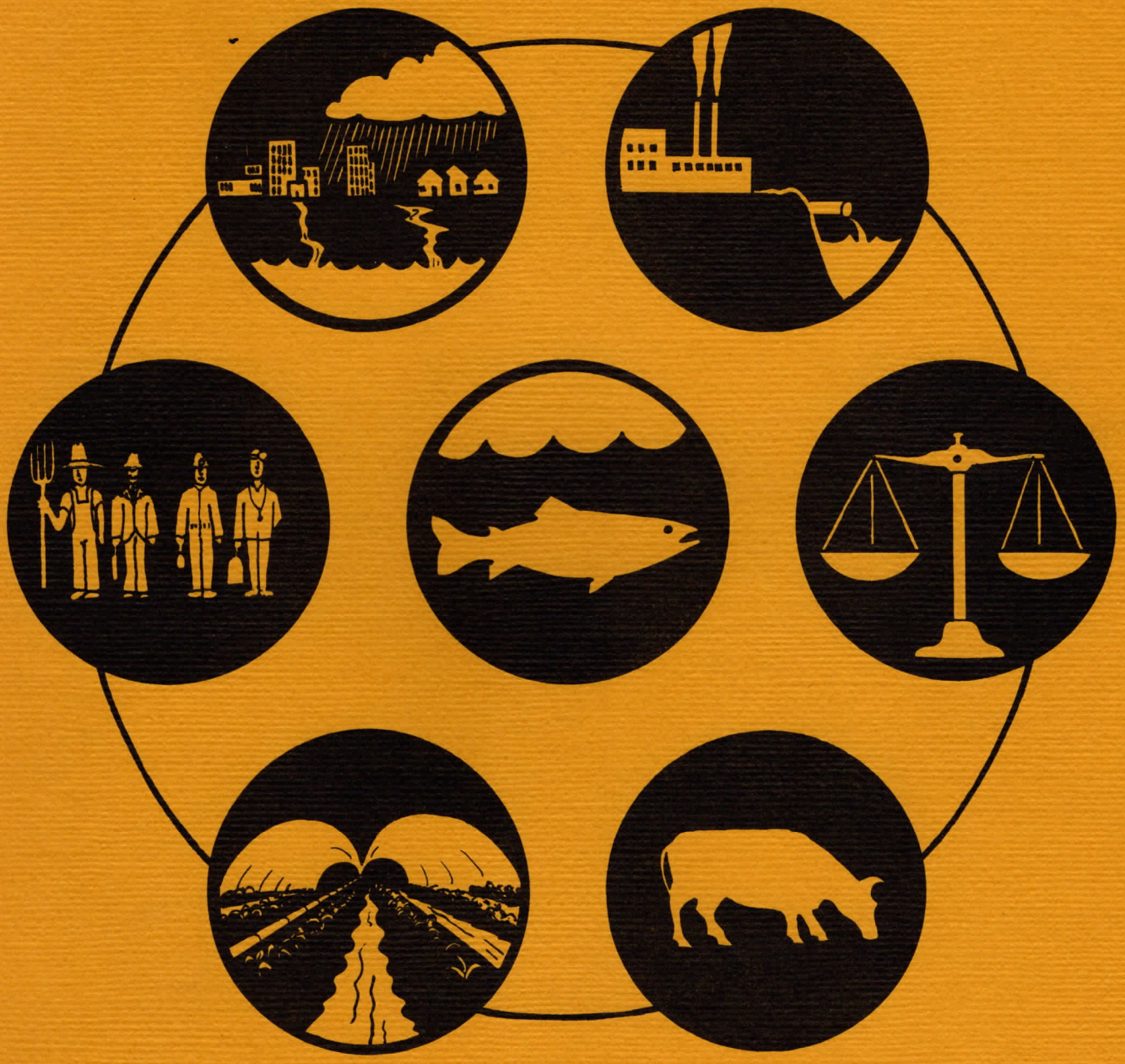
INTERIM REPORT — INSTITUTIONAL / FINANCIAL

# UTILITY MANAGEMENT HANDBOOK

## INSTITUTIONAL, FINANCIAL AND MANAGEMENT PROCEDURES



# Water Quality Management Plan

LARIMER-WELD REGIONAL COUNCIL OF GOVERNMENTS
LOVELAND, COLORADO

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PREPARED BY BRISCOE, MAPHIS, MURRAY & LAMONT, INC.
BOULDER, COLORADO APRIL 1977

# UTILITY MANAGEMENT HANDBOOK
# INSTITUTIONAL, FINANCIAL, AND MANAGEMENT PROCEDURES

Prepared For

LARIMER-WELD REGIONAL
COUNCIL OF GOVERNMENTS

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March 7, 1978

Dear Reader:

This handbook has been prepared in response to a need to insure that local elected officials make wise financial decisions for utility programs based on a full understanding of the risks involved rather than delegating wholly the responsibility to professional staff or consultants. Likewise, utility personnel and consultants responsible for utility recommendations can use this handbook to diminish the risk of being criticized by the user for being insensitive to local financial and political realities.

Rather than emphasize the traditional approach of back designing a financial program to meet an engineering "solution", the handbook promotes the development of financial management policies that largely influence the engineering solution. These management policies are considered prerequisites to committing to costly utility construction programs.

Additionally, a method is displayed herein, that facilitates a judgment as to the "degree of risk" involved in committing local dollars. The potential local financial commitment is expressed in terms of a simple per capita user fee. While not all utility programs are repaid through user fees, the user fee is a common denominator with which to make a political judgment as to how much of a household budget can realistically be allocated for a particular utility service. With individuals familiar with financial planning and readily available local information the degree of risk analysis can be developed in less than one man-week.

This handbook has been used successfully in Larimer and Weld Counties, Colorado. Perhaps its greatest value lies in its ability to stimulate a critical reexamination of the applicability of federal pollution control requirements in a given area and help local residents judge whether the investment required to meet federal standards is affordable, results in real benefits which offset the costs, and does not foster the subordination of limited local financial resources to one goal at the expense of others such as safe drinking water supplies, roads, schools, fire protection and other community needs.

Sincerely,

F. A. Eidsness, Jr.
Director, 208 Water Quality
Planning

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## 1.0 EXECUTIVE SUMMARY

Utility management is an activity requiring careful planning, coordination with other community activities and ongoing attention to day-to-day details. The size of a small community's financial investment in a wastewater system justifies making the effort to manage the system to best serve the community's overall goals. Efficiency and equity are two goals of obvious importance. Of equal importance is the way the wastewater system may be used in supporting the community's goals regarding land use and the pattern of future development.

Planning is important in utility management because of the close linkages between utility decisions and community development, and because most utility decisions represent long term commitments. Physical locations, financial policies and extension policies are not easily changed. Clear management policies are required to ensure plans are followed, and that citizens are treated equitably in light of the myriad of daily decisions to be made. Competent operational management is crucial for efficient plant and system operation. Wastewater collection and treatment is a technical, complex business we frequently know too little about and consequently do not integrate into the whole community development process.

Small communities should strive to take charge of their wastewater systems, and press to achieve the maximum benefit for their citizens from the utility investment. This can be done by adopting a program of planning, setting out management policies and encouraging competent operational management. Such a program is outlined in the following sections, along with suggestions regarding the approach and content of plans, policies and operational procedures.

## 2.0 CHARACTERISTICS OF SMALL COMMUNITY WASTEWATER SYSTEMS

A small community's investment in wastewater collection and treatment facilities is probably one of the largest financial commitments it will make. The cost for construction of plant and equipment alone often runs in the thousands of dollars on a per household basis. Moreover, wastewater facilities give rise to annual costs for operators, chemicals, equipment maintenance, and so on, that must be paid by the utility users. These costs may exceed a hundred dollars per year for each household in the community. Political issues also develop if the system is inadequate or fails to operate properly.

For these major costs to be acceptable to a community it is important that each citizen is treated equitably and that the citizens' needs are efficiently served. Often times, communities have difficulty meeting these objectives. One reason is that wastewater systems are not easily modified to adjust to new and sometimes unforeseen circumstances. Once facilities are built, they become fixtures; locations and designs are not readily changed. Pricing systems and user charges are not easily changed either. Furthermore, utility operation is a technical and complex business. For these reasons, sound utility planning must place a premium on both anticipating future requirements and in developing management policies which can assure continued utility effectiveness and equitable sharing of costs as growth occurs and conditions change.

Careful utility planning is important also because of the fact that the utility system and its operation are so closely linked with growth and development in the community. For instance, as new residential developments are built, new customers will be added to the existing system and additional volumes of wastewater will require treatment. To achieve the goals of efficiency and equity, it is important that new developments are not excessively expensive to serve, and that the costs of providing service extensions are identified and made the responsibility of the new developments. Advance planning of the utility system can help in assuring that new customers can obtain service efficiently, at prices approximating the added costs imposed on the system as a whole, and when they need the service.

Not only is the wastewater system impacted by community events; conversely, the system has its own effects on the development of the community. Wastewater treatment capacity may pave the way for new development and growth. According to the

design of the collection system, new growth may be encouraged to locate in particular areas rather than others. New growth may be repelled in the vicinity of the treatment plant. The treatment plant location, plant capacity, type of plant design, and layout and design of the collection system are all important factors in determining the community's costs of future operation, and in shaping the community's development pattern in the years ahead.

Although planning the wastewater utility to meet future community requirements is important, encouraging new development to meet the needs and constraints of the utility is equally important. The best utility planning possible will not assure continuing efficient, low cost service when there is no control over location of future land development and new demands for service. Pell mell expansion of plant capacity and collection lines can impose premature additional costs on both new developments and the system's existing customers. New land uses should be planned and encouraged where services can be provided efficiently, and so that the existing users are not penalized due to premature plant expansion or unrecoverable collection line extension costs.

Sound planning can get the wastewater utility off in the right direction. However, due to the utility's expected long life, a set of management policies are needed to assure continued efficient and effective operation. On an ongoing basis, the community will have to decide where it will provide new services, how the collection system will be extended, who should pay for extensions, how inflationary cost increases can be handled, and so on. Policies for dealing with these questions will be necessary to assure fair and uniform treatment of all customers and citizens, and to carry out the original plans for efficiently serving the public's needs for wastewater services.

## 3.0 PROGRAM FOR WASTEWATER UTILITY PLANNING AND OPERATION

### 3.1 INSTITUTIONAL ALTERNATIVES FOR PROVIDING WASTEWATER SERVICES

Wastewater systems and services can be provided by general purpose governments including towns and counties, quasi-government agencies (usually special purpose districts) or by private companies.

General purpose local governments have the advantage of being able to integrate management of the wastewater utility with their other governmental activities. Actions in the community regarding development decisions, land use control, budgeting for public services, community tax structures, administrative management, water resources management, and intergovernmental relations are all important in relation to wastewater utility operations. These activities are typically within the domain of the general purpose government. When the local government controls the wastewater utility, a much broader perspective is possible, and coordination of related activities and of the total range of public expenditures and taxes is greatly facilitated. Land use decisions can be made which reinforce utility decisions and vice versa.

The special purpose district is a usable alternative for a community that is limited by debt or low assessed valuation and needs to raise funds to develop or expand a system. The town council should be on the board of directors or otherwise control the district whenever it is included in the district boundaries. Special purpose districts have singular outlooks and powers and are not apt to consider the broad implications of extending new service, or of levying property taxes on taxpayers who are also facing school, county, city, and possibly other special district levies. Scattered rural area developments at urban densities are other areas frequently served by special districts. They can create increased budget and service problems for county governments. Such checkerboard developments may also have adverse effects on the region's ability to sustain an agricultural economy. Wastewater and water districts are key ingredients that make scattered development possible. They are not the cause but they are essential tools to support such uses. Such districts operate under hardships by not being able to plan and control the land use in their area. Their technical plans can be aborted by a decision by the county to change anticipated densities. System investments can thus be wasted and financial burdens placed on existing users. The need to control land use and utility decisions thus becomes obvious.

Private companies are seldom used in Colorado for providing wastewater services. The major problems in organizing wastewater services in this way are the lack of available suppliers, the need for community control over the utility's extension and service decisions, and the requirements for rate regulation. Some solutions to these problems are undoubtedly conceivable, yet it would seem unwise for small communities to try to pioneer this seldom used, and largely unexplored method of obtaining wastewater services.

## 3.2 UTILITY DESIGN AND LOCATION

Within the geographical area for which utility service is to be provided a collection network must be designed. Natural drainage is greatly preferred to avoid the need to purchase and operate costly pump systems. The treatment facilities should be located to serve the area and yet not become a problem by virtue of their proximity to residential concentrations. Collection systems should be phased in their development to avoid unproductive investments lying unused waiting for additional hookups. Location of trunk lines is a key to where new subdivisions or other urban uses can occur. By controlling where trunk lines are placed, and thus where urban uses are encouraged, a community has some control over where they will have to provide other services as well.

When facilities are constructed in the lower reaches of a drainage basin there is concern with flooding. Such occurrances can create major hardships and costs if not considered initially in the location of the treatment facilities.

These are areas of concern which the engineers typically handle for a community. However, attention to the related land use issues is a frequently overlooked consideration. It will be up to the community to ensure that the broader issues are raised and addressed.

## 3.3 WASTEWATER UTILITY MANAGEMENT POLICIES

The governing body of the wastewater utility should make the policy decisions that establish the framework within which the utility will be developed and function. The policies should enable the facility to be a selfsustaining entity operating within the framework of all overall community goals. To do this the utility agency must set direction for itself so others will know the ground rules they must meet to obtain service.

### 3.3.1 Wastewater Utility Service Master Plan

The wastewater utility should be planned to serve a particular geographical area. This area, the service area, should relate to the community's comprehensive land use plan and service areas designated for other utility services. The land use plan shows the types of land uses and densities which

must be served by the utilities. All utility plans should be coordinated recognizing a given area's multiple service requirements and natural topographical features as opposed to somewhat arbitrary and transitory city limits. Conversely, land use plans should be considered in light of the utility service area plans and the ability to serve. For example, if it is not possible to serve an area due to the location of the treatment plant, topography, or efficiency of existing service lines, amend the land use plan or alter the utility plans to accommodate the land use at some future date. The need to check one plan against the other is critical if the community is to optimize expenditures and achieve its planning goals. Too often we ignore the tie between land use planning and facility planning and create unnecessary community problems and costs. Land use plan elements that must be known and tested in light of the proposed utility service plan include:

- The service area in which planning decisions are being made and where local services will be required.
- The proposed location of various types of land uses and activities that will need wastewater services.
- The density or intensity of existing and proposed uses.
- Topographical barriers to service hazardous areas (flood plains, unstable soils, steep slopes, etc.) and critical areas (prime farmland, unique natural areas, recreation areas, etc.) where service should not or cannot be provided.
- The phasing of growth--that is, the logical sequence of development in extending services the community wishes to follow.

The utility service plan should be based on a minimum 20 year projection of growth. Logical extensions, pipe size, treatment facility capacity, and location should all be part of the utility service master plan. Elements of the system can occur in increments. These should be included as part of a five year capital improvement program.

### 3.3.2 Wastewater Utility Extension Policies

Utility extension policies guide system expansion and set the conditions under which new customers are added to the community's existing facilities.

#### 3.3.2.1 Extensions In and Out of the Service Area

The community should lead, and not merely follow development.

By deciding where it is most economical and efficient to provide services, and making known where the community prefers to see growth take place, it may accomplish these goals. In addition, in choosing a desired service area location, the community must consider not only planning and economic goals, but technical constraints that will eliminate potentially costly facilities. Once the community identifies the area it is willing and able to serve efficiently, it can achieve its goals by refusing to provide service elsewhere. It can go even further and provide incentives by actually building trunk lines into the areas where it has determined development desirable. This approach must obviously be tied to other community goals and programs in order to be successful.

3.3.2.2 Conditions for Service Extension

Utility extension policies should be written down and acknowledged by the community legislature. Individual contracts should be used to spell out the responsibilities of both the utility and the parties requesting new service. A standard form can usually explain the obligations of each party in accordance with the extension policy in order for the service to be provided. The following conditions are frequently included in such contracts and extension policies by Colorado cities and should be considered:

- All extensions of lines to serve new customers should be financed or paid for by the people requesting service.

- If extensions must pass by undeveloped properties a payback agreement should be provided so that an appropriate share of the developer's extension costs can be recovered as the intervening properties are developed. A time limit of 7 to 10 years should be placed on this reimbursement provision.

- The utility master plan (reference 3.3.1) specifies the desired sizes of trunk lines (frequently 8" or larger) planned for future installation in various locations within the service area. When constructed in phase with the community's program of capital improvements, these lines should be paid for by the utility. On the other hand, if a development requires utility extension out of phase with the capital improvement program, the developer should be required to install whatever size lines are specified in the utility plan, even if the lines are oversize for the development. At the time when the oversize line was originally planned for installation by the utility, the developer should be reimbursed for his <u>additional</u> cost for putting in the larger line.

- Special circumstances that may arise with expansion

of the collection system should be identified and a specific policy adopted regarding responsibilities and costs. To the extent, on-the-spot negotiations with the developer should be avoided.

- Engineering standards for the system design, including pipe materials, jointing and fittings, manholes, etc. should be written and all system expansions should follow these desired standards.

- Plant investment fees should be charged all new customers who tap into the system (reference 3.4.2.1).

3.3.2.3 Provision of Internal and Local Lines

Require all new developments to provide their own basic system. Internal or local lines required to serve a new subdivision, industrial park, or shopping area should be provided by the developer in accordance with the system's master plan. The developer may directly finance and built these lines and pass on costs to the future occupants; or, where occupancy is assured, the community may permit formation of a special improvement district to finance the improvements. In any event, the cost of these facilities should not be borne by the community at large.

3.3.3 Uniform Application of Policies

Competition among communities can destroy the effectiveness of a sound management program. Unless the program reflects regional concerns and is consistent in application, particularly between cities and the county, the program may not work. If the city has standards for service and a proposed development can circumvent those guidelines by locating in the county, by starting a special district, or by putting in a package plant, the program will be jeopordized. Intergovernmental cooperation is essential.

3.4 WASTEWATER UTILITY FINANCIAL POLICIES

In a rapid growth situation, many of the public facilities required to support new development can be created integral to that growth. The pay-as-you-go approach can free the general revenue and borrowing capacity of local government for other non-revenue producing community facilities.

In order to develop a pay-as-you-go program, plan the utility system and all aspects of its operation and capital costs. Where rapid growth is not anticipated but improvements are necessary it is still desirable to build the costs of the system directly into user rates. But recognize there will be little help from the buyin or plant investment fees from new hookups.

If you adopt a "he who benefits pays" philosophy, you will utilize reveues from other sources such as property tax or sales tax only to avoid defaults. All users will pay a proportionate share related to their use.

### 3.4.1 Estimation of Total Utility Costs on "Per Tap" Basis

In order to be self-supporting, the utility must generate sufficient revenue to pay annual operating and maintenance costs, to pay interest and retire outstanding debt, and to make investments required from time to time for plant modification and expansion. In one way or another, these costs must be absorbed by the utility's customers.

It is a relatively simple matter to compute the amount of cost that must be shouldered by each existing customer to support only the existing system. This can be done by adding the operating costs, the debt service on outstanding debt and capital improvements necessary for maintaining the system, and dividing by the existing number of taps or equivalent taps. If there were no growth anticipated, "per tap" costs would only change in the future as the outstanding debt is retired, and as operating costs are raised by inflation.

More often, however, growth is anticipated. Under these circumstances the utility's financial requirements are affected by the costs of system expansion, the utility's share of expansion costs, the utility's success in obtaining grants, plant investment fee income, and the growth in the number of taps to share in the system's operating, modernization costs and retirement of existing debt. Some way to evaluate alternative financial policies and rate structures under these circumstances is necessary. For example, when system expansion or modernization is being considered, there must be some method of determining how much cost might have to be borne by the existing users under various assumptions about the future population growth which the new facilities may serve.

Table 3.4.1-A and the notes that follow illustrate how this analysis might be done. Shown in the table are the total annual costs which would be the responsibility of each tap in order to support the wastewater system. All system costs are included and projected to a date five years into the future so the effects of population growth can be evaluated. Existing and projected additional debt and O & M costs are included. In this particular example, new debt is planned for plant expansion and modernization, so no cash capital improvement requirements are shown. The table allows these projected annual costs per tap to be considered while varying two major assumptions: the rate of population growth and the amount of borrowing required for modernization. Tap fees are deducted from the total financial requirements to arrive at the amount to be paid by the utility's customers.

TABLE 3.4.1-A

TYPICAL ANNUAL COST FOR EACH UNIT ON THE SYSTEM

Annual Growth Every Year Through 1996

| Growth Rate Relative to 1975 Population | New Population Each Year | New Taps | Funds Borrowed by the Town for Wastewater System Improvements | | | | |
|---|---|---|---|---|---|---|---|
| | | | 0 | $25,000 | $50,000 | $75,000 | $100,000 |
| 0% | 0 | 0 | $ 87 | 93 | 98 | 103 | 109 |
| 1 | 16 | 5 | 78 | 83 | 88 | 93 | 98 |
| 2 | 33 | 10 | 69 | 74 | 79 | 83 | 88 |
| 3 | 49 | 15 | 61 | 66 | 70 | 75 | 79 |
| 4 | 60 | 20 | 54 | 58 | 63 | 67 | 71 |
| 5 | 82 | 25 | 47 | 52 | 56 | 60 | 64 |
| 7 | 98 | 30 | 41 | 45 | 49 | 53 | 57 |
| 8 | 114 | 35 | 36 | 40 | 43 | 47 | 51 |
| 9 | 130 | 40 | 31 | 34 | 38 | 42 | 45 |
| 10 | 147 | 45 | 26 | 29 | 33 | 37 | 40 |
| 11 | 163 | 50 | 21 | 25 | 28 | 32 | 35 |
| 12 | 180 | 55 | 17 | 21 | 24 | 27 | 31 |
| 13 | 196 | 60 | 13 | 17 | 20 | 23 | 26 |
| 14 | 212 | 65 | 10 | 13 | 16 | 19 | 22 |

| | | | | | |
|---|---|---|---|---|---|
| ANNUAL COSTS: | | | | | |
| Operations and Maintenance (1981 | 21,692 | 21,692 | 21,692 | 21,692 | 21,692 |
| New System Operations and Maintenance | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 |
| Existing Debt (1981 Payments) | 15,018 | 15,018 | 15,018 | 15,018 | 15,018 |
| New Debt | 0 | 2,453 | 4,906 | 7,359 | 9,812 |
| TOTAL ANNUAL COSTS: | 40,210 | 42,663 | 45,116 | 47,569 | 50,022 |

Source: Murray; Briscoe, Maphis, Murray & Lamont, Inc. January 1977

## NOTES ON TABLE 3.4.1-A

All costs are calculated for 1981, but nevertheless are close enough estimates of any year through 1996.

The operation and maintenance (O & M) costs are inflated for price and wage increases to 1981.

There are 462 taps on the system as of 1976.

New debt is figured at being retired in 20 years and paying an interest rate of 7-1/2%. Actual terms will be closely related to local financial conditions and bond market conditions upon issue.

Tap or plant investment fees of $500 are used to retire as much new debt as possible. For instance, with the addition of 10 taps at $500 each, $5,000 in new debt could be retired. In some cases where the growth rate is high and borrowing low, tap fees are applied to the cost of old debt and/or O & M costs.

The yearly growth rate necessary to achieve the annual costs shown on the chart would have to occur every year. For example, if $50,000 were borrowed, 10 new taps would have to be added every year for the next five years (or a total of 50 new taps added to the system over the five-year period) for the annual cost to be $79 per unit by 1981. To maintain that annual charge, the growth would have to continue by that rate beyond 1981.

The source of revenue to pay the annual costs is a local decision. The tables simply indicate the amount needed.

The tables may be adjusted as new information becomes available by using the following basic formula:

$$\text{Annual Cost Per Unit} = \frac{\text{Annual O\&M} + \text{Annual Debt Service} - \text{Tap Fees}}{\text{Number of Units on System}}$$

Note that the tables show the remaining cost, over and above that paid by tap fees, to be shouldered by system users. It may be determined that the maximum or "worst case" figure shown in the top row of the table is not unreasonable in terms of user's ability to pay. This is the case if no growth occurs and only current residents are available to pay the full cost. If the figure is unreasonable, funds from other sources should be sought to cover the total cost. An alternative would be initially to scale down the amount of borrowing, if possible.

As an example, the table shows that if the utility must borrow $75,000 for improvements, then its total annual outlays by 1981 will be $47,569. This amount will cover all O & M and debt service costs. As shown in the notes to the table, at present there are 462 equivalent taps. Thus, if by 1981 no growth is occurring, the 462 taps would have to collectively pay $47,569 or an average of $103 each. On the other hand, suppose growth is running at a rate of 10 new taps annually. The notes to the table indicate a tap fee of $500. This $5,000 is collected in tap fees so the rest of the system must support the balance of $42,569. Because of the growth, by 1981 the system would include another 50 taps so that 512 taps would share the $42,569 or $83 per tap.

The value of the above analysis is in judging the risk to the existing citizens of undertaking expansion to serve growth when it is expected that the growth will pay its own way. The big question is, what if growth does not occur as scheduled? Then what is the burden on the existing utility customers? The table shows the maximum exposure for each tap as well as the more happy outcomes with the occurance of growth as planned.

With total cost estimates in hand, the next issue is how should the required funds be raised.

### 3.4.2 Sources of Capital Funds

Capital funds may be generated from within a system through charges and fees (PIF), through grants from other levels of government, and by borrowing.

#### 3.4.2.1 Plant Investment or Tap Fees (PIF's)

This is a "buy in" fee that is a one time charge for new hookups to the existing wastewater system. It is based on the concept of paying for a pro rate share of the treatment plant and trunk lines that the user needs. If new debt is incurred to expand or build a system, the PIF should reflect the amount needed to retire the debt. It must be tied to the master plan to ensure adequate capital is available to keep the system in phase with needs. PIF's should not be used for operating costs unless there is no debt and it is a surcharge to the new user. The PIF is sometimes called a Tap Fee. In reality a tap fee is what is charged for the actual cost of tapping an individual user into the public line. This cost should also be paid by the user.

PIF's should be devised by estimating the average cost in system plant and equipment (excluding extensions to be paid by a developer) necessary to serve a growing population over the next 10 to 20 years. Being sure the additional capacity is matched with the anticipated growth in taps, this cost

should be divided by the number of new taps. For instance, if $500,000 will be required to serve an anticipated 500 new taps, the PIF should be set at $1,000. This revenue should then be set aside in anticipation of periodic expansions to serve the new customers.

Sometimes tap fees cannot be set purely according to the financial requirements, but when they are not specific reasons should be identified and the consequences carefully examined.

3.4.2.2 Grants

In recent years, grants from other levels of government have been a major force in funding wastewater systems. Both the state and federal governments have various programs to fund the planning, design, and construction of sewer facilities. The proportion of funding per project varies with each program as do the availability of funds and requirements to qualify for them. A brief summary of the more common sources is in the Appendix. The Environmental Protection Agency for larger communities and the Farmers Home Administration and Colorado Department of Local Affairs for smaller communities (under 5,000 population) have been the dominant sources of funding. Rarely can a community obtain a 100% grant for a given source.

3.4.2.3 Borrowing

Borrowing is a common method for local governments to gain necessary funds to pay their portion of treatment facility costs. Smaller communities can sometimes accomplish private placements with individuals or banks. However, the more common approach is to go public via a bond issue. The federal government has a program (in addition to its grant program) which provides long term bonds (40 years) at low interest rates. Outside of this federal program a community depends on a number of variables, such as current bond market conditions, the size of the issue, the financial condition of the community, and its assessed valuation or tax base, to determine the rates and its ability to borrow. Twenty year bonds are common for utility improvements, theoretically the life of the facility.

Preferably, borrow by revenue bonds. Save general obligation bond, which are subject to state imposed limits, for non-revenue producing public improvements such as parks, fire protection, police, or office facilities. Borrowing terms can vary to permit raising the amount of necessary revenue on terms most favorable to the community. Usually, the shorter the issue the lower the cost. The stronger the financial condition of the borrower, the lower the interest rate.

Where there is some question as to a community's immediate ability to meet debt requirements and raise all the money needed, the terms may be adjusted. That is, the early payments may reflect interest alone or a minimum amount of principal, with heavier payments "ballooned" out five to ten years hence. The theory is that there will be more customers later to share the increased costs. As long as growth occurs as projected, this approach is valid. But approach it cautiously. If projected growth fails to materialize, the burden may be quite heavy on obligated users. Refer to table 3.4.1-A to judge the consequences of slower than expected growth.

### 3.4.3 Sources of Operating Funds

Knowing the maximum potential financial burden per user (as the table indicates) permits the community to assume a desired level of risk regarding its commitment to anticipated growth, and to realize that if growth does not occur on schedule, costs to individual users may have to be increased or supplemented. If the community's overall revenue system is strong enough to use as backup to keep rates down, it can risk greater borrowing and buy a more complete systen now. Because of state/federal grant or loan assistance, borrowing more now may be a wise decision, as opposed to paying for an added portion totally from local funds later.

Service charges or user rates are the most equitable source of operating and maintenance funds. The beneficiary should pay in proportion to the amount of benefit received. Peg rates to reflect the full cost of operation, maintenance, and depreciation, and perhaps debt service where borrowing to provide a plant for existing customers remains unpaid. It is common practice for communities to charge higher rates for service to customers outside the town limits. Additional operation and maintenance costs, as well as the lack of risk support for any bonds, are the reasons for the difference in rates.

Because of historical precedent, many communities and districts do not charge users in proportion to their use, but keep a low user rate by subsidizing costs with mill levies on property. This is particularly true in special districts where high user rates would discourage potential hookups. The argument against using property tax revenues is that it depletes an important but limited source of funding for general purpose, nonrevenue producing facilities.

A community can subsidize rates from its general fund monies. These might be composed, for example, of revenue sharing funds, sales taxes, fees, licenses, or cigarette taxes. These sources are not available to special districts. The same disadvantage as with using property taxes applies. Use these funds as a last resort.

### 3.4.4 Other Financial Concerns

#### 3.4.4.1 Inflation

Monies collected by means of PIF's set in relation to current costs will be inadequate if construction or extension of facilities is not expected for several years. Annual review of such costs is necessary to stay even close to parity.

#### 3.4.4.2 Exclusion of Low Income Housing

By assessing new development costs directly related to new growth, housing costs increase more than when the community at large bears a substantial portion of development costs. This can affect low income housing to the point of exclusion. Early recognition of the need for subsidizing low income units PIF's can resolve this problem while at the same time not give a bonus to new users who can afford to pay their share. Using PIF's keeps annual costs to users lower so they should not be eliminated just to lower initial housing costs. The annual rate to the user is equally important to avoid hardships on fixed income users.

## 3.5 WASTEWATER UTILITY OPERATION

Adequate management of wastewater utility operations is equally as important as planning and policy-making in achieving an effective small community system. Lack of staff and technical and administrative resources have caused many small systems to operate inefficiently, lose out on grant monies, run afoul with state and federal regulations, and neglect to collect important data for use in planning and policy-making. Aside from increasing demands of regulatory agencies, careful management is very likely to pay its own cost simply in system efficiencies.

### 3.5.1 Management of the Utility Operation

Long experience has taught that publically operated utilities are best run as enterprises independent from but coordinated with other general government activities. This provides an opportunity to run the utility "like a business" and discourages the use of the utility as a vehicle for raising general fund revenues to fund normally tax-supported programs. This latter use of the utility is not uncommon, but can create severe problems of credability in financing public programs, may be questionable legally, and can threaten the long run financial viability of the utility.

Clear management responsibility should be defined for the utility. An individual in the organization should have both authority for the utility operation and be held accountable. This person may have other responsibilities as well. The

utility should be organized as a separate accounting entity so that its revenues and costs are not entangled with those of non-utility activities.

The utility manager should be responsible for preparing budgets and authorizing expenditures; monitoring the adequacy of rate structures; supervising the plant operation; devising operation and maintenance programs; communicating with other wastewater professionals in the state, region and local area; assuring that community development activities take the utility's circumstances into account; recordkeeping; relating with other public agencies and activities (201 and 208 planning); providing the stimulus for utility planning and capital improvement programming; and securing technical and engineering advice as required.

### 3.5.2 Recordkeeping

Records should be kept, and a history of data accumulated, relating to user characteristics and plant influent and effluent characteristics. Records should be continuous and structured to meet the needs of billing, studying alternative rate systems, identifying possible sources of operational problems such as infiltration, plant overloading or below-standard discharge. Some data is required by federal and state law through discharge permit requirements or other regulations.

Data on the number of taps, types of taps, modifications to the collection system, daily or weekly plant inflow volume, effluent characteristics and status of the accounts of each customer are essential. Identifying correlations among the data will be extremely useful in achieving efficient operation. For instance, a correlation between rainfall and plant inflow can help assess infiltration problems.

### 3.5.3 Staffing

In addition to management skills, a certified operator is required. The manager may also be the operator or an operator may be shared with another small community or district. In some cases, the operator skills may be obtained from a private company on a contract basis.

Technical, engineering skills are frequently required. It is important that technical advice be based on a thorough understanding of the community's needs, capabilities, and desires beyond that of simply collecting and treating wastewater. The utility system has effects far too broad to rely on a narrow, short-run technical perspective. For this reason, a continuous and close relationship with the source of engineering or technical advice is highly desirable. The utility manager and council should insist that community development and financial considerations are a meaningful part of any technical analysis.

# APPENDIX A
# SOURCES OF POTENTIAL FINANCIAL AID

| | FHA COMMUNITY FACILITY LOANS/GRANTS - FEDERAL | CONSTRUCTION GRANTS FOR SEWERAGE WORKS (STATE OF COLORADO) STATE | FOUR CORNERS REGIONAL COMMISSION, SUPPLEMENTAL GRANT-REGIONAL | COMMUNITY DEVELOPMENT ACT (HUD)-DISCRETIONARY FUNDS FEDERAL | EPA CONSTRUCTION GRANTS - FEDERAL | PREDESIGN ENGINEERING GRANTS (STATE OF COLORADO) STATE | ECONOMIC DEVELOPMENT-ADMINISTRATIO (EDA) - FEDERAL |
|---|---|---|---|---|---|---|---|
| **PROGRAM DESCRIPTION** | | | | | | | |
| FUND USAGE | TO CONSTRUCT, ENLARGE, EXTEND, OR IMPROVE SEWERAGE SYSTEMS. | TO CONSTRUCT, EXPAND, OR MODERNIZE SEWAGE TREATMENT FACILITIES | PROGRAM IS GEARED FOR ECONOMIC DEVELOPMENT TYPE PROJECTS. HOWEVER ECONOMIC DEVELOPMENT HAS A VERY BROAD DEFINITION. | TO CONSTRUCT SEWAGE COLLECTION LINES NOT TREATMENT FACILITIES. | TO PLAN, DESIGN, AND CONSTRUCT SEWERAGE COLLECTION AND TREATMENT FACILITIES. | PREDESIGN ENGINEERING FOR THE EXPANSION, CONSTRUCTION, OR MODERNIZATION OF SEWAGE TREATMENT SYSTEMS INCLUDING COLLECTION OF FACILITIES | THE PROGRAM IS CURRENTLY BEING RECONSIDERED BY THE CONGRESS. IT IS ANTICIPATED THAT THE QUALIFICATION REQUIREMENTS WILL NOT CHANGE. THE BASIC REQUIREMENT BEING HIGH UNEMPLOYMENT RATE AND HIGH NUMBER OF UNEMPLOYED. |
| FORM OF ASSISTANCE | MAY BE EITHER LOAN OR GRANT. GRANT OR LOAN 50% OF PROJECT, LOAN 40 YEARS AT 5%. | ASSISTANCE IS GIVEN IN THE FORM OF A GRANT. THE AMOUNT VARIES UPON THE FINANCIAL NEED OF THE COMMUNITY | ASSISTANCE IS IN THE FORM OF A GRANT. MAXIMUM SUPPLEMENTAL GRANT IS 50% OF OTHER FEDERAL FUNDING OR $150,000. | GRANT FROM DISCRETIONARY FUNDS FOR ALL PORTION OF PROJECT. | ASSISTANCE IS IN THE FORM OF A 75% GRANT. | NORMAL STATE GRANT OF 80% APPLICANT MATCHING FUNDS OF 20%. THE APPLICANTS SHARE IS VARIABLE DEPENDING UPON FINANCIAL NEED. | |
| AMOUNT OF ASSISTANCE | LOAN/GRANT RANGE: $20,000-$200,000. | AVG. GRANT: $50,000<br>MAX. GRANT: $500,000 | AVG. GRANT: $75,000 | AVG. GRANT: $100,000<br>GRANT RANGE: $50,000-$300,000 | AVG. GRANT: N/A<br>GRANT RANGE: | AVG. GRANT: $3,000 | |
| CURRENT FISCAL YEAR APPROPRIATION | $4.8 MIL LOANS, .9 MIL GRANTS | $2.3 MIL | $2.5 MIL | $2.5 MIL FISCAL YEAR 1977 (COLORADO NONMETROPOLITAN) | | $200,000 | |
| ANTICIPATED APPROPRIATION NEXT FISCAL YEAR | ABOUT THE SAME AS PRIOR YEAR. | $2.9 MIL | $1.7 MIL | MINOR INCREASE FOR FY 1978 | | $200,000 | |
| **ELIGIBILITY REQUIREMENTS** | | | | | | | |
| ELIGIBLE ENTITIES | MUNICIPALITIES AND DISTRICTS | ANY MUNICIPALITY OR SPECIAL DISTRICT | ANYONE WHO CAN GET FEDERAL BASIC FUNDING | A FORM OF GENERAL PURPOSE GOVERNMENT, E.G. INCORPORATED MUNICIPALITIES, COUNTIES, THE STATE OR INDIAN TRIBES. | SEE ATTACHED NOTICE OF FINAL ADOPTION OF FEDERAL CONSTRUCTION GRANT PRIORITY SYSTEM, DATED AUG. 20, 1975. | ANY MUNICIPALITY OR SPECIAL DISTRICT. | |
| ELIGIBILITY REQUIREMENTS | MUST NOT HAVE THE CAPABILITY TO FINANCE THE PROJECT THROUGH AVAILABLE COMMUNITY RESOURCES. HAVE POP. LESS THAN 10,000 AS OF LAST CENSUS | APPLICANT'S POPULATION MUST BE 5,000 OR LESS, AS OF THE LATEST CENSUS. | MUST HAVE RECEIVED ANOTHER SOURCE OF FEDERAL AID. | N/A | N/A | APPLICANT'S POPULATION MSUT BE 5,000 OR LESS, AS OF THE LATEST CENSUS. | |
| DISCRIMINATING FACTORS | FINANCIAL NEED. THE ENTITY MUST BE AT OR NEAR THEIR LIMIT ON BONDING INDEBTEDNESS. | FINANCIAL NEED, BONDED INDEBTEDNESS, ASSESSED VALUATION, MEDIAN INCOME, ETC. | THE PROJECT MUST PROMOTE ECONOMIC DEVELOPMENT. | EXTENT TO WHICH: COMMUNITY HAS POVERTY, SUBSTANDARD HOUSING, BENEFITS LOW-MODERATE INCOME HOUSING. NEEDED FOR HOUSING STOCK, ALLEVIATING HEALTH, SAFETY, & WELFARE PROBLEMS AND GRANTS FROM OTHER AGENCIES. | N/A | FINANCIAL NEED, SERIOUSNESS OF POLLUTION PROBLEM. | |
| **APPLICATION MECHANICS** | | | | | | | |
| APPLICATION PROCESS | BEGIN WITH COUNTY FHA REPRESENTATIVE. | A. SUBMIT GRANT APPLICATION TO DIRECTOR OF LOCAL GOVERNMENTS AND APPLY FOR SITE APPROVAL FROM THE COLORADO WATER POLLUTION CONTROL COMMISSION.<br><br>B. DIVISION OF LOCAL GOVT. THEN ISSUE A CERTIFICATE OF FINANCIAL NEED STATING AMOUNT OF GRANT AND THAT THE APPLICANT MUST OBTAIN SITE APPROVAL.<br><br>C. SUBMIT SITE APPROVAL, FINAL PLANS AND SPECIFICATIONS TO THE DIVISION OF LOCAL GOVERNMENTS.<br><br>D. SUBMIT TWO SETS OF FINAL PLANS AND SPECIFICATIONS TO COLORADO DEPARTMENT OF HEALTH. | DETERMINE A SOURCE OF FEDERAL FUNDING OR POSSIBILITY THEREOF, ARRANGE A PRE-APPLICATION CONFERENCE WITH THE FOUR CORNERS REGIONAL COMMISSION REPRESENTATIVE. ARRANGE FOR AN A-95 REVIEW OF PROJECT. | APPLICATION PROCESS WAS PUBLISHED IN THE FEDERAL REGISTER ON OCT. 13, 1976. COMPETITION IS VERY STIFF FOR THESE FUNDS. | THE STATE HEALTH DEPARTMENT WILL CONTACT THE MUNICIPALITY WHEN FUNDING BECOMES AVAILABLE. | A. OBTAIN LETTER FROM LOCAL HEALTH DEPARTMENT OFFICIAL CERTIFYING THAT SYSTEM IS CURRENTLY IN VIOLATION OF STATE STANDARDS.<br><br>B. OBTAIN ENGINEERS PROPOSAL FOR WORK.<br><br>C. OBTAIN APPLICATION FORM LG-PS275.<br><br>SUBMIT ALL OF THE ABOVE TO THE DIVISION OF LOCAL GOVERNMENTS. | |
| APPLICATION DEADLINES | FIRST COME, FIRST SERVED UNTIL APPROPRIATION RUNS OUT. | FUNDING IS ON A FIRST COME, FIRST SERVE BASIS. | NO DEADLINES, FUNDING IS ON A FIRST COME, FIRST SERVE BASIS. | TO BE DETERMINED | N/A | FUNDING IS ON A FIRST COME, FIRST SERVE BASIS. | |
| TIME REQUIRED TO EVALUATE APPLICATION | 3 MONTHS | 1-3 MONTHS. THIS INCLUDES TIME REQUIRED FOR HEALTH DEPARTMENT REVIEW OF PLANS AND SPECIFICATIONS. | VERY FAST, AS FUNDING IS TIED TO ALREADY APPROVED FEDERAL FUNDING. | TO BE DETERMINED<br>5-6 MONTHS, EXCEPT FOR EMERGENCY SITUATIONS | N/A | 2 MONTHS | |
| **MISCELLANEOUS** | | IF FUNDING IS NOT RECEIVED UPON INITIAL APPLICATION, IT IS REVIEWED MONTHLY UNTIL IS IS FUNDED OR THE APPROPRIATION IS EXHAUSTED. THESE FUNDS MAY BE USED IN CONJUNCTION WITH OTHER LOANS OR GRANTS. THE COMMUNITY MUST BE PREPARED TO USE 1.5% OF ITS MEDIAN FAMILY INCOME PER CUSTOMER PER ANNUM TO OPERATE ITS EXISTING SYSTEM AND/OR PAY FOR ITS SHARE OF THE NEW PROJECT. | | | CURRENTLY THERE IS A LARGE EMPHASIS ON STEP 1 AND 2 GRANTS. HOWEVER, AS COMMUNITIES BECOME READY FOR STEP 3 GRANTS, THE AMOUNTS AVAILABLE FOR STEP 1 AND 2 GRANTS WILL BE GREATLY DIMINISHED. | THESE FUNDS MAY BE USED IN COMBINATION WITH OTHER LOANS/ GRANTS. | |
| **CONTACTS** | JOHN MEIKLE, FHA, 337-4717 | BILL PEED, STATE OF COLORADO, DIVISION OF LOCAL GOVERNMENTS 892-2156<br>JEB LOVE, STATE HEALTH DEPT. 320-6111 | IVO ROOSPOLD, DEPT. OF LOCAL AFFAIRS, RURAL DEVELOPMENT 892-2631 | ARMAND SEDGELEY, HUD-DENVER 837-4666<br><br>BRISCOE, MAPHIS, MURRAY & LAMONT, INC. MARCH 3, 1976 | RON SCHUYLER, STATE DEPT. OF HEALTH, 388-6111<br>JERRY BURKE, SAM BERMAN FEDERAL EPA, 837-3961 | BILL PEED, STATE OF COLORADO DIVISION OF LOCAL GOVERNMENTS 892-2156 | PAUL RENNE, ALL PROGRAMS, JOHN ZENDER LOCAL PUBLIC WORKS ACT, 337-4714 |

### 3.5.4 Maintenance Programs

Once public facilities are built, they are often put aside as community concerns. They are allowed to run down and deteriorate until they can be replaced. Obtaining and sustaining an annual budget for maintenance is notoriously difficult. The best approach is to formalize a maintenance and rehabilitation program and build the cost into the user fee structure. Then commit to the overall program. For example, if it is known the collection system has 400 bad joints and that replacement is cost effective, consider a program whereby 40 are replaced each year. Once initial funding is accepted as including maintenance, the activity will stand much more chance of obtaining funding each year without a complete rejustification.