A MANAGEMENT STUDY for WATER AND SEWER UTILITIES in the BLUEGRASS ADD

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A management study for water and sewer utilities in the Bluegrass ADD

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Prepared For

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ABSTRACT:	This report is a management study of water and sewer utilities in the Bluegrass Area Development District. The report identifies management practices and problems relating to administration and financing, and legislation of water and sewer utilities. Recommendations for providing better, more economical water and sewer services and for solving management problems are given to enable Area Development Districts and state and local agencies to work toward the improvement of rural water and sewer utilities.

PREFACE

The work reported herein was performed over the period of September 15, 1972 to January 31, 1973 under the supervision of Dr. Lawrence K. Lynch, Manager, Environmental Systems Division. Mr. Andrew J. Winfrey served as project manager and principal author of the report. Mr. Chuck Burton prepared Chapter III with the exception of the section on water and sewer rates. Mr. Glendon Ross, Mr. Jack Martin, and Ms. Anna Martin provided information for parts of the reports. Mrs. Ann Ellers assisted in preparing the review draft.

Grateful appreciation is extended to the following agencies whose cooperation made possible this report:

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I. INTRODUCTION

Private and municipal sewage treatment utilities were provided for certain municipalities in Kentucky even before the turn of the century. The number of municipal water and sewage treatment utilities continued to increase at a rapid rate until the 1940's. Since about 1950, rural areas adjacent to major cities in Kentucky have been undergoing heavy subdivision activity and development. The refusal or inability of cities to extend municipal water and sewer lines into suburban and rural areas and the inability of new suburbs to finance utilities caused the emergence of special districts such as water districts. Also in the 1950's, so-called package sewage treatment plants were developed to serve subdivisions, institutions, shopping centers, highway service areas, recreation facilities and other activities not served by city sewer systems.

Now there are 168 water districts and an uncounted number of package treatment plants in Kentucky that serve primarily nonmunicipal areas, and there is no effective limit on the number of water and sewer utilities that may be established in a given area. Since the water and sewer utilities were created by public interest groups or by subdivision developers and usually are operated independently of county and state control, coordination of utilities within a county is practically impossible. The recent merger of Lexington and Fayette County will require a master sewer plan and the discontinuance of package sewage treatment plants wherever feasible. The Public Service Commission regulates privately-owned water utilities and water districts; municipal water and sewer utilities are not regulated. Therefore, in any one county or area there may be an unlimited number of water and sewer districts, private water and sewer utilities, and municipal water and sewer utilities. Each of these three types of water and sewer utilities may be autonomous from either state, county, or city control. This autonomy of sewer and water utilities creates an uncoordinated effort in providing services, a wide variety of costs, and a lack of adequate water quality control.

The municipalities do have governmental control and their efforts are coordinated with fire protection and other city activities. Large private utilities have proven their ability in the past to provide above-average water services at low cost. Water districts and package sewage treatment plants serve a small area with a limited number of customers--usually resulting in high cost and poor quality of service.

The Public Service Commission states that numerous water districts have failed in Kentucky primarily because ". . . problems are traceable to inadequacy of design or construction in the original systems and the lack of provision for funds in the company's fiscal budget to continually meet the standards set out by the Public Service Commission."* Whatever the reasons, a major problem exists with respect to (1) the number of water and sewer districts which should be allowed to serve each county or area and (2) the governmental control which should be effected to coordinate the various types of water and sewer utilities. In order to assure coordination, both now and in the future, so that these public utilities will operate in a manner to benefit the public and the economy of Kentucky, some type of comprehensive management plan should be implemented.

*Nineteenth Biennial Report of the Public Service Commission of Kentucky, October 1971.

OBJECTIVES

The objectives of this management study of water and sewer utilities are (1) to identify management problems relating to administration, financing, and legislation; and (2) to recommend mechanisms for coordinating state and local regulatory agency and utility management activities to provide better, more economical water and sewer services.

METHOD OF APPROACH

State and local regulatory agencies, and utility representatives were interviewed to identify problems, to collect data, and to obtain their recommendations for better coordination of management programs. (Only utilities in the Bluegrass Area Development District were sampled.) Six state agencies; ten water utilities (including private firms, municipal water utilities, and water districts); and five sewer utilities (including both private and municipal utilities) were among the agencies interviewed. In addition, regional agencies already in operation in Kentucky were interviewed.

The information obtained included legal, financial, and management data which were then evaluated and sorted in order to determine workable recommendations. This report describes the number and types of water and sewer utilities in the Bluegrass Area Development District (ADD); identifies representative management, financing, and legal problems; and recommends actions to alleviate these problems.

This report is limited with respect to evaluating specific utilities since only 15 representatives of approximately 100 utilities in the Bluegrass ADD were interviewed. Nevertheless, representative management problems clearly emerged. A more extensive study would be required to develop comprehensive technical and statistical data.

WATER UTILITIES IN THE BLUEGRASS ADD

Private and municipal water utilities have provided water to the Bluegrass area since the late 1800's. Municipal water utilities continued to increase at a rapid rate until about 1950. Since that time, rural areas adjacent to major cities in Kentucky have been undergoing heavy subdivision activity and development. In most cases city administrators declined or considered it too expensive to extend municipal water and sewer lines into suburbs outside city limits. This, and the inability of new suburbs to finance a complete set of utilities caused the emergence of special districts such as water districts.

A good example of the history of the full growth of a water utility in the Bluegrass area is Fayette County. The Lexington Hydraulic and Manufacturing Company was incorporated in the State of Kentucky in 1882. The original source of water supply was obtained from a reservoir which was completed in 1884. The first water districts adjacent to the Lexington metropolitan area were created in the 1950's, and as recently as 1965 there were nine water districts in Fayette County. Most of these water districts could not provide a high quality of service at a cost comparable to the Lexington Water Company. Today, the Lexington Water Company has purchased all but two of the water districts in Fayette County. This is a good example of how a utility can expand and provide high-quality, low-cost service where it is economically feasible regardless of city boundaries.

The 17 counties in the Bluegrass area are served by three basic types of water utilities: (1) water districts and associations, (2) municipal water utilities, and (3) private water utilities.

Water Districts and Water Associations

Figure 1 illustrates the 29 water districts which are presently serving the Bluegrass ADD and the date each was formed. Water associations are created through the Secretary of State as not-for-profit corporations. However, water districts and associations are considered synonymous according to the Public Service Commission and KRS Chapter 74. Therefore, this text will use the term "water district" for both water districts and water associations. Twenty-eight of these water districts purchase their water from a nearby municipality. Only the West Scott County Water District has its own water treatment plant.

These water districts serve primarily suburban areas, small rural towns, and their adjacent areas. The number of customers served by each water district is shown in Table 1.

Municipal Water Utilities

There are 25 municipal water utilities in the Bluegrass area, as listed in Table 2. The only municipalities served by private companies are the cities of Lexington, Berea, and Wilmore. Most of these municipal water utilities provide a main line to the city limits to serve adjacent water districts. In general, the municipal water systems offer average to above-average service at a reasonable price.

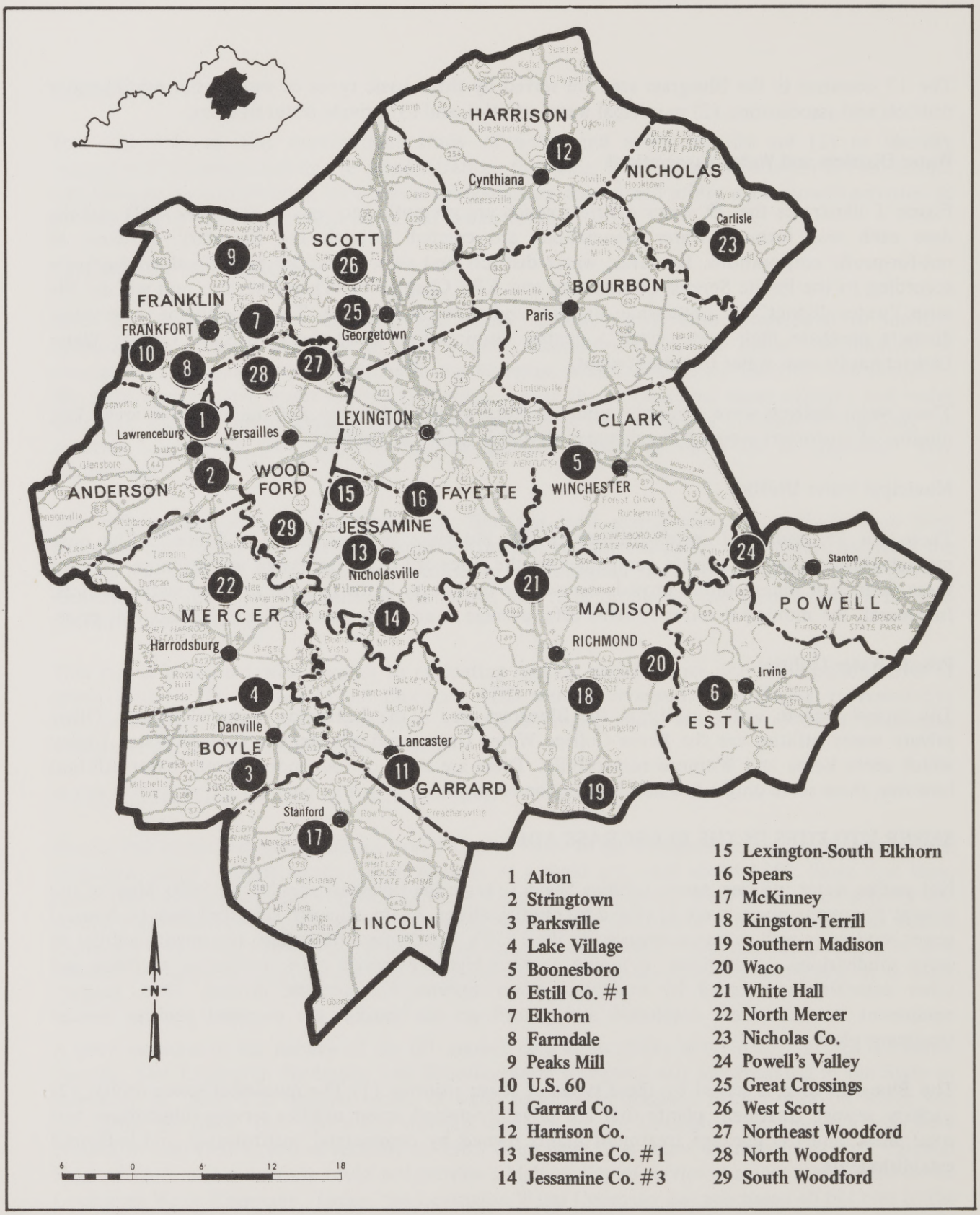
Private Water Utilities

The largest private water utility in the Bluegrass area is the Lexington Water Company. Other private water utilities are the Berea College Water Utility and the Asbury College Water Utility which serve Berea and Wilmore respectfully. There are three or four more private water utilities; however, these serve only a few hundred customers each.

SEWER UTILITIES IN THE BLUEGRASS ADD

Not unlike water utilities, sewer utilities began to serve the Bluegrass area before 1900. Most of the sewage treatment plants were operated by municipalities. Again, adjacent suburbs began to demand sewer services as well as water services. By the 1950's, the demand for sewage treatment facilities to serve subdivisions, institutions, shopping centers, highway service areas, recreation facilities and other activities not served by municipal sewer systems had become intense. Thus, sanitary equipment manufacturers developed and placed on the market the so-called package sewage treatment plants.

The Bluegrass area is served by three types of sewer utilities. (1) The municipal sewer utility; (2) package sewage treatment plants that are privately-owned sewer utilities serving subdivisions and rural areas; and (3) package treatment plants owned by commercial, institutional, and industrial establishments.



Source: Spindletop Research, Inc.

Figure 1. Water Districts and Associations in the Bluegrass ADD

Municipal Sewer Utilities

There are 21 municipal sewer utilities, listed in Table 3. Unlike municipal water utilities which sell water to water districts, municipal sewer utilities usually do not provide tap-on services for adjacent suburbs and other nonmunicipal areas. Industrial and residential developments in nonmunicipal areas are usually served by package sewage treatment plants, or by septic tanks.

Package Treatment Plants

There is not an accurate count of the number of package treatment plants serving industries, commercial establishments and suburbs in the Bluegrass area. However, the State Water Pollution Control Commission does require the dischargers of waste into bodies of water in Kentucky to obtain waste discharge permits. Still, there are a number of package treatment plants and dischargers of waste that are either not familiar with the law requiring permit or have neglected to apply for a permit. Table 4 lists the permitted sources classified as package treatment plants. Approximately 60 percent of the package sewage treatment plants which are permitted in the Bluegrass area serve or are designed to serve a population of 100 or less.

Table 1
Water Districts in the Bluegrass ADD

Water Districts	Number of Customers	Date Initiated
Alton	235	1964
Stringtown	133	1951
Parksville	478	1966
Lake Village	500	1971
Boonesboro	380	1970
Estill County	380	1964
Elkhorn	151	1970
Farmdale	300	1968
Peaks Mill	191	1970
U.S. 60	321	1965
Garrard County	315	1971
Harrison County	192	1969
Jessamine County #1	140	1967
Jessamine County #3	110	--
Lexington-South Elkhorn	--	1972
Spears	506	1966
McKinney	--	1966
Kingston-Terrill	424	--
Southern Madison	630	1970
Waco	885	1965
North Mercer	414	--
Nicholas County	165	1968
Powell's Valley	210	1971
Great Crossings	190	1971
West Scott	778	1965
Northeast Woodford	167	1969
North Woodford	261	1963
South Woodford	207	1969

Source: Spindletop Research, Inc.

Table 2
Municipal Water Treatment Plants in the Bluegrass ADD

County	City	Water Treatment Plant Capacity (mgd)
Anderson	Lawrenceburg	1.0
Bourbon	Millersburg	0.08
	North Middletown	0.14
	Paris	3.0
Boyle	Danville	3.5
	Perryville	1.0
Clark	Winchester	2.2
Estill	Irvine	1.0
Fayette	Lexington*	24.0
Franklin	Frankfort	6.0
Garrard	Lancaster	1.0
Harrison	Cynthiana	1.5
Jessamine	Nicholasville	0.72
	Wilmore	0.43
Lincoln	Stanford	0.5
Madison	Richmond	2.04
Mercer	Harrodsburg	1.5
Nicholas	Carlisle	0.73
Powell	Clay City	0.37
	Stanton	0.36
Scott	Georgetown	1.2
	Stamping Ground	0.29
	West Scott County	0.14
Woodford	Midway	0.42
	Versailles	2.0

Source: Spindletop Research, Inc.

Table 3
Municipal Sewer Utilities in the Bluegrass ADD

County	City	Water Treatment Plant Capacity (mgd)
Anderson	Lawrenceburg	0.5
Bourbon	North Middletown	0.06
	Paris	1.6
Boyle	Danville	2.2
	Perryville	0.1
Clark	Winchester	2.0
Estill	Irvine	0.6
Fayette	Lexington	12.8 & 8.8
Franklin	Frankfort	4.0
Garrard	Lancaster	0.35
Harrison	Cynthiana	0.9
Jessamine	Nicholasville	0.75
Lincoln	Stanford	0.4
Madison	Richmond	1.32 & 0.77
Mercer	Harrodsburg	0.65
Nicholas	Carlisle	0.2
Powell	Clay City	0.2
	Stanton	0.17
Scott	Georgetown	1.25
Woodford	Midway	0.12
	Versailles	0.53

Source: Spindletop Research, Inc.

Table 4
Package Treatment Plants in the Bluegrass ADD

Highway rest areas and state parks	16
Mobile home parks	28
Schools, hospitals	38
Municipalities	27
Suburban areas	13
Shopping centers	1
Industrial establishments	68
Commercial establishments	63
Individuals	7
TOTAL	259

Source: Spindletop Research, Inc.

II. MANAGEMENT PRACTICES OF WATER AND SEWER UTILITIES

Representatives of ten water utilities and five sewer utilities were interviewed to identify management problems and practices of water and sewer utilities in the Bluegrass ADD.

The water and sewer utility representatives interviewed included managers and operators of private firms, municipal utilities, water districts, and package sewage treatment plants. The management survey and interviews were based on the following discussion topics:

- Organization
- Legal authority and limitations
- Administrative procedures
- Personnel
- Financing
- Accounting
- Planning
- Consultants
- Information requirements
- Education and training
- Public relations
- Rates
- Economies of scale
- Facilities, equipment, and materials
- Maintenance and operation
- Water Resources

This chapter summarizes the management problems that were presented by State and utility representatives, and those problems that were indicated in annual reports to the Public Service Commission.

WATER UTILITIES

It is as essential to have good management of a water utility in a small community as it is in a large city with many departments and specialized personnel. Large or small, however, good service has three principal requisites. First, that the water supply is safe, aesthetically pleasing, and preferably soft; second, that there is adequate pressure and supply for fire fighting needs; and third, that the cost of service is reasonable.

The consumer gives little attention to the details of the water system until an emergency arises depriving him of water. Then he holds the management directly responsible for any deficiencies that exist.

There is an essential difference between the management problems of large and small utilities. In a system supplying a large city, the utility director has under his immediate supervision several department heads responsible to him for operation, maintenance, and construction. His duties are mainly those of directing and supervising the proper functioning of these department heads. In a small water utility, the director must assume much more responsibility for the details of both administration and operation. He must plan and to a large extent supervise the construction and installation of all important distribution system improvements as well as control plant operation.

Organization

There are numerous organizations administering water utilities in the Bluegrass region; the basic types of organizations are as follows:

1) Water district authorities having jurisdiction over regional districts embracing self-supporting utilities.

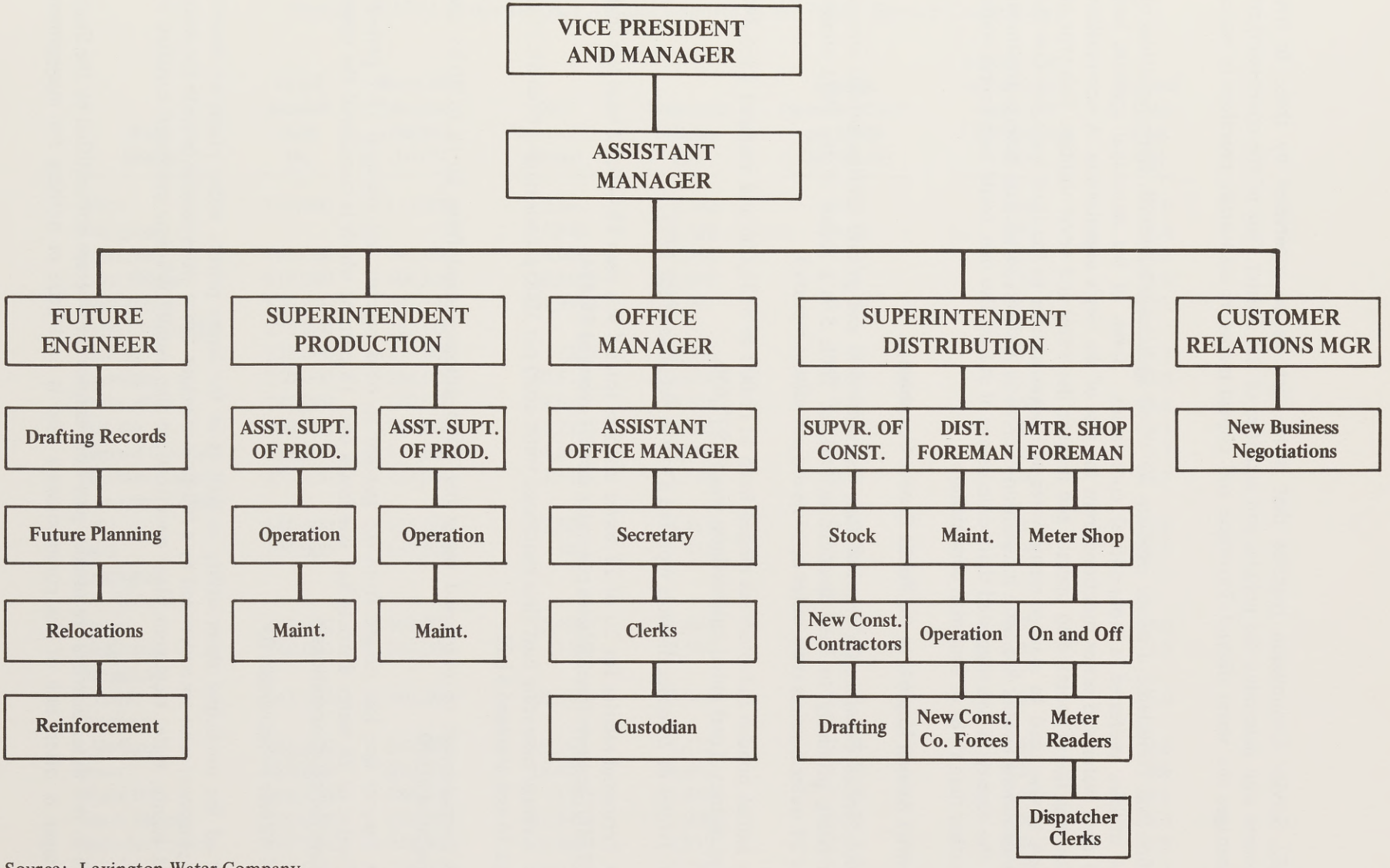
2) Independent boards or commissions within a municipality created to administer water utilities independent of the central municipal government.

3) Administration under a single individual such as an appointive city manager, an elective commissioner, or the mayor.

4) A committee of the city council appointed for water utilities.

The municipal organization is usually one controlled in some way by the mayor of the city. The management of water utilities is usually carried out by the public works department for a larger city, and handled by an individual or a city manager or appointee for a smaller city. The advantage of the municipal utility is that the water utility is coordinated with other city functions such as fire protection.

The Lexington Water Company is the largest private water utility in the Bluegrass area. (There are three or four other private utilities; however, their size is comparable to that of water districts.) The private firm has various forms of organization, but in any form, the organization is designed to deal directly with water services and the functions necessary to carry out good water services. Figure 2 depicts the organization of the Lexington Water Company.



Source: Lexington Water Company

Figure 2. Organizational Chart–Lexington Water Company

The Public Service Commission requires that water districts be supervised by three to five commissioners who determine the policies and activities of the district. One of the commissioners usually manages the water district. Part-time and unpaid managers are usually prevalent in water districts.

Organization was considered a minor problem by those agencies interviewed. Representatives of municipal utilities preferred a nonpolitical commission. Some of the municipal agencies had separated their water and sewer functions from the rest of the city's organization. A non-partisan commission was then appointed to operate and manage the water and sewer utilities. This type of commission is also used to manage many water and sewer utilities in the rural areas, because the county government usually has little jurisdiction over water districts or package sewage treatment plants in the county. It was suggested that commissions of at least five men could better serve water districts rather than three or four man commissions.

Water District Annual Reports to the Public Service Commission

The Public Service Commission requires that water districts and private utilities submit annual reports relating primarily to their financial operations. Table 5 is a review of the 1971 annual reports of 27 water districts (two water districts did not submit reports.)

- Initial bonded indebtedness ranged from $119,000 to $881,000 and averaged $356,340 per district. Total initial indebtedness was $9,977,650.

- Twelve of 26 water districts reported a loss in net income for 1971.

- Personnel salaries for 20 of 27 water districts totaled less than $5,000; 12 were less than $3,000; and personnel salaries per water district averaged $4,854.

- Average operating cost (less purchased water cost) per 1000 gallons ranged from $0.31 to $2.76 and averaged $1.21.

- Average cost of purchased water per 1000 gallons ranged from $0.16 to $0.95 and averaged $0.40.

- Percent line loss ranged from 0.6 percent to 68.8 percent and averaged 18.7 percent. Twelve of 26 water districts had line losses over 15 percent which is considered the upper limit for good operations.

Personnel (Refer to Appendix B)

The staff of the municipal water utility as well as in the larger private water plants are usually full-time personnel who are supervised by a full-time manager. Since cities usually operate the water treatment plants, water treatment plant operators are also usually full-time personnel certified by the State.

Personnel in the water districts are usually part-time employees who are not certified by the State. The manager is often one of the commissioners who is paid little or nothing for management

Table 5
Review of 1971 Water District Annual Reports to the Public Service Commission

Water District	Initial Bonded Debt ($)	Remaining Bonded Debt($) 1-1-72	Net Income($) -(Loss)	Personnel Salaries ($)	Average Operating Cost* per 1,000 Gallons ($)	Average Cost of Purchased Water per 1,000 Gallons ($)	Percent Line Loss (%)
Alton	119,000	111,000	2,447	3,500	0.61	0.40	5.0
Stringtown	--	0	1,858	1,140	0.58	0.41	6.8
Parksville	360,000	347,000	4,000	1,714	1.40	0.38	21.9
Lake Village	610,000	606,650	(19,968)	8,698	1.61	0.55	53.0
Boonesboro	520,000	497,540	(11,391)	4,567	N.G.	N.G.	N.G.
Estill County #1	270,000	262,000	--	--	--	--	--
Elkhorn	138,000	137,000	(37)	2,600	1.63	0.19	15.7
Farmdale	250,000	244,000	10,514	6,914	0.69	0.17	17.8
Peaks Mill	182,000	180,000	9,615	3,375	0.34	0.48	68.8
U.S. 60	360,000	348,000	(3,212)	2,085	1.37	0.16	9.1
Garrard County	518,000	515,880	14,662	2,968	0.75	0.27	5.7
Harrison County	235,350	235,350	3,110	1,189	0.74	0.40	24.3
Jessamine County							
#1	140,000	135,000	12,804	4,454	0.31	0.31	12.8
#3	172,000	167,000	784	811	1.65	0.32	22.1
Lexington-S. Elkhorn	--	--	--	--	--	--	--
Spears	467,000	462,000	(5,408)	11,501	1.72	0.39	29.0
McKinney	168,000	168,000	(158)	2,580	1.67	0.36	3.3
Kingston-Terrill	445,000	440,000	(8,360)	8,946	1.15	0.59	16.0
Southern Madison	881,000	881,000	10,267	6,422	2.09	0.43	7.8
Waco	685,000	630,000	15,437	18,092	1.72	0.36	0.6
White Hall	290,550	288,000	(151)	1,444	2.23	0.40	3.0
North Mercer	221,000	204,000	(1,544)	3,900	0.85	0.46	26.4
Nicholas County	249,000	243,000	(8,463)	3,919	2.76	0.44	1.9
Powell's Valley	278,000	278,000	(6,316)	2,200	2.12	0.95	5.7
Great Crossings	750,700	750,700	N.G.	2,397	0.53	0.67	44.5

Table 5 (Cont'd)

Water District	Initial Bonded Debt ($)	Remaining Bonded Debt($) 1-1-72	Net Income($) -(Loss)	Personnel Salaries ($)	Average Operating Cost* per 1,000 Gallons ($)	Average Cost of Purchased Water per 1,000 Gallons ($)	Percent Line Loss (%)
West Scott	710,000	690,000	(3,890)	14,944	0.79	0.41	15.0
Northeast Woodford	176,000	174,000	6,538	4,590	0.78	0.40	14.8
North Woodford	377,000	352,000	5,678	3,294	0.96	0.18	12.6
South Woodford	208,000	205,000	8,424	2,821	0.51	0.51	43.3

*Less purchased water cost.

Source: Public Service Commission Annual Reports of Water Districts and Spindletop Research, Inc.

responsibilities. The maintenance and operation crew that reads the meters and maintains the lines, and the staff for keeping the books and billing the customers are also usually part-time personnel. In counties in which two, three, or four water districts exist, duplication of services is common. For example, in a county which has four water districts, four clerks are needed for mailing bills. Four part-time meter readers are required to read the meters once a month. Four sets of maintenance and operation personnel are on call to maintain the lines. There are also four part-time managers for the four water districts. Therefore, employee records and bookkeeping are handled by four part-time bookkeepers.

Personnel problems were mentioned by both municipality and water district representatives. The larger municipalities and private companies had problems of personnel safety as an area of concern. Water districts and some municipalities did not have enough personnel on the payroll to adequately maintain and operate the water distribution system. New personnel working on the distribution systems had problems locating lines and meters because maps or updated maps which located new lines and meters were not available. Only the older experienced personnel knew the location of the lines and meters. This presented a problem in training new personnel to adequately carry out maintenance and operation of distribution systems.

Schools for maintenance and operation personnel were considered not practical because the educational backgrounds of many of the maintenance and operation personnel limited their understanding of the subjects taught. Very little subject matter concerning water distribution systems was taught anyway.

A common problem of water districts, because of their small size, is that the manager of the water district is paid very little or is not paid at all. Even though he may not be paid, he is expected to apply for federal grants, to maintain an accounting system, and to supervise personnel in the construction and maintenance and operation of distribution lines, to take new orders for water hook-ups, and to submit annual reports to the Public Service Commission concerning financing and bonding.

In a few municipalities and most water districts, one man does all the work and no other personnel are used. His tasks include accounting, minor construction, maintenance and operation of distribution lines, hook-ups of new customers, meter readings, and all other tasks of the water district. Even though this eliminates the use of a number of part-time personnel, the effective continuance of the water utility is usually hampered if the man dies or takes another job and leaves his successor inadequate records and procedures.

Another personnel problem which was obvious in conducting the interviews was that managers for operation and maintenance personnel were difficult to contact for the interviews. This was due to the facts that the water district was only a part-time job and other jobs occupied most of their time, and that office facilities and telephones were not provided under the name of the water district.

Facilities

Water districts usually do not have office facilities. In the Bluegrass area most of the administrative functions were performed in the manager's home. (Of the water districts surveyed, the West Scott County Water District did have a mobile home purchased by the manager in order to handle customer calls concerning water service.) The lack of office facilities for water districts causes

problems with public relations and maintenance and operation because it is difficult for a customer to contact his local water district manager. For example, since the manager is only part-time and may work outside the water district and be away from his home phone most of the day, the customer will have difficulty in reporting service complaints or line breakages. The private water firms and municipal water utilities on the other hand have offices and telephones to receive service complaints, to initiate new services, and to take emergency calls concerning line breakages or other water quality problems.

Design

The engineering design of a municipal water system, private water utility, or a water district should be for a long-term period. This function must be entrusted to a registered professional engineer who must prepare complete drawings and specifications in order to obtain accurate cost estimates. Plans should be developed in accordance with sound engineering principles and the latest accepted good practice.

The larger water utilities are usually well designed. However, small water districts which have limited capital funds and the funding agency usually request that the engineer keep the design cost at a minimum. Because of this and because water districts are usually in rural areas, the consulting engineer may take less time to design the water distribution system than is actually required. The minimizing of cost to satisfy the immediate needs of a water district often results in an under-designed system which will be inadequate as new water hook-ups are added each year. The pipes which are used in design are usually the smallest and the cheapest and the water district itself usually takes on the same character.

Consulting engineers were sometimes held responsible for faulty design of the water distribution system or water treatment plants. In a number of cases, the consulting engineer was blamed for not assigning inspectors while construction was underway, or while the plant was in operation.

Construction

The construction of the water district should always be based on a registered professional engineer's design and his requirements for size and type of pipelines and meters and their placement and support should be followed in construction. Again, since many of the water districts are in rural areas and are operating on minimal budgets, the construction company may not perform the job as well as it could near its home base and using better materials that could be afforded with a higher budget. The Public Service Commission states that numerous water districts have failed in Kentucky primarily because ". . . problems are traceable to inadequacy of design or construction in the original systems and the lack of provision for funds in the company's fiscal budget to continually meet the standards set out by the Public Service Commission."*

Construction problems were evident both in the cities and water districts. Contractors which were hired to perform initial construction of water lines or to expand existing water systems were often criticized for incomplete work or work which resulted in line breakage. In some cases legal actions were taken against contractors because their work was said to be inadequate. On the other hand,

*Nineteenth Biennial Report of the Public Service Commission of Kentucky, October 1971.

water district systems are often designed and constructed at a minimal cost and often the pipe lines installed are too small or made of substandard material. Breakage of water lines was often caused by the use of substandard plastic pipe, or pipelines installed with little or no cushion. This lack of cushion or support caused the pipelines to break under their own weight plus the weight of the water and the overburden shortly after construction had been completed.

Water Resources

There was a definite lack of knowledge concerning the water resources which were available to municipalities or water districts for the present and the future. This was a major problem with the municipalities, and some of the municipalities agreed that a determination of water resources should be performed.

Only one water district treated its own water and had direct control of its water resources. This water district had a water shortage during the past summer. There are also a few municipalities that could experience water shortages during severe drought periods.*

Accounting

Of 13 agencies which perform billing for either water or sewer services, eight agencies perform their billing by hand, two had their own computers, two contracted for computer services, and one agency performed its accounting on a billing machine. Accounting relating to billing based upon meter readings for each individual consumer was being done fairly well. However, accounting for expenditures and relating to the actual cost of operating the system was usually not performed as well. For example, some of the part-time managers would often drive their cars to check meters and to perform other water district work without including the automobile costs in the water district expenditures.

Personnel used for accounting operations that were performed by hand were often related to the manager of the water district. For example, either the wife or daughter or another relative was often hired to perform billing services by hand. Hiring relatives in private business may be acceptable, but this is usually not a good personnel policy for public utilities.

Even though computers were used by municipalities or computer services were contracted by municipalities, accountants or clerks complained that it was still necessary to perform much of the work by hand.

Rates

Water districts admitted that their rates were high but they felt the rates had to be high in order to pay off their indebtedness. The larger private company and the municipal rates were substantially lower than the rates charged by water districts. (Refer to Water and Sewer Rates, Chapter III.)

*See the *Kentucky Framework Water Plan,* Kentucky Department of Natural Resources, Division of Water, 1971.

Financing

Financial problems were usually not reported in the interviews even though 1971 annual reports to the Public Service Commission clearly show that 12 of the 26 reporting water districts had deficits. Some of the water districts and municipalities reported that more money should be kept on reserve for emergencies, operation and maintenance, and expansion. One water district indicated that only interest will be paid on its bonds for the next five years.

It was obvious that both municipalities and water districts had initial financing that was not well coordinated with the expected plant life or life of the water distribution system. Financing was not coordinated with future expansion or future monetary needs. New financing was usually not initiated unless emergency conditions forced the city or the water district to do so. Planned repayment schedules were sometimes not maintained because of deficit spending.

Federal Government

The federal government was often mentioned because not enough federal money was available to start a good water district. No federal funds were available for improvements for water districts. Both municipalities and water districts mentioned that there was too much red tape in filling out federal forms and trying to obtain federal money.

State Control

There were recommendations by the water districts and private utilities concerning Public Service Commission control of municipalities as well as water districts and private utilities. The cities, however, did not agree that the Public Service Commission should control them. One mayor stated that if the city system is performing satisfactorily, bond issues are met, and financial deficits are not incurred, then there should be no Public Service Commission control. However, if the city is not meeting these conditions, then the Public Service Commission should be allowed to step in.

Water districts representatives said the Public Service Commission was a great help in initiating their water district. However, most water districts stated that the Public Service Commission seldom communicated with them after the water district was initiated.

One city official said the State had offered to supply a plant operator in case of any plant emergencies. There have been a number of cases of plant operators dying of old age while on the day or night shift at the plant.

A number of the cities desire better state standards relating to water quality. One mayor said the state should have stricter control over water quality for both municipalities and water districts.

City-District Relations

A few cities offered to provide consulting services to the districts during emergencies at no charge. However, materials, equipment, and maintenance would be charged to the district. For the most part the cities did not want to become involved with water districts except to sell them water.

Mergers

Most cities did not desire to expand their systems to suburbs or areas outside municipal boundaries. However, the Lexington Water Company was interested in acquiring water districts or other suburbs outside their boundaries.

It was recommended by both small and large water districts and by the private water companies that water districts should be of sufficient size to pay a full-time manager. A range of 700 to 1000 customers was recommended as the minimum size water district necessary to support a full-time manager and other part-time personnel required to operate an adequate system.

For extension of water services along rural roads, a minimum density of 10 to 12 customers per mile was recommended by one water district. This same water district had 20 customers per mile.

Administrative and Technical Assistance

Assistance from an outside group in the initial stages of development was recommended by representatives of water districts. Assistance and advice relating to financing, filling out federal applications, and contacting and arranging meetings with the various federal agencies which offer financing was also requested. Technical assistance and information relating to suppliers of equipment and materials, reputable consultants and contractors, and management guidelines for water districts were also recommended.

Fire Protection

Fire protection usually was not a significant problem in the municipalities because the water utility was coordinated with fire protection activities by the mayor, city manager, or city council. However, fire protection was a problem in some of the water districts. This was often due to the fact that small-diameter pipe lines were used which did not meet the insurance inspector's approval for fire protection purposes. A number of commercial and industrial establishments served by water districts had their fire insurance rates raised because the insurance inspector did not approve the small pipe line serving the plant.

Public Relations

The major problem mentioned by both municipality and water district representatives relating to public relations was complaints over water bills. Water districts, because of their lack of a full-time employee to hear complaints, take initial hook-up orders, and discuss billing with their customers, were often criticized for not maintaining good public relations. The lack of a facility to call "home" for water districts often contributed to poor public relations. Customers usually complained of poor quality of service and lack of a responsible person to hear and act on service complaints.

When a water district is initiated the public has to become accustomed to a new type of water service and water quality. Some water district customers that have hooked up to new water districts complain because there is a chlorine taste in the water. A responsible person should be in charge at the water districts in order to explain the functions, purposes, and operations of the water district and its services.

Maintenance and Operation

Among the survey respondents, municipal water utilities usually had full-time maintenance and operation crews to locate and repair line breaks and leaks, to check meters, and to maintain and operate the distribution system. The smaller water districts had only part-time personnel (primarily for reading the meters) and maintenance and operation was usually not carried out unless a line broke. This lack of maintenance and operation was evident in water districts through the unaccounted for water loss figures given in annual reports to the Public Service Commission. The failure to employ maintenance and operation personnel qualified to properly operate the water distribution system is a major problem with water districts in the Bluegrass ADD. The managers of the water districts usually state that they cannot afford full-time maintenance and operation personnel, that design and construction costs have to be kept at a minimum, and that the pipes and equipment which are used in construction are the least expensive they can find. The result is a system that is not only difficult to maintain and operate, but is usually not maintained and operated properly.

Some of the municipalities had a water problem of odor and taste during the summer months. In most cases, activated carbon is not utilized to remove odor and taste from water. However, the larger private company in the Bluegrass ADD is performing research in order to utilize carbon for removal of not only odor and taste, but organic matter as well.

Districts and cities seldom have maps which adequately outline the location of lines and meters. This caused problems for new personnel and for construction workers building highways or laying sewer lines or other buried utilities. Water lines were sometimes broken and dug up during the excavation of highways and other construction work.

Another problem common to both municipalities and to water districts was line loss. Line loss was not recorded in some municipalities and was as high as 40 to 60 percent in some of the water districts. A line loss of over 15 percent usually represents a poor distribution operation. Water loss was sometimes attributed to faulty or dead meters. This problem, common to both cities and water districts, occurred because meters were seldom calibrated. The Lexington Water Company stated that water districts which have been purchased by them in the past had to undergo major changes with respect to meters. Additional meters had to be installed, and old meters had to be taken out and calibrated or, in most cases, replaced.

One water treatment plant which was operated by a water district had a number of problems relating to outdated equipment. Operation and maintenance problems relating to equipment also occurred where pipe lines were too small or inadequately installed.

SEWER UTILITIES

Municipal Sewer Utilities

The preferred organization to provide sanitary sewer services in the overwhelming number of cases is the local municipal or county government itself. From a practical standpoint greater efficiencies can be achieved through operations on a larger scale. Municipal revenues can be allocated according to overall needs, professionals can be engaged, and most important, coordination among various

utility services within the governmental structure is possible. Another very important advantage is that full-time maintenance and operation personnel can be employed for continuous operation and maintenance of the plant.

In the Bluegrass ADD, some of the sewage treatment plants have been overloaded due to rapid population growth. For example, State control to limit the number of additional hook-ups onto the Lexington sewage treatment system have been implemented during the past year. Additional hook-ups will not be granted until Lexington expands their present sewage treatment facilities.

Therefore, even though municipal operations may be the preferred organization for sewer utilities, many of the municipal systems have become overloaded and expansion will be necessary in order to hook up newly incorporated areas or nearby subdivisions that are now utilizing septic tanks or package treatment plants. One major setback is the cutback in federal funds for constructing new municipal sewage treatment facilities.

Package Sewage Treatment Plants

Introduction

Package sewage treatment plants are usually factory-made compact units which are transportable and contain all the necessary equipment for sewage treatment. The various elements may be packaged into a single tank or may be bolted together in the field. Package plants are designed to operate with a minimum of supervision and control and can be up to 90 percent efficient. However, in order to achieve such semi-automation, the plant is usually over-designed. Consequently, package plants have a relatively heavy power consumption and they cannot compare in cost and engineering efficiency with municipal treatment plants under continuous control. But this is not their purpose; package plants have been regarded as filling the gap between simple individual septic tanks and the large scale custom-designed municipal treatment plants.

Under ordinary suburban conditions a 50-house development (or even 25 houses if the homes are expensive) is enough to support a sewage collection system and a package treatment plant. Although numerous package treatment plants have operated satisfactorily, the plants are vulnerable to shock loadings or sharp increases in flow volumes.

Package plants have several important planning features. The prime ones are their use as permanent facilities at isolated locations and their temporary use for suburban areas until transmission of collected sewage to a central treatment plant can be provided. For example, areas which were once served by package treatment plants can be hooked up to interceptor sewers which will convey the flow to a new large scale municipal treatment plant. The individual package plant usually can be salvaged for re-use elsewhere. For this to be possible, the initial design of the sewer system should not only serve the package treatment plant but should also be compatible with future hook-ups to large-scale municipal treatment plants.

In summary, package treatment plants should be considered (1) only as a stop-gap measure for areas which will later hook on to a larger sewage treatment system or (2) as a permanent feature of areas which will probably remain isolated for the life of the plant.

Planning Considerations

A search of available literature provided very few answers concerning the population densities which should be served by either package treatment plants or septic tanks. For example, suggestions that public sewers are rarely justified in areas with densities below 2,500 to 5,000 persons per square mile, can be highly misleading in any particular case. The design depends on the substrata conditions and the locally defined levels of desired sanitation. Since subdivision developers usually provide streets and sanitary utilities for nonmunicipal areas, the developer is confronted by several considerations:

1) Local ordinances and regulations may demand the utilization of an existing municipal system which is near to the subdivision.

2) The homeowners may decide to enforce superior environmental standards which can be achieved through a regular collection network and treatment plant.

3) The subsoil conditions may not be suitable for septic tank disposal (high ground-water level or impermeable soil) and therefore only a sanitary sewerage system can cope with the sewage disposal problem.

4) The homebuyers, who have become recently more selective and knowledgeable, may recognize the long-range advantages of a public system. To put it another way, the developer may find it a marketing asset to provide sewage networks that can support his claim of having created a planned community, a label which is currently a strong selling feature.

Financing

If the builder decides or is required to construct a sewer system and a package treatment plant rather than to use septic tanks, a number of new problems arise, creating difficulties in the achievement of this preferred solution. The primary problem is financial: a sewer system requires a large investment in site improvement before any return can be obtained. Borrowing specifically for sewer improvement is not feasible since the developer may not want or may not be allowed by law to operate the system as a self-supporting enterprise after construction. Thus he can offer no security to lending institutions on this improvement alone. The expenses must be absorbed by the entire development, making the financial burden that much heavier for the investor and homeowner.

Organization and Operation of Package Treatment Plants

Package sewage treatment plants serving subdivisions are usually provided by (1) the subdivision owner or builder, (2) the homeowners within the subdivision, (3) consulting engineers or individual owners of the package treatment plant, or (4) larger companies which purchase package treatment plants from subdivisions. In the Bluegrass ADD, usually the builder of the subdivision owns the package treatment plant and the homeowners share the capital or annual costs of the plant. In the older subdivisions, associations made up of the homeowners sometimes purchased their own

package treatment plant to alleviate septic tank problems. In the Bluegrass ADD, very few individuals or larger companies own the package treatment plants which serve subdivisions.

Water and sewer utilities for mobile trailer parks are usually paid for by the owner of the trailer park. The cost of the package sewage treatment plant is then included in the rent of the land and other utilities operated by the owner.

There are numerous package sewage treatment plants for industries and commercial establishments in the Bluegrass ADD. The majority of these plants are owned and operated by the industry or commercial establishment. Sometimes consulting engineers are hired to assist in the maintenance and operation of the package treatment plants.

There are a few package treatment plants which serve state parks and toll booths on the parkways. These plants are primarily operated by the State of Kentucky.

Management Problems Associated with Package Treatment Plants

The key to an acceptable package sewage treatment plant is good operation and maintenance. The majority of the smaller package treatment plants are operated by part-time personnel which spend very little time at the plant. This part-time supervision of the plants may result in unnecessary overloading, equipment breakdowns, and malodors to those in the vicinity of the plant. In addition, the small plants, expensive to operate under the best conditions, become even more expensive to maintain and operate when additional capital and repair costs are incurred. Because of the numerous problems which have been associated with package treatment plants, the trend by county and state government is to approve fewer and fewer package treatment plants each year. The new federal and state stream classifications will not likely be met by many package plants and it will be difficult to modify these package plants to meet the new classifications and standards. Even though there is some state control relating to the discharge of sewage from package treatment plants, and also some local control of the location of package treatment plants, there is still no effective limit to the number of package treatment plants which may be put into operation in any one area. Also because of the large number of package treatment plants in the Bluegrass ADD, it is probably not reasonable to expect adequate state control.

III. LEGISLATIVE AND FINANCIAL ASPECTS OF WATER AND SEWER UTILITIES

INTRODUCTION

With the evolution of both federal and state programs and policies concerning the delivery of water and sewer services, the importance of interfacing federal, state and local enabling legislation and financing vehicles has become paramount to the establishment and operation of water and sewer facilities. Maximum interfacing of available programs and funds is critical to the efficient and practical delivery of water and sewer services in Kentucky.

It is the purpose of this section to present an overview of the legislative and financial aspects of water and sewer utilities in the Commonwealth of Kentucky. The Kentucky Revised Statutes (KRS) should be reviewed by the legal counsel of each political subdivision to determine applicability to that political subdivision.

LOCAL WATER AND SEWER UTILITY FINANCING AND OPERATING VEHICLES

This section of the report discusses, in general terms, the provision of water and sewer services at the local level through special districts, municipalities and through private water companies.

SPECIAL DISTRICTS

There are essentially five special districts* enabled under various statutes to provide water and/or sewer (including treatment) services and facilities in Kentucky. They are:

District	KRS Citation
1. Water District	74.010
2. Sanitation District	220.010
3. Joint Metropolitan Sewer District	76.010
4. Sewer Construction District	76.281
5. Urban Service District	108.010

The powers and duties of these districts are prescribed by statute and their operations are subject to review by the state agency or agencies responsible for the type of service provided. A brief description of each district's powers and duties is presented below.

*For a more detailed discussion of the history and advantages and disadvantages of special districts, see Research Report No. 48, Legislative Research Commission, 1968.

WATER DISTRICT

KRS Citation:	74.010-74.416 (see Appendix A)
Creation:	On petition of 25 freeholders of district. Not less than five resident freeholders shall apply to Kentucky Public Service Commission for approval. District created by county court.
Governing Body:	Board of three to five commissioners, appointed by county judge.
How Financed:	Rates established by the Public Service Commission, and assessments on real estate included within district on classification into five classes according to benefits to be received.
Functions:	Furnish water, gas or sewage services.
Bonds:	May be issued on authority of ordinance passed by commission for constructing or acquiring additions payable in not exceeding 40 years from date of issue. Bonds may be issued for the amount of unpaid assessments.

SANITATION DISTRICT

KRS Citation:	220.010-220.504
Creation:	By petition of 60 percent of those in possession claiming as freeholders within proposed district, approved by county board of health to commissioner of sanitation districts.
Governing Body:	Board of directors, number depending upon the number of governmental units in district, appointed by county judge of each county forming a part of the district.
How Financed:	Board may levy one, two, or three annual taxes of not more than 15 cents per $100 of assessed valuation of property within district for organizational expenses. Board shall determine rates and rentals to be charged for sewer service.
Bonds:	May be issued upon resolution by the board of directors. Maximum interest rate shall not exceed 6½ percent and the term shall not be longer than 40 years. Bonds are payable solely from sewer service revenues of the district.

JOINT METROPOLITAN SEWER DISTRICT

KRS Citation:	76.010-76.230

Creation:	Ordinance passed by legislative body of city of first or second class, approved by mayor and filed with county judge.
Governing Body:	Board of five members, three appointed by mayor subject to the approval of city legislative body, and two appointed by county judge subject to approval of fiscal court.
How Financed:	Sewer rates, rentals and charges; issuance of negotiable bonds.
Functions:	Rehabilitate, construct, improve and extend any sewer and drainage systems.
Bonds:	May issue revenue bonds secured by revenues of district to mature in not to exceed 40 years. For project within city, issuance of bonds must be authorized by ordinance passed by the legislative body of city.

SEWER CONSTRUCTION DISTRICT
(Subdistrict of Joint Metropolitan Sewer District)

KRS Citation:	76.281-76.420
Creation:	On petition of 25 percent of resident freeholders in district and written statement of metropolitan sewer district filed with county court.
Governing Body:	Commission composed of three members, appointed by county court.
How Financed:	Assessment of property within district on the basis of classification and ratio of benefits to accrue from the construction. As alternative, the district may issue revenue bonds payable solely from rentals from operation of systems, and proceed under KRS 96.350 to 96.510. District may proceed under KRS 107.220, or may use apportionment warrants under KRS 184.150 to 184.250.
Functions:	To provide sewer and/or drainage facilities to serve district.
Bonds:	Bonds may be issued for the amount of unpaid assessments and secured by revenues of the system.

URBAN SERVICES DISTRICT

KRS Citation:	108.010-108.070
Creation:	Election held on petition of a number of registered voters equal to ten percent of the vote cast for county judge in last election.

Governing Body:	District council composed of five elected members with vacancies filled by appointment by the Governor.
How Financed:	May collect fees for services and levy assessments in such amounts as council deems necessary to carry out functions.
Functions:	Provide police and fire protection; construct and maintain streets and walks; provide library service, garbage and trash collection and disposal, street lighting and cleaning; acquire, maintain, and operate parks and playgrounds; **provide sewer drainage and treatment facilities**; and other services.
Bonds:	The Urban Service District is provided with the operating authority provided under KRS 58, 66, and 107 and may issue bonds for capital improvement under those chapters.

Water districts, organized under KRS 74, are probably the most widely used vehicle for providing water supply facilities in unincorporated areas of Kentucky. Water districts are also enabled to provide sewer and natural gas supply services. Because of statutory restrictions concerning the source of natural gas (limited to within the county in which the district is located) this service is not widespread and is not utilized in the Bluegrass ADD. However, a water district (KRS 74) may supply sewer services in the same manner it supplies water services. Chapter 74 provides three methods of financing improvements for water, sewer or gas services: (1) special assessments, (2) service charges, or (3) a combination of special assessments and service charges. Additionally, a Chapter 74 water district, able to provide both water and sewer services, is an eligible political subdivision (under various criteria) for interface with federal and state programs to finance improvements and may be merged with other water districts under new additions to Chapter 74 by the 1972 legislature (Refer to Appendix A).

Chapter 74 water districts fall under the regulatory control of both the Public Service Commission (Department of Consumer Protection) and the Department of Health or the newly formed Department for Natural Resources and Environmental Protection. There are 29 water districts in the Bluegrass ADD, which covers 17 counties.

MUNICIPAL UTILITIES: WATER AND SEWER SERVICE

Under Chapter 96 of the Kentucky Revised Statutes, incorporated cities in the Commonwealth may provide a variety of utility services and impose special taxes and assessments and service charges.* For example:

*"County Revenue/Expenditure Analysis," Kentucky Program Development Office (KRADD), 1972.

Revenue Source	KRS Citation
Special Taxes and Assessments	96.910
In-Lieu of Taxes	96.179
In-Lieu of Taxes (TVA)	96.820
Utility Service Charges	96.170
Gas Service Charges	96.542
Water and Sewage Service Charges	96.350
Combined Electric and Water Service Charges	96.171
Sewer Service Charges	96.910

There are presently 25 municipalities in the BGADD providing water services and 21 municipalities providing sewer services.

Municipally owned utility systems may finance capital improvements under a variety of KRS Chapters:

- KRS 58—Acquisition and Development of Public Projects Through Revenue Bonds
- KRS 66—Issuance of Bonds and Control of Funds
- KRS 96—Utilities in Cities
- KRS 107—Municipal Improvements: Alternative Methods

Also, if one of these municipalities qualifies under one of the various federal program guidelines, it may receive both federal planning and construction grants and state planning or construction funds.

Municipally owned utilities do not fall under the jurisdiction of the state Public Scrvice Commission (PSC) except that the PSC must approve the issuance of debt obligations or acquisition of debt obligations of another utility service (KRS 278.300).

PRIVATE (STOCK CORPORATION) WATER OR SEWER UTILITY COMPANIES

Private utility companies may provide water, sewer, gas and electric service in Kentucky under KRS Chapter 278 and other related chapters. There are four privately owned and operated water utility companies in the BGADD, the largest by far being the Lexington Water Company. Private utility companies finance capital improvements by various financing vehicles, such as sale of stock, debentures, warrants, bonds and notes. A private utility company may acquire a municipal utility or a nonprofit utility, such as a water district or association, with approval by the PSC. Lexington Water Company, for example, has acquired almost all existing Fayette County water districts to which it formerly wholesaled water. In some cases this results in consumer savings by removing the middleman mark-up imposed by the water district to cover operating expenses. In other cases, where extensive improvements must be made, the acquisition does not immediately reduce water rates but improves service.

STATE AGENCIES RESPONSIBLE FOR CONTROL AND FINANCING OF WATER AND SEWER UTILITIES

This section discusses the various state agencies which have primary responsibility for sanitation and pollution control in terms of regulatory control, capital financing, or planning. These responsibilities are established by the Kentucky Revised Statutes (KRS) as indicated. **Because of the recent reorganization of state government and new additions to the KRS by the 1972 Kentucky General Assembly, certain lines of responsibility and function are not yet clear.** However, the general areas of responsibility are as indicated.

DEPARTMENT OF HEALTH AND/OR DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION (Refer to Figure 3.)

This agency of state government is responsible for administering state programs for adequately safeguarding the general health, safety and welfare of Kentucky citizens.

Division of Sanitary Engineering (KRS 211.180)

The Division of Sanitary Engineering is responsible for the safety and chemical quality of the Commonwealth's public water supply. The Division is primarily a regulatory agency responsible for the proper design and operation of all public and semi-public water supply facilities and public and semi-public swimming pools. The Division does not provide funds to local political subdivisions of the Commonwealth for either design or operation of water supply systems.

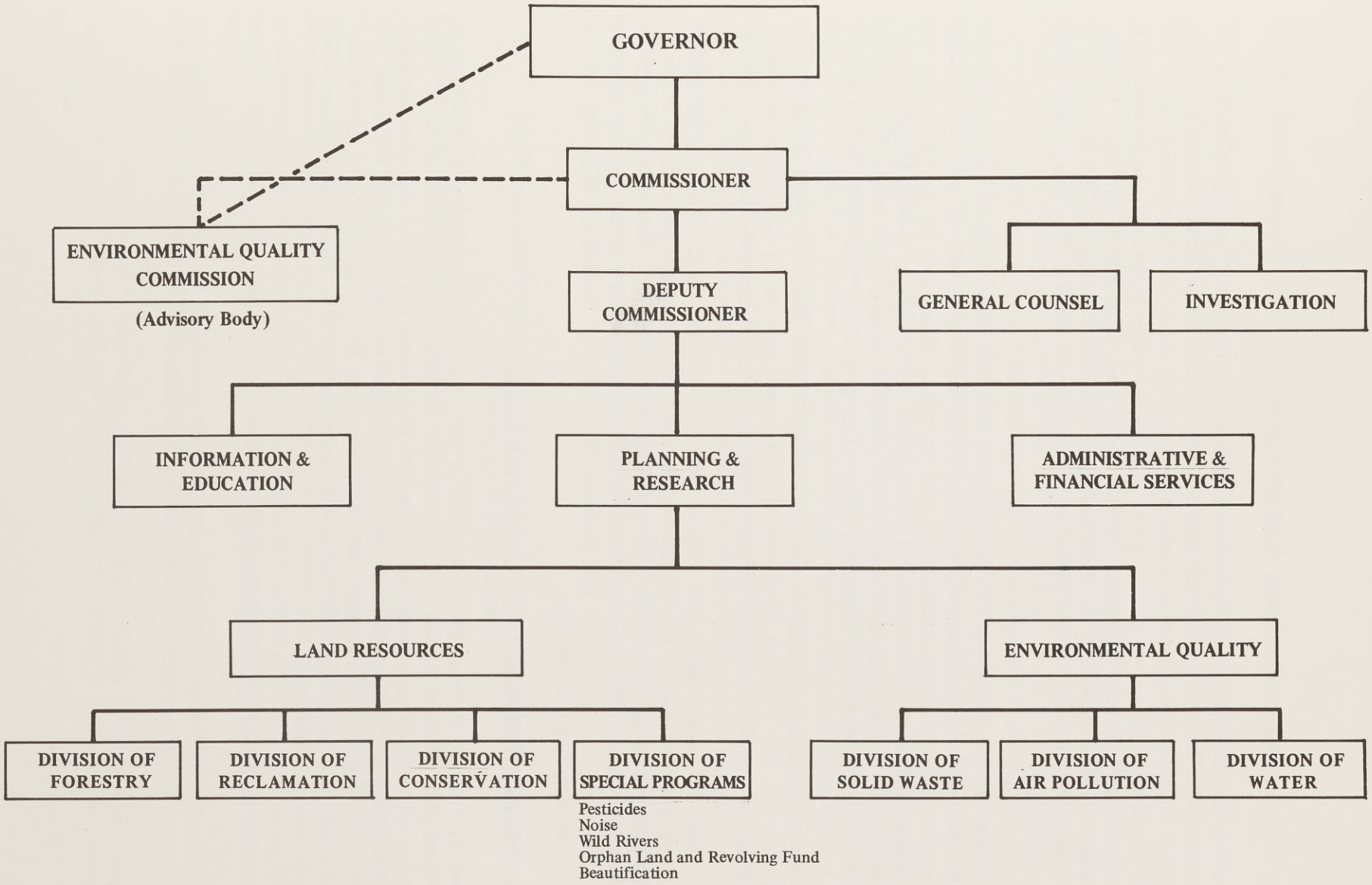
Division of Water

The Division of Water Pollution Control administers programs established by the Water Pollution Control Commission. The commission is responsible for developing and discharging a comprehensive program for the prevention, control and abatement of water pollution throughout the Commonwealth. To this end the commission is empowered to, among other things, operate as the state agency for the purposes of the Water Pollution Control Act (Public Law 660) as amended. The commission is therefore authorized to secure to the Commonwealth the benefits of the Federal Act. Under this act the federal government, through the Environmental Protection Agency (EPA), will provide up to 55 percent of the construction and planning costs of sewage treatment facilities to eligible projects if the state government will match these funds with 25 percent of the cost. The remaining 20 percent must be provided by the local government.

However, a new federal amendment, the 1972 Water Quality Control Act, provides up to 75 percent of the planning and construction costs to eligible local projects, with no state matching funds required.

DEPARTMENT OF FINANCE AND ADMINISTRATION

The Department of Finance and Administration is a new cabinet program established by executive order and is responsible for the general administration and finance of state government programs.



Source: The Courier-Journal, Thursday, January 4, 1973.

Figure 3. Department for Natural Resources and Environmental Protection

Kentucky Pollution Abatement Authority (KRS 224A.010)

The Kentucky Pollution Abatement Authority is administered by the Department of Finance and Administration. The Authority was established by the 1972 General Assembly in response to the Federal Water Pollution Control Act as a vehicle for financing required state matching funds. The Authority is enabled to levy a two percent tax on all retail water sales in the state. Additionally, it is empowered to issue "assistance agreements" in the form of loans payable from revenues of the local sewer system. Revenue generated by these assistance agreements is then applied as security to amortize revenue bonds issued by the authority, if not otherwise secured by a two percent charge on retail water sales.

Under the new federal amendment (Water Quality Control Act) those units of local government eligible for assistance of up to 55 percent, with state contributions of 25 percent, will not be eligible for 75 percent assistance grants. Additionally, only $5 billion dollars over the next two years has been appropriated instead of the proposed $24.6 billion for a five-year period. Under the new federal formula for allocating funds, Kentucky will receive an amount equal to about one-half of the sewage treatment construction assistance it received last year (Fiscal Year 1972), or $17 million.

As of November 30, about $24 million will be available for fiscal year 1973 under the old federal act's appropriation. The Pollution Abatement Authority will issue about $25 million in revenue bonds secured by the aforementioned assistance agreements to match federal funds now available.

However, only 28 communities now eligible will receive these funds, including Lexington, Lawrenceburg, and Versailles, in the Bluegrass ADD. After these funds are allocated, no additional funds will be forthcoming through the Pollution Abatement Authority unless certain changes are made in the Authority's empowered function. No definitive action has been taken in this direction to date. Therefore, for all intents and purposes the Pollution Abatement Authority as now constituted will only function one time.

Kentucky Program Development Office (Abolished and Reorganized)

The Kentucky Program Development Office (KPDO) which was recently abolished essentially acted as the official state planning agency and clearinghouse for various state and federal funds. **These functions are evidently being assumed within the new Department of Finance and Administration.** Those cities, counties and districts which are eligible to receive federal planning funds may also receive state planning funds as matching funds for federal water-sewer planning grants. Additionally, KPDO provided technical assistance to local governments in applying for various federal water-sewer planning and construction grants.

DEPARTMENT OF CONSUMER PROTECTION

The Department of Consumer Protection was recently established by executive order and will administer, among other agencies, the Public Service Commission.

Public Service Commission (KRS 278)

The Kentucky Public Service Commission (PSC) is the public utility regulatory agency for the Commonwealth. All private utilities and water districts, associations and corporations are regulated by this agency.

Under new additions to KRS 74, water districts must have approval from the PSC prior to the provision of services. Also under new additions to Chapter 74 (74.361) the PSC is authorized and empowered to seek the merger of existing and new water districts, associations and nonprofit corporations. This authority is based on the principle that a reduction in the number of water districts is in the public interest, in that mergers will tend to eliminate wasteful duplications of cost and effort, result in a sounder and more businesslike degree of management, and ultimately result in greater economies of scale and provide, therefore, better service at less cost to the consumer.

The PSC is empowered to initiate such studies and investigations as it deems necessary to make a determination of the advisability of merging two or more water districts. Discussions with PSC staff indicate that policy regarding the source of such investigations and the funding thereof have not been firmly established. However, the PSC will remain open to proposals regarding such studies, particularly for merger studies on an area-wide basis.

In the event a merger is determined to be in the public interest, the PSC may order such a merger after appropriate public hearings, and may establish a schedule of rates, rentals and charges of the merged district.

This new section of KRS 74 does not limit in any way the acquisition of water districts, associations by private or municipally owned water utilities or the merger of water districts or associations with private or municipal utilities.

FEDERAL AGENCIES RESPONSIBLE FOR WATER AND SEWER UTILITY PLANNING AND FINANCING

FARMERS HOME ADMINISTRATION (FmHA)

The FmHA provides assistance to incorporated rural communities not exceeding 5,500 population or to rural areas that do not include an incorporated community of more than 5,500. Grants and loans are made to develop or improve water supply and wastewater disposal systems which must serve primarily rural residents, farmers, ranchers, farm tenants, and farm laborers. Grants are limited to 50 percent of the project cost. (As much as 50 percent is seldom given in the Bluegrass ADD). To augment this construction loan/grant program, FmHA finances water and sewer planning for rural areas.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

The programs administered by the Office of Water Programs (OWP) of the EPA are designed to maintain and enhance water quality. Consequently, the OWP is primarily concerned with

encouraging the construction of adequate wastewater treatment facilities. The federal share of these grants ranges from 30-55 percent.*

The EPA requires that the proposed facilities be designed to achieve economy, efficiency, and effectiveness in water pollution abatement or prevention. EPA also requires that the facilities be included in a regional plan and must be designed to maintain the quality of the receiving stream. The state must guarantee annual inspection of the treatment facilities for three years following construction to assure they are operated to achieve these goals. Finally, where industrial wastes are treated, the project must provide an integrated waste treatment system for the entire area concerned.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)

This department makes grants to assist communities in the construction of adequate basic water and sewer facilities in order to promote efficient and orderly growth and development. This program applies primarily to larger communities and urban areas of greater than 5,500 population. Grants cannot be made for the construction of "treatment works" which are eligible for assistance under the pollution control program administered by the EPA. The HUD grants generally cover 50 percent of the approved project cost, but can cover up to 90 percent. Ninety percent funding is seldom given by HUD.

ECONOMIC DEVELOPMENT ADMINISTRATION (EDA)

The EDA makes basic and supplementary loans and grants for the construction of public works and development facilities in designated geographic areas where economic growth is lagging behind the rest of the nation. The basic grant is 50 percent of the project cost, but the federal contribution may be increased up to 80 percent in severely depressed areas.

The EDA may provide assistance to water and sewerage facilities under this program, provided: (a) the project will directly or indirectly (1) tend to improve the opportunities for the establishment of expansion of industrial or commercial enterprises, (2) otherwise assist in the creation of additional long-term employment opportunities, or (3) primarily benefit the long-range unemployed and members of low-income families or otherwise substantially further objectives of the Economic Opportunity Act of 1964; (b) the project will fulfill a pressing need; and (c) the area for which a project is to be undertaken has an approved Overall Economic Development Program (OEDP) and such project is consistent therewith. Applicants for supplementary grants must have applied for all available assistance from FmHA, HUD, and EPA and have complied with the criteria established by the basic grant agencies before EDA will consider the application. A qualified Title I county is eligible for 50 percent project assistance.

EPA–HUD UNIFIED PLANNING REQUIREMENTS

EPA and HUD have agreed to consolidate their planning requirements and are jointly preparing unified planning requirements. The "Water Quality Management Planning Guidelines" published by

*Under the New Water Quality Control Act of 1972 this is now 75 percent to qualified recipients. About $5 billion is available for the next two years. Kentucky's share has not been finally determined but is expected to be less than one-half of this year's share under the old act.

EPA in January, 1972, serve in the interim. Generally, there are three major features of the unified requirements:

1. HUD's Areawide Certification Procedures are utilized by both EPA and HUD.

2. The HUD Areawide Planning Requirements include EPA requirements for water quality considerations.

3. In accordance with the President's proposal for increased coordination of federal programs with the states, the basin and areawide plans called for in the unified requirements are to be approved and certified by the governor, or his designee, prior to acceptance by EPA and certification by HUD.

The joint requirements are set forth in detail in three HUD circulars and the EPA "Water Quality Management Planning Guidelines."

WATER AND SEWER RATES

Payment for water and sewer use may be obtained through general taxation such as property taxes. However, under a property tax the property owners would be assessed for water and sewer services regardless of use. To avoid inequities, water and sewer use is usually based on the quantities of water used or the quantities of wastewater removed. The initial cost of hookup may vary with distances from the main line to the customer. Municipalities avoid these inequities by resorting to mean rates for residential, industrial, and other user classifications. However rates are derived, rates should provide sufficient income to cover capital costs, financed capital costs, operation and maintenance costs, the cost of reasonable improvements, and reserves for normal expansion of the system.

WATER RATES

In the Bluegrass ADD, water rates are expressed in either cost per 1000 gallons or cost per 100 cubic feet of water. Customers are charged according to their metered use of water.

Water rates are normally formulated with the class of customers served and their water uses. Common classifications are residential, commercial, industrial, and agricultural or irrigation. A minimum rate should be charged to cover the cost of water availability, metering, meter-reading, billing, and collecting. This minimum charge usually covers the first 1000 or 2000 gallons of water. Subsequent charges should assess customers according to the actual amounts of water used.

Initial hookup costs are usually related to the size or actual cost of meter and line required by the customer. Therefore, industrial or large users of water should be assessed larger hookup costs than the residential customers that use smaller and less costly meters and lines.

Table 6 illustrates the rates charged by water districts in the Bluegrass ADD for 2000, 5000, and 10,000 gallons of water supplied to residential customers. Initial hookup costs are also given. Table 7 illustrates water rates for residential customers that are charged by municipal water systems or

Table 6
Water District Rates

Water District	2,000 Gallons	5,000 Gallons	10,000 Gallons	Initial Hook-up
Alton	5.25	8.50	12.75	75.00
Boonesboro	6.15	9.65	14.15	200.00
Elkhorn	6.50	13.00	20.50	300.00
Estill County #1	6.00	12.00	19.00	NG*
Farmdale	6.00	10.50	15.50	NG
Garrard	9.90	14.90	18.90	NG
Great Crossings	8.00	15.50	23.00	NG
Harrison County	6.00	9.25	13.25	75.00
Jessamine County #1	7.50	9.50	14.50	150.00
Jessamine County #3	7.50	15.00	21.25	65.00
Kingston-Terrell	6.12	11.83	18.61	Act. Cost + 10%; min. 75.00
Lake Village	8.25	13.75	19.00	150.00
McKinney	7.20	11.35	17.10	125.00
Nicholas County	7.50	11.00	17.25	100.00
N.E. Woodford	5.90	11.40	16.30	250.00
North Mercer	5.75	9.00	11.25	NG
North Woodford	6.25	11.05	16.30	NG
Parksville	5.75	9.00	13.25	125.00
Peaks Mill	6.50	14.50	22.00	250.00
Powell Valley	7.25	13.50	18.75	200.00
Southern Madison	6.65	15.70	26.60	NG
South Woodford	5.90	11.40	16.90	NG
Spears	7.50	13.50	23.50	200 + meter
Stringtown	3.50	5.30	7.80	NG
U.S. 60	5.25	8.50	12.75	NG
Waco	6.12	11.83	18.22	NG
West Scott	6.00	10.50	18.00	200 - 300
White Hall	6.50	10.06	14.87	NG
TOTAL	182.69	321.51	481.25	
AVERAGE	6.52	11.48	17.18	

*NG - not given.

Source: Spindletop Research, Inc., and Public Service Commission.

private water companies serving a municipality in the Bluegrass ADD. For municipalities, hookup charges are usually included in the builder's construction cost of the residence or the initial homeowner's cost.

It should be emphasized that the average district rate ($6.52 per 2000 gallons) is more than twice the average municipal water rate ($3.14 per 2000 gallons). Figure 4 also illustrates the higher rates for water districts and the smaller populations (less than 3000) as compared to the water rates for populations of more than 3000. For example, Figure 4 illustrates a water rate of about $6.00 for populations from 500 to 2000 persons and a water rate of about $3.00 for populations greater than 3000.

Water rates charged by municipalities and water districts in Kentucky should be reported to the Public Service Commission in standard units such as dollars per 2000, 5000, and 10,000 gallons to enable economic comparisons and to determine minimum size water systems to assure that water rates are minimized for Kentucky residents. Reporting of water rates to the Public Service Commission is now required for water districts and private companies; however, standard units of reporting are not. Municipalities are not required to report water rates to the Public Service Commission.

Table 7
Private Company and Municipal Water Rates

City	2,000 Gallons	5,000 Gallons	10,000 Gallons
Lawrenceburg	2.75	4.21	7.86
Millersburg	3.00	5.25	9.00
Paris	3.40	6.10	10.60
Junction City	4.00	8.50	15.00
Danville	2.42	5.10	8.77
Winchester	3.15	5.93	10.63
Irvine	3.95	6.80	9.55
Lexington	2.03	4.55	9.10
Frankfort	1.00	1.50	2.50
Lancaster	2.90	5.65	9.70
Nicholasville	2.75	5.15	8.90
Asbury College	3.50	8.60	16.60
Stanford	3.50	6.80	12.30
Berea	2.80	6.30	11.74
Richmond	2.25	4.49	7.86
Carlisle	4.25	8.00	18.25
Stanton	5.21	7.53	12.53
Clay City	4.00	6.60	10.00
Georgetown	3.00	3.28	5.98
Versailles	3.05	5.45	8.95
TOTAL	62.91	115.79	205.82
AVERAGE	3.14	5.78	10.29

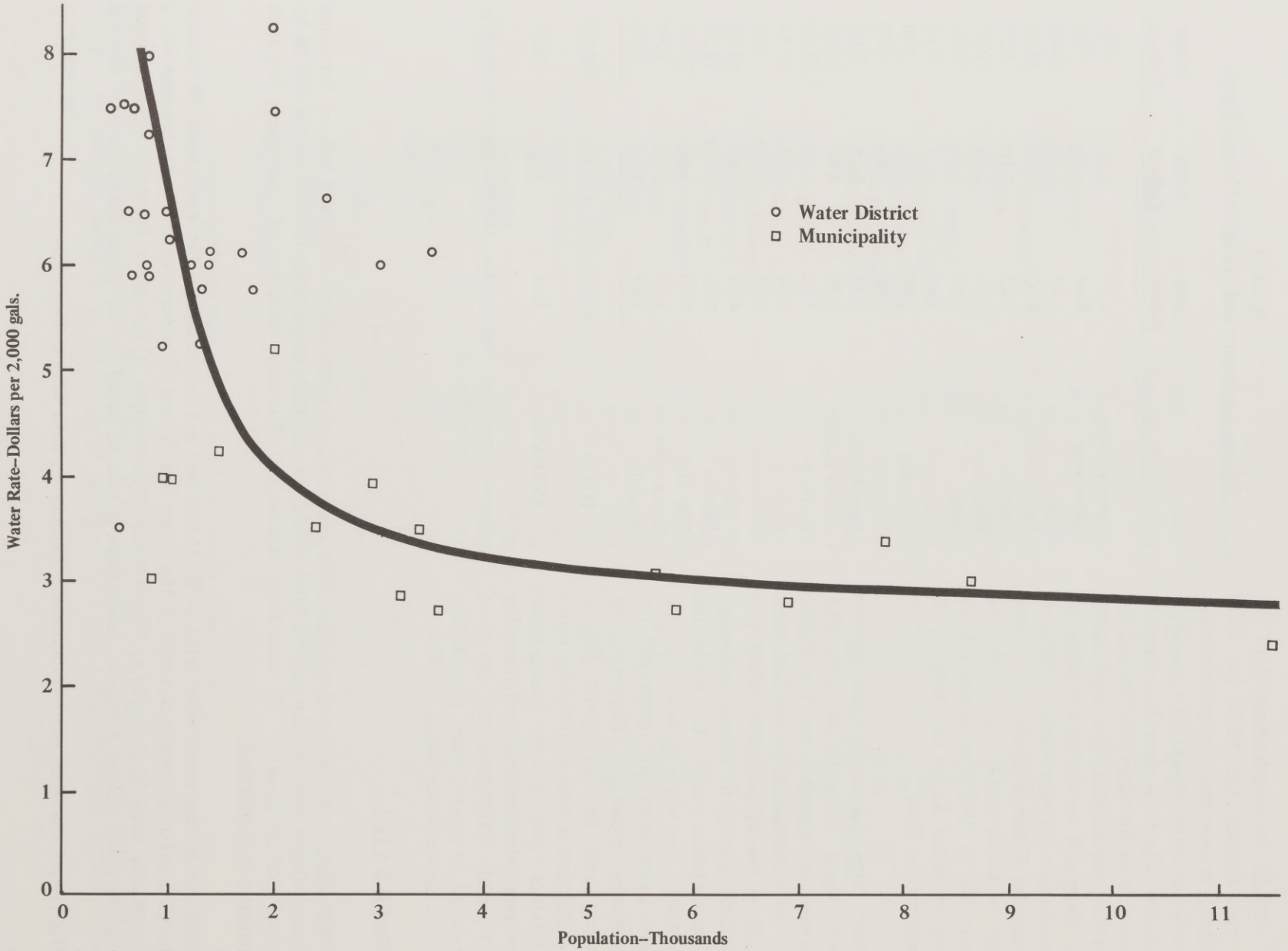
Source: Spindletop Research, Inc., and Bluegrass Area Development District.

SEWER RATES

Sewer charges are assessed through property taxes, as a percent of the water bill, or for some municipalities, through the general fund. Again, an equitable assessment of sewer cost would be by actual use or quantity of wastewater discharged. However, metering of wastewater for each customer is impractical.

Inasmuch as the wastewater released to the system is a percentage of the water used, the service charge is often a fixed percentage of the water bill. About 70 percent of the water brought into a community must be removed as "spent water."* Sometimes 70 percent of the water bill is assumed as a fair sewer charge. However, sewer rates should be based on the actual cost of sewage disposal

*Fair, Geyer, and Okun, *Water and Wastewater Engineering,* John Wiley & Sons, 1966.



Source: Spindletop Research, Inc.

Figure 4. Water Rates per 2,000 Gallons vs. Population

and not a constant percentage of the water bill. In addition, sewer rates should be sufficient to establish reserves and special funds for improvements.

Table 8 lists the sewer rate as a percentage of the water bill for selected municipalities. The rates vary from 40 percent to 150 percent of the water bill. Data were not available for all municipalities because reporting to the Public Service Commission is not required of cities.

Sewer rates based on a percentage of the water bills are not always equitable for residential users. Water users that discharge only a small percentage of their water into the sewers may incur inequitable charges. For example, homeowners using large amounts of water for watering their lawns during the summer months may be charged too much for sewer service.

Table 8
Sewer Rates as a Percentage of the Water Bill for Selected Bluegrass Cities

Municipality	Sewer Rate (percent of water bill)
Lawrenceburg	100% of Water Bill
Paris	70% of Water Bill
Danville	20% of Water Bill
Winchester	50% of Water Bill
Irvine	Approx. 80% of Water Bill
Frankfort	150% of Water Bill
Lancaster	100% of Water Bill
Nicholasville	40% of Water Bill ($1.50 min.)
Richmond	75% of Water Bill
Stanton	Approx. 67% of Water Bill
Versailles	70% of Water Bill

Source: Spindletop Research, Inc.

In water districts, suburbia, and rural areas that are not served by municipal services, septic tanks and package sewage treatment plants are used. The package plants are usually operated by subdivision builders or private companies and individuals; and assessments and sewer rates are not reported to the Public Service Commission. Therefore, State reporting requirements and further studies are necessary to gather enough data to estimate average sewer rates for areas served by the numerous package treatment plants.

FINANCING CONSIDERATIONS

This section discusses the general scope of water and sewer service in the Bluegrass ADD, new state-federal policies and programs and their financial aspects, and possible further directions and roles the ADD might consider in the management of water and sewer service.

OVERVIEW OF THE SITUATION

In the 17 counties that comprise the Bluegrass Area Development District, there are 29 rural water districts (KRS 74) operating and providing water services only; there are 25 municipal water utility systems operating; there are four private utility systems serving the public with water; there are 21 municipalities with public sewage collection and treatment facilities and there are over 259 package sewage treatment plants approximately 60 percent of which serve less than 100 users.

In addition to the physical complexity of these various levels of water and sewer service, each of these service providers is governed, regulated, and controlled by a complex mix of state, local and federal regulations, statutes and ordinances, each of which has its own innate complexity.

Each of the service providers has financed the capital improvements that comprise its respective system in various ways--federal grants, tax exempt bonds, corporate debt obligations, short-term notes and state loans, user fees, etc. For example, the 29 water districts and four municipally-owned utilities surveyed had over $20 million in outstanding debt obligations of various types under various authorities.

Each of these service providers is operated and managed by separate and different management structures and policies.

NEW POLICIES AND PROGRAMS

There are two new policies or programs at the state level which affect local water and sewer utilities.

1. Kentucky Pollution Abatement Authority Sewage Treatment Plant Financing Program.

2. Public Service Commission Policy to encourage and enforce merger of rural (class C and D) water districts, associations or nonprofit corporations.

The Pollution Abatement Authority was designed to meet the need for state matching grants or loans to secure 55 percent federal construction grants for sewage treatment facilities under Public Law 660 (federal code). This authority may only function one time on a limited scale as presently constituted, because the new federal Water Quality Control Act can provide up to 75 percent federal grant money and requires no state matching funds.

The Public Service Commission (PSC) is now enabled to secure the merger of two or more rural water districts or associations as a matter of state policy. No state funds, however, are available to finance any aspect of the construction of water systems.

In addition to the above, certain state funds are available to qualified bodies for planning water or sewer systems as matching funds for federal planning grants.

FINANCING

Under the various state and federal programs for financing water and sewer facilities, as discussed earlier, one fact should remain clear--local financing will be required to some degree, regardless of the program. Local financing will be required for ten percent to 50 percent or more of the project cost, depending on the source of state or federal funds.

Although there are several statutory authorities for financing the local share, the primary vehicle (beyond initial authorized assessments) will remain revenue bond financing. The desirability of a tax-exempt revenue bond, and thus the interest cost, is dependent upon the number of customers, density, the management of the issuer (enforcement of collection and efficient operation), the

amount of money involved, and existing debt obligations. In short, the ability of the issuer to repay the bond is the primary factor. In any water and sewer management program, these factors will greatly affect future expansion and should be considered carefully.

The merging of water districts presents both strengths and weaknesses in terms of past, present and future financing considerations. Beyond the economies of scale achieved through consolidation of management and maintenance operations, a multi-district merger also has other benefits.

Consolidated Revenues and Debt Retirement

By consolidating revenues of several districts, excess or surplus revenues, after operation and maintenance (O&M) costs are deducted, are used to retire the outstanding debt of the various districts which are merged. Certain districts may now be operating on a marginal basis and may thus be using reserves to retire debt. Under merger, excess revenues of stronger districts (after deducting O&M and previously existing debt service costs) may be used for any lawful purpose, such as sinking fund payments into other, weaker district's debt amortization accounts. Thus the debt position of the overall combined districts would be strengthened.

Future Financing and Refinancing

The merged district, with a strong central management and the risk spread over a larger user base, is potentially a better credit risk for future financing of new improvements and refinancing of older improvements at a lower interest cost for both. Obviously, 29 water districts with less than a thousand customers each are now competing among themselves, both for federal and state funds and for lower interest costs for new improvements. The efficiency of a larger district in financing capital improvements is a major asset to consumers.

Past and Future Financing Complexities

A review of the 1971 financial reports to the Public Service Commission for 24 water districts in the Bluegrass ADD indicated that 19 districts had $6.4 million in outstanding bonded indebtedness and $2.6 million in federal water facility loans. Each of these bond issues (totaling $9 million) has a different interest rate term, security characteristic and repayment schedule. Unless consolidated and refinanced under one authority, which is not necessarily feasible or advisable without more analysis, each of these debt obligations must continue to be amortized under the terms of their respective security. This alone is a complex, but manageable problem.

The greater problem arises in financing future capital improvements as a merged district. Future financing considerations must include possible second liens on revenues (at a higher interest cost), greater use of front-end assessments to reduce the need for greater debt financing, a mixture of first and second liens on revenues (first liens on new facility revenues and second lien on existing facility revenues), and the lien position of the state, assuming loans or assistance agreements (Pollution Abatement Authority) are available in some form.

Regionalization

Pursuant to an analysis of feasibility and political commitment, three situations exist which would

reduce the number of water and sewer service providers. Other permutations exist and these three represent a conceptual approach to the problem. Further analysis is needed.

1. Private water companies may acquire rural water districts, particularly those districts presently purchasing water from the private companies.

2. Municipally owned utilities may acquire rural water districts which are presently purchasing water.

3. Those not acquired, as above, may combine their management into a multi-county water district (16 counties, excluding Fayette County). This regionalization will be an ultimate goal that may be obtained only by a planning agency such as the Bluegrass ADD.

An interesting prospect appears regarding sewage treatment facilities. Traditional sewage treatment plants are costly, therefore they are only feasible where population density is sufficient to support treatment plants and collection lines. Also, cities are generally the only areas which are capable of qualifying for traditional treatment plant construction grants.

However, rural water districts were developed to serve less densely populated areas. Rural water districts are also empowered to provide sewage treatment services, but traditional treatment plant and collection system costs and lack of sufficient density of users prohibit this function by rural water districts.

Previous studies (Initial Housing Elements) have indicated that a major roadblock to rural housing development is the lack of adequate sewage treatment facilities outside small towns (population 5,500 or less). The installation of packaged treatment plants by subdevelopers in these rural areas evolved as a response to this problem. However, now that Kentucky will be adopting new stream classifications to protect the quality of streams, many package treatment plants either will not meet minimum standards for the receiving stream or will not meet the criteria for federal housing loans by the Farmers Home Administration.

A water and sewer district could enforce package treatment plant standards, replace substandard treatment plants, and provide ongoing maintenance for package treatment plants. This role would be particularly suited for rural water districts which are also providing water to the subdivision. This function should be explored in any merger considerations.

AREA DEVELOPMENT DISTRICT ROLE IN WATER AND SEWER SERVICE MANAGEMENT AND FINANCING

The Area Development District (ADD) is in the unique position of being able to consider problems on a regional, rather than local level. It is, therefore, recommended that the ADD consider undertaking a feasibility study, internally or coordinating the work of consultants, of the merger of rural water districts into county water and sewer districts. This study should consider the following factors:

1. Management Functions

2. Operation and Maintenance

3. Capital Cost of Merger--Engineering

4. Debt Management--Existing

5. Financing and Refinancing Capital Improvements

6. Cost/Benefit Impact

7. Environmental Impact

8. Recommendations Concerning the Form and Operating Structure of a County Water and Sewer District

9. Legal Restrictions

IV. RECOMMENDATIONS

CONCLUSIONS

The major problems identified by the management survey of 15 water and sewer utilities were primarily problems with water districts and package sewage treatment plants. The larger municipal utilities were usually in fairly good condition with respect to management and economic efficiency. Municipal utilities were reluctant or unable to extend services beyond city boundaries.

The water districts and package treatment plants were often understaffed with non-certified, part-time personnel. Too many water districts operated at a deficit, charged high water rates, and offered a poor quality of service. Maintenance of pipelines and meters was seldom carried out and water districts were sometimes losing as much as 60 percent of the water purchased or produced.

State and local agencies were usually uncoordinated with respect to planning and enforcement of State law.

In order to achieve better management and personnel for the smaller water and sewer utilities, regionalization may be necessary. Regionalization of management functions with the help of Area Development Districts can provide:

- Professional and technical staff that smaller units cannot provide individually.
- Economies of scale by centralizing administration, financing, billing, engineering, and bulk purchasing.
- Coordination of water supply and production resources for the entire district.
- Performance of long-range planning for the entire district.

Regionalization of water and sewer utilities on a county basis can provide full-time personnel to supervise and maintain the utilities. It should also reduce operating costs per customer and should eventually reduce water and sewer rates.

RECOMMENDATIONS

With regionalization and coordination the primary objectives, the specific recommendations are as follows:

1. Water districts should be limited to one for each county.
2. In counties where the existing or projected number of potential customers is not large enough to justify a county water district or because of the close proximity of water districts to cities, merging of utilities for districts, municipalities and private companies should be investigated.

3. Combined water and sewer districts should be established by county if it is economically feasible.

4. County governments should take a more active role in the control and coordination of water and sewer utilities within their jurisdictions.

5. Area Development Districts should perform feasibility studies and coordinate federal, state, and local activities to promote regionalization of water and sewer utilities.

6. State agencies should coordinate their activities and enforce the legislation to promote mergers of water and sewer utilities that would benefit the public.

7. Municipal water and sewer utilities should be required to submit financial reports annually to the Public Service Commission.

8. Qualified personnel for water and sewer utilities should be obtained by enforcement of the State law.

9. Proper maintenance and operation of water and sewer distribution lines by utilities should be enforced by the State.

10. Protection of public utilities from substandard work by engineers, construction companies, and financial institutions should be under the authority of the Public Service Commission.

11. Handbooks should be prepared and given to potential and existing water and sewer utilities to define the various means of financing, the proper design of a management program, personnel job descriptions and requirements, and important techno-economic considerations.

1. **Water districts should be limited to one for each county.**

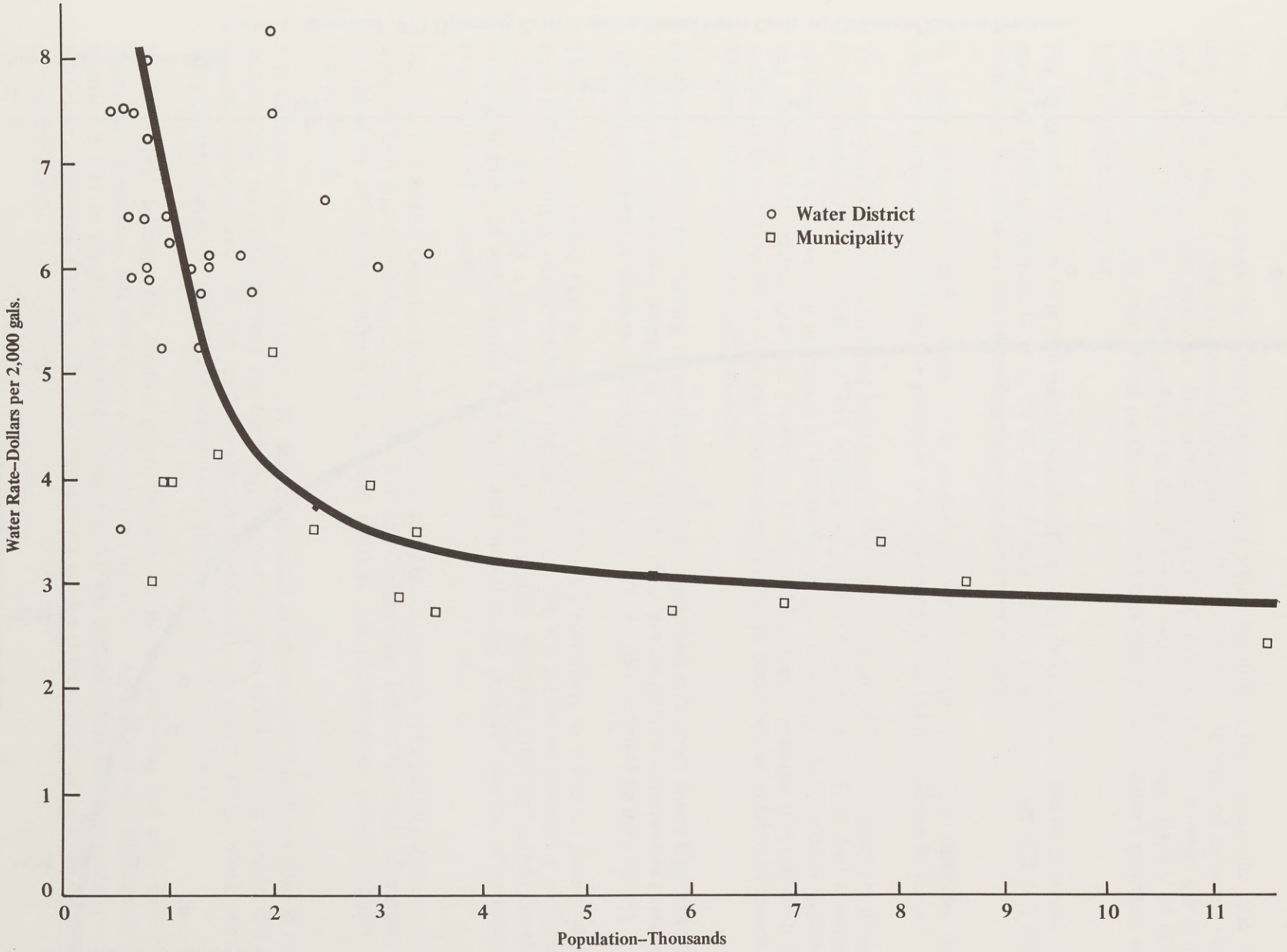
This recommendation is based on a determination of the minimum size water district that should be allowed to function as a public utility and serve the customers with high-quality water at a low cost. The minimum efficient size was determined by analyzing two basic parameters:

a) Water rates as a function of population

b) Operating costs to distribute purchased water as a function of total gallons purchased

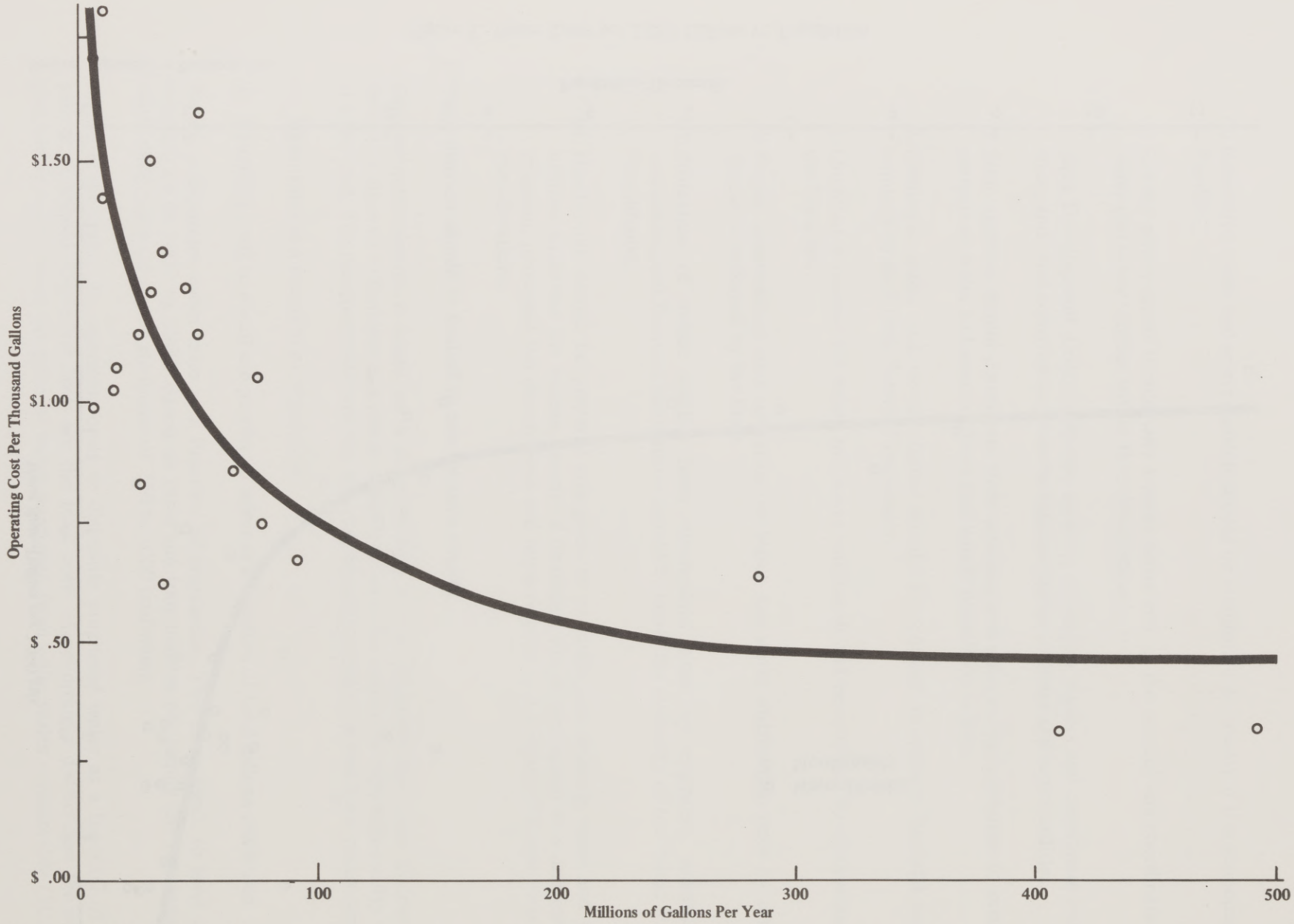
Figure 5 illustrates water rates as a function of population. The curve tends to level off at populations of 3000 to 5000. Based on three and four persons per family the minimum size water district should serve a minimum of 750 to 1000 customers.

Figure 6 illustrates the operating costs to distribute purchased water as a function of total gallons purchased. Operating costs are the total costs of operating a district less the cost of purchasing water. Since the price of water purchased from cities varies considerably ($0.16 to



Source: Spindletop Research, Inc.

Figure 5. Water Rates per 2,000 Gallons vs. Population



Source: Spindletop Research, Inc.

Figure 6. Reported 1971 Operating Costs (Less Purchased Water Cost) vs. Millions of Gallons Purchased

$0.95 per 1000 gallons), the primary function over which the district has control--the cost of distributing water--is used for economic comparison. The curve tends to level off between 100 and 250 million gallons per year. The average amount of water used per customer per year ranges from 12,000 to 100,000 gallons for the Bluegrass ADD. The average usage is 56,000 gallons per customer per year. Based on these data, a water district should serve a minimum of 1000 customers per year.

The Bluegrass ADD has only two water districts serving over 750 customers and none serving as many as 1000 customers. In fact, 20 of the 29 water districts serve between 100 and 400 customers, far below the recommended minimum number of customers.

If water districts in each county were merged to form county-wide water districts, the customers presently served and the gallons of water distributed would be as follows in Table 9.

The counties that have a cumulative total greater than the minimum of 750 customers are Boyle (978), Franklin (963), Jessamine (756), Madison (2,191), and Scott (968). Only two counties distribute the recommended minimum of 100 million gallons--Franklin (99.56 million gallons) and Madison (110 million gallons). Therefore, 11 of the 16 Bluegrass counties (Fayette County excluded) do not have the recommended minimum number of customers to operate efficiently. This leads to the second recommendation.

2. **In counties where the existing or projected number of potential customers is not large enough to justify a county water district, or because of the close proximity of water districts to cities, merging of utilities for districts, municipalities and private companies should be investigated.**

There are 11 counties that do not have enough existing customers to support a county-wide water district under recommendation number 1. However, the estimated number of potential customers may justify a continuing operation on a county basis. The following Table 10 lists the existing numbers of water district customers and the estimated potential number of customers in each of the 11 counties:

Nicholas and Powell Counties do not have enough potential customers to justify a county-wide water district and Anderson, Garrard, and Harrison Counties are borderline cases. Therefore, a combination of county districts or of water districts and municipal or private utilities is recommended.

For example, Clay City with its 327 customers could combine with Powell's Valley Water District with its 210 customers and both the city and the water district would benefit. Other possible combinations and the resulting estimated customers per water utility, which would afford better economies of scale for public water utilities, are given in Table 11.

Measures that increase the number of customers are highly desirable, not only from an economic standpoint, but also from a management approach. A minimum of 1000 customers should be able to support a full-time manager at $6000 to $10,000 a year and a number of part-time employees. Capable, full-time managers are needed if water utilities are to be operated at peak efficiency.

Table 9
Merger of Water Districts by County

County	Water District	Customers (Recommended Minimum: 750-1,000)	Millions of Gallons of Water (Recommended Minimum: 100 per Year)
Anderson	Alton	235	23.82
	Stringtown	133	6.98
	TOTALS	368	30.80
Bourbon	None	--	--
Boyle	Parksville	478	21.82
	Lake Village	500	35.08
	TOTALS	978	56.90
Clark	Boonesboro	380	31.72
Estill	Estill County #1	380	--
Franklin	Elkhorn	151	13.70
	Farmdale	300	33.98
	Peaks Mill	191	26.21
	U.S. 60	321	25.67
	TOTALS	963	99.56
Garrard	Garrard County	315	11.20
Harrison	Harrison County	192	18.48
Jessamine	Jessamine County #1	140	30.18
	Jessamine County #3	110	8.55
	Lexington-South Elkhorn	--	--
	Spears	506	35.20
	TOTALS	756	73.93
Lincoln	McKinney	not given	9.03
Madison	Kingston-Terrill	424	40.36
	Southern Madison	630	20.09
	Waco	885	36.93
	White Hall	252	12.87
	TOTALS	2,191	110.25

Table 9 (Cont'd)

County	Water District	Customers (Recommended Minimum: 750-1,000)	Millions of Gallons of Water (Recommended Minimum: 100 per Year)
Mercer	North Mercer	414	32.77
Nicholas	Nicholas County	165	9.37
Powell	Powell's Valley	210	6.03
Scott	Great Crossings	190	5.85
	West Scott	778	63.96
	TOTALS	968	69.81
Woodford	Northeast Woodford	167	18.55
	North Woodford	261	24.46
	South Woodford	207	24.27
	TOTALS	635	67.28

Source: Spindletop Research, Inc.

Table 10
Existing and Estimated Potential Water District Customers by County

County	Existing Customers	Estimated* Potential Customers
Anderson	368	725
Bourbon	0	1,180
Clark	380	1,330
Estill	380	1,130
Garrard	315	780
Harrison	192	975
Lincoln	150	1,615
Mercer	414	1,025
Nicholas	165	615
Powell	210	585
Woodford	635	3,740

*Estimated on the basis of 50 percent of the rural population and four persons equal to one customer.

Source: Spindletop Research, Inc.

Table 11
Mergers of Water Districts and Municipalities

County	Municipality	Water Districts	Estimated Customers for Combined Operation
Anderson	Lawrenceburg	Alton and Stringtion	1,560
Estill	Irvine	Estill County #1	1,380
Garrard	Lancaster	Garrard County	1,600
Harrison	Cynthiana	Harrison County	2,445
Lincoln	Stanford	McKinney	975
Mercer	Harrodsburg	North Mercer	2,660
Nicholas	Carlisle	Nicholas County	690
Powell	Clay City	Powell's Valley	537
Woodford	Versailles	Northeast Woodford, North Woodford, and South Woodford	2,528

Source: Spindletop Research, Inc.

3. **Combined water and sewer districts should be established by county.**

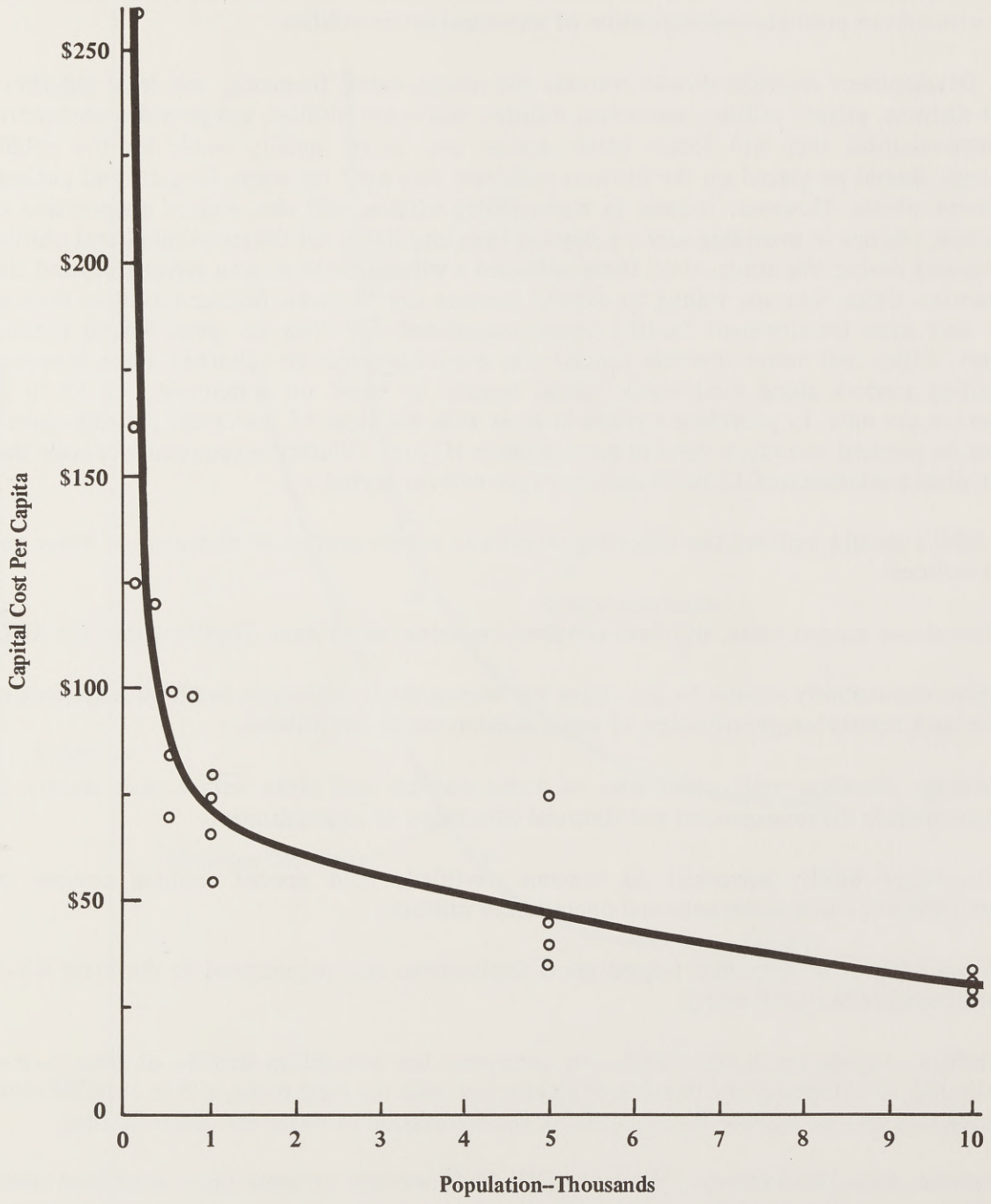
   The large number of package treatment plants serving rural areas need better overall supervision. The county government or combined county water and sewer districts can help in overseeing the development of sewer systems within the county.

   Regionalization of sewer utilities can produce economies of scale as illustrated by Figure 7. For example, the curve begins to level off at populations of 1000 or 250 to 300 customers. Therefore, package sewage treatment plants should serve a minimum of 250 to 300 customers to provide reasonably low-cost service.

4. **County governments should take a more active role in the control and coordination of water and sewer utilities within their jurisdictions.**

   In the past, county governments had little or no control over the number of water and sewer utilities which were established within their jurisdictions. However, new sections in KRS Chapter 74 enable the county courts to take an active part in seeking mergers among water districts. Combined water and sewer districts can also be controlled by the county court. County governments should also form planning committees or agencies to coordinate the development of water and sewer utilities.

   Another function of county governments should be the inspection of water quality and quality of sewage effluent within their jurisdictions. It is understood, local health sanitarians are to assist in the sampling program for water districts under a new policy being formulated by the Kentucky Department of Health.



Source: Spindletop Research, Inc.

Figure 7. Capital Cost of Sewage Treatment Plants vs. Population

5. **Area Development Districts should perform feasibility studies and coordinate federal, state, and local activities to promote regionalization of water and sewer utilities.**

Area Development Districts should evaluate the management, financing, and legal aspects of water districts, private utilities, municipal utilities, and sewer utilities, and provide constructive recommendations that will foster better service and better quality water for the public. Emphasis should be placed on the obvious problems that exist for water districts and package treatment plants. However, success in regionalizing utilities will also require cooperation of municipal utilities in providing services beyond their city limits. Of the seven municipal utilities interviewed during this study, only three indicated a willingness to expand services beyond city boundaries. Cities that are willing to expand services can be given further incentive through State and Area Development District recommendations that they be given federal funding support. Cities and water districts usually can expand services to suburban areas, however, expanding services along rural roads should usually be based on a minimum of 15 to 20 customers per mile. In providing services in areas with less than 15 customers per mile, grants should be pursued to reduce the cost per customer. (Figure 8 illustrates economies of scale that occur when a minimum of 15 to 20 customers per mile are served.)

The ADD's should perform the following services to ensure proper development of water and sewer utilities:

a. Coordinate federal, state, and local activities involving one or more utilities within the ADD.

b. Perform feasibility studies to determine the management, financing, and legal requirements for each county's regionalization of water districts and sewer utilities.

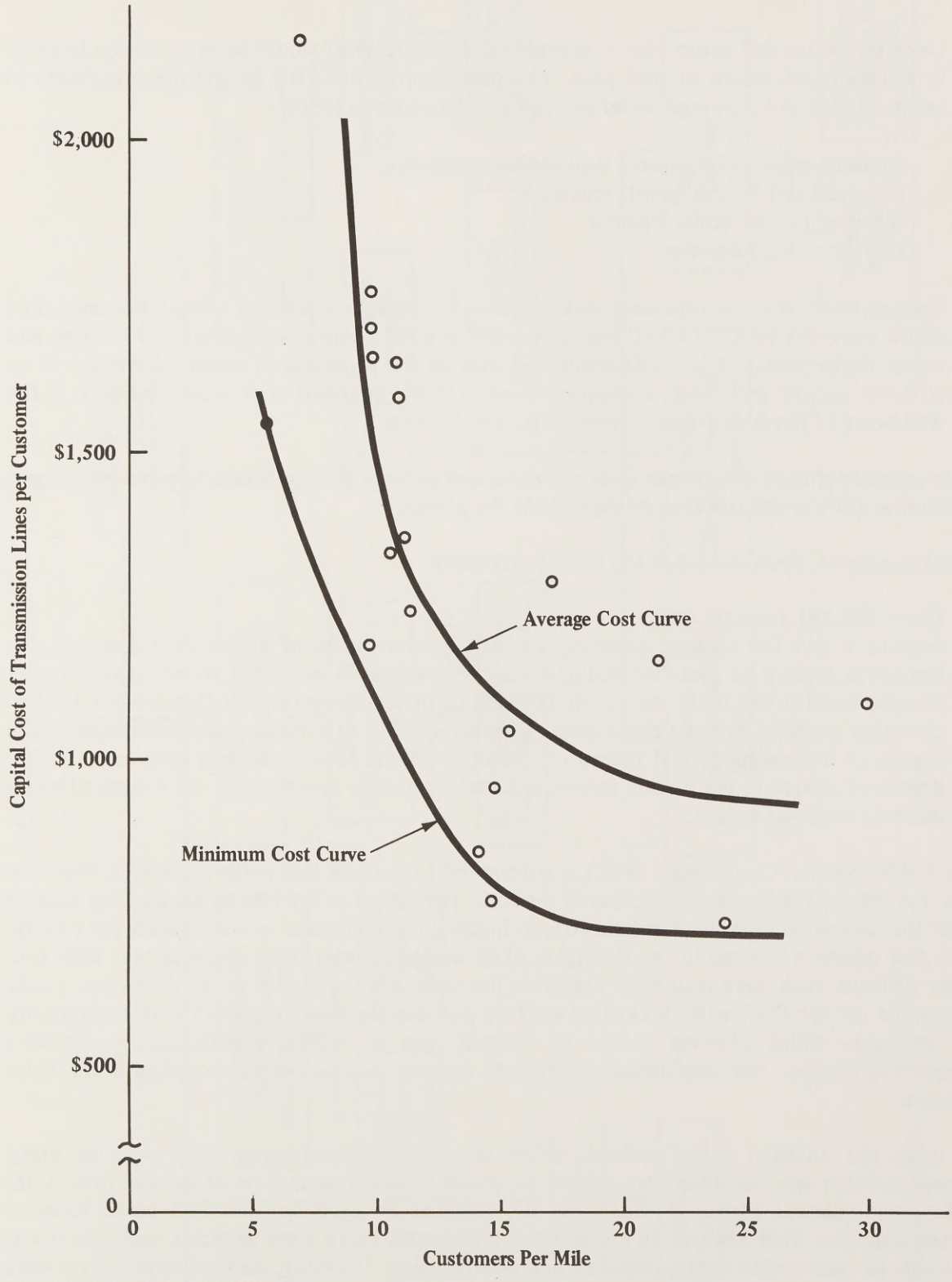
c. Arrange meetings and conferences of water districts and cities within each county to demonstrate the management and financial advantages of regionalization.

d. Encourage utility personnel to become certified; hold special training courses on management and maintenance and operation of utilities.

e. Assist utilities in preparing federal grant applications and recommend to the State which utilities need federal funding.

f. Perform population density studies to determine the population density of areas such as suburbs, to determine the number of houses per mile for rural roads, and to evaluate other areas that may be feasible for extension of regionalization of water and sewer utilities.

g. Provide Area Development District (ADD) staff services to assist local water and sewer utilities in various aspects of their planning and performance. Districtwide comprehensive water and sewer plans are being prepared by each ADD and will be completed during 1973. With regard to existing water and sewerage systems, strengths as well as weaknesses are being identified in water supply, treatment, transmission, distribution, storage, and in sewage collection and treatment. Where possible, financial aspects of these utilities are also being studied. In these studies, needs are being identified for both existing problems and for situations anticipated to accommodate growth.



Source: Spindletop Research, Inc.

Figure 8. Estimation of Minimum Customers per Mile

Once the water and sewer plan is completed, the ADD staff would be in a position to assist in the implementation of that plan. The professionals the ADD should make available to assist existing and proposed water and sewer utilities are as follows:

Sanitary engineer (registered professional engineer)
Financial and Federal grants specialist
Water and sewer utility planner
Lawyer or legal assistant

Two or more of these functions may be filled by a single individual who at the same time could serve the ADD in additional areas such as solid waste management and housing and urban development. The ADD concept should be the provision of technical services of an advisory nature and from a regional viewpoint by qualified staff whose purpose is the well-being of the Area Development District as a whole.

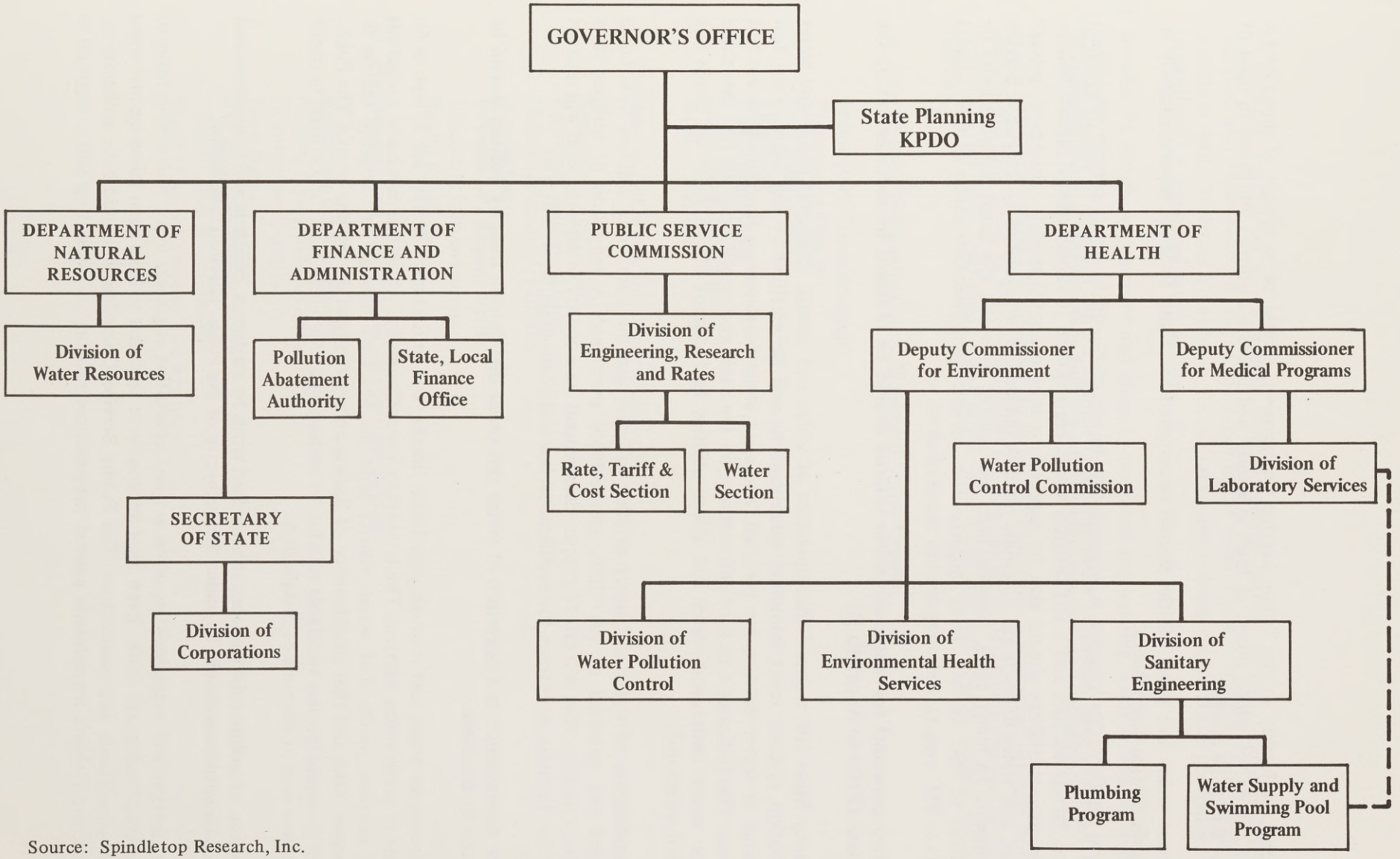
6. **State agencies should coordinate their activities and enforce the legislation to promote mergers of water and sewer utilities that would benefit the public.**

KRS Chapter 74, Section 74 361 (1) passed as follows:

House Bill 581 June 16, 1972
Section 4. (1) The General Assembly of the Commonwealth of Kentucky determines as a legislative finding of fact that reduction of the number of operating water districts in the Commonwealth will be in the public interest, in that mergers of such Districts will tend to eliminate wasteful duplication of costs and efforts, result in a sounder and more businesslike degree of management, and ultimately result in greater economies, less cost, and a higher degree of service to the general public; and that the public policy favors the merger of water districts wherever feasible.

The Public Service Commission (PSC) is authorized to enforce this policy, however, there are only two persons in the Water Section of the PSC. The policy of the PSC in the past has been to grant the formation of water districts without limiting the number of water districts per county. This past policy is evident in the Bluegrass ADD which includes three counties that have four water districts each. One county in the State has eight water districts. It would be practically impossible for the PSC, with its existing staff, to perform the feasibility studies for each county to determine which districts should be merged; and to handle applications, preliminary engineering studies, and conferences relating to possible mergers or new applicants for water districts.

To make the situation more involved, before the recent reorganization there were too many unrelated State agencies that have (or are supposed to have) some type of control over water and sewer utilities. Figure 9 illustrates the number of agencies that had some form of jurisdiction over these utilities. In interviewing representatives of these agencies, each said it was desirable to have better communication and coordination. However, some representatives were not familiar with who should be contacted in other agencies and what information was available.



Source: Spindletop Research, Inc.

Figure 9. Organizational Chart of Various State Agencies Responsible for Certain Aspects of Water Treatment and Water Distribution or Sewage Treatment--1972

Someone, preferably in the Public Service Commission, should be in charge of organizing a special committee which meets at least quarterly and identifies utilities which are in need of help or should be merged.

7. **Municipal water and sewer utilities should be required to submit financial reports annually to the Public Service Commission.**

   Under Kentucky law, municipal water and sewer utilities are not required to submit financial reports. Private utilities and water districts which are required to submit annual reports believe that municipal utilities should also be required to submit annual reports. Municipal, private utilities, and water districts are all **public utilities** and should be regulated by the Public Service Commission. In many cases, municipalities are audited now and the audit reports should be submitted to PSC. In fact, some municipalities present complimentary copies of their annual reports to PSC even though they are not required to do so.

8. **Qualified personnel for water and sewer utilities should be obtained by enforcement of the State law.** (Refer to Appendix B)

   Kentucky State law requires that operators of water and sewage treatment plants and water distribution systems meet minimum qualifications and be certified by the State. Very few personnel in water districts are certified, and even some personnel in municipalities are not certified. This indicates a lack of enforcement by the State and results from the fact that there are too many undersized water and sewer utilities that cannot afford full-time, much less certified, personnel.

   Regionalization of water and sewer utilities will decrease the number of utilities now being managed and operated by part-time, non-certified personnel. A reduction of utilities to a minimum number that will afford proper management on a county or regional level will make it easier for the State to enforce the certification law and environmental laws as well.

9. **Proper maintenance and operation of water and sewer distribution lines by utilities should be enforced by the State.**

   Line losses, or water lost through pipe leaks, breaks, and uncalibrated meters are as high as 60 percent in some water districts. The Lexington Water Company, which has purchased numerous water districts, states that water district lines do not have enough or adequate meters to determine flows and that maintenance of lines is only performed during line breaks. The Public Service Commission has standards relating to meters, but a two-man staff can do little to check the meters even at the time of installation.

10. **Protection of public utilities from substandard work by engineers, construction companies, and financial institutions should be under the authority of the Public Service Commission.**

    Water districts and municipalities often accused consulting engineers and construction firms of performing inadequate work. Even legal actions were reported to have been taken against some of the consultants and contractors. The Public Service Commission should have authority to protect the public's investments against malpractices relating to consulting and construction work.

In addition, the ADD's should survey their respective districts to determine which firms are qualified and experienced in water and sewer utility work. Open bidding for construction work is seldom used effectively by water districts, and proper bidding methods and procedures should be outlined for water and sewer utilities.

11. **Handbooks should be prepared and given to potential and existing water and sewer utilities to define the various means of financing, the proper design of a management program, personnel job descriptions and requirements, and important techno-economic considerations.**

These handbooks should be prepared to assist administrators, government officials, engineers, and construction firms to better understand the importance of developing regional or minimum systems rather than part-time, substandard operations. Subject matter should include the following:

a) Development and Evaluation of Water and Sewer Utilities

Preliminary Considerations
Engineering Design
Cost Estimating
Financing
Contract Bidding
Rules and Requirements
Public Relations

b) Management of Water and Sewer Utilities

Evaluation Techniques
Personnel Administration
Maintenance and Operation
Accounting
Information Requirements
Financing Improvements
Public Relations

c) Maintenance and Operation of Distribution Systems

Engineering Requirements
Meters, Pipes, and Equipment
Disinfection Equipment
Flow Balance Sheets
Avoiding Line Losses
Construction Requirements
Water Quality Sampling and Analysis

Appendix A

Chapter 74
Water Districts

Chapter 74

WATER DISTRICTS

WATER DISTRICTS

JOINT OPERATION OF WATER SOURCES

Cross References

Sanitation districts, Ch. 220
Watershed conservancy districts, 262.700 et seq.
Drainage districts, Ch. 267, 268
"Utility" defined, 278.010

Since the provisions of KRS 58.010 to 58.140 and 96.350 to 96.510 permit bond issues for the required revenue and give the government authority to raise revenue to build, acquire and operate a water system, a contract may be entered into between a water district and a bond corporation whereby the latter would undertake the preliminary survey without payment of costs in advance and a fee of 3% of the bond issue if and when the bonds are sold. This is possible whether the payment for the preliminary work comes from the community's general fund or whether it is included in the bond issue. 1956 OAG 39,264.

WATER DISTRICTS

74.010 [938g-1] Creation; notice; procedure; fee.

(1) Subject to the requirements herein specified any county court, upon petition of twenty-five resident freeholders of the proposed district, may establish a water district and appoint water commissioners for the purpose of furnishing a water supply to the citizens of the county. The petition shall describe the territory intended to be included in the district, and shall set out the reasons a water district is needed.

(1968 H 409, § 1. Eff. 6-13-68. 1966 c 70, § 2, c 239, § 20)

(2) When the petition is filed the court shall give notice of the filing by publication pursuant to KRS Chapter 424. Within thirty days after the publication, any resident of the proposed district may file objections, and the court shall set the case for hearing within ten days. If the court finds that the establishment of such district is reasonably necessary for the public health, convenience, fire protection, and comfort of the residents, it shall make an order establishing the district, and designating it by name or number. A fee of twenty dollars shall be allowed the court for hearing the petition and entering its order.

(1968 H 409, § 1. Eff. 6-13-68. 1966 c 70, § 2, c 239, § 20)

(3) The court may in this order strike off any part of the territory that the testimony shows will not be benefited by the creation of the district. If the court does not find that the district is necessary, it shall dismiss the petition. Either party may thereupon appeal to the circuit court for a retrial, and from the circuit court to the Court of Appeals as provided by law. (1968 H 409, § 1. Eff. 6-13-68. 1966 c 70, § 2, c 239, § 20)

Note: 1966 c 70, § 1 provides: This act may be cited as the Water District Amending Act of 1966. The chapter includes the amended sections 74.010, 74.115 and 74.290 and new sections 74.015, 74.363 and 74.367.

CROSS REFERENCES

Sanitation districts, "construction subdistrict facilities" defined, 220.010

AM JUR AND ALR ANNOTATIONS

Municipal corporation distinguished from water district. 37 Am Jur, MUNICIPAL CORPORATIONS § 6.

While the water district may provide fire hydrants and facilities for making water available to fight fires, it may not provide fire fighting equipment and pay for same out of proceeds of bonds sold to construct the water system. Theobald v. Buechel Water Dist. Bd. of Comm'rs., 288 Ky. 720, 157 S.W.(2d) 285.

The organization of a water district does not deprive a water company of the right to continue service to its customers or to others who cannot be served by the district. Board of Com'rs. v. Yunker, 239 S.W. 2d 984.

Water district does not have exclusive right to furnish services within its confines. City of Cold Spring v Campbell County Water Dist. 334 SW(2d) 269.

Insufficiency of the number of qualified petitioners cannot be raised in a collateral attack upon the judgment. Grubb v Wurtland Water Dist, 384 SW(2d) 321 (1964).

Water districts may be dissolved pursuant to statute authorizing district to be enlarged or diminished. Valla v Preston Street Road Water District #1, 395 SW(2d) 772 (1965).

74.012. A new section of Chapter 74 of the Kentucky Revised Statutes is created to read as follows:

(1) Prior to the establishment of any water district as provided by KRS 74.010, and prior to the incorporation or formation of any non-profit corporation, association or cooperative corporation having as its purpose the furnishing of a public water supply (herein referred to as a "water association"), a committee of not less than five (5) resident freeholders of the geographical area sought to be served with water facilities by the proposed District or the proposed water association shall formally make application to the Public Service Commission of Kentucky in such manner and following such procedures as the Public Service Commission may by regulation prescribe, seeking from the Commission the authority to petition the appropriate county court for establishment of a water district, or proceed to incorporate or otherwise create a water association. The Commission shall thereupon set the application for formal public hearing, and shall give notice to all other water suppliers, whether publicly owned or privately owned, and whether or not regulated by the Commission, rendering services in the general area proposed to be served by said water district or water association, and to any planning and zoning or other regulatory agency or agencies with authority in the general area having concern with the application. The Commission may subpoena and summon for hearing purposes any persons deemed necessary by the Commission in order to enable the Commission to evaluate the application of the proponents of said proposed water district or water association, and reach a decision in the best interests of the general public. Intervention by any interested parties, water suppliers, municipal corporations, and governmental agencies shall be freely permitted at such hearing.

(2) The public hearing shall be conducted by the Commission pursuant to the provisions of KRS 278.020. At the time of the hearing, no employment of counsel or of engineering services shall have been made to be paid from water district funds, water association funds, or made a charge *in futuro* against water district or water association funds, if formation of such water district or water association is permitted by the Commission.

(3) Before the Public Service Commission shall approve any application for creation of a water district or water association, the Commission must make a finding and determination of fact that the geographical area sought to be served by such proposed water district or water association cannot be feasibly served by any existing water supplier, whether publicly or privately owned, and whether or not subject to the regulatory jurisdiction of the Commission. If it shall be determined that the geographical area sought to be served by the proposed water district or water association can be served more feasibly by any other water supplier, the Commission shall deny the application and shall hold such further hearings and make such further determinations as may in the circumstances be appropriate in the interests of the public health, safety and general welfare.

(4) Any order entered by the Commission in connection with an application for creation of a water district or water association shall be appealable to the Franklin Circuit Court as provided by KRS 278.410.

74.020 [938g-2, 938g-4] Appointment of commissioners; number; terms; vacancies; organization; bond; compensation.

(1) A water district shall be administered by a board of commissioners which shall control and manage the affairs of the district. The term of each commissioner is four years, except as provided in this section:

(a) If a district lies wholly within a single county, or operates as a single county district as provided in paragraph (c) of this subsection, the board of commissioners shall consist of three residents of the district, or of any incorporated or unincorporated area served by the district in the county in which the district was originally established, who shall be appointed by the county

judge. Initial appointments shall be for terms of two, three and four years, as designated by the court. Commissioners serving under appointments June 16, 1966 shall continue to serve until the end of their respective terms.

(b) Except as provided in paragraph (c) of this subsection, if a district formed in a single county extends its area to include territory in an adjacent county as provided by KRS 74.115, the board of commissioners shall consist of five residents of the district, three of whom shall be appointed by the county judge of the county having the greater population within the boundaries of the district, and two of whom shall be appointed by the county judge of the remaining county. Initially upon the establishment of the extension of the district into the second county, the county judge of that county shall appoint only two commissioners, regardless of population requirements, but if the second county is determined to have the larger population within the district of the two counties, he shall have the authority to fill the next vacancy existing in the representation of the original county. Orders establishing the extension shall provide for the staggering of initial terms in an equitable manner.

(c) If a single county district administered as provided in paragraph (a) hereof shall acquire an existing water or gas distribution system serving an area which extends beyond the boundaries of the district into another county, it may operate the distribution system so acquired, provided the area served outside the county shall be deemed to be a minor portion of the total area served by the district, and provided the fiscal court of the county containing such minor portion of the total area shall have agreed to the acquisition of the distribution system. If less than twenty-five percent of the total assets of the distribution system are located within the county outside of the boundaries of the district, it will be conclusively presumed that said district comes within the terms of this subsection.

(1966 c 170, § 1, c 255, § 88. Eff. 6-16-66. 1962 c 218, § 1; 1958 c 174, § 1)

(2) Vacancies shall be filled by the same appointing authority which is empowered to make the original appointment. Vacancies resulting from cause other than expiration of the term shall be filled for the unexpired term only.

(1966 c 170, § 1, c 255, § 88. Eff. 6-16-66. 1962 c 218, § 1; 1958 c 174, § 1)

(3) The commission shall elect a chairman, secretary and treasurer. Each commissioner shall execute a bond, approved by the county court, conditioned on the faithful performance of the duties of his position.

(1966 c 170, § 1, c 255, § 88. Eff. 6-16-66. 1962 c 218, § 1; 1958 c 174, § 1)

(4) Each commissioner shall receive an annual salary of not more than thirty-six hundred dollars, which shall be paid out of the water district fund. In the case of single-county districts, which shall be deemed to include districts described in subsection (1) (c) of this section, the salary shall be fixed by the county court; in two-county districts it shall be fixed by agreement between the two county courts. In fixing the salary of the commissioners, the court shall take into consideration the financial condition of the district and its ability to meet its obligations as they mature. (1966 c 170, § 1, c 255, § 88. Eff. 6-16-66. 1962 c 218, § 1; 1958 c 174, § 1; 1952 c 12)

CROSS REFERENCES

Conditions of bond, 62.060

The county court has power to change the compensation of the commissioners of the water district during their term of office, subject to the maximum limitation of $2,400 per year and the financial condition of the district. 1958 OAG 42,266.

74.030 [938g-18] Legal advisor and counsel for district.

The county attorney shall act as counsel to the water commission, except that the commission may, subject to approval of the court, employ counsel whose compensation shall be paid from water district funds. (1958 c 174, § 2. Eff. 4-2-58. 1946 c 16.)

The county attorney is not entitled to extra compensation from the funds of a water district for his services to the district, but must perform the duties as a part of his office. 1958 OAG 42,590.

County attorney required by statute to act as counsel for a water district cannot be employed as private counsel and paid additional compensation. OAG 66-315.

74.040 [938g-21] Superintendent; employes; expenses; salary.

The commission may appoint a competent person as superintendent of water districts. The superintendent shall be subject to the orders of the commission and shall look after the improvements established under this chapter. The superintendent, with the approval and consent of the commission, may employ all necessary labor and assistance in the performance of his duties, and he shall report to the commission all expenses incurred. The salary of the superintendent shall be fixed by the commission and paid as other salaries provided for in this chapter are paid.

CROSS REFERENCES

Public works must be under supervision of registered professional engineer or architect, 322.360

74.050 [938g-15; 938g-19] Treasurer; duties; compensation; bond.

The treasurer of the commission shall pay out the funds of the commission only upon presentation of warrants signed by the chairman and countersigned by the secretary of the commission. As compensation for his services the treasurer shall receive an amount fixed by the commission, not to exceed two hundred dollars per year. He shall execute bond to the commission in an amount fixed by the commission. (1966 c 255, § 89. Eff. 6-16-66)

74.060 Repealed.—1958 c 174, § 3. Eff. 4-2-58.

74.070 [938g–4; 938g–5] Duties and powers of commission.

The commission may acquire and install pipe and water laterals, and operate a water system for any district. The commission shall be a body corporate for all purposes, and may make contracts for the water district with municipalities and persons for a water supply. It may prosecute and defend suits, hire necessary employes and do all acts necessary to carry on the work.

Note: The Governor's veto of H 415, passed at the 1956 Regular Session, amending this section was held valid in Rayburn Watkins v H L Waterfield et al, rendered November 30, 1956, in which the Kentucky Court of Appeals held that bills may be vetoed by the Governor within 10 days, excluding Sundays, after the enacting legislature has adjourned.

A water district is a political subdivision and one of the commissioners cannot obligate it on a contract. Neither can a recovery be had on an implied contract. Louisville Ext. Water Dist. v Diehl Pump & Supply Co., 246 SW(2d) 585.

A water district may convey its assets and liabilities to a water company. Valla v Preston St Rd Water Dist #1, 395 SW(2d) 772 (1965).

City has final right to determine whether water district can supply water to inhabitants of city. City of Flemingsburg v Public Service Commission, 411 SW(2d) 920 (1967).

Farmers Home Administration may insure bonds issued to finance the cost of construction of a water system by a water district commission in consideration of a 1% fee and to receive in exchange subordination rights to the bonds and all rights therein contained in the event of default. 1956 OAG 38,268.

In the absence of any statutory authorization, a water district cannot dissolve or merge with another water district and cannot acquire by annexation the territory of another district. OAG 63-666.

Water district has no authority to extend its facilities and services into an annexed subdivision of city without first obtaining city's consent. OAG 67-238.

74.080 [938g–5] Rates and regulations.

The commission may establish water rates and make reasonable regulations for the disposition and consumption of water.

A regulation permitting service connection only with houses facing on a street or road with a water main therein is reasonable. Middletown Water District v Tucker, 284 SW(2d) 666.

74.090 [938g–7] Condemnation.

If it becomes necessary to acquire a right of way or land, and it cannot be acquired by purchase, the commission may condemn the needed property in the manner provided in KRS 416.010 to 416.080. The owners of land sought to be condemned shall be made parties to the proceeding. Any damage awarded shall be paid by the commission out of the first funds available.

74.100 [938g–6] Acquisition of existing systems; extension of mains and laterals; how paid for.

(1) Whenever a water supply line or system is in operation in any water district, and is supplying water to the citizens and landowners, and the commission deems it expedient to acquire the exising system, they may examine it, and if they find it properly designed and constructed they may purchase it, and pay for it in the same manner as provided for the original construction and improvement; or may pay for it in whole or in part out of any surplus funds in possession, receipt or anticipation of receipt by the commission.

(2) The commission may order any work or improvement it deems necessary to extend the necessary water mains and water laterals in the district to supply water to the residents of the district, and pay for such work by assessment against the land benefited according to benefits, as provided in this chapter, or may pay for the work in whole or in part out of the general fund of the water district realized from all other resources in the district.

A water district may not purchase and operate another existing water system lying partly within and partly without said district. Olson v. Preston St. Water Dist. No. 1, 291 Ky. 155, 163 S.W.(2d) 307.

74.110 [938g–3] Change of districts; procedure; deficit.

The territorial limits of an established water district may be enlarged or diminished in the following way:

(1) The commission shall file a petition with the county court, describing the territory to be annexed or stricken off, and setting out the reasons therefor.

(2) Notice of the petition shall be given. Within thirty days after the notice, any resident of the water district or the territory proposed to be annexed may file objections and exceptions.

(3) The county court shall set the matter for hearing, and if the court finds that it is reasonably necessary, the court shall enter an order annexing or striking off the proposed territory. If the court finds that the proposed change is unnecessary, the court shall dismiss the petition. Either party may appeal to the circuit court, where the matter shall be reheard, and from the circuit court to the Court of Appeals in the manner provided by law.

(4) If any of the territory stricken off has been assessed to pay the costs of any improvements, the commission shall strike the assessments from the assessment roll and refund to the respective owners any assessments collected on the land which has been stricken off.

(5) If a deficit is incurred by striking off part of a water district, or by striking assessments from the assessment roll, so that the assessment roll is insufficient to pay the bonded indebtedness of the district, the deficit shall be paid out of the general fund of the district, realized from all other resources in the district.

Water district may not purchase and operate another existing water system lying partly within and partly without said district. Olson v. Preston St. Water Dist. No. 1, 291 Ky. 155, 163 S.W.(2d) 307.

The court has the power to dissolve a water district. Valla v Preston St Rd Water Dist #1, 395 SW(2d) 772 (1965).

In the absence of any statutory authorization, a water district cannot dissolve or merge with another water district and cannot acquire by annexation the territory of another district. OAG 63-666.

74.115 Extension of district into adjoining county.

(1) Upon written request of two or more freeholders

in a county or counties adjacent to a county containing a water district, the board of commissioners of the district may petition the county court of the adjoining county or counties for addition of proposed territory. The procedure for such extension shall be the same as prescribed in KRS 74.110 and the county judge of the adjoining county may make such order as is therein provided.

(1966 c 70, § 6. Eff. 6-16-66. 1958 c 171)

(2) Water districts may be established and extended regardless of whether the entire territory of the district is continuous, provided that such territory lies in a county or counties in which the district has been authorized to serve. (1966 c 70, § 6. Eff. 6-16-66)

74.120 [938g-24] Incorporated city may be included in district; contract with city.

(1) All or any part of an incorporated city may be included in the boundaries of any existing water district or water district being newly organized, provided the governing body of such city by resolution or ordinance gives, or has given, its consent. Said consent may be limited to water, gas or sewage service, and the authority of the water district to serve the area of the incorporated city shall be limited by the exclusion of any type of service from the consent given; provided, however, that the acquisition by a water district of an existing franchise for a water, gas, or sewage distribution system within such a city, whether by purchase, assignment or otherwise, shall be deemed to constitute the consent of the city which granted the franchise in the first instance, but only for the purpose of operating the type of distribution system for which the franchise was granted.

(1966 c 170, § 2. Eff. 6-16-66. 1962 c 218, § 2; 1954 c 106; 1952 c 175, c 133, § 6)

(2) The commission may contract with any city which is not included within the boundaries of the district for the purpose of furnishing water, gas or sewage services to the residents of such city and may contract with any city for the purpose of obtaining water, gas or sewage services for the use of the district.

(1966 c 170, § 2. Eff. 6-16-66. 1962 c 218, § 2; 1954 c 106; 1952 c 175, c 133, § 6)

(3) When the commission shall contract with any city of the first five classes in the manner prescribed in this section, such city shall be deemed a part of the district during the life of the contract, but only for the purpose of carrying out the provisions of the contract and for the purpose of permitting representation on the Board of Commissioners. Nothing herein shall impair the ownership by the contracting city of its own system, or empower the district to take any action not authorized by the contract. (1966 c 170, § 2. Eff. 6-16-66. 1962 c 218, § 2; 1954 c 106; 1952 c 175, c 133, § 6)

City has final right to determine whether water district can supply water to inhabitants of city. City of Flemingsburg v Public Service Commission, 411 SW(2d) 920 (1967).

Where water district lies wholly in one county, and contains any city of the first five classes, or services such city, such city is deemed a part of the district and can be represented on the board of commissioners, but such representation cannot enlarge the board to more than three members. OAG 64-488.

Once a city is incorporated it is not dissolved by the mere failure to elect officers or to exercise corporate powers; since consent of the governing body is required to include all or part of an incorporated city within the boundaries of a water district, and an inactive municipality to have its residents included in such water district, must either reactivate a governing body to give the required consent or else have its charter dissolved by the appropriate statutory procedure. OAG 65-32.

Water district has no authority to extend its facilities and services into an annexed subdivision of city without first obtaining city's consent. OAG 67-238.

74.130 [938g-8] Classification of lands for assessments; report.

(1) The commission shall examine the real estate in the district that may be affected by the proposed water system, and classify it into five classes according to the benefit it will receive from the construction and operation of the water system. The real estate receiving the most benefit shall be marked "class A," and the other classes shall be marked "class B," "class C," "class D" and "class E," respectively, the real estate receiving the smallest benefit being marked "class E." All real estate actually receiving water shall be placed in the highest classification. The amount of real estate owned by any person in each class, and the extent benefited shall be determined. The scale of assessment to be made by the commission upon the several classes shall be in the ratio of five, four, three, two and one. The classification shall form the basis of the assessment of benefits to the real estate for all purposes.

(2) If the commission believes that substantial injustice will be done any landowner by strict conformity to the five-class rule above, the classification may be changed by diminishing or increasing the number of classes so as to conform to existing conditions.

(3) The commission shall make a report containing a statement of the estimated cost of the work and improvement to be made in the district, a description of all real estate in the district, showing the amount of real estate in each class, in tabulated form, and the names of the owners, and a statement of the estimated benefits that will accrue to each class of real estate by reason of the construction of the proposed improvements.

The tax may be imposed upon the basis of assessed values as distinguished from upon a front foot or square foot basis. Barnes v Jacobsen, 417 SW(2d) 224 (1967).

74.140 [938g-9] Acceptance of report; notice; final hearing.

When the final report is completed and filed, it shall be examined by the court, and if it is found to be sufficient it shall be accepted. If it is not sufficient, it may be referred back to the commission with instructions to secure further information, to be reported at a subsequent date fixed by the court. When the report is fully completed and accepted by the court, a date not less than twenty days thereafter shall be fixed by the court for the final hearing upon the report, and notice of the hearing shall be given by publication pursuant to KRS Ch. 424. During the time, a copy of the report shall be on file in the office of the clerk of the county court, and shall be open to the inspection of any landowner or person interested within the district. Any landowner assessed therein may file exceptions to the report. The court upon final hearing shall confirm or reject the report. (1966 c 239, § 21. Eff. 6-16-66)

Notice provided in this section is sufficient and not violative of any constitutional guarantees. One who has such notice but fails to appear in the county court to object or fails to prosecute an appeal from the county court waives the right to thereafter question the validity of the assessments. Ryan v. Comm'rs of Water District, 220 Ky. 822, 295 S.W. 1023.

74.150 [938g–10] Assessment roll; statement of costs; hearing; final order.

(1) After the classification of the land and the ratio of assessment of the different classes to be made has been confirmed by the court, the commission shall prepare an assessment roll in duplicate, signed by the chairman and secretary of the commission, giving a description of all the land in the water district, the name of the owner, and the amount of assessment against each of the several tracts of land. In preparing this assessment roll the commission shall ascertain the total cost of the improvement, the cost of the proceedings and all wages paid or to be paid, and the total shall be the amount to be paid by the lands benefited. Attached to this water-assessment roll and filed with it, shall be a statement of all the costs of the work to be done, and five percent in addition to meet any unforeseen contingencies. This statement of costs shall also be made in duplicate and signed by the chairman and secretary of the commission. One copy of the assessment roll and statement of costs shall be filed with the clerk of the county court in which the proceeding is pending, and he shall then give at least ten-days' notice of the time of the hearing on the assessment roll and statement of costs.

(2) At the time fixed for the hearing, the court shall hear in a summary way all objections to the cost of the improvement, as set out in the statement made by the commission and filed with the assessment roll, and all objections to the assessments of lands therein set forth, and shall enter an order confirming the assessment roll, or directing the commission to change the assessments in accordance with the finding of the court. The order of the court confirming or modifying the assessment roll and statement of costs may be appealed from. The court shall also direct the clerk to certify to the treasurer of the commission a copy of the assessment roll as filed by the commission or changed by the court. One copy of the assessment roll shall be retained by the clerk and recorded as part of the record.

CROSS REFERENCES

See KRS 74.190 and 74.210, and citing Bd of Comm, 288 Ky 720, 157 SW(2d) 285

74.160 [938g–10] Striking assessments from roll, procedure.

After the assessment roll has been confirmed or modified by the court, if the commission is unable to furnish water to the owner of any land in the district, or if the land in any part of the district is so sparsely populated that in the opinion of the commission water could not be furnished to the owners thereof without incurring an unreasonable burden of additional assessment against the lands or an unreasonable burden of indebtedness against the water district without receiving any corresponding return in the profits realized from the sale of water in the territory, the commission may strike the assessments on land not receiving water from the assessment roll, or may reduce the assessments to conform with the benefits received, and refund to the respective owners any assessments collected that have been stricken off or reduced. After striking or reducing such assessments, the commission shall file a petition with the county court setting out the reasons why the assessments should be stricken off or reduced, with a certified copy of the assessments so stricken off or reduced. The county court shall then set the proceeding for a hearing, and after giving at least ten-days' notice of the time of the hearing, the court shall hear all objections to the order of the commission striking or reducing the assessment, and shall enter an order confirming the action of the commission or directing them to change the assessment roll in accordance with the finding of the court. The order of the court confirming or modifying the order of the commission striking off or reducing the assessment may be appealed from. If a deficit is incurred by striking or reducing any assessment so as to make the assessments insufficient to pay any bonded indebtedness of the water district, the deficit shall be paid out of the general fund of the district realized from all other revenues collected or to be collected in the district.

CROSS REFERENCES

See KRS 74.190 and 74.210, and case note citing Bd of Comm, 288 Ky 720, 157 SW(2d) 285

74.170 [938g–11; 938g–12] Payment of assessments in thirty days; constructive consent to bond issue.

Any landowner whose land is assessed for any improvement under the provisions of this chapter may pay his assessment in full at any time within thirty days after notice of assessment has been given. Every person who fails to pay the full amount of his assessment to the treasurer of the commission within thirty days shall be deemed as consenting to the issuing of water district bonds.

Constitutionality:
This section is valid. Ryan v. Comm'rs of Water District, 220 Ky. 822, 295 S.W. 1023.

74.180 [938g–11; 938g–13] Issuance of bonds for unpaid assessments.

(1) If all assessments are not paid in full by thirty days after notice of assessment, the commission may issue bonds for the amount of the unpaid assessments, and shall give notice that it proposes to issue bonds, giving the amount of bonds to be issued, the rate of interest they are to bear and the time they will become payable.

(2) At the expiration of thirty days after the publication, the commission may divide the unpaid assessments into not less than ten annual installments, which shall draw interest at the rate of not more than six percent per annum, payable annually, from thirty days after the date of publication. The bonds shall mature in series to correspond with the installments into which

the unpaid assessments are divided, and shall draw interest at the rate of not more than six percent per annum, payable annually, and be payable at some place to be designated by the commission. The bonds shall be for the exclusive use and benefit of the water district and shall designate on the face the name of the district and the purpose for which they were issued.

(3) The commission, in dividing the unpaid assessments into installments, shall fix the time for payment, and each landowner shall pay the installments due on his land, with interest due on that installment and deferred installments, to the treasurer of the commission on or before the time fixed by the commission for the maturity of the installment.

Operating revenues as well as proceeds of assessments may be pledged as security for payment of bonds and when so done bonds may be made by their terms negotiable. There is nothing in the act which forbids a sale of the bonds at less than par and accrued interest. Olson v. Preston St. Road Water Dist. No. 1, 286 Ky. 66, 149 S.W.(2d) 766.

Water district proposed to pay for establishment and maintenance of water service out of revenues but should they prove insufficient, to supply deficiency out of assessments in land benefited, the levy not to be made until the deficiency is established, the levy for the annual assessment for the deficiency to be payable in ten annual installments. Held the property owner does not have the right to pay such partial assessments in installments. Theobald v. Buechel Water Dist. Bd. of Comm'rs., 288 Ky. 720, 157 S.W.(2) 285.

74.190 [938g–13] Collection of unpaid installments; sale of land; redemption; settlement with collecting officers; fees.

(1) Upon the first Monday after an installment is due, the commission shall meet and ascertain the parties whose installments are in default and shall within sixty days issue warrants directing the sheriff or other collecting officer to collect the installments that are in default. The collecting officer shall collect the installments, with interest due on them and deferred installments, together with a penalty of six percent, in the same way state and county taxes are collected, and the collecting officer shall settle with the commission within sixty days from the time the installments were certified to him.

(2) All lands upon which the installments have not been collected at the end of sixty days shall be advertised and sold by the collecting officer in the same manner as in the case of state and county taxes. The sale so made shall be subject to the future installments of the assessments, and at the expiration of ninety days from the date of the original certification of the installments to the collecting officer, the collecting officer shall make final settlement with the commission and pay to them all the moneys in his hands. If the collecting officer fails to make a settlement, the commission may compel him to make the settlement by rule against him issued by the county court, after giving him five-days' notice in writing. In case any land is not purchased at the sale, the collecting officer shall bid in the land for the district and in his final settlement with the commission shall take credit therefor. The collecting officer shall certify each of the sales to the county court clerk as required in the sale of lands for state and county taxes, and the clerk shall record each sale in a book kept by him. For collecting the assessments certified to him the collecting officer shall be paid by the water commission the same fees allowed him for collecting state and county taxes and in the same manner. For recording the certificate of sale the clerk shall be allowed and paid the same fees allowed him by law for similar work in reference to state and county taxes.

(3) The owner of such real estate, or his representatives, heirs or assigns, shall have the right to redeem the land from the sale as is provided for the redemption of lands sold for state and county taxes, but only upon the same terms and conditions and within the same time as allowed in such case.

Penalty, 74.990

CROSS REFERENCES

Clerk's fees, 64.010
Payment, collection and refund of taxes, Ch. 134
Sheriff's fees, 134.290

Water district proposed to pay for establishment and maintenance of water service out of revenues but should they prove insufficient, to supply deficiency out of assessments in land benefited, the levy not to be made until the deficiency is established; the levy for the annual assessment for the deficiency to be payable in ten annual installments. Held the property owner does not have the right to pay such partial assessments in installments. Theobald v. Buechel Water Dist. Bd. of Comm'rs., 288 Ky. 720, 157 S.W.(2d) 285.

74.200 [938g–14] Modification of assessment; relevy.

When the court has confirmed an assessment for the construction of a water system and the assessment has been modified by a court of superior jurisdiction, or for some unforeseen cause it cannot be collected, the commission may modify the assessment as originally confirmed to conform to the judgment of the court and to cover any deficit caused by the order of the court or unforeseen occurrence. The relevy shall be made for the additional sum required, in the same ratio as in the original assessment. In any other case where it is ascertained that the amount assessed against the property in the water district is not sufficient to complete the improvements provided for, such deficit may be paid out of current reserve, or the county court may order a relevy upon the petition of the commission, or any three or more petitioners. The petition must set forth the amount of the deficit, the causes thereof, and the amount necessary to be raised in order to complete the work. The county court shall give notice of the filing and purpose of the petition and fix a time, not less than ten nor more than twenty days from the giving of the notice, when the petition shall be acted upon. If upon hearing the court finds that the relevy asked for in the petition is necessary in order to complete the work, the court shall direct such relevy to be made by the commission. The relevy shall be made in the same ratio as the original assessment was made and shall be collected in the same way.

74.210 [938g–10; 938g–13] Lien of assessments.

The assessment roll and each installment shall be a first lien on the land assessed, subject only to the lien for state and county taxes.

Water district proposed to pay for establishment and maintenance of water service out of revenues but should they

prove insufficient, to supply deficiency out of assessments in land benefited, the levy not to be made until the deficiency is established. Held until the levy is made there is no lien on the benefited land. Theobald v. Buechel Water Dist. Bd. of Comm'rs., 288 Ky. 720, 157 S.W.(2d) 285.

74.220 [938g–18] Assessment roll as evidence; enforcement of liens; proceedings; costs.

The assessment roll as made up by the commission shall be prima facie evidence in all courts that all steps necessary to be taken have been properly taken, and that all proceedings are regular and valid. The commission may enforce liens under this chapter by an action against the land in the circuit court at any time after January 1 of the year for which the assessments were levied. The right to institute such an action shall not prevent sales by the collecting officer as in cases of delinquent state and county taxes. The proceeds of sales in actions under this section shall be paid into the treasury of the district.

CROSS REFERENCES

Collection of public claims by action, Ch. 135

74.230 [938g–20] Effect of irregularity; exclusive remedies; effect of release.

The collection of an assessment shall not be defeated, where the parties are properly before the court, on account of any irregularity in the proceedings that does not affect the substantial right of the party complaining. The remedies provided for in this chapter are exclusive of all other remedies. If any person or property is released, or any assessment raised or lowered, it shall not affect the rights or liabilities of any other property or person.

74.240 [938g–17] Record of expenses to be kept; apportionment of expenses.

(1) The commission shall keep an account of the time spent by all employes, and each item of expense incurred in connection with any water district, and shall charge such account to the district for which the expense was incurred. Where the time or work is upon more than one district at the same time, it shall be apportioned between the districts. In the event any compensation fixed by the commission for any employe is on a salary basis, such salary shall be equitably apportioned between the districts by the commission.

(1946 c 70. Eff. 1-19-46.)

(2) The commission shall be required to prepare and make available, to the consumers of the water supplied by any water district, an annual statement of receipts and disbursements; and any floating or bonded indebtedness. This report shall show the cost of water, material, labor, other salaries and any other expenses incidental to the operation and maintenance.

(1946 c 70. Eff. 1-19-46.)

(3) All books of the commision shall be open for public inspection during normal business hours. (1946 c 70. Eff. June 19, 1946.)

74.250 [938g–15] Fees; costs.

The fees of officers for services rendered under this chapter shall be the same as fees now allowed by law for similar services in other cases. Such fees shall be taxed as a part of the costs and paid on the order of the court. The compensation allowed for services of the employes shall be paid by order of the commission out of the water fund. Fees or compensation for any service not otherwise provided for shall be fixed and paid by the commission.

CROSS REFERENCES

Fees and compensation of certain public officers, Ch. 64

74.260 [938g–22] Letting of work; notice; procedure; bond of bidder.

Upon the final reference to it by the court of any proceedings under this chapter, the commission shall give notice by publication pursuant to KRS Ch. 424, of the time and place of letting the work of construction of the improvements. In such notice the commission shall specify the approximate amount of work to be done and the time fixed for the completion of the work. On the date appointed for the letting, the commission shall convene and let the work to the lowest responsible bidder. The work may be let either as a whole or in sections, and either for a lump sum bid or upon the basis of cost plus a fixed fee or percentage of the cost of the improvement, as the commission deems most advantageous. In the event that the work is let upon a lump sum basis, no bid shall be entertained that exceeds the estimated cost, unless it is shown that the original estimate was erroneous. The commission may reject any or all bids and advertise the work again, if in its judgment the interest of the district will be served by so doing. The commission may require each bidder to execute a bond or put up a certified check payable to the treasurer of the water district, in an amount fixed by the commission, to the effect that the bidder will enter into a contract with the commission if his bid is accepted. The successful bidder shall be required to enter into a contract with the commission and to execute a bond for the faithful performance of the contract, with sufficient surety, to the commission for the use and benefit of the district in an amount equal to fifty percent of the estimated cost of the work awarded to such bidder. (1966 c 239, § 22. Eff. 6-16-66. 1952 c 92)

CROSS REFERENCES

Public works must be under supervision of registered professional engineer or architect, 322.360

AM JUR AND ALR ANNOTATIONS

Relative rights, as between surety on public work contractor's bond and unpaid laborers or materialmen, in percentage retained by obligee. 61 ALR2d 899.

Additional construction required in area annexed to district can only be performed on a low bid basis after being duly advertised. OAG 62-68.

74.270 [938g–23] Monthly estimates; payment.

The chief engineer in charge of construction shall make monthly estimates of the amount of work done, and furnish one copy to the contractor and file the other with the secretary of the commission. Within five days after the filing of such estimate, the commission shall meet, and if they approve the estimate they shall direct the secretary to draw a warrant in favor of the contractor for eighty percent of the work done, according to the contract. Upon the presentation of the warrant, properly signed by the president and secretary, to the treasurer of the water fund, the treasurer shall pay the amount due out of any funds in his hands to the credit of that district. When the work is fully completed and accepted, the whole amount due, including the amounts withheld on the previous monthly estimates, shall be determined and paid from the water fund as provided in this chapter.

74.280 [938g–28 (1933 Supplement)] Additions may be acquired.

(1) Any water district may construct or acquire, and operate, within or without the district, additions, extensions and all necessary appurtenances to the water system, the cost of which may not be assessed as a local benefit, for the purpose of supplying the water district with water.

(2) One or more of such additions, extensions or appurtenances owned by one or more persons may be acquired as a single enterprise, and the commission may agree with the owner as to the value thereof and purchase the same at that value.

74.290 [938g–28 (1933 Supplement)] Issuance of bonds for additions.

(1) For the purpose of defraying the cost of constructing or acquiring any additions, extensions and necessary appurtenances under KRS 74.280, the water district may borrow money and issue negotiable bonds. Before any bonds are issued an ordinance shall be enacted by the commission specifying the amount of the bonds and the rate of interest they are to bear, and reciting that the proposed additions, extensions or necessary appurtenances that are to be constructed or acquired are to be made pursuant to the provisions of KRS 74.280 to 74.310.

(1968 S 208, § 6. Eff. 3-25-68. 1966 c 70, § 7)

(2) All bonds issued under this section shall bear interest at a rate not exceeding six and one-half percent per annum payable either annually or semiannually, and shall be executed in such manner, and be payable at such times not exceeding fifty years from the date of issue, and at such place, as the commission shall determine.

(1968 S 208, § 6. Eff. 3-25-68. 1966 c 70, § 7)

(3) All such bonds shall be negotiable and shall not be subject to taxation. If any officer whose signature or countersignature appears on the bonds or coupons ceases to be an officer before delivery of the bonds, his signature or countersignature shall nevertheless be valid the same as if he had remained in office until delivery. The bonds shall be sold in such manner as the commission shall deem for the best interest of the water district, or the contract for the acquisition of any such additions, extensions and appurtenances to the water works may provide that payment shall be made in such bonds. The bonds shall be payable solely from the revenues of the water works and shall not constitute an indebtedness of the water district within the meaning of the Constitution. It shall be plainly stated on the face of each bond that it has been issued under the provisions of KRS 74.280 to 74.310 and that it does not constitute an indebtedness of the water district within the meaning of the Constitution.

(1968 S 208, § 6. Eff. 3-25-68. 1966 c 70, § 7)

(4) If the commission finds that the bonds authorized will be insufficient to accomplish the purpose desired, additional bonds may be authorized and issued subject to the limitations prescribed for the original bonds. (1968 S 208, § 6. Eff. 3-25-68. 1966 c 70, § 7)

The interest limitation relates to the cost to the district and not to the selling of the bonds by the holder. Valla v Preston St Rd Water Dist #1, 395 SW(2d) 772 (1965).

74.300 [938g–28 (1933 Supplement)] Payment of bonds for additions; operating and depreciation funds.

(1) All money derived from any bonds issued under KRS 74.280 to 74.310 shall be applied solely for the construction or acquisition of the additions, extensions and appurtenances, or to advance the payment of interest on bonds during the first three years following the date of issue of the bonds.

(2) At or before the issuance of such bonds the commission shall by ordinance set aside and pledge the income and revenue of the water works into a separate and special fund to be used and applied in the payment of the cost of the additions, extensions or appurtenances and the maintenance, operation and depreciation thereof. The ordinance shall definitely fix and determine the amount of revenue that is necessary to be set apart and applied to the payment of the principal and interest of the bonds, and the proportion of the balance of such income and revenue that is to be set aside as a proper and adequate depreciation account. The balance shall be set aside for the operation and maintenance of the water works. The rates to be charged for the service from the water works shall be sufficient to provide for the payment of interest upon all bonds and to create a sinking fund to pay the principal when due, and to provide for the operation and maintenance thereof and an adequate depreciation account.

(3) If there is a surplus in the operating and maintenance fund equal to the cost of maintaining and operating the water works during the remainder of the current calendar or fiscal year, and during the next calendar or fiscal year, the commission may at any time transfer any excess over that amount to the depreciation account.

(4) The funds in the depreciation account shall be expended in balancing depreciation in the water works or in making new constructions, extensions or additions thereto. The funds may be invested as the commission designates and the income from investments shall be credited to the depreciation account.

74.310 [938g-28 (1933 Supplement)] Receiver on default.

If there is any default in the payment of the principal or interest of any bonds issued under KRS 74.280 to 74.300, any court having jurisdiction of the action may appoint a receiver to administer the water works on behalf of the water district. The receiver shall charge and collect rates sufficient to provide for the payment of any bonds or obligations outstanding against the water works and for the payment of the operating expenses and shall apply the income and revenue in conformity with KRS 74.300.

74.320 [938g-28] Refunding bonds authorized.

Water districts organized and operating under this chapter, or under Chapter 139 of the Acts of 1926, may issue refunding bonds for the purpose of refunding any bonded debt.

CROSS REFERENCES

Issuance of bonds and control of funds, Ch. 66

AM JUR AND ALR ANNOTATIONS

Estoppel as to refunding bonds by recitals. 86 ALR 1093; 158 ALR 950.

Power of municipality to refund special assessment bonds. 102 ALR 202.

Constitutionality of statutory plan for financing or refinancing bonds of smaller political units by larger political unit. 106 ALR 608.

Implied power to issue refunding bonds. 135 ALR 634.

74.330 [938g-29] Issuance; form of bonds; signatures.

Refunding bonds shall be issued under the signature of the chairman of the commission, the countersignature of the treasurer of the commission and the seal of the district. The bonds shall be serially numbered. The commission shall prescribe the form and denominations of the bonds, and the time, not exceeding thirty years, at which they will mature and be redeemable. The bonds shall bear not over six and one-half percent per annum interest, as the commission directs, payable either annually or semiannually, and shall have interest coupons attached. The bonds shall not be sold for less than par and accrued interest, and their proceeds shall be used exclusively for the refunding of bonded debts. In case any officer whose signature or countersignature appears on the bonds or coupons ceases to be an officer before delivery of the bonds, his signature or countersignature shall nevertheless be valid the same as if he had been in office until delivery. (1968 S 208, § 7. Eff. 3-25-68)

AM JUR AND ALR ANNOTATIONS

Undelivered bonds authorized prior to adoption or effective date of constitutional or statutory provision regulating issuance of bonds, as affected by such provision. 109 ALR 961.

Requirement of prior appropriation by municipal authorities as condition of making a contract or incurring expense as applicable to bond issue payable only out of special funds and not constituting an obligation of the municipality. 124 ALR 1467.

74.340 [938g-30] Interest payments and repurchase of bonds out of sinking fund; bonds negotiable and nontaxable.

Upon the issuance of refunding bonds, the water district shall annually, from delinquent assessment collection and other revenues, carry to the sinking fund of the water district an amount sufficient to pay the annual interest on the bonds and create a fund for their purchase. Whenever there is a sufficient sum in the sinking fund over the amount required for the payment of interest, it shall be used in the purchasing of as many bonds as is practicable. All such bonds shall be negotiable and shall not be subject to taxation.

74.350 [938g-25] County may pay part costs.

Any county may, by resolution of the fiscal court, pay any part of the costs of establishing or purchasing a water line or water system.

74.360 [938g-3; 938g-9; 938g-10; 938g-11; 938g-14] Manner of giving notices required by this chapter.

The notices required by KRS 74.110, 74.150, 74.160, 74.170, 74.180 and 74.200 shall be given by publication pursuant to KRS Ch. 424. (1966 c 239, § 23. Eff. 6-16-66)

CROSS REFERENCES

See KRS 74.190 and 74.210, and note citing Bd of Comm, 288 Ky 720, 157 SW(2d) 285

Water district may not purchase and operate another existing water system lying partly within and partly without said district. Olson v. Preston St. Water Dist. No. 1, 291 Ky. 155, 163 S.W.(2d) 307.

74.361. A new section of Chapter 74 of the Kentucky Revised Statutes is created to read as follows:

(1) The General Assembly of the Commonwealth of Kentucky determines as a legislative finding of fact that reduction of the number of operating water districts in the Commonwealth will be in the public interest, in that mergers of such Districts will tend to eliminate wasteful duplication of costs and efforts, result in a sounder and more businesslike degree of management, and ultimately result in greater economies, less cost, and a higher degree of service to the general public; and that the public policy favors the merger of water districts wherever feasible.

(2) The Public Service Commission of Kentucky is authorized and empowered to initiate, carry out, and complete such investigations, inquiries, and studies as may be reasonably necessary to determine the advisability as to the merger of water districts. Prior

to ordering a hearing with reference to the merger of any water district into one or more additional water districts, the Public Service Commission shall cause to be prepared in writing a feasibility report and study regarding the proposed merger, containing such studies, investigations, facts, historical data, and projections as in the circumstances may be required in order to enable the Commission to formulate a proper decision regarding such merger.

(3) Based upon the written report and study required to be made incident to any water district merger, the Public Service Commission may propose by order that a merger of water districts be accomplished, and, upon the issuance of such order, shall give actual notice to all water districts proposed to be merged. Said order shall provide for a formal public hearing to be held before the Public Service Commission on the subject of such proposed merger. Actual notice of such merger hearing shall also be furnished to the county judges of each county containing a water district proposed to be merged, and each Water Commissioner of a water district proposed to be merged, and notice of such public hearing shall be afforded to the public served by the respective water districts sought to be merged, by newspaper notice in accordance with the provisions of KRS Chapter 424.

(4) A formal hearing before the Public Service Commission shall be held with reference to such merger proposal, and, upon such occasion, all water districts which are sought to be merged into a single entity shall be afforded the right to appear, to present evidence, to examine all exhibits and testimony, to cross-examine all witnesses, and to submit such memoranda, written evidence, and briefs as may be desired. Such public hearing may be adjourned from time to time by the Public Service Commission, and notice of such adjournments may, but need not, be afforded as with reference to the initial public hearing. At the conclusion of such proceedings, the Public Service Commission shall enter its order, either merging the water districts which are the subject of the merger proceedings into a single water district, or abandoning the merger proposal.

(5) Outstanding obligations of any water district merged in accordance with the provisions of this section which are secured by the right to levy an assessment as provided by KRS 74.130 to 74.230, inclusive, or secured by a pledge of the income and revenues of the systems operated by any such merged water district, shall continue to be retired from such moneys and funds as shall be collected from the users of facilities operated by such merged water districts in the original water district area in accordance with the terms and provisions of the enabling laws and the authorizing resolutions or indentures under which the outstanding obligations were issued, until all such obligations have been retired.

(6) In any order ordering the merger of water districts, the Public Service Commission shall make such additional orders as may be required in connection with the schedule of rates, rentals and charges for services rendered to be levied by the water district which remains in existence following such merger, having due regard to contractual commitments made and entered into by the constituent merged water districts in connection with the issuance of obligations by such Districts.

(7) Upon the effective date of any merger of water districts, the Water Commissioners of the merged water districts shall continue to serve as Water Commissioners for the remainder of the terms for which they were appointed, and, following the expiration of the terms of such Water Commissioners, the appropriate county court or county courts shall appoint and reappoint Water Commissioners to manage the business and affairs of the resultant water district, in the manner provided by KRS 74.020.

(8) Any order of merger entered by the Public Service Commission in accordance with this section shall be subject to all of the provisions of KRS Chapter 278, with reference to petitions for rehearing, and appeal.

(9) Using the authority of this section the Public Service Commission can also cause mergers of water associations into water associations or mergers of water associations into water districts.

(10) Nothing contained herein shall be construed to prohibit or limit in any respect the acquistion by water utilities subject to the jurisdiction of the Commission or by municipally owned water utilities of the assets of water districts or water associations or the merger of water districts or water associations and water utilities subject to the jurisdiction of the Commission or municipally owned water utilities.

74.363 Merger of water districts; transfer of assets; payment of obligations.

Boards of Commissioners of any two or more water districts may by concurrent action and by approval of a majority of the membership of the board of each merge their districts into one. In case of a merger the members of the boards of commissioners of the merged water districts may serve out the terms for which they were appointed and the merged districts may continue to be governed by a board of commissioners whose total number shall not be greater than three commissioners for

each county represented. The resulting district shall take over all the assets and legal liabilities of the water districts joining in the merger. Bonded obligations of any district secured by the right to levy an assessment as provided by KRS 74.130 through 74.230 or secured by the revenue of the systems operated by the district shall continue to be retired or a sinking fund for such purpose created from the tax assessments or revenue from the system operated by the district from funds collected over the same area by the new board of commissioners in accordance with the laws under which the bonds were issued until all bonded obligations of the old district have been retired. (1966 c 70, § 4. Eff. 6-16-66)

74.367 Discontinuance of water district; procedure.

(1) At any time after the organization of a water district, and after approval by the Public Service Commission in a proceeding similar to that provided by KRS 74.015, more than fifty percent of the freeholders within the district and a majority of the commissioners of the district may file a petition with the county court which had jurisdiction over the organization of the district requesting discontinuance of the water district. The petition shall state the reasons for discontinuance and that all obligations of the district have been met and that approval of the Public Service Commission has been obtained.

(1966 c 70, § 5. Eff. 6-16-66)

(2) After giving notice as provided in KRS Chapter 424 the county court may conduct such hearings on the petition as may be necessary to assist in making a determination.

(1966 c 70, § 5. Eff. 6-16-66)

(3) If, after hearings on the petition for discontinuance of the district the county court determines that a discontinuance is in the best interest of the residents of the district, the water district shall be dissolved by order of the county court and a copy of the order shall be forwarded to the Public Service Commission. (1966 c 70, § 5. Eff. 6-16-66)

74.370 Revenue bonds, issuance.

(1) Any water district, created in the manner provided in KRS 74.010 to 74.070, both inclusive, may if the commissioners of such water district deem it feasible, build, or acquire or enlarge a water system without resort to the right to levy assessments for the cost of such water system, as is provided in KRS 74.130 to 74.250, both inclusive, and may obtain the funds with which to build, acquire or enlarge such system by the issuance of revenue bonds, payable solely from the revenue to be derived from the operation of such system.

(1944 c 141, § 1. Eff. 6-13-44.)

(2) In the event the commissioners shall decide to finance the cost of such construction, acquisition or enlargement by the issuance of revenue bonds, secured solely by the revenue of the system, the commission shall note such decision by appropriate resolution, and shall thereafter proceed under the provisions of KRS 96.350 to 96.510, both inclusive, and the water district and the commission shall have the same powers and duties as a city of the second to sixth class inclusive under the provisions of KRS 96.350 to 96.510, both inclusive.

(1944 c 141, § 1. Eff. 6-13-44.)

(3) In the event such procedure is followed the commission shall not observe the provisions of KRS 74.130 to 74.230, both inclusive. (1944 c 141, § 1. Eff. June 13, 1944.)

Farmers Home Administration may insure bonds issued to finance the cost of construction of a water system by a water district commission in consideration of a 1% fee and to receive in exchange subordination rights to the bonds and all rights therein contained in the event of default. 1956 OAG 38,268.

Where bonds are payable solely from revenue funds derived from operation of water works to be constructed and the remedies of the bondholders extend only to enforcement of a lien upon the water works system together with its appurtenances and extensions, the landowners in the water district would not be liable for any cost of construction of the water system under KRS 74.370. 1956 OAG 38,359.

Where a revenue bond issue was effected to finance the construction of a water district system, created under KRS 74.010 et seq., the county has no authority to use its funds out of county treasury to assist in meeting the principal and interest on bonds. OAG 68-121.

74.380 Refunding assessment bonds with revenue bonds.

If any district has previously issued bonds secured entirely or partially by the right to levy an assessment as provided by KRS 74.130 to 74.230, both inclusive, and such bonds are redeemed prior to maturity, bonds to refund same may be issued secured solely by the revenue of said system in the manner provided in KRS 74.370. (1944 c 141, § 2. Eff. June 13, 1944.)

74.390 Revenue bond plan is alternative.

KRS 74.370 and 74.380 shall not repeal nor reduce any existing rights or duties of a water district, and the commissioners thereof, but shall constitute an additional and alternate method of financing. (1944 c 141, § 3. Eff. June 13, 1944.)

74.400 District may acquire, develop, maintain and operate gas system; procedure.

(1) Any county court, except in counties containing a city of the first class, upon petition of seventy-five resident freeholders of a water district organized under the provisions of KRS 74.010, may authorize said water district to acquire, develop, maintain, and operate a system for the distribution of gas to the citizens of the county. The petition shall describe the territory intended to be included in the area to be served and shall set out the reasons a gas distribution system is needed.

(1966 c 170, § 3, c 239, § 24. Eff. 6-16-66. 1952 c 133, § 1)

(2) When the petition is filed, the court shall give notice of the filing by publication as provided in KRS Ch. 424. Within thirty days after the publication, any resident of the district may file objections, and the court shall set the case for hearing within ten days. If

the court finds the establishment of a gas distributing system by such district reasonably necessary for the public health, convenience, and comfort of the residents, it shall make an order authorizing the establishment or acquisition of the gas distributing system.

(1966 c 170, § 3, c 239, § 24. Eff. 6-16-66. 1952 c 133, § 2)

(3) The court may in its order strike off any part of the territory that the testimony shows will not be benefited by the creation of the distribution system. If the court does not find that the gas distribution system is necessary it shall dismiss the petition. Either party may appeal to the circuit court for a retrial, and from the circuit to the Court of Appeals, as provided by law. (1966 c 170, § 3, c 239, § 24. Eff. 6-16-66. 1952 c 133, § 3)

74.401 Gas system established only if primary supply in district or county.

All other provisions of this chapter to the contrary notwithstanding, no water district created under this chapter shall establish a gas distribution system unless the primary source of the gas to be distributed is natural gas produced from within the territorial limits of the district or of a county in which the district is located. A gas distribution system so established may contract with a seller of gas for supplementing supplies of gas. Nothing in KRS 74.020, 74.120, 74.400, 74.401 and 74.408 shall be construed to enlarge any requirement under existing law relating to the furnishing of gas to a water district by any other supplier. However, nothing in this section shall prohibit the continued operation of a gas distribution system in operation pursuant to the provisions of this chapter prior to June 16, 1966. (1966 c 170, § 5. Eff. 6-16-66)

74.405 Gas distribution system to be administered by water commissioners.

If the water district is authorized to establish the gas distribution system, such system shall be established, maintained, and operated by the water commissioners of the district authorized to establish said system and said commissioners shall have all of the powers and authority, as regards the gas distributing system, that are conferred upon them for the purpose of furnishing a water supply under KRS 74.010 to 74.390. (1952 c 133 § 4. Eff. 6-19-52.)

74.407 Operation of sewage disposal systems.

In addition to the other authority which water districts presently have under this chapter, water districts are hereby authorized to acquire, develop, maintain and operate sewage disposal systems within the confines of their respective districts except that such sewer systems shall not include territory within the boundaries of existing municipal corporations having the authority to provide such sewer services without the consent of such municipal corporations. In the event of annexation of territory within a water district by another municipal corporation authorized to provide sewer systems and services, the water district may continue to provide and charge for sewer services within such newly annexed areas until such annexing municipal corporation makes adequate payment, by negotiation or condemnation, for such sewage disposal facilities owned and operated by the water district. The water district commissioners shall have all of the powers and authority, as regards sewer systems that are conferred upon them for the purpose of furnishing a water supply under KRS 74.010 to 74.390. (1962 c 152, § 1. Eff. 6-14-62)

Cross References

Construction subdistrict not to include nonconsenting city or district, 76.242, 220.553

74.408 Board to determine order in which water, gas or sewage service is to be commenced.

The authority of a water district to establish water and gas distribution systems, and sewage treatment and disposal systems, having been recognized and established, it shall be the function of the board of commissioners of the water district to determine when, and in what order, each of these functions shall be commenced, and the operation of one type of system shall not be a prerequisite for the operation of another type of system. (1966 c 170, § 4. Eff. 6-16-66)

74.410 Revenue bonds may be issued as provided in KRS 58.010 to 58.140.

Water districts may, in addition to all other methods provided by law, acquire and develop water systems, systems for the distribution of natural, artificial, or mixed gas and sewage disposal systems through the issuance of revenue bonds under the terms and provisions of KRS 58.010 to 58.140. (1962 c 152, § 2. Eff. 6-14-62. 1952 c 133, § 5)

Constitutionality:

This section is constitutional and the project may be financed by revenue bonds. Fraley v Beaver-Elkhorn Water Dist., 257 SW(2d) 536.

74.412 Extending lines through territory of other political subdivision.

Where operation of a sewer system requires, because of watershed factors or other reasons, water districts are authorized to extend lines through the territory of any municipal corporation or county with prior consent of such municipal corporation or county. (1962 c 152, § 3. Eff. 6-14-62)

74.414 Contract with other municipality or district for services.

The commissioners of a water district, in order to abate possible health menaces in their area and to increase the consumption of water in the area, or whenever such commissioners deem it to be for the general benefit of the water district, shall have the authority to contract with any city, water district or sewer construction district, or other incorporated municipality or district, to provide for the operation of a water system, or a sanitary sewer system, or both, regardless of

whether or not such water district operated by said board of commissioners has or will acquire any ownership rights in such systems to be so operated, upon such terms and conditions as such board of commissioners may deem appropriate, with or without any consideration being paid to or received by such water districts, other than the general benefit which may accrue to the water district from having more water or sewer customers and consequent increased use of water or sewer services. (1966 c 146, § 1 (1). Eff. 6-16-66. 1962 c 152, § 4)

74.415 Commissioners may specify standards for fire hydrant spacing for new water lines.

The commissioners of a water district in order to provide adequate means of fire protection, may require minimum fire hydrant spacing for new or extended water lines within their area. (1966 c 146, § 1(2). Eff. 6-16-66)

74.416 Approval of sanitary sewer system project in Jefferson county.

Before any water district in a county containing a city of the first class shall undertake the construction of a sanitary sewer system, such district shall first obtain the written approval of whatever agency of the county, if any, by other statute, possesses county-wide authority over sanitary sewer systems. (1962 c 152, § 5. Eff. 6-14-62)

JOINT OPERATION OF WATER SOURCES

74.420 Definition of "sources of water supply."

As used in KRS 74.420 to 74.520, unless the context requires otherwise "sources of supply of water" means and includes any or all of the following: wells, impounding reservoirs, standpipes, storage tanks, pumps, machinery, purification plants, softening apparatus, trunk mains and all other appurtenances useful in connection with developing and furnishing a supply of water under pressure into the water distribution systems of the cities or water districts which are represented by a commission created pursuant to the provisions of KRS 74.420 to 74.520. (1960 c 207, § 1. Eff. 6-16-60.)

74.430 Authority for joint operation of water supply.

In the interest of the public health and for the purpose of providing an adequate supply of water to cities and water districts any two or more cities or any two or more water districts organized under this chapter or any combination of such cities and water districts may jointly acquire either by purchase or construction sources of supply of water and may operate jointly such sources of supply of water and improve and extend the same in the manner as provided in KRS 74.420 to 74.520. The governing body of any city or water district desiring to avail themselves of the provisions of KRS 74.420 to 74.520 shall adopt a resolution or ordinance determining and electing to acquire and operate jointly sources of supply of water. (1960 c 207, § 2. Eff. 6-16-60.)

74.440 Procedure for creation of water commission.

(1) Upon the adoption of such an ordinance or resolution by the governing body of each such city or water district a certified copy thereof shall be filed with the county court of the county in which the cities or water districts proposing the creation of the commission having the greatest aggregate population are situated and upon such filing the court shall by appropriate order set a date for a public hearing on the creation of such commission and shall give reasonable notice of such public hearing which notice may be given in the manner as provided by KRS Chapter 424. Any resident of the cities or water districts proposing the creation of the commission may file objections and at the public hearing if the court finds that the establishment of such a commission is reasonably necessary or advantageous for the public health, convenience and comfort of the residents of all such cities and water districts which proposed the creation of the commission it shall make an order establishing the commission and designating it by name which name shall include the words "Water Commission."

(1960 c 207, § 3. Eff. 6-16-60.)

(2) If the court does not find that the creation of a commission is reasonably necessary or advantageous it shall make an appropriate order in this regard. Any party in interest may thereupon appeal to the circuit court for a retrial, and from the circuit court to the Court of Appeals as provided by law or the cities and water districts may revise and readopt such ordinances or resolutions. (1960 c 207, § 3. Eff. 6-16-60.)

74.450 Membership of water commission; term; compensation; removal; status.

(1) After the county court has made an order creating a water commission the presiding officer of each of the cities or water districts which proposed the creation of said commission with the approval of the governing body thereof shall appoint one commissioner and if the number of commissioners so appointed by the presiding officers of such cities or water districts shall equal or exceed five, then no further commissioners shall be appointed and such commissioners shall be and constitute the water commission.

(1960 c 207, § 4. Eff. 6-16-60.)

(2) If the number of commissioners appointed by the presiding officers of such cities or water districts shall be less than five, then the county judge of the county court which entered the order creating the commission shall appoint such additional commissioners to said commission as shall be necessary to make the number of commissioners equal five. The commissioners so appointed shall constitute the commission which shall be a public corporation and a public body corporate and politic with the powers and duties specified in KRS 74.420 to 74.520 and which commission shall be a joint agency and instrumentality of the respective cities or water districts represented by said commission. The commission may in its corporate name contract and be contracted with, sue and be sued, adopt and alter at its pleasure a corporate seal and purchase, own, hold and dispose of all real and personal property as may be necessary for carrying out its corporate purpose under KRS 74.420 to 74.520.

(1960 c 207, § 4. Eff. 6-16-60.)

(3) The commissioners originally appointed shall meet and select by lot their respective terms of office so that approximately one-third of the commissioners shall serve for a term of two years, a like number for a term of three years and the remaining commissioner or commissioners for a term of four years. Such terms shall be deemed to commence from the first day of the month during which the order of the county court creating the commission was entered.

(1960 c 207, § 4. Eff. 6-16-60.)

(4) Upon the expiration of the term of office of each of the commissioners a successor shall be appointed to succeed him for a term of four years and such appointment to be made in the same manner as the original appointment.

(1960 c 207, § 4. Eff. 6-16-60.)

(5) Each commissioner so appointed shall serve until their successors have been appointed and have qualified. Each commissioner shall be a resident of the cities or water districts which are represented by the commission. However, no person shall be eligible for appointment, if he has held an elective office in the state, any county or city, until one year after the expiration of the term for which he was last elected, and no officer or employe of any city, water district, political subdivision or other public body whether holding a paid or unpaid position shall be eligible for appointment as a commissioner. A commissioner is eligible for reappointment upon the expiration of his term. A vacancy shall be filled for the balance of the unexpired term in the same manner as that prescribed for the appointment of the person who has ceased to hold office. Each commissioner shall receive the same compensation which shall not be more than $500 per year, to be fixed by the commission and to be paid out of commission funds. Each commissioner shall furnish a bond for faithful performance of his official duties. This bond shall not be less than $5,000 and the amount thereof shall be fixed by the commission and its cost shall be paid by the commission.

(1960 c 207, § 4. Eff. 6-16-60.)

(6) Each commissioner may be removed by the official by whom he was appointed, for cause, after hearing by the appointing official and after at least ten days' notice in writing shall have been given to such commissioner, which notice shall embrace the charges preferred against him. At the hearing he may be represented by counsel. The finding of the appointing official shall be final and removal results in vacancy in such office. (1960 c 207, § 4. Eff. 6-16-60.)

Water district commissioner held to be a "public officer" and therefore subject to the statutes which restrict public officers from receiving a profit on public funds and receiving bribes. Com v Howard, 379 SW(2d) 475 (1964).

74.455. A new section of Chapter 74 of the Kentucky Revised Statutes is created to read as follows:

(1) From and after the creation and establishment of a water district and the appointment of Water Commissioners to manage the affairs of the District, and following the acquisition or construction by and duly created and established water district of a public water system, and the consequent establishment of regulatory jurisdiction over such water district by the Public Service Commission of Kentucky, the Public Service Commission may remove any Water Commissioner from his office for good cause, including, *inter alia,* incompetency, neglect of duty, gross immorality, or nonfeasance, misfeasance, or malfeasance in office, including without limiting the generality of the foregoing, failure to comply with rules, regulations, and orders issued by the Public Service Commission.

(2) No such order of removal with respect to any Water Commissioner shall be entered by the Public Service Commission until a public hearing on the merits with reference to such matter has been held by the Commission, at which hearing the Water Commissioner proposed to be removed from office shall be afforded the opportunity to appear, either *pro se,* or by counsel and file briefs, memoranda and motions, cross-examine witnesses, examine exhibits, and present evidence, both orally and in writing. All such orders of removal entered by the Public Service Commission shall be final and shall not be subject to appeal. Any Water Commissioner may waive such public hearing, in which case an order on removal may be forthwith entered by the Commission.

(3) Using procedures of this section the Public Service Commission may also request the removal of Directors, Trustees or other governing persons of water associations in like manner.

74.460 Organization of commission; powers and duties; authority to acquire water supply; obligations.

Such a commission shall organize by appointing a chairman from its own members and a secretary and a treasurer, who need not be commissioners. The secretary shall keep a record of all proceedings of the commission which shall be available for inspection as other public records. The treasurer shall be the lawful custodian of all funds of the commission and shall pay same out on orders authorized or approved by the commission. The secretary and treasurer shall perform such other duties appertaining to the affairs of the commission and shall receive such salaries as shall be prescribed by the commission, and either or both may be required to furnish bonds in sums to be fixed by the commission for the use and benefit of the commission. The commission shall adopt its own rules of procedure and provide for its meetings. The commission shall have full and complete supervision, management and control of the sources of supply of water as provided in the ordinances or resolutions for acquiring and operating same, and in their maintenance, operation and extension. The commission is authorized to contract with cities or water districts which are represented by the commission for furnishing a supply of water to such parties for a period not exceeding fifty years and the governing bodies of such cities or water districts are authorized to enter into such contracts with the commission. For the purpose of acquiring all or any part of its sources of supply of water the commission is authorized to purchase from cities or water districts which are represented by the commission

for mutually agreed terms without regard to actual value any sources of supply of water separate and apart from the water distribution systems of such parties and such cities or water districts are hereby authorized to convey such sources of supply of water to the commission without any election or voter approval notwithstanding any provision of any other law to the contrary; provided, however, in the event any such city or water district, has outstanding any obligations which by their terms are in any manner payable from the revenues of their waterworks distribution system, the proceeds recieved from any such conveyance shall be sufficient to retire all of such outstanding obligations including all interest accrued and to accrue thereon to the date of retirement thereof and such proceeds when received shall be set aside in a special fund and used for that purpose. The commission may appoint or contract for the services of officers, agents and employes, including engineers, attorneys, accountants, fiscal agents and other professional persons, prescribe their duties and fix their compensation. (1960 c 207, § 5. Eff. 6-16-60.)

74.470 Authority to issue revenue bonds.

For the purpose of acquiring, either by purchase or construction, sources of supply of water or for making improvements and extensions to sources of supply of water such a commission is authorized to issue revenue bonds payable solely from the revenues to be derived pursuant to water supply contracts with the cities, water districts, political subdivisions or other public bodies as provided in KRS 74.420 to 74.520 and for that purpose the commission may issue such revenue bonds and be vested with all of the powers, duties and responsibilities including the power of condemnation as are delegated and granted to a "governmental agency" under the terms and provisions of KRS Chapter 58 as said law now exists or as it may hereafter be amended and under said law the term "governmental agency" means the "commission" and the term "public project" means "sources of supply of water." (1960 c 207, § 6. Eff. 6-16-60.)

74.480 Exclusive water supply; basis for establishing rate, charges.

(1) When a commission has been created the cities or water districts represented by the commission shall contract with the commission for water and said contracts may provide that the sources of supply of water of the commission shall be the exclusive water supply for the respective water distribution sytsems of said cities and water districts. These cities or water districts shall establish such charges and rates for water supplied by them to consumers as will be sufficient at all times (a) to pay the principal of and interest on all outstanding obligations of said cities or water districts which by their terms are payable in any manner from the revenues of their respective waterworks distribution systems and (b) to pay the cost of operation and maintenance of their respective waterworks distribution systems including the payments to be made to the commission pursuant to contracts for the purchase of water by those cities or water districts.

(1960 c 207, § 7. Eff. 6-16-60.)

(2) The commission shall establish such charges and rates for water supplied to those cities or water districts as will be sufficient at all times (a) to pay the principal of and interest on the revenue bonds issued by the commission under the provisions of KRS 74.420 to 74.520, (b) to pay the cost of operation and maintenance of the sources of supply of water and (c) to provide an adequate fund for renewals, replacements and reserves. Contracts entered into between the commission and the cities or water districts shall include covenants for the establishment of rates and charges as provided in this section. (1960 c 207, § 7. Eff. 6-16-60.)

74.490 Commission may contract to supply other public bodies.

Such commission shall also have the right to supply water to any city, water district, political subdivision or other public body, in addition to the cities or water districts which are represented by the commission, upon such payments, terms and conditions as may be mutally agreed upon, provided, however, that no capital expenditures shall be made by the commission for the purpose of furnishing water to such other party or parties. Any such contract entered into to supply water to a city, water district, political subdivision, or other public body shall provide that payments to be made thereunder shall be solely from the revenues to be derived by such city, water district, political subdivision or other public body from the operation of the waterworks distribution system thereof and said contract shall be a continuing, valid and binding obligation of the city, water district, political subdivision or other public body, payable from such revenues for such period of years, not to exceed fifty, as may be provided in such contract. Any such contract shall not be a debt of any such city, water district, political subdivision or other public body within the meaning of any statutory or constitutional limitations. (1960 c 207, § 8. Eff. 6-16-60.)

74.500 Procedure for participation by other city or water districts.

After the creation of a Water Commission provided for by KRS 74.420 to 74.520 a city or water district which did not participate in the creation of said Commission may participate in its operation and appoint a commissioner to serve on said commission in the following manner:

(1) The governing body of such city or water district shall adopt and file in the County Court which entered the order creating said commission an ordinance or resolution electing and requesting that it be permitted to be included in and represented by said commission in the same manner and to the same extent as if said city or water district had originally participated in the creation of said commission.

(2) Upon such filing the court shall by appropriate order set a date for a public hearing on the inclusion of such a city or water district in said commission, and shall give notice of such public hearing in the manner as provided by KRS 74.440. Any resident of the city or water district at the time represented by said commission, and any resident of the city or water district requesting to be included in and represented by said commission and to participate in its operation, may file

objections, and at the public hearing if the court finds that the inclusion of such city or water district in said commission is reasonably necessary or advantageous for the public health, convenience and comfort of the residents of all cities and water districts represented by said commission, including the city or water district requesting to be included in said commission, and provided further that there shall be on file at the County Court a resolution adopted by said commission evidencing its willingness to have such city or water district included in and represented by said commission the court shall make an order authorizing the inclusion of such city or water district in the commission. If the court does not find that the inclusion of such city or water district is reasonably necessary or advantageous it shall make an appropriate order in this regard. Any party in interest may thereupon appeal to the Circuit Court for a retrial and from the Circuit Court to the Court of Appeals as provided by law.

(3) Upon the entering of the order by the County Court authorizing the inclusion of such city or water district in said commission the number of commissioners, if any, to be appointed to said commission by the County Court shall be reduced by one and the presiding officer, with the approval of the governing body of the city or water district which shall by virtue of said proceedings be included in and represented by said commission, shall appoint a commissioner whose term shall begin at the expiration of the term of the commissioner appointed by the County Court whose term shall first expire. In the event there is no commissioner on said commission appointed by the County Court the term of the commissioner appointed by the presiding officer of such city or water district shall be fixed so that the terms of approximately one-third of the commissioners will expire in each year. (1960 c 207, § 9. Eff. 6-16-60.)

74.510 Commission declared not to constitute a utility.

Inasmuch as the activities of a commission created pursuant to KRS 74.420 to 74.520 are limited to the supply of water under contract to cities, water districts, political subdivisions or other public bodies as provided in KRS 74.420 to 74.520 and such a commission has no authority to supply water to individual private consumers such a commission shall not be deemed to constitute a "utility" or "person" within the meaning and application of KRS Chapter 278 and a Commission shall not be required to obtain a certificate of convenience and necessity from the Public Service Commission of Kentucky prior to the construction of any sources of supply of water nor shall said Public Service Commission have any jurisdiction over the operation, management and control of any sources of supply of water acquired by such a commission or any power or authority in connection with the rates and charges established by such a commission pursuant to contracts with the cities, water districts, political subdivisions or other public bodies as provided in KRS 74.420 to 74.520. (1960 c 207, § 10. Eff. 6-16-60.)

74.520 Construction of KRS 74.420 to 74.520.

KRS 74.420 to 74.520 shall constitute full and complete authority for the creation of water commissions and for carrying out the powers and duties of same as provided in KRS 74.420 to 74.520. The provisions of KRS 74.420 to 74.520 shall be liberally construed to accomplish its purpose and no procedure or proceedings, notices, consents or approvals, shall be required in connection therewith except as may be prescribed by KRS 74.420 to 74.520. Every water commission organized under KRS 74.420 to 74.520 is declared to be a public body created and functioning in the interest and for the benefit of the public, and its property and income and any bonds issued by it and income therefrom shall be exempt from taxation. (1960 c 207, § 11. Eff. 6-16-60.)

74.990 [93Sg-13] Penalties.

Any collecting officer who fails to settle and pay any installment of assessments with interest, as and when provided by KRS 74.190, shall be liable to the commission for the full amount certified to him, with interest. Such amount may be collected from such collecting officer by rule issued against him by the county court in which the proceeding is pending, on five-days' notice in writing. The collecting officer shall be liable on his official bond for acts done under KRS 74.190, and for the faithful performance of his duties prescribed therein.

Appendix B

Certification of Operators of Water Treatment Plants, Water Distribution Systems and Sewage Treatment Plants

CERTIFICATION OF OPERATORS OF WATER TREATMENT PLANTS, WATER DISTRIBUTION SYSTEMS AND SEWAGE TREATMENT PLANTS

A recent evaluation of 36 Kentucky public water supplies* indicated that 56 percent of the operators (nine from systems both treating and distributing water and 11 from systems distributing finished water purchased wholesale) were not certified by the Kentucky State Department of Health as required by Kentucky Revised Statutes (KRS) 223.160. More importantly, all water systems with non-certified operators failed to meet water quality standards and/or had a Risk Factor of three or greater based on a scale of zero to ten. This section presents the criteria established by the State Department of Health, Division of Environmental Health.

DEFINITIONS

The State Department of Health, pursuant to KRS 223.160 et.al., has defined water treatment plants, water distribution systems and sewage treatment plants as follows:†

- "Water Treatment Plant"--shall mean that portion of the water supply system which in some way alters the physical, chemical, or bacteriological quality of the water,

- "Water Supply System"--shall mean the system of pipes, structures, and facilities through which water is obtained, treated, and sold, distributed, or otherwise offered to the public for household use or any use by humans,

- "Water Distribution System"--shall mean that portion of the water supply system in which water is conveyed from water treatment plant or other supply point to the premises of the consumer,

- "Sewage Treatment Plant"--shall mean the facility or groups of units provided for the treatment of waste water, either or both sewage and industrial wastes, and for reduction and handling of sludge removed from such waste water.

Water treatment plants and distribution systems and sewage treatment plants are divided into four (4) classes based on population served, type of works, and type of treatment. In addition, sewage treatment plant classification considers character and volume of wastes to be treated and the use and nature of the water resources receiving treatment plant effluent.

Water Treatment Plants and Distribution Systems

Class I

a. All plants not listed in other classes requiring chemical control of operation and designed to serve a population less than 15,000.

b. All distribution systems serving a population less than 15,000.

**Evaluation of the Kentucky Water Supply Program,* Bureau of Water Hygiene, Environmental Protection Agency, Region IV, May 1972.

†"Kentucky Water Treatment Plant, Water Distribution System, Sewage Treatment Plant, Water Distribution System, Sewage Treatment Plant Operators: Law-Regulation," State Department of Health, Division of Environmental Health.

Class II

a. All plants using filtration or chemical softening processes requiring chemical and bacteriological control and designed to serve a population less than 2,000.

b. All plants using chlorination requiring bacteriological control of operation and designed to serve a population less than 15,000.

c. All other plants requiring chemical control of operation designed to serve a population in excess of 15,000.

d. All distribution systems serving between 15,000 and 50,000 population.

Class III

a. All plants using filtration or chemical softening processes requiring chemical and bacteriological control of operation and designed to serve between 2,000 and 15,000 population.

b. All plants using chlorination requiring bacteriological control of operation and designed to serve a population in excess of 15,000.

c. All distribution systems serving in excess of 50,000 population.

Class IV

All plants using filtration or chemical softening processes requiring chemical and bacteriological control of operation and designed to serve a population in excess of 15,000.

Sewage Treatment Plants

Class I--Plants serving a population of less than 2,000.

Class II--Plants serving a population between 2,000 and 10,000.

Class III--Plants serving a population between 10,000 and 40,000.

Class IV--Plants serving a population in excess of 40,000.

CRITERIA FOR OPERATOR CERTIFICATION

The State Department of Health has devised criteria for operators of water treatment plants, distribution systems and sewage treatment plants of all four classes of facilities as defined above. The established criteria combine education (or educational equivalents) and experience which are presented in the following matrix (Table 12). It should be noted that where experience is substituted for education, that experience time may not also be used under the experience criteria. Thus an operator without a high school education, may need up to 13 years of experience on the

Table 12
Qualification Matrix for Operators' Certification of Classes I-IV Water Treatment Plants, Water Distribution Systems and Sewage Treatment Plants in the Commonwealth of Kentucky

	Class I	Class II	Class III	Class IV
Education				
High school graduate*,	X	X	X	
or 2 years general experience	X	X	X	
or high school equivalent (such as GED)	X	X	X	
College graduate*†,	X	X	X	X
or 4 years responsible experience	X	X	X	X
or 8 years important operating experience	X	X	X	X
Plus Experience ‡				
1 year acceptable operation of Classes I-IV	X			
3 years acceptable operation of Classes I-IV	X	X		
3 years acceptable operation of Classes II-IV, including 2 years in responsible role	X	X	X	
5 years acceptable operation of Classes III-IV, including 2 years in responsible role	X	X	X	X

*Completion of approved applicable courses of study such as correspondence courses or short courses is equal to six (6) months of college or one (1) year of high school, and other substitutions should be adjusted accordingly.

†Two years in a standard curriculum in engineering or allied science may be substituted for college degree or equivalent experience.

‡Experience substituted for education may not be used as experience requirements.

Source: Department of Health, Division of Environmental Health; Matrix by Spindletop Research, Inc.

job. The following criteria are applicable to all classes of water treatment plants, distribution systems and sewage treatment plants. Also, any experience criteria or educational equivalents (experience) must be under the facility definition for which a certification is sought.

Appendix C

Comparison of Economic Alternatives

COMPARISON OF ECONOMIC ALTERNATIVES

The annual cost is used to compare nonuniform series of money disbursements where money has a time value. This is done by reducing capital cost to an equivalent uniform series of payments and adding fixed annual operating costs.

In calculating the annual costs of items that have a salvage value after a given number of years, the following formula is used:

$$\text{ANNUAL COST} = (\text{CAPITAL COST} - \text{SALVAGE})\ \text{CRF} + \text{SALVAGE} \times \text{INTEREST}$$

In the above formula the capital cost is the total cost of equipment, land, or facilities including taxes and miscellaneous items. The salvage is the trade-in value after a given number of years. CRF is the capital recovery factor which may be obtained from Table 13 by using the interest rate and the expected life or the time period from purchase to salvage of the item.

If the capital cost item does not have a salvage value after a given period of time, then the annual cost can be computed by the following formula:

$$\text{ANNUAL COST} = \text{CAPITAL COST} \times \text{CRF}$$

For example, an item having a capital cost of $2,000, financed for a five-year project life and having no salvage value will have the following annual cost:

$$\text{ANNUAL COST} = \text{CAPITAL COST} \times \text{CRF}$$

$$\text{ANNUAL COST} = \$2{,}000 \times 0.23740$$

$$\text{ANNUAL COST} = \$474.80$$

The CRF of 0.23740 was obtained from Table 13 by referring to the row "five years" and the column "6 percent."

Financial project planning for water districts serving populations of 100,500, and 1,000 customers may be performed as indicated in Table 14. The capital cost items are reduced to annual cost by using a project life of ten years and 5 percent. For example, the total capital costs for 100 customers ($219,300) was reduced to an annual cost as follows:

$$\text{ANNUAL COST} = \$219{,}300 \times \text{CRF (10 years - 5 percent)}$$

$$= \$219{,}300 \times 0.12950$$

$$= \$28{,}399$$

Table 13
Capital Recovery Factor (CRF)

Year	INTEREST RATE					
	4%	5%	6%	7%	8%	10%
1	1.04000	1.05000	1.06000	1.07000	1.08000	1.10000
2	0.53020	0.53780	0.54544	0.55309	0.56077	0.57619
3	0.36035	0.36721	0.37411	0.38105	0.38803	0.40211
4	0.27549	0.28201	0.28859	0.29523	0.30192	0.31547
5	0.22463	0.23097	0.23740	0.24389	0.25046	0.26380
6	0.19076	0.19702	0.20336	0.20980	0.21632	0.22961
7	0.16661	0.17282	0.17914	0.18555	0.19207	0.20541
8	0.14853	0.15472	0.16104	0.16747	0.17401	0.18744
9	0.13449	0.14069	0.14702	0.15349	0.16008	0.17364
10	0.12329	0.12950	0.13587	0.14238	0.14903	0.16275
11	0.11415	0.12039	0.12679	0.13336	0.14008	0.15396
12	0.10655	0.11283	0.11928	0.12590	0.13270	0.14676
13	0.10014	0.10646	0.11296	0.11965	0.12652	0.14078
14	0.09467	0.10102	0.10758	0.11434	0.12130	0.13575
15	0.08994	0.09634	0.10296	0.10979	0.11683	0.13147
16	0.08582	0.09227	0.09895	0.10586	0.11298	0.12782
17	0.08220	0.08870	0.09544	0.10243	0.10963	0.12466
18	0 07899	0.08555	0.09236	0.09941	0.10670	0.12193
19	0.07614	0.08275	0.08962	0.09675	0.10413	0.11955
20	0.07358	0.08024	0.08718	0.09439	0.10185	0.11746
21	0.07128	0.07800	0.08500	0.09229	0.09983	0.11562
22	0.06920	0.07597	0.08305	0.09041	0.09803	0.11401
23	0.06731	0.07414	0.08128	0.08871	0.09642	0.11257
24	0.06559	0.07247	0.07968	0.08719	0.09498	0.11130
25	0.06401	0.07095	0.07823	0.08581	0.09368	0.11017
26	0.06257	0.06956	0.07690	0.08456	0.09251	0.10916
27	0.06124	0.06829	0.07570	0.08343	0.09145	0.10826
28	0.06001	0.06712	0.07459	0.08239	0.09049	0.10745
29	0.05888	0.06605	0.07358	0.08145	0.08962	0.10673
30	0.05783	0.06505	0.07265	0.08059	0.08883	0.10608
31	0.05686	0.06413	0.07179	0.07980	0.08811	0.10550
32	0.05595	0.06328	0.07100	0.07907	0.08745	0.10497
33	0.05510	0.06249	0.07027	0.07841	0.08685	0.10450
34	0.05431	0.06176	0.06960	0.07780	0 08630	0.10407
35	0.05358	0.06107	0.06897	0.07723	0.08580	0.10369
40	0.05052	0.05828	0.06646	0.07501	0.08386	0.10226
45	0.04826	0.05626	0.06470	0.07350	0.08259	0.10139
50	0.04655	0.05478	0.06344	0.07246	0.08174	0.10086
55	0.04523	0.05367	0.06254	0.07174	0.08118	0.10053
60	0.04420	0.05283	0.06188	0.07123	0.08080	0.10033
65	0.04339	0.05219	0.06139	0.07087	0.08054	0.10020
70	0.04275	0.05170	0.06103	0.07062	0.08037	0.10013
75	0.04223	0.05132	0.06077	0.07044	0.08025	0.10008
80	0.04181	0.05103	0.06057	0.07031	0.08017	0.10005
85	0.04148	0.05080	0.06043	0.07022	0.08012	0.10003
90	0.04121	0.05063	0.06032	0.07016	0.08008	0.10002
95	0.04099	0.05049	0.06024	0.07011	0.08005	0.10001
100	0.04081	0.05038	0.06018	0.07008	0.08004	0.10001

Table 14
Estimated Annual Cost per Customer for Water Districts with 100,500, and 1,000 Customers, Based on Ten-Year Repayment of Capital

	100 Customers	500 Customers	1,000 Customers
CAPITAL COST			
Planning	$ 500	$ 1,000	$ 1,500
Legal Fees	300	300	300
Engineering	10,000	22,000	28,000
Construction	200,000	550,000	800,000
Facilities (trailer)	6,500	6,500	8,000
Equipment	1,000	2,000	5,000
Miscellaneous	1,000	1,200	1,500
TOTAL	$219,300	$583,000	$844,300
ANNUAL COST			
Principal and Interest (10 yrs. @ 5 percent)	$28,399	$75,498	$109,336
Personnel	5,000	6,000	10,000
Maintenance and Operation	1,500	3,750	6,000
Additional Construction	1,500	7,500	15,000
Miscellaneous	1,000	2,000	2,500
TOTAL	$37,399	$94,748	$142,836
Average Annual Cost per Customer	$374.00	$189.00	$143.00
Average Monthly Bill	$31.17	15.75	11.75
Average Cost per 2,000 Gallons	$12.34	$6.74	$5.10

Source: Spindletop Research, Inc.

Therefore, this capital cost item was reduced to an annual cost and added to other direct annual costs.

Table 15 illustrates the annual costs based on 15 year financing at 5 percent.

Table 15
Estimated Annual Cost per Customer Based on Fifteen-Year Repayment of Capital

	100 Customers	500 Customers	1,000 Customers
ANNUAL COST			
Principal and Interest (15 yrs. @ 5 percent)	$21,127	$56,166	$ 81,339
Personnel	5,000	6,000	10,000
Maintenance and Operation	1,500	3,750	6,000
Additional Construction	1,500	7,500	15,000
Miscellaneous	1,000	2,000	2,500
TOTAL	$30,127	$75,416	$114,839
Average Annual Cost per Customer	$301.27	150.83	114.84
Average Monthly Bill	$ 25.10	12.56	9.57
Average Cost per 2,000 Gallons	$ 10.74	5.38	4.10

Source: Spindletop Research, Inc.