PROCEEDINGS

# SYMPOSIUM ON BETTER WATER AND SEWER SERVICES FOR SMALL COMMUNITIES IN NORTH CAROLINA

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## PURPOSE

To examine current water and sewer problems in the context of a multitude of applicable Federal and State programs, North Carolina law, and alternative governmental arrangements for the planning, financing, construction, and management of water and sewer systems.

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# SMALL COMMUNITY WATER AND SEWER SERVICES

# UNDER NORTH CAROLINA LAW

Warren J. Wicker, Assistant Director
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## INTRODUCTION

The discussions in today's symposium will cover the entire range of problems associated with providing better water and sewer services in North Carolina for small communities. They will also consider alternative approaches to the solution of these problems, including a review of the roles of various state and federal agencies already involved.

We will hear suggestions for new approaches, for action that needs to be taken now, from a number of speakers. All of you have been involved in meeting these problems, and together during the discussions we hope that we all may gain a better insight to the problems, and perhaps, develop some ideas that may be used in solving the problems.

I shall concentrate on what can now be done under North Carolina law with respect only to organizational arrangements and the financing of small community water and sewer systems. The detailing of other problems and the suggesting of solutions will be left to the distinguished roster of speakers who follow me.

In setting forth what may now be done under North Carolina law, I propose to:

A. Suggest seven standards for evaluating organizational arrangements.

B. Review briefly the eleven different organizational arrangements now available for use in North Carolina, with comments on the patterns of their use that have developed, and

C. Identify some of the major gaps or weaknesses in our present arrangements for planning and providing small community water and sewer services.

## STANDARDS FOR EVALUATING ORGANIZATIONAL ARRANGEMENTS[1]

1. The first of the seven standards is "adequacy of jurisdiction." Territorial jurisdiction is obviously a relative term, and no given amount of territory can always be said to be adequate. The size of the community, the

quality and quantity of water and sewer needs, the sources of supply and the problems of disposal will all affect the determination of an adequate jurisdiction. Here in the Research Triangle, for example, water supply is split among a number of jurisdictions: Durham, the University of North Carolina, Carrboro, Hillsborough, a new sanitary district, a nonprofit association and a private utility. Until recently the various jurisdictions were generally considered satisfactory. But with population growth, increased water demands, and a long dry spell, the jurisdictions of some of these units may no longer be adequate. Thus what is adequate in terms of jurisdiction may change over time as well as from place to place.

2. "Coordination of governmental services at the policy-making level" is the second standard for evaluating organizational arrangements. Water and sewerage services are not the only services a community needs, although they may be among the first. Moreover, decisions with respect to water and sewerage services affect other public services -- and the reverse is also true. The provision of water and sewerage services is closely related to patterns of land development, to the zoning of both rural and urban areas, to land subdivision and regulation, to the provision of schools, and to streets and fire protection. The decision on the location of a school, or an industry, or a major thoroughfare, on the other hand, affects the location of water and sewerage needs. It is thus desirable to have all these major public services coordinated at the policy-making level.

In recognition of this principle, the U. S. Advisory Committee on Intergovernmental Relations has recommended that wherever possible, water and sewerage services should be provided by general purpose governments, as opposed to special districts or authorities.[2] The U. S. Department of Housing and Urban Development, through its grant programs and area-wide planning requirements, tends to encourage coordination at the policy-making level and operations by general purpose governments. The Farmers Home Administration (about which you will hear more later this morning) also requires area-wide planning, but its funding practices in North Carolina tend to be with private associations rather than with general purpose governments. There are times, of course, when a separate authority or special district is demanded, but the loss of coordination with the provision of other public services ought to be recognized.

3. The third standard relates to provisions for "administrative coordination." Water and sewer systems are physically related to other public services -- especially streets, fire protection, drainage and recreation,

for example. It is desirable, therefore, that any organizational arrangement adopted be one that promotes the coordination of these activities at the administrative level.

4. "Financial capacity" is the fourth standard. There is little argument about this standard. Everyone would agree that the organizational arrangement must be one capable of financing the water and sewerage services needed. Where needs are large and water supply sources are relatively inexpensive, many organizational approaches might meet this standard. A problem arises when service is relatively expensive, or when risks or development investments in utilities must be ventured. In these cases substantial borrowing capacity, taxing powers, and flexibility in financing approaches may be quite important.

5. The fifth standard suggested is the organization's "capacity to secure the necessary professional and managerial staff" -- be it by employing the needed people, borrowing them, sharing them with others or the like. Competent personnel are essential and the organizational arrangement adopted ought to provide a means of securing competent people.

6. The sixth standard relates to how "democratic" the organization is. Is it democratically responsible to the people of the community? Some arrangements are more so than others, and at times this may be important. Of all the organizational approaches used now in North Carolina, service to fringe area communities or customers by cities and towns probably rates lowest on this standard. Fringe area customers have no control over the body that sets their rates, unlike the customers inside the city or the customers of a private utility who have the Utilities Commission to set their rates and watch out for their interests.

7. Finally, proposed organizational arrangements should be evaluated in terms of their "organizational flexibility" -- the ease with which the organization may be changed, modified, or abolished and merged with another organization. Rapid changes are taking place, both in technology and in related public services. The organizational arrangement adopted today may not be the best tomorrow. Other things being equal, an organization that is relatively easy to change is to be preferred over one that can only be abolished or changed with great difficulty. "If you are not certain about what you are doing, don't set it in concrete."

Needless to say, no single organizational arrangement is likely to score 100% with respect to all seven of these standards. From time to time

and place to place some will be more important than others. But all are important, and we will probably create better organizational arrangements if we examine any proposed arrangement in light of standards such as these.

With these standards in mind we may now examine the various organizational arrangements available for use in North Carolina at this time.

## ALTERNATIVE ORGANIZATIONAL ARRANGEMENTS AVAILABLE

There are eleven alternative organizational arrangements currently in use or available for use by small communities in North Carolina.[3]

1. City or Town.[4] Municipalities in North Carolina are authorized to provide both water and sewerage services, to plan for them and to provide services outside their boundaries as well as inside (although there may be a limit as to how far outside they may provide service). Municipalities possess a complete range of financing powers: they may issue general obligation bonds, revenue bonds, levy taxes for both purposes (expenditures for each service is a necessary expense within the meaning of the North Carolina Constitution) levy special assessments for extensions, and impose a variety of rates and charges.[5] Municipalities also have broad authority to provide other municipal services -- streets, fire protection, refuse collection and disposal, and exercise zoning and subdivision regulation powers, and the like.

Small communities that are already incorporated have a ready-made organizational arrangement for providing water and sewerage services. Communities that are not incorporated may become incorporated by a simple act of the General Assembly, or by a petition procedure through the Municipal Board of Control. Or, in the alternative, unincorporated communities in need of water and sewerage services may often find it is possible to secure the extension of such services from a neighboring municipality (with, in many cases, some prospect, or danger, of being annexed at some time in the future).

There are currently some 425 active incorporated cities and towns in North Carolina, and most of them provide water and sewerage services to their inhabitants. A few towns are served by private water utilities, and a very small number are located within a sanitary district. Service through a municipal government is thus the organizational approach by which most citizens receive service.

2. County. North Carolinas' 100 county governments may provide water and sewerage services, both within and outside their boundaries.[6] County governments may issue general obligation bonds[7] and revenue bonds[8] to finance water and sewerage facilities. They may also levy property taxes to

Comparison of Characteristics of Alternative Organizational Arrangements for Water and Sewer Services in North Carolina

| Organizational Arrangement | Gov. Bd. | | Utility Powers | | | | | | | | | | | Other Powers | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Elected Gov. Body | Appointed Gov. Body | Area-wide Planning | Water Operations | Sewerage Operations | Levy Property Taxes | Special Assessments | Impose Rates | Acreage Charges | Other Charges | Gen. Obligation Bonds | Revenue Bonds | Serve Outside Unit | Zoning | Subdivision Regulation | Fire Protection | Streets | Sanitation | Electric Systems | Parks & Recreation |
| 1. City or Town | X | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 2. County | X | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | X | | X |
| 3. Sanitary District | X | | X | X | X | X | | X | X | X | X | X | wo | | | X | | X | | |
| 4. Metro. Sewerage District | | X | X | | X | X | | X | X | X | X | X | X | | | | | | | |
| 5. Water & Sewer Authority | | X | X | X | X | | | X | X | X | | X | X | | | | | | | |
| 6. Joint Management Agency | | | X | X | X | | | X | X | X | | | | | | | | | | |
| 7. Joint Planning Agency | | X | X | | | | | | | | | | | | | | | | | |
| 8. Planning Commission | | X | X | | | | | | | | | | | | | | | | | |
| 9. Management Contract | | | | X | X | | | | | | | | | | | | | | | |
| 10. Non-Profit Association | | | | X | X | | | X | X | X | | X | | | | | | | | |
| 11. Private Utility | | | X | X | X | | | X | X | X | | X | | | | | | | | |

An "X" indicates that the organization in the column on the left has the characteristic or power named above the "X". A blank indicates that the organization does not have the named characteristic or power, or

support water and sewer services and more than a third of the counties may levy special assessments[9] against benefited property in financing water and sewer extensions. Counties may impose a wide range of rates and service charges.

County action in providing water and sewerage services to date has been in almost all cases a response to industrial needs and has taken four forms. A number of counties have made simple appropriations to aid cities in the extension of services to areas outside the city. For example, Wake, Lee, Vance and Buncombe have made appropriations of this type. Other counties have financed extensions to municipal systems, but have retained title to the lines while leasing them for a nominal sum to the municipality for operation and maintenance. Cleveland and Catawba counties have made major extensions with an arrangement of this type. The third pattern, and a pattern that is increasing in use, is one that provides for reimbursement of the county for its outlays. The reimbursement is usually from acreage charges, tap fees, or a share of receipts from the sale of water. Guilford, Rockingham, Wayne, Rowan and Edgecombe are among the counties using this type of approach to the financing of facilities.

More recently, a few counties are establishing water and sewerage systems and operating them. Anson, Forsyth and Mecklenburg are currently installing water systems and Durham has constructed a sewerage system, but is contracting with the City of Durham for operation and maintenance.

County governments have the power to establish separate community systems wherever they are needed in the county and operate them. County governments, for example, could serve as a "management agency" for a number of small community systems, and use the same source of funds now used by many small communities -- Farmers Home Administration loans. Buncombe County adopted this approach for a number of water and sewer districts organized in Buncombe County about 40 years ago. But no other county has followed Buncombe's lead, although it is an approach that should produce economies in operation and better planning than is currently found with a number of separate and independent small systems in operation in a single county.

3. Sanitary District. A sanitary district may be organized under a petition procedure in a community as a means of providing water and sewerage services.[10] A sanitary district is a limited local governmental unit, having power to provide water and sewerage services, fire protection, mosquito control, and refuse collection and disposal services, but none of the other

services or functions are usually available to the general purpose governments, cities and counties.

Sanitary districts also have less flexibility of service and financing than is true of cities and counties. They may issue general obligation and revenue bonds and impose rates and charges, but they are not empowered to levy special assessments or to extend sewer services outside their boundaries.

4. Metropolitan Sewerage District. A metropolitan sewerage district may be established by two or more political subdivisions and provides a means for joint action in meeting sewage disposal needs.[11] It is thus a device for bringing together several communities that have been previously incorporated, but is an approach not available to a single community without any formal governmental structure. Its powers with respect to providing sewerage service are extensive,[12] but not as extensive and flexible as those of a city or a county.

5. Water and Sewer Authority. Statutory authority for the creation of water and sewer authorities by the joint action of the governing boards of two or more political subdivisions has been available to North Carolina local governments since 1957 when legislation was enacted in anticipation of its possible use by seven Piedmont cities.[13] To date no authorities have been created. An authority is primarily useful as a means of bringing several units together for joint action. Its major limitation is that in financing it is limited to rates, fees and charges since it has not the power to levy taxes or impose special assessments.

6. Joint Management Agency. A joint management agency is a single administrative unit which has the responsibility for managing and operating water and sewerage facilities for any two or more political subdivisions or utilities. No such agency is now operating in North Carolina, but cities, towns and counties are expressly empowered to create joint agencies[14] and other types of political subdivisions, under their general powers, would seem to have adequate authority to contract with such an agency for management services. Such an organizational arrangement is not yet used anywhere in the state, but it could become an important approach since it offers the opportunity to achieve the economies of regional or large-scale operations while maintaining independent political control over financing and policy making by the participating units.

7. Joint Planning Agency. A joint planning agency is a single agency created by the governing boards of two or more political subdivisions and given responsibility of planning for the development and provision of water and sewerage service throughout the jurisdictions of the participating units.[15] It is an organizational approach that is especially appropriate for use where joint water supply or sewerage disposal facilities are physically and economically desirable. On a formal and continuing basis no such agency now exists in North Carolina, although some joint planning is often achieved by the informal exchange of information by units located and operating near one another.

8. Planning Commission or Board. Planning boards or commissions may be created by counties and cities, and on a regional basis by cities and counties acting together.[16] These boards have broad powers with respect to planning and could undertake planning for water and sewerage services as a part of general planning efforts. In fact, almost all planning boards do some study of utility needs, and a few, such as the Research Triangle Regional Planning Commission, do extensive planning of water and sewerage services and give special attention to the needs of small communities within their jurisdictions.

9. Management Contract. All the agencies and organizations discussed above have broad general contracting powers -- powers broad enough to permit them to contract with another agency for management services. As noted above, Durham County has contracted with the City of Durham for the management and operation of its sewerage facilities. A contract with an adjoining city could, in many cases, prove the most economical way for a small community to secure professional attention to its utility services, especially if it were too small to command a qualified staff of its own on a full-time basis.

10. Non-profit Association. Non-profit associations may be formed under North Carolina statutes[17] with such purposes as their charters may provide, including the provision of water and sewerage services. A large number of these have been formed in small communities in North Carolina in recent years because of the availability of utility loans to such private associations from the Farmers Home Administration. As private organizations, such associations are, of course, without the taxing power or the power to regulate development possessed by some governmental units. Such associations may enter into contracts with governmental units for water supply or for other

services. And public bodies, in turn, may contract with the non-profit associations for services. There is thus the possibility of including the private, non-profit associations in regional joint arrangements in order to improve services provided by each of the participating units.

11. Private Utility. Private utilities, organized and operated for a profit and operating under the regulations of the North Carolina Utilities Commission, proved services in a number of North Carolina communities, especially new residential communities outside the service area of any existing utility operated by a governmental unit.

These, then, are the different organizational approaches possible in providing better water and sewer services for small communities in North Carolina. Taken together, they constitute an arrangement of arrangements. They represent the state's response in providing organizational tools for the job.

## GAPS, PROBLEMS AND WEAKNESSES

It is appropriate to ask in conclusion just how well the job is being done. Are the present arrangements for providing water and sewer services working satisfactorily? A great many people in the state are served well -- clearly the "system" has some strengths. But a thorough review also suggests that there are some weaknesses, some gaps and some problems with respect to the way the total arrangement works. Relatively speaking, the weaknesses are small in comparison with the strengths, but if the goal is to improve the existing arrangements, it may be appropriate to examine the weaknesses. Four are suggested here for your consideration (the first three are actually aspects of a single weakness, but are listed separately for emphasis).

A. There is an absence of clearly established responsibility for comprehensive planning of water and sewerage services, and for providing such services when and where they may be needed throughout the state.

B. Responsibility for "risk taking" and for "development investments" in water and sewerage services is not clearly established.

C. There is no established procedure designed to assure that actions taken at the local level are coordinated, or that all alternative arrangements for the provision of services are considered in advance.

D. Traditional attitudes of city and county officials and professionals in water and sewerage operations sometimes restrict the

development of adequate solutions to water and sewer service problems. I will comment briefly on each of these.

A. Absence of clearly established responsibility for the planning and provision of services.

We have, as we have seen, a large number of existing units (and others that may be created when these do not exist) to plan for water and sewerage services, and to provide them. But a review of practices suggests that often where everybody is responsible, nobody is responsible. Suppose a small community is located two miles from a city. Who is responsible for planning for services to this community? The city may do it. The county may do it. If there are planning groups already established, they may do it. If there is a private utility in the area, it may do it. A profit-minded individual who wants to organize a utility may do it. A sanitary district could be formed to do it. But no agency is clearly responsible for planning for the community's needs, and, in fact, the planning may not be done at all.

Some basic planning is now being done under the Farmers Home Administration Program, and this planning together with the HUD supported and encouraged planning will soon cover the state. Several state agencies are concerned, and a number of local agencies are planning. But despite all this, there are still large areas of the state where responsibility for really effective and adequate planning is not established.

And the same situation exists with respect to the provision of services. Many agencies may provide services, but often it is found that either they cannot do so, or are unwilling to do so.

Compare this situation, with the arrangement the state has developed for streets and highways. The responsibility for both the planning and the providing of streets and highways is clearly established. Every square inch of the state is covered. The responsibility is jointly shared by cities and the state, with advice from the board or county commissioners. A citizen, a developer, or a new industry knows where to go to learn about plans or to request action. (He knows where to go even though he may not always be happy with what he is told once he gets there!) Our highways may not be considered adequate, and there may be shortcomings in the quality of our highway planning, but we have established clear areas of responsibility for highways. We have yet to establish such clear responsibility in the case of water and sewerage services.

B. Responsibility for risk taking and development investments is not fixed.

The failure to establish clear responsibility for planning becomes a particularly acute problem in cases requiring the taking of risks. This aspect deserves special and separate mention, because it is an important problem even though not a universal one. Where urban development is dense, or where the needs for water and sewerage services are substantial, we have no problem in meeting the needs with almost any of the existing arrangements possible. A $10 million industrial complex locating near any of our cities, one that pays high wages, smells good, and uses only 1,000 gallons of water a day will never have a problem in securing service in this state. In a like fashion, developers of first-class subdivisions who are willing to install at their own expense water and sewer lines to the nearest municipal system will seldom be turned down. But suppose the industry needs lots of water, or is located at some distance from a municipal supplier, or that the needs are those of a community with homes several hundred feet apart. Or suppose it is a fringe area with scattered development but expectations of more. Extension of service in these cases cannot be self-supporting from the start. Some agency must take a risk -- in anticipation of future growth.

Or what about the community that wants to install water and sewerage facilities in order to have them available as an attraction for economic development?

To some extent many of our existing units take risks of the type just mentioned, or make investments in economic development (or what they hope will be economic development). Both city and county governments have often made expenditures of this type.

Grants from the Economic Development Administration are expressly designed to promote economic growth. And in Anson County we have one of the rare examples of EDA, Farmers Home, HUD, and the County government all cooperating in a massive investment in development. Often, however, there are needs, and especially in small communities, which are not being met. Some of these, probably, should not be met. The shortcoming is that we have no established means for assuring that all the needs are adequately considered and, when appropriate, met.

C. Procedures for coordinated action and consideration of all alternatives at the local level are missing.

As already noted, there are many different approaches that a small community may take in providing water and sewerage services or in improving

them. To a large extent, however, these actions may be taken without reference to what other units or agencies are doing, or may be doing. Moreover, present procedures do not assure that all possible arrangements and solutions, some of which, we may assume, might be better than others in each situation, are considered.

For example, a private utility may be organized in an unincorporated area without any discussions with nearby local public bodies already providing services. A sanitary district may be organized after consultation with the board of county commissioners and the State Board of Health, but without any necessary reference to other public or private agencies in the area. Non-profit associations may be formed without discussion with any public agency (in terms of organization and finance) unless they seek funding from the Farmers Home Administration, in which case a review by the county commissioners is required.

The long range plans of local units may overlap, but in the absence of federal aid requirements and the wisdom of local officials who may get together informally, action on the plans may be taken without consultation with one another.

We have probably not yet made too many serious errors because of the failure to coordinate action properly. But with increased local action, and using the great variety of approaches possible, more serious errors may be anticipated if present practices continue.

D. Traditional attitudes of local officials and utility professionals.

The three weaknesses in our present arrangements just discussed have all been identified before. Many of you here have commented on them over the past several years. Yet to a large extent, they still exist. Why?

There are many reasons why institutional arrangements are slow to change, but in this case what might be termed "traditional attitudes" seems to be quite important. There are undoubtedly many different attitudes that are important in this context, but I will mention only three:

1. First, county governments have often been reluctant to provide services because some county commissioners have viewed the provision of water and sewerage services as "something counties have no business in." Thus many small communities in the need of services have been forced to organize non-profit associations or sanitary districts (often at a size too small for efficient operations) because the county government was unwilling to act. An attitude change here is necessary before county government may be used fully as a means of meeting utility needs.

2. Many city officials and governing boards (not all) still view outside water and sewerage services only as a step in the annexation process, and one that should be used to encourage annexation. Outside rates in the typical North Carolina municipality are about double those applying to customers inside -- even though all the service mains located outside may have been installed without cost to the city, to city standards, and dedicated to the city upon completion. Years ago a higher outside rate was justified on the basis that some support of the system came from taxes -- which, of course, apply only to inside customers. This basis still exists in a few cities, but more and more cities are going to a self-supporting utility operation.

Another reason for higher outside rates was the attempt to encourage annexation. In the days when annexation was dependent upon a vote of those being annexed, the carrot of "cut your water rates in half" was important. It has been ten years since most annexations were subject to a vote, but the attitude with respect to rates continues. And this attitude will pose a real problem for the city that needs to become a regional or area-wide supplier of services -- supplying services well beyond territory with any prospect of early annexation.

3. Finally, I would mention the attitude that "politics is bad and the utility is a business and the two should be separate" that has been widely present among professionals in the utility business. This attitude has largely ignored the relationship between the provision of utility services and the extensions of other governmental services. Moreover, and more importantly perhaps, it fails to recognize that the greatest service problems are precisely those where the utility cannot operate as a "business." The big problems are the needs for service in areas difficult to justify on an economic basis -- where a subsidy is needed -- or in areas where investments in economic development are called for. In other words, political decisions and political allocation of resources are required. The real problem is not how to avoid political decisions with respect to water and sewer services, but how to create structures that promote good decisions.

## FOOTNOTES

1. The standards listed here are examined more fully in "Standards for Evaluating Organizational Arrangements for Water Services" by Warren J. Wicker and Milton S. Heath, Jr., a paper delivered at the International Conference on Water for Peace, Washington, D. C., May 23-31, 1967.
2. See Intergovernmental Responsibilities for Water Supply and Sewage Disposal in Metropolitan Areas, U. S. Advisory Commission on Intergovernmental Relations, Washington, D. C., 1962.
3. See page 5 for chart indicating the chief characteristics and powers of each.
4. Cities and towns may be incorporated in North Carolina either by a special act of the General Assembly or by the Municipal Board of Control under a petition procedure. G. S. 160-195 to 198.
5. Water and sewer services and rates are authorized by G. S. 160-255 and 160-256. Special assessments may be levied under the provisions of G. S. 160-241 to 248.
6. G. S. Ch. 153, Art. 24.
7. G. S. 153-77.
8. G. S. Ch. 160, Art. 34.
9. G. S. Ch. 153, Art. 24A.
10. The procedure for organizing sanitary districts and their powers may be found in G. S. Ch. 130, Art. 12.
11. A metropolitan sewerage district may be created under the authority of G. S. Ch. 153, Art. 25.
12. See chart on page 5.
13. The procedure for creating water and sewer authorities and their powers may be found in G. S. Ch. 162A.
14. G. S. 153-288.
15. A joint planning agency could be created under the same authority cited above for the creation of a joint management agency.
16. Planning boards or commissions may be created by counties (G. S. 153-9 (40)), or by municipalities (G. S. 160-22), or on a regional basis by cities and/or counties (G. S. 153-276).
17. G. S. Ch. 55A.

# COORDINATION OF FEDERAL PROGRAMS FOR COMMUNITY WATER AND SEWER SYSTEMS

Alvin L. Alm
United States Bureau of the Budget

I appreciate this opportunity to discuss the very important subject of coordination of Federal programs for community water and sewer systems.

As you are probably aware, four Federal agencies currently make grants and loans for sewer, water and treatment facilities. These agencies and the functions for which grants are made include the following:

1. The Federal Water Pollution Control Administration of Interior makes grants for waste treatment facilities for control of water pollution. The Federal percentage share varies from 30% to 55%, depending on State matching, water quality standards, and comprehensive planning.
2. The Department of Housing and Urban Development makes grants and loans for water and sewer systems (but not sewage treatment facilities) for the purpose of stimulating planned and orderly development of metropolitan areas, and as a secondary goal, water pollution control. The grants normally cover 50% of eligible project costs, although in certain instances, HUD has authority to supplement up to 80% of eligible project costs.
3. The Farmers Home Administration of Agriculture makes grants and loans to small rural communities for sewer, water and treatment facilities for the purpose of overall community improvement and development. The Federal percentage share may go up to 50%, depending on potential revenues from user charges.
4. The Economic Development Administration of Commerce makes grants and loans for sewer, water and treatment facilities in economically distressed areas to provide significant opportunities for industrial development. The basic grant percentage is 50%, but it can go up to 80% in certain designated areas of heavy unemployment and low income. EDA can also supplement the sewer and water grants of other agencies.

In addition, the Appalachian Regional Commission and the five other regional commissions can supplement up to 80 percent of the costs of projects for which a basic grant is made by FHA, FWPCA, or HUD.

The problem of Federal coordination of sewer and water programs did not become acute until 1965. The EDA, FHA and HUD grant programs were not even created until then; previously, the only sewer and water programs were the waste treatment program in HEW and the water and sewer programs of the Area Redevelopment Administration. It became apparent to us that it would be necessary to create a coordinating mechanism for these four programs, and the Federal interagency water and sewer coordinating committee was formed in 1965 under the sponsorship of the Bureau of the Budget. Its membership included, and still includes, EDA, FHA, FWPCA, and HUD, and the Bureau.

The Committee's first task was to develop a jurisdictional system to assure that Federal agencies and communities clearly understood which agency would be responsible for projects in different sizes of communities. The jurisdictional system was agreed upon in October 1965. A supplementary Agriculture-HUD agreement was approved in December 1965.

The jurisdiction system works roughly as follows: FWPCA has primary jurisdiction for waste treatment facilities. HUD has primary jurisdiction for water and sewer facilities for communities over 5500 in population. The Agriculture-HUD agreement which I won't go into in this brief description, covers communities of less than 5500 population. EDA receives applications from other Federal agencies for projects in EDA-designated, economically distressed areas that will contribute significantly to the creation of new jobs.

The second step in improving coordination of Federal sewer and water programs was to develop a standard referral form to be used by all four agencies. That form, which is used to establish initial agency jurisdiction, was first developed in December 1965 and updated in December 1967.

A third step was agreement among the three sewer and water agencies with loan programs--EDA, FHA, and HUD--to use the same interest rates for their loans. Currently, the rate is five percent for all areas except those designated by EDA as economically depressed, in which case it is 4 3/4 percent.

During the early history of these three programs, rather sizable backlogs developed as local aspirations outdistanced available Federal financial assistance. It became apparent that the Federal agencies would have to take

steps to reduce these backlogs. HUD was the first agency to develop a priority system that would clearly indicate which communities would be eligible for grants within funds available. As a result of applying this system, HUD was able to send out over 1,900 "Dear John" letters in December 1966. EDA followed suit at about the same time, turning down 900 applications for over $1 billion in grants and loans, a significant part of which were for sewer and water facilities. Although the communities were not always overjoyed, they were in a position to make alternate financing plans for these facilities. FHA has also taken steps to reduce backlogs to controllable levels. FWPCA was never required to take these actions, since priorities and backlogs are handled by the State water pollution control agencies.

The Executive branch also recognized the need to reduce the time required for processing applications to an absolute minimum. The President's Joint Administrative Task Force, chaired by HUD Secretary Robert Weaver, recommended a 57 percent reduction in the time it takes Federal agencies to process water and sewer applications. The report called for a number of actions, both by individual agencies and by the Interagency Committee, to bring about these changes. Most of these have been accomplished, and some of the agencies have exceeded the Task Force's goals.

The interagency committee provides a forum for continuing coordination of sewer and water programs. In the last year, the committee developed a new preliminary application form (S.F. 101), and the member agencies have agreed to a standard approach to engineering standards. Currently, the committee is working on standard policies and procedures for disbursement and audits, for areawide sewer and water planning, and for consistent handling of joint projects. Once successful in these areas, it will most likely look toward other areas of improving coordination of these four programs.

The interagency committee meets periodically with public interest groups--both State and local associations and representatives of the sewer and water industry--to discuss problems and matters of mutual interest. These discussions are useful in terms of improving the coordination of these programs, understanding the needs of local governments and industry, and frankly, giving us an opportunity to explain some of our problems and objectives to those most interested. Our impression is that the public interest groups are satisfied with the progress being made, and appreciate the opportunity to discuss candidly the sewer and water programs with Federal representatives.

In closing, I do not wish to leave the impression that we in the Executive Branch believe all is well. Coordination among four agencies is always difficult work which requires continuous vigilance. Although we believe the system is working fairly smoothly, we continue to strive for improvements and periodically assess the success of the coordinating mechanism. This is one of the reasons I was pleased to have this opportunity to speak with you and welcome the chance to hear some of your comments.

# COMMUNITY WATER AND SEWER SYSTEM PLANNING BY THE FARMERS HOME ADMINISTRATION

W. Bryan Oliver, Chief
Community Services
Farmers Home Administration

Under legislation authorized in 1965, Farmers Home Administration has had authority to make grants for the purpose of making comprehensive water and sewer system plans to the planning board in any county that is not in a Standard Metropolitan Statistical Area (SMSA). These plans cover only the rural areas of counties and places of 5500 or over population are not to be included.

In North Carolina grants have already been made to planning boards in seventy-eight counties for the preparation of comprehensive water and sewer plans. By the end of the present fiscal year we will have completed or will have in process a comprehensive plan for all of the non-SMSA counties in the state.

The plans are prepared by registered engineering firms licensed to do engineering in the State of North Carolina. We are not in the planning business as such. We have only one engineer on our state staff, and he is used to check plans and to help decide whether or not plans for loans and/or grants are properly engineered. We do not select engineers. Comprehensive plans are overall plans and are not meant to be designs for individual systems. All comprehensive plans in North Carolina that are financed by Farmers Home Administration are made through planning boards appointed by the county commissioners. County commissioners as such are not authorized to contract for comprehensive plans, but they do have the authority to set up planning boards who are authorized to contract with engineers for a comprehensive water and sewer plan. Planning boards contract with the engineering firm they have selected. We probably deal with thirty to forty different engineering firms; consequently, we do not get the same type of job done in every case even though all engineering firms have the same FHA criteria. Comprehensive plans contain a study of the present situation in each county, and then a plan is developed for long-range development (20 years or more in the future).

Farmers Home Administration is also authorized to make loans and grants to rural communities in non-SMSA counties for the development of water

and sewer facilities. In 1961 we were first authorized to develop water and sewer systems through loans to communities. Broadening of the program began when Congress first made provisions for grant funds to be available in the 1965 fiscal year. Actual appropriation, however, for grants has been so small that we are limited in the number of communities we can assist through both loans and grants. Through these authorities we have made loans and/or grants for water and sewer systems to 139 communities serving around 40,000 rural families.

This authority, along with all the other authorities to make and supervise loans through the Farmers Home Administration, has placed rather heavy workloads on the limited personnel of the agency. Since 1961, our workloads have become at least 500 percent heavier, and personnel in the same period have increased only about 57 percent.

As in any group project, the cooperation of the people participating--in this case the members of the communities--is essential. Surprisingly, not everyone in a community wants this service. They may already have some type of water supply--even though the water is not potable. They probably have an individual sewer system of sorts. Actually, to be successful in most areas of North Carolina, we have found that we need the participation of more than 85 percent of the population in an area to make a water or sewer project feasible. Essential to planning and developing water and sewer systems is local leadership.

One of the essentials in planning for development of a water and sewer system is the serious consideration of the ability of the community to repay the loan. In many cases, in order to develop these projects under sound financial principles, density of population becomes a rather important factor.

No grants can be involved unless at least 80 percent of the population in the area are interested in securing the service. The maximum grant that can be made is limited to 50 percent of the cost of a water system and 30 percent of the cost of a sewage treatment plant.

Most of the systems which we have helped develop have been financed entirely by FHA loans. Loans are amortized over a period of forty years and are to be repaid by the revenue from the system. Families in the community--we call them users--are billed on a monthly basis and are expected to make their monthly payments by the 10th of each month.

As much as possible, grants are used to bring the individual cost in line with the ability of the users to pay. The plan prepared by the community and their engineer must reveal the ability of the people residing in the area to make their monthly payments. Some of the difficulties in repayment depend upon whether or not the population is relatively stable and dependable.

Due to the method of financing that the Farmers Home Administration is forced to use, we must only finance systems that are modestly planned and designed. Naturally, we have some problems involved with local engineering firms that have a tendency to design "the ideal system." Systems financed by the Farmers Home Administration are advertised for bids, and the lowest bidder is usually awarded the contract. There are not many serious problems encountered in getting satisfactory work done through this process.

Of course, somebody must be responsible for seeing that users are billed, that bills are paid, and that the system is properly operated and maintained. The systems that we have financed through Farmers Home Administration vary in size from a small community system serving a dozen or so families to a system that is being constructed up in Davidson County designed to take care of 3650 families at the present time. This system is designed for 100 percent increase in population. Consequently, operating personnel varies as greatly as does the size of the system. Funds to pay operating personnel are usually very limited. Finding capable people to manage and service the rural water and sewer systems is a problem.

In the planning and financing of the small systems, the design is usually made to fit into larger overall systems as planned in a comprehensive water and sewer plan. In the ideal situation, the comprehensive plan, based upon the completed plan for overall water and sewer needs of the county, will be the master plan and all future loans and grants for water and sewer systems will be designed in such a manner as to fit into and become part of an overall plan. Comprehensive plans vary, even though all engineering firms have the same instructions and sign identical contracts for this work.

As I have said, we have made 127 loans for water systems through our authorities, and twelve loans for sewage treatment systems. We have on hand applications that will use up all the available funds during this year and probably next fiscal year, also. We are interested within available funds in helping every possible community to develop systems, of both water and sewage, to meet the needs for a pure water supply and an efficient plant to meet the sewage disposal needs.

# COMMUNITY WATER AND SEWER SYSTEMS IN THE CONTEXT OF URBAN AND REGIONAL PLANNING

James R. Hinkley, Director
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North Carolina Department of Conservation and Development

North Carolina is one of the leading States in the Nation in small community planning. One reason for this leadership is the Division of Community Planning. The Division, one of eight in the State Department of Conservation and Development, has been in existence since 1959, being authorized by the 1957 General Assembly. Beginning with a small staff, the Division now has about 50 personnel--25 of whom are professional planners. In its ten year history, the Division has served over a hundred North Carolina towns and counties.

The Division of Community Planning's purpose is to render small communities and counties professional planning service where these governmental units are unable to support their own planning staffs.

Through the U. S. Department of Housing and Urban Development's "701" Planning Program, enacted as part of the Housing Act of 1954, the Division administers funds and renders professional assistance to towns, counties, and regions which are unable to pay in full for such services. Normally, costs are footed on a 2/3's Federal - 1/3 local matching grant basis, but in the western and eastern parts of the State where the Appalachian and Coastal Plains Economic Development Programs are in operation, matching is on a 3/4's - 1/4 basis. Here, Local Government pays only 1/4 the cost of planning assistance.

The Division works primarily with local Planning Boards. Staff members serve as consultants rendering technical assistance to these bodies. Normally, a "Planning Contract" with a community or county is completed within a period of two years. For an initial contract with a Local Government, for instance, base mapping, population and economic data and projections, existing land use studies, and land development plans may be prepared by the local planning bodies with the technical assistance being supplied by a DCP Consultant. Also, legal tools for implementing plans are prepared. These are Zoning Ordinances developed to control the use of land and buildings and subdivision regulations formulated to guide the layout of land in accordance with Land Development Plans. Advisory service to Local Governmental Administration is also rendered during the contract period.

Studies prepared with the aid of the Division which would more than likely fall into a second contract period are Community Facilities Planning, Public Improvements Programming, and Capital Improvements Budgeting. These studies are all prepared in accordance with a previously formulated Land Development Plan. Facilities Planning, Programming, and Budgeting are accomplished for the various functions of Local Government. These include the Public Safety Function which entails Fire protection, Police protection, Rescue operations, and Civil Defense; the Public Works Function which includes water and sewer services, streets, garbage and refuse collection and disposal, etc.; and the Social and Cultural Functions including schools, parks and recreation facilities and libraries.

For these functions of Local Government, specific recommendations are made in support of the Land Development Plan. In the area of water and sewer, for instance, a planner realizes that for certain planned residential land use densities proposed in the development plan that certain capacity systems must be installed to serve the proposed land uses properly. With the aid of the local engineer or engineering consultant, the planner is able to plot the mains and other improvements which will be required by the future land uses. Superimposed upon the Land Development Plan Map, schematic water and sewer improvements and extensions can be shown.

Based on the information which was garnered in the analysis stages of the planning program, the planner and the engineer are able to tell in which direction the community is growing and how fast. Upon this information, water and sewer programming takes place. Because of the previous planning studies, programming can be done specifically on a fiscal year basis - listed yearly in priority. Budgeting then can follow, on a short term basis, possibly up to six years. The budgeting, of course, is based on the programming of the recommendations of the community facilities plan. In a nutshell and in an oversimplified form, this is how water and sewer systems improvements fit into the Urban Planning Process.

From this type of process - namely, Land Use-Community Facility Planning - stems economy in the installation of water and sewer improvements. Local managers and engineers, through the use of this Planning Process, can plan their work and budgeting far enough into the future to be prepared to foot the bill when the demand for water and sewer improvements comes along, and bond issues for major additions to the system may be <u>scheduled</u> rather than forced.

In short, the essence of the Division of Community Planning's role is to aid in preserving, enhancing, and improving the amenities which prevail in small towns and in counties of the state; second, to aid in improving living conditions; and third, to help in improving governmental services - at the same time improving economy in government. This is the Division's role in serving small communities in North Carolina, but its role is limited by several factors. Accomplishments of the Planning Boards with which the Division works must be measured with these factors in mind. Primarily, these factors are the human elements of the citizenry, the sometime disinterested local legislative body, and the occasionally unsympathetic or inhibited local administration. When the human element is entered into the picture, as it always is, the Division's role sometimes looks like a horse of a different color by the time the product of this role is seen implemented at the local level.

After hearing of the many areas in which planners dabble - Fire and Police protection, zoning, economics, recreation, libraries, traffic, land use, subdivision regulation, not to mention water and sewer - one might ask how in the world planners would know enough in any area to be competent. Although there are some planner-types who might claim to be "God's Gift" to Mankind, Good planners do not claim to be competent in many areas. They are not Jacks-of-all-Trades; they cannot do passable work in all areas. Rather, a planner should be considered to be a Coordinator-of-Municipal-Functions. Some planners do specialize in Zoning and Subdivision Design and even in Water and Sewer Planning, but all good planners do call in the experts to assure that planning recommendations and programming are meaningful and applicable to the community or region of the future.

Although planners and engineers are willing and paid well to put in long hours to plan, program, and budget for water and sewer improvements, the citizenry is not always receptive. Many Bond Issues have failed and many taxpayers are unwilling to be assessed for their share of installation costs.

Additionally, small community Boards of Commissioners are not always prone to take any action that might tend to raise taxes. Many are dedicated primarily to keep taxes as low as possible disregarding the usual low level of Municipal services which often can be directly associated with low taxes.

In many cases, local Legislative Bodies are disinterested in water and sewer planning. Generally, small communities use stopgap type action in authorizing improvements. Oftentimes, water and sewer improvements come long after there is a need for them and at a much greater expense, by the way, than if they had been planned, programmed, and budgeted. Pathetic as it may seem,

many small communities in our State just wink at their water and sewer problems hoping that they will go away. Frequently, at the eleventh hour small towns must go knocking on Washington's door to seek out Federal assistance to rectify a typically unhealthy situation where seepage from septic tanks is contaminating individual residential wells.

Moreover, the third factor which is mentioned in the above is the unsympathetic local administration. In all fairness to the small community and county manager, it must be recognized that he is generally overworked, and his organization is understaffed. He wears so many hats and is so busy doing things that others should be hired to do that he just cannot apply himself to the subject of water and sewer planning as he should be able to. He just cannot be bothered with the "sophisticated" approach to water and sewer programming and budgeting, he is extremely busy putting out many other fires. On the other hand, small communities and counties often are unable to pay or to attract administrative personnel who are capable of coping with the subject of water and sewer. As a result, water and sewer problems go unheeded.

It is difficult for some local Legislative Bodies to understand that an expenditure for planning now may save many times the amount spent for this service in the long run. Although examples abound where planning has paid off, it is obvious that some small communities still are not sold on it. Good examples are less spectacular, e.g., a smoothly paved street does not tell the citizen-motorist that programming of community facilities improvements made it that way. However, more spectacularly, a bumpy, butchered, black-top pavement indicates to him that somebody forgot to put water, sewer, and gas mains in first. It's good that he really does not know that someone did not plan carefully, and as a result, the bumpy street actually cost more than the smooth one. If he did know, he would be at City Hall "blowing his stack."

When the human element enters into the water and sewer planning picture, the obviously best solution to you and me is not always the outcome. It makes sense to us, for instance, for two small communities which abut each other to construct joint water treatment and sewage disposal facilities. However, petty rivalries, pride, and lack of understanding do figure as a blockade to sharing of such facilities. There are several instances where treatment facilities have been misplaced and where facilities could have been shared in North Carolina. Just recently there was a case where a small residential community of about 600 which abuts a City of over 10,000 applied for Federal assistance to construct its own, separate treatment facilities. Although the small community is situated beside a Municipality which already has a system

whose capacity could handle its needs with a little modification, application for Federal assistance was made to Atlanta, where the Department of Housing and Urban Development's Region III offices are located. Atlanta's reply naturally was, "You need to have a comprehensive plan." Chances are that Atlanta also asked why the community does not tap on to its neighbor's system. Well, the answer to that is long and complicated and will not be answered here, but a clue to the answer might be pride, rivalry, and personality.

Another case is worth mentioning here. A year or two ago, a community prepared water and sewer maps and projected its needs into the future in accordance with its Land Development Plan. The water and sewer plans were prepared by the Town's Engineering Consultant. Later under a Farmers Home Administration Water and Sewer Planning Grant, another engineer was contracted by the county to prepare a comprehensive plan with water and sewer lines laid out in accordance with that plan. At the same time a planner retained by the town just happened to be working on some public improvements programming based on recommendations stated in the water and sewer section of his Town's community facilities plan. He discovered that there was little or no coordination between the City's water and sewer plan, developed earlier, and the FHA plan just recently prepared.

The point of these three examples is that there simply is not the water and sewer planning, cooperation, and coordination to the degree that there could be in the small communities and counties of our State.

It's easy to be critical, but is is difficult to come up with meaningful recommendations. I feel that it is essential that small communities and counties be made aware of the importance and advantages of programming for water and sewer in accordance with Land Development Planning. Of course, there is more emphasis than ever in this area, but apparently there is hardly enough. An example of this is the effort which is being set forth by FHA to supply as many people in rural areas with water. This is good, but coordination with other plans is very important and should be insisted upon by FHA.

The problems I have mentioned are only three of many, but these are clear evidence that water and sewer services are not planned in many cases. I feel that emphasis on curtailing the need for stopgap measures, the lack of coordination, and one shot water and sewer programs should be forthcoming.

A program for educating the State's small communities on the importance of water and sewer planning, programming, and coordination is a need, and I hope that this symposium will serve as the kickoff effort of an educational program geared to meet this need.

Many water and sewer systems are being constructed in counties. These are often through ad hoc private water and sanitary districts. A need, in my opinion, is to insure that the location of these districts are not in the path to block logical growth of communities by annexation. In order to annex, North Carolina communities must supply utilities by law. What is the case when a community must annex an area already being served by a private utility district? Are the mains in the private system of a quality and size which are acceptable to the municipality? Must existing lines be abandoned and new ones added? Must community water lines cross and parallel utility district lines? I think that a means must be found to allow towns and counties to have the right to acquire and take over existing private utility lines when they lie in the logical path of growth of town and county systems.

In another area, North Carolina's General Planning Legislation should be augmented to allow for communities to require improvements in subdivisions such as street paving, curb and gutter, water and sewer, etc. which lie beyond their corporate limits. Normally the case is that when towns grow, they extend outward into their peripheral areas. Towns should be given the power to exercise improvements requirements in the extraterritorial areas. These normally extend one mile beyond corporate limits in all directions. This type legislation would aid in eliminating a community's having to accept substandard water, sewer, streets, and the like at annexation time. Some communities in the State are now faced with annexing substandard areas or not growing at all.

In another area, small communities need to face up to the issue of supplying water and sewer services to those parts of their towns which are not served. Slum areas, those sections where deteriorating and dilapidated conditions prevail, are particularly the target of this suggestion. Communities must amend their local policies of assessing property owners. Small towns must meet the challenge of supplying good water and sewer services in low owner-occupant and poverty stricken areas. The one inch outside water tap with the muddy hole under it to serve eight to ten residences is ridiculous, and outside toilets in high density areas do not make sense in this day and age. Boards of Commissioners must boldly exercise their right of forced assessment to pay for water and sewer services in sections of their communities where there is either no service or substandard service. If it is not feasible to use this approach, particularly where poverty stricken people are unable to pay, then other methods for rendering this service should be used.

Finally, I feel that coordination of local and regional water and sewer planning should be encouraged and possibly required by the State Government. North Carolina should begin to ask questions that the Federal Government now asks, namely, is a certain sewage system laid out in accordance with a Land Development Plan? Is a certain water line improvement consistent with good planning? Can one treatment plant be built to serve two communities, rather than building two? Are local water and sewer policies effective, and are they consistent with good planning?

I hope that the 1969 General Assembly will be able to take a big step towards aiding Local Government in this area, by creating a Department of Community Affairs. This Department could ask questions such as these, and this Department could supply the expertize to assist small communities and counties with their water and sewer planning, programming, and coordination problems. I feel that small municipalities and counties need the staff and technical assistance that this Department could provide.

# PLANNING OF PRIVATE WATER AND SEWER SYSTEMS

R. J. Nery, Engineer
North Carolina Utilities Commission

The remarks I will make here this morning in connection with the planning of private water and sewer systems are mine alone. I am not speaking for the North Carolina Utilities Commission or the water companies.

First of all, I think it necessary to define what a water and sewer utility is insofar as those operations under the regulation of the Utilities Commission. The General Statutes of North Carolina define a water public utility as a person, firm or corporation supplying water service to twenty-five or more residential water customers for compensation. Sewer utilities do not have this limitation as to the number of customers. The General Statutes contain an exemption under which municipalities, sanitary districts, and co-ops are not subject to the jurisdiction of the Utilities Commission. In the past three years approximately sixty water systems have been incorporated under G.S. 55A, the non-profit corporation act, and financed through Farmers Home Administration, have been exempted from the jurisdiction of the Commission not as a matter of law but as a matter of Commission discretion. These water systems supply water service only to their members, and it appears that the Commission was of the opinion that these operations fell within the exemption provision of the Statutes which provides that operations are exempt from Commission jurisdiction if they supply water to themselves.

At this point you may get the impression that the law has exempted all water and sewer operations from the Commission jurisdiction; and therefore, the Commission has very little responsibility in the area of water and sewer service. However, at this time the Commission regulates 150 water and sewer utilities which supply water or sewer service in approximately 400 separate cities, towns or subdivisions throughout North Carolina. These systems range in size from approximately 25 to 3,500 customers. These public utilities can be classified into two basic categories. One of which I consider the normal type of utility operation in which a utility is providing service within and under franchise from the municipality. Examples of this type of system are the City of Hamlet, Towns of Beaufort, Rutherfordton and Ruth, where the Hamlet Water Company, General Water Works Corporation and Duke Power Company provide the water service. The second

type is community water systems which are those installed primarily in subdivisions located outside of the corporate limits of municipalities. These are generally owned and operated by the developer himself or the developing corporation or its subsidiary or a small water company.

The General Statutes require that all public water and sewer utilities obtain from the North Carolina Utilities Commission a Certificate of Public Convenience and Necessity, approval of rates and financing. Once the application is filed and authority granted, the utility becomes subject to regulation, must comply with the rules and regulations of the Commission governing service, must file annual financial reports and maintain its books and records in accordance with the Uniform System of Accounts as adopted by the Commission.

I would like to point out that even though the Commission regulates some four hundred separate water systems throughout the State, there are many systems operating without having obtained the necessary authority from the Commission as required by law. Ignorance of the law appears to be the main reason for their not filing for a Certificate of Public Convenience and Necessity and approval of rates as required by law.

Many states have attempted to solve this policing problem by requiring all subdivision developers to file their proposed subdivision plans with state or county planning boards along with the approval of the water and sewer systems by the appropriate state agencies and authorization where required from the Utilities Commission.

I will devote the remaining portion of this paper to those water and sewer systems located in areas surrounding municipalities which I believe will be of more interest to you.

## PLANNING

The planning for these community water and sewer systems begins after the developer has acquired a large enough tract of land on which a subdivision can be build and where the economics and the local conditions favor the installation of a community water and sewer system. There is no legal requirement that a central water or sewer system can be installed within a subdivision. If the tract of land is small or the land values low or if local conditions are unfavorable, the developer may decide to install wells and septic tanks. However, if the acreage involved is substantial and the land of high value and other factors such as sufficient water supply, stream

availability are favorable, the developer considers the economics of installing a water and sewer system, evaluates whether municipal or other central water and sewer service is available and then decides on the most appropriate system considering all the facts involved. The advantages to the developer are considerable if he obtains municipal water service or installs a community water system. The lot size can be substantially reduced, and he will be able to construct many more houses on the same land area thereby increasing his profit. If, on the other hand, a decision is made to install a well and septic tank on each individual lot, a minimum of 20,000 square feet is required. Under these conditions approximately two homes can be constructed on each acre of land. If, however, municipal service or a community system is installed in a subdivision, the number of houses constructed per acre can be increased to approximately 2.8. The size of the lot is further influenced by the price and type of houses to be constructed.

Once the decision on land use is made and a decision is made to install a community water system, the detailed design of the water or sewer system to be installed is undertaken.

All water system design criteria and plans must be approved by the North Carolina State Board of Health. All sewer systems must obtain comparable approval from the Department of Water and Air Resources. The Federal Housing Administration and the Veterans Administration approve design and plans if loans are to be processed through these agencies. The Utilities Commission processes the plans for both water and sewer operations that are subject to its jurisdiction.

The Commission's general policy in recent years has required water systems subject to its control to be installed in a manner that is compatible with the standards of the closest municipality. This allows the water system to be more easily incorporated into the larger system of the municipality if and when the corporate limits are extended. Prior to this policy, there have been many water systems that when the areas in which they provided service were taken into the city limits that the water distribution systems were abandoned and discarded because of the small size of pipes used.

In my discussions with a developer who proposes to install a water system every effort is made to be sure that the water system is planned with a gridiron distribution system having pipes of six inches or larger. Any system that contains smaller pipes, in my opinion, is a throw-away type system.

Sewer systems being more expensive, requiring the availability of a stream for discharge purposes, being more difficult to operate and maintain are not generally installed except in the larger subdivisions and in those circumstances where local soil conditions may not allow the use of septic tanks.

## FINANCING

The financing of community water and sewer systems is unique as distinguished from the normal type of utility financing. In the normal utility capital is obtained through the sale of debt or equity securities which funds are invested in plant and the customer or rate payer is charged rates for service sufficient to pay a rate or return on the investment, expenses of operation, including depreciation of the facilities. This source of capital is generally unavailable to the community water and sewer utilities mainly because the service life of the utility is related to the time when the area in which the subdivision is located is taken into the corporate limits of the city around which it was constructed and the uncertainty of what will happen to it at that time.

When city limits are expanded and encompass the area where a water or sewer utility is operating, the utility has two practical choices. It may sell the system to the city or abandon the facilities. In most cases, however, the facilities that are usable are sold to the municipality. If a controversy arises between the city and the water company, the municipality could parallel the water lines of the public utility. The North Carolina Supreme Court has held that a paralleling of water lines by a municipality of a public utility is not a taking of the property. You can understand that an investor realizing the circumstances of public water and sewer utilities in and around a municipality would not risk the loaning of his funds in these circumstances. Few water and sewer utilities have received loans through the Small Business Administration. However, 95 percent or more of the water and sewer utility systems are financed by the developer. The cost of providing water and sewer service by the developer is considered as a cost in the development of the subdivision as is the providing of streets, curbs, gutters or wells and septic tanks to each hours. The cost of these improvements is generally considered by a higher appraised value of the improved lot for financing purposes. The land or subdivision developer generally prefers to donate the water system either outright or through a

tapping fee arrangement so that for Federal Income Tax purposes these items are considered as an expense in the development and sale of the houses or lots within the subdivision. Insofar as the Utilities Commission is concerned, the dollars contributed to the water and sewer utility representing the contributed property are considered a contribution in aid of construction for accounting purposes and deducted from the original cost of the property in rate making proceedings.

The Utilities Commission staff does not inspect the installation of water and sewer systems except on a spot basis. However, the water utility testifies at the time of the hearing that the facilities will be constructed in accordance with the plans as submitted to the Commission, and since the Commission has continuous surveillance over the water and sewer utilities, it could require a utility to correct any deficiency or to improve its service to the public. In all recent applications water utilities have been required to have a minimum of two wells (most community water systems obtain their water supply from ground sources). The water from each of the wells must be analyzed from a bacteriological, chemical and physical standpoint and meet requirements of the North Carolina State Board of Health and the chemical and physical requirements of the U.S. Public Health Drinking Water Standards - 1962. If the water does not meet these requirements, then treatment must be provided to bring the water up to these standards before approval by the Commission can be obtained. The water supply from the wells, storage facilities and pumping capability must be sufficient to meet the instantaneous demands as well as the daily needs of the community for water service. The distribution system must be so designed so that each customer throughout the system obtains an adequate quantity of water at reasonable pressure.

While there are many criteria established to assist the design engineer in meeting the goals listed above, in a number of circumstances these standard design criteria may have to be changed so that adequate service to the customer can be provided. Once the small water system is installed, close supervision over the operation is required. Periodic review of the system is necessary if the system is to be operated at peak operating conditions. Many of these small water systems lack adequate technical personnel. In most cases the operator works full time at his regular employment and operates the water system on a part-time basis. Usually, the regular employment is in the field of well drilling, pump mechanic, electrician or general contractor. Under these

circumstances the utility operator does not have a permanent local office nor does he provide service on a 24-hour basis unless the customer is successful in locating him. However, on the other hand if the small systems had a full-time operator, the cost of providing this type of service to the customer would be prohibited. In many cases the subdivision developer utilizes his sales office located in the subdivision and his operating personnel in the operation of the water and sewer systems until all the property in the subdivision is sold. Of course, in the larger operation a full-time office and service arrangements can be made so that the customer can obtain service on a reasonable basis.

In closing I would say that the preferred methods of providing water and sewer service in general is as follows:

1. Central water and sewer service provided by municipal, county, sanitary district or large public utility
2. Community water or sewer service
3. Individual wells and septic tanks.

There are underway throughout the State by many county and city governments programs attempting to seek solutions whereby municipal water and sewer service can be provided by them in the outlining developing areas around their particular town or within their county. This cause is now being helped through numerous Federal grants and assistance programs. The Farmers Home Administration has been particularly helpful in the small rural community in assisting those communities in obtaining water service where it was not economically feasible. This is accomplished through grant or guaranteeing of the loan. Within the past year new legislation has been passed which now permits the Farmers Home Administration to provide the same tools and facilities for the installation of sewer systems. Sanitary districts have been of some help in providing or upgrading water and sewer service. However, in my opinion they seem to be the most difficult type of operation to get into service.

In general, water and sewer service has been substantially improved over the past fifteen years as many of the small inadequate type systems have been absorbed by existing municipalities, by sanitary districts and by acquisition of systems financed by Farmers Home Administration. The newer water and sewer utilities now coming into existence are built to much higher designs and

standards and in most cases can be absorbed into a larger system with a minimum of additional construction.

I appreciate very much having the opportunity of presenting this paper to this conference.

# COMMUNITY WATER SUPPLY SOURCE DEVELOPMENT

Col. Daniel E. McDonald, Chief
Water Management Division
Department of Water and Air Resources

Community water supply source development is an integral part of the broad problem of developing raw water resources sufficient to meet all of North Carolina's present and projected water needs. The problem resolves itself into three basic steps:

1st - Find the water

2nd - Make it available

3rd - Develop it

By definition, the work "Resources" is inseparably linked with availability. North Carolina has a bountiful supply of fresh water -- about 43 billion gallons a day of surface water alone against a total demand in the order of 6 billion gallons a day -- but not all of this water is available to those who need it. Although the State's fresh water surplus is large, it brought small comfort to those North Carolina towns and communities that two months ago faced critical water shortages as a result of extended drought. Ways and means must be found to make the State's total fresh water supplies available to all throughout the State who need to draw on them. This is an ultimate objective in our water resources development effort. It is in the context of this objective that I want to comment briefly on community water supply source development.

There are no hard and fast rules that guarantee best results in seeking and developing community water supply sources. There are, however, certain avenues of thought that might well be explored, and certain checkpoints that might be observed along the way.

It is of primary importance, I believe, that we attune our community water development plans and objectives to regional water needs and availability, and that we not confine our thinking to a single community or local area. I cannot stress this point too strongly. North Carolina's bountiful raw water supplies must be effectively harnessed and made available to meet all needs in all localities throughout the State, urban and rural areas alike. This calls for cooperative effort and joint planning on a broad regional and statewide basis. The time has passed when a community, town or city can afford to satisfy its own water needs in isolation from its neighbors. This is not to say that

we should build no more independent municipal or community systems, or that all water systems should be cooperative regional enterprises. It does mean that we should view every water system as a link in a chain of systems designed to assure a plentiful supply of water throughout the State, under all conditions. In this connection, I believe it is not unrealistic to predict that eventually we will have in North Carolina a statewide water supply and distribution network with interconnections between key systems much the same as now exists between electric distribution systems in several areas of the United States. That kind of network will make it possible to transport water to wherever it is needed, and with such a provision for ample supply there will be no water shortages like those experienced by some North Carolina towns and communities this year and last.

As a question of policy or general practice, should small communities develop their own water systems and sources of supply, or should they be served from established municipal systems? Certainly there is no fixed answer to this question. The economic and political factors that must be considered in each case are too diverse to permit the use of general criteria for a decision in every case. As a general rule, it might be advantageous for small communities that are located fairly close to major urban centers to consider first the possibilities of municipal supply. Major cities and towns are generally in a better position to develop reliable sources of water supply than are small communities. Also, their costs for treatment and distribution tend to be lower. Of course, not all small communities are located near urban centers, and in many cases it would not be feasible to supply communities from municipal systems. In these cases, where should we look for water? Should we look forst at surface-water possibilities, or should we give first attention to developing ground-water sources?

Again, there are no fixed answers. There are too many variables. However, I would emphasize certain important points. It is common practice in water source development planning to unduly favor the use of surface water supplies. This is understandable. We can see the water in streams and lakes, and we can compute with a fair degree of accuracy how much water will be available under varying conditions. Not so with ground water. It's hidden. For this reason, there is always the question of how much there is to draw on. Yet the total quantity of fresh water now stored in ground-water reservoirs underlying North Carolina is probably enough to supply the State's total water needs for the next 200 years, at the present level of demand. Unquestionably, we are overlooking a vast po-

tential resource when we do not consider the possibilities for ground-water supply along with surface-water supply. I believe that we should, and that eventually we must, do more toward developing ground-water supplies as the principal source of water for small communities, particularly where surface-water sources or quantities are limited. We are largely neglecting our potential ground-water resources. We should find them, make them available, and develop and use them in conjunction with our surface-water supplies.

How can our surface-water supplies be made to best serve our needs, including those of small communities? This question brings us again to the importance of regional planning. The answer is not to develop a multitude of supply sources to serve independently our communities, towns and cities. There are not enough reliable streams and probably not enough available damsites to support such a development even if it were economically feasible. We must develop common sources of supply that are strategically located to serve the optimum number of communities, towns and cities. With few exceptions, we need to get away from direct stream withdrawals and go to storage reservoirs for our supplies. These reservoirs should be large enough to assure an ample quantity of raw water for an entire area or region, not just a single community, town or city. We should act as necessary to obtain the maximum amount of water supply storage in every Federal water-impoundment project authorized for construction in North Carolina. In short, we must advance toward the day when our impounded water resources are sufficient to meet all of our needs for surface-water supplies under all conditions. Small communities, towns and cities can then draw on these resources and satisfy their water needs on a mutually supporting basis.

That utopian day is not at hand, although we can faintly see its dawning. Until it arrives, the problems of community water supply source development will continue to be complex and fraught with obstacles. While I have no specific solutions to specific problems, I am confident that good results will be achieved if we consider community water needs in the light of regional and statewide needs and objectives, and then act accordingly. Certainly any community plan should be consistent with the development of a regional water plan that provides for mutual support and common benefits.

The water is here. Our task is to make it readily available and then to develop and use it wisely.

# DESIGN AND OPERATION OF

# COMMUNITY WATER SUPPLY SYSTEMS

Marshall Staton, Assistant Director
Sanitary Engineering Division
State Board of Health

The State Board of Health consists of seven divisions. One of these, the Sanitary Engineering Division, was created in 1919 for the primary purpose of enforcing the State Sanitary Privy Law. From that humble beginning its responsibilities have increased until today it embraces all the non-medical activities of the State Board of Health except Occupational Health. It is composed of five sections - Plan Review, Engineering, Food and Lodging, Radiological Health, and Insect and Rodent Control. As we are discussing problems relating to water and sewerage, I will explain briefly the duties of the Engineering and Plan Review Sections. (Fig. 1)

## ENGINEERING

The chief of this section and his assistant have offices in Raleigh. Because North Carolina is large in area, the section could not effectively provide all services from Raleigh. Therefore, we have divided the State into three regions and established offices in Asheville, Asheboro, and Greenville. These are staffed with engineers and technicians who conduct investigations, provide engineering assistance to State agencies, municipalities, privately owned public water utilities, local health departments, consulting engineers, and others. They also maintain surveillance over public water supplies and provide assistance during emergencies. (Fig. 2)

## PLAN REVIEW SECTION

The personnel of this section are all located in Raleigh. These people carry out the legal responsibilities related to review and approval of plans and specifications for all public water systems and for those sewerage systems, swimming pools, food and lodging establishments, and institutional sanitary facilities within the jurisdiction of the State Board of Health.

In planning for today's program I was requested to address myself to one of the most important water system problems of the State. I have decided to discuss one that is caused by the lack of proper planning. This is

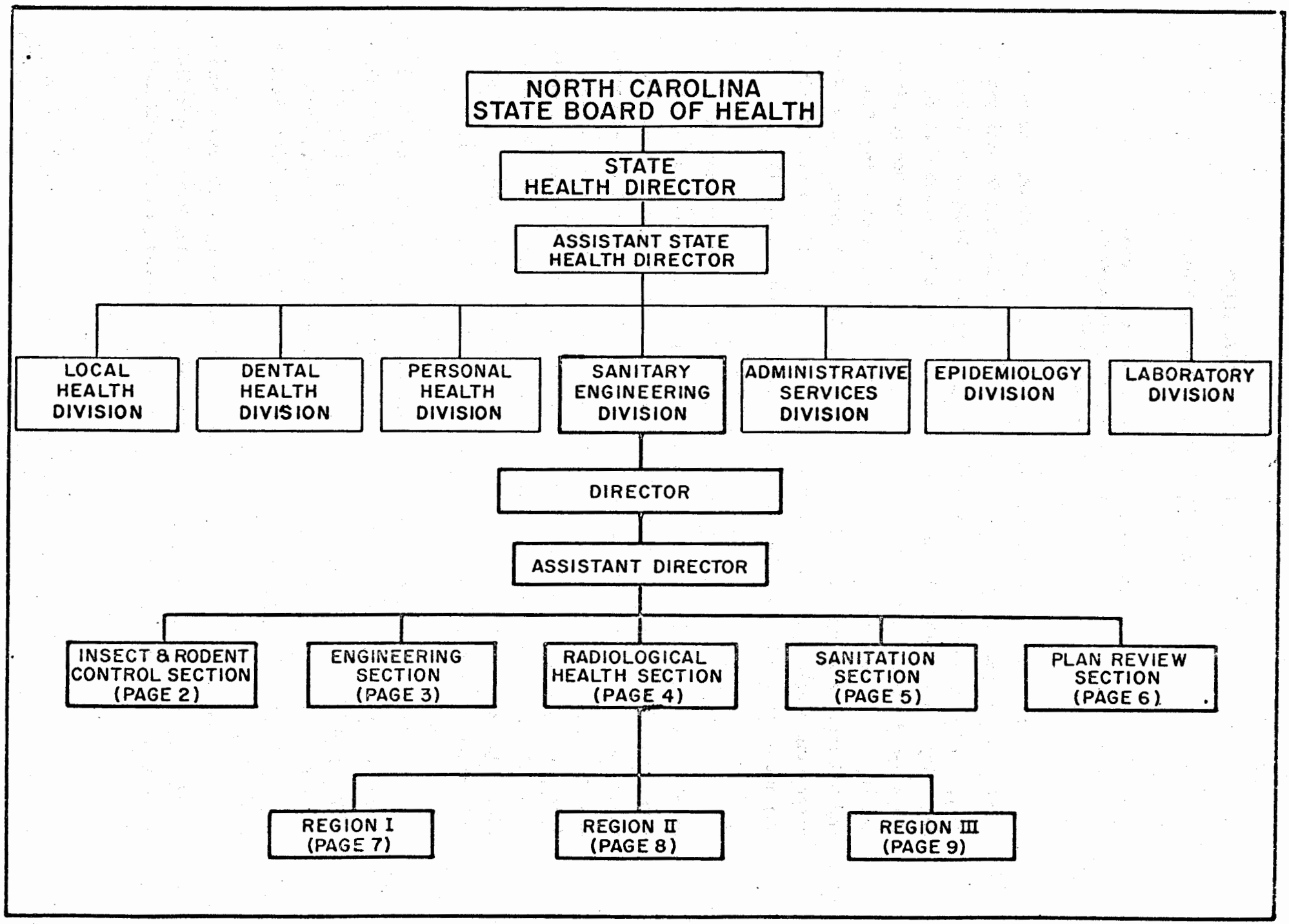
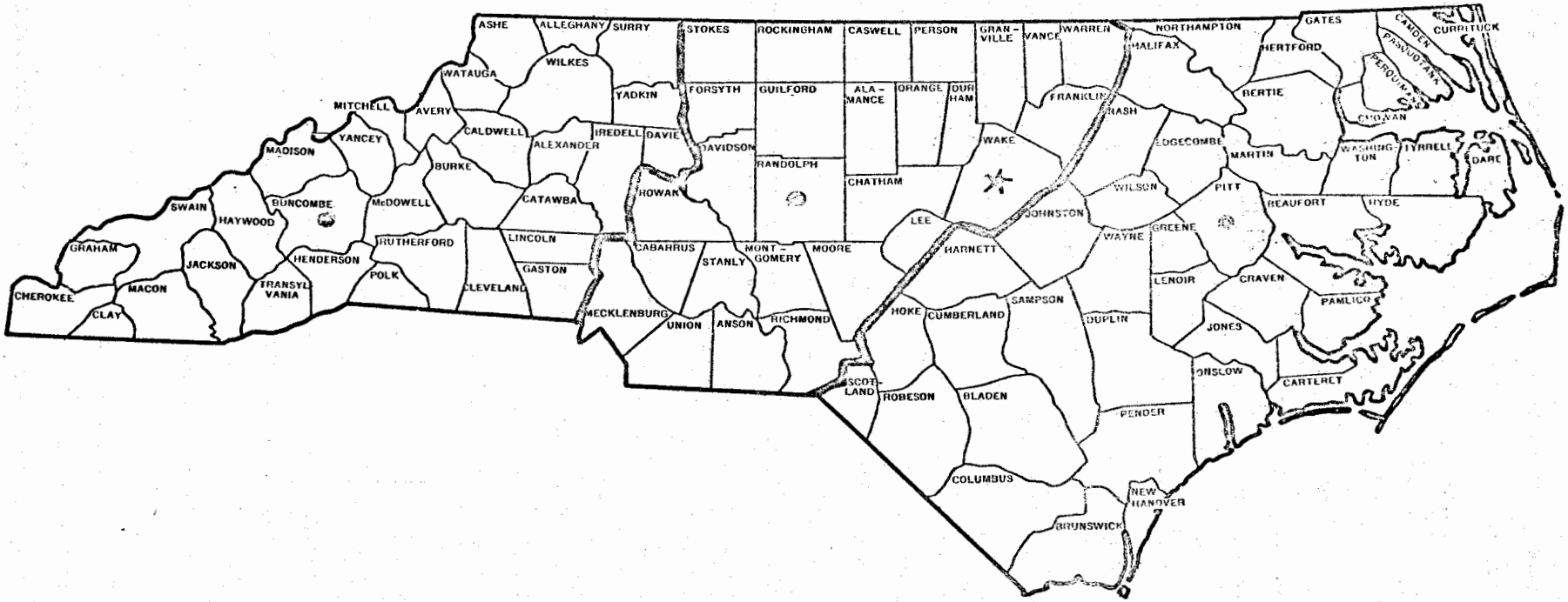

NORTH CAROLINA STATE BOARD OF HEALTH
STATE HEALTH DIRECTOR
ASSISTANT STATE HEALTH DIRECTOR
LOCAL HEALTH DIVISION
DENTAL HEALTH DIVISION
PERSONAL HEALTH DIVISION
SANITARY ENGINEERING DIVISION
ADMINISTRATIVE SERVICES DIVISION
EPIDEMIOLOGY DIVISION
LABORATORY DIVISION
DIRECTOR
ASSISTANT DIRECTOR
INSECT & RODENT CONTROL SECTION (PAGE 2)
ENGINEERING SECTION (PAGE 3)
RADIOLOGICAL HEALTH SECTION (PAGE 4)
SANITATION SECTION (PAGE 5)
PLAN REVIEW SECTION (PAGE 6)
REGION I (PAGE 7)
REGION II (PAGE 8)
REGION III (PAGE 9)



Figure No. 1

# NORTH CAROLINA




● REGIONAL OFFICES
- Asheville
- Asheboro
- Greenville

★ RALEIGH
- Headquarters - State Board of Health

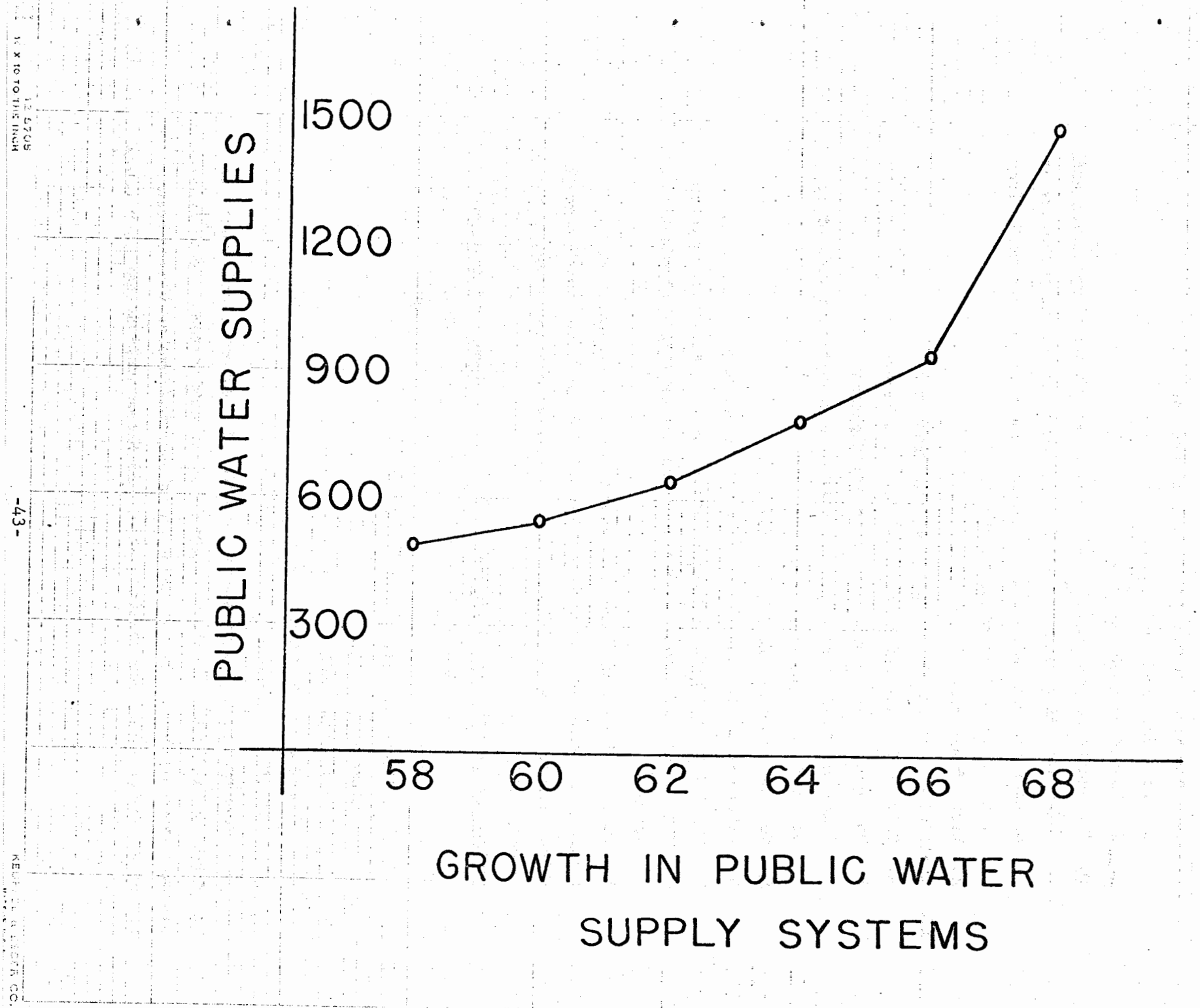
an insidious problem that is becoming more serious. It relates to the great number of small water supplies in the State, and to the prospect of acceleration unless action is taken to bring about correction. This may not appear to you to be a complex problem; however, in areas of North Carolina where such are being solved, human nature has had to be considered. As you know, the area of human response is generally complex.

A public water supply is legally defined as one that serves ten or more residences or businesses or a combination of these. It will surprise many of you to know that we have more than 1,470 public water systems in North Carolina. Approximately 3,000,000 people are served by these. Such a large number of systems reflects a lack of planning and constitutes a major problem in providing assistance and surveillance of water quality. The public health aspects are even more serious when you realize that for each water system, there is a sewerage system. In some instances there might possibly be something even less desirable such as communities being served by individual septic tanks.

You will note on the graph the increase in the number of systems since 1966. Most of this increase is not due to new systems but to privately owned public utilities (Fig. 3) that were in operation prior to this survey, and were not approved by the State Board of Health. As the result of the employment of several sanitary engineering technicians in 1966, we have completed a survey of about eighty percent of all counties within the State. The numerical results are reflected in the graph. Deficiencies found in many of these systems consisted of inadequate distribution, storage, and source of supply; wells located near sources of potential pollution; and improper protection of wells. A detailed outline of the deficiencies is as follows:

PROBLEMS

I. Systems poorly planned
   A. Little or no professional engineering advice
      (Systems constructed without knowledge or approval of State Regulatory Agency)
   B. Water supply system inadequate for initial demand or future expansion
      1. Distribution pipeline too small
      2. Inadequate storage capacity
      3. Source of supply capacity too low in relation to demand and/or storage


PUBLIC WATER SUPPLIES
1500
1200
900
600
300
58
60
62
64
66
68
GROWTH IN PUBLIC WATER SUPPLY SYSTEMS

4. Adding additional connections to system which are already at capacity

C. No provision for water quality stabilization where required
   1. Corrosion, scale, system deterioration
   2. Poor chemical quality
   3. Tastes and odor problems

D. Inadequate protection of well sites from sources of pollution and inferior well construction; also, sewer lines or other sources of of possible contamination constructed too close to the well after it has been installed and approved.

E. Lack of metering

II. Inefficient operation, maintenance, and management

A. Untrained, inexperienced operators and managers

B. No regular maintenance operators and managers
(Lack of standby equipment or parts with resulting period of no water when breakdown occurs)

C. No fund for depreciation or expansion

D. Little knowledge of water quality and treatment

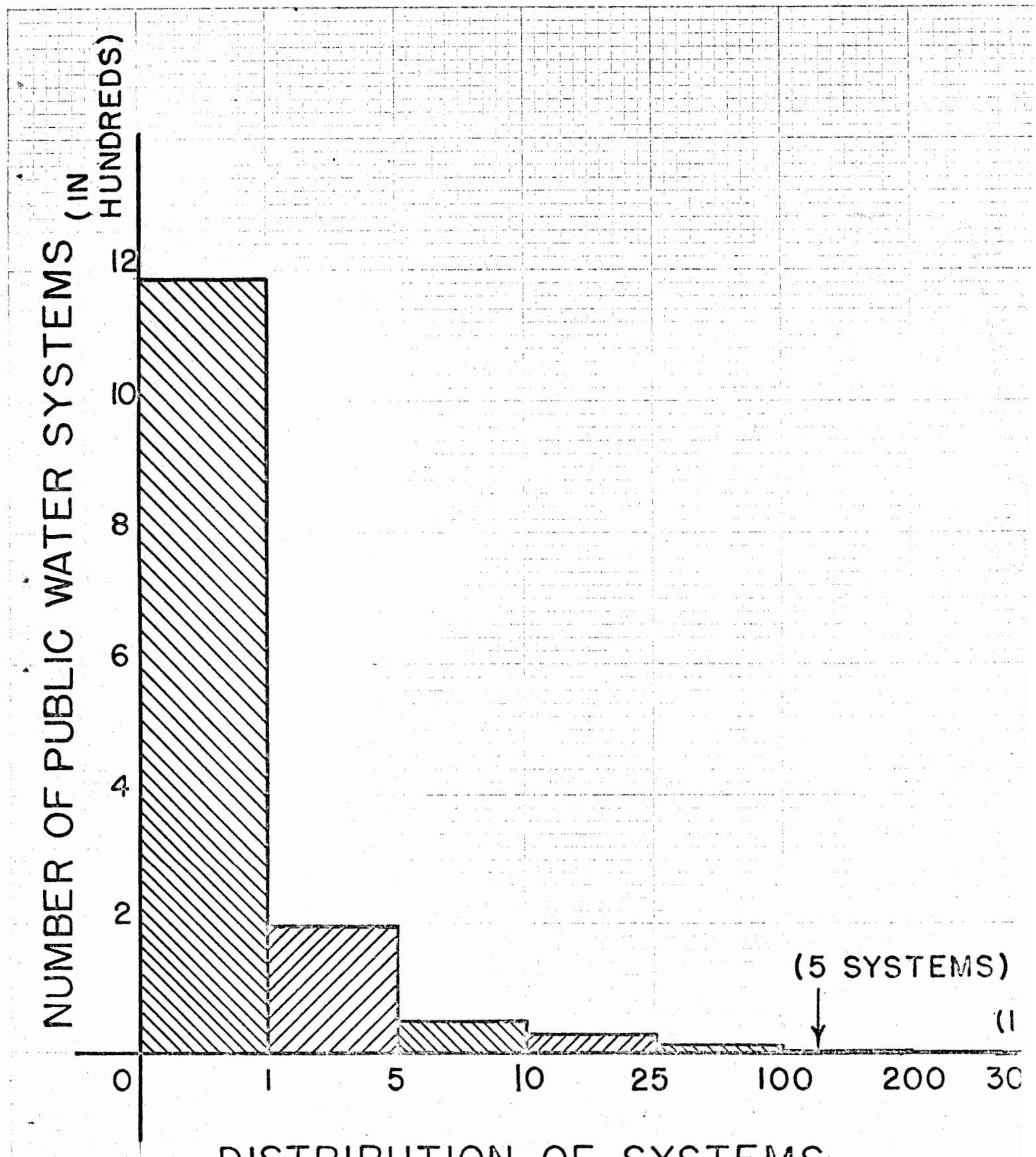
E. Repairs or alterations made at wells and in distribution system without disinfection or consideration to possible contamination of system

F. Victims of unscrupulous or ignorant sales representatives

To bring the problem into sharper focus I have prepared another graph which indicates the distribution of supplies according to population served. (Figure 4)

| Systems Serving a Population of: | Number of Systems |
|---|---|
| 10 - 1000 | 1190 |
| 1000 - 5000 | 197 |
| 5000 - 10,000 | 45 |
| 10,000 - 25,000 | 23 |
| 25,000 - 100,000 | 12 |
| 100,000 - 200,000 | 5 |
| 200,000 - 300,000 | 1 |

The number and approximate location of systems in one county is described in Figure 5. In this county there are 140 systems. With proper planning most of the people dependent on these could probably have been served economically by one system. It should be emphasized that even though




DISTRIBUTION OF SYSTEMS
ACCORDING TO POPULATION
(IN THOUSANDS)

Figure No. 4

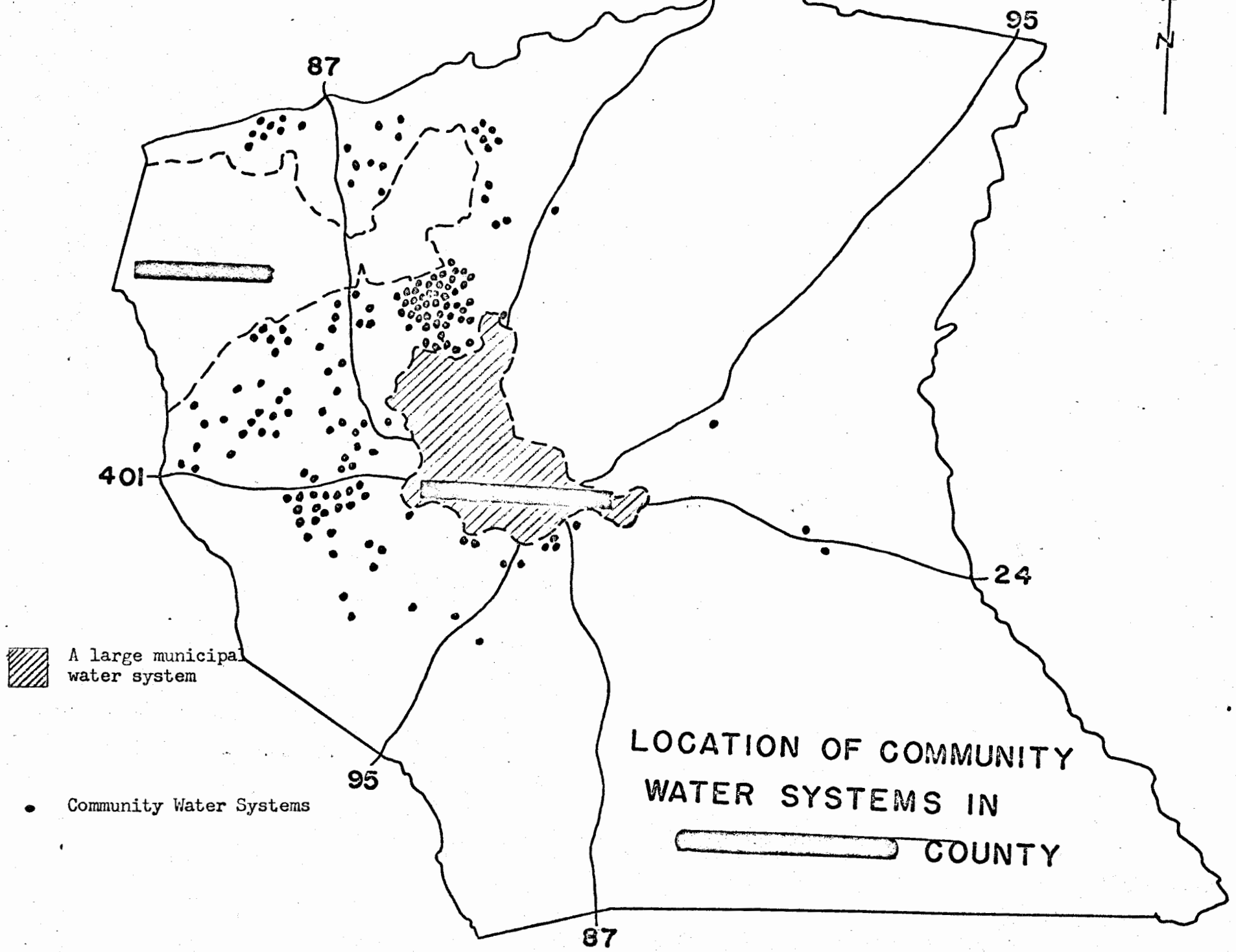

87
95
N
401
24
95
87
A large municipal water system
Community Water Systems
LOCATION OF COMMUNITY WATER SYSTEMS IN
COUNTY

Figure No. 5

this county has the greatest number of systems in the State, many counties have from twenty to eighty systems serving municipalities, housing subdivisions, and mobile home parks.

We believe that considerable improvement could have been realized in providing water service outside city limits had there been more understanding and awareness of the problem by city and county officials. There apparently has been some temerity among county officials concerning involvement with problems of water supply. Also, I have already indicated that human nature, being what is is, makes cooperation between county and municipal government, in some instances, difficult to realize. I am somewhat optimistic, however, because I believe that the increase in planning for county-wide systems at the present time is an indication that some county officials are becoming aware of the problem and intend to do something about it.

Much has been accomplished in providing water to rural areas through the Farmer's Home Administration program. As of April, 1968, sixty-seven systems, varying in size from 15 to more than 3500 connections, had been approved. These systems will serve approximately 80,000 people. This program should be more effective and could be, except for the fact that FHA does not in all cases permit proper planning for future needs. This criticism applies primarily to the smaller supplies even though some portions of larger ones are inadequate for future growth. It should be understood that the systems having received approval by the State Board of Health are adequate for the population served at the present time and do not constitute a public health hazard. However, unless future connections are limited, the results of poor planning will be quite evident. This criticism is brought to your attention and to that of the FHA in a constructive manner and is not a condemnation of their program. Many people in rural areas are receiving water from public systems. Without the FHA program these would not have been possible. We expect to continue to cooperate with FHA in the hope that they will be able to upgrade their standards to provide for reasonable growth within the service areas.

In the past few months we have experienced the effect of poor planning in that some twenty municipalities experienced water shortages resulting from the drought. Through emergency action by the Army, Civil Defense, State Board of Health, by industries altering manufacturing schedules, by employing the use of farm irrigation equipment, and using trucks

to haul water I believe all municipalities obtained enough water to keep essential services operating. Had the drought lasted two or three weeks longer, other municipalities would have experienced possibly even more serious shortages. Approximately fifty sources of emergency water supply were approved through field investigations by State Board of Health personnel. It was necessary to obtain water from farm ponds and from class "C" and "D" streams. We were even requested by one rather large municipality to consider re-circulating their sewage effluent if the drought continued for thirty more days. Fortunately the drought ended before that decision had to be made. Two municipalities found a partial solution to their problem by connecting to the distribution system of two cities who fortunately had enough water.

Municipalities that were not fortunate enough to secure water by pipeline from nearby communities used sixteen and one-half miles of eight inch pipe and thirteen pumps secured from Civil Defense to provide 6.75 million gallons of water per day. Also, two water purifiers obtained from the Civil Defense agency were used by one town. Perhaps it will be of interest to you to know that it takes twenty forty-foot trailers to transport ten miles of pipe and five pumps as supplied by Civil Defense. Even though they provide this equipment free of charge, it is costly for a municipality to have to utilize such emergency measures as they have to pay transportation cost of the equipment to and from the supply depot. Eleven miles of irrigation pipe and seven irrigation pumps provided one million gallons per day for two small municipalities. Proper planning generally can prevent the need for emergency equipment.

I will close with an illustration which indicates some of the opposition we have encountered in attempting to promote one relatively large supply in place of two smaller supplies. For twenty years we attempted to promote a water system in the eastern portion of the State. It was to serve two municipalities with a contigious boundary. The area served was to be approximately twenty-two miles in length and would utilize one reservoir and one purification plant. We could not create enough interest for the system even though the individual wells produced water of very poor mineral quality. Mother Nature assisted us in solving this problem by inundating the area with sea water resulting from a storm after which the ground water was unsatisfactory for use.

The State Board of Health, through the use of an emergency plant, kept the two communities in water for about two years during which time a public system was planned. The State owned a reservoir and sold it to them at a very nominal cost. Everything looked favorable toward obtaining a final solution. However, the municipalities for some reason -- call it false pride, prejudice, sectionalism, or human nature -- could not agree to use one water plant. Two water plants, and two raw water intakes, identical in design except for capacity, located side by side, were constructed. The unnecessary construction of two plants in place of one represents a loss to the users in capital investment, operating costs, and in a waste of manpower. Even though we are exceedingly pleased with the overall outcome, we believe that a complete victory was not won because we could not convince the city officials to use their resources to the utmost by providing one plant.

## RECOMMENDATIONS

I believe the answer to the problem that I have presented is through the use of county-wide and regional water systems. If this is to be realized, better planning and means for implementing planning will have to be provided.

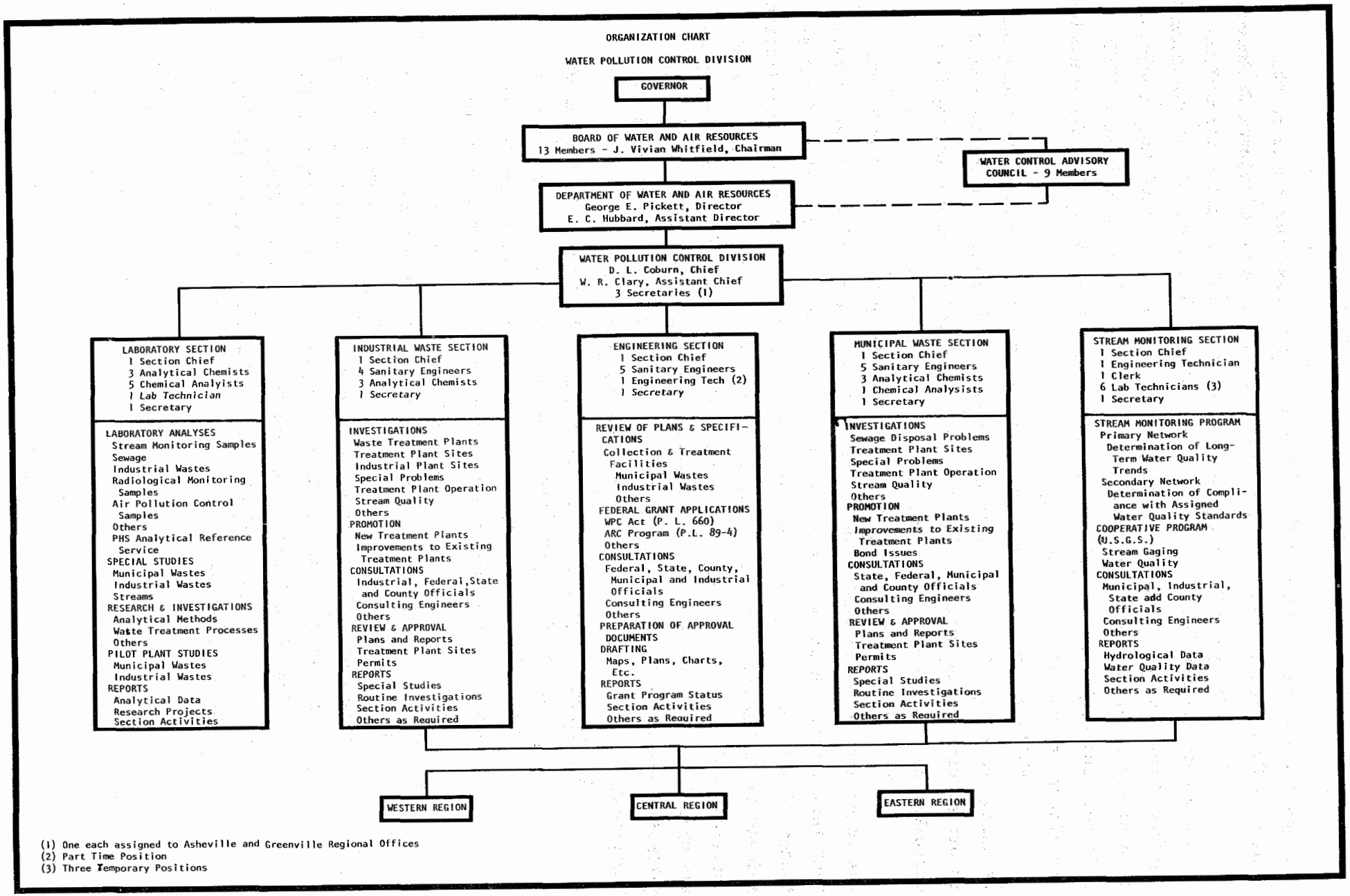
# DESIGN AND OPERATION OF COMMUNITY SEWER SYSTEMS

Darwin L. Coburn, Chief
Water Pollution Control Division
Department of Water and Air Resources

I am delighted to participate in this Symposium on "Better Water and Sewer Services for Small Communities in North Carolina." North Carolina is experiencing a steady population growth and with this growth a significant change in the population pattern. There is a general trend toward urbanization and a corresponding increase in population density in the rural areas around urban centers. New communities are being built and old ones expanded. These communities, though rural by definition, require public services comparable to the services provided in towns and cities. Public water and waste treatment facilities are foremost among the services required. This Symposium is timely because clear-cut policies and procedures have not been developed for the provision of these needed facilities; therefore, we should be deliberate in our efforts toward the development of the necessary procedures and policies to be followed.

The North Carolina water pollution control program, initiated in 1951, is presently carried out by the Water Pollution Control Division under the policies of the North Carolina Board of Water and Air Resources and as directed by the Assistant Director of the Department, who directly administers the Water and Air Pollution Control Programs of the Board under the general supervision of the Departmental Director. The activities of the program, as carried out by the Division, fall into five major categories, all of which are related. The activities within each category have been assigned to a Section and are carried out by competent personnel under the immediate supervision of a Section Chief.

The assigned responsibilities and positions allocated to each Section are shown on the Division Organization Chart, Figure 1. As shown on this chart, the staff of the Division, including the Chief and Assistant Chief, consists of 50 permanent full-time employees and 4 part-time employees. The chart also shows that the work of the Division is further carried out by regions with Regional Offices being located at Asheville and Greenville, each being under




(1) One each assigned to Asheville and Greenville Regional Offices
(2) Part Time Position
(3) Three Temporary Positions

FIGURE 1

the general supervision of an Office Manager who is assigned either to the Municipal Waste Section or the Industrial Waste Section as a Regional Engineer.

The water pollution control program has resulted in the classification and establishment of minimum water quality standards for all of the State's surface waters and the issuance of 1,585 approval documents covering construction of waste collection and treatment facilities costing approximately $275 million. Industries and municipalities alike have cooperated with the State in its efforts to upgrade water quality.

While we can point with pride to the accomplishments of this program, we cannot rest on our laurels, for much remains to be done. As has been said so often, with the population explosion and rapid industrial growth, we find ourselves running just to keep pace with present day needs.

The General Statutes provide for the issuance of permits prior to the construction of all public and industrial wastewater collection and treatment facilities. These permits are issued only after the submission of satisfactory final plans and specifications. The staff is available for consultation and advice to the officials of municipalities, industries, or other political entities, and their consulting engineers in the development of such final plans and specifications, as well as in the construction of same. Generally, the following steps should be adhered to in the development of final plans and specifications for wastewater collection and treatment projects:

1. Retaining of a Consulting Engineer - A consulting engineer who is licensed in the State of North Carolina, knowledgeable in the field of wastewater collection and treatment facilities, should be retained to make an engineering study of the problem involved and to design and supervise the construction of needed wastewater collection and treatment facilities. In this regard after the consulting engineer is retained, it is recommended that a conference be arranged with representatives of the Water Pollution Control Division for a preliminary discussion of the problem at hand in order that the staff be thoroughly acquainted with the problem and be in position to offer maximum assistance.

2. Preliminary Engineering Report - A preliminary engineering report should be prepared which will contain the findings of the engineering study, along with recommendations, estimated costs, and methods of financing the project. In addition, such recommendations should include the method and degree of treatment proposed. In this regard, attention must be directed to Rule 6 of the "Classifications and Water Quality Standards Applicable to the Surface Waters of North Carolina" as adopted by the North Carolina Board of Water and Air Resources on January 30, 1968, relative to required degree of waste treatment, which states as follows:

> "In the interest of maintaining and enhancing water quality, secondary treatment or equally effective treatment and control shall be considered the minimum acceptable abatement action for all significant sources of sewage, industrial waste or other waste regardless of the assignment classification and applicable water quality standards, unless it can be demonstrated that the quality of the receiving waters will be maintained and enhanced by a lesser degree of treatment or control. Advanced waste treatment processes shall be required insofar as practicable in instances where a higher degree of treatment is required to maintain the assigned water quality standards."

Upon completion of the engineering report, the report should be submitted to the Division for review and approval.

3. Approval of Plant Site - Actually the inspection and approval of a suitable plant site for the location of the wastewater treatment facilities should be made prior to the submission of the preliminary engineering report. This is necessary in order that the plant site be properly located, not only in relation to nearby residences, but in determining the method and degree of treatment required to protect the water quality standards of the receiving stream. The rapid movement of population to urban areas makes it very difficult to locate sites in isolated areas that are remote from occupied dwellings. In addition, Rule 5

of the "Classifications and Water Quality Standards Applicable to the Surface Waters of North Carolina" states as follows:

> "The governing flow, which shall be the criterion for the design of waste treatment facilities, shall be the minimum average flow for a period of seven consecutive days that have an average recurrence of once in ten years."

Receiving streams having adequate flows are not always available. Likewise, available receiving streams having sufficient flows may be limited in use due to upstream waste loads that utilize their assimilated capacities. Therefore, it is imperative that our Department be contacted in the early stages of the engineering study to assist in the proper location of the proposed wastewater treatment facilities as well as in the determination of the methods and degree of waste treatment facilities needed.

4. Financing - Subsequent to the preparation of final plans and specifications, it is necessary to arrange methods of financing the proposed project. It would certainly be in order to investigate Federal grants and loans which may be available to assist in the construction. Likewise, arrangements should be completed with the Local Government Commission for the holding of a bond referendum, if required, to finance the town's share of the cost of the project.

5. Final Plans and Specifications - Having satisfactorily completed the aforementioned steps, the engineers can be authorized to proceed with the preparation of the final plans and specifications for the proposed project. Upon completion, the plan documents, along with an application for a permit, should be submitted to the Division for review and approval. After review and if determined to be satisfactory, an approval document will be issued authorizing the construction of the proposed facilities.

6. Construction - After financing has been arranged and the plan documents are approved, the applicant will be in position to proceed with the advertising, receipt of bids, and the awarding of contracts for the project. Under no circumstances should contracts be awarded for collection systems or wastewater treatment works prior to the submission of plans and specifications and the issuance of an approval document for the project. Like-

wise, if for any reason the applicant is unable to complete construction of the facilities by the date specified in the application, which is also inserted in the approval document, it will be necessary for the applicant to request the necessary time extension, giving justification for such extension. This policy should be adhered to in order that the applicant have a valid permit.

During the 17 years of the water pollution control program, we have had the opportunity to observe many problems in the development of adequate wastewater collection and treatment facilities for small communities. While it would be impossible to list and discuss all such problems in the time allotted to me, I will attempt to enumerate and discuss some of the problems that appear to be major stumbling blocks in the development and operation of such facilities. Some of these problems are as follows:

1. Body Politic - Small communities that are presently incorporated do not present a problem in this area since these communities have the Statutory authority to finance, construct, and operate wastewater collection and treatment facilities. I am speaking here in terms of the more than 465 communities in this State having populations in excess of 200 which, at the present time, do not have such Statutory authority or wastewater collection and treatment facilities. While county governments have such Statutory authority, in most cases they are reluctant to spend tax dollars that will benefit only a few people in small areas of a county. This, therefore, requires going through the procedures of setting up sanitary districts, etc., in order for the communities to obtain the Statutory authority necessary to provide these needed facilities.
2. Financing - Too often the inability to arrange necessary financing has delayed and/or nullified the construction of the needed wastewater collection and treatment facilities. Most rural areas are finding it almost impossible even with the assistance of sizable Federal grants to construct these needed facilities. Past history has indicated that water supplies and distribution systems are provided first, followed later by the provision for wastewater collection and treatment facilities.

3. Location of Wastewater Collection and Treatment Facilities - Urban encroachment on the fringe areas of municipalities has resulted in the construction of many wastewater collection and treatment facilities. In many instances, while the adjoining municipality has sufficient capacity to receive and treat the wastes from the fringe areas, it does not have Statutory authority to provide such services beyond its corporate limits. While metropolitan systems can best serve these fringe areas, policies and procedures for providing such systems have not been developed; therefore, private enterprise can provide such services at a more rapid rate. Accordingly, it is mandatory that the sewage collection system be properly designed and constructed in order to make integration with the municipal system more feasible when such areas are incorporated.

4. Maintenance and Operation - In the past, major emphasis has been placed on the construction of adequate wastewater collection and treatment facilities with too little attention given to the provision of proper maintenance and operation of these facilities. The North Carolina Water Pollution Control Association has sponsored Annual State-wide and Regional Schools for training wastewater treatment plant operators under a voluntary plan. This approach has not been adequate to satisfy the total needs. More recently, the Federal Government has recognized the need for providing adequately trained wastewater treatment plant operators by providing funds to initiate such training through On-The-Job Training and Coupled Training Programs. While this is a step in the right direction, these programs will not satisfy the needs until Institutional Type Training Programs are initiated which will permit the recruitment, training, and placement of new personnel in this field. In addition, legislation is being drafted for presentation to the 1969 General Assembly relative to mandatory certification of wastewater treatment plant operators. If this legislation is enacted, it will provide a firm foundation leading toward satisfying the needs for properly trained wastewater treatment plant operators in this State.

This briefly points up the water pollution control program and some of the related problems in the development of wastewater collection and treatment facilities for small communities and municipalities. It should be recognized, however, that each community has inherent problems that may not be applicable to other communities; therefore, each project must be treated individually in accordance with its own merits.

# FINANCING OF COMMUNITY WATER AND SEWER SYSTEMS

W. Ewart Easterling, Consultant
Local Government Commission

The State of North Carolina plays a major role in assisting its local governmental units in obtaining funds for capital improvements, including water and sewer facilities. The Commission, which functions as a division of the Department of the State Treasurer, was created in 1931 and serves as financial consultant to the counties, cities, towns and special purpose districts in North Carolina. Its major responsibility involves the authority to approve or disapprove the issuance of bonds and notes by the local units. It also involves working with the representatives of the local units and other agencies of the State and Federal governments in planning the projects to be financed and finally serving as issuing agency for the bonds and notes.

The controlling statute, the Local Government Act, carefully spells out the procedural requirements to be followed in the issuance of bonds and notes by a local unit. In brief terms, the Act provides that before any local unit may issue its bonds or notes, the unit's governing board shall file an application with and receive the approval of the Local Government Commission. The provisions of Article 5, Section 4 of the Constitution prohibits a county or municipality from contracting new debt, except for certain specified purposes, in an amount exceeding two-thirds of the amount by which the outstanding indebtedness of the particular county or municipality shall have been reduced during the next preceding fiscal year, unless approved by the voters. The provisions of Article 7, Section 6, further requires voter approval when the purpose is other than a "necessary expense," regardless of amount. In the case of counties, the term "necessary expense" includes such things as courthouses, public jails, county office buildings, etc. Tax levies and bonds for county water and sewer facilities would under the present interpretation of the law require voter approval. For municipalities the term "necessary expense" includes water and sewer systems, electrical systems, streets and sidewalks, fire houses and fire fighting equipment, municipal office buildings, etc. Public hospitals, libraries, airports and places for public amusement and entertainment are some of the expenses which are still eliminated from this special category and the levy of a tax or the contracting of a debt therefor would require voter approval.

The General Assembly, through enactment of statutory law, has placed additional limitations upon the amount of debt a county or city may incur by stating the maximum debt as a percentage of the unit's assessed property values. In the case of counties, but again with certain exceptions, the limitation is 5 per cent. For cities the limitation is 8 per cent but bonds issued for water and certain other purposes are not counted against the legal debt limit and bonds for sanitary sewer purposes are not counted when the facilities are ordered constructed by the State Stream Sanitation Committee.

Bonds issued by local governmental units in North Carolina are, unless otherwise clearly denoted, classified as general obligation bonds. This means that the bonds are secured by the issuing unit's pledge of its full faith and credit and taxing power for the payment of such bonds. In addition to provisions of the county and municipal finance laws which govern the issuance of general obligation bonds and notes the statutes, under the Revenue Bond Act of 1938, permit a local unit to issue revenue bonds to provide funds to pay the cost of erecting or constructing revenue producing facilities such as water facilities, sewer facilities, parking facilities and certain other proprietary operations. The issuance of revenue bonds does not require voter approval and the bonds do not apply against the unit's legal debt limit. They are not payable from general taxes. The unit's obligation extends to the payment of the bonds and interest from a special source of revenue. The issuance of revenue bonds requires the approval of the Local Government Commission in the same manner as general obligation bonds. Of prime importance, in the case of revenue bonds, is the factor of economic justification.

The task of financing governmental facilities presents the same problems and follows the same procedural techniques as those applicable to private industry. The local unit must have a credit standing and it must be able to show that the funds will generate sufficient earnings and benefits to insure repayment. The unit must demonstrate a managerial capacity to handle the projects undertaken. The method of financing that meets the needs and capacity of one unit may or may not work for the adjoining community.

In summary, the factors of importance to the Local Government Commission may be briefly stated as follows: Upon completing the preliminary engineering study showing the physical requirements and the magnitude of the financing required the local unit should schedule a conference with the Com-

mission's staff for technical and procedural advice. These conferences are informal and are designed to assist the local unit in evaluating the proposed financing, in selecting the mode of financing and presenting the application to the Commission for approval. During the course of the initial consideration of the proposed capital program an analysis is made concerning the unit's present resources and the practical limitations applicable to any increases in tax revenues that may be necessary to meet the repayment requirements resulting from the proposed borrowing.

The Commission's experience indicates that with respect to the smaller local units the difficulty of establishing economic feasibility often eliminates the revenue bond as an instrument through which the unit can obtain the needed funds and as a consequence, the general obligation bond is generally used because the unit is then able to pledge its taxing power in making the bonds and notes meet the standards and demands of the investing public. Also the Commission has found that although both water and sewer facilities are often needed by the local unit the better approach in many instances is to obtain the water facilities first and after the unit has established an acceptable record in the bond market that bonds for sewer facilities be proposed. The public entities that are empowered to borrow funds for water and sewer facilities in North Carolina include counties, cities and towns and sanitary districts. Also of importance to the Commission is the need for public facilities other than water and sewer facilities, such as schools, public hospitals and recreational facilities, the premise being that the status of the plans for such other facilities will determine to a major extent the degree to which the local unit will be capable of participating in the proposed financing for water and sewer facilities.

## TAX AND DEBT LIMITATIONS

Counties:

Voter approval required for bonds issued if -

(1) amount of issue exceeds 2/3 of net debt reduction for preceding year; (Article V, Section 4) or

(2) purpose of issue is for "non-necessary" purpose (airports, hospitals, etc.) even if amount is within 2/3 rule. (Article VII, Section 6)

Voter approval required for tax levies if -

(1) proceeds are to be expended for "non-necessary" expenses. (Article VII, Section 6)

Other limitations on debt -

(1) Debt for other than school purposes - limited to 5% of assessed valuation. (G.S. 153-87)

(2) Debt for school purposes - limited to 5% assessed valuation, except when county has assumed all school districts' debt, then limitation is 8% of assessed valuation. (G.S. 153-87)

Other limitations on tax levies -

(1) Rate shall not exceed 20¢ on the $100 assessed value (other than for public schools), except when the tax is levied for a special purpose (debt service, elections, public health, welfare, etc.)

Cities and Towns:

Voter approval required for bonds issued if -

(1) amount of issue exceeds 2/3 of net debt reduction for preceding year; (Article V, Section 4) or

(2) purpose of issue is for "non-necessary" purpose (airports, hospitals, etc.) even if amount is within 2/3 rule. (Article VII, Section 6)

Voter approval required for tax levies if -

(1) proceeds are to be expended for "non-necessary" expenses. (Article VII, Section 6)

Other limitations on debt -

(1) Debt limited to 8% of assessed valuation except for bonds issued for water, gas, electric and power purposes, sanitary sewer facilities ordered constructed by State Stream Sanitation Committee, or to prevent beach erosion. (G.S. 160-383)

Other limitations on tax levies -

(1) rate not to exceed $1.50 per $100 assessed value for purposes other than debt service. (G.S. 160-402)

(Preliminary)

## Scope of Feasibility Study For Comprehensive Water Supply Program

### I. General

1. Objective

   To develop the salient engineering and financial factors pertaining to a comprehensive, county-wide, public water supply plan.

2. Feasibility Study and Report

   Should establish the following:

   a. Physical requirements of a comprehensive water supply plan.
   b. Magnitude of financing required.
   c. Amount to be used for acquisition of existing privately or publicly owned waterworks facilities (if any).
   d. Amount necessary for immediate construction.
   e. Schedule of future major financing to meet anticipated growth.
   f. Costs to operate and maintain the facilities.
   g. Debt service and reserve requirements.
   h. Total annual requirements by years (f plus g).
   i. Water rates required to finance the plan.
   j. Other operating income.
   k. Total annual operating revenues (by years).

3. Conclusions

   The report should answer the following questions:

   a. Is the plan feasible from an engineering and financial viewpoint?
   b. What are effects of initially including or excluding from the water supply plan certain county areas?
   c. What are the principal legal questions involved?
   d. What type of administrative body is best suited for financing the project and managing its operation?
   e. Is special legislation necessary or desirable and for what purpose?

## II. Existing Systems

1. Present Water Service Areas
2. Present Population Served
3. Operating Water Companies (Existing)
   a. Public
   b. Private
   c. Service areas and customers served by each.
4. Water Supply Sources (Existing)
5. Adequacy of Existing Sources
6. Distribution Systems (Existing)
   a. Evaluation of adequacy and condition.
7. Current Water Rates
8. Reproduction cost of existing systems to be acquired and other evidence of value.
9. Analysis of financial reports of operation of existing systems.

## III. Basis of Water Supply Plan

1. Comprehensive plan should be drawn on following basis:
   a. Provision of ample supply source for all present and estimated future county requirements.
   b. Integration of existing systems (to extent feasible) into single interconnected system capable of providing adequate general service and public fire protection service.
   c. Establishment of basic plan to strengthen existing systems as may be necessary and for extension of plan to all areas of county as future growth may require.
   d. Finance acquisition construction, operation and maintenance by means of uniform rates in all parts of county.
2. Water supply standards to serve as basis of detailed studies should include the following:
   a. Water Quantity. Adequate for peak consumption rates with due regard to fire protection needs.
   b. Water Quality. Safe, palatable and suitable final mineral content for domestic and industrial use.
   c. Water Pressure. Sufficient throughout system.

d. Dependability. Must provide reserve storage, interconnections, standby equipment and other facilities to insure water supply under all predictable conditions.

e. Economy and Efficiency. All parts of system to be designed and constructed to provide a long useful life and to allow a high degree of operating efficiency and economy.

3. Determine required present and future capacities of proposed principal facilities and schedule their construction to meet projected population growth of county and its distribution to various areas of the county.
   a. Population estimates
   b. Areas to be served
   c. Water consumption
   d. Maximum demands
   e. Water losses due to waste, leakage, etc.
4. Water Supply Sources
   a. Evaluation of existing sources
      (1) Quantity
      (2) Quality
      (3) Development potential
      (4) Costs (Construction, Operation)
   b. Consideration of groundwater sources
      (1) Quantity
      (2) Quality
      (3) Development potential
      (4) Costs (Construction, Operation)
   c. Consideration of surface water sources
      (1) Available sources
      (2) Methods of development
      (3) Development potential
      (4) Treatment requirements
      (5) Costs (Construction, Operation)
      (6) Comparative evaluations (Economic and other)
5. Transmission Requirements
   a. As related to source
   b. Preliminary location
   c. Costs (Construction, Operation)

6. Trunk Mains
   a. To initial service areas
   b. To future service areas
   c. Preliminary location
   d. Costs
7. Distribution Storage
   a. Preliminary location
   b. Capacity
   c. Costs
8. Distribution System Mains, Services, Meters (???)
   a. (Who will construct?)
9. Project Costs (Initial and by stages)
   a. Preliminary expense
   b. Construction
   c. Land and R/W
   d. Acquisition of existing facilities
   e. Professional services
      (1) Engineering
      (2) Legal
      (3) Financial
   f. Administrative expense
   g. Contingent allowances
   h. Interest during construction
   i. Bond issue requirements (initial, future)
   j. Debt service requirements (by years)
10. Operating and Maintenance Expenses (by years)
   a. Source of Supply
   b. Power and Pumping
   c. Water Treatment
   d. Transmission and Distribution
   e. Customer Accounts
   f. Administrative and General
   g. Total Annual (by years)
11. Total Annual Requirements (by years)
   a. From 9j and 10g
12. Operating Revenue (by years)
   a. Metered sales, wholesale*

b. Metered sales, retail*

c. (Possible) Availability Charge

d. Service Connection Charge

e. Account Charge

f. Investment Income

g. Total Revenue (by years)

* Based on rates to be developed in the study to meet Total Annual Requirements plus reserves (See 11).

## IV. Implementation of Plan

1. Legal considerations
2. Legislation
3. Type of administrative body (Powers)
4. Public education

# THE ROLE OF WATER AND SEWER SYSTEMS IN ECONOMIC DEVELOPMENT

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A recent and most comprehensive economic study[1] of the western Piedmont and Appalachian areas of North Carolina concluded that water resources represented one of the area's major potentials for economic growth. The study did not describe how these water resources should be developed or provide an indication of costs involved. As a result, a task force of State agencies[2] concerned with water development was formed to evaluate the subject. Since the economic study had delineated probable growth areas within the region, the task force selected representative ones for detailed analysis. Because growth was expected to take place largely in a corridor pattern, six corridors and two municipalities were chosen for evaluation.

The corridors selected were:

Andrews-Murphy
Asheville-Hendersonville
Morganton-Valdese-Hickory
Rutherfordton-Spindale-Forest City
Wilkesboro-Elkin-Jonesville
Winston-Salem-Kernersville

The municipalities were:

Boone
Spruce Pine

It will be noted that the subject areas vary widely in size and character. The relationship of the study areas to local government jurisdictional areas varied as well. For example, the Morganton-Valdese-Hickory corridor involves not only the local governments of these three towns but

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[1] Investment Guidelines for the North Carolina Appalachian Region, Hammer, Greene, Siler Associates, February 1967

[2] Dept. of Conservation and Development, Dept. of Water and Air Resources, Local Government Commission, Recreation Commission, State Board of Health, State Highway Commission, State Planning Task Force

those of a number of smaller towns also. In addition, the county governments of Caldwell, Burke, and Catawba counties would need to participate in the planning and development efforts. On the other hand, a corridor such as that identified as Andrews-Murphy involves a comparatively narrow strip of land lying within a single county--Cherokee. In short, each study area possesses its own individual combination of complex jurisdictional problems.

Development profiles for each area were projected. The subject matter of the profiles included the following:

Population and Employment
Major Industries
Ultimate Commercial and Industrial Lane Requirements (Acres)
Land Suitable for Commercial and Industrial Use (Acres)
Service Area Saturation Population
Assessed Valuation Projections
Annual Average Water Use Projections
Annual Average Waste Load Projections

These were projected for the years 1990 and 2015 and compared with the base year of 1965. Projections for all areas of the study have indicated that a most substantial growth and increase in demand is to be expected in every case. A partial listing of these, as developed for the Morganton-Valdese-Hickory Corridor, is tabulated below to illustrate the order of magnitude of the anticipated growth-demand situation confronting just one small segment of western North Carolina.

Projections for the Morganton-Valdese-Hickory Corridor

| Year | 1965 | 1990 | 2015 |
|---|---|---|---|
| Population | 60,000 | 151,000 | 296,000 |
| Service Area Saturation Population | 800,000 | | |
| Annual Average Water Use: | | | |
| Per Capita (gpcd) | 162 | 182 | 216 |
| Total (mgd) | 9.7 | 27.4 | 63.6 |
| Annual Average Waste Loading: | | | |
| Hydraulic Loading (mgd) | 9.7 | 27.4 | 63.6 |
| Organic Loading (PE) | 130,000 | 248,000 | 453,000 |
| (lbs/BOD/Day) | 22,000 | | 77,000 |

In addition, engineering and hydrological studies were made for each area. Factors included in these studies were:

Alternative Sources of Water Supply

Alternative Distribution Systems

Alternative Waste Treatment Collection and Treatment Systems

Alternative Capital Investment and Operating Costs

Opportunities for Phased Construction

As the study of each area has neared completion, a summary of the data has been presented to the governmental and civic leaders of the area in an open meeting, and questions and comments from the local leadership were invited.

Although the detailed analyses of each study area will be unavailable for several months, the study itself has focused attention on a number of broad areas of need:

(a) Each study area was found to have its own unique problems requiring individual attention.

(b) Even in thinly-populated mountainous areas, land--soon to be needed for reservoir sites, etc.--is not in public ownership, and acquisition costs at a later date promise to be costly.

(c) Planning and implementation of the indicated systems will require the concerted effort of combinations of local governments not now organized.

(d) Technical assistance in water resource development available to the local governments for planning and coordination is either severely limited or non-existent.

(e) Many economic opportunities have been and are being lost now because of inadequate water/sewer capabilities.

(f) Even the most favorable cost estimates for the facilities projected in the study are formidable in size. Delays in planning, coordination, and phased construction will magnify these costs even further.

# URBAN AND RURAL AMERICA: POLICIES FOR FUTURE GROWTH

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## INTRODUCTION

As the pace of urbanization and economic development in our Nation continues unabated, along with the many blessings that have been ours as a result of this unprecedented growth, we are confronted with two stark consequences--a damaging decline in many rural areas long accustomed and accommodated to an earlier economic order and a disturbing concentration of people, problems, and crises in massive urban concentrations. An added dimension is introduced through an emerging stratification in growth patterns and the resulting disparities between needs for public services and resources available to provide them.

Major growth is concentrating in the suburbs, while central cities themselves and outlying rural areas face problems which, while different in detail, are similar in many respects. By any standards, central city ghettoes and bypassed rural areas of economic decline are consistently in a disadvantaged position regarding educational and health facilities, housing, public services, and job opportunities while their governments are confronted with increasing demands placed on limited or declining public resources. Governments in rural areas, fashioned to serve a primarily agrarian economy with a population widely dispersed over the countryside requiring only minimal public services, find themselves with eroding tax bases and a structure frequently ill-equipped to meet present demands. Similarly the highly fragmented local government pattern in most metropolitan areas, while providing maximum opportunities for citizen participation, is not well adapted to perform areawide functions nor to provide an areawide tax base to meet the most intense demands regardless of where they are located geographically.

The pressures and tensions created in the federal system by imbalances between urban and rural development and disparities between urban and rural opportunities and public services have resulted in increasing emphasis on the need to consider new approaches to guiding and influencing present trends to produce a more balanced pattern of growth and urbanization.

It is ironic that accompanying the increasing concern over the pattern of urban and rural growth and its impact there has developed another major source of tension in our federal system. The pressing demands placed on State and local governments, partly at least as a result of the same forces producing the urban-rural imbalance, have directed attention to intergovernmental fiscal relations with particular emphasis on the proper relationship between the Federal Government and State and local governments. The grant-in-aid has become the major fiscal feature of this relationship. It is the primary method by which the National Government assists State and local governments financially and hence is a critical element in the design of the Federal system. It can be the instrument to enhance the capacity of State and local governments to deal with urban growth. However, through the sheer proliferation of separate grants and authorizations resulting from successive responses to specific needs and crises, a sense of frustration has developed. There are almost 400 programs and some additional separate authorizations and the pace of growth does not slacken. This, of course, is further complicated by the range and variety of implementing rules and regulations--the importance and significance of which is frequently overlooked.

The proliferation of narrowly defined grant programs fosters a functional federalism with its vertical relationships between specialists at the Federal level and specialists at the State and local level. Furthermore, programs may be directed specifically at metropolitan areas, at urban areas, or at rural areas. As a result, although grant programs may have a profound impact on the course and direction taken by national growth and urbanization, the influence is frequently random and undirected in many of its implications. Programs may work at cross-purposes making it difficult for them to contribute to the achievement of overall, long-range goals. They may, in fact, create a barrier by supporting substandard development or encouraging outmoded or fragmented institutional arrangements.

At this point you may legitimately ask what these troubling but somewhat global concerns have to do with better water and sewer services for small communities in North Carolina. The fact is that water and sewer programs provide an almost unique focus for the various developments, trends, and tensions to which I have referred. The pressures of urbanization and new patterns of settlement have created major demands

for water supply and sewage disposal facilities. Federal grant and loan programs for these purposes have come to provide the textbook example of proliferation, overlapping, and policy impact. You are all familiar with the concern of the cities that rural water and sewer programs subsidize substandard development resulting in equipment and facilities which can not easily be incorporated into a municipal system. You are also familiar with the charge that the programs encourage fragmentation of government by supporting special purpose districts. On the other hand, the provision of water supply and sewage disposal facilities by government is, along with highways, one of the major physical factors influencing the patterns of urban growth and industrial development. It is then particularly important that these specific programs be viewed in their broader role as major components in the complex process of economic growth and urbanization. This should be of particular concern to administrators of necessity concentrated on their own programs. You have already had an opportunity to listen to leading experts describe and analyze a number of facets of the questions I have raised as they relate directly to the water and sewer programs. Similar discussions are scheduled for this afternoon. It is perhaps most appropriate then at this midpoint to provide the broader context within which specific programs operate and to which they must be related.

## THE CONSEQUENCES OF RECENT URBANIZATION

What are the likely consequences of a continuation of the somewhat disturbing growth trends in our country to which I have referred? Let me summarize several.

In terms of employment, public services, and finance, the major central cities and the smaller rural communities and counties will share an increasingly tough task of maintaining healthy levels of economic activity, providing jobs, and adequately educating their residents.

A continued buildup in large urban centers and erosion in smaller rural areas will make public and private services more costly in both.

Increasing congestion may intensify social and psychological pressures on urban dwellers.

Present migration and population growth patterns coupled with trends in industrial location will produce an increasing geographic mismatch of jobs and job-seekers.

Finally, continuation of the present course of growth in urban areas foreshadows even more sprawl--accompanied by a disorderly and wasteful use of land.

## RECENT DEVELOPMENTS IN THE GRANT SYSTEM

Although several quite significant steps have been taken to strengthen the grant-in-aid system in the United States and to make it a viable instrument of overall policy, its increasing complexity offsets or at least obscures much of the progress. Let me briefly identify several of the significant trends in grant and loan programs and their administration which have particular significance for water and sewage services.

The increasing number of programs adopted at differing times and under varying circumstances for similar purposes but with only minimal, if any, relationship to one another produces a number of difficulties and sources of friction. The wide variety of planning requirements is one example of this.

Most of the so-called plan requirements are actually general program requirements and serve as the basis for subsequent supervision, audit, and review activities by the Federal agencies. They are not plans in the conventionally understood sense nor do they require even a functional planning process let alone comprehensive planning or coordination. This is not the case with the planning requirements for water and sewer grant programs since they are related directly to a meaningful function, and, in some cases, comprehensive planning process. However, as you know there is a considerable variety among the requirements.

The increasing diversification of eligible grant recipients is also significant. One result is the emergence of what might be called "direct federalism"--bypassing the States and going directly from the Federal Government to local governments. In addition there is an increased amount of bypassing general purpose government and going directly to special purpose districts and other recipients. In fact, special districts are actually fostered and sometimes even required by a number of Federal urban development grant programs.

The rapidly expanding use of project grants is an important development, particularly when they are coupled with "direct federalism."

The increasing variety in matching ratios and apportionment formulas is still another developing characteristic of the grant structure which, incidentally, is well illustrated by the water and sewer grants.

## RESULTING TENSIONS IN GRANT ADMINISTRATION

What are the consequences of these trends, what problems do they create, and what strenth do they bring to the system? Let me summarize a few illustrative implications.

First, a general overriding consequence has been an increasing dissatisfaction with the complexity of the system. It is a truism in this field that a grant program once established virtually attains immortality. The sheer burden of identifying and matching up available programs with needs to be met and instrumentalities eligible to receive the grants has become a major undertaking. Smaller jurisdictions--frequently with great needs--are at a distinct disadvantage because of limited staff available to make necessary contacts; pour over manuals, guidelines, statutes, and requirements; and develop sophisticated and convincing applications. A whole new profession of "grantmanship" has sprung up both within and outside of the public service. A significant aspect of "grantmanship" in addition to obtaining the grants is the evaluation of ways in which to "play off" one Federal agency and program against another, thereby enhancing the prospects of acceptance or assuring the largest amount of Federal funds or the lowest local matching. Within this process the ultimate objectives of the program may be obscured.

However, the recent trends in grant programs and their administration have their most profound influence on the position and role of the States in the federal system. This is felt in three major ways. First, the classic position of the States in a federal system as the intermediary between the National Government and local jurisdictions is diminished to the extent that grants go directly to local governments and other recipients. State comprehensive planning and coordination to reflect diversity of needs, priorities, and objectives interpreted in the light of overriding national policies is made extremely difficult. Significant segments of policy-making and program development are outside the purview of State institutions.

Secondly, the increasing categorization of grants with accompanying detailed rules, regulations, and supervision results in a vertical or functional federalism which emphasizes program administrators and professionals and their particular interest and focus. This weakens the Governor's role as chief administrator and his overall planning, programming, and budgeting leadership.

A final aspect of the impact on State arises as a result of the growing dependence on Federal aid with strings attached. This permits the National Government to make or influence many critical political decisions concerning the allocation of public resources in fields heretofore the province of State government. The amounts of money available, combined with detailed categorization, may skew a State's programs, priorities, and decisions in favor of those for which Federal aid is available.

In many respects the same three influences are felt by local government. When grants go directly to special purpose districts and other recipients operating or providing services within the borders of a general local government, its role and responsibilities are weakened.

This review of some of the sources of tension in the grant-in-aid and loan system should not be taken to imply that the present system is a failure and should be abandoned. Categorical grants have a definite and significant role to play in the federal system and have made a major contribution by furthering national goals while accommodating to and strengthening State and local governments. Stresses, strains, and tensions have developed and shifts in power have taken place, but the basic system should be preserved and reformed while new alternatives are provided. The categorical grants represent the hard won fruits of difficult and significant policy struggles in the United States. These programs embodying congressional decisions regarding desirable objectives are not to be lightly abandoned.

## APPROACHES TO REFORM

The direction taken by urban and rural growth in the United States and the developments in the grant system have not gone unchallenged. Much creative and thoughtful effort is being devoted to efforts to improve the system both from with government and from outside. A number of specific measures have been inaugurated and more are certainly to be anticipated.

The Advisory Commission on Intergovernmental Relations recently has devoted two major reports to these problems. The report Urban and Rural America: Policies for Future Growth closely examines the dimensions of the continuing process of growth and urbanization in the United States; it highlights the intergovernmental policy implications in its findings; and it advances recommendations in the belief

that the future of American federalism is inextricably linked with that of urbanization. The other report, Fiscal Balance in the American Federal System analyzes the basic structure of fiscal federalism, isolates the major shortcomings of the present system, identifies the fiscal sources of tension, and prescribes policies designed to strengthen the fiscal foundation of our intergovernmental system. In an earlier report, Intergovernmental Responsibility for Water Supply and Sewerage Disposal in Metropolitan Areas, the Commission considered a number of problems of specific concern to those of you attending this symposium.

A review of the recommendations of these reports along with the major features of the recently approved "Intergovernmental Cooperation Act of 1968" (P.L. 90-577) provide a convenient introduction to recent efforts and proposed approaches both to influencing the direction of future urban and rural growth and to improving the effectiveness and manageability of the grant-in-aid system.

## TOWARD BETTER URBAN-RURAL BALANCE

### Urbanization Policy

The Commission's major recommendation in the report dealing with urban and rural growth calls for the development of a national policy geared to achieving a more balanced distribution and better design for future urban development. Political reality and the pressing need for greater social stability dictate that we must deal with the immediate pressing problems of central cities and metropolitan areas, while simultaneously planning for a more balanced geographic distribution and an improved quality for our future urban growth. Such an urbanization policy--or perhaps we should say policies--must come to grips with three dynamic components of urban growth: The economic development and growth conditioners which influence the location and distribution of urbanization; the factors affecting where people live and work and when they move and seek new opportunities; and the forces determining the kind and quality of urban development that takes place.

To develop coordinated policies in these areas requires the establishment of new machinery and new methods for policy-making and execution in the executive and legislative branches of national, State and local governments. Both branches must be involved--given the planning, programming, and public expenditure ramifications. One way

to initiate this process at the federal level would be through the enactment of legislation requiring the President to submit annually to Congress a national urbanization message and report which would describe the progress and effectiveness of Federal efforts affecting the location and rate of population and economic growth.

At the State level policies are needed to guide specific State programs and administrative decisions that shape the pattern of urban growth and to provide a framework for local planning. For States to play a key role in the development of urbanization policies, they must have a planning capability that will produce the elements necessary to channel effectively their future growth. In a number of States, including North Carolina, steps are being taken to produce the kind of planning process which is here referred to.

Although the pattern of State planning fortunately will vary from State to State allowing for innovation and flexibility, certain basic characteristics appear desirable. Administratively, the planning agency should be an integral part of the Governor's top management organization. It should be linked closely with the executive budget agency. There must be a direct relationship between the State executive planning process and the legislature as there is now a direct relationship between executive budgeting and the legislature. Such a relationship ideally includes not only a reasonable and feasible sharing of information, data and capability, but also specific legislative consideration of appropriate executive planning products so that as the budget guides expenditures for the succeeding one or two years, plans and policies can guide decisions and give a policy direction for a longer period into the near future.

The Advisory Commission has developed a model State and regional planning act which incorporates these principles and is developing a companion State budgeting act. It has also developed a model concurrent resolution to establish a joint legislative committee on State planning.

The Commission also recommends that, to provide a vital link between national and State planning, the present multi-State regional economic planning and development agencies be reassessed. Initiative is already underway to bring about this reassessment and to encourage the consideration of a nationwide approach.

The Location of Urbanization

Acknowledging that both national and State governmental programs and policies have a role to play in influencing the location of people and industry and the resulting patterns of urban growth, the Commission identifies a number of possible components of growth policies that should be considered. It suggests "influencing the movement of population and economic growth among different types of communities in various ways so as to achieve generally a greater degree of population decentralization throughout the country and a greater degree of population dispersion within metropolitan areas." All levels of government are assigned a role in carrying out this policy.

To influence industrial location and economic growth, financial incentives such as tax credits, more readily available loans including below-market rate loans, deferred property tax liabilities, or direct payments--either singly or in combination--are possible. Public procurement contracts and new public buildings and facilities can be geared to fostering more orderly urban growth in furtherance of urbanization policy.

Measures to influence migration patterns must go hand-in-hand with the economic growth policies. The focus must be on ways and means of neutralizing those factors that have produced continued and excessive population concentration and on developing programs that will provide meaningful and viable alternatives throughout the country. Consideration should be given to joint programs of resettlement allowances for low-income persons migrating from labor surplus areas in core cities and countryside to economic growth areas identified in urbanization policies. On-the-job training programs and the inter-area job placement, counseling, and information services could be strengthened, expanded, and refocused. Consideration should be given to legislation eliminating or reducing the migrational pull of inter-state variations in public assistance standards and benefits.

The Quality of Urban Growth

While the geographic location and distribution of future economic and population growth are two fundamental features of urbanization policy, the form and quality of urban growth is a third vital component which must be considered. Massive building and rebuilding must occur in the final third of the century to meet more adequately existing housing needs and to accommodate the 115 million

Americans who will be added to our population.

The economic and demographic components of an overall urbanization policy can influence the location of much of this building and provide alternatives to the present concentrated centers. Yet a basic question remains: What kind of measures are necessary to promote a more pleasing, productive, and less pressured pattern of future urban growth--a pattern whose form reflects long-term national interest? This qualitative concern must be a basic component of any national effort and it should command the attention of all who recognize that a narrow focusing on the quantitative dimensions of future urban growth will not produce the most desirable future environment.

New approaches are needed and new large-scale urban developments should be encouraged. The possibilities of constructing more pleasing and welcoming environments to attract both industry and population hold promise of a new urban America--living and working in diverse settings, with pleasant physical surroundings, and with more desirable housing, working, and recreational arrangements. The innovative approaches of developing small rural centers and independent balanced new communities, improving suburban and metropolitan fringe development, and filling in undeveloped or cleared land in large central cities require strong and effective land-use planning and regulation and paradoxically more flexible development controls. All available public and private resources must be marshalled to accomplish these objectives.

The Commission suggests a number of approaches to achieving a more desirable urban growth pattern. Emphasis is placed upon a combination of proper staging and location of public services and facilities which are major growth determinants and effective land-use and development controls. These measures must be used in concert and in conformance with planning and development objectives. It is obvious that the provision of water and sewer facilities along with highways, public buildings and installations, and open space are among the major resources available to influence the location and pattern of urban growth.

Direct public involvement could be launched by new land development agencies, or by an existing agency. They could help shape

future urban growth by acquiring land, arranging for site development and basic physical improvements, setting up "land bank" operations, and disposing of land to local public agencies or private developers.

## FISCAL FEDERALISM--GRANT REFORM

In its other recent report, Fiscal Balance in the American Federal System, the Commission devotes attention to another major intergovernmental problem facing our federal system as we enter an unparalleled period of urban growth. This is the question of the best method for the Federal Government to use its superior revenue resources in support of State and local governments. The Commission concludes that the calssic objectives of fiscal aid--equalization, stimulation, demonstration, and general support--are not clearly differentiated under the present aid programs. To introduce a greater degree of flexibility in the entire system, the Commission recommends that a combination of categorical grants-in-aid, general functional block grants, and per capita general support payments--that is, revenue sharing--be used. Each approach would serve to meet specific needs: The categorical grant-in-aid stimulates and supports programs in specific areas of national interest and promotes experimentation and demonstration in such areas; block grants serve, through the consolidation of existing categorical grants, to give States and localities greater flexibility in meeting needs in broad functional areas; and general support payments on a per capita basis, adjusted for variations in tax effort, would allow States and localities to devise their own programs and set their own priorities to help solve their unique and most crucial problems.

For this flexible and innovative approach to succeed, a number of reforms, adjustments, and refinements must be made both in the grant programs and their administration at the Federal level and in their use and management at the State and local level. The recently approved "Intergovernmental Cooperation Act of 1968" (P.L. 90-577) represents an important step in this direction. The Act addresses itself to improving the grant structure by facilitating coordination, improving communication regarding grants, and fostering the development of a positive interrelationship between federally-aided urban development objectives and the goals of State, regional, and local comprehensive planning.

Title IV provides that the President shall establish rules and regulations governing the formulation, evaluation, and review of Federal programs which provide assistance to the States and localities to assure the achievement of the most appropriate and balanced development for urban areas. Full consideration must be given to appropriate uses and development and all viewpoints--national, regional, State, and local--must be considered and taken into account. Federal aid for development purposes must, to the maximum extent possible, be consistent with national objectives and conform with and further the objectives of State, regional, and local comprehensive planning. This broad declaration of development assistance policy, along with Section 204 of the Demonstration Cities and Metropolitan Development Act of 1966 calling for metropolitan areawide review and comment, provide a clear statutory basis for coordinated, comprehensive planning and review of federally-assisted State and local projects and programs.

The joint application procedure already established for the various water and sewer programs is a significant step towards simplification of the complex grant structure. A Joint Funding Simplification Act introduced during the last session of the 90th Congress, on which hearings were held but no action was taken, provides a more sweeping approach. In its report, the Commission recommends a more basic approach to grant consolidation--Authorizing the President to submit grant consolidation plans to Congress under terms comparable to the Executive Reorganization Act of 1949. Under this procedure, if negative action is not taken within a certain period of time by either branch of Congress, the executive consolidation proposal would become law. The Commission in its report, furthermore, specifically recommends as an initial, immediate step that the water and sewer grants be consolidated into a single program.

The Commission also recommends the enactment of general legislation by Congress consolidating, insofar as possible into a single Congressional enactment, a set of planning requirements to be applicable to Federal grant-in-aid programs.

## CONCLUSION

To sum up, the urgent needs of our harassed cities and eroding rural areas are immediate and interrelated. There must be

a major national commitment to the development of urbanization policy at all levels of government and in both the public and private sector. Necessary measures to restore equilibrium between the rapidly growing concentrated metropolitan belts and the rest of the countryside must be initiated while a more desirable, productive, and rewarding environment is established. Great effort at all levels of government and by the private sector will be necessary if this undertaking is to go forward.

Let me conclude with the plea that those of you who are directly involved in administering programs not be discouraged by the frustrations arising from the complicated intergovernmental relations which are necessitated by our federal system. Increasingly, avenues are opening up to facilitate efforts to make the most creative use of available resources. Your contribution to and support for the process of modernization and improvement are essential.

# MUNICIPAL WATER AND SEWER SERVICES TO SUBURBAN AND RURAL SATELLITE COMMUNITIES

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## INTRODUCTION

One of the most significant changes taking place in the State today is the development of rural areas and the growth of small communities adjacent to cities and towns. This growth and development is not confined to major urban areas but is taking place throughout North Carolina. Emerging with this development is the problem of finding a sound and politically acceptable arrangement for furnishing community water and sanitary sewer facilities. This problem is critical for local government. The Water Resources Research Institute and the Institute of Government are to be commended for sponsoring this Symposium which affords the opportunity to air this problem and discuss viable solutions.

In discussing the opportunities for municipalities to furnish water and sewer services, I believe that it is necessary to reach a general understanding as to what is meant by a suburban and rural satellite community. In my view, a suburban and rural satellite community includes the following:

(1) A small incorporated municipality economically satellited on and in the immediate vicinity of a larger municipality.

(2) An unincorporated, basically rural community economically satellited on and within a relatively short distance from a municipality.

(3) Subdivision developments outside of but within a relatively short distance from one or more municipalities.

(4) The environs of these communities which are or in the immediate future will be undergoing development.

In contrast, I am not including communities in remote sections of the county, nor am I limiting the location of these communities to any fixed boundary such as the boundary of the municipality's planning jurisdiction or a regional planning area. The relative distance of the community from the municipality will vary depending upon the size of the central city. For the most part, these communities are located in urban-type areas, but my discussion will not be limited to recognized urban areas and will include other locales in the State.

## AREA CHARACTERISTICS

If my description of suburban and rural satellite communities is acceptable, it is important to point out the basic characteristics of the general area embracing these communities.

(1) Land development pattern. The first characteristic to consider is the pattern of land development which resembles a wheel. The city or town is a hub with development taking place along the major highways leading into the municipality which resemble the spokes. The communities located on these highways and ringing the city often resemble the wheel rim. This "wheel pattern" of land development is significant in planning and designing area-wide water distribution and sewerage collection systems.

(2) Key to Growth. Installation of water and sewer services are the most important keys to growth and development of communities. They are not more important than other services, such as fire protection and refuse collection, but particularly important because they normally come first and accelerate the need and demand for other services. Water and sewer facilities stimulate and encourage development and they are the framework on which the urban type community is built. Therefore, the provisions for furnishing water and sewer systems cannot be considered as an end unto itself but must be considered as an integral part of the overall development of the area.

(3) Existing Facilities. The third factor that should be noted is the number of municipal systems and the extent to which these systems are now furnishing service to outlying areas. In the main, suburban and rural satellite communities are clustered around one of the 361 municipalities which are operating water distribution systems. Many of these 361 systems are serving outlying communities and have the capacity to serve additional areas or expand existing facilities for this purpose. In this connection it is important to note that the extension of water and sewer services is a major factor in the growth of municipalities. In order for a municipality to extend its boundaries under our state law, it is required to provide water and sewer service to the annexed area on substantially the same basis as these services are provided in the remainder of the city. This annexation law as a matter of state policy requires a well-planned and adequately financed water and sewer extension program.

## MUNICIPAL EVALUATION

To evaluate alternatives for providing water and sewer service to suburban and rural satellite communities, it is necessary to select general guides or standards to measure the soundness of each. Warren J. Wicker of the Institute of Government has suggested six general standards for this purpose, the more important of which I recommend we use in this discussion as follows:

(1) Comprehensive Jurisdiction

(2) Democratically Responsible

(3) Financial Capacity

(4) Policy Making Coordination

If you accept these four standards, I will use them to evaluate the capability of municipal governments to furnish water and sewer service to suburban and rural satellite communities.

(1) Comprehensive Jurisdiction. This standard provides that the jurisdiction of the responsible unit furnishing water and sewer should include all the area "likely to develop in urban fashion."

Municipalities have the authority to extend water and sanitary sewer service outside their boundaries to serve incorporated communities, unincorporated communities, subdivisions, and other areas. They have the authority to acquire land or easements for facilities and adopt policies and regulations governing these services. They are not limited or regulated except by the rule of reasonableness. In addition, the municipality is authorized to participate in the joint financing and operation of water and sewer system facilities with other units of government. The more important of these include the following:

(a) Water and Sewer Authorities (G.S. 162A-1 through 162A-19)

(b) Joint Water and Sewer Facilities (G.S. 153-284 through 153-294), and

(c) Metropolitan Sewerage Districts (G.S. 153-295 through 153-324).

In addition, two new approaches to cooperative action in furnishing services are in the offing. The first is the creation of the Regional Councils of Government, four of which are now active in the State and the creation of additional Councils is anticipated. Councils of Local Government which were authorized in 1967 offer a number of possibilities for planning and implementing the extension of water and sewer services on an area-wide basis. Also, an experimental plan authorized for Raleigh in 1967 under which that

City may annex and provide water, sewer and other services to a non-contiguous area has exciting prospects as a new and additional approach for providing municipal type services to outlying areas.

Municipalities have comprehensive jurisdiction and authority to provide water and sewer service to suburban and satellite communities.

(2) Democratically Responsible. This second standard requires that "the organizational arrangement should be one which is responsible to the people of the area in a democratic manner."

Municipal governments would not be directly responsible to non-resident property owners. However, they would be responsive to the needs of the property owners they serve. In all probability, if a relatively large area is to be served, a Water and Sewer Authority, Metropolitan Sewerage District, Council of Governments, or other organizational arrangement would be established. Systems jointly owned and operated under one of these alternatives which are governed by elected representatives would provide an organizational arrangement which is responsible to the people in a democratic manner. In the event one or more of these organizations of local governments is established, it would be the unit of government closest to the people it serves, and therefore, more responsive to local needs than any other.

(3) Financial Capacity. This standard suggests that any arrangement for furnishing water and sewer services must have the capacity to finance and operate facilities and the necessary flexibility to finance systems that will insure equity among users and taxpayers.

Municipalities have the authority to (a) issue general obligation bonds, revenue bonds, and to levy property taxes to finance the construction and operation of water and sanitary sewer systems to outlying areas; (b) establish and enforce rates and charges for service within and outside their limits; (c) establish extension policies under which subdivision developers and other property owners will bear a fair and equitable share of extension costs; (d) enter into contracts with one another and other local governments to jointly finance facilities and systems; and (e) contract with the State and Federal Government for loans, grants and other financial assistance.

Municipalities have the financial capacity to furnish or in cooperation with others to furnish water and sewer service to suburban and satellite communities.

(4) Policy Making Coordination. This fourth standard provides that the organization furnishing water and sewer services have the capability of coordinating all public services. This standard requires particular emphasis. As one newspaper editor recently stated, "In tomorrow's urban type area, we can have either paradise or purgatory." I would add that effective policy coordination requires an active, area-wide planning process and the enforcement of land use controls by the government responsible for furnishing a full range of urban-type services.

Municipal governments are created for the purpose of providing a full range of services, and with few exceptions the cities and towns we are discussing now provide these services. Until recent years municipal governments have been the only unit of government concerned with land development planning and area policy coordination. Following World War II cities and towns across the state began to establish planning boards, adopt land use controls within and beyond their boundaries and develop plans and policies for the coordination of services affecting development. Municipal governments have long recognized the need for and are leading the way in coordinating public service policies.

Municipalities have the expertise and are qualified to initiate and develop public policy coordination for the areas surrounding municipalities and embracing suburban and rural satellite communities.

To summarize the capability of municipalities for furnishing water and sewer service, I would point out that cities and towns have comprehensive jurisdictional authority, are democratically responsible and closest to the people when any of the several organizational arrangements are employed, have the financial capacity and are particularly qualified to coordinate area-wide public policies.

In the light of these capabilities, and the extent to which water and sewer facilities are now available in the area, it would be unwise for privately owned companies, non-profit associations, sanitary districts or other special districts to serve suburban and rural satellite communities. This would encourage duplication of facilities and impede the orderly growth and development of these areas. This is not to say that private systems, associations, or special districts do not have a place. I suggest, however, that they have a more appropriate place elsewhere. As the U. S. Advisory Commission on Inter-Governmental Relations in numerous reports has pointed out, water and sewer services should be provided to the urban-type area by

general purpose governments.

## CONCLUSION

If municipalities are to fulfill the role for which they are capable, municipal officials will have to put aside long standing community jealousies, initiate cooperative action with one another and with their county governments. With the growing need and the increased interest on the part of county governments in providing water and sewer service, I believe that the best opportunity for serving small communities lies in the development of a sound, politically acceptable, state-wide plan, which includes several alternatives, under which municipalities in cooperation with the counties construct and operate area-wide water and sewer systems.

In conclusion, I submit that municipalities or municipalities in concert with the counties are best qualified to provide water and sewer services to suburban and rural satellite communities. I hasten to add that unless our general purpose local governments find a solution and begin to serve small communities, someone else will step in and do the job for them.

# COUNTY-WIDE WATER AND SEWER SYSTEMS

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An informed observer of the local government scene, in search of a rationale to support his thesis that county-wide water and sewer systems are the answer to better water and sewer services for small communities in North Carolina, would first have to resolve the seemingly paradoxical state of affairs extant today.

Granted that some observers may feel that the thesis is quixotic and that the searching observer is merely "tilting with windmills." Be that as it may, your observer is thankful for the fact that a county-wide water system is under construction in Anson County today.

If the circumstances, timing, and sequence of events that led to Anson's demonstration of the thesis could be duplicated in the other 99 counties of North Carolina, we could put away our lance and simply point to the living model as the best evidence of a supporting rationale. And yet, the Anson system must prove itself economically feasible to become, in fact, a working model.

If it does prove feasible for a rural county to serve small communities, including incorporated small communities, with a county-wide system, does it follow that the same would be true in an urban county, which, by definition, contains a relatively large city?

If we assume that the city neither can nor will provide service to small outlying communities, then the answer would be yes, but the end result would be something different than a truly county-wide system.

The paradox appears from the fact that the urban county presumably would be potentially better able to provide such services than the typical rural county.

It would seem wise then, for the purposes of this paper, to distinguish between the small communities of an urban county and the small communities of a rural county. (The reader will of course be aware that the neatness of the distinction does not exist in an actual physical or geographical sense.)

What factors then ought to be considered in determining the rural county role in providing better water and sewer service to small communities?

First we must determine the need for such services. This need is usually expressed in terms of economic development. The hope of attracting industry to locate in rural areas is the pot of gold at the end of the rainbow. Less often expressed is the desire of the residents of the small communities for the amenities of modern living, a better way of life. Another expression of need is voiced by proponents of improved standards of health. The dimensions of need may be revealed by an engineering feasibility study, but is better determined in the context of a comprehensive plan for county development.

Second, county commissioners must determine the economic feasibility of county-wide services. In almost every case it is probable that financial aid from sources other than county revenue or county borrowing will be necessary. The preliminary engineering study and the availability of other resources will then guide the determination of economic feasibility.

Third, priorities must be established within available resources. Since counties are in part agencies of the State, they carry a mandate for local administration of and financial participation in the delivery of State services such as schools, welfare, health, court and jail facilities. This is no easy job but county commissioners are often guided by their interpretation of the will of the voters. We may call this factor the determination of political feasibility.

Inherent in the decision to undertake a rural county-wide system of service is the economic risk involved. The degree of risk seems minimal in an expanding economy but who can forget or overlook the lesson learned in the depressed economy of the thirties? Wisdom born of caution may be more lasting and profound than wisdom born of forecast and optimism.

Turning to the urban county role in providing water and sewer services to small communities, we may assume the same factors for consideration as stated for rural counties. But an additional factor which complicates the picture is the existence of a relatively large city system which represents a substantial capital investment and a potential for expansion. We may even assume a desire for expansion. In this situation, it would appear that the alternatives are (1) a city system providing county-wide service; (2) a county system providing county-wide services; (3) a combination of a city system

providing service in and around the city and a county system providing service in the rest of the county; or (4) a county-wide system operated by a commission or authority.

The first alternative may not be possible for legal, equitable, and financial reasons. The question of "public purpose" would seem to be an obstacle to county-wide service by a city. The "equity" of the city resident in the city system would require that "outside" service stand on its own financial bottom and this may result in economic unfeasibility.

The second alternative, a county system for county-wide service, would require a transfer of ownership and assumption of debt which, if possible, may not be practical. It is doubtless unacceptable to city officials who realize the relationship of control of water and sewer services to the growth of the city.

The third alternative, of both a county and a city system, seems to be more practical and is evidenced by the recent actions in Forsyth and Mecklenburg Counties. Yet, there seems to be a real question as to the ultimate wisdom and effectiveness of this approach. There is duplication of effort and imponderable questions arise as the urban community grows.

The fourth alternative, of a county-wide system operated by a commission or authority, would seem objectively to be the sounder approach. At least, all citizens and consumers would stand on the same footing. However, the multiplicity of boards or commissions is not deemed desirable, nor is the relative political remoteness of an authority desirable.

Whether rural or urban, a county undertaking to provide water and sewer services would undoubtedly be both a wholesaler and retailer of the services. The communities to be serviced which have the capacity should provide for retail distribution of water and collection of waste. The county should provide a water supply and delivery to the community and outfalls and treatment facilities for waste. In communities lacking the retail capacity and in more scattered areas of the county, of course the county would be the retailer.

Should the question of providing these basic services be left to local decision, county by county, community by community, city by city? I think not. I believe that we must raise our sights and determine as a matter of state policy, the best, most effective, and most economical ways of pro-

viding water and sewer services in both quantity and quality in every area of North Carolina. No other single program can do more for the economic development of our State and the well-being of our citizens.

The noble efforts of dedicated men are recognized in the several agencies of state and federal government administering a variety of programs. The special efforts being made to develop the North Carolina Water Plan are hampered by lack of funds and personnel, a product of selfish, competitive instincts of the diverse water users in the State. We are in dire need of courageous political leadership to demand sufficient resources and to insist on the rapid completion of a State Water Plan. Only then can we rationally determine how best to meet the most basic needs of a growing state.

Only then can we begin to fulfill our responsibility to succeeding generations who will inherit the land.

# REGIONAL PLANNING AND MANAGEMENT OF WATER AND SEWER SYSTEMS

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In this, the richest country in the world, we have many communities without adequate water service.

In this, one of the wettest regions of the United States, we have communities whose water supplies have run dry during a drought no more severe than some ten other droughts that have occurred during the last fifty years.

Other countries, without nearly our water and economic resources, have been providing a much larger percentage of their population with water from a public supply. With considerably less rainfall than we have, they have not suffered as we have from drought.

It has been estimated that some 13,000 communities in the United States with more than 700 people have no public water supply systems whatsoever (1). In North Carolina, only 60% of the population is served by public water supply, while in the United States 75% of the population has service from public water supply systems. By contrast, in England and Wales, more than 99% of the total population has such public service. In the United States, the average supply serves only 7500 individuals. In North Carolina, the average supply serves fewer than 2000 people. In England and Wales, on the other hand, the average system serves more than 150,000 persons. The excellent record for water service in England deserves some elaboration.

In April, 1944, before World War II was concluded, a white paper was published in Britain entitled "A National Water Policy." At that time in England and Wales alone there were 1226 separate water supply systems. The white paper referred to weaknesses resulting from the multiplicity of small systems and it set out three general principles: (1) Central control for improving efficiency of water supply services; (2) the ultimate responsibility for the administration of water supplies should rest with democratic bodies, such as authorities responsible to their electorates; and (3) as water supply systems affect many different interests, the procedures adopted should provide ample protection for all. The white paper also referred to the need for extension of piped water in rural localities

and for the provision of corresponding sewerage facilities, and recognized the difficulties of securing such extensions because of the high cost of laying mains to serve sparsely populated areas.

The Water Act of 1945, enacted as a result of the white paper, initiated a program of what is called in Britain "Regrouping", and what we might call "Regionalization". The government also introduced legislation making grants available to local water authorities for serving rural areas.

Until 1956, the government relied on the water industry to come forward with proposals for regrouping. Progress was slow and accordingly the Federal Government indicated that if local authorities failed to act, the government would take the initiative. By 1966, the number of separate water supply systems had been reduced from more than 1300 to 331. Fewer than 5% of the systems were taken over by ministerial directive. Among the guidelines established for regrouping was that no local waterworks would be considered large enough unless it could support at least one full-time qualified engineer, a full-time chemist, and an accountant.

Two general approaches to regrouping were followed: (1) Several local authorities could come together to form a joint board; or (2) a local authority, if it comprised more than 50% of the ultimate size of the regrouped system, might take over one or more of the neighboring authorities.

There is no intention of intimating that this approach and this record of accomplishment are feasible for North Carolina or much of the United States, primarily because of difference in density of population. On the other hand, many opportunities for regionalization in the United States do exist.

Regionalization in the United States

In the United States there are more than 20,000 separate water facilities, 58% of which have a capital investment of less than $5 million and 75% less than $10 million (2). These are not nearly large enough to be efficiently designed or operated.

Regionalization has in fact been growing. Seattle and Tacoma, Washington, are absorbing small installations at a rapid rate, to the economic advantage of both the large and small communities. The Washington State Health Department has found that water systems with fewer than 1,000 services usually suffer from poor service and high rates.

The number of water supply districts, which represent an approach to regionalization, has grown from 665 in 1952 to 1502 in 1962. In 1967, the New England Water Works Association held a conference entitled "Area Concepts of Water Supply and Distribution--Provincialism is Dead". Parish-wide water supply systems are an old story in Louisiana and in North Carolina a beginning has been made in several counties. In Forsyth and Mecklenberg, the large municipalities of Winston-Salem and Charlotte are working with county government to provide county-wide water service. And Anson County is on the way to providing a regional system for many small communities.

Advantage of Regionalization

The greatest advantage of regionalization, and an advantage sufficient to encourage an active program in that direction, is the basis used in Britain, namely, the provision of adequate management. Small water and sewer facilities do not have the technical resources for management, and cannot afford to employ qualified consultants to guide the development of adequate systems.

Economies of scale can be realized when a waterworks serves a larger population. It has been estimated that a ten-fold increase in facility size, from 5 to 50 mgd, results in a reduced cost per million gallons of about 60%. The unit cost of transmitting water is found to drop more than 50% for a 2 mgd supply as compared with a 1 mgd supply. The unit cost of well water from a 1 mgd well is about 1/3 of that from an 0.2 mgd well.

The economic resources of larger conglomerates of communities generally result in lower costs of financing, making the entire enterprise more economical.

Regionalization offers an opportunity to provide a better quality water than is possible when each community is left to scramble for its own water source. In this region, for example, Durham and Chapel Hill have water sources of naturally high quality and sufficient water is available to serve all the Research Triangle and surrounding areas. However, Raleigh in seeking additional resources has had to go to the polluted Neuse and Smithfield is dependent entirely on an even more polluted Neuse River below Raleigh. Even with modern treatment methods, we cannot be certain that highly polluted waters can be rid of low concentrations of potentially toxic chemicals nor of some of the viruses, both of which may have long-term health significance (3). A regional supply for this area could assure high quality water to all of the population in the area, and polluted waters might be used for secondary purposes such as irrigation, industrial water

supply and the like.

Regionalization, particularly where it involves the administrative management of several units, offers an opportunity for research. This is particularly important in wastewater management. Currently, each community is responsible for providing its own treatment facilities. It is seldom feasible for a community to experiment with new methodology, as it would have to bear the cost of experimentation while the advantages would accrue to other communities. For this reason, advances in water and wastewater treatment have been slow. If there were regional administration of many individual units, the authority could afford to experiment in one or more of the facilities with the results being applicable to other plants within the authority's jurisdiction.

Better operation is an important by-product of regionalization. Hundreds of millions of dollars have been spent and more will be spent on providing capital facilities for water supply and wastewater treatment in North Carolina. When these works are placed in operation, supervision of operation is almost always inadequate, particularly in the smaller communities. Annual one-week short courses for operators are hardly sufficient to prepare individuals, no matter how well motivated, to operate complex treatment works that require knowledge of chemistry and biology, hydraulics and engineering, business and personnel management, and equipment maintenance. Many wastewater treatment plants designed to provide 80 to 90 per cent removal of BOD are accomplishing only a fraction of that. In water supply facilities, lack of understanding hydrology has led to frequent water crises, such as we have recently experienced. Regionalization would help yield a much greater return on the investments that are being made.

Most pertinent of all, regionalization may do for public water supply what the rural electrification program did for electricity--that is, bring service to small communities that could not otherwise afford water and sewerage service because of low density of population.

Regionalization might also include combining water supply and wastewater disposal services as well as providing services for industry, either water supply, waste disposal, or both. Many economic benefits accrue from management of these facilities on a larger scale realized by combining operation of water and sewerage systems or incorporating industrial

service.

All the people of North Carolina deserve an adequate water supply of good quality and suitable wastewater disposal service regardless of their place of residence. Regionalization might help to provide these services.

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# STATE WATER AND SEWER AUTHORITIES

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## INTRODUCTION

To my knowledge all States establish minimum standards and regulate the installation and operation of water and sewerage systems. Regulation is accomplished through a number of complementary actions including review, technical assistance, issuance of permits, enforcement of laws and regulations, and, in some instances, through coordination of planning. In addition to their regulating role, a growing number of States are accepting a share of the cost of sewage treatment and are supplementing Federal grants to encourage the construction of sewage treatment facilities. In still a third role, two States, New York and Ohio, have created statewide authorities to provide direct services. Maryland has such a proposal under consideration.

I am of the opinion that fully effective and efficient water and sewerage programs depend on the use of the sovereign powers of the States in all three roles; regulating, financing and serving. An examination of the New York and Ohio Authorities and the Maryland proposal reveals some common trends and some divergent ideas in the makeup of State authorities.

### New York State Pure Waters Authority

In February, 1967, the New York State Legislature enacted the New York State Pure Waters Authority Act. The Authority thus created is a body corporate and politic constituting a public benfit corporation. Its membership consists of the Commissioner of Health, the Commissioner of the Office for Local Government, and three members appointed by the Governor by and with the consent of the Senate.

The Authority is granted the power to construct, operate, and maintain sewage treatment works, sewage collecting systems, and solid waste disposal facilities on behalf of a municipality. It may enter into contracts with the governing bodies of municipalities to provide these services upon such terms and conditions as the Authority determines to be reasonable, including, but not limited to, the reimbursement of all costs and

claims which may arise.

The Authority may make loans to a municipality for sewerage or solid waste disposal facilities. As evidence of indebtedness, the Authority may only accept the municipality's bonds or notes. Such loans are not to be made in excess of the actual costs of construction.

When requested by a municipality, the Authority may advise on matters of planning, construction, operation, and maintenance of sewerage systems or solid waste disposal facilities. A reasonable charge may be made for such functions.

The Authority has the powers needed to borrow money, issue bonds and notes and invest in reserve and sinking funds. It may issue negotiable bonds and notes necessary for achieving its purposes. Notes and bonds shall be general obligations of the Authority payable out of revenues. It has the power to accept gifts, grants or loans from the Federal Government, from the State of New York or from any other source.

The Authority is exempt from taxation on its property or the use of its property. It is exempt from taxes on all income received. Its bonds and notes are exempt except for gift and estate taxes on transfer.

Since its formation less than two years ago, the Authority has organized and recruited a staff. The staff is engaged in consultation with State and local officials to determine the initial useful role the Authority might play including a schedule of projects. One service that is under consideration is that of providing construction loans to assist municipalities with the early payments on projects under construction before Federal grant reimbursements are received.

Ohio Water Development Authority

Early in 1968 the Ohio General Assembly created the Ohio Water Development Authority. It is a body corporate and politic formed to carry out essential governmental functions and public purposes of the State. It consists of seven members; the Director of Health, the Director of Natural Resources, and five members appointed by the Governor with the advice and consent of the Senate.

The Authority may initiate, acquire, construct, maintain, repair and operate water development projects. It may cause such projects to be operated pursuant to a lease, sublease, or agreement with any person or governmental agency. Further, it can make loans or grants to governmental agencies for the acquisition or construction of wastewater or water management facilities.

The powers of the Authority and its area of responsibility are very broad. Water development projects are defined to include all manner of wastewater facilities and water management facilities including water supply and sewerage systems. It may assist industries and other private interests as well as governmental agencies. Furthermore, the Ohio Water Development Authority may initiate projects on its own initiative without waiting for another governmental agency to request assistance.

The OWDA may issue water development bonds, payable solely from revenues. In addition, it may accept gifts, grants, and loans of money or property from the Federal or State governments or from other sources. The property, activities and securities of the Authority are not subject to taxation.

The Ohio Authority, like that in New York, has organized quickly and recruited staff. Using their broad powers and the expertise of consultants, the Authority is promoting projects on a regional basis. Now under discussion is the Cuyahoga River Basin where it appears that major savings will result from combining the wastes from steel mills with those from municipal sources. Another project is under discussion for the Miami River Basin where paper mill waste might be profitably treated in a regional system.

Maryland's Proposed Waste Acceptance Service

Please understand that the proposed Service in Maryland is based on conditions that exist there and I am not suggesting that it is feasible at this time in any other State. I should also explain that the proposal is directed to the problem of waste management because the problem of water supply in Maryland is not of the same magnitude. Thanks to the imaginative contributions of some outstanding men including Dr. Abel Wolman, regional water supply systems are now more of a rule than an exception in Maryland.

New York and Ohio have created State Authorities to provide water and sewerage service. Maryland is proposing a statewide wholesale sanitary district to be known as the Waste Acceptance Service. These three States have moved to solve their problems in a fashion permissible under their individual circumstances. Circumstances in North Carolina might or might not warrant a similar course of action.

Certainly in Maryland there has been a period of rapid evolution that step by step has brought the State into a more active participating role in water pollution control. Some of the measures that make the Waste Acceptance Service proposal a reasonable next step include:

1. Maryland has a modern water resources law administered by a Department of Water Resources. Recognizing the difference between waste management and water resources management, it has preserved the very strong enforcement powers embodied in the health laws and these are administered by the State Department of Health.
2. Recent legislation requires that every county submit a master plan for water supply and liquid waste disposal prior to 1970 and update the plan annually thereafter. The plan is adopted by the governing body of the local jurisdiction and endorsed by State planning and water pollution control agencies. After the plan is adopted and approved, it becomes the basis for State and Federal grants. No county will be eligible for grants unless its plan has been adopted. Refusal to adopt a plan denies grant assistance to the county but does not relieve it from the necessity to comply with State water pollution control regulations and standards.
3. By law, every industrial and municipal waste treatment plant and water treatment plant must be under the direction of a certified operator. The State is financing the instruction of approximately 200 operators per year in four community colleges at strategic locations.
4. Like North Carolina, water quality standards have been established for all waters of the State. The standards and plan of implementation have been adopted as regulation, approved by the Governor and approved by the Secretary of the Interior. Nondegradation has long been the policy.
5. Maryland provides liberal financial assistance for the construction of sewage treatment facilities. The law requires that whenever a community receives a Federal grant offer, the State will guarantee 75 percent funding. Of that 75 percent, 25 percent is an outright grant. The State then advances any deficiency in Federal funds available to meet the Federal grant offer. Last year, Federal funds were sufficient to cover less than 10 percent of the cost of eligible projects, but the balance of the Federal share

was advanced by the State. This arrangement permits communities to proceed with construction of needed treatment facilities as rapidly as they are willing without facing the uncertainties of the availability of Federal funds and with the assurance that a fixed financing formula is available.

6. To assist communities needing both a collection system and a treatment plant, the State has established a revolving fund. From that fund, long-term, low interest loans can be made to communities to help finance elements of the sewer system not eligible for Federal water pollution control grants. Repayment is returned to the revolving fund to be used for financing other sewer systems as needed.
7. Countywide sanitary districts are authorized under State enabling legislation. Such districts have been formed in 17 of 23 counties. The districts are instruments of the county governments and they may establish subdistricts to provide water, sewer, or solid waste services in smaller areas of their county.

Remarkable progress is being made. By 1970 all municipal sewage collection systems will be served by secondary treatment plants. Similar advances are being made to catch up with the backlog of needed industrial waste treatment facilities.

In spite of this progress, a Study Commission concluded that the public would never be satisfied under the present arrangement. Time will not permit an enumeration of all of the reasons that led the Commission to that conclusion. However, for those who might be interested, a version of the Commission's report can be found in the April, 1968, issue of the Journal of the Sanitary Engineering Division, Proceedings of the American Society of Civil Engineers.

Essentially, a Commission authorized by the General Assembly and appointed by the Governor has concluded that efficient water pollution control cannot be achieved through the present system. The Commission proposes that a statewide sanitary district be established to provide waste

treatment services to industries and communities alike on a mandatory wholesale basis. This service organization would not be involved in decisions related to land use, industrial expansion, or other matters governing the point and time at which waste would be generated. It would simply provide service where and when it was needed and be free to exercise choices of treatment at the spot, transportation through sewer lines to other locations, and consolidation of treatment works to meet the State's water quality standards in an efficient manner. This Service would not dictate the policies of local interests, but on the other hand, local interests could not discharge liquid wastes to the streams of the State except through the facilities provided by the Service.

# THE ASSESSMENT OF GOVERNMENTAL ALTERNATIVES FOR IMPROVED WATER AND SEWER SERVICES

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I am reminded of the statement by one of my colleagues at a symposium like this who excused his lack of preparation by commenting that when he agreed several months ago to speak, he did not know how busy he was going to be last night. In my case, when Dave Howells asked me last September to serve as the anchor man for these sessions, I didn't know or consult the Carolina basketball schedule for the nights of December 2 and 3. I was likewise bold enough, largely out of ignorance, to think that I might be able to say something significant and provocative. My boldness and ignorance could be likened to that of the city-bred Scotsman who sought escape from the crowded golf links of the city into the rural hinterland for a few practice swings. Completely oblivious to country life, he spied a spacious cow pasture where he hit several wood shots a might distance. In the process of retrieving his practice shots, however, the Scotsman lost his round tam-o-shanter head piece. The insensitive fellow tried on at least a half-dozen circular shapes before he finally found one that fit! This type of solid waste disposal technique is perhaps unique in the annals of sanitary engineering!

But it is a liquid commodity, both pure and polluted, that has occupied our attention here today. On the liquidity topic I cannot help thinking of the liquid-conscious Scotsman who was walking home from a grand and glorious gathering of his clan. As he cautiously navigated his course along the rural roadside, his partially full flask firmly in his hip pocket, a vehicle whipped by him and the aerodynamic force of its passage sent the Scotsman tumbling to the ground. As he arose and resumed his progress, he felt some warm liquid trickling down his leg, to which he remarked, "O Lord, I 'ope that's blood!"

My topic and role has been billed as that of assessing the governmental alternatives for improved water and sewer services in North Carolina. As a resident of this State for slightly more than one year, you can see that I possess a great fund of that invaluable commodity necessary to pose as an

expert on the subject; namely, ignorance. I have reviewed the papers and listened to these discussions with a great deal of interest and informational benefit. The multiplicity of problems and the variety of approaches forced me into an attempt to simplify and, hopefully, clarify the character of the numerous difficulties encountered in these service fields.

The root cause of our concerns, of course, is the urbanization of the countryside--the development of spatial concentrations of people in an otherwise rural setting. North Carolina is especially vulnerable to this phenomenon, since it ranks third among all states in the proportion of its population not living within incorporated municipalities. Only Maine (63%) and South Carolina (62%) exceed North Carolina's 58% living outside incorporated areas. As urban values have penetrated all but the most remote enclaves of our nation, the demand for urban-type public services has escalated among non-urban populations. After roads, water and sewers seem generally to follow in the sequence to a fully developed physical plant undergirding-urbanized development.

It also is evident from the existence of and attendance of this conference that the problem has a special shape to it in North Carolina. The paradox or inconsistency seems to be that there is more "rural urbanization" in this state, if it is permissible to use such seemingly contradictory terms. Above and beyond the evidence already introduced here, especially by Messrs. Hinkley, Staton and Nery, I checked the recent figures of the 1967 Census of Governments on the increase in special districts in North Carolina since 1962. I found that of the nearly one hundred new special districts created in this five-year span, about eighty were outside the six SMSA's in North Carolina. This count, of course, reflects only formal governmental units as defined by the Bureau of the Census and not the private, quasi-public and otherwise unidentified utility systems such as those turned up in the Board of Health's survey.

The creation of these new governmental units plus the even greater number of small private, non-profit, and other water-sewer providing entities have added to the proliferation of service performance and increased the difficulties of coordinated response to rapid changes. It is on this theme of coordinated response that I would like to hinge the major burden of my remarks and suggested courses of action.

Certainly, if there is any one theme permeating the character of governmental activities these days, it is that governments at all levels--federal, state, and local--are intimately involved in most if not all the major functions of government. This is nothing new to you who are practitioners of the art of government and administration. The corollary to this thesis, however, is not so frequently recognized; namely, that if one wishes to institute important changes and improvements in the delivery of public services, it requires the mobilization of influence among officials and agencies at all levels. Furthermore, there are a number of rigidities built into our governmental structures and administrative apparatuses. What are some of these rigidities? In what ways might they be overcome to facilitate the overall improvement and better coordination of water and sewer services?

At the risk of behaving like a bull in a china shop and in view of the time constraints, let me offer a set of prescriptions that should provoke some discussion and perhaps allow me to justify them as they raise the fur on some of your backs.

At the Federal level:

1. Eliminate the three different categorical water and sewer grants presently authorized and funded by HUD, FHA, and EDA.
2. Eliminate the categorical grant for treatment facilities under the FWPCA.
3. Replace the above grants with a consolidated grant, apportioned on a formula basis to the states with state-local matching. This consolidated grant for water supply and pollution prevention would be administered by the state on the basis of a state water plan that has received the approval of HUD, FWPCA, and perhaps other agencies similar to the procedure of priorities set currently for treatment facilities.

At the State level:

1. Strengthen (a) the function of state planning generally, and (b) coordinated state-local planning in particular.
2. The first suggestion appears to be on the way to reality in the new administration; the second hinges on the creation, powers, and functioning of a state department of community or local affairs.

3. Develop workable, viable, and meaningful common planning-development regions across the state and require the state agencies to treat these regions and their governmental officials as decision components in total agency policy formation.
4. Formalize, foster and otherwise assist by funding and other means regional and area-wide councils of governments with planning, review, and related coordination functions in their early stages. These entities should eventually serve as the entities for taking advantage of the economics of scale and fiscal capacity for large capital works such as water, sewerage, and treatment facilities.
5. Reduce the number of options available for organizing to provide water and sewer services. Place primary reliance on the two instruments of general government, municipalities and counties. Broaden the powers of the counties to plan, approve, and/or finance and operate water-wastewater facilities.
6. Enact a water supply and waste treatment planning act that would authorize and fund a coordinated development plan for water use across the state. Alternatively,
7. Consider the creation of a state study commission on Environmental Quality in which land, water and air resources will be inventoried as to present state and evaluated as to possible future users.

At the local level:

Within the context of broadened state interest and support, local officials need to:

1. Take the initiative for promoting the identification of community goals and the development of plans for their implementation.
2. Take a broad view of their representative role, consulting with all groups in the community.
3. Assert leadership in forming formal or informal inter-local councils of officials.

4. Consider establishing, in larger jurisdictions, a reorganized Department of Water Resources Management, with all the implications that broadened control, planning and administration would imply.

These proposals are gross, oversimplified and reflect my lack of feel for some of the specifics, details and nuances of North Carolina Government. I do not offer them as guaranteed panaceas. No one familiar with or involved in government can expect perfection. But certainly, we have reason to expect fewer imperfections than we now have. Currently, our governments appear as ponderous, multifooted animals where all the feet must be in place before the next step is taken. This is saying rather crudely what Henry Kissinger, Nixon's new foreign policy adviser, has said about the obstacles to improved public policies:

> First, "the pragmatic, issue-oriented bias of our decision makers," but perhaps more fundamentally, "the pervasiveness of modern bureaucracy."
>
> "The policy maker," Kissinger notes, "becomes a referee among quasi-autonomous bureaucratic bodies," using most of his energy to move administrative machinery to decisions, rather than to analyze the merit of the decisions.

In conclusion, let me summarize the emphases and implications of my remarks. First, I call for a reduction in narrowly-focused, limited-flexibility role of the Federal Government through categorical grants. Second, I urge a greatly expanded and important role for state decision-making. Third, I argue for a strong emphasis at the combined state-local level for a planned approach to community services, with limited reliance on actual state administration (as in Maryland and Ohio). Fourth, and most important, I emphasize the need for local leadership highly motivated by a larger, broader, wider concept of community. These local leaders (statesmen, if you will) must be ready and willing to endure political risks in pursuit of the public interest. In this connection I am reminded of Lord Nelson's command to his several captains at the Battle of Trafalgar in 1814. He avoided the danger of giving long or qualified orders that might induce hesitation among his officers by saying that "No man can go

far wrong if he lays his ship close beside the enemy and gives him full battle." Candor compels me to admit, however, that these were about the last words the British hero uttered!

I thank you.

## REGISTRATION

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| Stephens, Jack | Commissioner | Holly Springs |
| Stewart, Pearson H. | Regional Planner | Research Triangle Park |
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| Sullivan, Mark B. | Planner, C & D | Salisbury |
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| Townsend, James R.(Gen.) | Unemployed | Durham |
| Truitt, Virgil | Public Works Director | Tarboro |
| Ussla, A. B., Jr. | Town Manager | Dunn |
| Varner, Jimmy | County Manager | Davidson |
| Von Oesen, Henry | Consulting Engineer | Wilmington |
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| Wheeler, Carl S. | Economics Div. | Jones Co. |
| Wicker, Warren J. | Asst. Dir., Institute of Government | UNC-Chapel Hill |
| Wiggins, Jr., Noland E. | W. M. Piatt & Co. | Durham |
| Wilson, C. H. | Public Works Department | Carrboro |
| Wilson, Leigh | N. C. League of Municipalities | Raleigh |
| Witherspoon, J. V. | Manager | Guilford County |
| Witt, Gary | Community Planner | DCP |
| Wood, George R. | Supt. of Water | Canton |
| Wooten, J. A. | Supt. of Water & Sewer Works | Farmville |
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