

# Regional Water Supply Planning - The Work of the Capital Region Water Board

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## Abstract

The Capital Region Water Board of South Central Pennsylvania was formed to study and evaluate the water supply situation of the Region. The Board is attempting to address the problem of viability of small systems by searching for regional solutions. It may now expand its scope to do more comprehensive planning for a larger Region in order to represent the Region's interests in facing competition for out-of-basin diversions.

## The Capital Region of Central Pennsylvania

The Capital Region of Central Pennsylvania, shown in Figure 1, comprises an area of approximately 1,500 square miles and includes the City of Harrisburg, all of Cumberland County, portions of Berks, Dauphin, Franklin, Lebanon, Perry, and York Counties. Some of the features of the Region are:

1. Harrisburg is the State Capitol.
2. The Region is a crossroads to both rail and interstate highway systems of the Eastern United States.
3. The Region is a tourist mecca to visitors of the Amish and Pennsylvania Dutch Region to the East, the Gettysburg Battlefield to the West, and the Hershey amusement and entertainment facilities in Dauphin County.

Over half a million people live in the areas served by the Capital Region Water Board. Of these, 70% are served by public water supply systems while almost 30% have private wells. Twelve large systems in the area, each serving over 1,000 customers, provide water to about 85% of the people served by public water supply systems. The remaining residents who have water service are served by 116 small systems ranging from mobile home parks

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to municipal systems; serving hundreds of homes. These small systems serve approximately 60,000 people.

### The Work of the Board

In 1984, three retired professional staff members of the State Department of Environmental Protection (2 attorneys and an engineer) came together in their desire to enhance the quality of life in Central Pennsylvania. They formed an organization called, "The Law and Planning Institute". A number of activities designed to address the problems of the Central Pennsylvania Region were initiated by the Institute. One of these was the formation of the "Capital Region Water Board". The other was the formation of "The Susquehanna Conference". (A citizen's organization designed to do education and to improve the quality of life in Central Pennsylvania.) During the summer of 1989, the Law and Planning Institute convened a meeting of representatives of water suppliers in the Capital Region, state agencies, and The Susquehanna River Basin Commission in order to discuss the desirability of conducting a water supply study of the Region. There was enthusiastic consensus at the first meeting to form an organization for that purpose.

### Goals of the Board

At the third meeting in September 1989, the following study goals and objectives were suggested and adopted.

1. To provide the Region with a safe and reliable supply of water at reasonable prices.
2. To meet federal, state, and local standards of drinking water quality and quantity, now and in the foreseeable future, with minimal adverse effect upon receiving water quality.
3. To address the management and resource needs of public water suppliers in the Region.
4. To study a broad range of alternative forms of regional cooperation.
5. To facilitate cooperation by public water suppliers in the region to meet the stated goals and objectives.

There was consensus on the need for a regional water supply study and work on the development of a

study outline and the request for proposal began. On March 20, 1990, the Board held a public meeting where it explained its purposes and the outline of the proposed study. As a result of that meeting, the Corps of Engineers suggested to the Board that federal financing for such a study would be available under Section 22 of *The Federal Water Resources Planning Act*. During the spring of 1990, negotiations were concluded for a contract with The Susquehanna River Basin Commission that would provide the fiscal and administrative home for the study contract. By the end of 1990, a Corps of Engineers' work plan and budget for the study had been approved, and the study was conducted during 1991 and early 1992.

The cost of the Board's operations was borne by the large water suppliers and the Baltimore Office of the Corps of Engineers who contributed to the Board's operating expenses throughout its history. These costs consisted largely of conducting Board and public meetings relating to the work of the Board and to maintaining the records and financial affairs of the Board.

### The Regional Study

The work of the Board has consistently followed the objectives set during its early meetings in 1989. The *Harrisburg Metropolitan Area Regional Water Supply Study* was concluded in November 1992. The Study found that the Region had abundant water and should be able to meet the needs of the future using local sources. Approximately 60% of the people living in the study area received their water from the 12 large systems serving the Region. The Study found that the water managers of these major systems had anticipated growth and had made plans to expand their systems to meet the growing demand within their service area. However, approximately 10% of the study area residents received their water from 116 small water supply systems. The Environmental Protection Agency (EPA) drinking water regulations may require some of the systems in the area to increase water quality testing and to filter those ground water sources which are found to be under direct influence (UDI) from surface water sources. Because more than 90% of the water used by small systems is ground water, small systems are likely to be impacted by the requirements to filter UDI ground water sources. The Study found that meeting these drinking water regulations is expected to be an expensive endeavor for small systems and their customers. Therefore, it was important to see how many of these small systems might benefit by some form of regionalization,

either with each other or larger systems. It is well known that scale economics makes the per capita or per family costs of small systems significantly greater than similar costs in larger systems. Regionalization will therefore reduce per family costs. In order to analyze the feasibility of regionalization, three categories were established for small systems.

1. Fringe Systems. These are systems, which are located within one mile of the outer boundaries of the twelve large systems. Therefore, they have the opportunity to connect to a large system. There were 39 fringe systems.

In addition, there existed 22 interconnections between systems in the Region. Eleven of these provide all the needed water to the other systems. The others provide occasional or emergency service.

2. Another approach to regionalization is grouping or "clustering" of systems into one new large system with a centrally located water treatment plant. In the Regional Study Area, the possibility exists for 49 small systems to form up to 8 new clusters, ranging in size from an average usage of 24,500 gallons per day (GPD) to 504,000 GPD.

### Sub-Regional Studies

The Study recommendation that more detailed assessments of small systems be conducted in parts of the Region in order to advance the cause of regionalization. As a result of that recommendation, 4 additional studies have so far been conducted by the Baltimore Office of the Corps of Engineers in cooperation with the Capital Region Water Board and its members. The local share of the studies was provided by the Pennsylvania Department of Environmental Resources (Later to become Protection.) These studies were done in the following sequence:

1. The *Small Systems Regionalization Study For Lebanon County* that was concluded in April 1995.
2. The *Shippensburg Area Regionalization Study For Cumberland County* that was concluded in February 1997.
3. The *Small System Regionalization Study for Cumberland County, Pennsylvania*, which is expected to

be concluded in spring 1998.

4. The *Market Feasibility Study Lebanon County, Pennsylvania*, which is expected to be concluded in 1998.

The first three Studies provided detailed information concerning each of the small systems, including administrative and basic information about capacity, distribution systems, treatment systems, storage systems, projected usage, and information on water sources. The Studies provided specific cost estimates for alternative improvements of each system and detailed discussion concerning alternatives available to each system. These Studies provide an excellent database for anyone; the state, private water companies, counties, or others to plan regionalization efforts, which might greatly reduce the future per capita cost of water service and greatly enhance the quality of service provided by these small systems.

The *Small Systems Regionalization Study For Lebanon County* is being followed by the *Market Feasibility Study Lebanon County, Pennsylvania* that is expected to be completed in 1998. This Study looks at system alternatives in more detail, discusses financial and institution alternatives, and recommends regional institutional alternatives. The first recommendation of this Study is to create a countywide institution to address particular problems of small systems. The system would also provide for well-head protection and comprehensive water supply planning since it does not now exist in Lebanon County.

### The Problem of Small Systems in the United States

#### Fragmentation of Local Government

The problem of small systems is not unique to Pennsylvania. Pennsylvania has many small systems because of the high degree of fragmentation of local government. Pennsylvania has 6,700 municipalities. It is estimated that the Capital Region Water Board Region includes more than 100 municipalities. A recent report entitled *Community Water Systems Survey*<sup>2</sup> conducted by the United States Environmental Protection Agency indicated that there are 180,000 water systems in the United States serving more than 250 million people.

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<sup>2</sup>United States Environmental Protection Agency, *Community Water Systems Survey*, (Washington, DC: 1997).

According to this survey, most of the community water systems are considered "small" systems serving 3,300 or more people. Large systems serve 50,000 people or more. In the United States, 2% of the systems are large, 13% are medium, and 85% are small systems. The Report indicated that during the past decades, water rates have increased faster than the Consumer Price Index. EPA found that many water systems have costs that exceed revenues. Forty percent of the small systems serving less than 500 people reported a deficit. It is the author's opinion that the rising costs for drinking water in the United States is creating a growing gap in the ability of a large number of systems to meet modern drinking water standards.

The work of the Capital Region Water Board has helped to provide detailed information concerning that situation in Central Pennsylvania and is designed to promote increased regionalization, which will help maintain water service costs at a reasonable level. Certain other activities in state government have also been stimulated by the work of the Board and the recognition of the problems.

#### Viability

The Pennsylvania Public Utility Commission has been very active in working with the Department of Environmental Protection on the viability issue. A movement is under foot to prevent the creation of non-viable small systems. Criteria for viability are being developed and applied to discourage the formation of small non-viable systems.

## Violations of Law

A recent report<sup>3</sup> by the Small Systems Research Committee of the American Water Works Association highlights these problems. It indicates that 90% of the violation of maximum contaminate levels monitoring and reporting requirements occur in small systems. The Committee concludes that available research funds be allocated in the following priorities:

1. Funding, financing, and costs.
2. Adequate qualified staffing.
3. System viability.

## The Link to Land Use

It is this author's opinion that the prevalence of small systems should also be considered a land use management issue and needs to be addressed in that context. Land use decisions that encourage sprawl and the creation of small systems impose a hidden cost on present and future population that are rarely discussed in the public policy context. If these problems are addressed with the kind of data that the Board has collected, the Region should be able to make better water management decisions in the future.

## The Future of the Board

The Capital Region is located in the Lower Susquehanna River Basin, which is one of the least developed basins in the Commonwealth of Pennsylvania. The Susquehanna River Basin Commission has recently proposed a new set of policies for the diversion of water out of the basin. It has given the Capital Region Water Board an opportunity to consult with the Susquehanna Assembly for Effective Governance. (An eight county organization of elected officials and community leaders who are beginning to look at the problems the South Central Pennsylvania Region.) The policy, now written, requires an extensive amount of Regional land use and water supply planning before the Commission will seriously consider an out-of-basin diversion. This means that both the area of origin and

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<sup>3</sup>Small Systems Research Committee, "Research Needs for Small Water Systems: A Survey," *Journal American Water Works Association Jan. 1997: 101-113.*

the area where the out-of-basin diversion will be destined will be required to provide an extensive planning document for future needs. This suggests the possibility that the geographic area and the scope of the water studies being conducted in Central Pennsylvania should be greatly broadened to cover other areas; such as waste water management, flood control, energy production, irrigation, recreational uses and others for the entire Eight County Region. One of the issues which now confronts the Board and the Region is whether its work should be expanded both geographically and in terms of water use scope. Sound decisions regarding the protection of the quality of life in a region such as South Central Pennsylvania demands sound data in order to discuss options for the future. The work of the Capital Region Water Board and the agencies which have supported it, have provided that kind of data and that kind of framework. Decisions about water and land use go hand in hand and need to be dealt with in a unified way in order to serve the future quality of life in the Region.