

UTILITIES

The County utilities for the comprehensive plan shall include available water, sewer, solid waste management, communications, and electric systems whether publicly or privately owned and operated. As a collection, the utilities--along with transportation, primarily highways, and certain community facilities--form the County's existing infrastructure. This infrastructure provides the support for all the varied human activities that are carried on throughout the County on a day-to-day basis.

Utility-type enterprises usually operate over large geographic areas and are largely capital or hardware--intensive. Because of this, utilities are very expensive both for original investment and for ongoing operation and maintenance. For planning, this means that careful decision-making by local government and/or private enterprise utility firms must be given to needs, wants, user charges or tax burden, and cost effectiveness of service to be provided. This decision-making is in the hands of local elected officials who must decide to: a) progress to higher levels of services to citizens--and cost; b) maintain the status quo.

Surface water and groundwater are discussed in the "Natural Conditions" section of this document.

Water Systems

The County's water distribution systems are located in the County, the Towns of Rocky Mount and Boones Mill, and in the Ferrum community. In addition, there are substantial residential developments at Smith Mountain Lake having central systems that are owned and managed by private water companies. There are also other developments distributed over the remainder of the County with water supplied by private water company systems or supplied by individual wells using groundwater supplies.

The Rocky Mount water system serves approximately 2,506 connections with an estimated population of 6,675 including most of the large industries which do not have their own water supply systems (based on 2002 billing data; *Town of Rocky Mount Alternative Water Source Study*, July 2004, Mattern and Craig). The Town has 1,955 connections in-town and 551 out-of-town (22 percent). The Town estimated its 2006 average water demand at 945,000 gallons per day, with 47% comprised of residential usage, 29% commercial, and 26% industrial. The Town's water plant was started up in 1983, and obtains its raw water from the Blackwater River. The plant, located north of Rocky Mount off U.S. Route 220, has a potable water production capacity of 2.0 million gallons per day. The system has extra capacity, since the current average daily production is 945,000 gallons of water per day—or approximately 44.1 percent of capacity. The water is artificially fluoridated and has a hardness of 2 grains per gallon. There are seven finished storage tanks with a combined capacity of 2.815 million gallons, including a 0.5 million-gallon storage tank on Grassy Hill which provides a high pressure zone to complement the existing low pressure zone, allowing an additional potential to deliver water beyond the bounds of the Town. The Town is investigating the development of back-up sources for its customers in consideration of drought effects upon its Blackwater plant source, including groundwater wells, a raw water withdrawal

from the Blackwater at Smith Mountain Lake, a withdrawal from the Pigg River, and/or construction of a sidestream reservoir near the Blackwater River.

The Town of Boones Mill operates its own water source and distribution system which serves approximately 268 connections, (350 persons). There are about 200 connections within the Town and 68 outside the Town (25 percent). The Town's water sources consist of two active wells and one spring. Another well has been designated but not developed. The system has a rated capacity of 36,800 gallons per day. General water storage is provided by a 250,000-gallon tank; an additional 100,000-gallon tank has been taken off-line but is available if needed. The distribution system in the Town consists of 2-inch up to 12-inch distribution lines. The current average daily production is about 78,000 gallons per day. The Town updated a portion of its distribution lines and replaced the older tank with the new existing tank in 1997 with the aid of grant funding from USDA-Rural Development and a Community Development Block Grant through the VA Department of Housing and Community Development. The Town is in the process of reviewing funding sources to upgrade its water and sewer systems.

In 1971, the Ferrum Water and Sewage Authority extended the Ferrum College water system into the community of Ferrum. The system is supplied from three wells and has a storage capacity of 450,000 gallons. A 2005-2006 project replaced three existing tanks with one 300,000-gallon tank and added one other 300,000-gallon tank in another section of the system to improve overall pressure and fireflow. The water is distributed from 4-, 6-, 8-, and 12-inch lines to approximately 1,840 persons. There are about 160 customers, including Ferrum College. The average daily consumption is approximately 140,000 gallons per day. The improvement project cost \$1.7 million, financed by loan-grant funding from the Tobacco Commission and from USDA-Rural Development. Overall, the water facilities in the Ferrum area are excellent with well-planned expansion potential.

A major addition to public water service for the citizens of the County occurred in 2003, when the County formed a Public Works Department to oversee planning and design, project construction and management, and utility operations and maintenance. The Public Works Department is the operating utility entity representing the County. At the direction of the Board of Supervisors, the department has initiated formal coordination between utility planning and land use planning through the development of policy and ordinances, which were adopted by the Board of Supervisors. In 1991, a Franklin County Water and Sewer Facility Plan was prepared (Dewberry & Davis and William C. Overman Associates, P.C., in cooperation with the U.S. Environmental Protection Agency and the Virginia State Water Control Board). At that time, it was recommended that the County develop intermunicipal agreements to purchase bulk water and wastewater treatment, extend service lines by agreement where feasible, and work with other localities on regional water source development. Since the 1991 report, the County has taken steps to provide its own infrastructure development, determine that the entire County is the County service area, and assure a high standard for utility development throughout the County, working toward both County and regional solutions:

- In 1996, Chapter 22 of the local code was adopted to provide water and sewer construction standards, and it along with the subdivision and zoning chapters (19 and 25) were amended to link utility and land development as the countywide public water system is constructed (February 15, 2005).

Development of sewage treatment standards to be incorporated into Chapter 22 began in 2006.

- In 1998 and 1999, the County Board of Supervisors agreed to allow a boundary adjustment and additional annexation of 1.53 square miles of the County including Franklin Heights, with the provision that public utilities would be provided in those areas by Rocky Mount.
- In 2002, a bulk water purchase agreement was forged between the County and the Bedford County PSA to provide source for the construction of a public water system to serve Franklin County's residents, commerce, and industry; and in 2004, a bulk water purchase agreement was developed with the Town of Rocky Mount to provide for the area of Doe Run and Forest Hills to the south of the Town.
- In 2002 and 2003, the County developed preliminary engineering reports approved by the VA Department of Health which built upon the 1991 study and went further to delineate service study areas for a countywide public system and base the source on water withdrawn from Smith Mountain Lake (both regionally and by the County independently), and on intermunicipal agreements where possible. The map "Franklin County Water Service Area, 2002 Update" shows the service study areas within the County service area. Specific projects were delineated in the two preliminary engineering reports to provide water service within the County service area. The areas of the County covered by the study are loosely bounded by U.S. Route 220 North and south of Rocky Mount on the west, Route 40 east of Rocky Mount on the south, Smith Mountain Lake on the east/northeast and the County border with Roanoke and Bedford Counties on the north. The remainder of the County will be addressed according to service demands.
- In 2002, the County agreed to a boundary adjustment of about 417 acres in the Grassy Hill area to allow water utility development to be extended by the Town of Rocky Mount, and to provide tank sites for both the Town and the County.
- In 2003, the County initiated water quality studies on the Blackwater arm of Smith Mountain Lake to enable the eventual siting of a water withdrawal and water treatment plant site, with the intent to permit a facility which will serve County residents as well as the region, as the need for an additional water source increases over the long-term.
- In 2003, the County participated in a regional water supply study with its neighboring localities to the north and east.
- In 2003, the County established its Public Works Department.
- In 2004, the County began its first phase of construction for the countywide public water system, beginning at Halesford Bridge and stretching initially to Westlake village. The project was finished and implemented in August 2005.
- In 2004 and 2005, the County and the Ferrum Water and Sewage Authority developed renewable agreements to share utility services (operations and engineering).
- In 2004, the Board of Supervisors adopted rules and regulations for the County public water system and in 2005 enacted local ordinances to assist enactment.
- In 2005 and 2006, the County continued its utility service planning to meet apparent needs—including a sewer study for the general area served by Phase I of the water system, and public water development along the northern commercial corridor of U.S. Route 220.

- In 2006, the County began initial steps toward the development of a water plan to meet State requirements. This plan will be completed by 2008 – 2011 as mandated.
- In 2006, the County began assessment of the applicability of the Public-Private Investment Act of 2002 (PPIA) to its utility planning, which would allow public-private partnerships.
- In 2005 – 2006, the County worked with Windtree property owners, the developers of Westlake Village, LakeWatch, and Westlake Towne Center to transfer their water systems to County ownership.
- County shall continue to study future water needs along Route 220 corridor from Rocky Mount to the Roanoke County border.

These steps taken by the Board of Supervisors have enabled Franklin County to fulfill the organizational planning concepts of the 1991 study, go further in its utility planning, and provide the support and initiative for utility construction and operation by the County to meet the needs for public water service throughout the countywide service territory—that is, the entire County exclusive of the area within the boundaries of the Towns or assigned to the Ferrum Water and Sewage Authority. There is now organizational and financial capacity to enact the past, present, and future planning for County utilities.

The County is the utility agency for the County water service area, and it is the sole provider of public utility services in order to maintain orderly development of the system in conjunction with the Comprehensive Plan and assure the financial viability of the countywide system. The County acknowledges and appreciates that there are existing connections to both municipal systems and private central and community systems within the countywide service territory; however, the County is the responsible agency for utility planning, construction, and operation beyond those utility connections now in place by other providers. The County looks forward to cooperation and mutual benefit in the development of interjurisdictional agreements with its regional neighbors for facilities, bulk source water, and wastewater treatment services.

The County's first service area project is the Phase I water project, which secures the Smith Mountain Lake source for the County, brings it across Halesford Bridge from Bedford County, and delivers the water along the State Route 122 corridor to Westlake village. There is a service extension included to Routes 666 and 948 providing service to the Windtree Subdivision.

With this first major construction project in the service area, Phase I service was completed in August 2005, and the County is able to extend water service from the Smith Mountain Lake source to other areas. The countywide service study areas analyzed in the 2002 preliminary engineering report were estimated to include about 5,100 present connections, projected to a 20-year need of 5,924 connections. In 2005 as it initiated service, Phase I service area included about 100 connections—both residential and commercial customers—and is in a high growth area of the County. Original planning foresaw over 400 potential customers in the Westlake area over a 20-year period. Phase I includes 6-inch up to 18-inch water distribution lines, over a distance of 7.8 miles. The County's water source, by agreement with the Bedford County Public Service Authority (dated October 18, 2002), includes ownership of distribution capacity in the Bedford water infrastructure required to serve Franklin

County. Two State and Tribal Assistance Grants (STAGs) through the Congress and the EPA have assisted the planning and financing of the project. The County has a contract to purchase up to 400,000 gallons per day, with the potential to expand the water plant in conjunction with the Bedford County PSA when need requires. In 2005 – 2006 a joint study has been initiated to permit an increase in withdrawal at the High Point plant on Smith Mountain Lake owned by the Bedford County PSA to two (2) million gallons per day for service to Bedford and Franklin Counties.

The County agreed with the Town of Rocky Mount in November 2004 to purchase bulk water to provide service to residents of the Doe Run/Forest Hills/Power Dam Road section which experienced severe water need. The Town of Rocky Mount's wastewater treatment plant is also served. The water project was connected in February – March 2006 and includes 4,300 feet of 12-inch line and 7,800 feet of 8-inch line at a cost of \$586,070. It was financed by a local share of \$91,070 for construction and \$69,223 for engineering and inspection (\$160,293), and grants totaling \$495,500 from the USDA-Rural Development.

Other ongoing projects include additional water projects and development of a future withdrawal location and plant on the Franklin County side of Smith Mountain Lake, including source quality and location assessment studies, to assure that long-term water needs may be met and sufficient capacity is allocated from Smith Mountain Lake for Franklin County by the State and Federal regulatory agencies, and American Electric Power/Appalachian (the licensee producing electricity at Smith Mountain Lake Dam).

In April 2006, the Board of Supervisor adopted a resolution to participate in a regional water supply plan with the Counties of Bedford, Botetourt, Franklin, and Roanoke, the Cities of Bedford, Roanoke, and Salem, and the Towns of Boones Mill, Rocky Mount, and Vinton. The local governments will participate in a cooperative regional effort to develop and submit a regional water supply plan as a "Regional Planning Unit." The plan will result in the proposed development of future water supply projects that accommodate the long-range water supply needs of the participating local governments.

For detailed water and sewer planning information on the County, reference should be made to the following available planning studies.

- 1991 Franklin County Water and Sewer Facility Plan (Dewberry and Davis Engineers and William C. Overman Associates, P.C., in cooperation with the U.S. EPA and the VA State Water Control Board)
- 2002 Preliminary Engineering Report for the Franklin County/Smith Mountain Lake Water System Development Project (Thompson + Litton)
- 2003 Preliminary Engineering Report for the State Route 122/Burnt Chimney/Smith Mountain Lake Water Distribution System, Volumes I and II (Thompson + Litton)
- 2006 Wastewater Service Evaluation – Halesford Bridge to Westlake Area – Franklin County, Virginia (Anderson and Associates, Inc.)

Residential Water Supplies--1980 and 1990 Census Data; 1995 Survey Data

The 1980 and 1990 Census included questions on the source of water for residences in the County. The Census included counts of 12,906 year-round units in 1980 and 17,526 year-round units in 1990 where respondents noted their sources of water supplies. The following table sets forth the findings from the Census for County housing units. In both census years over 50 percent of the County households responded that their homes' source of water was from wells, 58 percent in 1980 and 64 percent in 1990. The percentage of total homes on public systems or private water company systems was 27 percent for both years; however, the number of units claimed to be using central type systems grew by 1,147 units or over 32 percent from 1980 to 1990.

Sources of Water

	<u>1980</u>		<u>1990</u>	
Public systems/private company	3,520	27%	4,667	27%
Drilled wells	6,300	49%	10,223	58%
Dug wells	1,154	9%	1,094	6%
Other sources-not specified	<u>1,932</u>	<u>15%</u>	<u>1,542</u>	<u>9%</u>
Total year-round units surveyed	12,906	100%	17,526	100%

The 2000 Census did not include a similar question; however, data from the U.S. Geological Survey indicate that Franklin County's water withdrawals in 1995 continued the patterns described above, as follows:

Withdrawals of Water, 1995 (millions of gallons per day)

<u>Use</u>	<u>Groundwater</u>	<u>Surface Water</u>	<u>Total</u>
Public Supply	0.47	0.84	1.31
Domestic	2.34	0.00	2.34
Comm./Ind.	0.25	0.09	0.34
Thermoelectric	0.00	0.00	0.00
Mining	0.00	0.00	0.00
Agriculture	<u>0.06</u>	<u>1.64</u>	<u>1.70</u>
Total:	3.12	2.57	5.69

Source: U.S. Geological Survey, "Water Use in the United States," web files located at http://va.water.usgs.gov/w_use/va_wu_95_web.htm; also Census Bureau, County and City Data Book: 2000.

Public water supplies provided 1.31 million gallons of water/day in 1995 and 33 percent of all water needs, exclusive of agriculture. Groundwater provided 55 percent of all water used in the County. Domestic water use continues to be largely supplied by individual groundwater wells (2.34 million gallons/day), not public supplies.

State and County Approved Public Water Supplies--State Definitions and Requirements of Local Code

The State Health Department defines a public water supply as a waterworks system that serves piped water for drinking or domestic use of (1) the public, (2) at least 15 connections, or (3) an average of twenty-five (25) individuals for at least sixty (60) days of the year. Waterworks shall include all structures, equipment, and appurtenances used in storage, collection, purification, treatment, and distribution of pure water except the piping and fixtures inside the building where such water is delivered. A community water system serves at least 15 service connections used by year-round residents or regularly serves at least twenty-five (25) year-round residents; they are under the jurisdiction of the State Health Department's Division of Water Programs (Danville Office). A non-community water system is a waterworks not defined as a community water system, but operates at least sixty (60) days out of a year; they are under the jurisdiction of the local health department (Rocky Mount).

Actions by the Board of Supervisors in 1996 brought these systems under local government regulation with the passage of Chapter 22 of the local County Code ("Water and Sewer Systems"). Chapter 22 includes the definition above for community systems and defines a central water system as "any water supply system serving three or more structures, dwellings, or equivalent residential connections (ERCs)." Chapter 22 requires that new central systems and community systems be reviewed and approved by Franklin County for conformity to the construction standards of the local code. These provisions ensure that small and large systems meet the general and fireflow construction standards of Chapter 22, so that they may be connected with the County's public system when it is within a serviceable distance. Well development approval rests largely with the VA Department of Health, although standards are included in Chapter 22.

Chapter 22 provides guidance on connection of new structures, subdivisions, and developments to the County public water system (it is required within a mandatory connection distance), and it requires that new water systems be designed to sustain fireflow and be offered to the County at no cost. The County may or may not accept the systems according to its water service area plans; however all new systems must be built to the standards of Chapter 22.

In 1982, the West Piedmont Planning District Commission staff developed a Groundwater Resources Inventory to serve as a database for subsequent groundwater studies in the County by engineer/hydrological consultants. Wells across the County were mapped and indexed to a database containing quantitative and qualitative data. The data was made available for comprehensive planning purposes and to ascertain the general well water yield character of the County. Many of the wells in the database feed the public water supplies systems.

County Water Facilities Planning Efforts

As previously noted, an initial Franklin County Water and Sewer Facility Plan was developed by Dewberry & Davis Engineers in April 1991. The report provided alternatives for addressing projected water and sewer needs in the County, and

presented recommended standards and strategies. It provided descriptive information on existing systems (private and public), and both regional and County-independent approaches to utility development based over a 20-year planning horizon.

Some of the key concerns that guided the development of the Plan are detailed below, along with the County's efforts to provide for these public utility needs since 1991 (see italicized entries):

- Comprehensively addressing, in a study area format, those areas of the County that were developing to a density or already at a density to make central, municipal type water and sewer systems practical both in respect to engineering feasibility and economic feasibility.

The 1991 Facility Plan designated six (6) study areas, with four (4) of those in the central county. The four (4) central county study areas included the Route 220 Corridor from Rocky Mount to Boones Mill, Route 40 West of Rocky Mount to Ferrum, Route 40 East of Rocky Mount to Route 122 Intersection, and Route 220 South of Rocky Mount. The fifth study area was Smith Mountain Lake, and the sixth was the remainder of the County.

The County added to the study areas detailed in the 1991 Facility Plan in two later preliminary engineering reports (2002 Preliminary Engineering Report for the Franklin County/Smith Mountain Lake Water System Development Project, and 2003 Preliminary Engineering Report for the State Route 122/Burnt Chimney/Smith Mountain Lake Water Distribution System, Volumes I and II, both prepared by Thompson + Litton). The enlarged study areas are shown on the map entitled "Franklin County Water Service Area, 2002 Update." The County also has determined its service area to include the entire County exclusive of the areas within the limits of the Towns of Boones Mill and Rocky Mount and the service area designated by the Board of Supervisors for the Ferrum Water and Sewage Authority.

- Develop implementation approaches where several special areas could commence to be developed in respect to either water or sewer systems; the Forest Hills Community and the Route 220 South area were selected as these initial target areas.

The County has initiated projects to provide County public water to the study areas of Smith Mountain Lake and Doe Run/Forest Hills/Power Dam Road. The County worked with the Town of Rocky Mount on selected annexation of areas which included the required extension of the Town's public system and other services, to enable health needs to be met (as in Franklin Heights), and to stimulate economic development (as along Route 122 to the east of Rocky Mount). The County is continuing to plan and develop projects to serve the County service area, seeking intermunicipal agreements to purchase bulk water and other utility services, and developing funding approaches to continue extension of the countywide public system including the development of a water withdrawal and treatment plant on Smith Mountain Lake to provide future source.

- Develop suggested approaches to handling septic systems in areas where it is not practical or timely for central systems to be developed, but where water quality protection is no less important.

The County has developed a sewer study for the general area of Halesford Bridge to Westlake village in order to determine recommended best practices for sewer design within the area to uphold the standards of development most appropriate for the high growth corridor. Wastewater Service Evaluation Halesford Bridge to Westlake Area Franklin County, VA by Anderson and Associates, Inc., January 10, 2006. The study topics were received by the Board of Supervisors over a period from August 2005 – January 2006, with potential sewage treatment designs varying from cluster systems serving specific subdivisions to regional systems serving larger land uses. A major recommendation is the determining of a long-range land use plan for the study area so that utilities may be tailored to it. A related study by the Tri-County Lake Administrative Commission (TLAC) produced a proposed septic pump-out ordinance for properties bordering Smith Mountain Lake. The Board of Supervisors passed this ordinance in February 2006 and Neighboring localities are still reviewing it.

- Develop a methodology for insuring that future water and wastewater systems are constructed to standards that would make their deeding over to the County or its representative operating agency both cost effective and efficacious.

The County adopted standards by ordinance in 1996 (Chapter 22 of the Franklin County Code). The ordinance was amended in 2005 to coordinate subdivision and zoning ordinances with utility development. New water systems must be offered to the County. Standards for sewer treatment are under development by the County to be incorporated in Chapter 22.

- Make recommendations for the most practical public body to manage future water and sewer systems in the County; a service authority was recommended in the 1991 Plan by the consultant firm conducting the Plan's development.

In 2003, the County established a Public Works Department reporting to the County Administrator or his/her designee. The County originally formed the Ferrum Water and Sewage Authority in 1969, and today the two entities coordinate and cooperate through agreements on projects and programs of mutual interest, in an effort to prevent duplication of efforts and share technical staff skills.

The County Board of Supervisors has developed an intermunicipal agreement to purchase bulk water, share storage, and co-own distribution facilities for water service with the Bedford County PSA. A recent intermunicipal agreement with the Town of Rocky Mount provides for the County to purchase bulk water and obtain utility operations and maintenance for the Doe Run/Forest Hills area. The County looks forward to future intermunicipal cooperation on the purchase and sale of bulk water and other utility services.

- Develop a series of recommended projects along with their costs, priorities, and mode of financing that would provide a long-range system development program.

The County develops a yearly 5-year Capital Improvements Plan (CIP) and implements the first year projects in the annual County budget. Utility projects are carried in a separate utility fund from the General Fund and financing is developed as projects move forward, through grants and loans.

Through its planning studies including the recent 2002 and 2003 preliminary engineering reports, service areas and project costs are delineated in the County service area. Progress continues to be made in addressing the utility needs outlined in the original 1991 and more recent utility study areas delineated (1991, 2002, and 2003) as additional sub-area studies continue, intermunicipal agreements are considered, and projects are developed and funded in the County service area.

- Develop a practical scheme for addressing water and sewer needs for the Smith Mountain Lake area where no facilities planning had been undertaken in previous planning studies in 1991.

The 2002 and 2003 preliminary engineering reports (Thompson + Litton) prepared for the Board of Supervisors detail potential County projects and water sources for Smith Mountain Lake and other areas of the County. The 2005 - 2006 County sewer study in the area of Halesford Bridge to Westlake village provided wastewater strategies for consideration by the Board of Supervisors, appropriate to the area.

The West Piedmont Planning District Commission's Metropolitan/Regional Comprehensive Water and Wastewater Disposal Plan, developed in 1973, and its 1977 Update called for extensions of the Rocky Mount water system into selected nearby areas of the County (Henry Fork, Route 40 West). Some portions of these extensions were accomplished by the Town of Rocky Mount; the Town of Boones Mill has also provided similar service close to its boundaries. With the establishment of the County's Public Works Department and the delineation of the countywide service areas, utility extensions in these areas are the responsibility of Franklin County. Future agreements for services and/or bulk water purchase by the County from the Towns to provide source for service to additional areas may be considered where agreeable and beneficial to all parties, along with the County's own source development. A public service authority was recommended in the West Piedmont plan to carry out projects in the County including the Ferrum College area. The County accomplished this recommendation with the establishment of the Ferrum Water and Sewage Authority and the development of the Public Works Department. The County has established the organizational basis for utility development in the countywide service area

The 1991 Franklin County Water and Sewer Plan, the 2002 Preliminary Engineering Report for the Franklin County/Smith Mountain Lake Water System Development Project, and the 2003 Preliminary Engineering Report for the State Route 122/Burnt Chimney/Smith Mountain Lake Water Distribution System Project (Volumes I and II) described a number of projects including detailed descriptions of water line routing, storage facilities, valves, and other appurtenances to provide water services. Below are summaries of the findings of these studies.

The *1991 Plan* stated that the financial feasibility of the various proposed projects was marginal due to the existing development densities and it made recommendations over a 20-year planning horizon. It called for bulk water purchases and line extensions from the Town of Rocky Mount through interjurisdictional agreements and, where that was not possible, the development of independent water sources by the County. In this early study, the Smith Mountain Lake area was forecast to continue using groundwater unless an independent water source and plant were developed.

Some portions of the project areas in the 1991 study have been provided public service in the interim, but most are included along with supplements in the later 2002 and 2003 preliminary engineering reports (Thompson + Litton) leading up to recent project development and financing. The following table sets out summary descriptions of the various 1991 study projects and their costs estimated in 1990 dollars. This information is followed by more recent recommendations and cost estimates from the 2002 and 2003 preliminary engineering reports.

On the 1991 project map there are references to projects in code fashion which were used in the Plan's text; the following explains these references with a note in italics to update the status of these study areas:

RMW1 Rocky Mount - Water - 1, represents a water project service area south of the Town of Rocky Mount along Route 220 South and near the County landfill area.

The County developed an independent water system at the Commerce Center industrial park. Some of the area has been provided water by the Town of Rocky Mount and the remainder is supplied by individual groundwater wells.

RMW2 Rocky Mount - Water - 2, represents a water project service area south-southwest of the Town of Rocky Mount including Henry Fork, Doe Run, and Deerwood Springs.

This area is served by the County's ongoing water project, with bulk water source provided by the Town of Rocky Mount by interjurisdictional agreement, and distribution provided by the County. Some of the area has been served by the Town and the remainder is supplied by individual groundwater wells.

RMW3 Rocky Mount - Water - 3, represents a water project service area northeast of the Town of Rocky Mount, including Route 40 East and the Franklin Heights area.

This area is largely served by the Town of Rocky Mount as the result of annexation and boundary line adjustment agreements between the Town and the County and the resulting required utility extensions by the Town.

RFW1 Rocky Mount/Ferrum - Water - 1, represents a water project service area running along Route 40 West between Rocky Mount and Ferrum

A portion of this area receives service from the Town and a portion is in the Ferrum Water and Sewage Authority service area.

RBW1 Rocky Mount/Boones Mill - **Water - 1**, is a water project service area lying between the Town of Rocky Mount and Town of Boones Mill that includes the Wirtz area on the east side of Route 220 North.

Included in the 2002 preliminary engineering report.

RBW2 Rocky Mount/Boones Mill - **Water - 2**, a project service area on the west side of Route 220 North.

Included in the 2002 preliminary engineering report.

RBW3 Rocky Mount/Boones Mill - **Water - 3**, a project service area on the east and west sides of Route 220 North, just south of Boones Mill.

Included in the 2002 preliminary engineering report.

RBW4 Rocky Mount/Boones Mill - **Water - 4**, a project service area on the west side of Route 220 North extending out to the Teel Brook subdivision.

Included in the 2002 preliminary engineering report.

SMW1 Smith Mountain Lake - **Water - 1**, a project service area that includes the entire lake area; this single area wide alternative was presented as one approach for serving the lake area with a unitary water system.

Most of the area is included in the 2002 and 2003 preliminary engineering reports.

SMW2 Smith Mountain Lake - **Water - 2**, this is an alternative service area that assumed an incremental approach to lake area service would be used; it addressed the Route 616/Route 670 Peninsulas extended up to the Halesford Bridge area and then over to the Hardy Ford Bridge area.

The County has developed an interjurisdictional agreement for bulk water purchase with the Bedford County Public Service Authority (2002). The County has constructed Phase I of the countywide water system which brings water across Halesford Bridge, along Route 122, to the vicinity of Westlake village. Operations began in the August of 2005.

SMW3 Smith Mountain Lake - **Water - 3**, this project service area serves the area below the Blackwater River arm of the lake and down to Route 40 East.

Included in the 2002 and 2003 preliminary engineering reports.

SMW4 Smith Mountain Lake - **Water - 4**, this project service area incremental alternative serves the Route 616 Peninsula/Scruggs down to Bernards Landing and over to the Route 711 Peninsula.

Included in the 2002 and 2003 preliminary engineering reports.

The projects in the 1991 report were set out as above to attempt to organize the projects/project service areas on a practical basis in respect to economics and engineering design to fit the land terrain and amount of existing and projected development. An incremental approach was assumed as density increases, to build smaller projects initially and at the same time build up equity and revenue, in order to be able to take on larger, more expensive projects as time extends into the future. The central county projects were foreseen to occur by the provision of source water through bulk water purchase agreements with the Town of Rocky Mount and water line extensions through interjurisdictional agreements between the County and the Town. Without the purchase of source at a reasonable cost, the Plan called for the development by the County of independent source water. The Smith Mountain Lake projects are costly due to the terrain, the existence of coves and bays that cannot be crossed without extensive costs, and the need for development of multiple water treatment facilities at the lake.

The more recent 2002 *Preliminary Engineering Report (PER) for the Franklin County/Smith Mountain Lake Water System Development Project* was prepared for the Board of Supervisors by Thompson + Litton to expand the County's initial planning areas and identify water source needs and resources. Six (6) alternatives are analyzed to provide public water service to residential, commercial, and industrial users in the areas around Smith Mountain Lake, Burnt Chimney, Redwood/Hodgeville, Union Hall, Glade Hill, Penhook, the U.S. Route 220 corridor in the vicinity of the Town of Rocky Mount, and the State Route 40 corridor in the vicinity of Redwood/Hodgeville. The service areas are located along the U.S. Route 220, State Route 40, State Route 122, State Route 616, and State Route 834 corridors in Franklin County, where presently residents are able to obtain water either from community systems (where available) or private wells. Drought conditions during the 1990's have provided an indication that groundwater may be stressed as a water source in some developed areas.

The 2002 PER analyzed water source development as a priority to determine the most cost-effective means of providing public water supplies over a 20-year design period. The major alternatives for bulk water purchase or source development included:

- Alternative I: Entire Study Area served by the Bedford County Public Service Authority (BCPSA)
- Alternative IV-A: Entire Study Area served by a Franklin County source/plant on Smith Mountain Lake
- Alternative V-B: Entire Study Area served by a Franklin County source on Smith Mountain Lake and an upgrade of the Town of Rocky Mount's water treatment plant to accommodate raw water from Smith Mountain Lake
- Alternatives II, III, V, and VI: Study Area served by a combination of the following:
 1. Franklin County source/plant in conjunction with the BCPSA; or
 2. Franklin County source (intake) on Smith Mountain Lake using the Town of Rocky Mount's water treatment plant in conjunction with the BCPSA.

All of the projects provided realistic and feasible solutions to the provision of public water in the County, but evaluation of the net present worth of project costs

resulted in a source recommendation to pursue Alternatives III + VI including purchase of regional bulk source from Bedford PSA and construction of a source independent of Franklin County 1.75 million gallon/day conventional water treatment plant and a 2.5 million gallon/day intake on Smith Mountain Lake. This Alternative was the least expensive project with a total cost for the service area distribution and source infrastructure of \$57,728,825. This compared with the other Alternatives which ranged in cost from \$58.5 million to \$64.5 million. (A cost estimate for each of the alternatives is found in Appendix F of the 2002 PER.)

The most cost-effective source and distribution alternative was recommended to be implemented by phased construction, and by interjurisdictional agreements with BCPSA and the Town of Rocky Mount to provide bulk water purchase for service to some areas. The 2002 PER concluded that the project would provide environmental protection and promote development, but given the substantial cost, it should be implemented on an incremental basis. It recommended several initial phases of waterline construction which were dependent on interjurisdictional agreements for bulk water purchase. The current project representing Phase I of the countywide public system is now under construction by the County at a total cost of \$3.2 million (including capacity purchase in the Bedford County PSA water infrastructure) and served by bulk water purchase from this regional neighbor.

The 2003 *Preliminary Engineering Report for the State Route 122/Burnt Chimney/Smith Mountain Lake Water Distribution System Project* (Volumes I and II) prepared for the Board of Supervisors by Thompson + Litton focused on one sub-section of the larger study area in the 2002 PER. The 2003 study area included the Westlake area and Scruggs Peninsula, Route 122 to the vicinity of the Town of Rocky Mount, and Route 834.

The 2003 report assessed the overall proposed water service facilities required for the study area and provided preliminary cost estimates for water service to the study area, including fireflow. The facilities needed to serve the area include about 64 miles of water line, as follows:

- 1,035 linear feet of 18-inch water line across Halesford Bridge
- 20,630 linear feet of 16-inch water line
- 129,150 linear feet of 12-inch water line
- 53,550 linear feet of 10-inch water line
- 49,740 linear feet of 8-inch water line
- 84,900 linear feet of 6-inch water line
- One 350,000 gallon elevated water storage tank
- One 500,000 gallon elevated water storage tank
- One 634 gallon/minute water pump station
- A future 1,090 gallon/minute transfer pump (for bulk water sales)
- Other associated appurtenances

The potential capacity of the project would include the ability to provide one million gallons/day of bulk water purchase to the Town of Rocky Mount. The report recognized that nearly half of the service population was presently served by community systems, and that these systems may be served through a master meter to provide a

public water source. The total preliminary cost estimate for the service area was \$22,328,628.

The 2003 PER further broke down the total project into smaller project areas. Cost estimates include a Phase I project at \$2.8 million similar to that which is presently under construction for \$2.7 million (excluding the cost of the infrastructure on the Bedford side). The detailed cost estimates for sub-areas are found in Appendix C of the PER. The PER develops varied construction scenarios showing that it will be necessary to coordinate with the Bedford County PSA to enlarge the water treatment plant as the County reaches more customers and its water needs grow. The PER advises that the Phase I project seek to reach about 200 customers initially to match the system minimum water purchase requirements; however, the sub-area service area is projected to grow to over 5,800 customers in a 20-year period based on updated Census data. The present contract calls for a bulk water purchase from BCPSA of up to 400, 000 gallons per day, notes that the present plant is expandable to one-million gallons/day, and that the County and BCPSA agree to meet and discuss plant enlargement as it is needed. The PER also recognizes that Franklin County is working to permit a water withdrawal and plant site on the Franklin side of Smith Mountain Lake so that future water needs are met.

The 2003 PER recommended that the County develop a ranking system to evaluate future public water extensions so that needs and resources are matched.

The background 1991 facility plan and the two more recent preliminary engineering reports detailing public water source and infrastructure development to serve County residents have provided the basis for going forward with public water service by the County in the County service area. The County is now a public water provider, having a Public Works Department, and it has taken the first important step of securing source water from Smith Mountain Lake, establishing and confirming to the regulatory agencies the County's water needs from this important regional source, and it has purchased and constructed water storage and distribution facilities for the initial phases of public water service to the citizens and businesses. It has also recognized the importance of negotiating and implementing interjurisdictional agreements with its regional utility partners, including the Towns and the Ferrum Water and Sewage Authority for source water and operational services.

Sewer Systems

The rural areas of the County including the Route 220 corridor from Rocky Mount-to-Boones Mill, the section south of Rocky Mount, and the Smith Mountain Lake area are not served by any centralized, municipal-type sewage systems. Thus, homes and businesses must be served by either septic tanks, mass drainfield-type septic systems, or small package-type or innovative systems.

The largest public-type system serving the County's central developed area is the Town of Rocky Mount's system serving the Town and some adjacent areas. The Town's system served approximately 1,598 connections in 1999 with a secondary wastewater treatment plant. Since that date, it has added connections due to annexation and boundary adjustment requirements, including an estimated 142 residences in the Franklin Heights area. The plant disposal capacity is 2,000,000

gallons per day. Current average wastewater loads run at a rate of 956,000 gallons per day, allowing a surplus load of 1,044,000 gallons per day. The plant uses ultraviolet disinfection and discharges to the Pigg River. The Town obtained funding from the Virginia Resources Authority state revolving loan program and a U.S. Economic Development Administration Grant developed by the West Piedmont Economic Development District to undertake plant upgrades.

The Town of Boones Mill received a Virginia Community Development Block Grant in the amount of \$68,892 to construct a 300,000-gallon per day sewage treatment plant, approximately 12,000 linear feet of interceptor/collector lines, and hookups and septic tanks for low-moderate income families. These funds were matched with funds from the Virginia State Water Control Board, for a total project cost of \$893,338. The treatment plant is located just east of the Town limits on Maggodee Creek. Interceptor and collector lines run generally through the central part of the Town along the creek.

The Ferrum Water and Sewage Authority operate a wastewater treatment plant rated at 400,000 gallons per day of effluent. It uses chlorination and dechlorination for disinfection. The average daily flow is 160,000 gallons. Its service population includes 155 connections and about 1,840 people. The plant was upgraded in 2001 at a cost of \$3.2 million, using USDA-Rural Development loan-grant funding.

Current Sewage Treatment 1980 and 1990 Census Data

The principle method of disposal for wastewater in the County is through individual septic tanks and drainfields for single residences and small commercial operations and through large septic tanks and mass drainfields for some large subdivisions and developments. In the 1980 and the 1990 Census, survey questions on the method of sewage disposal were tabulated. Similar questions were not asked in the 2000 Census. The following table displays the findings from available Census surveys.

Sources of Sewage Treatment

	<u>1980</u>		<u>1990</u>	
Public systems/private company	2,068	16%	2,636	15%
Septic tank-type systems	9,726	75%	14,267	81%
Other type systems	1,112	9%	623	4%
Total year-round units surveyed	12,906	100%	17,526	100%

Source: U.S. Bureau of the Census, 1980, 1990.

As can be seen from the preceding table, 75 percent of residences in the County were using septic tanks in 1980; by 1990 81 percent were using septic tank dependent systems.

Since 1980, the Health Department has received a number of applications for septic tank/drainfield systems that serve multiple dwelling units in a single development. These systems, primarily in the Smith Mountain Lake area, often employ large septic tanks for treatment through settling and some have holding tanks that dose the connected drainfields at appropriate intervals. Some of the central treatment units are provided with valve arrangements to send effluent to one out of two or three drainfields emplaced to receive the effluent. This action allows the dosing of one drainfield while

the other drainfields are in a recovery stage. During the recovery stage, a drainfield loses its effluent to the surrounding soils and the soils disperse the effluent over a large area where microbial activity completes effluent treatment.

Most of the central septic tank/mass drainfield systems located near Smith Mountain Lake were developed to meet the disposal needs of developments of retirement homes, vacation homes, and condominium homes. Because of the desire to be close to the lake shore, dwelling units are placed close to the shoreline. Homes with individual septic systems often have their drainfields placed between the home and the shoreline. However, in those developments with large centralized septic tank treatment systems, the required drainfields are larger and their location in proximity to the lake and the dwelling units are more varied, depending on the layout of the development. Some of the developments are simple gravity-fed drainfields which may be in close proximity to the shoreline of the lake (but no closer than 50 feet under State regulations). Other developments are employing pump-back methods. Because of competition for space between the dwelling units and the drainfields and, in addition, the lack of good soils for septic drainfields, the developer purchases additional land away from the shoreline development and pumps effluent uphill to large drainfields. Some developments use combinations of gravity-fed systems and pump-back systems.

County Sewer Facility Planning Efforts

The 2006 Wastewater Service Evaluation – Halesford Bridge to Westlake Area - Franklin County, Virginia and the 1991 Franklin County Water and Sewer Facilities Plan provide general and specific sewer facilities planning efforts. In addition, the West Piedmont Planning District Commission developed a Metropolitan/Regional Comprehensive Water and Wastewater Disposal Plan in 1975 and a 1977 Update, which called for the following additional extensions of sewer service through the year 2000: 8,400 feet of line to serve areas west of the Town along Routes 820 and 909 and southeast of the Town along Route 220; service to an area south of Scuffling Hill Road; and service along Route 40 west of Town. This staged expansion also included interceptor/collector lines to the Franklin Heights area as well as portions of the County near the Town. The Town has provided some of the additional recommended service during the intervening years. Franklin Heights was served due to the requirements of an annexation agreement between the County and the Town of Rocky Mount. The 1991 plan also called for the consideration of a County public service authority to implement service in County areas including the Ferrum College area. The County established a Public Works Department in 2003, and it organized the Ferrum Water and Sewage Authority in 1969.

The 1991 Franklin County Water and Sewer Facilities Plan included development of projects for sewage collection from the more populous areas where both in terms of engineering design and economics it appeared practical to plan future facilities. The central county area alternatives (along the Route 220/Route 40 corridors out from Rocky Mount) assumed that there would be available central wastewater treatment purchased by the County from the Town of Rocky Mount's plant, rather than the County developing a separate wastewater treatment plant. However, the plan also included independent plant and collection system approaches if these needed to be studied at a later date, should interjurisdictional agreements not be possible at reasonable costs. Projects for

the Smith Mountain Lake area assumed development of an independent wastewater treatment plant at the lake.

The Board of Supervisors asked the staff in January 2005 to proceed with a sewer study for the general area of Smith Mountain Lake between Halesford Bridge and Westlake village. The study was finished in January 2006 and assessed alternative sewage treatment approaches to best serve a level of high quality development foreseen in the area whether publicly-owned or privately-owned. The study provided the recommendation of developing a land use plan for the area and the development of regulations in Chapter 22 of the local code which would provide guidance to development of sewage treatment plants, emphasizing best management practices. Depending on the density desired in the area, clustered systems could serve specific developments or a regional centralized system may serve a large section of population. Partnerships with the private sector were suggested as an alternative funding scenario. Because Westlake is near to Smith Mountain Lake, a public water source and recreational lake, non-discharge sewer plants may be preferred, although the potential to develop discharge plants at least five (5) miles upstream of Smith Mountain Lake may be studied in the future. The Westlake – Halesford Bridge study area was anticipated to have a wastewater potential of 440,000 gallons per day in five (5) years, growing to an estimated 2.6 million gallons per day at its buildout (beyond 20 years of growth).

The following sets out descriptions of the various project service areas highlighted in the 1991 study in the Rocky Mount area of the County, Rocky Mount-Ferrum area, Rocky Mount-Boones Mill area, and the various areas around Smith Mountain Lake. Project service areas were given coded descriptions which were used in the plan text and accompanying maps and require some further definition. One of these projects near the Town limits has been accomplished due to the requirements of an annexation agreement with the County.

- RMS1** Rocky Mount - Sewer - 1, this project service area takes in the area above Henry Fork, South Main Street-South Business 220 and then over to the Route 220 Bypass.
- RMS2** Rocky Mount - Sewer - 2, this project service area covers the Route 220 South area below Henry Fork, areas east and west of Route 220 South, the old and new landfill sites, and the recreation park.
- RMS3** Rocky Mount - Sewer - 3, this project service area takes in Henry Fork, Deerwood Springs, Doe Run, and Forest Hills.
- RMS4** Rocky Mount - Sewer - 4, project service area takes in Route 40/Route 122 and Franklin Heights area. *(Accomplished due to requirements of a boundary change and annexation agreements between the County and the Town.)*
- RFS1** Rocky Mount/Ferrum - Sewer - 1, this project service area includes a portion of Route 40 West, Barfoot, and Mt. Pleasant areas.
- RFS2** Rocky Mount/Ferrum - Sewer - 2, this project service area takes in Waidshoro and portions of Route 40 West.
- RFS3** Rocky Mount/Ferrum - Sewer - 3, project service area covers a portion of Route 40 West, just east of Ferrum, and includes Hillcrest subdivision.
- RBS1** Rocky Mount/Boones Mill - Sewer - 1, project service area includes portions of Route 220 North corridor, starting above Franklin Heights, continues along east and west sides of Route 220, up to Franklin Memorial Park area.

- RBS2** Rocky Mount/Boones Mill - Sewer - 2, this project service area runs along both sides of Route 220 North, and includes Boones Mill Elementary School, Clearview Estates subdivision, and Mountain View subdivision.
- SMS1** Smith Mountain Lake - Sewer - 1, this project service area includes the entire lake area as a single project area, rather than as an incremental approach to service as presented in alternatives set out below.
- SMS2** Smith Mountain Lake - Sewer - 2, this project service area takes in Route 616 and Route 670 Peninsulas, extends over to Halesford Bridge, and then over to Hardy Ford Bridge. *(Some of this area is included in the 2005 -2006 County sewer study.)*
- SMS3** Smith Mountain Lake - Sewer - 3, this project service area takes in areas south of the Blackwater River arm of the lake and extends south to Route 40 East, and is also called the South Shore area in the plan.
- SMS4** Smith Mountain Lake - Sewer - 4, this project service area takes in the Route 616/Scruggs Peninsula down to Bernards Landing and also the Route 711 Peninsula.
- *FRS1** Ferrum/Rocky Mount - Sewer - 1, this project area runs along Route 40 West between Ferrum and Waidsboro.
- *FRS2** Ferrum/Rocky Mount - Sewer - 2, this project area runs along Route 40 West from Waidsboro to Rocky Mount.

*Not shown on map.

The provision of public sewer projects recommended in the 1991 Franklin County Water and Sewer Facility Plan must be reviewed as to population density and the County's ability to capitalize the project, gain equity and a stable revenue base. Most of the projects were foreseen in the facility plan as the result of interjurisdictional agreement, with the County purchasing wastewater treatment capacity from the Town of Rocky Mount. Without such an agreement, the 1991 Plan called for independent development of wastewater treatment capacity by the County. Recent development of sewage treatment plants have not been for area-wide public projects, but rather they have been associated with service to specific private land use developments, some residential and some mixed use, developed by the private sector in high growth areas. These must be reviewed and approved under a special use permit process in zoned areas. The Board of Supervisors has set conditions addressing discharge limits, sampling reserved drainfield areas, reserve maintenance funds, buffers, and other considerations in an effort to supplement ongoing State regulations and assure the public health and welfare. Recent examples of such sewage treatment approvals serve Bridgewater Plaza and LakeWatch in the Westlake – Halesford areas. Others are under study to serve recreational, residential, and mixed use developments in areas near Smith Mountain Lake and potential high growth commercial corridors such as 220 North. In 2006, the County is continuing to develop acceptable countywide sewage treatment standards to apply to private and public projects.

Communications

The Franklin County area is served by two local newspapers, The Franklin News-Post, published on Monday, Wednesday, and Friday and the Smith Mountain Eagle, published on Thursday. In addition, several daily newspapers are available locally including the Roanoke Times and the Martinsville Bulletin.

The area is also served by several local radio stations to name a few: WFTR, WNLB, WYTI, WZBB-FM, WRUC, and WVTF.

The major television networks--ABC, NBC, CBS, FOX, and PBS--are available in the area through stations located in Roanoke, Lynchburg, VA, Winston-Salem, Greensboro, High Point, and Chapel Hill, NC. Charter Communications offers Cable television in a variety of channels in some areas of the County as well as in the Town of Rocky Mount. These channels include Home Box Office, WTBS, CNN, and ESPN. Satellite television can be obtained by DirecTV and Dish Network in the Franklin County area.

The largest office of the United States Postal Service, located in the Town of Rocky Mount, has a first class rating. Mail is received and dispatched two times daily. There are also ten other smaller offices in the County or that serve the County, including locations at Boones Mill, Callaway, Ferrum, Glade Hill, Hardy, Henry, Penhook, Redwood, Union Hall, and Burnt Chimney as well as Moneta in Bedford County.

Several Western Union Telegraph Company offices are located in the Town of Rocky Mount and Franklin County. In addition, parcel delivery services are provided by the United Parcel Service, Emery Worldwide, Federal Express, DHL, and the U.S. Postal Service/Parcel Service.

Telephone Services

Local telephone service for the majority of the County is provided by Embarq, formerly Sprint Telephone Company. Smaller areas of the County are served by other local carriers with the area near the Floyd County line being served by Citizens Telephone Cooperative of Floyd, Virginia, the area near Pittsylvania County in Penhook, Virginia being served by Peoples Mutual Telephone and an area near Hardy, Virginia being served by Verizon. nTelos recently installed their own infrastructure and is now offering local and long distance telephone service along with fiber high-speed internet service to the larger commercial customers in the immediate Rocky Mount area. There are several other telephone carriers that re-sell service from the incumbent local exchange carrier for the specific area. Overall, these telephone providers serve some 25,059 citizens and businesses throughout Franklin County.

In addition to the traditional "copper line" telephone providers, companies offering Voice over Internet Protocol (VoIP) services are beginning to provide services in Franklin County. Vonage and Level 3 Communications, as well as several other VoIP providers, have begun offering services where high speed internet is available.

Long distance service is available through AT&T, MCI, Embarq, Business Telecom of Virginia, nTelos, and many other carriers.

High Speed Internet

Franklin County is served by several high speed internet (Broadband) service providers, including Embarq with DSL and fiber connections, nTelos with fiber connections, Kimbanet from Martinsville, Virginia with DSL and wireless high speed

internet and B2X from Salem, Virginia with high speed wireless internet services. All of the providers offer a wide array of options to serve commercial, government, and residential customers at competitive prices.

Coverage for broadband is fairly complete in the more densely populated areas of the County and the Town of Rocky Mount with, in most cases, a minimum of two and sometimes three choices for service. Currently, there is a project in cooperation with B2X to develop the necessary infrastructure to offer high speed internet at competitive prices in the more rural southeast, southwest, and northwest areas of the County. This project is expected to be completed by the end of 2006.

Additionally, there is a major project through Mid-Atlantic Broadband (MBC) under a grant provided by the Virginia Tobacco Commission, and the federal Economic Development Agency to provide "dark" fiber throughout the entire Southside region. This project – the Regional Backbone Initiative (RBI) –will provide an advanced fiber backbone to connect all 56 industrial parks in Southside Virginia, carrier central office locations, hospitals, higher educational facilities, and other connectivity points. Once completed, the network will cover more than 700 miles across 20 counties and five cities. The project user base includes almost 700,000 citizens and 19,000 businesses.

MBC will offer wholesale dark-fiber pairs as well as wholesale-managed services to competitive carriers, existing carriers, cable companies, content service providers, and research groups.

As a part of the project, a new state-of-the-art Network Operations and Control Center (NOCC) in South Boston, Virginia is being built that will be used to manage the operational aspects of the MBC network.

The RBI will provide for connections outside the Southside region including Roanoke, Richmond, Norfolk, Tysons Corner, Virginia and Raleigh, North Carolina. These connections will provide open access connectivity to major telecom hub locations and allow the Southside region to market itself as a home for technology related industries, connectivity, and job creation. This network will provide numerous opportunities for economic development within the County.

Electrical Utilities

The Franklin County-Rocky Mount area is provided electric power by Appalachian Power Company (APCO), a wholly owned subsidiary of the American Electric Power (AEP). Appalachian serves approximately one million customers in portions of Virginia, West Virginia, and Tennessee offering a reliable power system through its transmission interconnections. Appalachian operates two coal-fired power plants in southwestern Virginia and a number of hydropower generating facilities.

Backed by the AEP system with generating capabilities of 36,000 megawatts, Appalachian has the capacity to meet the needs of most industrial requests. AEP is one of the nation's largest utilities and the country's largest generator of electricity, which gives Appalachian access to large quantities of efficient power, principally from coal fired, nuclear and hydroelectric plants. Appalachian Power's rates are recognized as among the lowest in the region and nationally.

Electric power is supplied to the Franklin County area through a network of 138 KV circuits. Construction of a major 765 KV circuit line provides a key transmission facility to Franklin County, Rocky Mount, and surrounding areas; in length and power carried, the transmission facility is one of the largest in the United States.

Completed in 1996, APCO invested \$4.6 million in a project within Franklin County to meet the demands of new growth and to continue to provide reliable service to existing customers. The improvements to the system included upgrading a substation near Rocky Mount and the addition of approximately 78 miles of distribution lines.

Franklin County is home to the fastest growing electric demand in Appalachian Power's three-state service area. The area between U.S. Route 220 and Moneta has experienced an annual load growth rate of 6.7 percent per year for the past 17 years, and has seen a 17 percent annual load growth rate in the last three years. In 2005, Appalachian Power announced a 27-mile 138,000-volt transmission upgrade for its eastern Franklin County area. The \$28 million upgrade connects stations in Blaine and Penhook with a to-be-constructed facility in the Westlake area of the County.

To further augment the electric service reliability in eastern Franklin County, a transmission line extension from the proposed Westlake substation to the Penhook substation is being planned. This will significantly improve the reliability of both substations with a reduction in power outages for more than 15,000 customers in this area. The purpose of the project is to strengthen APCO's electrical infrastructure in northeastern Franklin County and should provide adequate electrical power for decades to come based on current load growth projections.

In addition to APCO's adequate and dependable power supply, Franklin County has two major hydroelectric impoundments for production of electric power--Smith Mountain and Philpott Reservoirs.

The hydroelectric "pump storage" power project at Smith Mountain was placed in commercial operation in 1966 with a generating capacity of 440,000 kilowatts of electric power. As a result of the project, approximately 250 miles of shoreline was created in Franklin County. The entire lake is 40 miles long and covers 20,000 acres in a three-county area. Currently, five generating units at Smith Mountain Dam, along with the smaller Leesville Dam downstream, combine to create a generating capacity of 600 megawatts for Appalachian and AEP customers. In addition to power, the project has provided jobs, economic development, housing potential, recreation, and tourism for the area.

The Philpott Reservoir project was authorized by the Congress in 1944 for flood control, with generation of electric power. By 1953, the dam and three generators in the powerhouse were completed and in operation, with a combined capacity of 14,000 kilowatts of electric power. Philpott, like Smith Mountain, is one unit of an eleven-reservoir system planned by the U.S. Army Corps of Engineers (although some reservoirs have been built by private utility companies) to control floods in the entire Roanoke River Basin. The Philpott Reservoir Lake is 15 miles long and covers approximately 3,000 acres. With a shoreline of approximately 110 miles, Philpott Lake also provides recreational opportunities as well as flood control, hydroelectric power generation, and water supply.

Coal and Fuel Oil

In 2004, Virginia was ranked in the top ten among coal-producing states. Much of this coal is carried by the Norfolk Southern Corporation through Franklin County. In addition, coal is available from West Virginia.

The coal mining areas lie in the Central Appalachian region in which good quantities of low sulfur coal remain and where there is higher BTU content than western coal. Though coal may be more expensive than other fuel sources, there is an advantage for area industries in that the coal sources are reasonably close and the sulfur content is lower than other regions. Thus, costs of operating for local industries may be lower than for industries in other regions when pollution controls and transportation costs are considered.

There are quantities of fuel oil available for residential and commercial use in the Franklin County-Rocky Mount area through regional and/or local distributors.

Natural Gas

Though natural gas service is not available in the Rocky Mount area at the present time, a certificate has been issued to the Roanoke Gas Company to serve both the Town and the northern part of the County. In 2005, the Roanoke Gas Company estimated extending natural gas service into Franklin County routing from Roanoke to Rocky Mount would cost approximately \$9 million. No current or immediate plans have been made to proceed in extending such service.

Solid Waste Management

Joyce Engineering developed a Franklin County Revised Solid Waste Management Plan in 2004 (an update of the 1991 Waste Management Plan). The report is divided into nine sections: Introduction, Projections and Waste Quantities, Solid Waste Management System, Hierarchy (Source Reduction, Reuse, Recycling, Waste-to-Energy/Incineration, and Landfill), Plan Implementation, Funding and Construction Schedules, Public Participation, and Summary. For detailed information on solid waste management, reference should be made to the Solid Waste Management Plan.

The recommended recycling plan in the Franklin County Solid Waste Management Plan includes ten (10) recycling centers for residents to deliver their recyclables, such as paper, metals, white goods, glass, used tires, plastics, used oil, batteries, aluminum, and bi-metals. The County will continue to offer these services and will add additional recycling services when economically feasible.

Additional efforts include initiating a mulch facility at the landfill and instituting an ongoing commercial and industrial voluntary reporting system to accurately monitor wastes generated and recycled. These efforts will enhance the County's own recycling efforts and its tracking of the recycling rate and what areas need further concentration to achieve State regulatory requirements.

Waste Management Alternative Selected – The *Franklin County Solid Waste Management Plan* determined that landfilling appears to be the most feasible of solid waste disposal alternatives while noting that it will be an expensive approach because of rising costs to meet stricter regulatory requirements. It suggests that, if landfilling is coupled with recycling, the life expectancy of a proposed landfill facility could be extended. Recycling is required, in any event; thus, the two efforts would be directly complementary. The *Solid Waste Management Plan* considered other alternatives from the waste management hierarchy including source reduction, reuse, resource recovery, incineration, and recycling.

The Franklin County Landfill serves the solid waste disposal needs of the County. The Landfill occupies a portion of a 425-acre, County-owned site south of Rocky Mount on U.S. Route 220. At the time of the Plan Update, 26 acres are at capacity and closed, and 24 are in use. The current working area will reach capacity in 2011. The County-owned site also serves as a recreational park and center for Parks and Recreation Department activities at this time. The following table summarizes landfill areas.

County Landfill/Park Site:	425 acres
Approved for Landfill Use:	125 acres
Permitted Landfill Areas:	50 acres (current) and 45 acres (new permit)
Used and Closed Landfill:	26 acres
Landfill Area in Use (2005):	24 acres

Operation of the landfill is carried out by County personnel. Primarily, the trench method of disposal is used. Vertical disposal is also used. Daily coverage of solid waste material is required. Gates and fencing at the perimeter of the site control public access. The facility operates seven days a week including holidays for County collected waste. Solid waste is accepted from the general public Monday through Saturday.

As the existing landfill reaches capacity, the County must address its future disposal needs. The County has both Part A and Part B of its permit application approved with the Virginia Department of Environmental Quality. This site is located within the 425 acres where the existing landfill is located. The new landfill will consist of 45 acres for landfilling plus 17 acres for accessory requirements such as leachate and sediment control. The new landfill is projected to meet all State and Federal requirements for 32 years.

Collection – Current collection is from residences, businesses, and industries or from collection centers. The County employs a green box network with 67 collection centers. The collection box units are picked up on an average of four to five times a week; however, there can be fluctuation in waste generation rates at certain sites—particularly in the Smith Mountain Lake area—due to seasonal variations, necessitating more than daily pickups at certain sites. A majority of the collection boxes are in good condition but the annual solid waste budget includes funds for replacements and rehabilitation of the green boxes (solid waste) and brown boxes (recycling).

Business and industry in the County are served by private haulers. Fees are assessed on private sector waste generation when disposal is made at the County landfill.

Increasing amounts of residential wastes are expected due to increasing numbers of residents and the use of more disposable products. Collection costs are expected to increase along with the population due to the need for more frequent servicing by waste collectors. The Federal and State regulatory changes on solid waste disposal systems also dictate increased cost for collection and disposal.

Population Projections Used In Waste Forecasts – In order for the County’s solid waste management plan to project the waste stream attributable to the various types of wastes generated within the County, it was necessary to develop a population projection for the County. The consultant was then able to use the population and multipliers to develop projected wastes being generated across the County.

The population projections are as follows, using a growth rate of 1.24 percent per year, based on the percent change estimated for Franklin County between 2001-2002:

<u>Year</u>	<u>Population</u>
2000	47,286
2005	50,100
2010	53,200
2015	55,930
2020	58,800

Sources: Virginia Population Projections, Virginia Employment Commission, May 2003.
Franklin County Solid Waste Management Plan, 2004 (Revised 2006).

Materials Generated and Recycled – The *Franklin County Solid Waste Management Plan* projected the amount of solid wastes that could be recycled. In 2004, 13 tons of recyclables were received by the landfill each day on average, or 4,750 tons per year. This amount is anticipated to increase to 17 tons on a daily basis by 2024, or 6,078 tons per year.

Waste Generation Projections – The *Franklin County Solid Waste Management Plan, 2004* included projections of wastes in tons for a series of planning years extended out to the year 2024. An appendix to the plan indicated that 3.843 pounds per day of municipal solid waste per person per year (about 0.88 tons), was the estimate for 2003, and it was similar to national estimates. Similar estimates were derived from actual data for 2003 of the various types of solid waste generated in the County. These averages were used to project the solid waste expected to be generated in years to come.

Projected Annual Tons of Solid Waste

Total Solid Waste

<u>Year</u>	<u>Less Recycling</u>	<u>Recycled</u>
2000	50,434	4,522
2005	58,285	8,901
2010	61,895	9,452
2015	65,095	9,937
2020	68,460	10,447

The County produced 50,434 tons of solid waste requiring disposal in 2000 (excluding recycling and yard waste), and by 2020, this total will rise to 68,460 tons (up 35 percent). In 2004, Municipal solid waste alone represents 50 percent of the total solid waste stream, construction and demolition wastes represent 16 percent, industrial wastes are 15 percent, recyclables are 13 percent, vegetative and yard waste 2 percent, sludge 2 percent, with the remaining categories under one percent each.

Landfill Volume Statistics, 2000-2003 – In 2003, the annual total waste received at the landfill totaled 57,237 tons. The following table shows tonnage figures over the 4-year period including the most recent census year (2000).

Recent Landfill Tonnages

<u>Year</u>	<u>Tons Received</u>
2000	50,814
2001	52,847
2002	52,662
2003	57,237
Average	53,390

The amount of solid waste received at the landfill has increased over the years by 13 percent, and the average yearly tonnage has been about 53,400 tons.

Actions to Meet Current and Future Needs – To aid the County in meeting the disposal needs for the future, recycling efforts are aimed at exceeding the mandated recycling rate, which is 15 percent as of July 2006. The County will implement a voluntary reporting system by business and industry to more closely monitor and document waste amounts. An educational and enforcement program designed to encourage the community to recycle and keep a clean community will be continued in conjunction with the Franklin County Litter Control & Recycling Program. Addition of a wood chipper for chipping of yard and wood wastes for mulch will be instituted in 2006 - 2007. The County also supports the efforts of the Tri-County Administrative Commission to clear Smith Mountain Lake of debris and litter.

Landfill and Recycling Site Locations – Franklin County's sites for landfilling and sites for its recycling program have been mapped to show their relationship to built-up and urbanizing areas of the County. It should be observed that it is necessary to alter the locations of recycling centers from time to time; this is required if, for some reason, usage of a facility declines, uses become incompatible, and it is thought some adjustment in a facility's location might assist in increasing usage and efficiency.

There is but one principal location for the landfill. The overall tract that the landfill is located on has been in use since 1972. As cells and sections that had been permitted have been closed out, succeeding, approved areas have been opened. The immediate environs of the County site tend to isolate or screen it from uses that might later be found to be incompatible. The site is bounded on the west by the public right-of-way of U.S. Route 220, on the east by a public park and recreation site, and in other directions forest land and buffers. The County has also erected extensive fencing which helps provide the site with safety and protection of equipment and personnel on-site and citizens and wildlife off-site.

Utilities Summary

- **Water Systems**

The County has established a Public Works Department (2003) and is the public water provider for its citizens. The County acknowledges and appreciates that there are existing connections to both municipal systems and private central and community systems within the countywide service territory; however, the County is the responsible agency for utility planning, construction, and operation beyond those utility connections now in place by other providers. In two (2) recent preliminary engineering reports (the 2002 Preliminary Engineering Report for the Franklin County/Smith Mountain Lake Water System Development Project, and the 2003 Preliminary Engineering Report for the State Route 122/Burnt Chimney/Smith Mountain Lake Water Distribution System Project, Volumes I and II, both by Thompson + Litton), the County outlined a direction for current and future water projects, where County public service is planned, and it has established reliable source through both interjurisdictional agreements and County project development. The County has secured a substantial public water source for the present and the future through an agreement with the Bedford County Public Service Authority (BCPSA) to purchase bulk water, purchase capacity, and upgrade water infrastructure on the Bedford side of Smith Mountain Lake to serve Franklin County. The County is pursuing studies leading to its own water withdrawal and water plant on the Franklin side of Smith Mountain Lake to provide for future water needs. The County and the Town of Rocky Mount have cooperated on a bulk water purchase agreement for an area of emergency water need to the south of the Town (Doe Run/Forest Hills). The County has developed independent water well systems to serve an industrial park and recreational parks. The County sees interjurisdictional agreements for purchase of source and services as a potential to provide for its citizens as well as assisting in the cost of water production with its neighbors.

As noted in the “County Water Facilities Planning Efforts” section of this chapter, the County’s 1991 Water and Sewer Facility Plan, the 2002 Preliminary Engineering Report for the Franklin County/Smith Mountain Lake Water System Development Project, and the 2003 Preliminary Engineering Report for the State Route 122/Burnt Chimney/Smith Mountain Lake Water Distribution System Project, Volumes I and II have outlined areas of present and future water needs where County public water resources are planned to be built over the 20-year planning horizon. Through the County’s current project construction work, the Smith Mountain Lake source is available to the County for future distribution. Future County projects will bring public

water service to other areas of the County, and the County may, over time, provide bulk water to its neighbors to supplement their existing sources.

The reliance on groundwater for community and individual potable water may begin to change with the construction of the Phase I countywide water system and extensions from that system. The State Health Department and State Water Control Board (Department of Environmental Quality) have noted through well tests for public water supplies that groundwater in the County and the area around Smith Mountain Lake has a high content of iron, manganese, and radium. Systems employing groundwater with high levels of iron, manganese, and radium should be provided with facilities to remove the contaminants in order to protect the public health and safety.

With the implementation of Chapter 22 of the local code, all new water systems must be built to Chapter 22 standards, be designed for fireflow, and offered to the County free of charge; the County may determine whether to accept the system. All new structures, subdivisions, and developments within a prescribed mandatory distance from the County public water system must connect to it. The County is seeking to provide a reliable source of potable water and a system which will sustain fireflow, for the public's health, welfare, and safety. Its service area is countywide, exclusive of the area within the incorporated boundaries of the Town of Rocky Mount and the Town of Boones Mill or assigned to the Ferrum Water and Sewage Authority.

The County will participate in a regional water supply plan with the Counties of Bedford, Botetourt, and Roanoke, the Cities of Bedford, Roanoke, and Salem, and the Towns of Boones Mill, Rocky Mount, and Vinton. This plan is mandated by the Department of Environmental Quality (DEQ) of the State of Virginia to be completed by 2011.

- **Sewer Systems**

The Town of Rocky Mount sewage system is centrally located to provide service to the Franklin County-Rocky Mount Industrial Park and future industrial parks as they are needed near Rocky Mount. Possible expansions of service by bulk purchase are included in the County's 1991 Water and Sewer Facility Plan and in the Metropolitan/Regional Comprehensive Water and Wastewater Disposal Plan of the West Piedmont Planning District--including expanding plant capacity by agreement and line extensions by the County should agreements for bulk purchase or services be made by the localities. Any expansions of the Town's sewer system into the County service area must be by agreement between the localities, with the County purchasing capacity or services from the Town. The County and the Town may develop an interjurisdictional agreement that would call for future bulk capacity or service extensions into the County to residential, commercial, and industrial areas.

As referenced in the "County Sewer Facilities Planning Efforts" chapter of this document, the 1991 Franklin County Water and Sewer Plan provides a listing of sewer collection projects for future implementation, with some service provided as

the result of the requirements of a voluntary annexation agreement between the Town of Rocky Mount and the County. These projects did include development of a new wastewater treatment plant by the County and thus assumed the Rocky Mount plant could be utilized by means of an interjurisdictional agreement. Costs for an independent plant were included in the plan, however, in the event an agreement was not possible.

Areas close to the Towns are candidates for purchased or contracted sewer services from the Town's systems. In other areas, sewer service has developed privately in growth areas and is regulated by the VA Department of Health and Environmental Quality and in zoned areas, by special use permits with conditions set by the Board of Supervisors. The 2006 Wastewater Service Evaluation Halesford Bridge to Westlake Area study indicates either cluster systems developing to serve specific developments or regional/central systems serving a broader area. These may develop privately, publicly or through some joint effort (public-private). The County is developing standards for sewer treatment that will emphasize best management practices.

- **Communications**

The County has a full complement of media resources including two County newspapers, the Franklin News-Post and the Smith Mountain Eagle; two locally circulating dailies, the Martinsville Bulletin and Roanoke Times. There are several local radio stations. Air wave and cable television stations reach the area, bringing the programming of ABC, CBS, NBC, PBS, and special TV channels. Also, satellite television is available.

A variety of parcel delivery services are available to business, industry, and the general public. Several companies provide basic telephone service to the County plus special services available from each company. Cellular service is available through various providers. Western Union is located in Rocky Mount, with electronic message services available through a toll-free number. The County is also served by high speed internet.

The United States Postal Service has a main office in Rocky Mount and offices located at Boones Mill, Callaway, Ferrum, Glade Hill, Hardy, Henry, Penhook, Redwood, Union Hall, and Wirtz.

- **Electrical Utilities**

The Appalachian Power Company, an American Electric Power Company subsidiary, supplies electric power to the County. In 1995, the company upgraded lines in the Smith Mountain Lake area from 12 KV to 34 KV to provide for more service load capacity and reliability in the future. Much larger loads can be placed on the system to serve power intensive industries due to the completion of the 765 KV transmission line that serves the West Piedmont Planning District region in which the County lies.

Completed in 1996, APCO invested \$4.6 million in a project within Franklin County to meet the demands of new growth and to continue to provide reliable service to existing customers. The improvements to the system included upgrading

a substation near Rocky Mount and the addition of approximately 78 miles of distribution lines.

Franklin County is home to the fastest growing electric demand in Appalachian Power's three-state service area. The area between U.S. Route 220 and Moneta has experienced an annual load growth rate of 6.7 percent per year for the past 17 years, and has seen a 17 percent annual load growth rate in the last three years. In 2005, Appalachian Power announced a 27-mile 138,000-volt transmission upgrade for its eastern Franklin County area. The \$28 million upgrade connects stations in Blaine and Penhook with a to-be-constructed facility in the Westlake area of the County. The purpose of the project is to strengthen APCO's electrical infrastructure in northeastern Franklin County and should provide adequate electrical power for decades to come based on current load growth projections.

In addition to APCO's adequate and dependable power supply, Franklin County has two major hydroelectric impoundments for production of electric power--Smith Mountain and Philpott Reservoirs.

- **Other Energy Supplies**

Fuel oil is available through distributors in the County. Coal supplies can be transported to the County via the Norfolk-Southern Railway line. The proximity of Virginia and West Virginia coal mines provides excellent access to coal supplies for existing and future County industries. Natural gas service is not distributed in the County due to a lack of demand for this product. Roanoke Gas Company in nearby Roanoke County could serve the area if demand becomes sufficient.

- **Solid Waste Management**

Franklin County operates a landfill at a 425-acre tract south of the Town of Rocky Mount, off U.S. Route 220. The landfill was permitted in 1972. It primarily uses the trench method of disposal requiring daily cover. The County plans to expand the landfill to meet future solid waste disposal demands, unless another alternative strategy proves to be more cost-efficient over the short-term. The existing landfill is expected to reach capacity by February of 2012.

Solid waste collection is from residences, businesses, or from collection centers. The County utilizes a green box network with approximately 67 centers. Businesses and industry in the County are served by private haulers.

To aid in meeting the disposal needs for the future, the County has established a recycling program with nine recycling centers located strategically throughout the community to accept aluminum, paper, plastics, and glass.

The County participates in the Virginia Department of Waste Management's Litter Control & Recycling Program. The program provides litter enforcement and special projects and is operated in conjunction with the Town of Boones Mill. The Town of Rocky Mount has its own program. Support is also provided to assist efforts at litter and debris removal at Smith Mountain Lake sponsored by the Tri-County Administrative Commission.

Smith Mountain Lake Sewage Disposal

General Evaluation of Sewage Disposal – The sewage treatment for the Smith Mountain Lake Area is based on septic tank/drainfield type systems employing either individual lot systems or mass drainfields serving multi-unit developments. Recently, sewage treatment plants and mass drainfields have also been approved for some developments. Many developments near Smith Mountain Lake have drainfields lying close to the lake's shoreline. The lake must be protected from pollution not only because of the laws governing polluting the State's waters, but also because the lake is a County drinking water source and economic and recreational resource.

Preparatory to the 1986 Franklin County Comprehensive Plan Update, informal discussions were held with the Virginia Department of Health office personnel in Rocky Mount and Danville; Agricultural Soil Conservation Service in Rocky Mount; and the Regional Soil Scientist in order to evaluate the adequacy of wastewater disposal. These offices provided materials cited earlier as well as insights into disposal methods currently in use, regulatory requirements, potential problems, and observations. The following general findings are set forth for use in formulating management strategies for planning development in the future:

- **Standards Used in Septic Drainfield Approvals.** The Health Department is generally requiring approximately 2 square feet of drainfield area for each gallon per day of effluent discharged. This is for a Texture Group II soil having a percolation rate of between 20 to 45 minutes per inch of soil. More or less drainfield space may be required based on tests results that fall above or below the standard. Borings for each drainfield site are made by the developer's consultant to check for soil type and the results are submitted to the Health Department. The Health Department verifies the color and texture tests using the consultant's test holes plus an additional hole dug by Department staff. There are no other tests made other than for color and texture used to classify a site's soil into Texture Groups.
- **Distance Requirements.** Mass drainfields must be 50 feet from the shoreline or stream course; individual septic tank/drainfields must also be 50 feet from the shoreline or stream course. Drainfields of all types must be 100 feet from a public water system's wells and septic tanks must be 50 feet from a public water system's wells. The required distances may be varied depending on slopes in an area and the degree of well protection provided.
- **Soil Suitability Mapping.** Soils testing is done on a site-by-site basis; no area wide mapping has been developed, to date, detailing the soils suitability for septic drainfields or other structures. However, the Soil association mapping for the County exists and is currently being updated. Generalized septic drainfield suitability ratings have been developed by the Soil Conservation Service and will be available within the Soils Survey report once it is published.
- **Septic Tank/Drainfield System Maintenance.** No legally required continuing system maintenance program exists. Periodic inspections of septic drainfield areas are not made to insure that systems are working properly. No other type of compliance program is in place to regulate system operations since the time they are approved and are in operation.

- **Drainfield Failure Rates.** Documents of regulatory agencies received indicate that a single drainfield cannot be expected to last indefinitely. After five years, the chance of drainfield failure is 6 percent; the probability of failure rises to 50 percent within 27 years of installation. Maximizing drainfield life of a single drainfield involves combinations of drainfield size, soil characteristics, amount of flow and the timing of flows to the drainfield, correctly functioning septic tank, rise and fall of the water table, saturation from precipitation, frequency of cleaning, and other factors.
- **Contingency Design.** Alternatives to a single drainfield system can be used. One alternative is to provide reserve areas for the installation of a new drainfield if the initial drainfield fails. A second alternative is to provide two or three drainfields initially. For example, if three areas are installed, two areas would be used at one time with each getting 50 percent of the flow--the third field would be allowed six months to one year to recover after being used 6 months to 1 year. The fields would be continually rotated. In addition, holding tanks would be used to dose the fields periodically instead of continuously. This allows some daily recovery periods even for fields that are in full use. Some large systems at Smith Mountain Lake employ both the multiple field and periodic dosing design concept.
- **Current Reserve Requirements.** Most of the soil in the County and the lake area has been assigned a Texture Group II rating and no reserve drainfield space is required by VDH (Virginia Department of Health), unless the zoning district requires a reserve drainfield for off-site drainfields. Texture Group III soils that have poorer percolation performance do require reserve drainfield space by VDH. The land required for the initial drainfield is one-third larger than that required under Group II conditions and a reserve space equal to 50 percent of the size of the initial drainfield is required by VDH. Few soils are even found in the Group III category.
- **Service Interruptions.** The systems that employ pumping of effluents are subject to temporary shutdowns if there are losses in electrical service. While electrical service outage also cuts off water service and, thus, the amount of wastewater going to septic tanks, this is obviously not a long-term solution. Appalachian Power has initiated a process of upgrading services in the County and lake area which should aid system reliability. However, backup storage and backup generators could be installed to fail-safe systems in the County. Some of the existing larger developments currently have backup systems.

Actions for Future Consideration – The preceding findings suggest a list of options and changes that might be considered for the future regarding development in the Smith Mountain Lake area:

- The County soils survey should include information on land suitability for septic tanks as an aid in land use planning and siting developments and their utilities. The Health Department is responsible for sizing drainfields and provides technical assistance.
- In addition to color, texture, and percolation testing conducted for Health Department approvals, other factors could be included in requirements for site plan review by the Planning Commission. These factors could include site drainage characteristics, plasticity of soils, soil profile information, and slope

character—factors that can affect the operation of drainfields and/or life expectancy of drainfields.

- Considering their large number of units and wide dispersion along the shoreline, the close proximity of many single-family homes and their individual drainfields to the Blackwater River Watershed tributaries, Smith Mountain Lake shoreline, and other associated water courses provides a potential source of water pollutants if drainfields begin to fail in the future. Maintenance of septic tanks to aid in preventing drainfield failures should be insured. A maintenance compliance system has been developed as an ordinance by TLAC and approved by the Board of Supervisors in February of 2006. The Health Department suggests that septic tanks for small individual systems be pumped every three (3) years; larger central systems should be pumped at least every six (6) years.
- Large, clustered developments that employ large septic tanks and mass drainfields as treatment systems should have system inspections periodically and be subject to a system maintenance compliance system.
- Strict requirements for adequate reserve drainfield space should be included in State regulations directed specifically for the area immediately surrounding Smith Mountain Lake. This could apply to all types of developments including single units in small subdivisions, large residential clusters, and commercial or other uses needing septic tanks and drainfields.
- The Health Department, in consideration of the development around Smith Mountain Lake and in its watershed, notes that drainfield square footage requirements, drainfield reserve requirements, backup system requirements, and distance requirements of drainfields from wells and surface water could modify and set special regulations for the Blackwater River Watershed area closest to the lake area of the County at the County's request. Public hearings would be necessary and local support would be essential for the more stringent regulations to be enforced. If the preceding approach cannot be achieved, another avenue suggested by the Health Department would be regulations set forth within a County zoning ordinance that would require more stringent regulations than the Health Department regulations. The Health Department would allow the more stringent County regulations to prevail in disputes.
- The Health Department does not have regulations specifically governing mass drainfields; regulations were once developed but not adopted. Currently, the department applies regulations for small systems and makes recommendations it thinks are needed to safeguard water supplies—but the recommendations do not have the force of law.
- In regard to Smith Mountain Lake development and other lakes in the State, the Department of Environmental Quality (DEQ) has developed draft standards for nutrients 2005 – 2006.

The concerns for watershed and lake pollution from future land use development and sewage systems across the Smith Mountain lake area and lack of specific State regulations, locally applied, to address the current and probable

trends in development and sewage disposal dictate a careful approach to developing a land use plan and the County's land use control ordinances. The planning-related actions of the County to regulate and direct future development must be sensitive to the need to determine the optimal pattern or distribution of future development and the intensity or density of future development for the protection of the public health, safety, and water resources.

The option of providing an area wide centralized sewage system should be considered if: a) continued use of septic tank/drainfield based treatment systems are found to be impractical in regard to potential pollutant impacts, b) detailed engineering feasibility studies can show that an area wide system is not cost prohibitive, c) the County is willing to accept the increased development pressure than an area wide system is likely to create, d) the County is willing to accept the high tax burden required to finance the necessary studies and facility construction. The 1991 Franklin County Water and Sewer Facility Plan and the 2006 Wastewater Service Evaluation – Halesford Bridge to Westlake Area include information needed to help make decisions on installing sewer projects, especially in areas of population density and fast-paced development. A major goal is to answer the question of the best approach to sewer development planning to match land use planning—whether non-discharge or discharge in nature, cluster, regional, or individually site-specific.