

***Effect of Municipal Water Service Policies
on Economic Growth in Suburban Areas***

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INDUSTRIAL DEVELOPMENT DIVISION

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EFFECT OF MUNICIPAL WATER SERVICE POLICIES
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By
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Table of Contents

	<u>Page</u>
Summary	i
INTRODUCTION	1
METHODOLOGY AND SCOPE	4
Geographical Distribution	4
Population Range	4
Distribution by Geologic Provinces	6
Data Collection	7
EXTENSION POLICIES AMONG THE CITIES	9
Background	9
Evaluation of Policies	10
Policies in Practice	12
Formal Policies	13
Informal Policies	16
Installation Policies	18
Mutuality of Objectives	19
INDUSTRY LOCATION VS. WATER POLICY	22
Locational Reasons of Industry	22
Policy and Service	24
Fire Protection	25
Policies	26
Service Costs	27
Location Approval	28
Evaluation of Tax Savings	29
WATER RATES AND COSTS	33
Underpricing of Water	36
Package Deal vs. Deficits	37
SUMMARY CONCLUSIONS	44
General	44
Extension Service Policies	45
"Policies" of Negotiation or Expediency	48
Locational Effect of Water	49
Industrial Districts vs. Water Policy	51

	<u>Page</u>
SUMMARY CONCLUSIONS (continued)	
Fire Protection Policies	51
Installation Policies	53
"Cheap Water" Policy	53
Water Conservation	56
REFERENCES	57
APPENDIX	58
1. Questionnaire on Municipal Water Service to Industry	59
2. Field Interview Questionnaire on Water Service - Industry	61
3. Field Interview Questionnaire on Water Service - City Officials	62

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Tables

1. Classification and Distribution of Study Cities by Population	6
2. Water Service Policy Evaluation by City Size	11
3. Industrial Rates Versus Production Costs	34

Figure

1. Distribution of Study Cities by Geologic Provinces	5
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Summary

In recent years, the locational trend of industry has been toward sites outside the corporate limits of cities. Pertinent to this trend has been the extension of municipal water service into the suburban areas. The present study was an investigation of the effects of the water service extension policies of 27 Georgia municipalities and the development of industries in their suburban areas, with the purpose of providing guidance to the smaller community on water management policies relating to the attraction of new industries.

In the 1964-1969 period covered by this study at least 200 new industries were established in or near the 27 study cities. A total of 45 of these industries had located outside the corporate limits of 19 cities, 12 of which either lack a consistent water extension policy or have no policy at all. Fifteen of these 19 cities have industrial districts, a fact that may have a significant relationship to the water policy of most of these cities. Among the 27 cities, only seven were considered to have formal, consistent policies. In the smaller cities so-called water policy is more often observed in the breach than in its observance.

No cases of extremely uneconomic extensions of water service were found. However, as numerous case examples cited from the field investigations show, the industrial development of most study cities is being more or less handicapped, and that of two cities definitely damaged, by the lack of effective policies on outside water service extensions.

Industrial respondents did not consider water to be a prime locational factor, but ranked its availability for out-of-city fire protection as critical.

The package deal of extending municipally distributed natural gas and/or electric power along with water has enabled some of the cities to make outside water extensions that otherwise would be economically impossible.

A tabular comparison of industrial water rates with production-distribution costs reveals that 59% of the cities are underpricing their water up to 58% below cost to outside industries. Related data suggest that residential consumers may partially bear the deficits of such cheap water policies.

Among the more important of the study conclusions are that:

Municipalities seem to overemphasize the importance of making water available outside their corporate limits and seriously underrate the industrialist's concern over the quality of the service, especially as it relates to his fire protection needs.

Since water is not a prime locational factor and the price of water is highly inelastic in relation to demand, municipalities should not hesitate to establish water rates that will fully support outside water services. Special rate structures are recommended to cover the investment necessary to build the extra capacity into a water system to provide standby fire protection service.

Greater forward planning, aided by more specific policies, is needed for the orderly development of water and other utility services in areas of the community best suited for industry, preferably within the city or in areas so situated outside as to permit eventual annexation. The industrial district is suggested as a favorable method for achieving this objective.

The advantages of better city services at inside locations are shown usually to outweigh any tax savings of an outside industrial site.

Municipalities, in their cooperative efforts with county governments to provide outside water service, must be alert to safeguard the community's best interests. Outside fire protection by the municipal fire department also should be done, at least, on a break-even basis.

INTRODUCTION

Economic development of the smaller communities of this country is essential in the promotion of a sound or better-balanced national economy. Out-migration of job-seeking persons from rural areas to major urban centers has been a continuing trend for many years, and this population influx has placed an overwhelming burden on public services. Stemming this tide of population shift will require the creation of more jobs in the smaller cities and towns.

Increased industrialization is a principal means of creating additional job opportunities. The vital element in this effort to attract new industries to the nonmetropolitan areas is the availability of adequate water supplies. Without access to water, no tract of land, regardless of the excellence of other aspects of its location, can be a site for industry.

In recent years, the locational trend of industry has been toward sites outside the city limits. Lack of adequate industrial sites within the city proper, as well as a desire to escape city taxes, has fostered this trend. However, in numerous communities, a liberal policy of water service extension, making water widely available beyond the corporate limits, plus unrealistically low rates, has served to intensify this trend toward the suburban areas. (ref. 7)

Governmental policies toward industry reflect community attitudes. Therefore, the formulation of local policies is an important and commonly decisive factor in the selection of locations by industry and none is more important than those related to water service. In short, local policies and attitudes can do much to frighten off industry or to foster its growth.

Not only is a municipality's water service influential on management's decision as to whether or not to locate its projected new operation in a city or town, but its water service extension policy also may determine whether the plant is located inside or outside the municipal boundaries, with consequent effect on municipal tax revenues.

In their conduct of the statewide Georgia Certified City Program over the past six years, the authors have found that many municipal governments do not have consistent policies with respect to the extension of water services beyond their corporate limits. A review of findings on 47 cities that

had participated in the Certified City Program showed that 26 of them (55%) had reported some kind of formal water extension policy spelled out in an ordinance, city council resolution, charter provision, and/or special legislation; 14 or 30% had some form of rather informal, more or less indefinite policy; and seven or 15% had no kind of policy. In some instances, the policy appeared to be so restrictive as to make obtainment of water service in the suburban or fringe areas difficult, if not impossible. In other municipalities, the policy or lack of one suggested extremely generous water service beyond the city limits which, in effect, would subsidize industry, particularly large water users, at the expense of the city taxpayers and/or water users.

This lack of uniformity or consistency in water service extension policies among Georgia municipalities suggested that perhaps such lack could be definitely influential, if not detrimental, in the attraction of new industry to certain cities and towns. This seemed particularly true of the two instances where highly restrictive water extension policies, in combination with a lack of industrial land inside the corporate limits, definitely were handicapping local development groups in their efforts to accommodate new industries.

Against this background, the present investigation was planned and executed. From the beginning, as professional industrial developers, the authors have been extremely conscious that many other factors, such as market access, labor supply, transportation facilities, and local tax rates, are evaluated along with water and other municipal services in the selection of an industrial plant site. As Mace (ref. 7, p. 115) has pointed out, "Undoubtedly, over the long range, the general assumption that utility extension policies influence the location of industry is valid. However, other influences . . . obscure the relationship between the extension policy and plant location." Consequently, it was not anticipated that a definitive answer as to the impact of municipal water service extension policies on industrial growth could be statistically demonstrated. Nevertheless, in certain instances, it has been possible to empirically segregate these other locational factors from the water service factor mainly because of the authors' familiarity with local situations, amplified by information obtained in local interviews. In other cases, municipal water policies quite evidently have had a definite, though not dominant, influence in affecting local industrial development in the suburban areas.

On the whole, the present project is a pioneering effort in analyzing the impact of municipal water policies on local industrial development and, despite the obvious shortcomings, in showing some rather interesting relationships between industrial water usage and municipal water services. Further in-depth investigations are quite desirable, particularly with respect to rate structures, fire protection, and the economic justification of outside service extension. Nevertheless, this study hopefully seeks to provide a degree of guidance to municipal officials in their adoption and/or revision of water service extension policies.

METHODOLOGY AND SCOPE

A total of 27 Georgia cities and towns were included in the detailed evaluations of municipal water service extension policies upon which the present study is based. Briefer information on an additional six municipalities was obtained from officials of several area planning and development commissions (the multi-county public agencies serving the various areas of Georgia) and from other authoritative private and public sources.

Selection of the study cities was based on four criteria: (1) broad geographic distribution; (2) a population range representative of Georgia municipalities; (3) ample representation within each of the geologic provinces of the state; and (4) the apparent water extension service policies of 24 of them as revealed by earlier findings developed through the Georgia Certified City Program. (Three of those selected have not been participants in the program; hence their policies were not known.)

Geographic Distribution

Geographically, the 27 selected cities are distributed fairly well to the extremes of all four of the cardinal directions. Distribution of the cities is approximated on the accompanying map (Figure 1), but, as explained below, their exact locations are slightly distorted to prevent identification.

Population Range

In population, the study cities range from over 100,000 down to approximately 1,500, as shown by 1960 U. S. Census figures. The selection is strongly weighted toward the smaller cities and, in general, is typical of the Georgia situation. By agreement with the various municipal officials interviewed during the field work, none of the cities is identified in this report, except by a series of classification codes. This anonymity was desirable in order to get the various respondents to talk as frankly as possible, without fear of embarrassment to themselves or their respective companies or organizations. Similar anonymity for similar reasons was assured to industrialists and others interviewed. The authors are certain that many adverse items of information which have contributed to the evaluations in this study would not have been obtained otherwise. The only exceptions where the data are

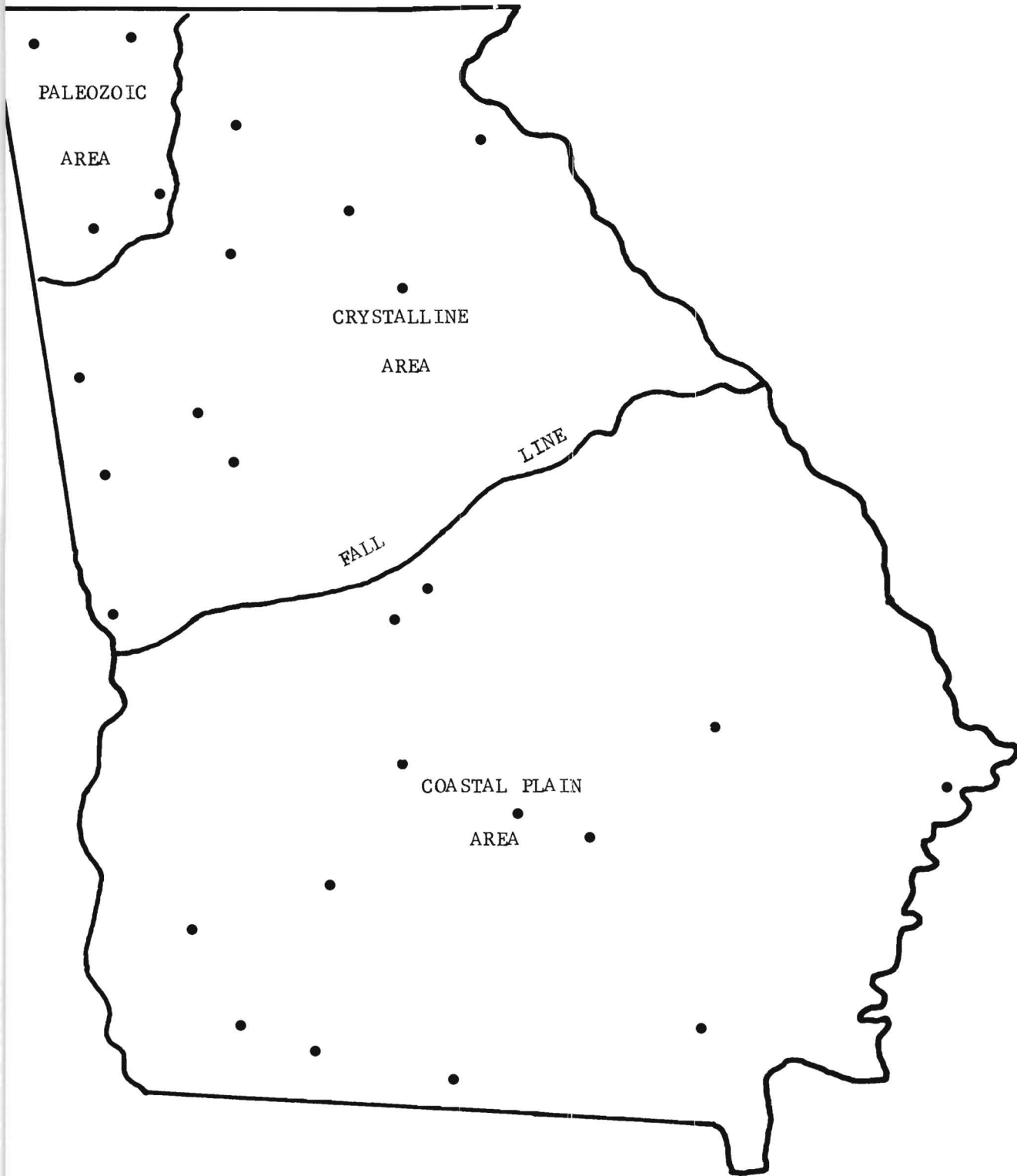


Figure 1. Distribution of study cities by geologic provinces (locations intentionally distorted)

sufficient for identification of any of the study cities are those on which published information is available.

For the purposes of this report, the study cities are classified A, B, C, D, according to population, as shown in Table 1.

Table 1
CLASSIFICATION AND DISTRIBUTION OF STUDY CITIES BY POPULATION

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Population range (000)	50-100 plus	25-50	10-25	1-10
Number of cities	4	3	9	11

Distribution by Geologic Provinces

Georgia is divisible into two broad provinces that, because of underlying geologic strata, have notable dissimilarities in water sources. Since these differences are quite relevant to the present study, this fact was kept in mind in the selection of the study cities.

Approximately the northern third of Georgia is underlain largely by igneous and metamorphic rocks, broadly classified as "the crystallines." The development of substantial volumes of water from these rocks through drilled wells is generally difficult to impossible, and cities and industries must depend principally on streams, lakes, and other surface sources. In northwest Georgia, a considerable area is underlain by limestones, sandstones, and other consolidated sedimentary strata from which, locally, fairly large volumes of water may be obtained from drilled wells and from springs; however, as elsewhere in north Georgia, the surface sources are mainly relied upon for water supplies.

Below the Fall Line (see Figure 1), which marks the geologic transition from the crystallines of the north Georgia province to the Coastal Plain sediments that underlie the southern two-thirds of the state, is the area generally referred to as south Georgia. The Coastal Plain sediments of this area consist of a series of sands, gravels, clays, and limestones in which occur certain widespread aquifers, notably in some of the limestone strata. Wells drilled to these water-bearing strata commonly yield very large volumes of

water of excellent quality. In the southeastern part of south Georgia, for example, wells in and around Savannah and Brunswick yield up to 4,000 gallons per minute. (ref. 15, p. 101) As a consequence of this favorable groundwater situation, most south Georgia municipal water systems are based upon wells. Obviously, this ease of producing water supplies from underground sources tends to free industry from dependence upon municipal water systems and permits a high degree of flexibility in the choice of plant sites. These differences in available water sources in north and south Georgia are most significant in the development of municipal water service extension policies, as indicated in this report.

The distribution of the 27 study cities between north and south Georgia is nearly equal, there being 13 and 14, respectively, in the two regions. (See map, Figure 1.)

Data Collection

Both questionnaires and personal interviews were used in the collection of the data and information upon which the present study is based. Prior to the initiation of the field interviews, the questionnaire form no. 1 of the Appendix was submitted to an appropriate official of each of the study cities. Usually, this was either the city manager or mayor.

Approximately one-third of the study cities indicated a formal policy controlling water service extension beyond the city limits, through either municipal charter provisions or city ordinance. (See Table 2.) However, few officials, in responding to the pre-field work questionnaires, submitted documentary materials on their policies and similarly poor success was achieved by field efforts to obtain them.

Subsequent to the return of the completed questionnaires, the authors personally interviewed each of these public officials to amplify certain aspects of the local water service. At least two industrialists, and frequently more, also were interviewed in each city, at a total of 43 industrial plants. In these field interviews, questionnaire forms nos. 2 and 3 of the Appendix were used to guide the discussions and attain a degree of uniformity in the information sought. However, early in the study it became quite evident that some of the desired information could not be developed, specifically that relating to the dollar volume of expenditures by municipalities in extending

water service to industry. Also, estimates would have been helpful from new industries on their plant construction expenditures, employment, and wage scales, and from the municipalities on related expenditures for sewers, streets, and other public services necessary to the accommodation of these new plants. This kind of information, it was found, could not be obtained from either public officials or management personnel within the limits of time or available funds. Nevertheless, some respondents were able to provide limited information along these lines. Although the data were too meager for any systematic analysis and evaluation, they have contributed significantly to the various evaluations made in the present report.

More than 100 interviews were held in the study cities and elsewhere in the state. Among the city officials, some interviews were held with mayors and/or members of city councils, but city managers and utility superintendents or managers of local water boards or commissions were the commonest sources of information at the official level. Others interviewed included representatives of local industrial development groups, including chambers of commerce or their affiliates, managers of industrial districts, directors and/or other members of area planning and development agencies, state health and development officials, and, in a few instances, local businessmen concerned with their community's economic growth.

EXTENSION POLICIES AMONG THE CITIES

Background

Throughout Georgia, as elsewhere in the United States, cities and towns vie with each other for new industries and, in numerous instances, municipal and county governments become directly involved in these local industrial development efforts. Some appropriate tax monies for the support of industrial development committees or similar affiliates of chambers of commerce and/or for the promotional advertising of their communities or areas. Others lend indirect support through the use of public authorities in bond financing of new plants, preferential tax treatments, and, more frequently, subsidization through special utility services and rates, notably water and sewer. The desirability, if not the value and effectiveness, of these actions may well be questioned when viewed strictly in the framework of municipal government and finance. Yet, as Ruth L. Mace points out in her penetrating study of industrial development among North Carolina cities, "There can be no set answer to the question of municipal responsibility in the (local) industrial development program." (ref. 7, p. 13) In the final analysis, the people of each community will determine how far they want their government to go in activities of this nature. Their decisions undoubtedly will depend upon economic conditions -- how badly off the town is or, more precisely, how badly off they think the town is.

It is not the purpose of this report to argue the merits of official municipal support of local industrial development, either direct or indirect. However, the present study was initiated because, as professional developers, the authors believe that most municipal officials are not well advised as to the true impact of their actions in this field, not the least of which is the provision of water service to industry. Water is vital to the operation of any industrial plant and, obviously, its availability is a key determinant in the selection of a plant site in or near a city or town. As this report attempts to show, municipal water extension service policies or the lack of them do have a locational influence on industry, but more important are the effects of variations in the levels of the service. Often the extension of water service to industry without the corporate limits is done at rates and installation costs that amount not only to an indirect subsidy to the industry, but also an added tax burden to the citizens or unduly high water costs to

other consumers in the system. Nevertheless, the present investigations have revealed a very general disinterest by both municipal officials and the taxpayers with respect to this type of subsidization of local industry.

Evaluation of Policies

The value of any policy is lodged in the obtained results of its implementation rather than in the document itself.

Twenty-one of the 27 study cities (80%) considered their extension of water service to industry outside the corporate limits to be made under some form of official policy, either a written formal policy or some informal arrangement among the elected officials. The authors have evaluated each city's present water service extension operations, as determined from the field investigations, against the various assurances of official policy guidance.

The policy evaluation is based on the principle that any satisfactory policy, formal or otherwise, will provide for adherence to fixed and uniform procedures or standards for fairly and impartially evaluating each industrial project on its merits rather than on some so-called variable and vague "policy" based upon "what is good for the community." In other words, "the absence of well-defined and firm policies with respect to where and under what terms decisions will be made . . . makes for ad hoc decisions." (ref. 7, p. 139) Such policies of "expediency or precedent," usually dependent upon the decision of the mayor and/or city council or other elected official, commonly are not sufficiently consistent to be designated as a policy and were so rated in the present analysis.

As the data of Table 2 show, the municipal governments of cities under 25,000 population profess to a higher degree of policy control over water service extensions (57%) than actually obtains in practice (19%). In these smaller cities, extension policies, whatever they may be, are more observed in the breach than in practice, probably because the smaller city has a greater competitive handicap in the attraction of new industries than do the larger cities whose greater resources will permit the employment of formal extension policies.

Table 2

WATER SERVICE POLICY EVALUATION BY CITY SIZE

City Size (in thousands)	Evaluation by Officials and Authors							
	Formal		Informal		None		Status Not Known	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
A (50-100)	1	4	1	-	-	-	1	-
B (25-50)	2	2	2	-	-	2	-	-
C (10-25)	2	2	3	1	-	5	1	-
D (1-10)	5	1	5	1	4	9	-	-

Of the 27 study cities, eight^{1/} were found to have had no industry locate outside the city limits in the past five years, yet none of these cities had failed to obtain one or more industries in that period. It seems significant that seven of these eight cities have established industrial districts, but only one of these cities can be said to have any formal policy for extension of water services beyond its corporate city limits.

In the 19 cities of the study where industry has located outside city limits, 12 are considered either to lack water extension policies or to have inconsistent policies since industrial prospects are dealt with on an expediency basis. Of these 12 cities, eight have industrial districts or what, at least, may be identified as such. The seven cities which are considered to have definite extension policies all have industrial districts, including one Class A city that recently annexed its industrial district and four which have their districts outside the city with no tax return or other compensation to the municipality. Thus, the industrial district, with its provision of established water and other services, appears to be an effective factor in the attraction of new industry and possibly is the reason some of these cities do not have any fixed outside water service policy since there has been little need for one. But a contributing factor may be the other municipally operated utility services which can be offered as a "package deal." (See page 13.)

^{1/} This does not include two cities that recently have made annexation into the municipality a prerequisite for obtaining water service. Included, however, is one city which has a very restrictive extension policy, but fortunately has a county-operated industrial district, with an independent water system, in which all new industry has located.

Five of the cities classed as having no policy but having industrial districts are capable of offering such a utilities package.

However, regardless of whether they had a policy or not, the cities with industrial districts had only a limited number of sites selected outside the district, approximately 15, but most of these selections were made for particular reasons. Among the largest cities, there were very large industries that could not be accommodated inside the corporate limits, another occupied an existing building, a third wished to escape the high land prices of an industrial district, and several had to make expansions of their operations that were not possible within the city.

Policies in Practice

A wide range and diversity in municipal water service extension policies, and frequently the lack of them, was revealed by the present study. The review below summarizes the scope and effectiveness in application of the policies of a selected number of the study cities.

The enthusiastic reception that some of the communities, uninhibited by adherence to any specific policy, accord new industries is well exemplified by a Class D city that agreed to install one and a half miles of water line to a new \$300,000 plant without any determination of the line installation cost. At the other extreme, a Class C city which, by its city manager's characterization, is "conservative" has a water commission which consistently opposes the extension of water service beyond the corporate limits, despite a complete lack of available industrial sites within the city. This restrictive policy is definitely handicapping the city's industrial growth for, as indicated by the local owner of considerable outside industrial property, a power official, and the manager of a new plant operation, a number of industrial prospects have been lost to the city through this uncompromising policy on outside water service extensions. In fact, the manager of the new plant, a local man, was unable to get water service although the plant is less than 800 feet from a water main inside the city limits.

The city manager of the latter city thinks the most satisfactory answer to the local water problem is a city-county consolidated water system, reportedly opposed by the mayor. Although consolidation has been discussed for more than six years, the only time such consolidation was put to a vote, the

rural voters defeated the proposal. The city manager says the county is unwilling to spend tax monies for a water system, seemingly a poor excuse in view of the future potential of this Atlanta-oriented county. A properly engineered county water system, operating under a realistically designed rate structure, could be self-supporting, if not distinctly profitable, and both the city and county governments would obtain substantial economic benefits from the new commercial and industrial developments such county system certainly would generate.

Formal Policies. Less than a half dozen of the study cities are providing water service on a sufficiently formalized basis to permit a consistent policy of water service extension to industry, particularly those locating outside corporate limits. While these few better-developed water service procedures are mainly limited to Class A cities, there are both Class C and D cities with equally effective methods and policies.

Probably the most notable among the larger cities is one which has installed, on the basis of engineering studies, a skeletal system of 12- and 16-inch water mains in the suburban areas; off these can be tapped 8-inch industrial lines or smaller residential service mains. Although this city has no written policy on outside line extensions, in recent years water lines, sewerage, and other utility services have been extended to industry in these suburban areas whenever the "package deal" or combined use of the city's utilities will provide sufficient revenues to amortize the required capital investment within a reasonable period of time. The mayor and city council also evaluate each project, in part, on the "prominence of the company name," number and type of employees, and other factors related to the economic advancement of the community. In short, their extension policy is one of expediency, geared to how well and how soon the utilities will pay off the investment. Since city fire and police protection and, in most instances, sewerage are provided, it is obvious that this plan would be attractive to industry. And, indeed, it has been, bringing in several sizable new plants.

As the manager of one plant was quick to point out, these new operations have drastically reduced unemployment in the area; nevertheless, despite this common economic argument, the city is sacrificing a substantial amount in property taxes, which local officials contend is being recouped by the city's package deal on utility services. However, two of the latest outside operations obtain all of their processing water from wells, depending on the city

system only for standby fire protection. Although complete data are not available, this city has made some fairly large investments on outside water service in the last few years, and it is questionable whether its liberal policy on water and other outside services is adequately offset by the new jobs created.

Another of the Class A cities provides water service in the adjacent county areas through a city-county cooperative agreement. Under the water service contract, the county installs the mains, under city engineering supervision, and then turns them over to the city, which supplies the water and provides maintenance and customer billing. While this procedure appears to be working out satisfactorily to the mutual interests of both city and county, it lacks the advantage afforded by the long-term engineering and installation of a skeletal system of mains that characterizes the foregoing system. In that instance, the installed mains create a pattern within which the development of specific areas is assured, whereas in the latter city, there is a dependence upon county action which, at times, may not be in pace with the industrial development needs and/or interests of the city; for instance, the lead time necessary to install supply mains may not always coincide with a prospective industry's time schedule.

Two other cities, both Class C, presently are experiencing problems in connection with water extensions beyond their corporate limits, due to the lack of advance planning and city-county cooperation in the installation of mains. Although one of these cities has had a cooperative agreement with the county for extension of water service into the latter's areas, this plan of line installation by the county and leasing of the lines to the city for operation and maintenance has not been highly successful. The weakness here results from inconsistent and haphazard laying of pipe by the county, which in its response to political pressures, has repeatedly failed to follow the city's engineering recommendations. Consequently, the installed lines often are too small to meet industrial water demands in various areas around the city. This is also the situation around the other city and for the same reasons of political expediency. Obviously, neither of these cities has a practical, workable extension policy. It is not surprising, then, that neither has had much industrial growth in recent years, especially the first of these cities.

A rather unique situation exists in one of the Class A cities situated in the south Georgia coastal area. There, where a number of existing industries

are very heavy users of water from wells, the danger of salt water encroachment into the underlying aquifer became evident as early as 1939. (ref. 11) As a preventive measure, the city established an agency to supply water at cost to industry from a surface source, to alleviate the drain on the underground supply and thus reduce the encroachment danger. The service is supported entirely through sales to industry, with the water rates being very nominal. The policies on distribution of the water are set by the city, and extensions of the service to industry located outside the city is done as a "matter of course," if they want to pay for it.

The success of a north Georgia Class C city in providing water service in pace with an exceptional industrial growth -- more than 20 new plants and expansions in the past five years -- argues well for a policy of nonpolitical and businesslike operation of the water system and other utility services. The system there is operated by an independent commission, established by special legislative action which prohibits the agency from using tax monies in its operations. This agency has been able not only to produce and distribute water on a steadily increasing scale to the current daily output of 33.2 million gallons, but also to tailor and maintain a water quality best suited to its major industrial users and to distribute it at a very economic price. (ref. 1) Although production cost figures are not available, it is probable that there is subsidization of the production cost by the agency's being able to offer a package deal on utilities to the local industries, most of which also are large users of natural gas. It is especially notable that this city has been able to retain much of its new industrial growth within the city limits, partially because of local efforts to keep development of industrial sites within the city in step with needs; another probable contributory reason is the utility commission's policy of requiring outside industry to pay a double water rate and to absorb all costs of water line extensions and of hydrants and other equipment necessary to provide fire protection.

Considerable newspaper publicity was given to one of the Class A cities last year when, after annexation of a large percentage of the county area, the city commission by ordinance called a halt to extension of water and sewer lines beyond the city limits. By the annexation action, practically all existing water service was brought into the city and, henceforth, only by request for annexation into the city can county property owners obtain water service.

Although adoption of the new water policy apparently was partially motivated by political reasons, there reportedly had been rather strong local objection to the city's capital investments in giving outside water service which yielded insufficient returns to the municipality. The industrial development of this city, long handicapped by the lack of industrial sites within the city, has been mainly in adjacent county areas, notably in a small industrial district established a few years ago. This and widespread residential growth in suburban areas had created a heavy demand for water and sewer services, both of which the city was authorized to give and apparently did supply satisfactorily in most of the suburban areas. A recently voted city-county consolidation should be helpful in resolving the problems of water service.

In a Class B city which, until two years ago, had a rather liberal but unwritten policy of making outside water service extensions whenever requested to areas within "reasonable" reach, the city manager reports that now the city requires annexation into the city to receive water service. In justifying the new policy, the city manager cited the recent location of two new industries within the city that required an \$80,000 expenditure to extend water service to them, but the annual city tax returns from these operations alone will amount to \$76,000.

Informal Policies. Where cities are extending their water service outside the city limits, without the benefit of some practical policy and/or more or less formalized procedure for systematic development, there frequently is the additional disregard for the economics of operation, with losses on the service that may or may not be offset by the profits from other utilities marketed as part of the package deal to industry. An excellent case in point is a Class D city of north Georgia. A local business leader there, commenting on the city's practice of negotiating with new industry as to their water needs, says this "policy" has been "liberal almost to the point of no policy." It is his evaluation that while this liberality has been a favorable factor in the attraction of new industry, it has been "bad fiscally" for the city. To illustrate his point, he cites a local industry outside the city that uses two million gallons of water daily at an extremely low rate, at least 68% below the city's production cost, negotiated at the time the plant was established in the community. As this businessman emphasizes, the industry's water cost most certainly is being heavily subsidized, largely by residential users, and the data collected in this study support that contention. The average residential user in this

city is paying a water rate that is 285% above production cost if he lives in the city and nearly 485% if he is outside, these percentages being among the highest developed in this study. (See Table 3.) Nevertheless, when interviewed, the management of the subject industry was rather completely disenchanted with the city because it had raised his water rates recently in order to help finance much needed improvements of the municipal water and sewage treatment facilities.

The city manager of a Class B south Georgia city confirms that its industrial development program has been handicapped, to date, by the inability to provide sufficient water service, especially with respect to pressure, to certain areas within the city that are adjacent to industrially developable acreages beyond the corporate limits. In view of the existing shortage of industrial acreages within the city, this city government is following a policy of trying to meet the water service needs of the fringe areas along its corporate boundaries in order to make extensions into the outside areas as early as economically possible. Although the city policy on extensions requires that the applicant be in an area contiguous to the city limits, it permits negotiation on individual merits as to whether or not the prospective industry pays all or part of installation costs.

In view of this city's policy, it is of interest to note that all of the six new industries located there over the past five years are within the corporate limits, due to annexations that include a recently established industrial district; about 1,000 new jobs have resulted from these new additions. A particularly notable instance of the negotiability aspect of the city's extension policy is the expenditure of \$35,000 for a water main and establishment of a special water rate to induce one of the new industries to permit annexation. Although the industry is neither a large water user nor employer, these concessions are justified locally on the basis of property tax gain and "opening up of new industrially developable land." Contributing to this city's policy would seem to be the absence of utility package-deal profit possibilities, since water and sewerage are the only municipally operated utilities; however, the current water rates, both inside and outside, are well above average, with the latter rates being the highest among the study cities.

One of the smaller cities (Class D) in north Georgia defends its so-called policy of negotiation on outside water extensions on the fact that "each industry gives us a different proposition," as the utility superintendent expressed

it. This, in itself, is a confession that the city has not "done its homework" to the extent that land already fully serviced with utilities is not available. The negotiations, he adds, include consideration of the amount of employment that will be provided and whether the operation will be "good for the city." Inasmuch as the recent promotional history there has been one of overly enthusiastic and precipitate action on the part of the city government with respect to extending its water service to new industry, it seems desirable that the present extension "policy," another of those "liberal to the extent of no policy," be drastically revised and its water rates so increased as to make outside service self-supporting, especially since future industrial additions to the community are likely to be in the local industrial district, largely outside the corporate limits and not yet fully serviced with utilities.

Installation Policies. Policies on absorption of installation costs related to the extension of water service outside the cities can be grouped roughly into four general practices: (1) the industrial water customer pays all costs of the line installation, including materials, between the city limits and the plant property; (2) the city pays all costs; (3) the cost of installation is divided between the city and the industry, usually with the latter providing the necessary pipe and other materials and the city making the installation; and (4) the city does the entire installation without cost to the customer, provided the industry is using other of its utility services, such as natural gas and electric power -- the so-called "package deal."

This last type of policy is used by four south Georgia cities of Classes A, C, and D (2), with one of the last cited requiring use of its municipally distributed electric power and limiting the extension to within one mile of the city limits. The policies of the other cities limit their outside extension to projects that are "economically feasible," i.e., can be justified by the returns from their "package" of utility services. Only three other cities, all in Class D, are willing to meet all installation costs, although one restricts the distance to "not too far out."

Of two north Georgia Class C and D cities and one south Georgia Class C city requiring full payment of the installation costs, one is doing so on a "precedent" basis since the city charter prohibits outside water service. A similar charter prohibition caused another of the south Georgia study cities in Class D to annex a new privately developed industrial district in order to

provide water service to it, and two other cities in that region, both Class D, also had to annex land adjacent to the city in order to meet legal restrictions on bond issues necessary to their industrial development efforts.

Seven cities about equally distributed between north and south Georgia and ranging from Class A to D in size have policies of sharing installation costs. The city manager of one of the two Class A cities admitted, however, that this policy had not been strictly observed because, several years ago, the city was so anxious to obtain a large branch plant of a "name" industry that the city paid for all utility extensions to the plant site at a "considerable capital investment." However, the plant, now employing over 1,700, has since been annexed into the city.

Mutuality of Objectives

A good example of the handicap in economic development that may result from lack of proper coordination or, possibly more accurately, the lack of mutual objectives between municipal and county government is exhibited in a north Georgia county. An agency of the county government is responsible for water supply development and, under contract, sells water to the municipalities of the county, which includes a Class B city, the established focal point of industrial activities.

Until recent years, the county's water distribution system was rather limited, as to both areal coverage and size of distribution mains. A further limiting factor on economic growth was the lack of a widespread county sewer system. As a consequence, new industries necessarily sought locations within the municipalities and particularly in the principal city, which could offer the advantages of an industrial district.

In recent years, reorganization of the chamber of commerce in the major city to a county-wide basis, with accompanying strong industrial promotion efforts, has served to stimulate the aid and support of the county government in advancing the industrial growth of the county. As a consequence, extensive expansions and improvements have been made in water and sewer services throughout the county, resulting in the location of a number of new industrial and related operations in the suburban areas, although the principal city continues to get most of the new industrial operations in the local industrial district.

The present municipal government has an understanding with its county counterpart to extend water service to industry in any of its fringe areas where, for any reason, the county government does not want to furnish the service, but the city must have the county's approval! The city manager reported that, to date, there has been no conflict between the two governments over this unwritten policy which, at best, is one of expediency and/or negotiation. A particular flaw in this type of arrangement is that future city and county administrations may not be in mutual agreement on economic development. In such case, the city being wholly dependent upon the county for its water supply, could be placed in a rather untenable position respecting extension of water service outside its corporate limits.

One of the less foresighted of the Class D study cities of north Georgia engaged in a vigorous industrial development program over the past decade and met with unexpected success. Six new plants and employment for nearly 1,500 persons were obtained, but the total combined usage by these industries eventually grew to 25 million gallons a month against the city's spring-fed supply source of 22 million gallons per month. Contributory to the resultant water shortage, in addition to an undersized distribution system, was a poultry processing plant, located outside the city nearly 10 years earlier. Over the years, this plant had substantially advanced its water consumption as a result of changed processing regulations involving increased water usage and, at least temporarily, of faulty control valves within the plant. Nevertheless, the city apparently had unwisely guaranteed to supply this plant with "adequate" water; so, when the supply failed and the plant was forced to close temporarily, the city officials received a bill from the company for payment for the shutdown. This action was sufficient to stimulate the municipal government into taking the needed corrective measures for the improvement of its water system. This experience again emphasizes the necessity to gear municipal actions and policy to the needs of the community's industrial development objectives, of which water is the basic need.

In one south Georgia city, where a municipal water board supplies and administers the county water system under a very specific contractual arrangement (see p. 14), serious complaints of inadequate fire protection have been voiced by the tenants of a county-operated industrial district because pressures are too low for proper operation of sprinkler systems and, additionally, fire-fighting equipment is obsolete and lacks firemen to man it. Obviously,

the problem is not the fault of any deficiency in water policy since the existing city-county arrangement provides very definite operational guidance that seems mutually satisfactory and affords a basis for the orderly development of industry outside the city. Rather, the county government evidently does not fully appreciate industry's need for and emphasis upon adequate fire protection because of fire underwriters' demands. Consequently, in this instance, where there is a scarcity of industrial sites within the city, the local industrial development program could be seriously handicapped by this lack of complete understanding between the city and county governments. In fact, the unsatisfactory fire protection service in the industrial district reportedly almost cost this city a new industry only a few months ago.

A similar discrepancy between policy and practice is reported by a north Georgia Class C city where the municipal and county governments have mutually agreed upon a water service extension policy for the suburban area. (See p. 14.) The flaw in their policy was that both had the privilege of making extensions to the outside system; because of the county's failure to adhere to the city's engineering specifications, the line installations were inconsistent as to sizing, and, as the distance from the city limits increased, various outside areas had not been supplied with the larger-size lines needed to meet the service demands of outside industry. This may be one of the reasons the city has had only one industry locate outside its corporate limits in the past five years, in the face of a "tight" land situation inside the city. And even this recently located outside operation is unhappy because of inadequate water pressure for its fire protection system.

INDUSTRY LOCATION VS. WATER POLICY

Locational Reasons of Industry

To a degree, the suitability of a city's water service policy is reflected in the experience of the existing industry, both inside and outside the corporate limits. This kind of evaluation has been sought in the present study through personal interviews with the managements of 43 industrial operations. Of this total, 22 were new plants or relocated operations established in their respective communities within the past five years. The remaining 21 operations had been in operation at their present locations for longer periods, some for 50 years or more. Consequently, the interview findings provide a fairly balanced evaluation.

Of the total 43 industries, 24 or 55% are located outside corporate limits. Of the remaining 19 inside their respective cities, eight or 40% originally were established outside and subsequently have been annexed into the city. These industries represent a variety of types ranging from apparel and similar plants with only nominal water usage for sanitary purposes to paper mills and a metal plant that individually use from 18 million to 25 million gallons of water daily.

Aside from sanitation needs, 10 of the plant managements gave fire protection as their primary need for water, while three more included fire protection along with processing and cooling as principal usages of water in their operations. Other indicated principal usages included: cooling (8), textile processing (5), food processing -- chickens, vegetables, soft drinks, etc. (5), and, notably, the testing of plumbing equipment by one mobile home manufacturer.

Plant managements of 27 of the 43 industries cited land needs as the prime reason for the selection of their respective locations. Of that number, 18 were outside their respective cities, including five operations that had expanded from downtown locations. In addition to the need for land space, the choices of four locations had been influenced by land price or tax considerations, proximity to an airport, and accessibility to a trained labor force.

The availability of an existing building was the locational reason given by 10 industries, with three of these being outside the city; existing equipment in the building had additionally influenced one of these latter three.

Free land plus a building was cited as the reason for one of the in-city locations.

Other locational reasons given by local plant managements were labor availability, a favorable fire rate plus sewerage, and tax savings plus odor and waste disposal problems, the last by an outside-city paper mill.

It is interesting to note that in the above summary of locational reasons, none of the managements cited water as the prime locational factor.^{1/} While it is a fact that all of these industrial operations require more or less water, the failure of plant managers to specifically emphasize their water needs would seem to suggest that the general availability of water is taken for granted by the industrialist, as well as the average residential consumer, in any urban area. This is emphasized by the failure of all nine of the large-volume water users in the study (textile mills, poultry processors, paper mills) to include water as a prime locational factor. Since essentially no complaints were voiced as to water costs, it also seems safe to assume that the prevailing rates are low enough. (See p. 43.) The only serious complaint on cost came from a textile official whose firm has enjoyed a negotiated rate, probably 50% below the city's cost of production and distribution.

Such apparent lack of sensitivity to water needs is better understandable in the south Georgia area where, in most areas, water in volume can readily be obtained from drilled wells and industrial plant selections are less dependent upon municipal water systems, except for fire protection, as noted elsewhere in this report. In a similar fashion, municipal governments also seem to accept the concept of the universality of water and commonly adopt a policy of making water available throughout the community regardless of the costs, especially in making extensions of water service outside the city. Abetting such liberal extension policies in some cities would seem to be the rather substantial profits yielded by the package deal on water and other municipally operated utility services.

^{1/} This lack of interest in water as a locational factor is similar to that found by Texas A & M University in a 1954 survey of 350 plant managements, of whom only 40 or 11% mentioned water as a site locational factor. (cited in ref. 3)

Policy and Service

In eight of 16 cities without a consistent water policy which have had at least one new plant locate outside the corporate limits within the past five years, plant managements registered complaints on the local water service. Four of these complaints involved low pressures and/or inadequate volumes of water resulting from undersized lines. In one instance, the incoming new plant had to make an additional expenditure of \$30,000 for an elevated water tank to obtain sufficient line pressure. Two other plant managers complained of inconsistent water quality, while a third was unable to obtain extension of city water service to his plant. In two other cities, undue delays by the municipal governments caused one company to have to develop its own water source, while another had to construct its own sewage treatment plant. In the latter case, after the city did build a municipal sewage disposal plant and make a needed expansion of the water plant, the water rates were raised 50% to help finance these improvements and the industrial management strongly resented having to make this indirect payment on the sewage plant which it did not use. This complaint came from a company which, for years, had enjoyed a very low negotiated rate on a monthly consumption of 3 million to 3.5 million gallons of water, the largest in that community.

The above complaints of the plant managements, to a large extent, appear to reflect insufficient forward planning and formulation of water policy by the municipal governments on line installations and other expansions of the water systems to meet industrial growth needs outside the city limits. As the Georgia Municipal Association emphasizes, "Georgia cities and towns need to develop sound, positive policies for extending water and sewer services beyond the corporate limits." (ref. 6, p. 19) Nevertheless, even where a city has a well-established water service policy, problems related to the distribution of water outside the city may arise to adversely affect local industrial development. A case in point is the fire protection problems that exist at the county-operated industrial district near the city described on page 20.

A somewhat alarming municipal tactic reportedly has been used by at least two south Georgia cities in their efforts to increase local industrial development. In the absence of presently developed water and sewer services outside the corporate limits, these cities persuaded newly established industrial plants to obtain their water needs from drilled wells (readily done in

that part of Georgia) and to dispose their wastes to septic tanks until pending plans for the extension of water and sewer lines from the municipal system could be consummated. Since these extension plans were dependent upon federal financial assistance that was doubtfully available, it seemed quite possible at the time of the authors' field investigations that neither of these cities would be able to fulfill these water-sewer service commitments to the respective industries. Since then, however, the authors have learned that in one of the cities, after it spent \$30,000 to finally bring the promised water line to the plant, its management is so well satisfied with the well supply operation that only a 2-inch water line for fire protection has been taken off the city main.

It is obvious that should this kind of promotional policy of expediency be more widely adopted by south Georgia communities, with failure by only one or two cities to make good on their promises, it could be distinctly hurtful to the statewide industrial development effort, even though a part of the onus for any such adverse development must be borne by industry for faulty evaluation of the local financing plans. Of even more concern to municipal officials in their planning of outside water service should be this demonstration of the ease and economy of water supply development for industrial operations in south Georgia areas.

The findings here suggest that when cities practice a policy of negotiation or expediency in extending water service outside their corporate limits, there is a fair possibility that the resultant service may not prove satisfactory to the industrial customer. This often results from inadequate or improper sizing of lines with consequent deficiencies in pressure and volume. Even where the city may have a firm and theoretically sound agreement with the county for furnishing water in areas outside the corporate limits, as in two instances cited above, the arrangement may break down in practice.

Fire Protection

The failure of water to score high as a locational factor among the managements of the industries of the study (see p. 23) is in marked contrast to their concern over need for fire protection. Of the 19 outside industries (44% of the study total), managements of 14 (73%) cited fire protection among the topmost factors important to their operations, with six of the 14 mentioning fire protection as being of primary importance.

This heavy emphasis by outside industry on fire protection is perhaps the most significant finding of the present study, especially in respect to low pressure. This is so since fire ratings are dependent upon the adequacy of the water service to meet fire underwriters' requirements; industrial managements naturally are concerned with the major interrelated factors of the volume of water flow and pressure at their plant sites. Where volume and/or pressure are inadequate, fire insurance rates may be abnormally high and expensive installations of overhead water tanks may be required. Even under conditions of adequate service, there may be a wide spread between industrial fire rates within and without corporate limits. In one south Georgia city, the outside rate is more than five times higher than the in-city rate. Another city in that area, where an industry has water service only from a 6-inch main, preventing use of a sprinkler system, the local chamber of commerce manager said if sprinkler protection were possible, the fire rate could be reduced from \$1.80 to 30 cents, permitting amortization of the sprinkler system in four and one-half years.

Of the total 43 industries, the managements of 13 plants or 30% (only one of which was inside city limits) were critical of the local water services in relation to fire protection needs. Low water pressure was the basic complaint of seven or 54% of these 13 plants. In two instances, expensive installations were necessary to develop adequate water volume and pressure for certain industrial operations outside city limits.^{1/}

Policies. A considerable diversity exists with respect to furnishing fire protection outside city limits. The policies and practices of a selected number of cities are described below.

A major north Georgia city with substantial suburban development provides a county-wide service, charging the county government a specified percentage of the city's fire prevention budget; under the contractual arrangement, the county purchases fire trucks which are rented to the city. (ref. 2, p. 54) A similar arrangement exists between a Class C south Georgia city and the county, with the latter paying a fixed annual fee of \$25,000 to provide fire protection only to those county areas within a distance of a mile or so of the city limits.

^{1/} A textile mill, which uses a pond to supply its operational water needs, does not avail itself of city fire protection, although inside the city limits. The management says its own forces can handle plant fires with less damage to building and equipment than if done by the city fire department.

Residents receiving the service have a fee included in their tax bill. Another south Georgia Class A city, under a cooperative contract with the county, provides fire protection service within specified zones. Within the first zone, which covers areas up to five miles from the city limits, the county levies a 2-mill tax for the fire protection service; beyond the five-mile limit, a 1-mill tax is levied.

Payment of a registration fee with provision for payment of a fixed fee for each fire call is a usual practice where outside fire protection is permitted by the city charter and the municipal department is sufficiently equipped. (In order to maintain its fire underwriters' rate classification, a city must keep a certain amount of fire-fighting equipment within the city at all times.) One of the north Georgia Class D cities of the study answers outside fire calls for a \$50 fee, although this service is not authorized in the city charter. Another city of similar size in the same region provides fire protection within a three-mile radius of the city, the fee being scaled according to the type of structure and the potential fire hazard.

Service Costs. Under the prevailing fire protection policy of a prominent north Georgia city, outside service is limited to schools, churches, industrial plants, veterans clubs, radio stations, and assistance to other municipalities. Recipients of the service pay an annual \$30 registration fee and \$100 per call. In 1968, an analysis of the service then being provided showed 44 registered industries, only four of which had sprinkler protection, with an annual return to the city of about \$2,500. The maximum distance any of the protected industries were from the city limits was 26 miles, but the average was only 3.8 miles.

When the 3.4-mill tax rate paid by in-city residents for their fire protection was applied to the fair sales value of the industrial properties being served outside the city limits, the resultant calculations showed that a total of \$28,540 annually would be returned to the city for this out-of-city service, instead of the current \$2,500. On the basis of 100% assessment of property values, the same millage would produce \$33,044.

Either of the above calculated returns argues strongly for the adoption by municipalities of realistic pricing of their fire protection services to industries outside city limits, particularly where eventual annexation is not going to be possible. Most reputable industries do not mind paying their way, and the taxpayers of a community should not have to shoulder the burden of escaped

taxes and/or subsidization of outside extensions of utility services and fire protection which characterize the industrial development activities of numerous of the study cities. The present findings respecting the strong concern expressed by most outside industries in having adequate fire protection further support the argument for realistic pricing of fire protection service as well as water service.

Location Approval

As a part of the discussions with the managements of the various industrial plants, an effort was made to determine the extent of satisfaction with their present locations, especially with regard to the local municipal water services.

Of the 23 industries of the study that are located outside city limits, 10 or 45% were satisfied with their present locations and, under similar circumstances, would again select the same outside site. In nearly every case, there is a deficiency of industrial land within the various cities. However, eight or 35% of these outside industries now would prefer that their operations be inside the city, mainly due to water service problems.

Officials of another five of the plants, although preferring an outside location, wish they had selected another city. Two of these officials, in Class C and D cities, are unhappy with the local water services, and the other two, both in Class D cities, have transportation and industrial services problems, unforeseen in the selection of their respective cities. An unfavorable initial water problem possibly further contributes to the discontent of one of these plant managers. A fifth official, now operating a paper mill outside but relatively close to a major city, would prefer to be on a site farther removed from the urban areas because of noise and odor problems.

Interestingly enough, officials of 11 or 50% of the 22 industries located inside the cities would prefer to have their plants outside but, in the main, not because of any water-related problem. The reasons cited for desiring an outside location are rather varied, among which are land need for expansions by two companies and the need for a more isolated location by a third, which its management calls the "messy kind" of operation, because of unfavorable public reactions to its odors.

It seems apparent that of the seven plants which have been annexed into their respective cities, some apparently were taken in against their wishes,

since two managers said they would prefer an outside location. Three others would prefer an inside-city site, but in other cities, mainly for better water service and related reasons. Another plant manager expressed a desire to be outside his city's limits if he could obtain water service and fire protection. The manager of still another plant, whose parent company operates nationwide, stated that it was company policy to locate outside city limits whenever possible in order to have an autonomous operation, free from the restrictions of municipal government.

In summary, it appears that most industries locating outside city limits are very well satisfied, especially if it is assumed that those which have been annexed into their respective cities also found outside locations agreeable to their operations, and the findings suggest this. Insofar as the servicing of water requirements for plant operations is concerned, most cities are meeting this need, but the adequacy of their service for fire protection often leaves much to be desired, possibly because their rate structure is not properly scaled for the extra costs and demands of this much-needed outside service.

Evaluation of Tax Savings

Taxes are a closely allied aspect of the extension of water services outside municipal limits to supply industrial operations. It is usual for the leadership of local industrial development groups to seek the municipality's cooperation in making such water extensions to new industries, despite the tax loss to the city government. The proponents of a liberal water service extension policy argue, and frequently with considerable validity, that the new payroll and related economic gains to the community more than offset any tax loss. This argument, however, loses much of its force where due consideration is not given to the wage scale of the incoming industry -- new jobs just for the sake of employment is a fallacy to which too many cities succumb in their desperate efforts to get new industry. Nevertheless, as the findings here suggest, water service extensions outside the city are best justifiable when there is a scarcity of developable industrial land within the city, especially, if the water service can be offered as part of a package deal along with other utility services, such as gas and/or electric power. In such cases, the profits from their sale to the new industry may recoup, in whole or part, the property tax loss to the city. Nevertheless, this appears to be needless sacrifice of utility revenues, unless near-future annexation of the industry is possible.

As a partial defense of their outside water service extension policies, public officials and other local leaders sometimes say that the tax saving to be derived from an out-of-city industrial site is important in the attraction of new industry. From the findings of the present study, it seems that this promotional belief is more imagined than real.

Among the 16 managements able or willing to evaluate the tax savings of their outside-city locations in relation to their operations, it is obvious that the four whose plants are receiving all city utility services, including water, gas, and electric power, plus fire and police protection, naturally find the tax savings to be worthwhile. However, four others indicated that the tax savings definitely did not offset the lack of such city services as police and fire protection or, in one instance, the higher water cost. Three others said the tax savings were unimportant, with the president of one of these firms adding that he would be glad to pay the city taxes if, by annexation, he could obtain city fire protection. Another of these three qualified his evaluation by saying that the tax savings were relatively unimportant in comparison with the higher costs of water and other utility services outside the city -- in fact, so high that he strongly felt the city should be giving his plant both police and fire protection.

Only one management official held his tax savings to be worth the higher water rates, lack of fire and police protection and sewerage, but, in this instance, there is a strong bias against the municipality from which the firm recently removed its operations into a suburban area.

The branch plant manager of a national corporation probably best illustrated the relative unimportance of tax savings through an out-of-city location by comparing his personal Georgia taxes with those of the Eastern city in which the parent plant is located. "Look," he said, "in our base city in (state), I have a home comparable in value with that of my Georgia home, yet here my tax bill is approximately one-eighth that which I pay on my home in the East. Consequently, I would never consider Georgia taxes as an influential locational factor in comparison with the numerous other more important operational costs involved in picking a plant site." This, from an experienced plant executive who also is an active leader in the local chamber of commerce's industrial development effort.

Another firm in north Georgia, because of its dissatisfaction with water service, recently moved from an in-city location and relocated its operations in the suburban area of a larger city a few miles away. The president is now convinced that any tax savings realized by an outside location are unimportant. Apparently, through poorly conducted site investigations, this company selected a site served by a water line too small to meet fire underwriters' requirements and their plans to use a septic tank for waste disposal, because public sewerage was not available, proved infeasible, due to poor soil absorption characteristics. As a consequence, the company has had to make heavy investments in a reservoir, pumps, and auxiliary equipment to meet fire underwriters' requirements and in its own sewage treatment plant. Although its new, practically fireproof plant results in a fire rating substantially under that on the former plant, the management says this and the tax savings do not offset the disadvantage of being without city fire protection and sewerage, especially since the limited capacity of its own treatment plant prevents doing one stage of manufacture at this location.

A north Georgia poultry processor who removed from an in-city location to a nearby rural situation, due to land needs for expansion of operations, is of interest in illustrating savings resulting from factors other than taxes in the face of relatively heavy investments to offset the advantages of city water, sewerage, and fire protection services at the former location. In the new location, the company has sufficient acreage for an extensive oxidation pond system and a modern, efficient fireproof plant with ample room for its production lines and other facilities, a condition impossible in the very limited space of the earlier in-city plant. Because of the improved layout in the new plant, the company has been able to maintain its production schedule with less overtime operation, and the resultant reduction in overtime payments to the workers and more than a dozen federal inspectors (whose overtime pay must be borne by the company) combines to a total high five-figure annual saving. Although this is a high-volume user of water (nearly one million gallons daily), drilled wells are the principal water supply source, supplemented by water from a small-diameter water extension of the city system that provides boiler feed. A company executive commented that, at the commencement of their operation in the nearby city, the anticipated saving on water because of the in-city location did not materialize and that, despite the extra costs of developing their own well-water supply at the new plant, they had realized

some saving on water. These factors, plus the other advantages and savings because of greater efficiency, make their present location "best for them."

On balance, these evaluations by industrial managements are well weighted in favor of the in-city location when the locational decision is purely one of tax savings versus the values and advantages of city utility services. This is especially so where city water rates are doubled for outside service, often with the customer bearing the additional costs of line installations, and sewerage is lacking or charges are made for that service.

WATER RATES AND COSTS

Industrial water rates and costs among the study cities vary widely, as shown in Table 3. The rates are for 1,000-gallon units, calculated from each city's rate schedule on the basis of industrial usages of 100,000 and 500,000 gallons daily and for residential usage of 12,000 gallons monthly. For each usage the rates have been determined for locations both inside and outside the corporate limits.

Among the north Georgia cities, the in-city industrial rates range from 10 cents to 51 cents per unit, with the average and median rates being 25 cents and 24 cents, respectively. Rates for outside locations range from 19 cents to \$1.14 per unit, with the average and median rates being 24 cents and 33 cents, respectively. The rates for locations inside south Georgia cities range from 11 cents to 49 cents per 1,000-gallon unit, with the average and median rates being 27 cents and 21 cents, respectively. Out-of-city rates range from 12 cents to 98 cents per unit, with the average and median rates being 34 cents and 20 cents, respectively. In a study of 33 Georgia cities, Waldas (ref. 13, p. 78) reports a mean price of 44.49 cents per 1,000-gallon unit, with nearly 67% of the prices ranging between 20 cents and 59 cents.

As is apparent from these data, there is no correlation between unit rates and city size. The various rates, however, do tend to reflect the local situations as observed during the field study, ranging from those cities with practical-minded officials who have established more or less realistic water rates to some others which, apparently for reasons of political expediency or otherwise, have unit rates that are exceptionally higher or lower than production costs, as will be indicated below.

In order to compare the various rates with production costs,^{1/} data were assembled from each city on the total annual pumpages and production costs for 1968 and the production costs per 1,000-gallon unit calculated on daily consumptions of 100,000 and 500,000 gallons. The resultant unit production costs, as shown in Table 3, also exhibit wide variations. They range in north Georgia from 15 cents to 48 cents per 1,000-gallon unit and in south Georgia from 11

^{1/} For convenience, the term "production costs" is used here to include both production and distribution charges.

Table 3
INDUSTRIAL RATES VERSUS PRODUCTION COSTS
(per 1,000 gallons)

City No.	Class 1/	Industrial Water Rates 2/				Source 3/	Production Costs			Residential Rates 2/ 12,000 Gallons		Rates as Percent of Production Costs			
		100,000 Gallons		500,000 Gallons			Calcu- lated 4/	Esti- mated 5/	Inside	Outside	Residential		Industrial - 500,000 Gallons		
		Inside	Outside	Inside	Outside				Inside	Outside	Inside	Outside	Inside	Outside	
1	A	\$0.20	\$0.33	\$0.16** 6/	\$0.27	W	\$0.20	\$0.15	\$0.32	\$0.52	163	265	81	135	
2	A	0.23	0.33	0.20**	0.26** 6/	S	0.28	0.30	0.21	0.35	75	125	71	93	
3	A	0.58	1.15	0.51	1.14	S	0.28	0.30	0.58	1.15	207	410	181	407	
4	A	0.40	0.49	0.31	0.33	S	0.20	0.30	0.61	0.86	305	430	155	165	
5	B	0.46	0.46	0.37**	0.37**	S	0.41	0.30	0.72	0.73	175	178	90	90	
6	B	0.39	0.78	0.31**	0.33**	S	0.34	0.30	0.40	0.80	118	235	91	97	
7	B	0.34	0.68	0.49	0.98	W	0.41	0.15	0.82	1.64	200	400	120	239	
8	C	0.55	0.83	0.24**	0.39	S	0.28	0.30	0.80	1.20	286	430	86	140	
9	C	0.28** 6/	0.42** 6/	0.21**	0.24**	W	0.48	0.15	0.55	0.93	115	194	44	50	
10	C	0.13	0.25	0.10	0.20	S	N.A.	0.30	0.13	0.25	N.A.	N.A.	N.A.	N.A.	
11	C	0.52	0.99	0.41**	0.57	S	0.46	0.30	0.82	1.62	177	352	89	124	
12	C	0.31	0.47	0.22	0.23	S	0.11	0.30	0.38	0.57	345	518	200	209	
13	C	0.28	0.51	0.14**	0.31	S	0.20	0.30	0.56	0.74	280	370	70	155	
14	C	0.42	0.56	0.26	0.34	S	0.22	0.30	0.55	0.73	250	332	118	155	
15	C	0.23	0.36	0.11**	0.26	W	0.18	0.15	0.41	0.67	228	372	59	144	
16	C	0.15**	0.23**	0.14**	0.20**	W	0.38	0.15	0.52	0.60	137	158	36	53	
17	D	0.23	0.23	0.20	0.20	W	0.15	0.15	0.43	0.43	286	286	133	133	
18	D	0.53	1.06	0.31	0.64	S	0.11	0.30	0.66	1.32	600	1,200	280	580	
19	D	0.34	0.34	0.22	0.22	W	0.15	0.15	0.54	0.54	360	360	147	147	
20	D	0.32	0.47	0.22**	0.33	W	0.28	0.15	0.64	0.96	228	343	71	118	
21	D	0.44	0.44	0.33	0.33	S	0.28	0.30	0.61	0.61	218	218	117	117	
22	D	0.28	0.33	0.12**	0.13**	W	0.23	0.15	0.26	0.30	113	130	44	44	
23	D	0.22**	0.23**	0.13**	0.19**	S	0.40	0.30	0.50	0.55	125	137	32	48	
24	D	0.24**	0.37**	0.20**	0.31**	S	0.39	0.30	0.30	0.50	77	128	51	79	
25	D	0.32**	0.63	0.22**	0.52	W	0.47	0.15	0.65	1.26	134	268	47	110	
26	D	0.48	0.64	0.30	0.38	S	0.25	0.30	0.57	0.97	228	388	120	162	
27	D	0.28	0.29	0.11**	0.12**	W	0.20	0.15	0.54	0.66	270	330	55	60	
Averages		0.35	0.51	0.24	0.36	W	0.28	0.28	0.52	0.79					

-34-

1/ Population ranges in thousands:
A = 50-100; B = 25-50; C = 10-25; D = 1-10.

2/ All rate and cost figures rounded to the nearest decimal but, since percentages were calculated on precise amounts, above-reported percentages may show some slight variations.

3/ W - Well; S = Stream.

4/ Calculated from data submitted by each city.

5/ "Representative" cost estimates from authoritative water engineers.

6/ **Denotes underpricing of water in relation to production cost.

cents to 46 cents. These compare with a mean cost of 25.10 cents obtained by Waldas for 33 cities. (ref. 13, p. 78)

Any cost comparison requires recognition of certain differences between north and south Georgia, due to geologic conditions, that influence basic production costs. In north Georgia, where the water systems of all of the study cities are supplied from rivers or other surface streams, more extended treatment is required to make the water potable than in south Georgia. In the latter area, however, drilled wells are the source of water for all municipal systems of the study cities except one, and, since well water requires only minimum treatment, the production costs are relatively low. Authoritative water engineers have given the authors an estimated average production cost of 20 cents per 1,000 gallons for the north Georgia cities. However, a recent engineering study for a city in this northern area shows a cost range of 30 cents to 47 cents per 1,000 gallons at daily consumption rates of 400,000 and 100,000 gallons, respectively. In contrast, reliable cost data obtained from the city manager of a south Georgia city showed a production cost of only 15 cents per thousand gallons for daily pumpage of 500,000 gallons. A utility manager of another city in this area says the same unit production cost could be reduced to approximately 6 cents in large volume pumpage.^{1/}

On individual comparisons, most of the study cities are found to have production costs either higher or lower than the above-noted "representative" costs of 15 cents and 30 cents per 1,000-gallon unit for consumptions around 500,000 gallons. For those unit costs that appear to be unduly low, it is known that, in some instances, the submitted data are incomplete in that certain expense items, such as debt service charges, have not been properly allocated to the water system. On those unit costs that are higher, this probably is due, in some cases, to exceptional local conditions, such as old systems requiring above-average maintenance costs or highly rugged terrain with resultantly higher installation costs. However, on certain of the exceptionally high production costs, a water engineer has suggested that perhaps the city is allocating to the water account some city expenditures, such as sewer maintenance,

^{1/} A survey of 60 cities across Illinois and western Indiana in 1957 revealed water costs ranging from 36 cents to \$1.36 per thousand gallons for consumptions of 7,500 gallons. (ref. 8, p. 1)

that more properly are allocable to other accounts. Again, it is known that some of the submitted data include debt service charges on bonds covering both water and sewer systems.

Underpricing of Water

Imprecise as the cost data of Table 3 may be, when the industrial rates on 500,000-gallon consumptions are compared with production costs, a surprisingly high percentage of the cities appear to be underpricing their water, particularly to industrial users inside the cities. The comparison of water rates with production costs brings the revelation that, in 500,000-gallon units, 16 of the 27 cities (59%) are selling their water under production costs. This underpricing ranges from 9% to 68% below cost for in-city industries and 3% to 56% under cost for service to outside industries.

To offset any losses incurred by this "cheap water policy" of underpricing water to industry, the city has the alternatives of charging them against general tax revenues or of recouping them in whole or part, either from higher rates to the residential users or from profits derived from other utility services, such as natural gas and/or electric power, that may be furnished to industrial users through a "package deal," or through a combination of these two revenue sources. Sewerage, incidentally, usually does not pay its way.

The apparent extensive underpricing of water among the survey cities lends support to the contention of some industrial developers that "cheap" water is a concession made by municipal governments to new or existing industry, with the residential consumers having to bear the brunt of this form of subsidization. The data of Table 3 suggest that this may be true for some of the cities, notably nos. 8, 13, 15, 20, and 27. Not only do seven of the nine north Georgia cities that appear to be underpricing their industrial water have in-city residential rates that average 59 cents or 210% above the 28 cents average for that region, but five of them also can offer a package deal on utilities. A similar situation exists among the south Georgia cities, where five of seven cities have in-city residential rates that average 190% above the 26.6 cents average for that region; all but one of the seven cities have a utility package deal. In fact, the mayor of one of the cities which appears to be heavily underpricing its industrial water (nearly 60% below cost) admitted that reliance is placed on the city's package deal to support the extension of water and related utilities outside corporate limits.

Several utility superintendents and other municipal officials did confirm that losses were being sustained on the operation of their water systems, due to underpricing of their water. One utilities manager said their rates cover production costs and system maintenance, but only part of the bond retirement and new improvement costs. When the annual debt service charge of \$140,000 is included, he said, the deficit of the city water system operation amounts to about \$200,000 a year. Dependence here is placed on the package deal in amortizing the costs of extending water service to out-of-city industries and of any resultant revenue loss on the service.

Similar comments relating to underpricing were made by utility superintendents and a city manager in three other cities. In one of these cities, the superintendent said about \$40,000 annually is added to the city general fund by the water department, representing, in part, "profit" above the treatment cost; however, he concluded, maintenance and extension costs more than offset this so-called profit. Another superintendent stated that his city's annual water revenues show a "profit" of nearly \$200,000, but this does not reflect any debt service charge. Debt service, along with an annual loss of nearly \$70,000 on service maintenance, completely eliminates all of this "book profit," leaving an annual deficit of over \$100,000 which is readily offset by the electric department's \$750,000 profit. In a municipality heavily dominated by large-volume water-using industries, mainly within the city, the city manager reported that subsidization of the water costs to those industries ranges from 6 cents to 11 cents per 100 cubic feet, "at the expense of other users."

Package Deal vs. Deficits

Acceptance of the so-called "package deal" on municipal utilities is, in one of the south Georgia study cities, a specific condition for the extension of water service to industry outside the corporate limits. The city manager reported that an out-of-city industry must take municipal electric power as well as water service, with their extensions being limited to a distance of one mile from the corporate limits. In those cities which can offer the full range of services -- water, sewer, gas, and electric power -- the package deal becomes a particularly significant factor in a city's willingness to make water extensions to outside industry.

In brief, the combined profits from large gas and power users often are sufficient to offset capital investments in extensions not otherwise possible

for "cheap water" systems. Yet, the data of this study do not support the commonly held belief that a cheap water policy is or has been an effective industrial promotional tool among the study cities. However, the underpricing is reflected in the very high percentage (84%) of favorable responses from the 43 industrial respondents on their water costs. This suggests that the rates of most of the study cities are, in general, too low. This fact has been noted by Waldas (ref. 13, p. 31) in his study of the financing of small municipal water systems in 47 Georgia cities. However, he also says (p. 9) that of the 47 cities still paying on their water systems, 33 had net revenues in excess of debt service, while only six were having to use general funds to retire their water indebtedness. It would be interesting to know the extent of residential revenues in these various cities.

Subsidization of industry through underpricing of water does not appear to have been a significant locational factor among the study cities over the past five years, especially as an attraction to outside locations. Only three instances of underpricing to new industries are worth noting.

A cheap water policy may have its resultant losses offset by the economic benefits of a new plant, as the following case shows. Among the 200 or so new industries known to have located in or near the study cities in the past five years, one of the few that are very large water users (18 million gallons per month) did locate within a Class D city which has a cheap water policy, but the management of the new plant is not certain that the advantage of water subsidization played any important part in the company's decision to locate in this city. However, on the basis of apparent underpricing of at least 8 cents per 1,000 gallons, this city may be subsidizing the new plant's water usage to as much as \$17,000 annually, a loss which, for lack of a package deal, apparently is being shifted partly to the residential consumer, whose rates are 270% and 330% over production costs for inside and outside users, respectively. On the other hand, this new plant, the community's only substantial addition over the past decade, contributes sizable new tax revenues and 450 new jobs at better than average wage scales. These economic benefits are sufficient to minimize the common objection of professional developers to subsidization of corporations well able to pay their own way.

Among the 15 other cities underpricing their industrial water, there are only two known instances where the total water usage by new outside industries

results in any significant losses to the cities. Under the cheap water policy of one of these cities, water service, both inside and outside the municipality, is being provided at rates at least 55% or 10 cents per 1,000 gallons below the production cost of the water, in the quantities involved. All of the six plants established there over the past five years are outside the city, and it is estimated that the annual loss on water service to them is \$1,500. Since industrial water service inside the city is similarly underpriced and residential rates both inside and outside the city are only slightly above cost, obviously the recouping of losses from these sources is hardly possible. The mayor and other municipal officials stated that their cheap water policy is supported by a package deal on municipally operated utility services. The extension of water service to the six new industrial plants outside the city is justified by the mayor on the basis that five of the plants are expansions from locations within that city. Although a policy of expediency is evident in the city's extension of outside water service, the principal handicap to its economic growth is a land stringency inside the city and the ownership of the best industrial sites outside the city by a single landowner who reportedly is opposed to industrial growth of the community.

The maximum underpricing known to have occurred is 76%, resulting from the "negotiated" rate given by a small (Class D) city to obtain a large textile mill outside its corporate limits. Residential rates there seem sufficiently above production cost to offset the apparent \$340 per day subsidization of the 2-million-gallon daily consumption of this mill.

That a cheap water policy is not essential to successful industrial promotion is proved by cities in both north and south Georgia. The north Georgia city, despite the lowest water production cost of any of the cities in the study, maintains the highest water rates, percentagewise, both industrial and residential and inside and outside the city, among the study cities (see no. 18 of Table 3); yet, in the past five years, 16 new industries have been located there, a number of which are substantial water users. Only two of the 16 new plants sought outside locations; the official of one of them, a native of the city, confessed he wanted to escape the relatively high land prices in the local industrial district. Now, after several years of operating outside, he would prefer the in-city advantages of cheaper water, police and fire protection, and sewerage (his present usage of a septic tank is unsatisfactory).

In the south Georgia city, which has an industrial water rate of 98 cents per 1,000 gallons for out-of-city users, the third highest among the study cities, the city manager contends that this high rate has been an effective deterrent to industry's location outside the city, pointing out that all six of their latest additions are inside the corporate limits. In this instance, the recent establishment of a sizable industrial district within the city, plus capable leadership in the local chamber of commerce and a very cooperative city government, better accounts for the city's success in keeping its recent industrial development within the city rather than do its water rates. Similarly, the foregoing north Georgia city's long-established industrial district and succession of practical, aggressive, industrially minded mayors have been more important in keeping industry in the city than any deterrent effect of its high outside water rates.

An interesting contrast to the foregoing situation is provided by another south Georgia city where, despite relatively high water rates, three large new industrial operations recently have been located outside its corporate limits, due mainly to the lack of sizable areas of developable industrial land within the city, plus the ready and economical obtainment in suburban areas of city services, including sewerage and fire protection. Although the utility package deal has made much of this possible, there also has been a good degree of forward planning and, in part, financial assistance through use of industrial revenue bonds. Nevertheless, investigation proved that the two largest water users are dependent on the city water system only for sanitation and standby fire protection purposes, involving only nominal consumptions; their major water usages are supplied from wells.

Even the city with the highest unit rates, 51 cents and \$1.14 inside and outside the city, respectively, has had six out of 13 new industries locate in an industrial district beyond the city limits, despite the extremely high price of water.

In view of the above case examples, the authors cannot agree that water rates overshadowed, to any significant extent, the many other factors involved in selecting a plant location. In three of the four cities cited, their industrial districts appear to have constituted a more influential locational factor than their water rates, although the city that has an outside industrial district is sacrificing tax revenues obtained by the others.

Probably the most significant relationship between cheap water policy and industry to emerge from these comparisons of water rates and costs is the apparent accommodation being made by certain municipal governments to established local interests that would have a vested interest in cheap water. It seems more than coincidental that 12 of the 16 cities and towns (80%) selling water 9% to 68% under production costs, even at such low consumptions as 500,000 gallons, have within their corporate limits large water users, notably in the textile and poultry or other food processing fields. This is not to infer that, in all cases, local industrialists are actively influencing the rate making within a community. Rather, certain of the field investigations strongly suggest that some municipal leaderships must, for political or other reasons, defer to their leading industries or major industrial groups by not adjusting water rates to a realistically higher base. The several selected situations discussed in the following paragraphs are sufficient illustrations of this underpricing or subsidization of water to "home" industries.

In a Class C city of north Georgia, over 60% of the 6,800 local industrial employment is in textile mills and food-processing plants, long established in that community. Although total water consumption by these operations is not known, at least one mill reported usage of about 25 million gallons per month. Comparison of water rates and production costs shows no loss for 500,000-gallon units, but the much higher volumes consumed by the large water users obviously are not realistically priced. The utilities superintendent readily confirmed that substantial losses were being experienced on the water operations. Since residential water rates, percentagewise, are among the highest of the study, the admitted water losses are suggestive of underpricing through special negotiated rates to the textile and food industries.

In one of the state's textile centers, where approximately two-thirds of the total 5,000 industrial workers of the community are employed in the mills, it is easy to surmise that the inside water rate is 30% below production cost as an accommodation to their major industry, all of which is within the city. In this instance, residential water rates are 280% and 370% above production costs inside and outside the city, respectively; these rates, plus a package deal on utilities, likely compensate the city government for its subsidization

of industrial water service. In fact, a local plant official commented on the high utility rates, but justified them as "keeping taxes down." However, it is doubtful that outside industrial water rates of 155% above production cost have been as effective a factor in keeping all new industry within the city over the past few years as has the local industrial district, also within the city.

In two Class D cities, one in south Georgia and the other in north Georgia, where the respective 56% and 68% rates of underpricing of industrial water are among the highest of the 16 cities engaging in cheap water policies, the principal industry of each community is a sizable textile mill. Similar water underpricing situations exist in two other cities, both Class A municipalities which also are dominated by textile mill operations. And, in another north Georgia city (Class C) where food and textile operations predominate, a city official pointed to continuing losses by the municipal water department which, due to political pressures through the dominant industry group, are difficult to eliminate through adjustment of present water rates to a more realistic basis.

Of the 16 cities using cheap water policies, four municipalities have in-city water rates to industry ranging from 10% to 65% below production cost on the 500,000-gallon unit basis, but in none of these cities is there a single industry that is a large water user. Consequently, it must be concluded that the underpricing here is not the result of accommodation to any local industrial group; in each case, residential rates are relatively high.

The conclusion that water service being received by industries of the survey, both inside and outside the study cities, is generally too cheap is supported by two findings of this study. First, the calculations based on existing rates for specific unit volumes indicate that numerous cities are selling their water near or below production costs; second, the field interviews with the managements of industries operating both inside and outside city limits have produced only a minimal number of complaints on their water costs.

Among the managements of the 23 industries of the study operating at out-of-city locations, only five registered any complaints on city services, one of which related to the local high electric power rates. Of the four complaints relevant to water service, only two specifically mentioned water costs as

being too high; officials of three other companies, one of which does not even use city water, expressed the opinion that water costs are too low and one favors a rise in local rates at least sufficient to cover production costs. In fact, in one city the management of an incoming new plant found the water costs so reasonable that plans to drill their own water well were abandoned.

An equivalent degree of satisfaction with water costs prevails among the managements of the in-city industries who expressed an evaluation of this aspect of the study. Of the 15 satisfied respondents, two officials frankly stated that their water was too cheap, with one of them favoring a rise in rates sufficient to cover the city's production costs. Naturally, this latter official's plant is a nominal user of water.

These findings are supported by Brewer's recent study of the Georgia poultry industry in which he found that "many of the plants surveyed seemed to disregard water as a significant cost factor." (ref. 3, p. 73)

SUMMARY CONCLUSIONS

General

Many of the municipal officials, industrial managements, and other respondents to the field interviews, in general, seemed to evidence no particular concern over the manner in which public funds are expended in the extension of water service outside their respective cities. This seems particularly so in regard to whether or not the water system is operated on a self-supporting basis or whether the residential water customers through unduly high rates are, in effect, subsidizing water service to the local industries inside or outside the city.

The responses of interviewees frequently were very subjective. For example, two respondents, both officials of textile mills operating in the same city, gave extremely divergent replies as to the quality of local water service, one characterizing the service as "excellent" and the other deeming it "poor." Although no personal bias was evident in this instance, in other municipalities replies were conditioned by the personal experiences of the respondents. This was true of the official of an out-of-city plant in a south Georgia city. He complained bitterly about the municipality's lack of concern over the need for greater water pressure to eliminate fire protection problems at this new plant, although other industrial respondents were complimentary of local water service. However, the complaining official, after considerable discussion of his problem, revealed a strong personal bias against the entire city because of its social attitudes toward him. In the present study, the authors have made allowance for any data or information that appeared influenced by personal bias.

On balance, the results of the present study indicate that, despite the successful overall results of industrial development efforts among the study cities, there are enough instances of unwise commitments and potentially hazardous procedures that have been or are being practiced as to fully justify the present study. They are individually reviewed below; as will be apparent, a number of them deserve considerable investigation in depth.

Extension Service Policies

The economic advancement of most of the study cities is being handicapped to greater or lesser degree and, in a few instances, definitely damaged by the lack of an overall water service policy.

The subsidization, in effect, that outside industries are obtaining from many of the study cities through escaped property taxes and underpriced water service is not in the best interests of the community. Although scarcity of land within a city often forces location without the city, the authors feel strongly that eventual annexation of industry should always be a basic principle in formulating outside water service policies. The recent adoption of annexation as a prerequisite for outside service by two of the major cities among the study group and its effective use by two others, plus the minor importance assigned by industrial respondents to outside tax savings, support the authors' belief that such annexation procedure will not handicap local industrial development efforts, if municipalities will quit providing outside industry with all city services, often below cost. When that is the case, industry naturally will resist annexation unless the services are quite inadequate.

Among the study cities, those which appear to have met the challenges of out-of-city industrial water demands most successfully have independent, more or less nonpolitical water commissions or boards which have applied reasonable engineering direction and business principles to the development of their systems, in an atmosphere of cordial cooperation with the county governments. Two major south Georgia municipalities furnish notable examples of this type of operation. In one of these cities, the industrial development is within a long-established skeletal system of water mains (see p. 13); the other city, working through a water board and in concert with the county government, accepts from the latter its system of water line extensions, laid to city specifications, and then operates and administers the system. (See p. 14.)

The present findings suggest that municipal policy on extension of water service to industry commonly has lacked careful analysis as to the particular sector of the community, inside or outside the corporate limits, that has the most potential for industrial development. Such determination should be made, followed by the planning and engineering and policy controls that will assure extension of the water and allied services into the selected area in pace with

the industrial growth needs. Finally, water rates should be structured to realistically reflect and support the costs of operation, depreciation, maintenance, and bond service charges of the entire water system, including sewer service where provided. Outside areas should be so situated as to permit eventual annexation. In its policy formulation, the municipal government should follow Blau's suggestion (ref. 2, p. 29) that detailed standards for water service extensions should be established to insure against over-expansion of the water system and the installation of inadequate and inferior water mains. The policy also should provide for customer participation in the financing of the extension, explicitly stating what the customer is to pay and the reason therefor. "Generally, the industry should pay for its own extension with no extension made until it is shown that the industrial requirements will not overburden the water supply." (ref. 12, p. 28) As one other authority counsels, "A city should plan its future and keep the utility informed so it can supply water when and where needed . . . a utility must operate on a business basis rather than a political one . . . neither a water utility nor a city can work in a vacuum." (ref. 4, p. 10)

While the foregoing recommended policy of planned water extensions will afford a sound, systematic basis for the development of any municipal system, some potential dangers of its application to outside industrial service have been indicated in the present study. First, as the executive secretary of the American Water Works Association properly points out in the above quotation, a real danger exists under any arrangement for the extension of industrial water service into the suburban areas if the county government is not kept well informed as to the objectives and needs of the community's industrial development program. Even though there may be a most cordial rapport with county officials, the municipality has a responsibility to let them have as much advance notice as possible of anticipated water demands and the areas in which growth is expected. This will prevent any conflict with county plans for road repairs or other activities when water lines must be extended. The maintenance of good communications between city and county government is especially imperative if the county government is the responsible agency for the installation of water lines. It is obvious that should county officials, for any reason, be unwilling or unable to make water line installations in pace with new industry demands, the development effort of a community could be severely handicapped. Of course, the reverse is true, as is the case in one

study city, where the city board is reluctant to make outside extensions, even though there is neither adequate industrial land inside the city nor a county water system.

The second hazard present in certain city-county water extension policies is the lack of authoritative control by the city in the provision of outside industrial water service. A case in point is the county-operated industrial district needing better fire protection. (See p. 20.) In addition to the above-noted dependence upon county actions for line installations, the present study has shown instances where inconsistent sizing of water lines is due to the county's failure to abide by the city's engineering recommendations. Such improper line sizing not only can result in undue, if not disastrous, delays in getting water service to new industries, but in the event of annexation into the city, these outside areas will prove costly to bring to the standards of the city system. Again, unless the city is properly safeguarded in its contractual arrangement, where a municipal system is the source of water for industries in suburban areas, unanticipated extraordinary industrial growth in these outside areas could well necessitate expansion of the water plant, largely at the city taxpayer's or water customer's expense, without any compensating tax return to the city government from the industrial growth. (See p. 20.)

Analysis of the foregoing problems and hazards related to extensions of municipal water service into outside areas argues strongly for (1) industrial development only of lands adjacent to the city limits that, in the near future, can be annexed into the city; (2) prior annexation into the city of any suburban areas which are to be industrially developed; or (3) development of specialized areas within the city, such as the industrial district. "When the city extends its services to fringe areas, it should always have periodic annexation as its ultimate goal." (ref. 2, p. 49)

The continued successful location of new industry within city limits, as a number of study cities have demonstrated over the past five years, proves that no special value attaches to an outside site if sufficient land can be made available within the city. In fact, the availability within the city of fire and police protection, sewerage, and lower water rates is shown by the findings to be much more persuasive to industrial managements than any outside tax savings.

In the several study cities with very liberal policies that allow outside industries to get all the same services as those inside the city, including water, police and fire protection, and sewerage, and often at very reasonable costs, the industrial managements naturally enjoy the tax savings. They have no real incentive to accept future annexation moves and quite possibly would actively resist such efforts. While the loss of taxes in some of the cities presently is being offset by the profits from utility "package deals" and/or is being rationalized by community leaders on the basis of new payrolls and related economic benefits, the authors do not believe that the property tax loss to the municipality is either desirable or necessary to the local industrial promotional effort. Certainly this is particularly true where the water rate structure does not fully amortize and support the extension of water service outside the corporate limits.

"Policies" of Negotiation or Expediency

In the evaluation of municipal policies on the extension of water services to industry outside their corporate boundaries as submitted by the officials of the various study cities, the authors rejected as being unsatisfactory for their intended purpose all policies that indicated extensions were made in conformity with the water demands of a prospective industry as developed through negotiations or that the service was extended outside on the basis of precedent rather than through city charter or other legal authorization. Too many of the study cities presently reveal, to varying degrees, inconsistent and haphazard development of their water systems under these so-called "policies" of expediency or negotiation in the extension of their water service to prospective industries in suburban areas.

In one city, where a new formal water extension policy recently was adopted, the city manager still contends that the municipality should not limit itself to any set rules respecting water service extensions because "this makes for a degree of inflexibility that, under certain unusual circumstances, could cost the community new industry." Similar arguments were made by others during the course of the field survey. A utility superintendent's argument that "each industry gives us a different proposition, so we have to negotiate" is not very valid because the city should be in a position to make a firm and decisive offer of its water service in any developed area and not have to resort to "negotiations" to resolve the question of ability to service a specified water

demand. This kind of subterfuge to cover up inefficiently operated municipal services is the real reason prospective industries often turn down a community.

If the officials of this city did their "homework" before the prospect arrived, they would not have to negotiate on the extension of water service; rather, they would be in a position to tell him specifically what service can be given, under what conditions, and what it would cost.

It is too much to expect that "policies" of negotiation will be entirely abandoned by Georgia municipalities. However, even if there is an unwillingness to eliminate the negotiation aspect of industrial promotion activities of municipal governments, at least particular attention ought to be given to the wage scales to be paid at any prospective industrial operation. The total payroll is much more important than just the total employment figure, the "big name" attractiveness of the company, or other similar factors which various officials of the study cities cited as the basis for their consideration of a prospective industry "on its merits."

Locational Effect of Water

The availability of low-cost water, as the present findings indicate, is not a significant locational factor, particularly when compared to fire protection. (See p. 25.) Even where limited land areas within a city tend to force industrial developments outside the corporate limits, the availability of low-cost water is not such an important factor that water service cannot be realistically priced to new industries. As Brewer (ref. 3, p. 71) has shown in his study of water use in the Georgia poultry processing industry, "The price elasticity of demand for water was highly inelastic," placing the water systems in the "advantageous position" of being able to "increase their total revenue by increasing the price of water to the firms."

An interesting aspect of the interviews with industrial plant managements is that practically all of them seem to take for granted that water is generally available in a community. (See p. 23.) This seems to be, in part, a free-water concept carried over from the frontier days of this country when water was abundantly available and free for the taking. So, as Mace (ref. 7, p. 99) points out, industrial developers and city officials often underrate, to their regret, the extent to which industrialists assume that "these facilities (water

and sewerage) will be available community-wide, beyond as well as within the corporate limits."

In view of this attitude of expected general availability of water by industrialists, the local development effort can suffer when overemphasis is given by city officials and other community leaders to the extension of water service to outside industries, frequently accompanied by underpricing of the service. Although the industrialist may expect such extension as an accommodation to his location in the community, his interest usually is focused on the quality of water service his new plant will receive or, later, is receiving. It is in this area of quality of service rather than in the mere provision of the service that municipalities so often are found wanting. And the findings of the present study were not exceptional. Industrial managements of the present study, in fact, were much more concerned with the quality of the water service, especially as it affected fire protection and insurance rates, than in water costs.

"If water is available in all locations, then its influence on the final (locational) decision will be small or nonexistent." (ref. 10, p. 7) This is true in south Georgia where, at almost any location, good supplies of well water are readily developable, making industrial plants relatively independent of municipal water service. Recognition of this fact must be taken in the formulation of municipal water service extension policies in that region and, of the fact that in north Georgia, industries generally are dependent on municipal water systems for both their processing and fire protection needs. It is obvious, therefore, that unduly restrictive policies on outside extensions of service can be detrimental to local industrial development efforts. In the south Georgia region, for example, unwise policies can force industries to develop their own water supplies for operational purposes, using the city system only for standby fire protection. Although this arrangement might prove advantageous to the industry in the long run (see p. 24), some managements may be difficult to convince of this in the pre-location stages of their projected new operation. In north Georgia, the greater dependence on a municipal water system certainly argues for skilled presentation to industrial prospects of either in-city or outside locations. Where sites are available within the city, advantages of utility services and fire and police protection at in-city locations in offsetting any apparent outside tax savings should be emphasized,

while for outside locations, municipal officials should realistically evaluate the increased costs imposed by the required extension of water service in relation to their tax loss on the new industry. As shown in the present report, industry does not rank water cost so high as to necessitate underpricing by the municipality of its water services to outside industries.

Industrial Districts vs. Water Policy

An authority on municipal government, formerly a city manager, has expressed the opinion that utility rates, including water, should be sufficiently high to persuade the residents of suburban areas to seek annexation into the adjacent municipality. While this technique may have validity with respect to residential subdivisions, it seems doubtful that this technique would prove highly persuasive to industry. A more likely approach to the attraction or retention of industry within the corporate limits is through the industrial district.

The growth of the industrial district concept since World War II has proved nationally to be a significant factor in community industrial development efforts. Some of the present findings (see p. 11) strongly argue for the effectiveness of the district as a locational factor and, under certain conditions, it is. Yet, the district in itself is not the universal avenue to successful development that municipal officials and others wistfully believe it to be.

The true relationship between an industrial district and local industrial expansion is that the district is a logical means of providing to industry suitably located land to which the desired utility services have been established. Most industries appreciate this convenience and are willing to pay premium prices for such developed acreage. To the municipal government, the industrial district, regardless of its location inside or outside the corporate limits, affords valuable guidance, and often permits substantial savings, in its extension of utility services. In short, the district allows the city to consolidate and direct extensions of its industrial utility services toward and within a limited area and to more accurately size water and gas mains and sewers, with resultant economies in their installation.

Fire Protection Policies

Water for fire protection, rather than its need for plant operation purposes, was heavily emphasized by outside industry. Particular stress was

placed on the need for sufficient pressure and volume flow to meet fire underwriters' requirements, since the insurance rate is dependent upon the adequacy of the water service.

Inasmuch as the municipal water service is being used in numerous instances only as a standby fire protection service, it appears that some of the study cities are making undue capital investments to supply this service. Further, the established water rates of the study cities do not appear to take into account the extra investment made by the municipality to build into its system and maintain the additional capacity necessary to support this type of service. Only one of the study cities seems to give any recognition in its water service policy to this capital investment element of providing standby capacity in the system to meet such limited fire protection demands. Even so, the amortization of these capital costs is not structured into that city's industrial water rate schedule.

"Private fire protection, such as sprinkler stand-by services for individual buildings, is a generally recognized service that should be paid for by those receiving the service." (ref. 2, p. 28) To help recoup the investment for this type of service, it seems desirable that a special rate structure be established with a relatively high monthly demand charge for the service, plus a usage rate, similar to that of electric power schedules.

The findings here indicate that among the several direct fire services being provided outside plants by the municipal fire department or through city-county cooperative methods, none is outstandingly successful, due mainly to inadequate financing. On the basis of the one cost analysis cited here, there is strong argument for the municipality to supply its fire protection service to outside industry on the same tax-determined basis as is applied to residents within the city. (See p. 27.) This is the basis of a contractual arrangement between Atlanta and Fulton County. (ref. 2, p. 54) Another of the fire protection services among the study cities which appears to be satisfactory is the county-wide service where the county purchases fire trucks for rental to the city providing the service and pays the city a specific percentage of the latter's annual budget for this fire protection. (See p. 26.)

Installation Policies

In most instances, the practices on installation of water lines to industry in areas outside the city are not written policies, setting forth in detail the responsibilities or agreements of the mutually interested parties. In the experience of the senior author, this lack of a definitive policy frequently has led to serious misunderstandings in the course of locating a new industry in a community -- in some instances, the industry has been lost to the community. It is obvious that without a specific uniform policy, the industry-hungry community may be sorely tempted to accept economically unwise commitments on water extensions, as well as on others of its utility services. An analogous case is the south Georgia city which brought an industrial plant into a suburban area on the anticipated installation of a water main, only to have the industry refuse its use after spending \$30,000 for its installation. (See pp. 24-25.) Hence, it is altogether desirable that city officials and other community leaders involved in local industrial development programs reach mutual agreement upon installation policies that are in the interests of the entire community. Of 54 cities surveyed by the Georgia Municipal Association, only two reported giving a refund of water installation costs to outside property owners, but apparently this study does not cover service to industrial properties. (ref. 6, p. 20)

"Cheap Water" Policy

The term "cheap water," as used here, is intended to convey the impression that the water rates are low only in comparison with production costs -- actually, in some cases, the rates would seem relatively high to the consumers. Some especially low, negotiated rates are known to have been or are being granted to industries of the study cities, but the extent of this type of subsidization has not been established in this study. One of the most extreme examples found during the study, but not among the study cities, was the furnishing of two to three million gallons of water daily to an industry at a flat annual fee of \$900.

The maintenance of a cheap water policy by a high percentage of the municipalities of this study appears to be done more as an accommodation to certain of their established industries which are large-volume users of water than as one of the inducements to be offered new industry for locating in the community. While water is essential to any manufacturing operation, "municipal facilities

are rarely a primary location consideration . . ." but "since all municipalities have some kind of package of services to offer . . . at issue, here, then is less the question of how the presence or absence of services and facilities affect industrial location and more what are the effects of variations in service levels and the terms under which they are provided." (ref. 7, p. 72)

This observation by Mace in her North Carolina study is reflected by the industrial respondents of this study, nearly all of whom indicated a higher degree of interest in the availability of adequate water volume and pressure for fire protection at out-of-city locations than in the water rates. Further, as North (ref. 9) has noted, this disinterest "in rates is true because the cost of water per unit of product in these industries (poultry and wood pulp processing and textile finishing) is extremely small relative to labor and other input costs." An argument frequently advanced for maintaining a cheap water policy is that, as taxpayers, the citizens of a municipality expect that their taxes should subsidize water rates to keep them low. This is hardly a tenable argument, particularly with respect to industrial usages, in view of the present tax troubles of nearly all local governments today. As expressed by one water commissioner during the present study, "There is no valid reason why the local citizens' taxes should pay industry's water bill."

All water rates certainly should be sufficiently realistic to support the operation of the water system since each water customer then pays in proportion to his individual usage, hopefully with consequent relief for the entire community of a part of its tax burden. The cheap water policy is especially untenable in its application to industrial customers outside corporate limits because of the lack of any tax return to the city. In the words of the executive secretary of the American Water Works Association, "Water departments should be operated as public utilities . . . independent of other city departments . . . on a basis that will pay all their costs." (ref. 4, p. 101)

The underpricing of water found in numerous cities of this study also was noted by Waldas (ref. 13, pp. 31-32) in his study of 33 Georgia cities. "There are," he says, "still many Georgia municipalities with (water) rates too low for adequate repayment ability. . . . With rising costs, many rate structures are archaic and must be updated to raise enough water revenues to cover costs. . . . Updating of rates would not be necessary if the rate base were founded upon expenses as projected for the middle life of this project. . . . This would provide a margin of profit throughout the repayment period."

Some of the present findings indicate that where the study cities are able to offer outside industry a package deal on utilities -- water, gas, and/or electric power from municipally operated systems -- the combined profits will permit extensions of water service otherwise not economically feasible under the prevailing water rates. In fact, one city conditions its water service extension on use of municipally distributed electric power. Even where this kind of utility combination is available, there is no logical rationale for failure to have a water rate structure that, in itself, fully supports all phases of the municipal system. In short, on outside extensions of water service, why should the municipality forego the profits on any of its services while denying itself of all property tax revenues? This is especially so since most industrial respondents of the study consider their present water rates to be low and the findings of the survey tend to support the belief that low-cost water is not a prime locational factor. It may be, as a former industrial executive now in municipal employment suggests, industries sometimes put heavy stress upon the water aspects of location to divert local interests from their tax loss.

Among the more interesting suggestions on water rates is that made by the official of a large textile mill which is a large-volume user of water. He believes that in this industry, where water constitutes a raw material whose cost is reflected in the unit cost of the finished goods, the water rates should be subject to annual negotiation on a contractual basis. This would afford proper compensation to the municipal government for the cost of production and distribution of the water and give to the industrial consumer the benefit of any savings generated through increased efficiencies in the operation of the water system. While this suggestion may have some merit, North (ref. 9) has indicated that water, for certain high-volume industrial users, including textile finishers, constitutes an extremely small part of the unit cost of product relative to labor and other input costs. Brewer seems to confirm this in his study, which also included textile operations, where he noted that "many of the plants . . . seemed to disregard water as a significant cost factor." (ref. 3, p. 73) Hence, there would seem to be little gained by either party in this kind of suggested annual negotiation and, for the local industrial developer, it would pose an unnecessary problem in his promotion of the community.

Water Conservation

In three different cities of south Georgia, the authors noted large quantities of water from deep wells were being withdrawn by certain industrial plants for cooling purposes and, without further usages, were being discharged directly to sewers or nearby streams. This results from the very low cost of well-water production in this region, certainly in the order of 5 cents per 1,000 gallons for the quantities being used in the subject industries.

It does not appear to be in the best interest of water conservation to allow such unrestricted industrial pumpages within or in the vicinity of cities in this region. In 10 southeast Georgia counties, where in 1957 approximately 200 million gallons per day were being withdrawn by industry (ref. 14, p. 84), overpumping and the possibility of salt water encroachment into the aquifer have been under investigation by the U. S. Geological Survey since as early as 1939. (ref. 12, p. 285) As has been noted in the present findings, one city, as a consequence of such heavy industrial pumpages, has found it necessary to supply some of its industrial water needs from a surface source. (See p. 15.)

Inasmuch as present Georgia legislation in regard to the drilling and pumpage of wells covers only those wells operated in connection with a public or community water supply (ref. 5, p. 5), it seems desirable that a system of statewide controls over the operation of industrial well-water systems be established. By such controls, the dangers of industrial overpumpage and consequent damage by excessive drawdown can be minimized for the well-based municipal water systems common to this region.

Industries either inside or outside the corporate limits which obtain their water supplies from a municipal system may be wasteful of water in their operations, especially large-volume users who enjoy a declining block rate. This gives a lower price on water to these industries than to the smaller users and not necessarily because of lower production costs. As Brewer (ref. 3, p. 73) points out, "Perhaps a more equitable system would be an increasing block rate structure plus a demand charge similar to those now in effect."

REFERENCES

1. Allied Chemical Corporation, Pure Water-Clear Effluent, New York (undated).
2. Blau, David H., A Guide to Constructive Urban Fringe Development, Georgia Municipal Association, October 1969.
3. Brewer, Donald L., Factors Influencing the Demand for Water in Poultry Processing Plants, Master of Science Thesis, University of Georgia, Department of Agricultural Economics, June 1969.
4. Fleming, Rodney R., "Supply All the Water Your Customers Desire," The American City, May 1969, pp. 101-103, 168-171.
5. Georgia Department of Public Health, Rules and Regulations for Water Supply Quality Control, 1970.
6. Georgia Municipal Association, Ways and Means of Financing Municipal Services (discussion outline for GMA district meetings), 1964.
7. Mace, Ruth L., Industry and City Government, University of North Carolina, Institute of City Government, 1963.
8. McGregor, John R., "Water as a Factor in the Location of Industry in the Southeast," Southeastern Geographer, Vol. X, No. 1, 1970.
9. North, Ronald M. "The Demand and Price Structures for Water in a Humid Area" (abstract), Department of Agricultural Economics, University of Georgia, 1969.
10. Sener, Ismail, Water: As a Factor to Attract Industries, University of Nebraska, College of Agriculture, Home Economics Department, Report 45, March 1967.
11. Stewart, J. W., and M. G. Croft, "Groundwater Withdrawal and Decline of Artesian Pressures in the Coastal Counties of Georgia," Georgia Mineral Newsletter, Vol. XIII, No. 2, pp. 84-92, 1960.
12. Thomson, M. T., and others, "The Availability and Use of Water in Georgia," Georgia Department of Mines, Mining and Geology Bulletin 65, 1956.
13. Waldas, Howard, Financing of Small Municipal Water Systems in Georgia, Master of Science Thesis, University of Georgia, Department of Agricultural Economics, July 1969.
14. Warren, M. A., "Artesian Water in Southeastern Georgia," Georgia Geological Survey Bulletin 49, 1949.
15. Whitlatch, George I., Summary of the Industrial Water Resources of Georgia, Georgia Institute of Technology, Industrial Development Division, Special Report 44, 1964.

APPENDIX

Form 1
QUESTIONNAIRE
ON
MUNICIPAL WATER SERVICE TO INDUSTRY

Respondent's Name _____ City _____
Official Position _____ Phone No. _____ Area Code _____
P. O. Address _____

Service Policy

On the extension of water service to industry or industrial sites outside the city limits, the city government has:

- a. _____ an official policy established by ordinance or resolution of the city council
- b. _____ some other type of control, such as approval by city manager, mayor, and/or city council, etc.
- c. _____ no policy and/or consistent control

Outline briefly or send copy of current policy or explain situation with reference to items b or c checked above (use extra sheet, if necessary): _____

In extending water lines to industry or industrial sites outside the city limits:

- a. cost of the water line installation is paid for by _____ city _____ industry _____ shared
- b. if shared, percentage paid by city _____%;
by industry or site developer _____%;
- c. a limitation on distance beyond city limits is enforced
_____ yes _____ no

If "yes" to item c, explain briefly: _____

Operations

The city water plant in 1968 pumped a 12-months' total of _____ gallons.

Total cost of the water system operations, including debt service, in 1968 was \$ _____.

For industries or industrial sites outside the city limits:

- a. water rates are increased _____ yes _____ no
- b. a surcharge is applied to the water bill _____ yes _____ no
- c. volume demand is limited by a contractual arrangement with the industry or industrial site developer _____ yes _____ no

If "yes" to item c, please explain briefly: _____

Please furnish industrial water rate schedules for users both inside and outside city limits.

New Industries

Within the past five years (1963-68), new industries locating outside the city limits that are being served by the city water system are:

1. _____ 2. _____ 3. _____
4. _____ 5. _____ 6. _____

The above new industries have a total monthly or annual water consumption of approximately _____ gallons monthly or annually (underscore period cited).

These new industries have created a total of approximately _____ jobs.

Summary Opinions (Confidential)

In the location of new industries or the development of industrial sites, the city's present policy for extension of water service outside the city limits, or lack of policy, has:

_____ hindered _____ helped

Briefly note why you think so: _____

Do you know of any specific instance, or have reason to believe, that the city's present policy for extension of water service outside the city limits has created problems or situations contrary to the best interests of the city government or of the community as a whole?

_____ yes _____ no

If "yes," please briefly cite instances or reasons: _____

Return to: G. I. Whitlatch, Head, Special Projects Branch
Georgia Tech Industrial Development Division
1132 West Peachtree Street, N. W.
Atlanta, Georgia 30309

Form 2

FIELD INTERVIEW QUESTIONNAIRE ON WATER SERVICE - INDUSTRY

1. How important is water to the company?
Gallage used (day, month, or year)
2. How is plant waste handled?
Public sewer
Other
3. Why did the company locate outside (or inside) the city?
4. Would the company locate outside (or inside) the city if it had the location job to do all over again?
5. How do you evaluate the quality of services the city offers?
Water
Sewer
Fire
Police
Other
6. Do you think the savings resulting from not having to pay city taxes offsets those city services you don't get?
7. Inside City Industry
 - a. Do you consider city water service (and sewer, if provided) to be worth the price charged?
 - b. Do you consider other city services you receive to be worth the price charged?
 - c. As a tax-paying industrial citizen, do you favor the municipality giving a break to new industry outside the city limits? Why?

Form 3

FIELD INTERVIEW QUESTIONNAIRE ON WATER SERVICE - CITY OFFICIALS

1. Does the city operate its own water, sewer, natural gas and electric power systems?
2. What is city's water extension policy for service outside its corporate limits?
Is policy printed? If so, get a copy.
3. To what extent has the city extended water service to outside industry during the past five years?
4. What is the city's policy on paying for the water extension?
5. What is the approximate dollar amount spent to extend water service to industry during the past five years?
6. Have water (and sewer) extensions been made in response to lack of land inside corporate limits or to accommodate industry as a part of the local development program or policy?
7. Does the city furnish fire and police protection to industries outside its corporate limits?
Does it charge for such service?
Is such service authorized in the city's charter?
8. Do water rates (and rates for any other services) cover system depreciation costs?