

Chapter Six

PUBLIC FACILITIES

INTRODUCTION

Public facilities and services are provided by the County for the common good of the citizens. As growth occurs, the need for expanded facilities and services becomes increasingly evident. Some facilities such as parks and recreational facilities are desirable amenities that add to the quality of life of County residents. Other facilities such as schools are required or mandated responsibilities of the local government.

The public facilities component of the Comprehensive Plan is designed to assess present and future facility needs of the County. This provides a basis for the Capital Improvements Program and the means to address the needs more efficiently and cost effectively.

The facilities covered in the Public Facilities are not all provided directly by the County. However, because of the public nature of the services or assistance provided by the County, such services are considered "public" for planning purposes. The services and facilities covered in this section include: Libraries, Public Safety (Police, Corrections, Emergency Services), Schools, Solid Waste, Wastewater, and Water Supply.

LIBRARIES

Background

Library services are provided by the Caroline Library with support from the County. The Caroline Library was established in 1981. The mission of the Caroline Library provides a wide range of information for self-education, offering comprehensive collections supporting research of specific subject areas, improving job related skills, supplementing educational and literacy programs, and serving as a community center.

Existing Conditions

The Caroline Library currently operates three branches, one in Bowling Green, Dawn, and Ladysmith (Figure 6-1). The administrative headquarters is located in the Bowling Green Library. A brief description of each branch follows:

The Bowling Green Branch was established in 1981, and was moved to its present location at the Community Services Center in 1999. It contains 5160 square feet of space with approximately 23,000 books.

The Dawn Branch was established in 1989. It contains 1,000 square feet of space with approximately 2,000 books. It is located in the Dawn Progressive Center at the intersection of Dawn Boulevard and Old Dawn Road.

The Ladysmith Branch was established in 1993. It contains 1,500 square feet of space with approximately 8,000 books. It is located next to the Ladysmith Elementary School on Ladysmith Road.

Standards for Evaluation

The Virginia State Library Board has established standards for public libraries. These standards have been established for both urban and rural localities. A brief synopsis of the standards for rural localities with a density of $\pm 1,000$ people per square mile is as follows:

Table 6-1

	Travel Time	Space Requirements (Total)	Books Per Capita
Level 1	30 Minutes	0.6 Feet ²	2.0
Level 2	20 Minutes	0.6 Feet ²	3.0
Level 3	15 Minutes	0.6 Feet ²	4.0

*Source: Virginia State Library and Archives

The Caroline Library attempts to meet the Level 1 standards, which are the least stringent of the established standards. With the three current facilities, it appears that the minimum travel time of thirty minutes to a facility has been met. However, space requirements and the number of books appear to be inadequate.

Based on the 2000 population estimate of 22,508 the space needs equal approximately 13,505 square feet. However, the space available at these facilities equals only approximately 7660 square feet. The library is currently preparing plans for an addition to the Bowling Green facility that would add an additional 5024 square feet of space.

A deficiency with respect to the number of books per capita also exists. Based on a standard of 2.0 books per capita, the number of books determined by the 2000

population estimate should equal approximately 45,016. However, the present number of volumes total approximately 35,000. Thus, while progress has been made since the 1994 plan update, the current library system appears to continue to be deficient in several areas. This deficiency is likely to continue without additional citizen or County support.

Future Needs

Anticipated development in the future will place additional burdens on the library system. To meet the Virginia Employment Commission 2010 population estimates in the 15,059 square feet of space will be required. The number of volumes available in the system will need to increase to 50,198. If population exceeds the state projections, then further increases in space and volumes will be necessary.

The two areas of the County which are the greatest distance from library facilities are the Central Point and Rappahannock River Valley areas of the County. Development in the eastern area of the County is not projected to be sufficient to support a library branch in that area. However, if Haymount develops as planned, a branch will be necessary along the Route 17 corridor. This has been proffered as part of the Haymount development.

SOLID WASTE COLLECTION AND DISPOSAL

Background

As with most rural localities, Caroline County traditionally has collected its solid waste through a greenbox collection system and disposed of its waste in a landfill. This system was developed primarily for the convenience of residents to ensure that no individual had to drive very far for trash disposal. Until 1992, the County maintained up to fifty-six greenbox sites around the County.

The greenbox system posed a number of problems for the County. Despite a regular collection schedule, the number and distance between sites made it difficult to adequately police the sites. This encouraged the improper disposal of materials not acceptable at these sites, the use of the sites by non-County residents, as well as indiscriminate dumping when the greenboxes were full. This led to unsightly areas and complaints from neighbors. The greenbox system also discouraged residents from recycling.

In 1989, the Department of Waste Management of the Commonwealth of Virginia developed regulations designed to address the increasingly stringent regulations of the Environmental Protection Agency. Among the requirements of the regulations were:

1. Establish minimum solid waste management standards and planning requirements for protection of the public health, public safety, the environment, and natural resources throughout the Commonwealth; promote local and regional planning that provides for environmentally sound solid waste management with the most effective and efficient use of available resources.
2. Establish procedures and rules for the designation of regional boundaries for solid waste management plans.
3. Establish state, local, and regional responsibility for meeting the minimum recycling rates of ten percent by 1991, fifteen percent by 1993, and twenty-five percent by 1995.
4. Establish procedures for withholding the issuance of permits to local governments for solid waste management facilities after July 1, 1992 pending approval of a solid waste management plan.
5. Provide for reasonable variances and exemptions.

In response to these regulations, the County developed and adopted the Caroline Regional Solid Waste Management Plan, which included Caroline County and the Towns of Bowling Green and Port Royal. The plan set forth the goals and objectives for solid waste management and described the planning and regulatory concepts employed to meet these goals and objectives. Concurrent with the development of the Solid Waste Management Plan, the County established a citizen task force to thoroughly evaluate the waste disposal options available to the County. The task force met for over a year gathering data, conducting site visits and projecting future waste disposal needs. In February 1992, the task force presented its findings and recommendations to the Board of Supervisors.

Existing Conditions

Caroline County currently operates 7 convenience center sites around the County (Figure 6-2). These

sites contain both trash compactors and recycling containers. The convenience centers are located such that the majority of residents are within eight miles of a site.

The County also operates a sanitary landfill. The current facility is located off of A.P. Hill Boulevard (Route 301), north of the Town of Bowling Green, immediately adjacent to Fort A.P. Hill (Figure 6-2). The site contains ninety acres, approximately forty acres of which is permitted for use as a landfill. The landfill is scheduled to close in early 2001, at which time, the County will haul its waste to a permitted regional facility outside of the County.

Issues

As development continues in the County, the amount of solid waste will continue to increase, along with increased disposal costs. The biggest issue facing the County remains how to dispose of its solid waste in the most cost effective manner.

The Board of Supervisors evaluated the three waste disposal options available to the County:

1. Continue to operate a County facility under new state and federal regulations;
2. Allow a private company to establish a sanitary landfill in the County and dispose of County refuse at no charge; or
3. Transport solid waste generated in the County to a facility located elsewhere.

Options 1 and 2 have been evaluated and eliminated for different reasons. This leaves only the third option, which is currently being implemented. In the meantime, the County continues to operate its landfill under the pre 1989 regulations until early 2001.

A second issue related to disposal is recycling, which is important, not only because of state and federal mandates, but because of economics. The greater the amount of recycling, the less waste that must be disposed; resulting in lower disposal costs. The County relies on voluntary recycling efforts by its citizens and businesses. The County has contracted to provide recycling bins at its seven convenience centers (Figure 6-2). As the County continues to grow, it must monitor its waste collection and disposal patterns, in order to insure its collection program is operated as cost effectively as possible.

PARKS AND RECREATION

Background

Active and passive recreational opportunities are provided by the Parks and Recreation Department. Recreation and leisure activities play vital roles in personal development, cultural advancement, social reform, and emotional stability. Recreational opportunities contribute to the quality of life by providing social, cultural and community development opportunities.

Existing Conditions

The Parks and Recreation Department operates the Caroline County Regional Park adjacent to the Caroline County High School. The following facilities are available for recreational activities at the park.

- Basketball Courts 1
- Tennis Courts 4
- Volleyball Courts 1
- Baseball Field 3
2 Regulation, 1 softball/little league)
- Multi-purpose 1
- Exercise Trail 1
- Playground/Tot lot 1
- Picnic Shelter 1 (Capacity - 75)

The Parks and Recreation Department also has agreements with the Caroline County School Board, Fort A.P. Hill, Town of Bowling Green, Town of Port Royal, and community organizations for the use of their respective facilities. This allows the Parks and Recreation Department to extend recreational opportunities throughout the County at minimal costs.

The location of these facilities are identified in Figure 6-3.

In 1993, the Parks and Recreation Department offered eight organized athletic leagues for children and adults. The Department also offered approximately 40 clinics, classes and trips. Approximately 3,200 residents took advantage of the programs offered.

In reviewing the standards, the County fares quite well in several categories while being notably deficient in others. The County should modify and adopt these standards as it sees fit and attempt to meet the standards over a ten-year period.

Extending recreational opportunities throughout the County is important. Utilizing the standards in Table 6-2, the County has begun developing neighborhood or community parks as identified in Figure 6-3. The first neighborhood park was established in Dawn in 2000, while plans for facilities in Bowling Green and Ladysmith are under development.

Consideration should also be given to strengthening and formalizing the joint use agreements to compliment the neighborhood/community park system.

Standards of Evaluations

The National Recreation and Park Association has developed standards for recreational facilities development. Some of these standards are more applicable to suburban or urban areas. However, these standards provide a guide by which to evaluate current facilities and identify facilities that may be considered substandard. These standards are identified in Table 6-2.

PUBLIC SAFETY

Public Safety includes Emergency Services (fire departments, rescue squads, and the Office of Emergency Services) and Law Enforcement (Sheriff's Department, State Police, and Corrections). Such services are essential for the protection of property, as well as the health and well being of County citizens. A strong and efficient public safety program may also serve as an economic development tool when it comes to attracting new business and industry.

Emergency Services

Emergency Services is comprised of the Office of Emergency Services, fire departments and rescue squads, who work jointly to provide these services to the County.

The Office of Emergency Services (OES) is the County's technical support for the fire departments and rescue squads. OES is administered by the Director of Fire and Rescue/Emergency Services Coordinator. The responsibilities of the office include:

- Providing technical and clerical assistance to the volunteers;
- Providing and coordinating training opportunities;
- Public information and education;
- Dispatching and emergency communications;
- Technical assistance and oversight of fireground and hazardous material incidents; and
- Assisting with the plan reviews of new development.

The Director also serves as the County's liaison with state and federal emergency management agencies.

In 1995, the County and the volunteers recognized the need to establish a position to coordinate the Emergency Medical Services (EMS) functions of the County. The EMS Captain assists the Director in the management of the overall system as it relates to EMS. In late 1997 two full-time Medic/Firefighter positions were created to augment the volunteers during the daytime hours. Since that time, the County has also utilized part-time personnel to provide additional daytime coverage as needed.

Fire and Rescue Services

As with most rural jurisdictions, Caroline County relies predominantly on volunteers to provide its fire and emergency medical services. Six fire departments (Figure 6-4) and five rescue squads (Figure 6-5) provide primary coverage to the County exclusive of Fort A.P. Hill which provides its own services. Caroline County has also entered into mutual aid agreements with Essex, Hanover, King George, King and Queen, and Spotsylvania Counties, and Fort A.P. Hill to augment County departments if the need arises.

The County's volunteer system has developed over a number of years with the establishment of departments based on the perceived needs and interests of citizens in the area. The six fire departments and five rescue squads currently roster 286 active members. Fire department memberships are identified in Table 6-3 below and rescue squad memberships are identified in Table 6-4.

**Table 6-3
Fire Department Membership**

Bowling Green Volunteer Fire Department	35
Ladysmith Volunteer Fire Department	35

Port Royal Volunteer Fire Department	32
Sparta Volunteer Fire Department	20
Frog Level Volunteer Fire Department	41
Upper Caroline Volunteer Fire Department	19
Total	182

**Table 6-4
Rescue Squad Active Membership**

Bowling Green Volunteer Rescue Squad	30
Ladysmith Volunteer Rescue Squad	49
Frog Level Volunteer Rescue Squad	25
Port Royal Volunteer Rescue Squad*	
Upper Caroline Volunteer Rescue Squad*	
Total	104

*Included in Fire Department totals

The location of the fire and rescue departments over time has actually served the County well. Without any structured planning efforts by the County, a system has developed which provides adequate coverage to the majority of the County's population. However, additional development with resulting increases in emergency calls are likely to tax the system in the future.

County Assistance

In addition to providing technical and clerical assistance to the volunteers, the County also provides financial support. The County contributes financially to the operations of each fire and rescue department in the County. The County embarked upon a five year Capital Improvement Program with the volunteers in 1993, agreeing to contribute \$146,000 towards the purchase of a Class 1 pumper for each fire department and \$37,000 towards the purchase of a new ambulance for each rescue squad. Beginning in 1998, the County agreed to pay for the full purchase price of all new fire and EMS vehicles, subject to standardized purchasing and vehicle replacement policies. The County also provides financial assistance to cover a portion of the operational costs of each department, in an effort to reduce the amount of time the volunteers must spend on fundraising activities. The County also provides other incentives to assist in attracting and retaining volunteers.

Evaluation Standards

The American Insurance Association (AIA) establishes recommended levels of services for fire protection. The AIA standards for suburban areas is a 3 - 4 mile

response area for a fire department and up to ten miles in rural areas. Recognizing that the County is predominantly rural and applying the 10 mile response area around existing stations, the majority of the County's population and businesses are adequately covered by existing facilities.

However, in evaluating the future land use plan with respect to residential, commercial, and industrial development, a four-mile response limit is utilized. If development occurs in the Carmel Church and Route 17 areas, then service within those areas will not meet the guidelines established by the AIA.

Rescue squads have no published standards by which to evaluate appropriate levels of service. The most referenced standard for pre-hospital care is put forth by the American Heart Association for heart attack victims. This standard states that if a victim of cardiac arrest does not receive CPR within 8 minutes of the onset of cardiac arrest, the chances for survival diminish rapidly.

In a rural volunteer system, it is impossible to achieve an eight minute response time for all medical emergencies. It may be more appropriate to utilize the same level of service standards as established for fire departments.

In evaluating primary coverage areas based on a ten-minute response time, most of the County's businesses and population appear to be adequately covered. However, this coverage is dependent on in-house crews that can respond immediately upon dispatch. As with most volunteer systems, the stations are not staffed twenty-four hours a day. Personnel must often respond from their homes to the station before responding to an incident, thereby increasing the total response time and reducing the effective service area.

The volunteer system is also faced with personnel shortages, especially during daytime when volunteers are often at work, exacerbating the response situation. The response times for fire and rescue departments are maintained by OES. Response times should be analyzed to accurately evaluate the response times. If problems are identified, then the volunteers and the County collectively need to develop a plan(s) to address any problems. Problems that will only multiply as the County grows.

Future Needs

Based on approved developments and expected development trends, two additional stations will be needed within the planning period. Carmel Church, with its commercial and industrial developments will require a station if significant economic development activities occur as planned. The facility should be designed to house an engine company, a truck company and an ambulance.

An additional station will be required along the Route 17 Corridor if the Haymount development occurs. The developer has proffered the construction of a fire and rescue station as well as residential sprinklers/fire alarms and a water supply/distribution system of adequate size to provide adequate flows. If Haymount does not develop as anticipated, the second station will not be required. While a deficiency would still exist in that area of the County, the population density would be insufficient to support an additional station.

Law Enforcement and Corrections

Law enforcement is provided by the Caroline County Sheriff's Department and the Virginia State Police. The Sheriff's Department is responsible for criminal law enforcement, civil process, court security, and oversight and operation of the County Jail. The Virginia State Police is primarily responsible for traffic safety enforcement. Both departments provide assistance to each other as needed.

The Caroline County Sheriff's Department currently has 28 full time sworn law enforcement personnel, including: 1 sheriff, 1 captain, 2 lieutenants, 2 sergeants, and 13 deputies. Of the sworn personnel, 15 are full time patrol units divided into four shifts. Including communications personnel and administrative staff, the Sheriff's Department is staffed by a total of 43 full and part-time personnel.

The Virginia State Police headquarters is also located in Bowling Green. The Virginia State Police has six units assigned to Caroline County. These units also are responsible for patrolling King George County.

Evaluation Standards

The State Compensation Board has established a standard of one Deputy per 2,000 residents. Based on this standard, Caroline County would need ten deputies and would appear to be adequately staffed with thirteen deputies currently rostered. However, a number of factors appear to make this standard unusable.

First, this standard applies to all sheriff's departments, regardless of whether the department is responsible for criminal law enforcement or not. Most rural or suburbanizing counties like Caroline cannot afford a separate police department for criminal law enforcement. Thus, it becomes the responsibility of the Sheriff's Department in addition to civil process and court security.

A second issue is the size of Caroline County. At 540 square miles, the Sheriff's Department has a large area to cover. Response times can take up to fifteen minutes in an emergency.

Third, the department has established special patrols in the Carmel Church and Dawn areas at the request of citizens and businesses in those areas. These patrols have been periodic and are not full-time. However, incidents in these areas point to a need for a police presence.

Finally, additional development will add to the workload of the Sheriff's Department. The Haymount development in the northern part of the County will necessitate additional demands as will additional development in the Ladysmith and Carmel Church areas.

All of these factors together indicate that a standard of one deputy per 2,000 residents appears to be an unrealistic standard and that the deputy/resident ratio will continue to be deficient. The Sheriff's Department together with the Board of Supervisors should carefully evaluate the needs of the department in order to provide adequate protection to residents and business in the County. An appropriate standard applicable to Caroline County should be developed and staffed accordingly.

Correctional Facilities

The Caroline County jail previously served as the principal correctional facility for the County. It was administered by the Caroline County Sheriff's Department. The jail, which was constructed in 1969 failed to meet the current standards of the Virginia Department of Corrections, which were adopted in 1990. It also did not meet the minimum requirements of the 1988 Life Safety Code, 1990 BOCA code, and 1992 American Disabilities Act.

In 1989, government representatives from several northern Virginia jurisdictions began discussion

concerning the need for a special purpose regional jail for the incarceration of low-risk, post-sentencing inmates. These discussions were dictated by the overcrowding experienced in local jails in the jurisdictions. Not being able to find an acceptable site in northern Virginia, the localities requested assistance from the U.S. Government, which identified Fort A.P. Hill as a solution. Though initially skeptical, Caroline County officials recognized this opportunity to solve its jail deficiencies.

In 1991, a planning committee consisting of members from Alexandria, Arlington, Caroline, Fairfax, Hanover, Prince William, and Stafford began preliminary studies to determine the actual needs and costs of a facility. Caroline and Hanover Counties were also looking at the facility to address their needs for a pre-trial detention facility.

After considerable study, it was determined to be more economically feasible for Caroline and Hanover Counties to meet their pre-trial detention requirements with a separate facility. Thus, Caroline County agreed to join Hanover County and the Town of Ashland in the establishment of the Pamunkey Regional Jail.

Existing Conditions

The Pamunkey Regional Jail opened its doors in October of 1998. Caroline County is allocated 64 of the 318 available beds for its use. This is over 2-½ times the number of beds that were available in the County Jail and should be adequate for the County's needs in the near future.

Caroline County also remains a member of the Peumansend Creek Regional Jail Authority in order to address its cell needs for low risk, post-sentencing inmates. Caroline County retains 16 of the 336 beds in the Peumansend Creek Regional Jail for its use.

WASTEWATER TREATMENT

The 1987 Comprehensive Plan provided the impetus for the development of the County's wastewater treatment system. With the expansion of the Primary Growth Area and development in the Carmel Church area, County officials recognized that a central wastewater collection and treatment system were necessary in order to implement the plan and to encourage economic development efforts.

The 1987 utilities plan provided for one central wastewater collection system which included incorporating the Town of Bowling Green in the County's system. Utility lines would be extended to the Town within five years of the initial system development. However, the Town completed an upgrade of its system in 1993, expanding the capacity of the treatment plant to 250,000 gallons per day. The Town is now committed to continuing with its own wastewater disposal system and is evaluating expansion possibilities beyond the current Town limits. Thus, consolidation of the systems does not appear possible at this time.

Construction of the County's wastewater treatment system began in 1989 with the first phase completed in the summer of 1990. The initial service area contained approximately 2,000 acres. In 1993, the service area was expanded to approximately 3,500 acres with an extension along Route 207 to the County Complex on Route 676. The most recent expansion of the wastewater system occurred in 1998, with the construction of the Ladysmith Interconnection, between Ladysmith and Carmel Church. This created a service area of approximately 9000 acres and defines the current boundaries of the system (Figure 6-6). The Wastewater Treatment Plant is designed and permitted for 2.0 mgd with a current capacity of 0.5 mgd.

ISSUES

The population projections in Chapter Two indicate that the County is expected to grow moderately over the next decades. With the extension of service to Ladysmith, the system should be adequate to handle residential and commercial development in this area of the Primary Growth Area over the next ten to twenty years. Figure 6-7 identifies the service area for the 2000-2004 planning period.

Beyond the ten-year planning period, two additional expansions of the system are contemplated. The Milford extension of the system should be completed to provide service to areas currently served by the Milford Sanitary District. This would provide upgraded service to the Milford Industrial Park and residential areas. It also provides service to other areas not connected to the Bowling Green system. The second expansion involves the construction of the gravity sewer line along Polecat Creek. This extension eliminates the force main from Stevens Mill Run to Carmel Church. The twenty-year service plan is shown in Figure 6-8 and the ultimate

service beyond the twenty-year period is shown in Figure 6-9.

The 1992 amendment to the Comprehensive Plan established a Planned Unit Development designation for a portion of the Skinkers Neck area off Route 17. Within this area, a 1.5 mgd Wastewater Treatment Plant and Collection System would be constructed to serve the proposed Haymount project.

WATER SUPPLY

Caroline County owns and operates two water distribution systems, the Caroline County Utility System and the Milford Sanitary System. The Caroline County Utility System is comprised of three separate operating units. The Carmel Church system is located around the I-95/Rt. 207 interchange. The system primarily serves commercial and industrial development around the interchange. The system is served by three deep wells which are capable of producing 52, 70 and 120 gallons per minute. A 300,000 gallon elevated storage tank provides sufficient capacity and fire flows.

The second system is located at the Rogers-Clark Boulevard (Route 207)/Devils Three Jump Road (Route 676) intersection at the County park and school complex. The system serves the Caroline County Middle School, High School, Vehicle Maintenance Facility, Animal Shelter and Park. The system is served by two deep wells with yields of 50 gallons per minute each. A 200,000 gallon elevated storage tank provides sufficient capacity and fire flows.

The most recently created service area is the Ladysmith system, which was established in 1996, to facilitate economic development efforts in Ladysmith. This system is served by a single deep well with a yield of 50 gallons per minute and a 500,000 gallon elevated storage tank.

A second public system, the Milford Sanitary District, is independent of the other County system but is operated and maintained by County personnel. The system serves the Milford area including the Milford Industrial Park. This system is served by two deep wells with yields of 65.5 and 70 gallons per minute. A 100,000 gallon elevated storage tank provides capacity and fire flows. Figure 6-10 identifies all of the County operated systems.

In addition to the aforementioned facilities in the County, the Towns of Bowling Green and Port Royal operate public water systems.

There are also a number of private central water systems scattered throughout the County. Most of these systems were constructed during subdivision development. The three largest private systems are:

Lake Caroline	.476 MGD
Lake Land 'Or	.0986 MGD
Caroline Pines	.0050 MGD

All of these systems rely on groundwater with the exception of Lake Caroline which utilizes surface water withdrawals.

ISSUES

In order to implement the County's Land Use Plan, a water distribution system is necessary. Such a system must have the proper line sizes, adequate supply, sufficient storage, and pressure to meet the fire flow and general usage that will be required.

The most immediate issue facing the County is the need to ensure an adequate water supply to the three service areas that comprise the Caroline County Utility System. This involves the construction of interconnections between the service areas, as well as supplementing existing water sources for the system. The public works department is currently overseeing the Ladysmith/Carmel Church interconnection that will provide an additional 300,000 gpd of source, as well as supplement the supply in both areas.

A future project within the planning period involves the interconnection with the County Park/school complex and the Milford well field, which will provide an additional water source for the entire system.

The current County systems rely on groundwater as the water source. Groundwater supplies are probably sufficient to meet the County needs in the near future. However, groundwater conditions tend to fluctuate and are highly susceptible to contamination from inappropriate land uses. The County does not currently have a good groundwater based water supply plan.

The County has completed a groundwater resources study to determine the location and quality of groundwater resources as well as to develop a phased

distribution system to serve the primary growth area. The study indicates that significant infrastructure improvements will be necessary over the next 10 - 20 years to address existing deficiencies as well as future needs. Figure 6-11 identifies the service area for the 2000-2009 planning period.

Beyond the ten-year planning period, two additional expansions of the system are contemplated. The Milford extension of the system should be completed to provide service to areas currently served by the Milford Sanitary District. This would provide upgraded service to the Milford Industrial Park and residential areas. It also provides service to other areas not connected to the Bowling Green system as well as supplements the Bowling Green system if needed. The second expansion involves the construction of a connection line from Ladysmith to Milford along Route 633/639. This connection completes a “looped” system between Milford, Carmel Church and Ladysmith. The twenty-year service plan is shown in Figure 6-12 and the ultimate service area with possible connections on an “as needed” basis is shown on Figure 6-13.

The 1992 amendment to the Comprehensive Plan established a Planned Unit Development designation for a portion of the Skinkers Neck area off Route 17. Within this area, a 1.5 mgd Water Distribution System and Treatment Plant would be constructed to serve the proposed Haymount project.

The County also has an abundant supply of surface water resources available. The Rappahannock, Mattaponi, and Pamunkey Rivers are all potential water supply sources. However, surface impoundments or water withdrawal facilities are expensive to construct and operate. Such facilities are more likely to be long-term water supply sources for the County.

The County must begin to study its surface water supply options. The identification and permitting of surface water supply facilities are long term but expensive processes, sometimes taking 10 - 15 years to meet all of the regulatory requirements. The County must be careful not to let other localities monopolize the water resources in such a way to limit the County's future options. The County must continue to monitor water supply projects in Spotsylvania, King William and other areas to determine how these proposals will affect Caroline.

The County should also evaluate the potential for developing regional water resources to the benefit of several localities. Hanover County has been working on the Crump Creek Reservoir for several years. Spotsylvania has been attempting to work with other RADCO localities to meet its long-term supply needs. Water resource planning may be the best example of how regional public facilities can and should be planned and developed.

EDUCATIONAL FACILITIES

Schools provide our most valuable and important resource; educated citizens better equipped to cope with the complexities of today's society. The county school system is directed by the Caroline County School Board, a four member body appointed by the Board of Supervisors for non-concurrent four-year terms. Except for budget approval, the school system is administered separately from the rest of County government. The Superintendent is assisted by an Assistant Superintendent, Director of Operations, Director of Special Projects, and Director of Vocational/Adult Education/Pupil Services with supporting facilities, equipment, and staff. The Bowling Green Elementary School Annex is located south of Bowling Green on Route 301.

EXISTING CONDITIONS

The Caroline County School Board operates six schools (Figure 6-14), two primary schools, two elementary schools, a middle school, and a high school. The primary schools teach grades pre K - 2, the elementary schools, grades 3 - 5, the middle school, grades 6 - 8, and the high school 9 - 12. Table 6-5 identifies the capacity and current enrollment of each school. This table shows that the actual enrollment at the primary and elementary schools far exceeds the capacity of each of these schools.

**Table 6-5
School Capacity & Enrollment**

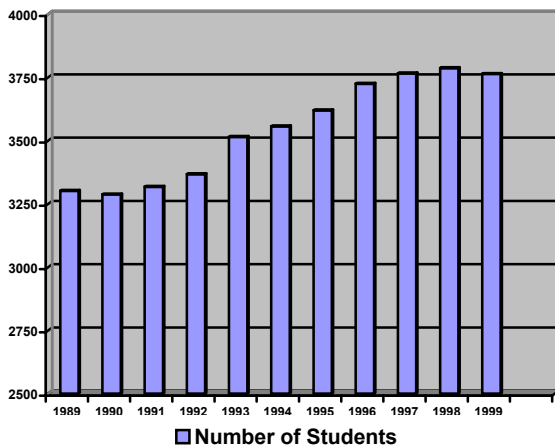
School	Capacity	Enrollment
Bowling Green Primary	450	530
Ladysmith Primary	370	500
Bowling Green Elementary	338	408
Ladysmith Elementary	328	480
Caroline Middle	1,200	904
Caroline High	1,350	1,077

Total 4,036 3,899

Historical Enrollment

Throughout the 1980's school enrollment generally declined decreasing by slightly less than 600 students. However, during that same time, standards of quality established by the General Assembly offset the excess capacity created by decreased enrollment. The net result was the school system found itself short of the required number of school seats in the late 1980's necessitating renovations to several schools and the construction of a new middle school. This shortage of seats was exacerbated by the reversal of decline in school enrollment which began in the 1989-90 school year. Over the last 10 years, the K-12 enrollment has increased steadily by 485 students. Total K-12 enrollment for the 1998-1999 school year was 3768 students. Table 6-6 indicates the overall increase in school enrollment for the entire system.

**Table 6-6
Caroline County Schools
Historical Enrollment
1989 - 1999**



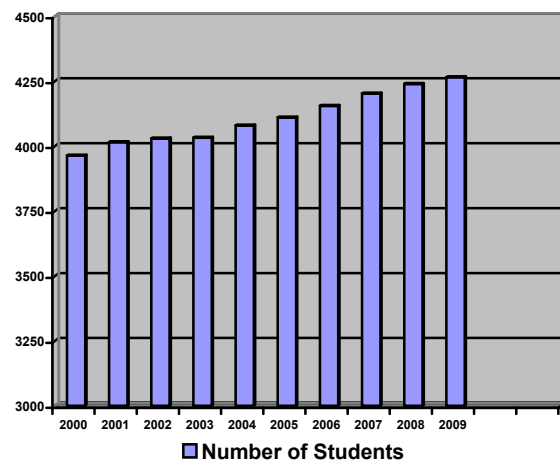
PROJECTED ENROLLMENT

In 1999, the Caroline County School Board employed Mosely, Harris & McClintock to engage in a long-range educational facilities study. As a component of the study, DeJong and Associates, Inc. were contracted by Mosely, Harris, McClintock to assist in developing future enrollment projections. Enrollment projections were developed by analyzing live birth data, historical

enrollments, and new housing. The projections were developed as a planning tool for the future and, based on anticipated growth, represent the most likely direction of the county. These projections may be influenced by external factors and economic/industrial development that may occur in the future. Therefore, these projections should be monitored and updated as needed.

Three sets of enrollment projections have been delivered for the next ten school years. The projections are based on a review of the number of live births, new housing, and historical enrollment. Table 6-7 indicates the most likely projected enrollment over the next ten years.

**Table 6-7
Projected Enrollment**



While enrollment in Caroline County schools has increased by approximately 14% over the past ten years. These projections indicate an increase of 326 students or 7.5% by the year 2008-2009.

The school issue has been studied a number of times over the years. The 1994 plan recommended the following:

The emphasis of present and future studies should primarily rely on (1) an evaluation of the physical school plant in order to reach conclusions as to the life expectancy of any given school within the duration of the 20-year planning period, and (2) a forecast of future enrollments by grade groupings for the geographical subdistricts of the County. A comparison of expected school capacity needs in light of the forecasts, with the available school plant capacity revealed by an existing building survey, will provide a basis for determining new school construction and replacement needs in years ahead.

Long term expected increases in school enrollment indicate that school planning should follow the following directives:

1. Eliminate from the school plant inventory those buildings which have outlived their usefulness for educational purposes.
2. Take maximum advantage of those school facilities in the County which have many more years of useful life.
3. Provide schools of sufficient capacity and quality to meet the County's enrollment expectations for the next 10 to 20 years.

To accomplish these aims and to further the primary goal of an improved educational program, it is recommended that the Board of Education consider organization of the school system on a K-5, 6-8, 9-12, or elementary, middle and high school system. Under these systems, larger schools could consolidate several smaller schools and offer better facilities to students and faculty with fewer buildings. Understandably, it would take considerable time to evolve into these new systems.

The long range plan for the County Schools should include:

- A high priority for repair and replacement of inadequate structural components which threaten the integrity and function of instructional buildings: roofs, walls, foundations, heat and cooling systems, and plumbing facilities.
- Renovation of older school facilities experiencing heavy use. The addition of classroom, restrooms, multipurpose rooms, and other repairs are necessary to keep certain facilities from

deteriorating and provide an adequate school environment.

- Expand and improve the quality of instructional programs by taking advantage of programs offered by State and Federal agencies. School staff assessment and the recommendation of professional associations have indicated a need to acquire micro-computers to teach computer literacy.
- Identify future school sites in a cooperative effort between the School Board, Planning Commission and County Administration to insure consistency with growth management policies.

Recommendations

Based on the facilities study, Moseley, Harris & McClintock presented options to the School Board in September of 1999. The school adopted the following recommendations as the most feasible and affordable:

1. Caroline County Schools should reconfigure the current split of Pk-2 and 3-5 grades and combine grades Pk-5 at all four elementary schools.
2. The Caroline County School Board has adopted the following framework as it's long range facility master plan:

Design and construct renovations and additions to Bowling Green Primary School to accommodate 500 students and discontinue the use of existing mobile units. Budget cost \$3,516,000.

Design and construct renovations and additions to Bowling Green Elementary School to accommodate 500 students and discontinue the use of existing mobile units. Budget cost \$2,911,000.

Design and construct renovations and additions to Ladysmith Primary School to accommodate 600 students and discontinue the use of existing mobile units. Budget cost \$6,017,000.

Design and construct renovations and additions to Ladysmith Elementary School to accommodate 500 students and discontinue the use of existing mobile units. Budget cost \$3,339,000.

Construct renovations to Caroline High School to improve conditions of the gym locker areas,

restroom facilities, ADA compliance, and provide adequate space for special education classrooms. Budget cost \$2,400,000.

3. It is recommended that the School Administration facilities be expanded to provide adequate space for current as well as future administrative needs, and centralize all operations at one location to improve operation efficiency.
4. The Caroline County school Board will work with the County Administrator and Board of Supervisors to explore potential alternative sources for funding the projects identified above.

EDUCATIONAL PLANNING CONSIDERATIONS

Bowling Green Primary School

The original 1959 building and the 1991 addition total approximately 50,000 square feet. Last year's enrollment was 530 students, grades Pk-2. The rated capacity of the permanent building is 450 students. The building is in relatively good condition and deserving of continued use for another 20 years. To support a larger student enrollment, the following are needed: additional classrooms, accommodations for special education, an art room, a music room, a computer lab, a guidance area, a clinic area, an expanded administrative area, an expanded media center, an expanded kitchen area and a multi-purpose room. The amount of addition is dependant upon the desired student enrollment and is noted in the different design options of this report. The site is large enough to support an addition.

General renovation improvements include ADA compliance, minor interior renovations for program changes, electrical power and communications upgrades, selected lighting improvements, asbestos removal where necessary, and site work to improve bus drop-off, parent pick-up and parking arrangements.

It is recommended that the School Maintenance Facility, located on this site, be relocated to address safety concerns. The Community Center should not be used as an extension of the primary school and was not considered in the options.

Bowling Green Elementary School

The original 1959 building totals approximately 40,000 square feet and the school utilizes portions of the

adjacent 1939 school annex for resource classrooms and physical education. Last year's enrollment was 408 students, grades 3 – 5. The rated capacity of the permanent building is 338 students. The building is in relatively good condition and with system upgrades could be utilized for school use for another 20 years. The school annex, which now houses the governor's school, should not continue to be used to supplement resource programs for the elementary school. However, if it is determined to continue it's use as an elementary school, the gym located in the annex, can be used. To support a larger student enrollment, the following are needed: additional classrooms, accommodations for special education, an art room, a music room, a computer lab, a guidance area, a clinic area, an expanded administrative area, an expanded media center and an expanded kitchen area. The amount of addition is dependent upon the desired student enrollment and is noted in the different design options of this report. The site is large enough to support an addition.

Because this school did not receive the 1991 building expansion improvements, the cost of it's continued use may be more extensive. Also, because of the need for additional administrative office space housed in the adjacent school annex building, along with the governor's school, this school building is a good candidate for replacement. The existing school building could then be remodeled and house all of the administrative functions together in one location.

General renovation improvements include ADA compliance, minor interior renovations for program changes, electrical power and communications upgrades, selected lighting improvements, asbestos removal where necessary, and site work to improve bus drop-off, parent pick-up, and parking arrangements.

Ladysmith Primary School

The original 1961 building and the 1992 addition total approximately 50,600 square feet. Last year's enrollment was 506 students, grades Pk-2. The rated capacity of the permanent building is 370 students. The building is in relatively good condition and could be utilized for school use for another 20 years. To support a larger student enrollment, the following are needed: additional classrooms, accommodations for special education, an art room, a music room, a computer lab, a guidance area, a clinic area, an expanded administrative area, an expanded media center, an expanded kitchen

area and a multi-purpose room. The amount of addition is dependent upon the desired student enrollment and is noted in the different design options of this report. The site is the smallest in the County, but is large enough to support an addition.

General renovation improvements include ADA compliance, minor interior renovations for program changes, electrical power and communications up-grades, selected lighting improvements, asbestos removal where necessary, and site work to improve bus drop-off, parent pick-up, and parking arrangements.

Ladysmith Elementary School

The original 1935 and 1951 buildings are approaching 65 and 50 years old respectively, have served their useful life, and should be replaced. Additions were added in 1996, 1971, and 1992, equaling approximately 40,500 square feet. Last years enrollment was 480 students, grades 3 – 5. The rated capacity of the permanent building is 328 students. The older buildings are in poor condition. The more recent additions are in fair condition and could be utilized for school use for another 10-20 years. To support a larger student enrollment, the following are needed: additional classrooms, accommodations for special education, an art room, music room, a computer lab, a guidance area, a clinic area, an expanded administrative area, an expanded media center, and an expanded kitchen area. The amount of addition is dependent upon the desired student enrollment and is noted in the different design options of this report. The site is large enough to support an addition or house a replacement school.

General renovation improvements include ADA compliance, minor interior renovations for program changes, electrical power and communications up-grades, selected lighting improvements, asbestos removal where necessary, and site work to improve bus drop-off, parent pick-up, and parking arrangements.

Caroline Middle School

This is the newest school in Caroline County and was constructed in 1992. The building totals approximately 145,000 square feet. Last years enrollment was 904 students, grades 6 – 8 and the rated capacity of the permanent building is 1200 students. The building is in good condition, although there have been problems with roof leaks over recent years. The projected enrollment for the year 2008 is 981 students and therefore no

additional construction is anticipated for many years. The physical education play fields are shared with an adjoining park site. During our interviews the only request from staff was to construct additional play fields to serve the middle school students.

Caroline High School

The high school was constructed in 1975 and totals approximately 160,000 square feet. Last years enrollment was 1090 students, grades 9 – 12 and the rated capacity of the permanent building is 1350 students. The building is in good condition, although in need of updating. The projected enrollment for the year 2008 is 1173 students and therefore no additional construction is anticipated. There is a need to renovate the science laboratories and casework, renovate physical education and team locker areas, provide more space for special education classrooms, provide more computer labs, and ADA and plumbing up-grades. The current Capital Improvement Program is addressing the science classrooms and up-grades to the stadium bleachers. An outdoor dressing facility is also planned for the year 2001-2002. During our tour of the school the only request was to increase the capacity of the auditorium and the gymnasium. The gym currently seats 1200 and the auditorium seats 500. Typically a high school gym is sized to seat the entire student body and high school auditoriums are sized to seat one third to one half of the student enrollment. Both these spaces meet the size standards for educational purposes but may not be adequate for community or regional events.

School Administration

The school administrative offices and maintenance areas are decentralized throughout the County and do not allow for efficient operation. The amount of space that the current administrative staff utilizes is not adequate for current or future needs. Many staff members are located in different buildings, included the annex Governor's School building adjacent to Bowling Green Elementary School. This building provides approximately 6,500 square feet for school administrative functions. It is anticipated that 12,000 square feet is needed to house administrative functions. A Countywide space needs assessment is currently being performed to study the needs of all County agencies, including school administration, and will make a recommendation this Fall. The traffic generated by the elementary school, the administrative staff and

visitors, and the Governors School, create an unsafe condition.

The maintenance staff is located in a building of approximately 2,000 square feet next to Bowling Green Primary School. It is anticipated that 5,000 square feet should be available for storage, shop areas, and staff offices. The maintenance facility should not be located on a school site due to conflict of vehicle traffic with school site circulation.

A preliminary overview of the bus maintenance facility was performed. Generally, other than minor suggestions, the bus maintenance facility appears to provide adequate space for current and future needs.

If an educational option is chosen that would replace Bowling Green Elementary School or Ladysmith Elementary School, it is suggested that one of these facilities be renovated and converted to house all school administrative offices and maintenance functions. If an option is chosen that will continue the use of both of these schools, it is suggested that a new facility be constructed on school property adjacent to the bus maintenance facility.

Strategy 3 - Utilize the Capital Improvements Program and Public facility standards to prioritize and program the development of public facilities.

Objective - Develop a Master Community Facilities Plan to assess the County's current and future public service needs which provides a plan for addressing the needs in an efficient and cost effective manner.

Strategy 1 - Establish public facility standards to use in determining needs associated with existing population as well as anticipated development to insure the adequate provisions of services.

Strategy 2 - Apply accepted zoning, land use, public facility criteria in evaluating potential sites for public facilities.

Strategy 3 - Encourage the joint use of public facilities by County departments and agencies to maximize utilization of such facilities.

Strategy 4 - Encourage the development of joint facilities in conjunction with surrounding jurisdictions.

GOALS, OBJECTIVES AND STRATEGIES

Goal - Establish Effective And Efficient Public Facilities And Service Delivery Systems To Serve The Existing And Anticipated Needs Of Future Development.

Objective - Locate facilities to provide efficient service to the greatest number of existing residences and businesses while taking into account future development needs.

Strategy 1 - Encourage the development of public facilities within the growth areas as identified in the Land Use Plan and the Future Land Use Map.

Strategy 2 - Utilize the review process set forth in Section 15.2-2232 of the Code of Virginia for the development of public facilities to ensure that such facilities are in accordance with the adopted Comprehensive Plan.