$23,001	$3,842	$78,243
TOTAL	$48,940	$115,230	$57,306	$64,687	$127,013
Population - 2000	12,259	11,567	8,809	16,718	9,989
Per Capita Total Retail	$3.99	$9.96	$6.51	$3.87	$12.72

SOURCES: Virginia Department of Taxation; Virginia Statistical Abstracts; U.S. Census
(Differences in some totals reflect rounding differences)

Although the breakdown is shown for each category, the data are somewhat distorted because of the necessity to retain confidentiality of individual businesses as has been discussed.

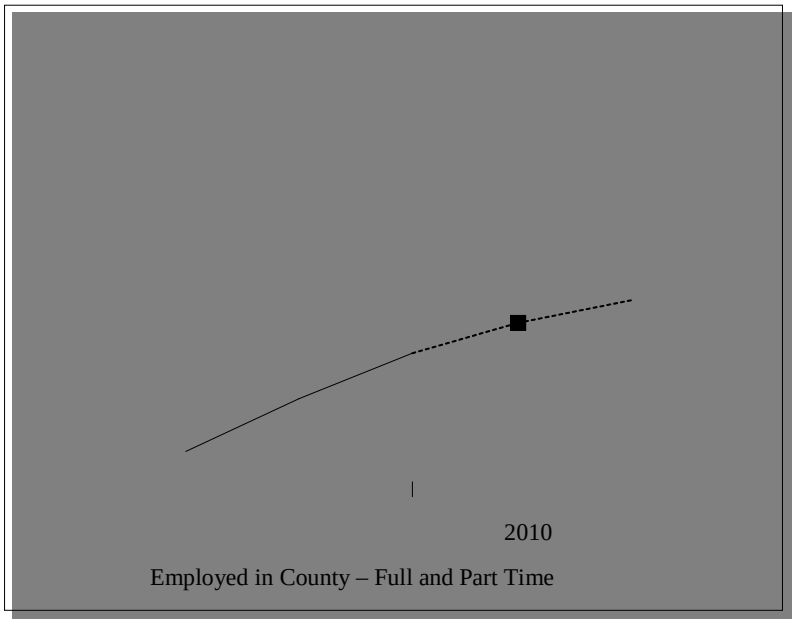
It appears that the County could increase its food group sales; hotel, motel and camp sales; and the miscellaneous group. The latter consisting of small, specialty shops which would benefit from being grouped in villages such as is the case in the communities in Lancaster County. The County has an additional seasonal market in the summer months and a large proportion of retirement-age residents year-round. The projections in Figure 1.7 assume the growth remaining at the current rates. This will result in some recapturing of the lost retail market share since the growth rate exceeds the population growth rate and approximates the income growth rate illustrated later in Table 1.12.

Northumberland County has the potential to capture more local sales that are currently lost to outside markets. The County is lagging significantly in retail sales.

6. Transportation and Utilities

Most of the 225 employees in the Transportation and Public Utility category work in trucking and warehouse operations. The remainder works in electric-gas-sanitation utilities. These jobs have been increasing steadily, at a rate higher than population growth and that trend is projected to continue. The trucking side should be influenced by the growth in the construction industry and the utility share match the housing market growth.

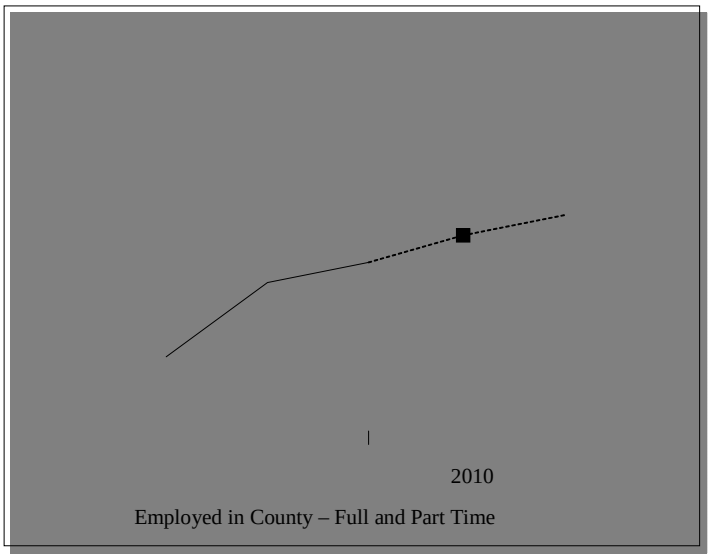
Figure 1.9
Transportation and Utilities Employment - Trends and Projections



7. Finance, Insurance and Real Estate

Employment in the Finance, Insurance and Real Estate, FIRE, grew rapidly between 1980 and 1990 with the establishment of several new large subdivisions. Growth slowed down between 1990 and 2000 to a level approximating the growth in the population. This rate is expected to continue as the County grows slowly.

Figure 1.10
Finance, Insurance and Real Estate Employment - Trends and Projections



The total number of additional homes and the turnover rate are expected to show a steady increase as baby boomers and retired persons move to the County. This means steady growth for this sector.

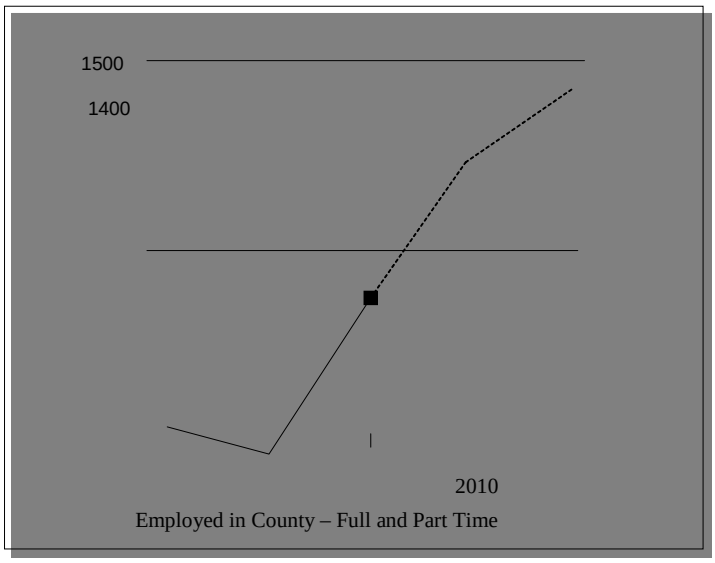
8. Services

The Service category contains a wide range of service employment including the following list:

Private Household	Auto Repair and Garages	Miscellaneous Repair
Engineering, Management	Personal Services	Business Services
Health Services	Membership Organizations	Legal Services
Amusement & Recreation	Hotels & Lodging	Other Miscellaneous

These items differ from retail in that no products are purchased and resold. This is the area where the largest growth has occurred recently and where it is forecast to continue at a high rate consistent with the major demographic trends and demand from the retirement community.

Figure 1.11
Services Employment - Trends and Projections



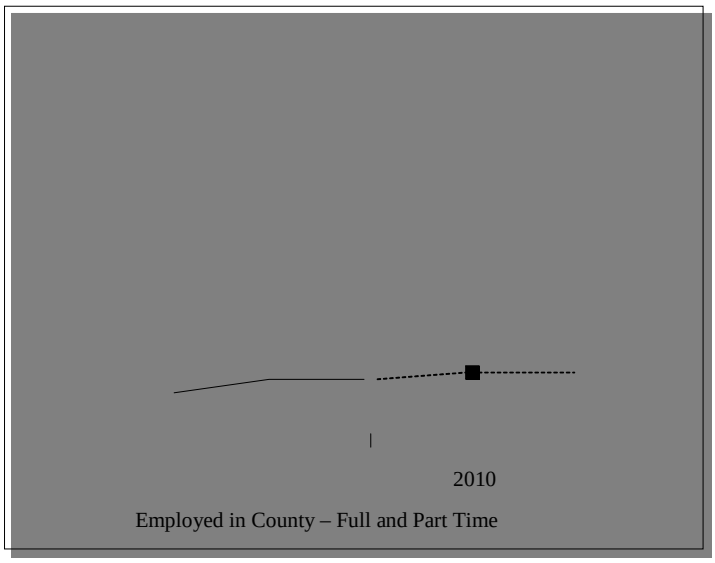
In the forecasting methodology used, each of the industries is analyzed and the projection based on the most likely trend considering the economic environment and history. Many follow population growth, income growth or other identifiable parameters. The Service category is the exception. The 1990 – 2000 trends are extrapolated to 2010 and 2020 and minor adjustments made to match the total projected employment in 2010 and 2020.

The service sector is forecast to have the highest growth rate and growth potential of all sectors over the next 10 years.

9. Government: Federal, Military, State

Approximately 110 persons work for the Federal or State Government or are in the Military. This number has been relatively constant and is forecast to remain so. There are no apparent reasons for State or Federal employment in the County to change. A small increase has been included to account for potential increases in postal workers or for VMRC or DEQ personnel.

Figure 1.12
Government: Federal, Military State Employment

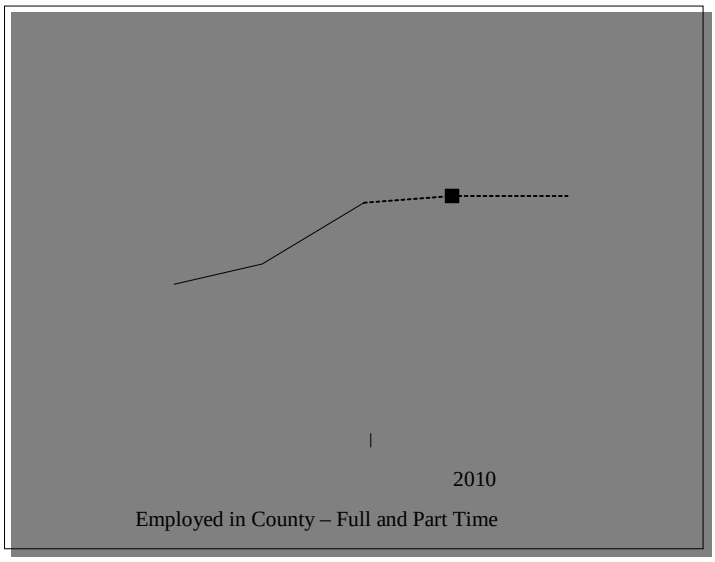


Government employment is expected to remain constant at current levels.

10. Local Government

The Local Government category includes County and school employees.

Figure 1.13
Local Government Employees



The employment in the Local Government category is currently at 438 persons. Of these, 78 are employed by the County and 360 by the schools. County employees include the persons working

in the courthouses and the Sheriff's department. Neither group is expected to increase significantly over the next 20 years. Population growth of school-age children is forecast to be approximately half the rate of growth of the overall population. This would require the addition of very few school personnel over the next 10 years assuming current teacher/student ratios.

Current enrollment projections in Table 1.11 show the total enrollment to remain constant at approximately 1450 students for each of the next 5 years.

Table 1.11
Northumberland County
Fall Membership, September 30

	YEAR	ENROLLMENT
Historic	2002–03	1,471
	2003-04	1,456
Projected	2004-05	1,446
	2005-06	1,432
	2006-07	1,441
	2007-08	1,434
	2008-09	1,429

Source: Weldon Cooper, Nov 2004

Pressures on the County from a conservative electorate will keep the County staff close to current levels with some small increases as the population increases. School employment levels will also remain relatively constant due to limited growth in school-age children.

D. Employment, Income and Economic Profile

The total personal income in Northumberland County has increased by approximately 70% over the past 10 years, while population has increased only 14% in the same period. Table 1.12 shows the source of personal income over the past 11 years. Net earnings as a percentage of total personal income has dropped from 45% in 1992 to 41% in 2003 and Retirement plus Dividends Interest and Rent has increased from 53% in 1992 to 56% in 2003. This quantifies the trend to more retired persons moving into this area with a contribution of approximately $200 million per year.

Table 1.12
Individual Sources of Income by Year ($000)

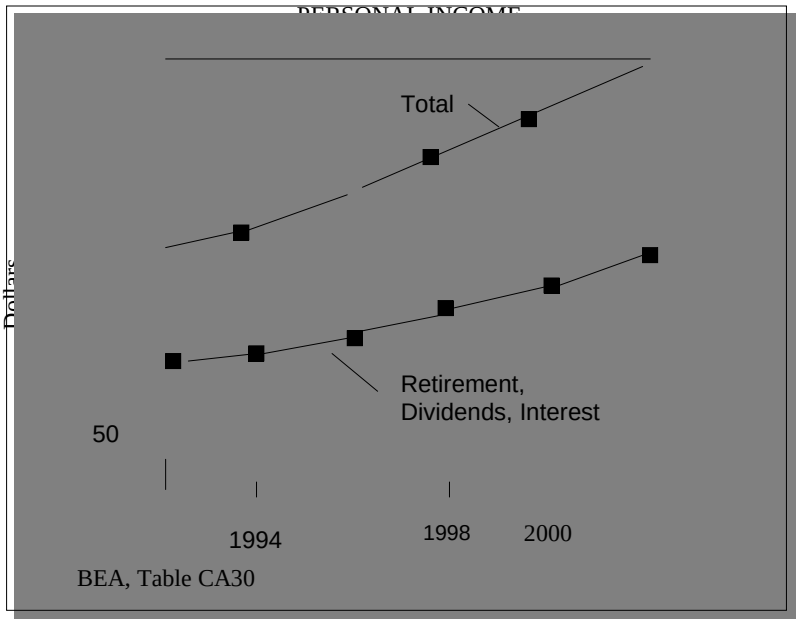
Title	1992	1994	1996	1998	2000	2003
PERSONAL INCOME	$198,667	$215,828	$241,090	$273,737	$302,093	$349,917
Net earnings 1/	$88,328	$94,352	$111,523	$121,635	$127,737	$143,532
Personal current transfer receipts	$39,514	$42,944	$52,709	$56,503	$61,553	$75,845
Income maintenance 2/	$2,241	$2,491	$2,842	$2,868	$3,189	$4,324
Unemployment insurance pmts	$2,517	$1,579	$1,345	$1,215	$1,162	$2,533
Retirement and other	$34,756	$38,874	$48,522	$52,420	$57,202	$68,988
Dividends, interest, and rent	$70,825	$78,532	$76,858	$95,599	$112,803	$130,540

Notes: 1. Total earnings less contributions for government social insurance adjusted to place of residence.
2. Consists largely of supplemental security income payments, family assistance, general assistance payments, food stamp payments, and other assistance payments, including emergency assistance

Source: BEA Regional Economic Profiles, Table CA30, April 2005

Figure 1.14 below presents the total income for the County by year and also the total amount of income received from retirement plans, dividends, interest and rent.

Figure 1.14
Total Personal Income and Retirement Income



The total County income is driven by retirement and related income and the jobs created by spending that same income.

Table 1.13 is comparable to Table 1.12 except it is on a per capita basis. Population growth over the past 10 years has been approximately 1.5 % per year. This compares to growth in net earnings of 3% per year – just slightly higher than price level increases in the same time period. The largest growth on a percentage basis is the retirement income including dividends and interest at approximately 3.5% per year.

Table 1.13
Per Capita Sources of Income by Year
(Data in Table 1.13 divided by population)

Title	1992	1994	1996	1998	2000	2003
Population (persons) 3/	11,045	11,304	11,637	11,964	12,283	12,719
PER CAPITA PERSONAL INCOME	$17,987	$19,093	$20,718	$22,880	$24,594	$27,511
Per capita net earnings	$7,997	$8,347	$9,583	$10,167	$10,399	$11,284
Per capita personal current transfer receipts	$3,578	$3,799	$4,529	$4,723	$5,011	$5,963
Per capita income maintenance	$203	$220	$244	$240	$260	$340
Per capita unemployment Ins. benefits	$228	$140	$116	$102	$95	$199
Per capita retirement and other	$3,147	$3,439	$4,170	$4,381	$4,657	$5,424
Per capita dividends, interest, and rent	$6,412	$6,947	$6,605	$7,991	$9,184	$10,263
Note 3: Census Bureau midyear population estimates. Estimates for 2000-2002 reflect County population estimates available as of April 2005						

Source: BEA Regional Economic Profiles, Table CA30, April 2005

Table 1.14 presents earnings and income based on place of work. Total earnings have increased at a rate of only approximately 2 ½% per year. Proprietor's income appears to follow the business cycle with farm proprietor income being very variable.

Table 1.14
Place of Work Profile – Earnings and Income - ($000)

Title	1992	1994	1996	1998	2000	2003
EARNINGS BY PLACE OF WORK	$75,070	$74,445	$88,194	$90,503	$87,938	$96,671
1. Wage and salary disbursements	$46,375	$45,951	$51,447	$54,986	$58,965	$65,700
2. Supplements to wages and salaries	$9,959	$10,399	$10,795	$11,280	$12,268	$14,907
a. Employer contributions for employee pension and insurance funds	$6,690	$7,102	$7,173	$7,447	$8,248	$10,412
b. Employer contributions for government social insurance	$3,269	$3,297	$3,622	$3,833	$4,020	$4,495
3. Proprietors' income	$18,736	$18,095	$25,952	$24,237	$16,705	$16,064
a. Nonfarm proprietors' income	$16,931	$16,116	$22,353	$23,911	$14,325	$15,109
b. Farm proprietors' income	$1,805	$1,979	$3,599	$326	$2,380	$955

Source: BEA Regional Economic Profiles, Table CA30, May 2004

Worker wages have increased steadily while proprietor income has varied with economic

conditions and shown little growth over the past 10 years.

The profile of employment and average earnings in Table 1.15 shows an economy that is very stable with the number of jobs and the number of proprietors approximately matching the slow growth in total population.

The number of farm proprietors has remained constant while their income has declined relative to 10 years ago. Note that these data are all in current dollars and have not been adjusted for price level increases. The picture would look worse if the adjustment were made.

Table 1.15
Place of Work Profile – Employment and Average Earnings

Title	1992	1994	1996	1998	2000	2003
TOTAL FULL-TIME AND PART-TIME EMPLOYMENT	3,830	3,922	4,150	4,160	4,292	4,347
1. Wage and salary jobs	2,618	2,563	2,737	2,783	2,911	2,851
2. Number of proprietors	1,212	1,359	1,413	1,377	1,381	1,496
a. Number of nonfarm proprietors 5/	1,074	1,214	1,273	1,235	1,240	1,358
b. Number of farm proprietors	138	145	140	142	141	138
Average earnings per job (dollars)	$19,601	$18,981	$21,252	$21,756	$20,489	$22,239
Average wage and salary disbursements	$17,714	$17,929	$18,797	$19,758	$20,256	$23,045
Average non-farm proprietors' income	$15,764	$13,275	$17,559	$19,361	$11,552	$11.126
Note 5: Excludes Limited Partners						

Source: BEA Regional Economic Profiles, Table CA30, April 2005

The County has a large number of small businesses with only two or three employees and the pay is relatively low, typical of a service economy. The income of the employees is fairly stable; however the proprietor income varies with the overall economic climate.

Top 50 Employers

Table 1.16 below presents the top 50 employers in the County as of the first quarter of 2004. This list is not expected to remain constant over the term of this version of the County Comprehensive Plan as the rankings change from year-to-year.

Table 1.16
Top 50 Employers - 2005

RANK	Company Name	OC *	Size Code**
1	Northumberland County School Board	30	07
2	Carry On Trailer Corporation	50	06
3	Omega Protein	50	06
4	County of Northumberland	30	05
5	MD Associates	50	05
6	Cowart Seafood Corporation	50	05
7	Indian Creek Yacht and Country Club	50	05
8	Buoy Food & Deli	50	05
9	Northern Neck Regional Special Education	30	05
10	Food Lion	50	04
11	Fastan Inc	50	04
12	Bank of Northumberland Inc.	50	04
13	Little River Seafood	50	04
14	Callao Supermarket	50	04
15	Pritchard and Fallin	50	04
16	The Management Company	50	04
17	R M C Mechanical Contractors	50	04
18	Reedville Marina	50	04
19	Lilian Lumber Company	50	04
20	The Tavern Restaurant	50	04
21	Village Green Golf Course	50	04
22	Tiffany Yachts	50	04
23	Sumner Golf Management	50	04
24	Great Wicomico Marina	50	04

RANK	Company Name	OC *	Size Code**
25	Allison's Home Improvement	50	04
26	Northern Neck Security	50	04
27	Keyser Brothers Inc.	50	04
28	Earl W. Withers, Inc.	50	04
29	W.A. Fisher	50	04
30	W.C. Lowery, Inc.	50	04
31	Vandy Farms	50	04
32	School Board Food Service, Northumberland County	30	04
33	Smith Point Seafood	50	03
34	Lake Packing Company	50	03
35	C.W.O. Bier and Sons	50	03
36	C.W. Obier and Sons Seafood	50	03
37	Revco	50	03
38	Northumberland Department of Social Services	30	03
39	Manufacturing Techniques Inc	50	03
40	Nino's Italian Pizza and Subs	50	03
41	Glenn Lester Company Inc	50	03
42	Tangier and Chesapeake Cruises	50	03
43	R.R. Beasley, Inc.	50	03
44	Sound Structures	50	03
45	James E. Headley	50	03
46	Rite Aid	50	03
47	Kings Cleaning Services Inc	50	03
48	Fairport Marina & Restaurant	50	03

RANK	Company Name	OC *	Size Code**
49	T & Ts Restaurant & Seafood	50	03
50	United States Postal Service	10	03

Ownership Code (OC)*	Ownership Type
10	Federal Government
20	State Government
30	Local Government
50	Private

Size Code**	Number of Employees
09	1000 and over employees
08	500 to 999 employees
07	250 to 499 employees
06	100 to 249 employees
05	50 to 99 employees
04	20 to 49 employees
03	10 to 19 employees
02	5 to 9 employees
01	1 to 4 employees

Source: Virginia Employment Commission

The list of top 50 employers is dominated (1) by organizations providing services to the County residents, (2) by companies related to construction and (3) manufacturing companies related to seafood and fishing.

The overall County economic profile presents a service economy that is growing slowly- slightly faster than the population growth. Income to the County comes primarily from retirement and related sources which in turn provides support for a large number of small businesses.

SECTION 2: POPULATION

This section examines the growth of population in Northumberland County and the salient characteristics of the populations that are of interest in future planning for the County. It is organized as four sub-sections which address respectively: trends and projections, age distribution, geographic distribution of the population, other population characteristics and housing.

Data used for population analysis come from different sources. Historical data on population numbers, characteristics and housing come from U.S. Census reports for the most part. Projections through 2020 were made by the Virginia Employment Commission which is the state agency officially responsible for maintaining population records and preparing projections. The algorithm for estimates of "summer population" came from the Northern Neck Planning District Commission.

A. Trends and Projections

Since the 1970s Northumberland County has been growing, following several decades of population decline. The decline reflected a nationwide trend which saw people migrating from agricultural communities to urban centers for better jobs. The County's population fell from 11,518 in 1920 almost steadily reaching a low of 9,239 in 1970. Since 1970, each Census has reported a gradual increase in the County's population to reach the 2000 level of 12,259 persons.

This trend is shown in the top line of Figure 2.1 as the year-round population. Projections made by the State for years 2010 and 2020 are included and these show a continuation of the growth trend experienced since 1970. If these projections prove accurate, the County is expected to add approximately 1,500 persons thereby reaching a population of just over 16,000 in 2020.

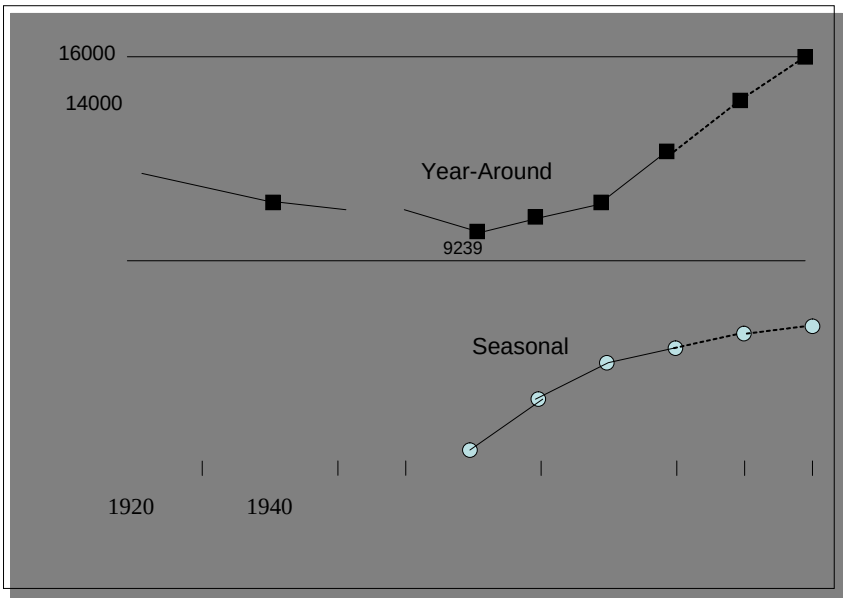
But the State's forecasts may be conservative (low). For example, in the last edition of this Plan, the State projected a population of 11,360 for 2000, but the actual population was 12,259 according to the 2000 census. Likewise, in the previous Plan the forecast for year 2010 was 12,096 and this was surpassed 10 years earlier. There is always a problem in taking special local conditions into account when making macro-forecasts. In the case of the County, the attractiveness of the large amount of relatively inexpensive waterfront property appears to have been driving growth in the past several years. This is expected to continue as the baby boomers discover the Northern Neck.

Change is occurring and the rate of change may increase at a faster pace than the conservative estimates in this Appendix.

The lower line in Figure 2.1 shows seasonal population estimated for 1990 by the

Northern Neck Planning District Commission and projections for other years (based on trends and the PMA methodology and the same 2.3 persons per unit assumption used by the PDC).

Figure 2.1
Population Trends and Projections
Northumberland County, Virginia



Source: Virginia Employment Commission

DATA FOR THE FIGURE

YEAR	YEAR-ROUND POPULATION (TOP LINE)	SEASONAL POPULATION (BOTTOM LINE)
1920	11,518	
1930	11,081	
1940	10,462	
1950	10,012	
1960	10,185	
1970	9,239	670
1980	9,828	2,370
1990	10,524	3,965
2000	12,259	4,280
2010	14,300 Est.	5,005
2020	16,000 Est.	5,600

A seasonal increase of 4,280 persons is estimated for year 2000 based on the 2000 census. This estimated seasonal population is based on 1,861 seasonal housing units with an average household size of 2.3 persons. Seasonal population increased rapidly between 1970 and 1990 with the popularity and affordability of second homes. Using 1990 as the

base where the seasonal population was an additional 35% of the basic population, the projections for 2010 and 2020 are illustrated.

With the sharp increase in prices of the waterfront property since 2001 and the increase in cost of second homes, the sharp increases in population of the 1980s are not anticipated. The chart shows graphically an anticipated tapering-off in the growth of the seasonable population, although the absolute numbers are still relatively substantial. As mentioned earlier, the projections may be underestimating the growth.

The in-migration that started in 1970 with several, new large recreation communities is expected to continue independent of state or national economic conditions. The attractiveness of the County for recreation and retirement will continue to impact population growth.

B. Age Distribution

The median age of Northumberland County's population in 1990 was 45.3 years and in 2000 it had increased to 50.1 years. The County ranks first of all Virginia communities in population age 65 and over.

Table 2.1 provides details of age distribution in four demographic groupings used by the Virginia Employment Commission:

- Pre-school through school age population, which declined during the 1980s, increased by 2000 to about the same level that existed in 1980 and is projected to continue to increase slowly through 2020. This would result in a continuing drop of this group as a share of total population (from 21.9 percent in 1990 to 20.3 percent by 2000 to 19.6 percent in 2010) because of the more rapid growth in the older age groups.

- The child-bearing/working age group (20-44) decreased from 2,913 in 1990 to 2,867 in 2000 but increase to 3,113 in 2010 and 3,727 in 2020. This amounts to a drop as a percent of the population from 27.7 percent in 1990 to 21.7 percent by 2010 and back up to 23.3 percent by 2020..

- The 45-64 older/working age group of adults is forecast to increase moderately. This is the so-called baby-boom generation born from 1945 through 1965. This group increased by 1,007 persons between 1990 and 2000 and is forecast to add only another 243 persons by 2010. This growth would increase this group from 25.5 percent of the population in 1990 to 27.5 percent by 2010.

- The age 65 and over group increased by 608 persons between 1990 and 2000 and add another 1,218 by 2010 - from 24.9 percent of the population in 1990 to 26.3 percent in

2000 and 31.1 percent by 2010. This makes it the fastest growing and dominant age group.

While the above observations can be made from the classic divisions shown in the table, another grouping of the data reveals these additional observations for the decade of change ending in 2000. For example, a decline occurred specifically in the number of persons in the 20 - 34 age group which is comprised of college-age youth and younger adults. The reverse was true in the 35-49 age group; it increased by almost double the same number of persons that the younger group lost. This group is the "baby boom" generation coming of age. This suggests that part of the younger group simply grew older and shifted into the older category. And that some of the difference is probably due to younger people of the County leaving the area where job opportunities are greater than in Northumberland County, but the increase in service jobs is perhaps attracting or retaining persons in the 35 – 49 age group..

Table 2.1
Population Projections by Age Groups

	1980	**1990**	**2000**	**2010**	**2020**
Under 5	512	560	527	675	803
5-9	539	623	629	721	839
10-14	636	619	693	710	875
15-19	798	503	642	698	839
0-19 Subtotal	*2,485*	*2,305*	*2,491*	*2,804*	*3,356*
20-24	663	449	386	607	647
25-29	588	594	385	595	695
30-34	535	670	564	572	779
35-39	480	604	729	595	851
40-44	420	596	803	744	755
Childbearing/ Working Age Subtotal	*2,686*	*2,913*	*2,867*	*3,113*	*3,727*
45-49	531	599	763	858	707
50-54	590	548	848	1,042	923
55-59	755	722	1,047	950	1,043
60-64	798	818	1,036	1,087	1,259
Older Adults/Working Age Subtotal	*2,674*	*2,687*	*3,694*	*3937*	*3932*
65-69	727	914	1,006	1,213	1,067
70-74	520	724	835	984	1,043
75-79	383	518	685	879	1,236
80-84	210	262	417	675	783
85+	143	201	284	694	852
Older Adults/Retirement Age Subtotal	*1,983*	*2,619*	*3,227*	*4,445*	*4,981*
TOTAL	**9,828**	**10,524**	**12,259**	**14,300**	**16,000**

Source: Virginia Employment Commission;

The "in between" group from 50 to 64 made major gains of 40 percent. The other major group to gain in population was the 65 plus group which increased by 606 persons (23 percent).

Again, some of the increase in the senior group is from aging but retirement accounts for much of it.

What is suggested by these figures is that the year-round population of Northumberland County grew, to be sure, by 1,735 persons between 1990 and 2000 but growth varied widely among different age groups.

The County's population is becoming older not only because of the aging of baby boomers but because of the attraction of the County to retirement-age families.

C. Geographic Distribution of the Population

The previous edition of this plan included extensive population data by magisterial district. These data are no longer available for periods after 1990. It also is questionable whether these data would be meaningful even if available. Whether categorized by Magisterial District or the current Board of Supervisors election districts, the geographical distribution does not seem to provide any basis for decision-making and planning.

The preferred data include such categories as waterfront versus non-waterfront; village areas versus rural and the like. Unfortunately no such data are currently available. Census data by census block groups such as presented in Figure 2.2 provide a gross picture of the population distribution at a point in time. This figure tends to show that the eastern part of the County in the Reedville and Chesapeake Beach communities and the lower Great Wicomico River and the Little Wicomico River areas have the highest density population. The next highest is the North West corner in the Yeocomico River area towards Westmoreland County. The lowest is the strictly rural area of the western edge that abuts Lancaster County and has no waterfront property.

The overall population density is 63.7 persons per square mile versus 178.8 persons per square mile for Virginia as a whole.

Figure 2.3 provides another view of the same data by Census Block. We hesitate to present it because of all the questions it raises, but it also shows where the full time population is clustered. The problem with both is that they do not show trends and do not show weekenders. Of interest would be the current number of properties on the water and how many currently have homes. This would give a good index of anticipated growth. Also useful would be the population density around areas currently with village designation.

Figure 2.2

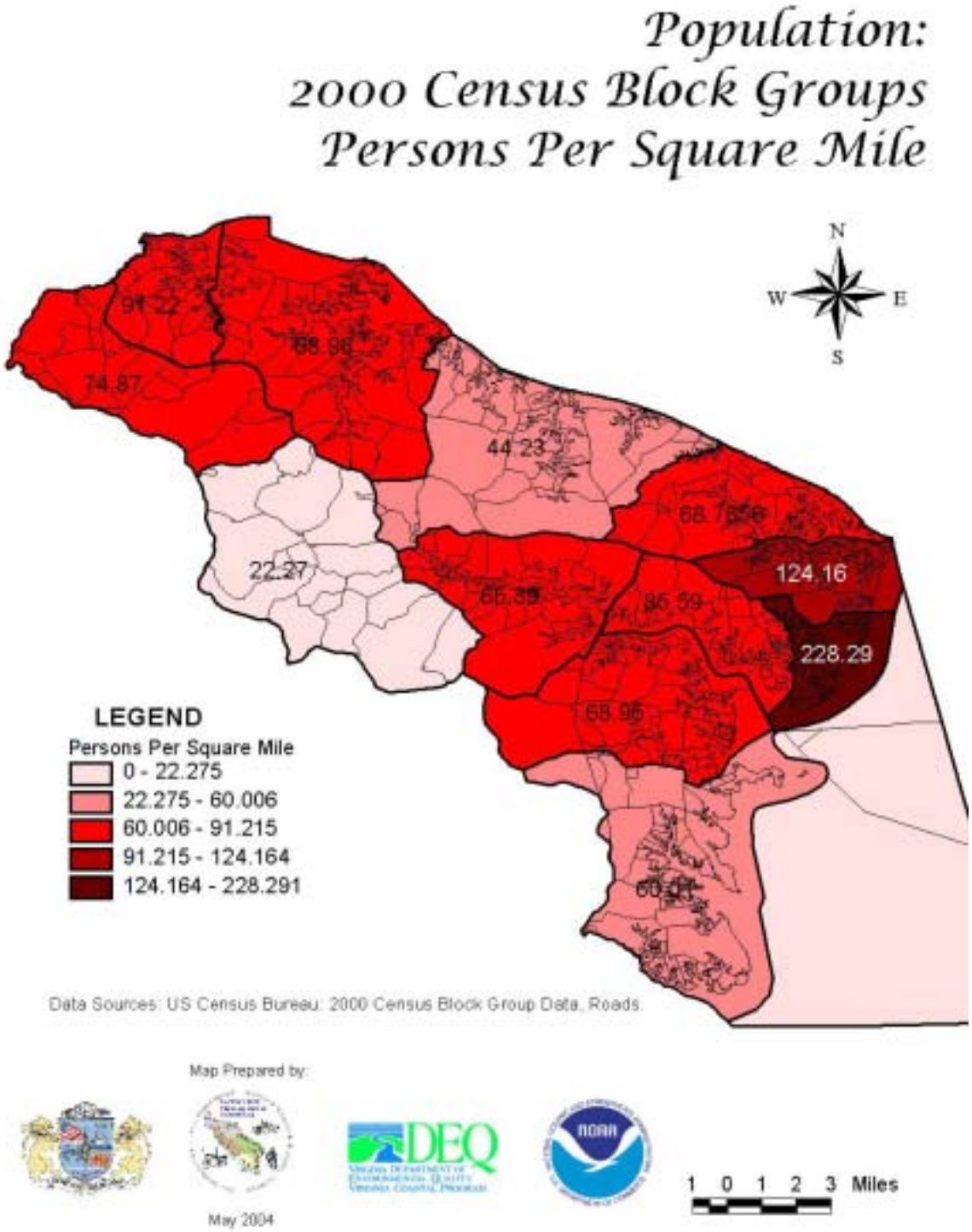
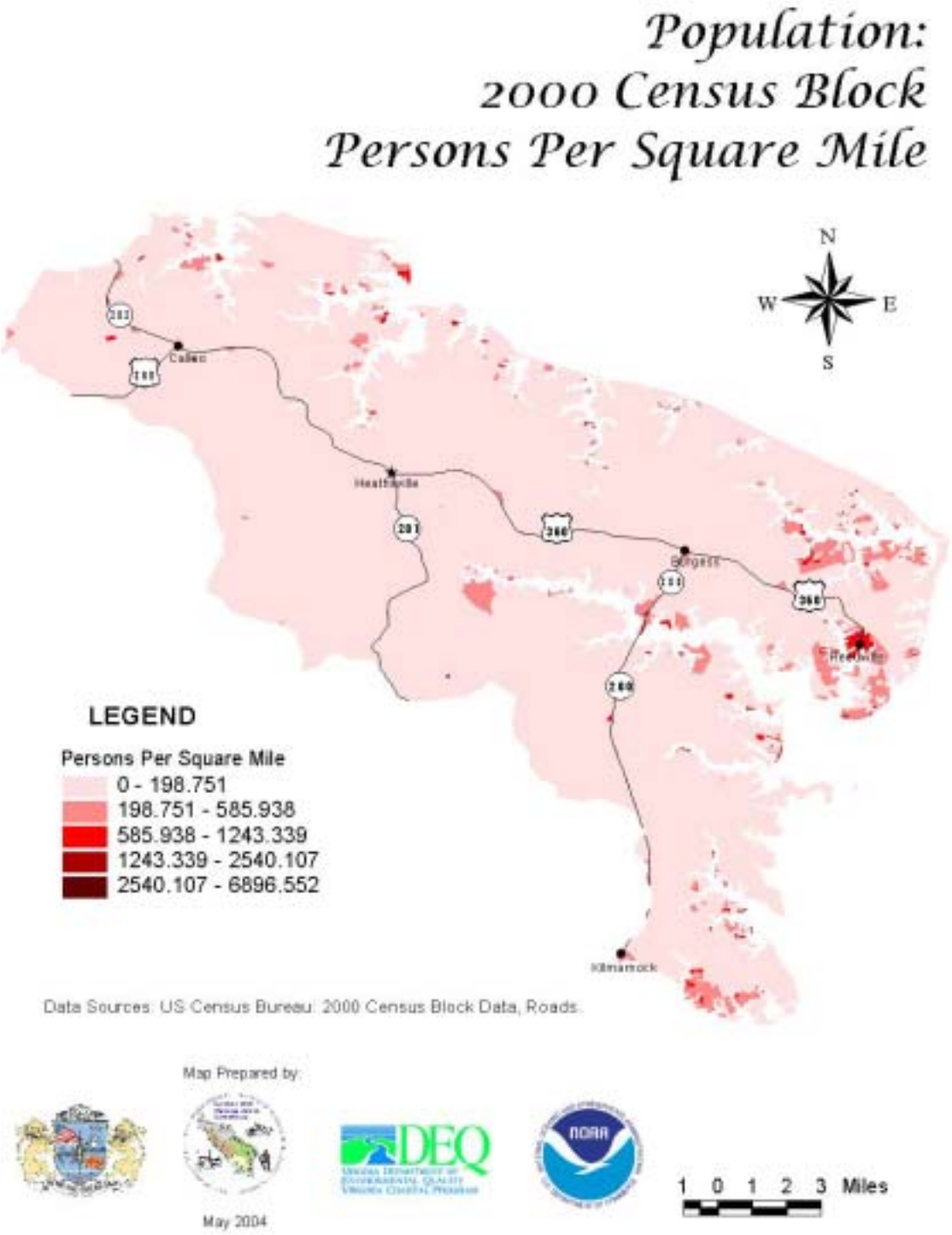


Figure 2.3



The County population is concentrated in waterfront communities – an

obvious observation to current residents of the County..

D. Other Population Characteristics

Changes from 1980 to 2000 in distributions of race, sex and income for the year-round population are given in Table 2.2.

Table 2.2
Other Population Characteristics, 1980 To 2000

	1980	**1990**	**2000**
TOTAL COUNTY	9,828	10,524	12,259
FEMALE	5,113	5,564	6,411
MALE	4,715	4,960	5,848
WHITE	6,506	7,388	8,849
BLACK	3,306	3,098	3,259
OTHER RACE	16	38	151
Households	3932	4492	5,470
Median Household Income	*$14,648*	*$23,065*	*$38,129*

SOURCES: US Census, 1980, 1990, 2000

The population is increasingly white with the black population remaining constant and an increasing unadjusted median income. There has been a recent influx of persons of other races.

E. Housing

Northumberland County housing is characterized mainly by single-family owner-occupied units

and many seasonal units. Both categories have increased substantially as shown in Table 2.3.

Table 2.3
Selected Characteristics of Housing Units

	1970	1980	1990	2000
TOTAL UNITS	4339	5584	6841	8057
SEASONAL UNITS	292	1065	1775	1861
YEAR-ROUND UNITS	4047	4519	5066	6196
VACANT YEAR-ROUND UNITS	984	706	574	726
OWNER OCCUPIED UNITS	2622	3283	3912	4783
RENTER OCCUPIED UNITS	441	530	580	687
SINGLE FAMILY	3730	4054	5831	6994
MULTI-FAMILY	62	166	48	89
MOBILE	255	299	890	941
OTHER			72	33
TOTAL*	4047	4519	6841	8057

* Year-round units for 1970 and 1980, all units for 1990, 2000

SOURCES: Census of Housing, Detailed Characteristics, 1970, 1990;
General Housing Characteristics, 1980; Bureau of Census DP-1,4 for 2000

Mobile homes accounted for 6% of the total housing units in 1970 and are up to 12% of the total units in 2000, but some of these may be used as seasonal units.

Renter-occupied units have only increased by 225 in thirty years from 1970 to 2000 reflecting the economic situation of the persons moving into the County.

The following table shows the age of the housing units in Northumberland County.

Table 2.4
Year Structure Was Built

	NO.
1999 TO MARCH, 2000	396
1995 - 1998	781
1990 - 1994	912
1980 - 1989	1,214
1970 - 1979	1,113
1960 - 1969	896
1940 – 1959	1,493
1939 OR EARLIER	1,252
TOTAL	8,057

SOURCE: Bureau of Census 2000, Table DP-4

Thirty-four percent, over a third, of the units are at least forty years old.

##

In summary: the population is growing, getting older and is buying waterfront property.

F. Historic Places

Chapter 1 contains a list of the historic places in Northumberland County that are on the National List of Historic Places. The following list is more comprehensive and includes the places in the historic districts in Heathsville and Reedville.

LIST OF HISTORIC PLACES IN NORTHUMBERLAND COUNTY
(Established Prior to 1915)6

Anchorage House, 1750-1775
Arcadia (Blundon House), 1890(Incorporates original 1783 house)
Ball Cemetery, 1694 (site of Cress Field, part of original Bay View)
Bay View Plantation, home site, 1830
Bruington, house, c 1700
Burnt Chimneys, house, c 1816
Camp Kittamaquand (Girl Scout Camp)
Christmas Cove, house, c 1780
Clark's Mill, c 1840
Clifton, house, pre-1790
Cloverdale, house, pre-1790
Coan Hall (John Mottrom plantation site, c 1640; victorian cottage, c 1870s
Cobb's Hall Burying Ground, 1664 (wall 1720); grave of Richard Lee I, the immigrant
Cobb's Hall, house, 1853; dependency building, 1732
Cottage, The c 1840
Cowart family cemetery, 1840
Cypress Farm, early 1800s
Cypress Swamp (Bald Cypress trees)
Ditchley, house, c 1752
Edgehill, house, c 1830
Fairfields Methodist Church, original site, 1789
Fish Factory Chimney (restored), c 1913
Gardy Millpond
Gascony, house, 1848
Glebe Point Campground
Guarding Point, house, c 1838
Great Blue Heron Rookery
Hancok Lee's House Site (old Ditchley) and Cemetery, 1694

6 List provided by Jan Beckett

Hard Bargain, house, c 1780
Heathsville Historic District
- The Academy, house, 1830-1845
- Basye Cemetery, 1841
- Basye/Snow/Tringle House, 1830-1845
- Betts/Anderson/Lawson House, pre-1848
- Belleville, house, c 1725
- Chicacoan Cottage, c 1800
- Chicacoan Oak, site
- Confederate Monument, 1873
- Constitution Oak, planted 1902
- Eichelberger/Hall House, 1892-1893
- Harding/Elmore House, 1825-1850
- Haynie Cemetery, 1697
- Heathsville Methodist Protestant Church, 1855-1860
- Heathsville United Methodist Church, 1894
- Juliana Gordon Hayes Monument, 1895 (At Heathsville UMC)
- Lawson/Headley House, 1820-1860
- Masonic Lodge, 1894
- Middleton/Rowe House, 1851
- Moss Cottage, c 1845
- Northumberland County Courthouse, 1851
- Oakley, house, c 1794-1810
- Old Northumberland County Jail, 1844
- Patrick A. Jones House, 1839-1845 and Anderson Cemetery
- Rice’s Hotel/Hughlett’s Tavern, c 1795
- Rice/Richardson/Robertson House, 1890-1910
- Springfield, house, 1828
- St. Stephen’s Episcopal Church, 1881
- Sunnyside, house, c 1820 and cemetery
- Wall/Lackey/Rowe House, 1832

Holley Graded School, site 1869, bldg. 1920s
Hope Union (Shiloh) Cemetery, c 1912-1915
Howland School, 1867
Hurstville, house, c 1750
Indian Creek Yacht and Country Club (former plantation)
Indian Settlements:
- Cekacawan (Chicacoan)
- Machoatick (Lower Matchotic)
- Wicocomoco
- Cinquack
- Later Wicocomoco (combined Chicacoan and Wicocomoco)

Keen/Opie Cemetery, 1684
Kirkland Grove, Baptist Campground, 1892
Lindsey (Cox) Cemetery, 1667
Locksley Hall, house, 1865-1870
Mantua, house, 1785, and cemetery
Marvin Grove Camp (site), Methodist Episcopal Church, South, founded 1878, burned 1930
Morris and Fisher Fish Factory Stock, 1910
Mount Pisgah, house, c 1850
Mount Zio, house and school, c 1851
Northumberland Heritage Trail (Heathsville to Reedville)
Northumberland House Cemetery, Grave of Col. John Moore

(Revolutionary War Officer) 1813
Palmer Hall Chapel, 1885
Reedville Historic District
- Bethany United Methodist Church, 1899-1901
- Blunden & Hinton Store (Reedville Market), c 1890
- Butler's Boat Yard (Reedville Marine Railway), 1906
- Crowther Meat Shop (Booth/McKenney), house, c 1890
- Dey (pre-fab Sears, Roebuck house, brought by steamboat, now Texaco office), c 1920
- James C. Fisher House (The Gables), 1909; carriage house, c 1880
- Garrison House, former boarding house, c 1890
- Megil's Bakery & Ice Cream Parlor, 1912
- Millionaires Row (stately homes), c 1900
- Albert Morris House (Elizabeth House), 1900
- Muir House (former hotel), c 1900
- Peoples Bank of Reedville (not current name), 1910
- Elijah W. Reed, monument (marble obelisk), 1888
- George Reed House (Slaughter), 1897-1899
- Reed & Rice Store, 1913
- Reedville House (former hotel), 1885
- Reedville Masonic Hall, c 1910
- G.T. Robinson (Miriam Haynie), house, c 1875
- William Walker House, (Reedville Fishermen's Museum), 1875
- Weaver House, c 1880

Sunnybank Ferry, 1906
Sydnor's Millpond, spillway and millrace, pre-1700
Versailles, house, 1853
Virginia Byway (Avalon to Reedville)
Virginia Byway (Wicomico Church to Indian Creek)
Waterloo House, c 1858
West End, house, c 1790
Wheatland, house, 1849
Wicomico View, house and cemetery, 1834

SECTION 3: SHORELINE AND WATER SUPPLY

A. Shoreline

Perhaps the single most important resource of the County is its shoreline. The tables in this section are from the VIMS Northumberland County Shoreline Situation Survey report dated March 2003. Data are from years 2000, and 2001.

Shoreline Situation Reports (SSR) were first generated by VIMS in the 1970s to report the condition and status of the shore lands. The SSR series were published in hardcopy on a county by county basis for each of the Tidewater Virginia localities.

Complete copies of this report including information on methodology and copies of all GIS maps and detail data by location are available in the County Planning Office.

The reports were intended to assist planners, managers, and regulators in decisions pertaining to management of coastal areas and natural resources therein. This report continues the process which updates and expands earlier reports.

Table 3.1 Basic VIMS Shoreline Data

Table 5. Northumberland County Shoreline Attributes - Shoreline Features - Plate Summary

PLATE NUMBER	TOTAL MILES SURVEYED	SHORELINE FEATURES											
		No. docks	No. dilapidated docks	No. boathouses	No. ramps private	No. ramps public	No. groinfields	No. marshes	No. jetties	No. breakwaters	Miles of misc	Miles of bulkhead	Miles of riprap
1	19.94	185	1	13	6	0	0	1	0	0	0.00	1.47	3.75
2	26.10	86	1	3	6	0	3	0	3	0	0.00	0.57	2.43
3	26.21	125	2	7	7	0	4	2	2	0	0.04	0.89	6.27
4	12.59	53	1	5	7	0	0	0	0	0	0.00	0.62	1.37
5	16.66	9	0	1	0	0	0	0	0	0	0.00	0.00	0.48
6	18.62	17	1	1	0	0	2	0	0	0	0.00	0.13	1.20
7	13.51	33	1	13	1	0	0	0	0	0	0.00	0.14	0.40
8	26.69	127	0	8	1	1	8	3	2	1	0.00	0.87	3.53
9	22.05	118	2	24	1	0	3	0	0	0	0.00	1.39	2.08
10	19.96	115	2	13	8	0	4	4	0	0	0.03	1.50	2.32
11	14.70	52	1	8	3	0	0	0	0	0	0.00	0.24	0.85
12	16.30	66	1	8	7	0	0	0	0	0	0.01	0.65	0.25
13	15.54	73	0	5	4	1	0	0	0	0	0.00	0.05	0.06
14	20.28	128	5	11	0	0	7	6	0	1	0.12	1.28	3.13
15	23.42	203	7	20	2	0	0	6	0	1	0.16	1.63	3.58
16	22.36	85	8	6	5	2	5	2	0	1	0.11	1.01	4.07
17	18.87	23	0	1	0	0	4	0	0	0	0.07	0.15	1.21
18	29.38	149	4	28	10	0	7	3	13	1	0.05	2.33	2.36
19	25.92	229	0	44	11	0	2	1	0	1	0.00	3.44	1.91
20	21.77	113	2	20	13	0	1	2	1	0	0.03	1.00	1.60
21	9.56	36	0	3	0	0	5	1	2	2	0.03	0.84	0.93
22	19.09	25	0	2	6	0	0	0	0	0	0.00	0.24	0.16
23	16.72	8	0	0	0	0	4	0	3	0	0.00	0.37	0.77
24	15.27	9	0	0	0	0	4	0	0	0	0.00	0.47	0.81
25	15.66	71	5	12	5	0	9	0	0	0	0.04	0.60	1.60
26	17.92	67	3	13	7	0	0	0	0	0	0.00	0.30	0.40
27	21.13	108	1	4	4	0	7	0	0	1	0.00	1.01	2.36
28	19.26	118	4	15	12	0	10	2	1	0	0.17	1.24	2.62
29	12.21	40	1	9	5	0	0	0	0	0	0.04	0.15	0.26
30	10.98	30	0	0	3	0	0	0	0	0	0.00	0.03	0.02
31	13.46	128	2	15	1	0	0	0	0	0	0.10	0.97	2.14
32	19.83	204	3	21	14	0	9	3	0	0	0.11	1.84	4.22
33	8.12	32	1	0	1	0	3	0	0	0	0.00	0.48	0.76
34	18.23	90	2	27	5	0	8	2	0	0	0.26	2.21	3.99
35	15.21	95	5	35	3	0	0	3	0	0	0.11	1.10	2.54
36	9.50	39	1	14	4	0	0	0	0	0	0.04	0.66	0.65
Northumberland Total	555.98	2563	52	324	130	4	91	27	19	6	1.05	26.08	54.19

Table 3.1 presents the basic data collected and describes conditions in the immediate riparian zone, the bank, and along the shore in order to inventory Virginia's tidal shoreline conditions.

There are three additional sets of data that are included:

(1) Land use and bank cover for Northumberland County contains data about the land use, bank height, bank cover, and erosion, marsh, and beach status along the shoreline;
(2) Shoreline structures delineates hard structures in place for shoreline protection (bulkhead, riprap, groin fields); and,
(3) Access structures coverage is point coverage with locations of docks, ramps, and boathouses.

The following tables present these data.

Table 3.2 Riparian Land Use

TOTAL MILES SURVEYED	RIPARIAN LAND USE (miles)									
	Agri-culture	Bare	Commercial	Forest	Grass	Industrial	Paved	Residential	Scrub-Shrub	Timbered
555.98*	36.73	2.06	11.52	249.07	8.65	0.11	0.77	187.16	59.74	0.18

- Total miles of shoreline surveyed for Northumberland County, of which 124.04 miles were remotely surveyed.

Table 3.3 Bank Data

BANK DATA														
(bank height and erosion status - miles of shore)														
0-5 ft				5-10 ft				10-30 ft				>30 ft		
Low	High	Undercut		Low	High	Undercut		Low	High	Undercut		Low	High	Undercut
367.9	24.2	17.1		82.5	19.7	14.8		14.5	6.0	3.7		2.4	2.2	1.1

Table 3.4 Bank Cover

BANK COVER (Miles)			
Bare	Partial	Full	Total
14.2	77.8	464	556

Table 3.5 Buffer Conditions

BUFFER CONDITION				TOTAL
BEACH PRESENT		MARSH PRESENT		
(miles)		(miles)		
Eroding	Stable	Eroding	Stable	
31.4	48.6	44.6	245.7	370.3

Table 3.6 Structures along Shores

	TOTAL MILES SURVEYED	SHORELINE FEATURES											
		No. Docks	No. Dilapidated Docks	No. Boathouses	No. Ramps Private	No. Ramps Public	No. Groinfields	No. Marinas	No. Jetties	No. Breakwaters	Miles of Misc	Miles of Bulkhead	Miles of Riprap
Total	555.98	2563	52	324	130	4	91	27	19	6	1.05	26.08	54.19

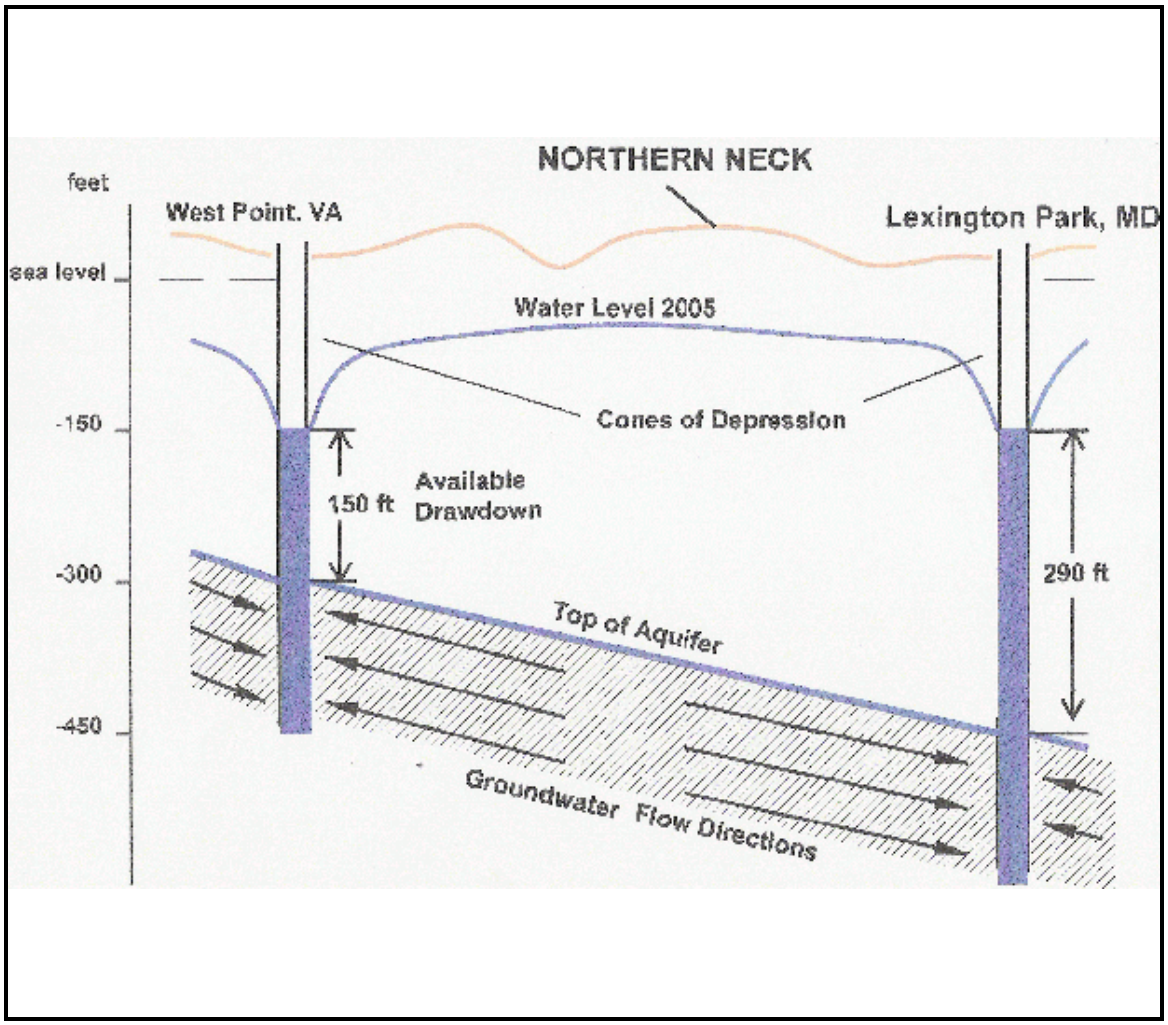
See Chapter 1 for an analysis of these data.

B. Water Supply - Aquifer Status

One of the very critical resources of the Northern Neck is the availability of fresh water from the deep aquifer.

Figure 3.1 presents a generalized cross-section of the water level surface of the Rappahannock artesian aquifer system, illustrating cones of depression and approximate amount of available drawdown beneath the Middle Peninsula and Southern Maryland. (*Source: F. W. Fletcher, 2005 based on US Geological Survey Data)*

Figure 3.1 Available Drawdown

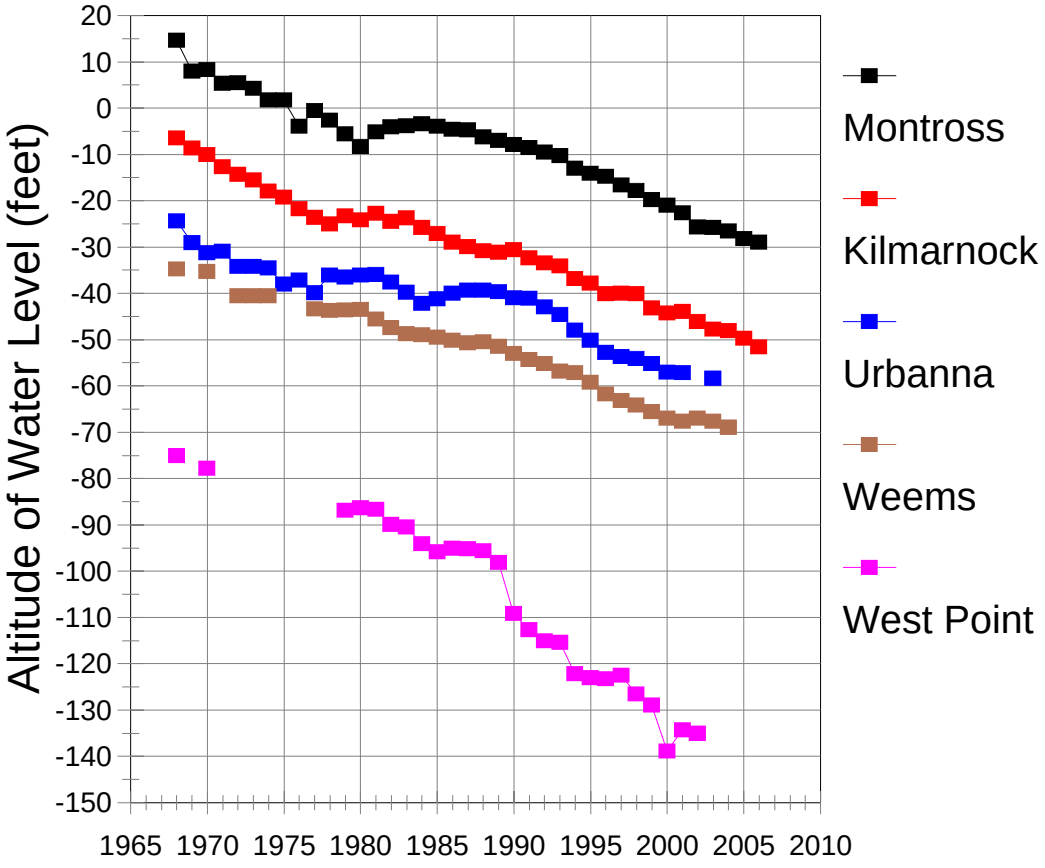


The "Water Level" line approximates the level to which the internal pressure of the aquifer would push confined water up a well drilled into the aquifer, without pumping.

The available drawdown as shown on the figure represents an approximation of the impact on the pressure level of the water due to the massive pumping of water from the aquifer at West Point and at Lexington Park.

Figure 3.2 presents the decline of water levels in monitoring wells of the Northern Neck and Middle Peninsula for the Brightseat-Upper Potomac artesian aquifer, 1968-2004. (*Source: F. W. Fletcher, 2005 based on US Geological Survey Data)*

Figure 3.2 Monitoring Well Water Levels

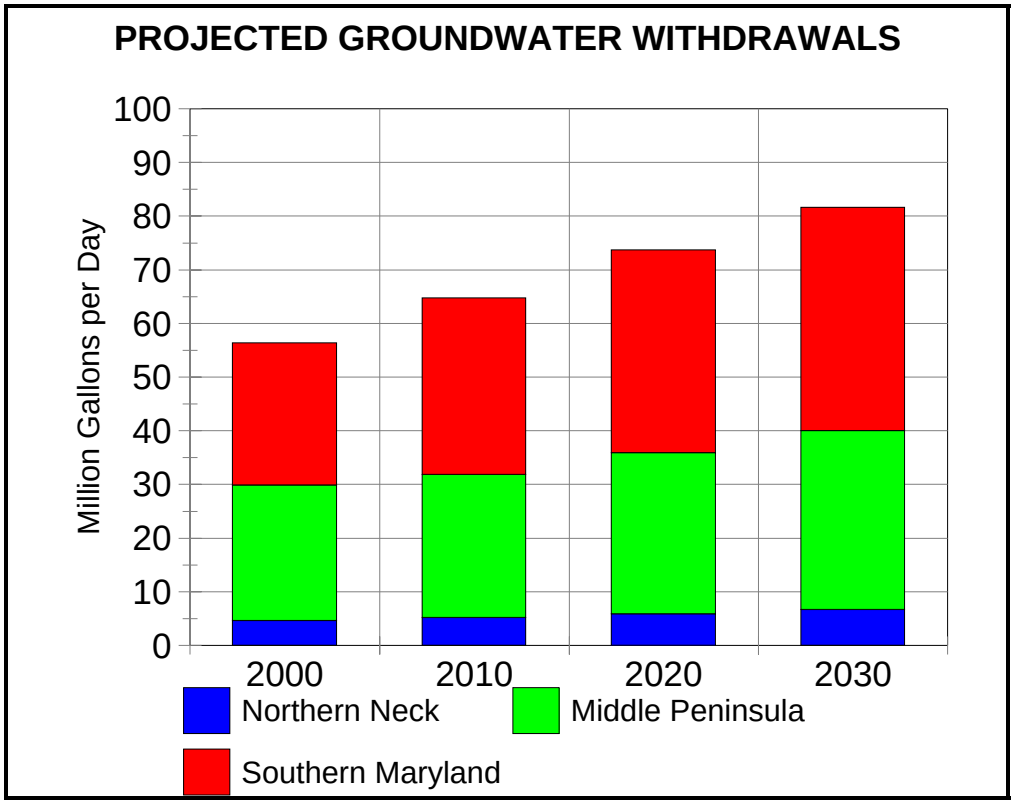


The above chart illustrates the decline in water levels in the aquifer at various locations. Because of the physics of aquifers and the measurements, these lines actually represent <u>increasing</u> drawdown over time at each location. If the pumping rate were constant over time, the trend lines would eventually approach horizontal.

Figure 3.3 presents the projected groundwater withdrawals for the Northern Neck and Middle Peninsula of

Virginia and for Southern Maryland based on current trends. (*Source: F. W. Fletcher, 2005 based on US Geological Survey Data)*

Figure 3.3 Projected Groundwater Withdrawals



The above data translate into approximately 2.5 ft/yr drawdown reduction at West Point and 3.5 ft/yr at Lexington Park. These figures may be higher with increased industrialization, commercialization and population growth in the Middle Peninsula and Southern Maryland.

Based on these data the Available Drawdown illustrated in Figure 3.1 will no longer exist in approximately 60 years and the aquifer will be disastrously impaired. Because of the inability to map the aquifer and its pressures accurately, and to predict commercialization, it may collapse sooner or saltwater intrusion may pollute the aquifer much earlier, especially in areas close to the Bay.

Table 3.6 presents the large groundwater withdrawals in Virginia as determined by the Virginia Department of Environmental Quality.
It should be noted that Northumberland County as awshole is a very minor user.

Table 3.6
Groundwater Withdrawals - 2003

LARGE GROUNDWATER WITHDRAWALS - 2003				
REGION/COUNTY	**FACILITY**	**WATER USE**	**WATER USE**	
		Millions of Gallons per Day	**Millions of Gallons per Year**	
NORTHERN NECK				
KING GEORGE	OWENS SERVICE AREA		NA	
KING GEORGE	WHITE PACKAGING CO., DOGUE PLANT		NA	
KING GEORGE	COUNTY WELL SYSTEM	1.155	421.470	
KING GEORGE	SURFACE WEAPONS CENTER	0.370	135.226	
LANCASTER	KINGSLAND		NA	
LANCASTER	HERITAGE POINT WATER SYSTEM		NA	
LANCASTER	TIDES GOLF LODGE INC., THE	0.502	183.322	
LANCASTER	IRVINGTON SERVICE AREA	0.088	31.939	
LANCASTER	WHITESTONE SERVICE AREA	0.050	18.143	
LANCASTER	RAPPAHANNOCK WESTMINSTER-CANTERBURY	0.038	13.828	
LANCASTER	WEEMS SERVICE AREA	0.031	11.138	
LANCASTER	FOXWELLS SERVICE AREA	0.022	7.994	
LANCASTER	LIVELY SERVICE AREA	0.021	7.603	
LANCASTER	TOWN OF KILMARNOCK SERVICE AREA	0.015	5.500	
LANCASTER	CORROTOMAN SERVICE AREA	0.012	4.527	

LARGE GROUNDWATER WITHDRAWALS - 2003				
REGION/COUNTY	FACILITY	WATER USE	WATER USE	
		Millions of Gallons per Day	Millions of Gallons per Year	
LANCASTER	LANCASTER SERVICE AREA	0.012	4.515	
LANCASTER	LANCASTER SHORES SERVICE AREA	0.004	1.484	
LANCASTER	COVE COLONY SERVICE AREA	0.004	1.372	
NORTHUMBERLAND	CHESAPEAKE BAY SERVICE AREA		NA	
NORTHUMBERLAND	REEDVILLE SERVICE AREA	0.051	18.486	
NORTHUMBERLAND	LAKE PACKING CO., INC., LOTTSBURG PLANT	0.027	9.914	
NORTHUMBERLAND	CALLAO SERVICE AREA	0.022	7.863	
NORTHUMBERLAND	BAY QUARTER SERVICE AREA	0.017	6.114	
NORTHUMBERLAND	HEATHSVILLE SERVICE AREA	0.017	6.107	
NORTHUMBERLAND	SHERWOOD FOREST SERVICE AREA	0.014	5.224	
NORTHUMBERLAND	INDIAN CREEK Y & C CLUB	0.013	4.917	
NORTHUMBERLAND	BURGESS SERVICE AREA	0.012	4.277	*2002
NORTHUMBERLAND	LOTTSBURG SERVICE AREA	0.010	3.648	
NORTHUMBERLAND	WICOMICO CHURCH SERVICE AREA	0.005	1.902	
NORTHUMBERLAND	GLEBE POINT SERVICE AREA	0.005	1.816	
NORTHUMBERLAND	BON HARBOR SERVICE AREA	0.004	1.527	
NORTHUMBERLAND	JETTY'S REACH	0.003	0.923	
RICHMOND	TOWN OF WARSAW SERVICE AREA	0.185	67.415	
RICHMOND	VIRGINIA CORRECTIONAL CENTER, HAYNESVILLE	0.130	47.585	
RICHMOND	LUTTRELLVILLE SERVICE AREA	0.008	2.994	
WESTMORELAND	BUSHFIELD SERVICE AREA			
WESTMORELAND	OLD PROSPECT LANDING		NA	
WESTMORELAND	TOWN OF COLONIAL BEACH SERVICE AREA	0.527	192.304	
WESTMORELAND	POTOMAC SHORES SERVICE AREA	0.071	26.035	

LARGE GROUNDWATER WITHDRAWALS - 2003				
REGION/COUNTY	**FACILITY**	**WATER USE**	**WATER USE**	
		Millions of Gallons per Day	**Millions of Gallons per Year**	
WESTMORELAND	TOWN OF MONTROSS SERVICE AREA	0.070	25.590	
WESTMORELAND	PLACID BAY ESTATES	0.049	17.735	
WESTMORELAND	BEVANS OYSTER CO., INC., KINSALE PLANT	0.042	15.324	
WESTMORELAND	STRATFORD HARBOR SERVICE AREA	0.034	12.347	
WESTMORELAND	BERKELEY SERVICE AREA	0.033	12.053	
WESTMORELAND	CABIN POINT SERVICE AREA	0.031	11.489	
WESTMORELAND	MONROE BAY ESTATE SERVICE AREA	0.016	5.967	
WESTMORELAND	WESTMORELAND STATE PARK	0.013	4.681	
WESTMORELAND	KINSALE SERVICE AREA	0.008	2.944	
WESTMORELAND	BLEAK HALL SERVICE AREA	0.006	2.186	
WESTMORELAND	DRIFTWOOD BEACH SERVICE AREA	0.004	1.369	
WESTMORELAND	GLEBE HARBOUR SERVICE AREA	0.004	1.285	
WESTMORELAND	DARL SERVICE AREA	0.004	1.280	
WESTMORELAND	MONTROSS MOBILE HOME VILLAGE	0.002	0.881	
WESTMORELAND	INGLESIDE PLANTATION INC	0.002	0.717	
WESTMORELAND	ADAMS GROVE SERVICE AREA	0.002	0.665	
WESTMORELAND	NORTHERN NECK BOTTLING CO., INC. MONTROSS PLANT	0.000	0.000	
MIDDLE PENINSULA				
ESSEX	TOWN OF TAPPAHANNOCK SERVICE AREA	0.358	130.509	
ESSEX	GWYNFIELD SERVICE AREA	0.029	10.675	
ESSEX	RIVERSIDE TAPPAHANNOCK HOSPITAL	0.018	6.685	
ESSEX	SOUTH HILL BANKS SERVICE AREA	0.004	1.380	
ESSEX	RIVERDALE SERVICE AREA	0.003	0.968	

LARGE GROUNDWATER WITHDRAWALS - 2003				
REGION/COUNTY	**FACILITY**	**WATER USE**	**WATER USE**	
		Millions of Gallons per Day	**Millions of Gallons per Year**	
GLOUCESTER	WATER SYSTEM	0.519	189.440	
MATHEWS	CHESAPEAKE SHORES SERVICE AREA		NA	
MATHEWS	MATHEWS CONVALESCENT HOME	0.014	5.160	
MIDDLESEX	CHRISTCHURCH SCHOOL		NA	
MIDDLESEX	SALUDA SERVICE AREA	0.049	18.019	
MIDDLESEX	TOWN OF URBANNA SERVICE AREA	0.034	12.296	
KING AND QUEEN	WALKERTON SERVICE AREA		NA	
KING AND QUEEN	JAMES & JOSEPH MAY	0.006	2.09	
KING WILLIAM	CENTRAL GARAGE SYSTEM		NA	
KING WILLIAM	**ST LAURENT PAPER PRODUCTS CORP., WEST POINT PLANT**	**19.126**	**6980.970**	
KING WILLIAM	TOWN OF WEST POINT SERVICE AREA	0.718	261.950	
KING WILLIAM	OAK SPRINGS	0.039	14.367	
KING WILLIAM	RALSTON PURINA, GOLDEN CAT DIVISION	0.009	3.375	
KING WILLIAM	KING WILLIAM SCHOOLS	0.006	2.185	
KING WILLIAM	MARLE HILL SERVICE AREA	0.005	1.856	
KING WILLIAM	WOODRUFF SERVICE AREA	0.004	1.325	

APPENDIX B

2006

NORTHUMBERLAND COUNTY COMMUNITY PLANNING PROCESS
FOR A
COMPREHENSIVE COMMUNITY HEALTH, HOUSING AND SOCIAL SERVICES
PLAN AND IMPLEMENTATION STRATEGY

NORTHUMBERLAND COUNTY, VIRGINIA

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December 27, 2005

APPENDIX B

NORTHUMBERLAND COUNTY COMMUNITY PLANNING PROCESS[1] FOR A COMPREHENSIVE COMMUNITY HEALTH, HOUSING AND SOCIAL SERVICES PLAN AND IMPLEMENTATION STRATEGY

It is important that community health, housing and social services are planned and implemented in a manner that reflects a community-based, comprehensive approach that best meets the needs of citizens. A comprehensive planning process represents a collaborative approach involving people from all sectors of the community. It assumes that all forms of diversity are represented and that the process is a very public, deliberative one.

There are many models for comprehensive community planning. Many grant funded programs in the Commonwealth of Virginia require such a plan. These include, but are not limited to: Family Preservation Plans, Community Services Prevention Plans, Youth Violence Reduction Plans, and Virginia Juvenile Community Crime Control Act Plans. The Community Development Block Grant Program supplies funds for such planning as do many of the mentioned plans.

In some communities these planning requirements have been approached by separate ad hoc planning efforts for each grant client. The intent of most models is to assist communities in developing a comprehensive long-term approach to prevention and early intervention services and to resolve current health, housing and social services problems. Individual grant programs should be sought to be a part of the funding of this specific community comprehensive plan to preclude duplicate planning for the purpose of receiving any individual grant program monies. Northumberland County should perform the planning and implementation in a manner consistent with existing local problems, processes and structures.

1. PLANNING GROUP

The role of the Board of Supervisors is to convene a planning group. It may appoint a transition group or designate an existing group to identify and convene stakeholders. The County should define the appropriate stakeholders with an emphasis on inclusion rather than exclusion. The diversity of this group should reflect the ethnic origin/race, gender, age, disability, income levels, viewpoints, youth and parents, public and private sector and geographic characteristics of the County.

Within the planning group or supporting the planning group, subgroups may be established focusing on the following suggested categories:

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1 This Appendix is based on the model of community assessment and planning recommended by the State of Virginia Department of Social Services and is similar to models used throughout the US.

- Business and employment
- Land, water and air
- Education
- Home and shelter
- Health and recreation
- Disaster and security

For maximum community involvement, it would be recommended that no single individual serve on more than one of the subgroups.

2. COMMUNITY ASSESSMENT

The group would develop a *Vision for the Community* that involves the community in the process. This vision would be developed around the concept of healthy children, healthy families and healthy communities. A starting place is the State social services vision which is: *A Commonwealth in which individuals and families have access to adequate, affordable, high-quality human/social services that enable them to be the best they can.*

Once the broader County health, housing and social services vision is developed, the group would do a *community assessment* including the following;

- The group should identify assets that support the vision. Assets may include people, community and religious organizations, programs and activities (regardless of source of funding), other planning groups, nonprofit organizations, community events, etc.
- The group should engage the community in an examination of the significant data indicators for multiple risk factors for families, youth, school and the community.
- The group should also review the demographic, social, political and economic systems that may impact families and youth, both positively and negatively.
- The group should identify and review the community assets against factors known to lead to the development of protective factors and resilience in youth, families and communities. From this comparison the group would identify local duplications and gaps.
- The group should develop a plan to reduce identified risk factors and to enhance the community's assets that would include developing and promoting additional programs, activities and services to support the vision. If there are community assets that are being under-utilized or not being utilized effectively by the community, the group would also decide how best to reorganize/redirect these more effectively.

3. SETTING PRIORITIES

- The group should use a *priority setting process* to set goals for the work of the group. This would include targeting efforts and making choices to support implementation of the community's vision.

4. DEVELOP THE PLAN: SETTING GOALS, OBJECTIVES, AND STRATEGIES

- Goals, measurable objectives and strategies should be selected for priority areas.
- Strategies would include resource allocation, funding, staffing, support, evaluation, marketing, public relations as well as the possible development of new community assets, i.e., programs and activities.
- Action steps would describe how strategies will be implemented.

5. PLAN APPROVAL

- The plan should receive *approval from the Planning Commission and the Board of Supervisors*. Both organizations should be involved in the process throughout the planning phase.

6. IMPLEMENTATION

- The plan should be *implemented* as approved with various and numerous groups/individuals taking responsibility for the various parts as identified in the Implementation Section.

7. EVALUATION

- *Process evaluation* - monitoring implementation of program as designed.
- *Outcome evaluation* - collecting and analyzing data to demonstrate the effects the program or activity has had on the participants.
- *Impact evaluation* - analyzing the effect of the programs on community level indicators.

Information from these three types of evaluation activities is used to make adjustments in plans and to develop new plans. The evaluation contributes in a meaningful way to ongoing service planning and operation.

8. REPORTING

- *Reporting evaluation results* (both process and outcome) to appropriate entities, e.g., funding sources, public, key officials (both BOS and state where relevant), etc. is a critical ongoing responsibility that will maintain focus on and support for the plan among stakeholders.

Use the same time frame as the Comprehensive Plan for reviewing and revising the Comprehensive Community Health, Housing and Social Services Plan and Implementation Strategy