REPORT OF THE
JOINT SUBCOMMITTEE STUDYING

DRINKING WATER SUPPLY PROBLEMS AND FUNDING MECHANISMS TO CORRECT DRINKING WATER DEFICIENCIES IN SOUTHWESTERN VIRGINIA (HJR 104)

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 3

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I. STUDY AUTHORIZATION

The 1996 Session of the General Assembly passed House Joint Resolution No. 104 (Appendix A) establishing a joint subcommittee to study drinking water supply problems and funding mechanisms to correct drinking water deficiencies in southwestern Virginia.[1] The 10-member subcommittee was charged with making recommendations on potential funding mechanisms to resolve the drinking water problems. In making its recommendations, the subcommittee was to analyze the appropriate role that the state should play in assisting with funding.

II. SUBCOMMITTEE DELIBERATIONS

A. WATER SUPPLY STUDIES

During its deliberations the subcommittee was fortunate to have the results of an 18-month study designed to assess the water supply situation in the coalfield counties (Lee, Wise, Scott, Dickenson, Russell, Buchanan, and Tazewell) and the City of Norton. Dr. John Randolph, Professor of Urban Affairs and Planning at Virginia Polytechnic Institute and State University (VPI-SU) and co-author of Water Supply in the Virginia Coalfield Counties: Status, Technical Systems, Assessing Rate Impacts, presented the study's findings and recommendations to the subcommittee. He found that the water availability and quality problems facing the coalfield region stem from a number of inherent problems including geology, topography, land-use and a tradition of underdeveloped and limited financial resources. The topography of the area has resulted in a linear pattern of development which has made it difficult and expensive to serve populations. Systems are designed with long water lines rather than the more efficient radial pattern. Topography also causes speedy runoff resulting in less water available for recharging ground water. The region's land-use activity characterized by such extractive industries as coal mining and agriculture forestry operations affects the quality and availability of water, especially the quality of individual water supplies.

Census data from 1990 (Appendix B) demonstrates one of the consequences of what Dr. Randolph noted as the inherent problems associated with the development of reliable public water supplies in southwestern Virginia. Of the 36,193 housing units within the LENOWISCO PDC, 19,950 (55 percent) were served by public

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[1] For the purpose of this study, southwestern Virginia is defined as areas located in the LENOWISCO Planning District Commission (Counties of Lee, Scott and Wise, and the City of Norton); the Cumberland Plateau Planning District Commission (Counties of Buchanan, Russell, Dickenson and Tazewell); and the Mount Rogers Planning District Commission (Counties of Bland, Carroll, Grayson, Smyth, Washington and Wythe, and the Cities of Bristol and Galax).

systems and 16,233 (45 percent) have as their water source either wells or some other source (springs, cisterns, etc.). In the area covered by Cumberland Plateau PDC, public systems provide water to even fewer households. Only 42 percent of the housing units received water from public systems, with wells supplying 44 percent of the households and 14 percent obtaining their water from other sources. Among the counties, Buchanan County has the smallest percentage of housing units receiving water from a public system (22.5 percent) and Wise County had the greatest percentage of units (72.5 percent) served by a public system. Only now are attempts being made to construct the needed infrastructure.

Data from the recent VPI-SU/Virginia Cooperative Extension Service (VCES) well testing program indicated that many households with individual wells and springs have experienced problems with water availability and quality. For instance, reliability problems were evidenced in 19 percent of the households with individual systems, and a number of samples revealed contamination levels exceeding drinking water standards.[2] Data gathered from 964 households in the coalfield counties showed that Dickenson County had the highest percentage of samples exceeding the Health Department iron standard. Wise County had the highest percentage of samples exceeding the standards for sulfate, total dissolved solids, and sodium. Bacterial contamination was very high in both well and spring samples throughout the region, except in Wise County.[3]

In a separate survey of unserved households in Dickenson and Buchanan County conducted by Dr. Randolph, people were asked about the quality of their water and perceived health effects. Of those who responded, two-thirds believed they had water quality and pressure problems, and about 15 percent said they had health problems caused by their water. The vast majority indicated a willingness to connect to a public water system.

While Dr. Randolph's study found that community public water systems appear to be well-operated, it did suggest that such systems continually cope with such problems as excessive water loss above the maximum recommended 20 percent. For those systems which rely on ground water as a back up source of supply, there is concern regarding the reliability of this source and its poor quality. Because of limited financial resources, many systems are unable to fund costly service connections, suggesting that systems have provided service to those most easily served and now face the prospect of costly extensions.

Dr. Randolph presented various technical options for providing public water supplies to the presently unserved population, cautioning the subcommittee that

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[2] John Randolph, Water Supply in the Virginia Coalfield Counties: Status, Technical Options, Assessing Rate Impacts, Executive Summary, August 1996, p. 9.
[3] Ibid.

there is no panacea or single technical fix that will solve the variety of water development problems in the region. He offered the following matrix of options and the advantages and limitations of each:

Potential for and Limitations of Water Supply Options for Outlying Households in the Virginia Coalfields

Options	Potential	Limitations	Further Study
Extend water lines	Most conventional mechanism	High cost, distance, terrain	Prioritization based on: cost, number served, relief of problems
Springs and wells	Site specific potential, primarily individual systems	Limited aquifers, poor experience with public ground water systems	Cost-effective treatment (e.g., point-of-use), source protection
Surface water catchments	Site specific, primarily large community systems	Limited sites, high cost requires scale economies, ecological concerns	Potential sites, cost-effective treatment, source protection
Water harvesting, cisterns	Plentiful annual rainfall	Effects of drought, quality of stored water	Emerging technologies for water harvesting

The first and most obvious and conventional option would be to simply extend water mains and water lines from existing service areas to those presently unserved. The second option is to develop local water sources for small community systems. Such sources could include springs and wells, coal seam and mine aquifiers, surface water, and rainwater harvesting.[4] Although each option has its limitations, each may be appropriate in certain site specific situations.

Dr. Randolph noted that while money is important in solving the region's water supply problems, it must be accompanied by an institutional mechanism to provide for careful planning for the development of water supplies. Any institutional mechanism that is ultimately established, according to Dr. Randolph, should have the following objectives:

[4] Ibid.

- Adoption of a regional perspective which will ensure that water systems will (i) have sufficient back-up supplies and (ii) be developed in a cost-effective manner;
- Involvement of diverse public and private interests in funding allocation and project development decisions;
- Targeting of available funds to relieve severe water quality and availability problems;
- Adoption of creative financing measures to extend the use of available funds; and
- Evaluation and understanding of the monetary effects on households and ratepayers.

There are a number of institutional alternatives which could provide the means for ensuring that these objectives are part of the water planning and development process, including a regional water authority, a collaboration of existing authorities and systems, planning district commissions, or the recently established Coalfield Water Development Fund.

Dr. Randolph, in concluding the review of his research, made the following recommendations:

- Further research should be conducted to (i) establish a reliable estimate of the funding needs in the coalfield counties, (ii) identify the most critical water quality and health needs, and (iii) evaluate innovative technologies, including water harvesting, cistern storage, small surface reservoirs and cost-effective treatments.
- Existing water resources should be preserved through water conservation and watershed, well-head, and spring protection measures.
- Adequate funding should be sought to solve water problems. Grants and a funding pool are needed to leverage other sources of funds so that the rate burden on low-income households remains affordable.
- Project selection and design should be based on good analyses, engineering and planning so that projects are reliable and cost-effective, are targeted at the most critical needs and minimize the impact on ratepayers.

Jason Gray, environmental manager for the Virginia Water Project (VWP), expanded upon Dr. Randolph's remarks regarding the findings of the VPI-SU/VCES well testing program. Since 1989, over 2,500 wells in 13 counties in western Virginia (Lee, Wise, Scott, Dickenson, Tazewell, Wythe, Montgomery, Rockbridge, Page, Warren, Clarke, Russell, and Buchanan) have been tested for basic chemical constituents, nitrates, coliform bacteria, and, in a very small number of samples, pesticides. Mr. Gray characterized the data collected as the best information

available on drinking water resources. Despite its value, the data has several limitations:

- The sampling programs conducted at the county level are not random samples which are statistically valid. The testing was offered at a small cost as a public service to county residents; consequently, there was a degree of self-selection in the samples.
- The data was collected from 1989 to the present; therefore, the data does not focus on a particular point in time.
- The total number of samples varied significantly among the counties; this uneven distribution makes it inappropriate to group all the data and apply a western Virginia value.
- The testing program evaluated only a small number of contaminants.

Taking these shortcomings into account, VWP conducted its own analysis on a county-by-county basis using the VPS-SU/VCES data as a general indicator of domestic water quality in western Virginia. VWP's analysis found that the natural quality of the ground water is poor. A significant number of samples exceeded guidelines for four key natural occurring chemical elements (iron, sulfur, total dissolved solids, and sodium). Higher iron values were generally found in the coalfield counties, although Page County had the second highest percentage of samples which exceeded the Environmental Protection Agency's (EPA) standard. While not a health hazard, in high concentrations, iron may severely limit the use of a water supply because it causes water to taste bitter or metallic. The presence of sulfates is more of an esthetic problem than a health concern; however, at very high levels it can cause gastro-intestinal problems. Although the rotten egg odor associated with the presence of sulfates may be apparent in low concentrations, data indicates that, with the exception of Wise and Dickenson Counties, sulfate concentration samples in excess of federal standards are minimal throughout the region.

The three counties (Montgomery, Page and Warren) which had the greatest number of samples exceeding the standards for total dissolved solids (TDS) are not located in southwestern Virginia. High levels of TDS, combined with low water hardness can result in the deterioration of metal pipes and fixtures. Natural sodium levels in water can have health implications for individuals on low sodium diets. In two southwestern counties, over 45 percent of the water samples had values exceeding the 20 mg/L recommended for low sodium diets (Wise County – 50 percent and Dickenson County – 47 percent).

While E. coli may not be harmful to humans, its presence in water samples does indicate that the water supply is being directly contaminated by animal or human wastes, and that pathogens may be present. A large percentage of the samples from Lee County (36 percent) and Scott County (28 percent) showed the presence of the bacteria. Such bacterial contamination can be a threat to the health of young

children whose immune systems are not fully developed. Looking at the presence of the bacteria by water source, it was found that springs were far more vulnerable than wells. Four counties (Lee, Montgomery, Scott and Dickenson) had fecal contaminants in 60 to 70 percent of their springs. Professionals in the field have long held that springs are not a good source of water; unfortunately, consumers in the region believe springs are a source of high quality drinking water.

Noting that bigger is better, Mr. Gray recommended that the drinking water needs of residents of southwestern Virginia should be resolved through regional approaches. Only through the development of large scale water projects will the costs of water service become affordable for many low- and fixed-income households in the region. However, there are instances, where, because of the prohibitive costs, some households cannot be served by public systems. For these, other options should be considered including the development of designs for cost-effective stand-alone systems for isolated communities. If such small systems are developed, decisions will need to be made on how such systems will be effectively managed.

In addition to his suggestions of a regional approach to water supply development and the development of small package plants, Mr. Gray recommended the following:

- Renewed commitment on the part of the Department of Environmental Quality to monitor ground water. The lack of long-term monitoring has resulted in the absence of a reliable reference point to assess regional ground water quality trends.
- Continued support of the VCES program to offer low-cost, domestic well testing. A similar program should be made available to households living near coal mining activities to obtain an objective premining determination of water quality.
- Education on point-of-use domestic water treatment. There exists a gap in knowledge between health professionals who are aware that springs are not a good drinking water source and the public whose perception is to the contrary.
- Retrofitting of water conservation devices for those in areas of limited ground water supplies by housing rehabilitation organizations and agencies. Those homes with the most limited drinking water resources have the most to benefit from water conservation.

B. SCOPE OF NEED AND PROBLEM AREAS

1. Treatment Technologies and Costs

The subcommittee invited a number of individuals, including private sector engineers, Health Department officials, PDC planners, and public service authorities administrators, to describe the water supply situation in southwestern Virginia: how it has evolved; water supply problems; and plans for future system development. The presenters prepared a briefing book containing the following information:

- Planning district maps designating the location of public water systems and problem areas;
- Proposed drinking water supply system projects, the costs of each and number of connections to be served;
- Characteristics and quality of housing;
- List of active public water systems; and
- Public water system status information, including public systems under boiled water notices, source capacities and limitations.[5]

Darrell Stapleton, a professional engineer with 25 years' experience designing water and wastewater systems, provided an historical context for the present situation. Over the last two decades, many changes have taken place in the drinking water business. In the past, ground water was the primary source of water supply in the region. Springs and well water required little treatment; at the most, chlorine was added. As a result, capital, operational, and maintenance costs were very low. However, the number of households that could be served by a ground water system was small. Conversely, systems which depended on surface water from reservoirs as their source of supply could serve a greater number of households, but had high capital and operational costs which required more sophisticated water quality treatment capability beyond simple chlorination. Typically, a concrete, metal, or cinder block water plant had to be constructed at a significant cost. In addition to serving more people, surface water systems are more reliable, not as subject to the vagaries of weather and geology as are systems which depend on ground water or springs as their primary source of water supply. In the past, the determination of which type of system was developed was based on the size of the population to be served. The small community, therefore, was served by ground water.

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[5] The entire packet of data submitted to the subcommittee is part of the subcommittee's record and is available from the Division of Legislative Services.

Because of current concerns with the safety of the nation's drinking water supply and its health effects, greater emphasis has been placed on the reduction of contaminants in the drinking water supply. Under the federal Safe Drinking Water Act, treatment is required of practically all surface and ground water. It is very unusual now for a ground water source to meet current drinking water standards using only chlorination; almost always additional treatment is required. Data in recent years has documented a significant deterioration in the quality and a decline in the quantity of ground water supplies in southwestern Virginia.

Until a few years ago, the only available method of treating drinking water was the conventional treatment plant. New technologies are being developed which ensure the quality of surface and ground water. Instead of the large concrete plant, smaller steel, custom packaged units can be developed in less time and at less expense. A specific treatment technology, membrane filtration, is being examined in several small community systems in southwestern Virginia with the hope of its possible broader application to any size treatment plant. This approach applies high pressure to push water through a fine membrane material, filtering out bacteria. It holds the promise of being less expensive than the technology used in conventional plants.

Even with the advent of new treatment technologies, the capital costs of treating water will remain high. The economy of scale is a major factor in the cost of providing treated water. For small communities served by a 250,000-gallon water treatment plant, the capital costs can be as high as seven to eight dollars per gallon of capacity constructed or a total cost of $1.5 to $2 million. For larger plants with a four to five million gallon-per-day plant, the costs could be as low as $2.50 to $3.00 per gallon of capacity or a total capital cost of approximately $10 million. However, Mr. Stapleton suggested one strategy to be examined to reduce the high costs of water treatment, especially for smaller communities, is the implementation of a regional distribution approach. With such an approach, the costs of operating individual plants would be eliminated by having a centralized administration for water treatment and delivery systems.

2. Problem Areas and Proposed Projects

Although figures provided to the subcommittee indicate progress is being made in providing public water supplies to residents of the region, problem areas still exist and plans are being developed to deliver safe water to those living in the smaller, isolated communities.

Skip Skinner and Jim Baldwin, planners for the LENOWISCO PDC and the Cumberland Plateau PDC, respectively, described those communities which are

experiencing water problems and presented a 10-year water supply development plan for the region. Areas with known water supply problems are described in Appendix C. This information was generated from complaints and concerns expressed to local health department officials. The concerns expressed by residents generally related to water supplies that went dry, were of insufficient capacity or poor quality, or needed new sources developed. The list of communities experiencing water supply problems was not inclusive, since it was based solely on citizens' contacts with health officials. It is believed that if all citizens could be individually surveyed, the number of drinking water systems listed as having problems would be greater.

Many of these problem areas are included in the list of proposed water projects. At the request of the subcommittee, PDC planners working with local officials assessed the region's water needs and developed a plan for the development of water projects to meet their communities' water needs. These projects are in various stages of development ranging from having been simply identified as needed to being projects that are under construction. The proposed projects include not only new systems, but also the upgrading of existing systems. The greatest obstacle to implementing a development plan will be funding. Following is a breakdown of costs and the number of new connections (households) by county. A complete list of projects can be found in Appendix D.

	Estimated Connections	Estimated Costs
LENOWISCO PDC		
Lee County	4,031	$ 24,603,350
Scott County	1,241	11,447,025
Wise County	1,680	20,322,705
PDC Total	6,952	$ 56,373,080
Cumberland Plateau PDC		
Buchanan County	2,215	$ 22,650,000
Dickenson County	642	8,704,000
Russell County	1,245	16,990,000
Tazewell County	4,140	28,610,000
PDC Total	8,242	$ 86,249,000
Mt. Rogers PDC		
Bland County	1,025	$ 12,000,000
Carroll County	7,700	25,100,000
Grayson County	4,000	22,300,000
Smyth County	5,100	17,500,000
Washington County	2,210	11,169,000
Wythe County	2,419	45,077,175
PDC Total	22,454	$ 133,146,175

The total costs of developing drinking water projects that will meet the needs of the residents of southwestern Virginia is approximately $276 million.

D. PUBLIC HEARINGS

To obtain the local perspective on the drinking water supply in southwestern Virginia, the joint subcommittee held hearings in the Towns of Richlands and Wise. The following is a summary of the public's comments and recommendations.

1. Wise Public Hearing

a. Local Residents

- A number of persons living in small, isolated communities found along the ridges and hollows of Dickenson County, expressed their concerns regarding the lack of a safe, reliable supply of drinking water and the costs of treating water for domestic consumption. Those who are fortunate enough to have a well or use cisterns still face the problem of treating the water to remove a variety of contaminants. The costs of purchasing filters or other treatment devices can be as high as $200 per month. Many of the affected residents (elderly poor or those on fixed incomes) are left with having to choose between food and shelter or safe, clean water. Those depending on natural springs as their primary sources of potable water face the prospect of an unreliable water supply during the warmer periods of time in the late spring and summer. A large number of residents have no water available from any source, and their only option is to buy expensive bottled water. The lack of a reliable drinking water supply has prevented small businesses from locating in the these smaller communities.

- Examples were given of the costs of developing wells as the primary source of water supply in the coalfield region. One resident of the Town of Pound drilled a 300-foot well in 1977. The expense of drilling the well and installing a pump was $3,500. Because of high levels of such contaminants as iron and manganese, the water had to be treated using a series of filters, including iron filters at a cost of $1,205, a salt filter as a water softener ($1,295), a charcoal filter ($1,295), and a chlorinator ($495). The filters and pumps have to be replaced periodically, and therefore represent an ongoing operational cost.

b. Local Government Officials (Representatives of Public Service Authorities and Boards of Supervisors)

- Dickenson County has a population of approximately 17,000 people, representing about 7,000 households. Like most rural counties, the population

is concentrated in towns and along major highways. Over the past 30 years, residents throughout the county have become all too familiar with private water supplies that are both unreliable and unsafe. Many of the water problems have been attributed to past mining practices. In 1993, a county-wide testing program was conducted which documented the seriousness of the water quality problems in Dickenson County. Over 400 samples of private water supplies were collected. Results of the survey indicated that 63 percent of the samples tested positive for total coliform and 16 percent showed the presence of fecal coliform.

- The obstacles confronting the development of water projects in Dickenson County taken singularly are not uncommon to those in any rural community. However, the unique combination of a number of factors creates a challenge in extending water supplies into many areas of the County, including:

    - The provision of water to ridge communities located in mountainous terrain with a vertical relief of 1,000 feet is a particularly difficult engineering problem.
    - Housing density seldom exceeds 15 houses per mile in the unserved areas of the county. Houses also tend to be located in clusters with substantial distances between clusters.
    - The location of some communities necessitates the installation of transmission lines, significantly increasing the costs of providing water.
    - The presence of rock formation in most areas results in high delivery costs. Due to this terrain, tanks and pump stations are commonplace.

  Because of these factors, the typical project of six to seven miles in Dickenson County will cost between $1.2 to $1.5 million, resulting in a cost per connection of $12,000 to $15,000 and an average water bill of $30 per month for a customer base of 100 to 200 connections. For a project to be feasible, it will require grant funding of approximately 70 to 80 percent of the project's costs.

- Although water problems in Dickenson County are serious, the County is fortunate to have the John W. Flannagan Reservoir within its borders. This facility has a capacity of 16,500 acre feet and has been a reliable source of water supply for Dickenson and Buchanan Counties. Water is withdrawn from the reservoir by the John W. Flannagan Water Authority, which operates a four million-gallon-per-day (MGD) treatment plant located near the reservoir and sells water at a bulk rate to the Town of Clintwood and the Buchanan County Public Service Authority (PSA). Dickenson County is different from many other counties in the region in that its citizens are often served through joint efforts of two or more separate entities. The following operate distribution systems in the

County: the Town of Clintwood, the Buchanan County PSA, the Big Caney Water Corporation, the Wise County PSA, and the Dickenson County PSA.

- The need for water service is something that should be viewed as a regional problem rather than a problem relating to a particular political subdivision. Thus, there is a need to develop a long range water supply plan emphasizing regional cooperation. The implementation of a regional water supply will not be possible without the financial assistance of various local, state and federal agencies. While funds are available, the process for providing financial assistance needs to be expedited.

- The cost to extend water supply lines to those who live in hollows and to their neighbors living above them in ridge communities is very expensive, often costing between $10,000 to $15,000 per connection. Funding agencies are more likely to finance more cost-effective projects whose cost per connection is $1,500 to $2,000. When the easy, cost-effective water projects in southwestern Virginia have been completed what is left is the expensive task of providing a water supply to the less populated, isolated communities. More state money is needed to fulfill federal matching grant requirements.

- The biggest obstacle to providing a water supply to residents within the Wise Count PSA's service area is funding. The plant has the capacity to supply water to everyone, but the costs of financing the necessary pump stations and tanks are very expensive. The cost of a pump station is $75,000 to $150,000, and the price of a tank is estimated to be one dollar per gallon for a 250,000-gallon tank.

c. Community Action Agencies (nonprofit)

- Low income residents suffer from both insufficient and unsafe water supplies. A survey of households located in the Stone Mountain area of Wise County indicated that 138 households comprising 372 people had either unsafe, insufficient or, in some instances, nonexistent water supplies. Two hundred and eighty of these individuals were classified as having low to moderate income. In the project area, 15 families had no bathrooms.

- There is a need to develop a safe reliable water supply, but also to protect the current water resources in the region.

- If drinking water is provided to low-income residents, it will be so expensive that they will need assistance in developing a household budget that reflects the costs associated with the provision of water service.

2. Richlands Public Hearing

a. Local Residents

- In the community of Clifton Fork (104 homes) in Buchanan County, the water is of such poor quality that clothing is discolored; water fixtures, commodes, water heaters and pipes are corroding; and the prepared food has a blackened color. Because of the expense of treating the water, some residents have to drink unfiltered water and travel to laundromats in neighboring counties to wash their clothes. According to one resident, if she washed her laundry at home, it would require the use of three filters a month, which she could not afford. Even with the use of filters, the water still has a bad taste and odor. In addition, because of past mining practices, a lot of residents have no water supply.

- In 1983 residents of the Baptist Valley in Tazewell County were told by the Board of Supervisors that a water supply system would be developed for the community. That same year the Health Department conducted a water quality survey, and the results of its study indicated that the water being used by the residents was an "urgent potential health hazard." Thirteen years later, absent the promised water system, a second survey was conducted. As a result of that survey, the community's water supply was categorized as being a potentially severe health hazard. Residents believe that their community has one of the highest rates of cancer in the state; they surveyed 430 households and found that 186 families reported that someone in their family had been stricken with cancer within the last 10 years. They attribute the high cancer rate in part to unsafe water supply.

- Jewell Ridge, located in Tazewell County, is experiencing water quality problems. It is under a long-standing Department of Health "boil water notice." Several years ago, the PSA terminated service to the community because the cost of operating the system greatly exceeded the revenues received from customers. There was a lack of available grant money which would have upgraded the system and provided water at affordable rates. Currently, only 86 families are served by the county's water system, but many others would like to be on the public system. The lack of progress in upgrading the water system has resulted in people moving out of the community and prevented others from moving in. Because of the lack of water, a building that was donated by Pittston Coal Company could not be developed as a facility which would attract outside industry. Recently, grant funding from a private foundation was awarded to extend water lines into Jewell Ridge from the Buchanan County water system at a cheaper cost than a comparable extension of the Tazewell County PSA.

- A state water agency should be established, along the lines of the Department of Transportation which would be responsible for providing affordable drinking water to all Virginians.

b. Local Government officials

- Russell County faces two critical water-related problems, not enough water available in those areas where mining has occurred and, as a result of recent natural disasters (flood, blizzard, tornado, and drought), a limited supply of water available for agricultural uses. There is a patchwork of small water systems, but no county-wide system. The county lacks financing for developing water supplies for the isolated communities. Currently, about 70 percent of the homes in the county are not being served by a public water system. Two areas need to be addressed: (i) provision of more state-sponsored emergency water assistance as part of an effort to respond to disasters and (ii) development of a trust fund for financing water projects in southwestern Virginia.

- In Washington County approximately 90 percent of the residents are supplied with water by the public service authority. What remains to be accomplished is the extension of lines to those areas whose geology is characterized by thick rock formations. The costs of extending new lines for areas previously unserved is estimated to be $7.4 million for 917 connections or an average cost per connection of $8,045. In addition, the costs of replacing lines, some of which are 60 years old, for areas with insufficient service totals about $3.8 million, involving 1,293 connections at an average cost per connection of approximately $2,900. Funding is also needed for the construction of water production facilities. The sources of one-third of the PSA's water supply are springs in the eastern portion of the county. According to the Health Department, the springs are fed by surface water which will necessitate additional treatment. To finance the upkeep of the present system and to extend new lines, the PSA has depended on user fees, bond revenue, and connection fees. Since 1989, rates have increased 6.9 percent annually. The PSA has established a minimum charge for the first 2,000 gallons plus a fee of $2.47 for each additional 1,000 gallons. The monthly charge for a customer using 5,000 gallons is $22.28. In 1989, the monthly rate was $13.95. The primary source of water-supply funding remains the customer rate structure.

- Tazewell County has more community waterworks (eight) operating under a "boil water advisory" than any other county in Virginia. Most of these eight systems are privately operated. Some of the best land available for economic and residential development lies along the Route 460 corridor, from Bluefield to Claypool Hill. The area is not presently

serviced by public water or sewer systems other than in the Town of Tazewell. This year the PSA has begun to extend a water line along the corridor. The County has applied for state and federal funds to evaluate its water-supply needs and to develop a plan to meet those needs. It is envisioned that the plan will rank projects on yet-to-be-developed criteria. The plan will also emphasize the protection of the county's water sources. Currently, the PSA serves 2,800 customers, although some small communities are treated as one customer. The rate for customers who use 4,000 gallons is $22. The rate was increased last year making the PSA eligible for Rural Development (Farmers' Home) funds.

- The County last year allocated $500,000 to the PSA for line extensions. Many of these funds will be used for the costly Route 460 corridor project. It is estimated that one foot of pipe for this project will cost in excess of eight dollars per foot.

Since 1992, the Tazewell County PSA has completed 12 projects at a cost of approximately $9.98 million using a combination of outside funding ($5.4 million in federal and state moneys), local government funding ($2.55 million) and local management funding ($2 million). In addition, applications are pending for $4.4 million in state and federal funds and $6.1 million in local government funds for the Baptist Valley Water Project. Tazewell County has made a commitment to finance county projects as reflected in the $10 million of strictly local funds allocated in the last four years for these projects. However, the Board of Supervisors is requesting a commitment from the state to provide additional financial assistance. The Board has written Governor Allen requesting that he allocate a portion of the state's year-end surplus fund in the form of a matching grant to help in the funding of the Route 460 corridor project.

c. Community Action Agencies

- Virginia does not have an admirable history of supplying drinking water to its rural community residents. Virginia is ranked second among the states with respect to the number of rural households lacking complete indoor plumbing and fourth in the number of individuals whose drinking water is not from an approved source (i.e., drinking untreated water from cisterns, springs, creeks, lakes, and rivers). According to the 1990 census, 1.8 percent of Virginia households lacked complete plumbing; however, in the 16 counties from Wythe County west, that figure rises to five percent. Examples of counties where a significant number of households are without indoor plumbing are: Tazewell County, 556; Buchanan County, 581; and Scott County, 1,228.

- There are two programs which address the need for safe drinking water. The Virginia Water Project provides grants of $600 for water storage boxes or public system connections for low-income homeowners. However, this money does not meet the needs of residents living in the area. If one considers that, for those homes which are beyond the reach of public water, the average cost of a well and pump is $4,000, plus as much as an additional $2,000 for filter treatment. The Indoor Plumbing Program provides zero interest loans for low-to-moderate income homeowners who lack complete facilities. Funds are used to perform repairs so as to make the entire dwelling safe while adding safe drinking water and sewage treatment. Over the past three years the program has upgraded over 70 homes. However, because this program is a loan program many people have chosen to do without water rather than go into debt. Additional funds are needed if these problems are to be resolved in a timely fashion.

E. FUNDING AGENCIES

Individuals who are responsible for seeking sources of funding for the development of drinking water projects described the problems associated with developing a plan for financing such projects. They discussed their dependence on the receipt of state and federal assistance from agencies with differing missions/objectives, application dates, funding cycles, and eligibility criteria.[6] Over the last 15 years, both state and federal fund amounts have declined. The reductions are of particular concern in light of the fact that the projects which remain to be developed are the more difficult, expensive public water systems, i.e., those serving a small number of customers in isolated communities. Agency officials presented the following descriptions of their agencies' financial assistance programs:

1. Rural Utilities Service (RUS)

RUS, a new agency created in October 1994 as part of the reorganization of the U.S. Department of Agriculture, administers a water and wastewater loan and grant program to improve the quality of life and promote economic development in rural communities. The program was previously administered by the Farmers Home Administration, which was abolished by the reorganization. Loans and grants are made to develop water and wastewater systems in rural areas and cities with a population of 10,000 or less. Public entities such as municipalities, counties, and special purpose districts are eligible to receive funds. Priority is given to restoration of a deteriorating water supply or to improve, enlarge, or modify a water facility

[6] A matrix of funding sources and criteria for water projects appears in Appendix E.

or an inadequate waste facility in areas smaller than 5,500 people. Preference is also given to requests which involve the merging of small facilities and regional projects. Loans with terms of up to 40 years and interest rates based on community income levels are available. Grants are awarded to help the most financially needy communities to reduce the rates and charges for the users to the level of similar systems. Loan and grant funds can be used to do the following:

- Construct, repair, improve, expand, or otherwise modify rural water supply and distribution facilities including reservoirs, pipelines, wells, and pumping stations;
- Acquire a water supply or a water right;
- Construct, repair, improve, expand, or otherwise modify waste collection, pumping, treatment, or other disposal facilities, which may include such items as sewer lines, treatment plants, storm sewer facilities, landfills, incinerators, and necessary equipment;
- Pay necessary fees for services, such as legal and engineering, connected with the development of facilities;
- Pay other costs related to the development of the facility, including the acquisition of rights-of-way and easements and the relocation of roads and utilities; and
- Finance facilities in conjunction with funds from other agencies or those provided by the applicant.

Over the last 10 years, (FY 1987 to 1996), RUS has funded water projects in the three PDCs in the following amounts:

LENOWISCO PDC (1)	$ 3,471,100
Cumberland Plateau PDC (2)	4,239,126
Mount Rogers PDC (3)	27,682,300
Total	$35,392,526

The three PDCs received approximately 39 percent of the agency's statewide obligation of $90,980,066 for financing water projects. During FY 1997, $17,750,000 in loans and $10,659,000 in grants were made for water and wastewater projects. Because of the large number of requests, there is a two-year backlog of requests for assistance. RUS discourages applications from new entities, preferring to extend lines using the existing water utility companies. PDCs 1 and 2 received a relatively small amount of financial assistance because of the high per-customer cost of their proposed projects.

2. Department of Housing and Community Development's Center for Rural Development

The Department of Housing and Community Development administers three programs to finance drinking water needs throughout the state. Two, the Community Development Block Grant Program (CDBG) and the Appalachian Regional Commission (ARC), provide financial assistance for the upgrade of public water systems. Over the last 15 years, these two programs have awarded $9.4 million to communities in the LENOWISCO PDC, $17 million in the Cumberland Plateau PDC, and $11.9 million to the Mountain Rogers PDC communities for financing water system improvements.

The CDBG program passes funds to local communities. The program's primary objective is to serve the needs of low-income citizens in a number of categories including drinking water and wastewater treatment. The state receives an annual allocation of approximately $24 million from the federal government. Money is separately awarded to two types of communities: the 22 communities with the largest population receive entitlement grants and 300 other communities apply for grants that are awarded on a competitive basis. Approximately 40 percent of the proposed projects are funded. The criteria used to award grants are the community's fiscal stress, ability to leverage the grant with other funds, appropriate design, impact on national objective, impact on need, and use of regional approaches. The maximum amount of a grant award is $700,000; however, if a regional approach is proposed, the amount awarded can be as much as $2.4 million.

ARC was created in 1965 to assist the distressed Appalachian region. The program operates as a federal/state/local partnership. About 20 Virginia communities are eligible to participate in the program. All of the eligible communities are located in southwestern Virginia (PDCs 1, 2, and 3). The primary focus of the program is economic development, consisting of such diverse components as community development, human resources and highway construction. The communities receive approximately $7.2 million from the program, with about half of the funds awarded for highway improvement projects.

The third program, the Indoor Plumbing Rehabilitation Program, which has awarded about $7.4 million statewide of which $1 million has gone to the three PDCs.

3. Abandoned Mined Land (AML) Program

The purpose of the AML program, as stated in federal law, is to promote the reclamation of mined areas which continue to substantially degrade the environment, prevent or damage the beneficial use of land or water resources, or endanger the public's health or safety. Reclamation projects are financed through the imposition of a per-ton tax on coal production. The Department of Mines, Minerals and Energy (DMME) is the state agency responsible for administering the federally mandated program. Program administrators rely heavily on PDCs to work with local government in preparing and submitting water project proposals and securing other funding so that the entire project can be implemented. Since 1984, the AML program has provided $7,014,980 to eight water projects serving over 1,200 households. This amount was combined with $4,697,620 in funding obtained from other sources for a total financial package of $11,712,600 for the eight projects. The average cost of providing water to each project household was approximately $9,600, ranging from a low of about $3,950 to a high of about $20,000.

In terms of future projects, the PDCs have identified more than 49 known water supply problem areas. Several areas for which DMME expects to receive project applications include Clifton Fork (Buchanan County), Hazel Mountain (Dickenson County), Red Root Ridge near Richlands (Tazewell), and Wise County for the Northern Wise County Water System. DMME has also identified over 400 areas which it has classified as endangering the health or safety of the public (Priority 1 and 2 sites). It is estimated that the cost of reclaiming these sites will be $117 million.

Congress has authorized the continuation of the program for the next eight years. The amount of grant funds available can vary from year to year, depending on such factors as AML fees collected, the number of emergencies which may occur in a given year, and the number and costs of other critical nonwater projects. DMME is allowed to expend up to 30 percent of its $4.1 million in federal grant funds for construction or repair of water supply systems which were adversely affected by past coal mining practices. DMME has reserved about $750,000 annually for financing nonemergency water projects even though, under the 30 percent maximum cap for these types of projects, DMME could provide up to $1.2 million. The subcommittee encourages the agency to increase the level of funding for nonemergency water projects.

In 1992, DMME contracted with the PDCs to develop the "AML Water Project Review Manual" to assist applicants in the preparation of their project proposals and to outline the evaluation criteria used in the selection process. The following activities are eligible to receive funding:

- Basic engineering services and construction management;
- Engineering services, such as surveying, geotechnical and soil analysis; and
- Source development and construction of water lines and appurtenances, tanks and pumping stations to serve AML impacted areas.

Local governments are required to submit their applications to the PDCs, who review them for completeness and forward them to DMME for review and evaluation. A PDC is able to use its knowledge of the various funding sources to determine the availability of other sources of project funding. This allows the "piggy-backing" of the AML with other funding sources, enabling the full funding of projects. Local government may submit only one application per year and must demonstrate that the (i) AML impacts significantly affected or damaged a water supply system, resulting in health and safety problems to users of the system; (ii) reclamation of the AML problems will not solve the water problem or would not be cost effective compared with construction of a new system; and (iii) construction of the proposed water supply system will eliminate or greatly reduce the danger to the public health and safety. When evaluating the project application, not only is an applicant's ability to obtain other funding considered, but also the level of user charges is analyzed to determine the reasonableness of water rates. Projects must be completed within 24 months of the execution of a contract with DMME.

4. Virginia Water Project (VWP)

VWP provides a variety of technical and financial assistance. It receives state general funds to conduct engineering studies for water and wastewater facility development. Interest from these funds is used for emergency grants to low-income households. The organization also administers a low-interest loan program capitalized by the Ford Foundation and supplemented by a $2 million grant from the U.S. Department of Agriculture's Rural Development Administration. In addition, ongoing technical assistance for system development and the operation and maintenance of water and wastewater systems is provided by VWP technical staff. VWP began receiving general fund appropriations for facility development projects in 1978. For the initial five years of state funding, VWP received $100,000 annually. The amount began to increase significantly in 1984. By 1987 funding had risen to approximately $400,000, where it remained until 1989, only to gradually decline to a low of about $350,000 by 1993. The trend was reversed in 1994, with the amount of state funds increasing to $657,943 in 1997. From 1978 through 1994, $1,096,543 was allocated by the VWP to complete 259 water-

related projects in southwestern Virginia. This assistance constituted 25 percent of all VWP facility development grant funds. These grants resulted in 59,139 connections made to public water or wastewater systems. Of the total, 27,553 connections were to low-income households. Because of the state appropriations, over the years the VPW has been able to leverage over $90 million in public funds.

From 1990 to June 1996, $1,609,273 has been allocated for 124 active projects in southwestern Virginia; of these, 17 are wastewater projects. The financial assistance provided for these projects was a little over 50 percent of all facility development grant funds available for active projects. These grants will result in creating approximately 36,000 new household connections. With the $1.6 million in current grants, the VWP has been able to leverage $28.7 million in additional public funds for these active projects.

The VWP also administers loan funds through the Southeast Rural Development Fund, which operates in a seven-state region. In the past two years, inquiries have been received from 18 Southwest Virginia communities. Three loans have been made in the Southwest Virginia region: two to Dickenson County PSA ($100,000 and $62,500) and one to Clintwood ($100,000). The Fund was recently recapitalized with a $2 million RUS program loan for a total program amount of $3 million. This program is viewed as a gap financing program. Loans are from $1,000 to $250,000 for lengths of one to ten years, at interest rates of three to seven percent. For emergency situations, a letter of commitment can be issued within 10 days for a loan of up to $50,000.

5. Virginia Department of Health Water Supply Revolving Fund

In 1987, the General Assembly established the Virginia Water Supply Revolving Fund (Virginia Code § 62.1-233 et seq.) to provide low-interest loans and grants to local governments for the construction and development of drinking water projects. From 1988 through 1994, the Fund was capitalized through an annual general fund appropriation of $100,000. Disbursements have been made from the Fund to finance small scale projects, including replacing water lines and upgrading equipment at water treatment plants. Currently, the Fund contains a little less than $100,000.

During its last session, Congress passed the 1996 Amendments to the Safe Drinking Water Act (SDWA) which authorized the creation and funding of state revolving funds such as the one established by Virginia in 1987. The federal money is to be used to assist communities in installing and upgrading safe drinking water treatment facilities. Virginia's share of the federal

allocation in 1997 will be approximately $30 million which represents two years of federal appropriations, and Virginia can expect to receive approximately $15 million annually in federal funds throughout the year 2003 and will be required to provide 20 percent in matching funds. The federal legislation establishes eligibility criteria to ensure that loans or subsidized loans (grants) are made to water system operators with the greatest need to improve the protection of drinking water supplies. Community and nonprofit, noncommunity water systems[7] are eligible to receive loans but federal and for-profit, noncommunity systems are not. Funds will be awarded to states through a capitalization grant which falls into two categories: (i) project funds which are to be utilized for construction of public drinking water systems and (ii) nonproject funds or set-asides. Construction funds are to be used to address public health problems and to ensure compliance with the provisions of the SDWA. A special provision requires that 15 percent of the construction portion of the funds be devoted to funding waterworks serving fewer than 10,000 persons. The purpose of the set-aside fund is to enhance the ability of the state and owners of waterworks to ensure a waterworks' long-term capacity to produce safe drinking water and to protect construction loan investments. A maximum of 31 percent of the federal capitalization grant may be set aside for the following activities:

[7] A community waterworks is a water system which provides drinking water to at least 15 service connections or regularly serves at least 25 year-round residents; examples include mobile home parks, subdivisions, towns, nursing homes, correctional facilities, counties or cities. A noncommunity waterworks is a water system which provides drinking water at least 60 days out of the year, serves at least 15 service connections or regularly serves at least 25 residents, but not on a year-round basis; examples include schools, restaurants, colleges, highway rest areas, factories, motels and hotels.

Activity	Maximum Allowable
Administration and technical assistance	4%
Small waterworks technical assistance	2%
Assistance to state drinking water programs: Waterworks supervision program Provide technical assistance through source water protection programs Develop and implement a program to assure the managerial, technical, and financial abilities of waterworks owners (capacity development program) Waterworks operator training	10%
Any combination of the following, with no more than 10 percent in any one area: Loans to acquire land or a conservation easement to protect source water Loans for community waterworks to implement voluntary source water protection measures Loans to implement source water protection partnership program Technical and financial assistance to a waterworks as part of the capacity development program Delineation and assessment of source water protection areas Establishment and implementation of a wellhead protection program	15%
Total	31%

The federal legislation also recognizes economic hardship as a continuing obstacle to the provision of safe drinking water by designating up to 30 percent of the federal grant for loan subsidies, including the forgiveness of principal to disadvantaged communities.

The legislation provides the states with considerable discretion in the design and implementation of the various programs and in the allocation of the revolving fund loans. In order to receive a capitalization grant, the state will have to apply to EPA and submit a plan on how the money will be spent (Intended Use Plan). The Virginia Department of Health has been designated as the agency to apply for and administer the capitalization grant.

The agency intends to solicit public comments in formulating the Intended Use Plan.

6. Coalfield Water Development Fund (CWDF), Inc.

The CWDF is a 501(c)(3) (nonprofit) organization which provides grant assistance through an endowment for water supply construction in the Counties of Lee, Wise, Scott, Dickenson, Russell, Buchanan and Tazewell, and the City of Norton. The organization was chartered in 1995 and received its nonprofit status in 1996. Its board of directors includes representatives from the Virginia Department of Health, the PDCs, the Virginia Water Project, the Center for Public Service, and RUS. In addition to these required members of the board, there is a representative from the Black Diamond Conservation Council and 10 private sector representatives who are affiliated with the coal industry. Operating as an endowment, CWDF began with a seed grant of $294,000 from EPA. The purposes of the CWDF are to:

- Expedite water system construction in Southwest Virginia. It is a "gap financing" fund. Applicants must leverage the maximum funding from traditional financing sources and only utilize grants from the CWDF to fill the gaps in funding needed for project construction. Projects which can be totally funded utilizing other federal programs are not considered for CWDF funding;
- Provide a source of flexible, nonfederal financial assistance that can be used to leverage local government investment in water system construction. Projects to be constructed with CWDF funding will require some local commitment of up-front investment in project construction, in addition to the investments being made through debt financing;
- Encourage regional development of water systems. CWDF favors investment in projects involving the cooperative efforts of more than one governmental jurisdiction in planning and constructing water systems, and also investment in projects which will hasten development of service to adjoining localities; and
- Address public health problems related to the quality and quantity of water.

Local governments, public service authorities and nonprofit organizations are eligible to receive grants. Two types of activities are eligible for funding: (i) reasonable and customary water system construction expenses and (ii) preliminary engineering and planning. CWDF recently awarded its first construction grant in the amount of $10,000 to the community of Dante to supply water from the Russell County Water and Sewer Authority to the

Dickenson County residents of West Dante. This project was part of a comprehensive development initiative which was leveraged with other funds made available through the Community Development Block Grant Program and the Virginia Water Project.

Language in the SDWA authorization recognizes the role that CWDF can play in providing needed financial assistance for the development of drinking water systems. While not specifically naming the CWDF, the Act authorizes, with the approval of the General Assembly and the Administrator of EPA, the conducting of a single program in Southwest Virginia to demonstrate alternative approaches to intergovernmental coordination to assist in the financing of new drinking water facilities. The demonstration project is to assist communities in the Counties of Lee, Wise, Scott, Dickenson, Russell, Buchanan and Tazewell, and the City of Norton that are experiencing economic hardship. Funds allocated to Virginia under the capitalization grant and deposited in the Virginia Water Supply Revolving Fund may be loaned to the endowment for financing water supply projects.

The goals of CWDF are to establish an endowment account of at least $10 million and to provide at least $500,000 per year for construction grants and administration. Private funding will also be sought for capitalization of the endowment. CWDF will use the loan as endowment corpus and will use the trust services of a bank to invest the resources in a conservative portfolio of equities (mutual funds) and fixed income investments to achieve an eight to nine percent average total annual return annually. It will comply with any investment guidelines established by the Commonwealth to protect the assets. CWDF will use earnings totaling five percent of the market value of the corpus annually to support grants and administration of the Fund. The additional three to four percent in average annual earnings will be used to hedge the Fund against inflation and to increase the size of the corpus. Grants will be awarded annually in September based on this allocation of earnings. After CWDF has received $10 million in state loan funds, it can be expected to have at least $500,000 available annually for grants and administration.

At the end of the 30-year term, CWDF will repay the $10 million loan to the water supply fund without interest. Over the 30-year term, it is anticipated that more than $15 million will be awarded in project grants. CWDF will retain the earnings that have accrued as a hedge against inflation. It is projected that over 30 years of earning three to four percent interest, that approximately $10 million will remain in the CWDF after the water supply fund is repaid.

III. CONCLUSIONS AND RECOMMENDATIONS

In formulating its recommendations, the subcommittee sought the assistance of a technical advisory panel composed of individuals representing local, state, and the federal governments as well as private sector individuals, all of whom have demonstrated their expertise in the area of water supply planning and development. Their suggestions along with the comments received during testimony before the subcommittee and at public hearings were invaluable in the subcommittee's effort to document the drinking water supply situation in southwestern Virginia. The subcommittee believes that the development of an adequate, safe and reliable water supply is the key to the improvement of social conditions and economic diversification in the communities of southwestern Virginia. However, without comprehensive planning, technical and financial assistance from local, state and federal agencies, it will be difficult to ensure that the residents of the region have a sound, reliable supply of drinking water.

The subcommittee's recommendations are based on a number of findings and conclusions. First, most of the "easy" cost effective water supply projects have been completed. What remains to be resolved is how best to provide water to the small, isolated communities where the costs could exceed $10,000 per connection. Second, where it is feasible, the development of water systems should be regional. This means that the establishment of new PSAs or water utilities should be avoided and the current systems should be consolidated or restructured to allow for the cost effective extension of water lines to unserved populations. For a number of areas, it will be difficult to provide public water in conventional ways. In such instances, it is crucial that small water system models be developed which will provide water to the small, isolated communities. Third, and perhaps most importantly, additional funding for construction of drinking water systems is needed. Local governments cannot depend solely on the rate payers to finance the estimated $276 million in needed water projects. A partnership must be established among all levels of government and the private sector to provide the necessary financing.

The subcommittee recognizes that a significant, new commitment of financial planning and technical assistance will have to be made if an infrastructure is to be developed that will provide the basis for an expanding economy in the region. The receipt of approximately $30 million in federal funds to capitalize the Virginia Water Supply Revolving Fund in FY 1997 represents a significant contribution to upgrading the state's water supply infrastructure. This, together with the state's required 20 percent match,

will enable Virginia to begin to address its drinking water problems in the rural areas of the Commonwealth. In 1987 Virginia created by statute the Virginia Water Supply Revolving Fund, and is prepared to accept the federal allocation with only minor changes of language to conform the Virginia program to the new federal requirements. Currently, under Virginia's revolving loan program, political subdivisions may borrow money or be awarded grants. The federal program provides financial assistance for both public entities and private owners of community waterworks and owners of nonprofit, noncommunity water systems; however, federal facilities are not eligible to receive such financial assistance. The federal program allows loan subsidies, including the forgiveness of principal. Virginia's authorizing language does not include the concept of principal forgiveness. The subcommittee believes one other change in language should be made to the state statute. There was concern expressed by representatives of community groups, local governments and various state and federal agencies that management fees charged by VRA for wastewater projects had the effect of increasing the "costs of money" to finance projects. This caused many small communities to not view the revolving loan fund, managed by VRA, as a possible source for financing development projects. To ensure that money is available to smaller communities at reasonable rates of interest, the subcommittee believes that VRA should seek ways to reduce the costs of professional services. Therefore, the subcommittee recommends:

Recommendation #1: That the General Assembly amend the Virginia Water Supply Revolving Fund to conform to the requirements of the federal SDWA and that language be added to the statute which directs the VRA to adopt policies and procedures that minimize the costs of professional services associated with the processing of a loan application and the financing or refinancing of a drinking water project, especially "disadvantaged" applicants. (Appendix F)

It is anticipated that Virginia will receive its share of the federal allocation before the end of FY 1997. It will be necessary for the General Assembly to amend the 1997 Appropriation Act to reflect the receipt of the federal funds and the inclusion of the appropriate state match. The Act also includes language which may require recipients of moneys from the revolving loan fund to match up to 20 percent of the amount they receive. The subcommittee believes this provision could be onerous to those smaller communities applying for grants or interest-free loans because they are unable to finance needed projects through conventional means and are relying on the state to assist in financing projects at rates which are below available commercial rates. To require such a match would be contrary to the intent of the Fund, that of making available to communities, especially those categorized as disadvantaged, grants and low-interest or subsidized loans. The subcommittee therefore recommends:

Recommendation #2: That the 1997 Appropriations Act be amended to include provisions that (i) reflect the receipt of a federal capitalization grant of approximately $30 million and (ii) remove the requirement that applicants must provide a 20 percent match for moneys received from the Water Supply Revolving Fund.

The Safe Drinking Water Act of 1996 contained a special provision which authorized Virginia, with the approval of the Virginia General Assembly and the Administrator of EPA, to conduct a program to demonstrate alternative approaches in intergovernmental coordination to assist in the financing of new drinking water systems in the rural communities of southwestern Virginia. The subcommittee finds that the organization best equipped to administer such a demonstration project is the Coalfield Water Development Fund, Inc., and that this program be funded through a $10 million loan at no interest for a 30-year term. The subcommittee recommends:

Recommendation #3: That a budget amendment be approved authorizing an appropriation of $4 million in the form of a loan the first year to the Coalfield Water Development Fund, Inc. The moneys shall be used to assist in the financing of new drinking water facilities in the following rural communities in southwestern Virginia where no such facilities exist on the date of enactment of the Safe Drinking Water Amendments of 1996, and where such communities are experiencing economic hardships: the Counties of Lee, Wise, Scott, Dickenson, Russell, Buchanan, and Tazewell, and the City of Norton. The terms and conditions of repayment, including interest rates, shall be agreed upon by the Board of Directors of the Coalfield Water Development Fund, Inc., and the Virginia Department of Health.

The problem of water availability and water supply in southwestern Virginia stem from several inherent factors, including the region's geology, topography, land use, and history of under-developed infrastructure and limited financial resources. Testimony indicated that most of the easy, less costly extensions of water supplies have been made and what remains are the more difficult and costly improvements that will be required to supply water to the more isolated smaller communities in the region. Even though county public service authorities and local water utilities continue to develop water facilities where financially feasible, the region lacks an effective institutional structure to provide oversight and technical assistance in such areas as fund raising, creative financing, project proposal evaluation and regional water supply planning. The subcommittee therefore recommends:

Recommendation #4: That the General Assembly request the Cumberland Plateau PDC, the LENOWISCO PDC and the Mount Roger PDC to jointly study the most cost-effective means of providing drinking water to their residents, and to develop a comprehensive regional water supply service plan for the areas. The plan (i) shall place a priority on providing the most feasible water service to unserved and underserved residents, without

concern for traditional jurisdictional boundaries or other artificial barriers to water service and (ii) shall not duplicate existing or ongoing planning efforts in various localities or subregions, but shall use existing technical data from those studies. (Appendix G)

Recommendation #5: That the General Assembly appropriate to each of the three PDCs, $57,000 to conduct the study of drinking water and to develop a comprehensive regional water supply service plan.

The task of putting together a financing package for the development of water supply projects is a difficult one. In their constant search for new sources of funding, local officials confront a maze of agencies with differing funding cycles, eligibility criteria, and spending guidelines. The subcommittee is encouraged by the willingness of the representatives of these agencies to examine ways to make the application process more uniform and more responsive to rural communities. We recognize that specific federal program requirements will limit any effort to change the manner in which funds are awarded to rural Virginia projects. However, there may be areas in which agreements can be reached. For instance, the federal and state funding agencies could develop a project plan document which would precede the submission of a formal application by a local government. This plan would contain baseline information defining the nature and scope of the problem and how it will be addressed by the proposed water supply project. The document could then be reviewed by the various agencies and suggestions made to the applicant on how the proposal could be improved to meet the funding criteria of the funding programs. Instituting pre-submission discussions would not only be more efficient but would also acquaint the parties with each other's perspective on the funding of each proposal discussed. The subcommittee recommends:

Recommendation #6: That officials of state and federal funding agencies examine opportunities for enhancing cooperation among their agencies and that their discussions include the possibilities of (i) standardizing application information, (ii) coordinating funding cycles, and (iii) reviewing projects before applications are formally submitted.

In addition to financing concerns, the subcommittee believes that more emphasis should be placed on providing the type of technical assistance that will ensure a safe, reliable and affordable water supply for those not served by public water systems. The conventional means of providing these residents with water service would be simply extending lines from existing surface water systems. However, because of distance and terrain, this alternative would be prohibitively expensive. Unconventional sources such as coal seam aquifiers and mine cavities, along with newly emerging collection, storage and treatment technologies, including the development of small package plants, may represent possible options for providing a reliable

and affordable source of the drinking water for this population. The subcommittee recommends:

Recommendation #7: That the General Assembly request the Virginia Water Resources Research Center at VPI-SU to study innovative technologies and other options for providing safe, reliable, and affordable domestic water supplies to individual households and small communities in southwestern Virginia. (Appendix H)

Recommendation #8: That the Virginia Department of Health and the Virginia Water Project develop a manual of best practices for the cost-effective planning, development and operation of small drinking water systems. This guide should provide information to owners of small systems on how to operate more efficiently and lower costs by emphasizing improving water capacity (i.e., reducing water loss) and the proper maintenance of existing infrastructure.

Recent testing data found E. coli bacteria contamination and the presence of unacceptable high levels of iron, sulfates and sodium in many household wells and springs. Treatment costs for individual homeowners to remove such contaminants can exceed $50 per month, and, even with such treatment, the quality of the domestic water supply in many communities in the region is, at best, marginal. The testing data suggests that there is a compelling need to provide comprehensive monitoring and treatment of the domestic water supply if the region's water supplies are to be protected. The subcommittee recommends:

Recommendation #9: That the Virginia Department of Health, public service authorities and local water utilities provide (i) more resources for testing and monitoring water supplies and (ii) more information to homeowners and developers about the water supply and possible health risks.

Respectfully submitted,

Delegate Clarence E. Phillips, Chairman
Delegate Terry G. Kilgore
Delegate Jackie T. Stump
Delegate John H. Tate, Jr.
Senator Madison E. Marye
Senator Jackson E. Reasor, Jr.
Senator William C. Wampler, Jr.
Donna Stanley
David Wampler
Honorable C. Donald Dunford

APPENDICES

Appendix A

960796400

HOUSE JOINT RESOLUTION NO. 104

House Amendments in [ ] —February 8, 1996

Establishing a joint subcommittee to study drinking water supply problems and funding mechanisms to correct drinking water deficiencies in southwestern Virginia.

Patron—Phillips

Referred to Committee on Rules

WHEREAS, maintaining and preserving adequate supplies of drinking water is critical to the health of all citizens of the Commonwealth; and

WHEREAS, southwestern Virginia has suffered devastating losses of drinking water supplies due to geological, manmade, and weather conditions; and

WHEREAS, upwards of tens of thousands of citizens of the Commonwealth have had to suffer due to lack of a reliable water supply, particularly from groundwater; and

WHEREAS, many of the causes of the loss and lack of groundwater supplies have been in part identified in southwestern Virginia, but funding mechanisms to provide adequate water supplies to citizens of that region have not; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That a joint subcommittee be established to [~~review the drinking water supply problems in southwestern Virginia and to study and~~ study drinking water supply problems and funding mechanisms to correct drinking water deficiencies in southwestern Virginia. The joint subcommittee shall] make recommendations on potential funding mechanisms to resolve those problems, including an analysis of the proper state role in assisting with funding. The joint subcommittee shall be composed of ten members as follows: four shall be members of the House of Delegates to be appointed by the Speaker of the House; three shall be members of the Senate to be appointed by the Senate Committee on Privileges and Elections; and three shall be citizen members, two to be appointed by the speaker of the House and one to be appointed by the Senate Committee on Privileges and Elections. Of the citizen members; one shall be involved in programs to provide water supply funding for rural localities, one shall represent the coal mining industry, and one shall be involved in the study of water supply problems in southwestern Virginia.

The direct costs of this study shall not exceed $ 5,400.

The Division of Legislative Services shall provide staff support for the study. All agencies of the Commonwealth shall provide assistance to the joint subcommittee, upon request.

The joint subcommittee shall complete its work in time to submit its findings and recommendations to the Governor and the 1997 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

Implementation of this resolution is subject to subsequent approval and certification by the Joint Rules Committee. The Committee may withhold expenditures or delay the period for the conduct of the study.

CHARACTERISTICS AND QUALITY OF HOUSING IN VIRGINIA

COUNTY	TOTAL HOUSING UNITS	SOURCE OF WATER						METHOD OF WASTEWATER DISPOSAL						FACILITY DATA			
		PUBLIC		WELLS		OTHER		SEWER		ST/CESSPOOL		OTHER		LACKING COMPLETE KITCHENS		PLUMBING	
		%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#
LEE	10263	46.3	4752	30.9	3171	22.8	2340	16.6	1704	73.7	7564	9.7	996	4.7	482	9.2	944
SCOTT	10003	36.5	3651	39.3	3931	24.1	2411	18.1	1811	73.1	7312	8.8	880	4.4	440	10.3	1030
WISE	15927	72.5	11547	21.0	3345	6.5	1035	45.7	7279	49.6	7900	4.6	733	3.5	557	4.4	701
LENOWISCO	36193		19950		10447		5786		10794		22776		2609		1479		2675
BUCHANAN	12222	22.5	2750	68.2	8335	9.3	1137	10.6	1296	82.1	10034	7.3	892	2.5	369	4.8	587
DICKENSON	7112	44.3	3151	39.7	2823	16.0	1138	14.9	1060	72.8	5178	2.3	875	4.2	299	6.7	477
RUSSELL	11558	37.6	4346	41.4	4785	21.0	2427	20.9	2416	70.6	8160	8.5	982	3.4	393	6.2	717
TAZEWELL	18901	55.4	10471	31.9	6029	12.7	2400	49.7	9394	46.2	8732	4.1	775	1.8	340	3.0	567
CUMB. PLATEAU	49793		20718		21972		7102		14166		32104		3524		1401		2348
TOTAL	85986		40668		32419		12888		24960		54880		6133		2880		5023

Taken From Larger Statewide Sheet - Water 2000 Survey (Census Data)

Appendix B

LENOWISCO HEALTH DISTRICT

LEE COUNTY

Water Supply Problem Areas

Map #	Problem Area	Quality	Quantity	Comments
1.	Flatwoods	x	x	Poor quality with major salinity problem and some mineral problems. Many wells must go over 500 feet in depth. Properly constructed deep wells usually do not have bacteriological problems, but mineral problems usually increase. Citizen complaints have been received. Cisterns and hauled water have occurred during past dry periods.
2.	Robbins Chapel	x	x	Problems with bacteriological and mineral quality exist. Wells can often obtain quantity, but loss of water supplies has occurred. Some citizen complaints have been registered. Some cistern use occurs.

The following community water supplies have reached their maximum operation permit limits.

1. Ridgeview Subdivision
2. Rose Hill

SCOTT COUNTY

Map #	Problem Area	Quality	Quantity	Comments
1.	U.S. 23 Area	x		There has been an increased incidence of bacteriological contamination occurring in water samples. Karst topography situations lead to increased incidence of potential bacteriological contamination. Some iron and sulphur removal needed. Problems have occurred with Noncommunity Water Systems meeting requirements.

The following community water supplies have reached their maximum permitted capacity limits.

1. Clinchport
2. Hiltons #2

CUMBERLAND PLATEAU HEALTH DISTRICT

BUCHANAN COUNTY

Water Supply Problem Areas

Map #	Problem Area	Quality	Quantity	Comments
1.	Leemaster	x	x	Citizen Complaints Received; Replacement Well Applications Received; Quality Problems Generally Mineral Related
2.	Rosin Camp (Drill Mtn)	x	x	Citizen Complaints Received; Several Replacement Well Applications Received; Quality Problems Generally Mineral
3.	Upper Slate Creek	x	x	Citizen Complaints Received; Replacement Well Applications Received; Some Mineral Quality Problems; Some Hauling of Water Occurs
4.	Bradshaw Mountain		x	Citizen Complaints Received; Replacement Well Applications Received; Some Hauling Of Water Occurs
5.	Main Knox Creek	x	x	Citizen Complaints Received; Replacement Well Applications Received; Mineral Quality Problems
6.	Smith Branch	x	x	Citizen Complaints Received; Replacement Well Applications Received; Mineral Quality Problems
7.	Stone Coal	x	x	Citizen Complaints Received; Replacement Well Applications Received
8.	Dave Branch	x	x	Citizen Complaints Received; Replacement Well Applications Received; Mineral Quality Problems
9.	Stiltner Creek	x	x	Citizen Complaints Received; Mineral Quality Problems

CUMBERLAND PLATEAU HEALTH DISTRICT

DICKENSON COUNTY

Water Supply Problem Areas

Map #	Problem Area	Quality	Quantity	Comments
1.	Osborne's Gap (Including Rt 624 & 630)	x	x	Significant mineral quality problems exist. Wells have gone dry, especially during dry periods. Replacement well applications have been received. Citizen complaints have been received. Pine Mountain Fault runs through this area.
2.	Blowing Rock	x	x	Significant mineral quality problems exist. Wells have gone dry, especially during dry periods. Replacement well applications have been received. Citizen complaints have been received. Pine Mountain Fault runs through this area.
3.	Jerry's Branch	x		Yield is usually satisfactory, but a general mineral quality problem exists. Area is not directly fault affected.
4.	Osborne's Gap (Rt 631)	x	x	Quantity is often available, but poor mineral quality exists. Citizen complaints have been received. Some supplies have gone dry during dry periods.
5.	Tom Bottom	x		Quantity often present, but mineral quality problem exists.
6.	Lick Fork of Bartlick	x	x	Wells and springs went dry during summer of 1995. Citizen comments have been received. Mineral quality problems are present in existing wells. Pine Mountain Fault somewhat affects area. There was much media attention focused during the recent trip to the area by Governor Allen.

DICKENSON COUNTY

Water Supply Problem Areas

Map #	Problem area	Quality	Quantity	Comments
16.	Roaring Fork	x		Quality problems exist, especially with mineral quality.
17.	Hazel Mountain	x	x	Citizen complaints have been received. Prior attempts to drill wells have been largely unsuccessful. There are a significant number of cisterns in use due to lack of any other water sources. Some residents have to haul water to supply residential needs.
18.	Sullivan Branch	x	x	Bacteriological contamination problems exist. Resident had well go dry which led to several complaint situations.
19.	Duty	x		Quality problems, especially of a mineral nature exist.

One general comment could be made that springs generally have difficulty in meeting bacteriological standards. An additional general comment is that many residents feel that if a well is to be drilled to supply water for clothes washing and other household uses, that it is set beforehand that they will need to purchase and install some type of filtration/treatment.

No community water supplies are shown as to have reached their maximum permitted operation permit limits.

CUMBERLAND PLATEAU HEALTH DISTRICT
TAZEWELL COUNTY
Water Supply Problem Areas

Map #	Problem Area	Quality	Quantity	Comments
1.	Road Ridge		x	Quantity of water has been limited. Many cistern water supplies exist due to limited water quantity. Citizen requests have been received concerning advisals on construction of water supplies and protection of drinking water supplies from contamination.
2.	Red Root Ridge		x	Quantity of water has been limited. Many cistern water supplies exist due to limited water quantity. Citizen requests have been received concerning advisals on construction of water supplies and protection of drinking water supplies from contamination.
3.	Jewel Ridge		x	Quantity of water has been limited. Many cistern water supplies exist due to limited water quantity. Citizen requests have been received concerning advisals on construction of water supplies and protection of drinking water supplies from contamination.
4.	Amonate	x		Quantity of water has not been a concern as much as the quality. Citizen comments have been received concerning drinking water.
5.	Dry Fork	x	x	Citizen comments have been received concerning drinking water supplies. Some older, shallow wells do not produce sufficient quantity, efforts have been made to construct deeper supplies.
6.	Baptist Valley	x		Very bad water quality exists due to water supply contamination. Karst topography yieldS contamination problems. Health Hazard Survey showed 60+% of water supplies had contamination present. Numerous citizen complaints have been received.

MOUNT ROGERS HEALTH DISTRICT

BLAND COUNTY

Water Supply Problem Areas

Map #	Problem Area	Quality	Quantity	Comments
1.	Little Creek Area	x		Many recently drilled wells have shown the presence of bacteriological contamination.
2.	Holybrook	x	x	Cisterns utilized for some water supplies. Iron bacteria and mineral quality problems with water supplies.
3.	Seddon	x	x	Dry wells have occurred. Cisterns utilized for some water supplies. Mineral quality problems occur with some well supplies.
4.	Waddletown	x	x	Poor quality present with some existing wells and springs. Cisterns utilized for some water supplies.
5.	Laurel Creek/Dry Fork	x		Poor water quality exists with some springs and wells.
6.	Ceres	x		Citizen concerns expressed over poor water quality with springs and iron bacteria problems with wells.
7.	Bastian/Hicksville Area	x		Citizen concerns expressed over mineral quality/iron bacteria in wells.
8.	Crandon/Mechanicsburg	x		Citizen concerns expressed over mineral quality/iron bacteria in wells.

CARROLL COUNTY

Water Supply Problem Areas

Map #	Problem Area	Quality	Quantity	Comments
7.	Chestnut Yard	x	x	Citizen concerns expressed and Health Department visits and tests have revealed mineral quality problems with iron and/or turbidity. Low yield wells are a quantity issue.
8.	Rt 645 (Below Laurel Fk)	x	x	Citizen concerns expressed and Health Department visits and tests have revealed mineral quality problems with iron and/or turbidity. Low yield wells are a quantity issue.
9.	Short Creek (Rt 640-I-77)	x	x	Citizen concerns expressed and Health Department visits and tests have revealed mineral quality problems with iron and/or turbidity. Low well yields are a quantity issue.

The majority of the county has problems with drinking water containing excess iron and often with a low pH (around 6.0)

MOUNT ROGERS HEALTH DISTRICT

SMYTH COUNTY

Water Supply Problem Areas

Map #	Problem Area	Quality	Quantity	Comments
1.	Walker Mountain Area	x		Citizen comments and Health Department visits and contacts have revealed a mineral quality problem, especially iron and sulfur.

(See Appendix L for Office of Water Programs explanations on status of community water systems.)

MOUNT ROGERS HEALTH DISTRICT

WASHINGTON COUNTY

Water Supply Problem Areas

Map #	Problem Area	Quality	Quantity	Comments
1.	Mendota - Rt 802 Area	x		Mineral problems with private water supplies exists in the area, especially with high iron and sulfur levels.
2.	Rt 91 (S. Fork Holston to to Rhea Valley)	x	x	Citizen comments received on low well yields and bacteriologically unsatisfactory water supplies.

LENOWISCO PLANNING DISTRICT COMMISSION
Proposed Water Projects
13-Dec-96

Community	Estimated Customers	Proposed Water Source	Cost Estimate	PER
Lee Co.				
Western Lee County Improvmnts.	2,835	Author Shawnee UD	$ 3,118,300	no
Stone Creek	98	St. Charles W&S (Penn Gap)	$ 1,356,000	no
Sandy Ridge & York Site	138	Jonesville	$ 3,354,000	yes
Keokee/Darnell/Rawhide	230	Appalachia	$ 729,950	yes
Pennington Gap Upgrade	n/a	Pennington Gap	$ 2,122,300	yes
Pennington Gap Tank Repairs	n/a	Pennington Gap	$ 55,000	no
Cedars/Flatwood	234	Jonesville	$ 3,986,500	no
Jonesville Upgrade	n/a	Jonesville	$ 1,729,700	no
Sugar Run	257	Jonesville	$ 492,700	no
Powell River East	214	DWA (Pennington Gap)	$ 2,019,000	no
St. Charles (Puckett)	25	St. Charles W&S (Penn Gap)	$ 471,900	no
Woodway Extensions	663	WWA (Pennington Gap)	$ 5,168,000	yes
Subtotal	4,031		$ 24,603,350	
Scott Co.				
Daniel Boone Extension	250	Gate City	$ 1,560,000	yes
Duffield Intake Relocation	393	DDA	$ 555,125	yes
Dungannon Extensions	60	Dungannon	$ 182,000	yes
Dungannon Plant Improvements	n/a	Dungannon	$ 474,900	yes
Jasper/Wise Co Ext	335	DDA/BSG	$ 4,000,000	yes
Mabe Extension	50	Scott Co WSA	$ 500,000	yes
Manville Road Ext	78	Gate City	$ 575,000	yes
Natural Tunnel State Park	45	Scott Co WSA	$ 1,500,000	no
Nickelsville Extension	30	Nickelsville	$ 300,000	yes
Gate City Plant Expansion	n/a	Gate City	$ 1,800,000	no
Hiltons Water Improvements	230	Develop source	$ 900,000	no
Subtotal	1,241		$ 11,447,025	
Wise Co.				
Bear Creek Reservoir Expansion	n/a	Wise	$ 549,000	yes
Birchfield Water Improvements	60	Wise	$ 685,000	yes
Bold Camp/Indian Creek	725	Pound/Clintwood	$ 5,297,800	yes
BSG/Norton interconnect	n/a	Big Stone Gap	$ 625,000	no
Bull Hill tank & extension	60	Wise Co PSA	$ 1,951,575	yes
Crab Orchard extensions	75	Wise Co PSA	$ 350,000	no
Dunbar Treatment Improvements	n/a	Wise Co PSA	$ 394,500	yes
Guest River - Powell River Connect.	150	Wise Co PSA	$ 1,125,000	yes
Rocky Fork Extension	100	Wise Co PSA	$ 875,000	no
South Fork Extension	510	Pound	$ 5,059,000	no
St. Paul Plant Expansion	n/a	St. Paul	$ 1,424,550	yes
Chandler Hill Water Project	30	Big Stone Gap	$ 356,280	yes
Maples Gap Water Project	10	Big Stone Gap	$ 130,000	yes
Virginia City Extension	160	Wise Co PSA	$ 1,000,000	no
Pound Treat. & Dist. Improvements	n/a	Pound	$ 500,000	no
Subtotal	1,680		$ 20,322,705	
Total	6,952		$ 56,373,080	

DWA = Dryden Water Authority
WWA = Woodway Water Authority

DDA = Duffield Development Authority

CUMBERLAND PLATEAU PLANNING DISTRICT COMMISSION
Proposed Water Projects: 12/12/96

Community	Estimated New Customers*	Proposed Water Source	Cost Estimate	PER?
Buchanan Co.				
Grundy Upgrade	0	Upgrade	$1,100,000	no
Clifton Fork	140	John Flannagan	800,000	no
Hurley	350	John Flannagan	8,000,000	yes
Big Rock-Conaway	300	John Flannagan	1,500,000	no
Lower Slate Creek	150	John Flannagan	1,600,000	no
Upper Slate Ck.	300	John Flannagan	2,000,000	no
Dismal Creek	100	John Flannagan	550,000	no
Compton Mountain	250	John Flannagan	2,000,000	no
Birchleaf / Big A. Mtn.	500	John Flannagan	4,500,000	no
Hale Creek	125	John Flannagan	600,000	no
SUBTOTAL	**2,215**		**$22,650,000**	
Dickenson Co.				
Eliza Gap	15+	Dick. Co. PSA	$500,000	no
Hazel Mountain	180	Dick. Co. PSA	3,200,000	plans
Rakes Ridge	90	Buch. Co. PSA	1,100,000	yes
Brush Creek	110	Clintwood	1,784,000	yes
Ramsey Ridge	40	Buch. Co. PSA	870,000	yes
Lick Creek	60	Dick. Co. PSA	900,000	no
Clinchco	35	Dick. Co. PSA	350,000	no
Red Onion	112	Dick. Co. PSA	700,000	yes
SUBTOTAL	**642**		**$8,704,000**	
Russell Co.				
Hansonville	150	Lebanon	$2,350,000	no
Drill	200	Honaker	2,000,000	no
Dante/Castlewood	0	Upgrade	1,800,000	no
Pine Creek	85	Swords Creek PSA	870,000	no
Rosedale	300	Lebanon	3,500,000	no
Belfast	250	Tazewell Co. PSA	3,200,000	no
Buffalo Mountain	60	Russell Co. W & S Auth.	1,270,000	no
Big A Mountain	200	Buch. Co. PSA	2,000,000	no
SUBTOTAL	**1,245**		**$16,990,000**	
Tazewell Co.				
Pocahontas Prison	500	Pocahontas	$3,225,000	no
Raven/Doran Rehab.	0	Upgrade	1,200,000	no
Jewell Ridge	200	Buchanan Co. PSA	1,500,000	yes
Baptist Valley	2,000	Town of Tazewell	16,000,000	yes
Abbs Valley	250	Tazewell Co. PSA	2,100,000	yes
Red Root Ridge	100	Tazewell Co. PSA	1,160,000	no
Big Creek	200	Richlands	1,850,000	no
Birmingham	40	Richlands	500,000	no
Lowes to Lowes	850	Tazewell Co. PSA	10,370,000	no
SUBTOTAL	**4,140**		**$28,610,000**	
TOTAL	**8,242**		**$86,249,000**	

Mount Rogers Planning District Commission
Estimate of Drinking Water Needs

Bland County	Connections	Cost
Rocky Gap area		
Dryfork	50	800,000
52 North	75	1,000,000
Bastian	300	2,200,000
Wolfe Creek	100	1,000,000
Bland Courthouse	75	800,000
Ceres	125	2,000,000
Mechanicsburg	100	1,200,000
Other	200	3,000,000
	Subtotal	12,000,000

Carroll County	Connections	Cost
Laurel Fork	400	3,000,000
Barren Springs	500	3,200,000
Fancy Gap	600	3,200,000
Wood Lawn	1,500	3,000,000
Cana	1,200	4,000,000
Dugspur	500	3,200,000
Hillsville Extension	2,000	3,000,000
Pipers Gap	1,000	3,000,000
	Subtotal	25,100,000

Grayson County	Connections	Cost
Whitetop/Mt. Rogers	1,000	2,000,000
Elk Creek	300	3,000,000
Boywood	1,000	3,500,000
Mouth of Wilson/Volney	500	3,000,000
Fries	500	3,800,000
Independence Extension	400	2,500,000
Troutdale Extension	300	1,500,000
	Subtotal	22,300,000

Smyth County	Connections	Cost
Sugar Grove Extensions	300	2,000,000
Thomas Bridge Extension	500	3,000,000
Atkins	1,000	3,500,000
Nicks Creek	300	1,500,000
Chilhowie Extensions	1,000	2,500,000
Other	2,000	5,000,000
	Subtotal	17,500,000

Washington County	Connections	Cost
Jefferson District		
Lindell Road area	104	812,000
Rich Valley Road area	243	2,135,000
North Fork River Road	21	156,000
Old Mill Road area	64	363,000
Brumley Gap Road	219	1,573,000
Woodland Hills Road area	24	79,000
Old Saltworks Road	123	397,000
	Subtotal	5,515,000
Madison District		
County Park Road area	16	96,000
Stone Mill Road area	8	148,000
Green Springs Road area	15	109,000
Lake Road area	62	219,000
Watauga Road area	25	320,000
	Subtotal	892,000
Monroe District		
Exit 29 Services Road area	13	268,000
Kilmachronan Drive area	5	144,000
Rt. 11/91 intersect area	153	714,000
Smyth Chapel Road area	23	83,000
North Glade area	178	462,000
	Subtotal	1,671,000
Taylor District		
Rock Springs Road area	21	282,000
Blue Springs area	7	62,000
Campbell Hollow Road	11	81,000
Rivermont Drive area	91	523,000
	Subtotal	948,000

Washington County (*Continued*)

Tyler District		
Benham area	46	350,000
Harleywood Road area	4	44,000
Dettor Road area	20	77,000
Mary's Chapel Road	34	164,000
Mendota area	15	71,000
Reedy Creek Road area	67	97,000
Goose Creek Road area	51	155,000
Rich Valley Road area	64	158,000
	Subtotal	1,116,000
Wilson District		
Bordwine Road area	24	310,000
Singing Wood Lane	27	133,000
	Subtotal	443,000
Harrison District		
Windale Road area	179	242,000
Chip Ridge Road area	114	170,000
Waldon Road area	78	129,000
West Main Street area	61	43,000
	Subtotal	584,000

Wythe County	**Connections**	**Cost**
Big Survey	50	1,149,000
Grahams Forge to Fort Chiswell	115	1,602,000
Austinville	98	4,027,050
Grahams Forge East	130	425,250
Route 94 Upgrade	Rt. 94 rerouting	514,250
	Subtotal	7,818,525
Ft Chiswell Ext. (Ph. I)	Indstry Devlpmnt. 81/77 Corridor	2,392,200
Route 619 West	91	1,312,200
Route 52 Extension	>100	1,714,500
Wythe Raceway extension	only 1 connect	425,250
Rural Retreat West	50	1,161,000
Route 619 East	40	546,750
	Subtotal	7,551,900
Fosters Falls well system	54	945,000
Barren Springs well system	200	2,421,900
Cripple Creek	92	1,433,700
Extension to Poplar Camp	140	1,633,500
Rt. 21 S from Wytheville (Phase I)	86	807,300
Rt. 610 ext. from Wytheville	77	523,800
	Subtotal	7,765,200

Wythe County *(Continued)*

Rural Retreat -Wytheville Connection	200	2,662,200
Fort Chiswell ext. west (Ph. II)	Phase I backup	1,063,800
Rt. 21 S to Speedwell (Ph. II)	158	2,427,300
Ext. to Fosters Falls	Backup for Fosters Fall well system	561,600
Rt. 610 ext. from Max Meadows	74	986,850
	Subtotal	7,701,750
Ext. to Barren Springs	Alt. source for Barren Springs	1,667,250
Stony Fork extension	98	2,475,900
Rt. 11 to Rt. 21 (Crockett)	140	1,817,100
Cedar Springs Ext.	112	1,675,350
Cedar Springs to Speedwell	98	1,849,500
Pulaski ext.	Alt. source for eastern area	359,100
Rt. 21 to Rt. 94	215	4,395,600
	Subtotal	14,239,800

FEDERAL, STATE & OTHER FUNDING SOURCES AND CRITERIA FOR WATER PROJECTS SOUTHWEST VIRGINIA

Appendix E

SOURCE	*APPLICATION ISSUES*	*ELIGIBILITY ISSUES*	*OTHER PROGRAM ISSUES THAT IMPACT LOCALITIES*
• Rural Development (Federal)	• Apply anytime within FY, but realistically only one project can expect to be funded per year per locality.	• Most qualify for 75% grant, 25% loan. However, reduced rural development funding makes 50/50 split more likely.	• Toughest projects are the ones now left. • Rural development puts emphasis on financial feasibility/reasonable rates. • Commitment of other funds sometimes causes delays. • Funding comes when Letter of Conditions met (including design).
• Virginia CDBG (State)	• Applications due late March each year. Awards announced in May/June. • Applications for Urgent Needs Projects can be submitted from January to November.	• Each locality eligible for one $700,000 grant, or two unrelated grants of no more than $1,000,000 combined. • Must meet 51% Low-to-Moderate Income benefit criteria. Requires survey and usually 60-70% LMI benefit.	• Project must be at least 75% complete before applying for another grant. • For Regional Infrastructure Projects (2 or more localities, up to $2.1 million), at least 20% of funds and 20% of beneficiaries must be in one locality. • Urgent Need means "immediate and severe" health threat.
• Appalachian Regional Commission (Federal)	• Pre-applications due September of each year. • Final applications due in April/May each year. • Awards announced in June/July.	• Can submit as many projects as desired, but realistically only 1 project per locality can expect funding. • ARC is supplemental. Can only take a project to 80% federal funding.	• ARC funds can only be used for water projects that are non-job related in Distressed Counties.
• Economic Development Administration (Federal)	• Can apply anytime during FY, but realistically only one project can expect to be funded each year per PDC.	• All EDD localities eligible.	• Public works funding is only funding available to non-job creating water projects. At least 40% of project cost must be spent on construction labor.
• Abandoned Mined Land Water Program (Federal)	• Project applications accepted once each year in October. Funding award announced in December.	• Only water problems which relate to pre-1977 coal mining are eligible. • Only one project per locality per year. • Must be 75% complete on previous project.	• State DMME only has about $750,000 available each year for projects - enough for only 1-2 projects.
• Coalfield Water Development Fund (Endowment)	• Project applications are accepted each August. Announce awards in September.	• Projects must have approached all available funding sources and still have a financing gap.	• At present, funds in the endowment from EPA are only enough to generate about $10,000 per year for projects.

FEDERAL, STATE & OTHER FUNDING SOURCES AND CRITERIA FOR WATER PROJECTS SOUTHWEST VIRGINIA

• Virginia Water Project (Private)	• Funds available throughout the year.	• No limit on number of applications. • Benefit to low-income persons (surveys required).	• Small grant amounts available per project. • Loan funds, sometimes at no interest, available in larger amounts ($150,000).

Appendix F

972166400

HOUSE BILL NO. 2739

Offered January 20, 1997

A BILL to amend and reenact § 62.1-233, 62.1-234, and 62.1-237 through 62.1-239.1 of the Code of Virginia, relating to Virginia Water Supply Revolving Fund.

Patrons—Phillips, Stump and Tate

Referred to Committee on Conservation and Natural Resources

Be it enacted by the General Assembly of Virginia:

1. That §§ 62.1-233, 62.1-234, and 62.1-237 through 62.1-239.1 of the Code of Virginia are amended and reenacted as follows:

§ 62.1-233. Definitions.

As used in this chapter, unless a different meaning clearly appears from the context:

"Authority" means the Virginia Resources Authority created in Chapter 21 (§ 62.1-197 et seq.) of this title.

"Board" means the Board of Health.

"Cost," as applied to any project financed under the provisions of this chapter, means the total of all costs incurred ~~by the local government~~ as reasonable and necessary for carrying out all works and undertakings necessary or incident to the accomplishment of any project. It includes, without limitation, all necessary developmental, planning and feasibility studies, surveys, plans and specifications, architectural, engineering, financial, legal or other special services, the cost of acquisition of land and any buildings and improvements thereon, including the discharge of any obligations of the sellers of such land, buildings or improvements, site preparation and development, including demolition or removal of existing structures, construction and reconstruction, labor, materials, machinery and equipment, the reasonable costs of financing incurred ~~by the local government~~ in the course of the development of the project, carrying charges incurred before placing the project in service, interest on funds borrowed to finance the project to a date subsequent to the estimated date the project is to be placed in service, necessary expenses incurred in connection with placing the project in service, the funding of accounts and reserves which the *Board or the* Authority may require and the cost of other items which the *Board or the* Authority determines to be reasonable and necessary.

"Fund" means the Virginia Water Supply Revolving Fund created by this chapter.

"Local government" means any county, city, town, municipal corporation, authority, district, commission or political subdivision created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth or any combination of any two or more of the foregoing.

"Noncommunity waterworks" means a waterworks that serves an average of at least twenty-five individuals for at least sixty days out of the year and such individuals are not year-round residents.

"Other entities" means owners of waterworks; however, this term does not include the federal government or owners of noncommunity waterworks operated for profit.

"Project" means any water supply facility which serves primarily residents of the Commonwealth or which is located or to be located in the Commonwealth ~~by any local government~~. The term includes, without limitation, water supply and intake facilities; water treatment and filtration facilities; water storage facilities; water distribution facilities; related office, administrative, storage, maintenance and laboratory facilities; and interests in land related thereto.

"Waterworks" means a system that serves piped water for drinking or domestic use to (i) the public, (ii) at least fifteen connections or (iii) an average of twenty-five individuals for at least sixty days out of the year. The term includes all structures, equipment and appurtenances used in the storage, collection, purification, treatment and distribution of pure water except the piping and fixtures inside the building where such water is delivered.

§ 62.1-234. Creation and management of Fund.

There shall be set apart as a permanent and perpetual fund, to be known as the "Virginia Water Supply Revolving Fund," sums appropriated to the Fund by the General Assembly, all receipts by the Fund from loans made by it to local governments *or other entities*, all income from the investment of

moneys held in the Fund, and any other sums designated for deposit to the Fund from any source public or private. The Fund shall be administered and managed by the Authority as prescribed in this chapter, subject to the right of the Board, following consultation with the Authority, to direct the distribution of loans, *loan subsidies (including principal forgiveness)* or grants from the Fund to particular local governments *or other entities* and to establish the interest, rates and repayment terms *and conditions* of such loans, *loan subsidies or grants* as provided in this chapter. In order to carry out the administration and management of the Fund, the Authority is granted the power to employ officers, employees, agents, advisers and consultants, including, without limitation, attorneys, financial advisers, engineers and other technical advisers and public accountants and, the provisions of any other law to the contrary notwithstanding, to determine their duties and compensation without the approval of any other agency or instrumentality. ~~The Authority may disburse from the Fund its reasonable costs and expenses incurred in the administration and management of the Fund and a reasonable fee to be approved by the Board for its management services~~ *However, the Authority shall adopt policies and procedures that minimize the costs of professional services associated with the processing of a loan application and the financing or refinancing of a project, especially in those instances in which the Board has identified the applicant as "disadvantaged."*

Notwithstanding any other provision in law, the Board may approve a budget for the Authority's reasonable expenses for the administration and financial management of the Fund, and periodically reimburse the Authority for documented expenses in accordance with state policies and procedures.

§ 62.1-237. Collection of money due Fund.

The Authority is empowered to collect, or to authorize others to collect on its behalf, amounts due to the Fund under any loan to a local government *or other entity*, including, if appropriate, taking the action required by § 15.1-227.61 to obtain payment of any amounts in default. Proceedings to recover amounts due to the Fund may be instituted by the Authority in the name of the Fund in the appropriate circuit court.

§ 62.1-238. Loans to local governments or other entities.

~~Except as otherwise provided in this chapter, money~~ *Money* in the Fund shall be used solely to make loans *or for loan subsidies* to local governments *or other entities* to finance or refinance the cost of any project *or to establish an endowment fund to assist in the cost of any project*. The local governments *or other entities* to which loans are to be made, the purposes of the loan *or loan subsidy*, and the amount of each such loan *or loan subsidy*, the interest rate thereon and the repayment terms *and any conditions* thereof, which may vary between loan *recipients*, shall be designated in writing by the Board to the Authority following consultation with the Authority. No loan from the Fund shall exceed the total cost of the project to be financed or the outstanding principal amount of the indebtedness to be refinanced plus reasonable financing expenses.

Except as set forth above, the Authority shall determine the terms and conditions of any loan from the Fund, which may vary between local governments *or other entities*. Each loan shall be evidenced by appropriate bonds or notes *or other adequate security* of the local government *or other entity* payable to the Fund. The bonds or notes shall have been duly authorized by the local government *or other entity* and executed by its authorized legal representatives. The Authority is authorized to require in connection with any loan from the Fund such documents, instruments, certificates, legal opinions and other information as it may deem necessary or convenient. In addition to any other terms or conditions which the Authority may establish, the Authority may require, as a condition to making any loan from the Fund, that the local government *or other entity* receiving the loan covenant to perform any of the following:

A. Establish and collect rents, rates, fees and charges to produce revenue sufficient to pay all or a specified portion of (i) the costs of operation, maintenance, replacement, renewal and repairs of the project; (ii) any outstanding indebtedness incurred for the purposes of the project, including the principal of and premium, if any, and interest on the loan from the Fund to the local government *or other entity*; and (iii) any amounts necessary to create and maintain any required reserve, including any rate stabilization fund deemed necessary or appropriate by the Authority to offset the need, in whole or part, for future increases in rents, rates, fees or charges;

B. Levy and collect ad valorem taxes on all property within the jurisdiction of the local government subject to local taxation sufficient to pay the principal of and premium, if any, and

interest on the loan from the Fund to the local government;

C. Create and maintain a special fund or funds for the payment of the principal of and premium, if any, and interest on the loan from the Fund to the local government *or other entity* and any other amounts becoming due under any agreement entered into in connection with the loan, or for the operation, maintenance, repair or replacement of the project or any portions thereof or other property of the local government *or other entity*, and deposit into any fund or funds amounts sufficient to make any payments on the loan as they become due and payable;

D. Create and maintain other special funds as required by the Authority; and

E. Perform other acts, including the conveyance of, or the granting of liens on or security interests in, real and personal property, together with all rights, title and interest therein, to the Fund, or take other actions as may be deemed necessary or desirable by the Authority to secure payment of the principal of and premium, if any, and interest on the loan from the Fund ~~to the local government~~ and to provide for the remedies of the Fund in the event of any default ~~by the local government~~ in the payment of the loan, including, without limitation, any of the following:

1. The procurement of insurance, guarantees, letters of credit and other forms of collateral, security, liquidity arrangements or credit supports for the loan from any source, public or private, and the payment therefor of premiums, fees or other charges;

2. The combination of one or more projects, or the combination of one or more projects with one or more other undertakings, facilities, utilities or systems, for the purpose of operations and financing, and the pledging of the revenues from such combined projects, undertakings, facilities, utilities and systems to secure the loan from the Fund ~~to the local government~~ made in connection with such combination or any part or parts thereof;

3. The maintenance, replacement, renewal and repair of the project; and

4. The procurement of casualty and liability insurance.

All local governments *or other entities* borrowing money from the Fund are authorized to perform any acts, take any action, adopt any proceedings and make and carry out any contracts that are contemplated by this chapter. Such contracts need not be identical among all local governments *or other entities*, but may be structured as determined by the Authority according to the needs of the contracting local governments *or other entities* and the Fund.

Subject to the rights, if any, of the registered owners of any of the bonds of the Authority, the Authority may consent to and approve any modification in the terms of any loan ~~to any local government~~ subject to guidelines adopted by the Board.

§ 62.1-239. Grants.

Subject to any restrictions which may apply to the use of money in the Fund, the Board in its discretion may approve the use of money in the Fund to make grants or appropriations to local governments *or other entities* to pay the cost of any project. The Board may establish such terms and conditions on any grant as it deems appropriate. Grants shall be disbursed from the Fund by the Authority in accordance with the written direction of the Board.

§ 62.1-239.1. Loans and grants for regional projects, etc.

In approving loans and grants, the Board shall give preference to loans and grants for projects that will (i) utilize private industry in operation and maintenance of such projects where a material savings in cost can be shown over public operation and maintenance or (ii) serve two or more local governments *or other entities* to encourage regional cooperation or (iii) both.

Appendix G

HOUSE JOINT RESOLUTION NO. 590

Offered January 20, 1997

Requesting the Cumberland Plateau Planning District Commission and the LENOWISCO Planning District Commission to jointly study the most cost-effective means of providing drinking water to their residents, and to develop a comprehensive regional water supply service plan for the area located within the two planning districts.

Patrons—Phillips, Stump and Tate

Referred to Committee on Conservation and Natural Resources

WHEREAS, reliable and safe drinking water supplies should be available to all Virginians; and

WHEREAS, in all communities, water supplies provide one of the most important components of infrastructure needed for community and economic development; and

WHEREAS, water supplies are especially important in the coalfield counties of southwestern Virginia, where surface and ground water resources are limited, and where, in 1990, less than one-half of the households were served by public water systems; and

WHEREAS, problems of water availability and water quality stem from several inherent factors, including the region's geology, topography, land use, a history of underdeveloped infrastructure and limited financial resources; and

WHEREAS, Virginia Cooperative Extension testing data found E. Coli bacterial contamination and the presence of unacceptable high levels of iron, sulfates and sodium in many household wells and springs; and

WHEREAS, such data suggests that there is a compelling need to provide more comprehensive monitoring and treatment of domestic water supplies if the region's water supplies are to be protected; and

WHEREAS, most of the easy and least costly extensions of water supplies have been made and what remains are the more difficult and costly improvements; and

WHEREAS, the income level of many unserved households is a significant obstacle to rate-based financing of costly options for providing public water supplies; and

WHEREAS, even though county public service authorities and local water utilities continue to develop water projects where financially feasible, the region lacks an effective institutional structure to provide oversight and technical assistance in such areas as fund raising, creative financing, project proposal evaluation and regional water supply planning; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Cumberland Plateau Planning District Commission and the LENOWISCO Planning District Commission jointly determine the most cost-effective means of providing drinking water to their residents, and develop a comprehensive regional water supply service plan for the area located within the two planning districts. The plan (i) shall place a priority on providing the most feasible water service to unserved and underserved residents, without concern for traditional jurisdictional boundaries or other artificial barriers to water service and (ii) shall not duplicate existing or ongoing planning efforts in various localities or subregions, but shall use existing technical data from those studies. In developing the plan the two Commissions shall complete technical studies for those portions of the region for which no such data exists or is outdated. The Commissions will retain or provide, as needed, sufficient engineering and technical support as required.

All agencies of the Commonwealth shall provide assistance to the Cumberland Plateau Planning District Commission and the LENOWISCO Planning District Commission for this study, upon request.

The Cumberland Plateau Planning District Commission and the LENOWISCO Planning District Commission shall complete their work in time to submit their findings and recommendations to the Governor and the 1999 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

Appendix H

HOUSE JOINT RESOLUTION NO. 592

Offered January 20, 1997

Requesting the Virginia Water Resources Research Center at Virginia Polytechnic Institute and State University to study innovative technologies and other options for providing safe, reliable, and affordable domestic water supplies to individual households and small communities in southwestern Virginia.

Patron—Phillips

Referred to Committee on Conservation and Natural Resources

WHEREAS, a safe, reliable, and affordable supply of drinking water should be available to all Virginians; and

WHEREAS, according to a recent study, Water Supply in the Virginia Coalfield Counties: Status, Technical Options, Assessing Rate Impacts, "water supply is especially important in the southwest Virginia coalfield counties, where surface and groundwater resources are limited, where community water supplies do not serve most rural households, and where private wells and springs have been impacted by resource extraction industries and agriculture"; and

WHEREAS, in 1990 fewer than one-half of the households in the coalfield region were served by public water systems; and

WHEREAS, water is so precious to this region that existing supplies should be preserved by water conservation techniques and source protection, including watershed, well head, and spring management; and

WHEREAS, recent testing data found E. coli contamination and unacceptably high levels of iron, manganese, sodium, sulfates, and chlorides in many of the household wells and springs; and

WHEREAS, treatment cost for individual households to remove such contaminants as iron and sulfur can exceed fifty dollars per month, and even with such treatment the quality of the domestic water is at best marginal; and

WHEREAS, groundwater as a water source is not only a concern from a water quality standpoint, but local groundwater sources are also unreliable because of poor water-bearing aquifers and their susceptibility to drought, and because of land use impacts; and

WHEREAS, the most conventional alternative for providing public water supplies to these unserved households and small communities is extending water lines from existing surface water systems; and

WHEREAS, such extensions can be prohibitively expensive because of distance and terrain; and

WHEREAS, unconventional sources such as coal seam aquifers and mine cavities, along with emerging collection and storage technologies such as rainwater harvesting, represent possible alternatives for meeting the drinking water needs of the small communities in southwestern Virginia; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Virginia Water Resources Research Center at Virginia Polytechnic Institute and State University be requested to. study innovative technologies and other options for providing safe, reliable, and affordable domestic water supplies to individual households and small communities in southwestern Virginia. The study shall consider such innovative technologies as water harvesting and cistern storage, small surface reservoirs, and cost-effective treatment, including the development of small package-system models.

All agencies of the Commonwealth shall provide assistance to the Virginia Water Resources Research Center for this study, upon request.

The Virginia Water Resources Research Center shall complete its work in time to submit its findings and recommendations to the Governor and the 1999 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.