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United States
Environmental Protection
Agency

Office of Water
(WH-550)

September 1989
EPA 570/9-89-014

EPA

Self-Assessment for Small Publicly Owned Water Systems



Dear Water System Manager:

As an official of a small publicly owned water system, you are responsible for providing a safe water supply to local residents. New drinking water regulations will put an increased burden on systems such as yours. This self-assessment package is designed to help you determine your financial and management needs. Using the enclosed materials now and taking appropriate action will help you to avoid fines and unnecessary costs in the future.

In 1986 Congress amended the Safe Drinking Water Act to require water systems to control many drinking water contaminants that were not previously regulated. Depending on your system's problems and characteristics, you may have to comply with some or all of these new regulations in the near future:

- filtration of water drawn from surface sources,
- treatment to remove heavy metals and organic chemicals,
- extensive monitoring for chemical and microbiological contaminants, and
- corrosion controls to reduce concentrations of lead and other heavy metals.

Although these regulations have not yet been issued, it is important for small systems such as yours to examine their finances and management practices now. This is especially true if you are having trouble complying with drinking water regulations that are already in effect. EPA has found that **only sound systems can provide safe water.**

This package will help you identify financial and managerial problems that you may now have. It also suggests steps you can take to improve your situation. To get the most benefit, you and anyone else who helps manage your system should give this self-assessment their direct attention. Participants should include people with expertise in operations, construction, finance, and government relations.

The package is divided into two parts. A short pamphlet contains questions and worksheets that will let you check whether you need help with planning, financing or operations. A separate booklet, the "Resource Guide for Small Drinking Water Systems," describes organizations and programs that provide assistance to systems such as yours.

This package is for your use only; you don't have to show it to anyone outside your system. Even if you think you understand your operation, you should answer the questions and fill out the worksheets. It is a good idea to go through the materials with all of the people who help manage the system, such as your operator or bookkeeper.

You are likely to learn things that will help you put your system on a better financial and managerial footing. You may be surprised at the results.

Acknowledgements

This manual was prepared for the U.S. Environmental Protection Agency, Office of Drinking Water, by The Cadmus Group, Inc. under Contract No. 68-03-3348. The EPA Work Assignment Manager was Brian Rourke; he was assisted by Dr. David W. Schnare and Jane Ephremides. The Cadmus Project Director was Gene E. Fax. Contributing authors were Vidya Ganesan, Matthew Pierce, and Laura Paradise. Gini Egan-McKenna directed the field test, and Kenneth Mayo, Robert John, and Cheryl Secor typeset and produced the manuals.

The authors wish to thank the many people who assisted them with information and advice, and particularly those who participated in the field test. They are too numerous to name individually, but they constitute a cross-section of the nation's drinking-water community. The organizations with which they are associated include many small drinking water systems, the National Rural Water Association, the American Water Works Association, the Farmers Home Administration, several Rural Community Assistance Programs, the National Regulatory Research Institute, EPA Regional Offices, and State regulatory agencies. In offering their advice they spoke, of course, as individuals and not as official representatives of their organizations. Their help is gratefully acknowledged.

Self-Assessment for Small Publicly Owned Water Systems

Can You Answer These Questions?

- Does your water system comply with federal and state safe drinking water regulations?
- Do the rates you charge for water cover the cost of water system operations and improvements?
- Do you know where and how to get help financing the costs of water system improvements and water quality monitoring?
- Do you know where and how to improve your water system's operations and management?

If you answered "No" to one or more of these questions, you probably need help. This pamphlet can provide it. It is divided into four sections:

- A. **Planning for Safe Water (page 3)**
- B. **Pricing Your Water (page 5)**
- C. **Getting Financial Help (page 21)**
- D. **Improving Your Operations and Management (page 25)**

Some sections contain worksheets to help you gauge your system's financial condition. These worksheets give only a general idea of how your system is doing. They are not a substitute for a careful review of your system's condition by an accountant or other qualified professional.

NOTES

A. PLANNING FOR SAFE WATER

1. *Do you know where to get free information about public drinking water regulations?*

Information on public drinking water regulations is available from Regional EPA offices and state environmental or public health agencies. The attached Resource Guide contains the names and phone numbers of organizations to contact for up-to-date regulatory information.

2. *Does your water meet current federal and state drinking water standards?*

If you don't know whether your water meets current standards, ask your state's regulatory officials. They will tell you how to find out. They will also tell you what you need to do to meet the regulations.

If your water already complies with current standards, you need to plan for meeting new requirements of the 1986 Safe Drinking Water Act (SDWA) amendments. Under the new requirements, you may see an increase in your operating costs. Worksheet #1 (page 11) and Worksheet #2 (page 15) will tell you if you will have to raise your water charges or get financial help to meet operating expenses. Worksheet #3 (page 19) will help you prepare a cash flow budget.

If your water does not meet current drinking water standards, call or write your state regulatory office and find out what you must do to comply. (Also, see Question 3 below.) They will help you estimate the costs of needed improvements. Then use Worksheets #1, #2, and #3 to find out whether you need to raise water charges or get financial help.

3. *Do you know how to improve your water's quality to meet current standards?*

Water treatment is a complicated subject. New equipment is not always the answer; hooking up to a new water source or changing your operating practices may be cheaper or more effective. It may take a trained engineer to tell what treatments will work best or cost least.

Many state drinking water programs employ technicians who can advise small systems like yours on how to improve their water quality. Many of these programs are listed in the accompanying Resource Guide. Often, state personnel will conduct a "sanitary survey" at your request, to spot system problems and suggest solutions. They can also advise you on how to comply with state design and operating standards for water systems.

If your system needs a lot of work, you may have to hire a consulting engineer. Before you contract with an engineering firm, you may want to check with similar systems that have contracted with engineers for similar work. It's a good idea to check the firm's references and make sure it has experience working with small water systems. Also make sure that the firm will consider all possible alternatives, including new water sources and better operating practices, not just new treatment equipment.

You need to make sure that the engineer considers all of the costs involved. For example, treatment equipment will need to be maintained by a qualified operator. Finding a new water supply--such as a new well--requires exploration and testing. Buying water from other systems may require you to build an interconnection line.

The engineer should give you a detailed report listing all improvements your system needs to bring it up to current standards. The report should include an estimate of each item's cost and on-going operational and maintenance costs.

4. *Do you keep records of water quality test results?*

By law, results of bacteriological monitoring tests must be saved for five years; monitoring results for other contaminants regulated under the Safe Drinking Water Act must be saved for 10 years. Keeping a notebook of test results will help you determine if water quality has changed over time. Good records will also let you know whether your treatment practices are working and may be useful if you apply for a variance from the regulations. A public health consultant can help you interpret the test results.

5. *Do you receive information or support on water system management from your state environmental or public health agencies, your local section of the American Water Works Association (AWWA), state rural water association, or similar group?*

These agencies and associations can provide information on how other small community water systems comply with drinking water regulations. Many associations work with state environmental agencies on problems of small water systems.

For Further Information See:

Water Utility Management Practices, American Water Works Association, Manual M5, 1980.

Design and Construction of Small Water Systems - A Guide for Managers, American Water Works Association, 1984.

See also your state's minimum standards for design, construction, and operation of public water systems.

B. PRICING YOUR WATER

1. *Do you know what your water system's operating expenses are?*

Your water system should be financially self-sufficient. Some municipalities and water-and-sewer districts subsidize their systems through transfers from other parts of the city or town budget. This practice can lead to under-recovery of costs. If you do not recover all costs of running your system, long-term deterioration of the system can result. On the other hand, the system may be losing needed revenues to other municipal or district accounts.

Some public authorities don't know whether their systems are making or losing money because they do not keep separate accounts for their water systems. The only way you can tell whether your system is making or losing money is by keeping a separate and complete set of books for the system. The books must account for all of your system's expenses and revenues. This practice is called Enterprise Fund Accounting, and is recommended by many experts in municipal finance.

The first step in understanding your system's financial condition is to create an Income Statement, which shows the difference between revenues and expenses. When this difference is negative, it represents how much you need to make up in rate increases. If you have not calculated an Income Statement for your system before, use Worksheet #1. It may show that you are losing money right now and don't know it.

2. *Do you know whether the number of customers you serve is increasing, decreasing, or staying the same?*

If your customer base or water use is increasing, your Income Statement should include the amount of additional revenue to be generated by the expanded service, as well as the additional costs. If the number of customers or their water use is decreasing, estimate the lost revenue and use the Income Statement to determine whether continued operations are affordable. It may be a good idea, in this case, to look into a joint management arrangement with a larger, more stable system.

3. *Are some of your customers not paying their bills?*

You should not increase rates to make up for customers who regularly do not pay their water bills. If you have customers who are not paying their bills, figure out how much money each of them owes. Consider setting up a payment schedule for these

members or sending them a shut-off notice. Before you shut off service, however, check with your state's Public Utility Commission or Public Service Commission about conditions and procedures you need to follow.

4. *Do you use meters to monitor each customer's water use?*

Water meters will let you know how much each customer uses. Once you have that information, you can set up a rate schedule based on actual water use. Rates based on use may help you increase the amount of money you collect in water charges. You may also find that meters save you money because they can help you determine if there are leaks in the system.

5. *Have your customers been able to pay any recent increases in water charges?*

If you are concerned that customers will not be able to afford the necessary rate increases, consider raising the rates gradually--say, every two years--to give them time to include the raises in their budgets.

Ask similar small publicly-owned systems in your area how much they charge for water. Your state's drinking water office or Public Utility Commission may be able to refer you to systems that have already faced this issue. When you answer customers' questions about the rate change, it will help if you know whether your rates are similar to others in the area.

For Further Information See:

Institutional Alternatives for Small Water Systems, Prepared by Robert G. McCall for American Water Works Association Research Foundation, 1986.

Managing Water Rates and Finances, American Water Works Association, 1979.

Water Rate: Criteria, Types, Pros, Cons, National Rural Water Association, 1987 (to be revised in 1989).

IS YOUR WATER SYSTEM MAKING OR LOSING MONEY? FIND OUT FOR YOURSELF USING WORKSHEET #1

Instructions for Using Worksheet #1:

Water charges are the main source of revenue for operating and maintaining your system. You should collect enough in water charges to meet your operating expenses. If you can't meet your expenses, you may need to raise rates or look at ways to reduce operating expenses that won't harm water quality.

Worksheet #1 is an Income Statement. It shows income and expenses related to running the system. Use it if your water system does not produce its own annual Income Statement already. If you expect no major changes in your customer base, use information from the past year's financial records to fill out the form. If you expect significant increases or decreases in your service, estimate the changes you expect in income and expenses and use those figures. This Worksheet gives only a rough picture of your system's financial condition; see an accountant for more accurate information.

You should copy this Worksheet (and the others, also) from the manual and work on the copies, not the originals.

I. Operating Revenue:

Water Sales include all money you received for supplying water service, whether you charged at a flat rate or for water actually used.

Fees and Services include all other fees you charge your customers.

Operating Grants include any funds received from public or private agencies to support current operations. Do not include money received for improving or expanding plant and equipment.

II. Operating and Maintenance Expenses:

These items are self-explanatory, except for payments to a reserve fund:

Payments to reserve fund are made in order to build up a cash reserve for dealing with extraordinary events. Examples of such events might include repairing serious damage or meeting unforeseen regulatory requirements. A cash account separate from your normal checking account should be set up to accumulate these funds.

III. General and Administrative Expenses:

Most of the items are self-explanatory, but depreciation needs some explanation.

Depreciation refers to the loss in value of property, plant, and equipment over time. The depreciation used in this Income Statement is what accountants call "book" depreciation. It is often different from the depreciation used for calculating your income tax, so don't use your old tax returns as a guide.

If you have *never* included depreciation on your books before, figure your depreciation expense by taking the following steps:

(1) For each building and piece of equipment the system uses:

- Find out (from your records) how much it originally cost, including installation;
- Estimate how many years of useful life it has left; and
- Divide the original cost by the years of useful life left to get the depreciation expense for each item.

Do not include the value of any land in this calculation.

Example: Your system has three items: a pump with attached piping, a pumphouse, and a distribution network. The pump cost \$4,000 installed and has 10 years of life left. Its annual depreciation expense is \$400. The pumphouse cost \$12,000 to build and has 20 years left. Its annual depreciation expense is \$600. The distribution system cost \$15,000 to install, and has 30 years left. Its depreciation expense is \$500.

(2) Add the annual depreciation expenses of all the items to get the total for the year.

Example: For the items in the system described above,

| | |
|----------------------|------------|
| Pump and piping: | \$400 |
| Pumphouse: | 600 |
| Distribution system: | <u>500</u> |

TOTAL depreciation expense: \$1500

If you *have* included book depreciation in the past, follow the same steps but with the following change. For each building and piece of equipment, subtract accumulated depreciation expenses previously claimed from the original installed cost before you divide by the years of life remaining.

IV. Total Operating Expenses:

Add Operating and Maintenance Expenses (total from Section II) and General and Administrative Expenses (total from Section III).

V. Income from Operations:

Subtract Total Operating Expenses (total from Section IV) from Total Operating Revenue (total from Section I).

VI. Other Revenues and Expenses:

Interest Income includes, for example, interest on any deposits that you make in bank accounts.

Interest Expense refers to interest payments on loans or merchant credit accounts. Do not include payments of principal on loans; these should be entered on Worksheet #3.

Miscellaneous Expense includes any expense item not already accounted for. (Again, do not include payment of principal on loans.)

Subtract the expense items from the Interest Income. Depending on whether income is greater than expenses, you may get a net gain or a net loss.

VII. Net Income:

If Total Other Revenues and Expenses (total from Section VI) shows a net gain, add it to Income from Operations (Section V). If it is a net loss, subtract it from Income from Operations. The result is your Surplus.

If revenues are less than expenses, your Surplus is negative and you are losing money on your water system. You should consider increasing your water charges to meet your operating expenses. If your Surplus is positive, the water system is operating at a profit.

To keep it as simple as possible, the Worksheet shows Net Income before income taxes. This does not affect whether your profits are positive or negative.

VIIa. Adjustments to Surplus

The Surplus shown above does not include any expenditures for meeting drinking water standards. If you already meet current standards, this cost will be zero. If you do not meet current standards, you should have a state technical assistance person or a consulting engineer estimate the annual cost of these improvements and use that number here (see Question 3 on page 3). Subtract this amount from Surplus (Item VII) to obtain Adjusted Surplus.

You should consider raising your rates to cover any needed compliance measures as well as current operating expenses.

As new standards are proposed in the future, you should have your engineer estimate their annual costs to you. You can then insert these annual costs in this line to determine their effects on your net income.

NOTES

Worksheet #1

**Small Publicly-Owned Water System
Income Statement**

For the year ending _____, 19____

I. Operating Revenue

Water Sales _____
Fees and Services _____

Total Operating Revenue _____

II. Operating and Maintenance (O&M) Expenses

Salaries, Wages,
and Benefits (Operator) _____
Power and Other Utilities _____
Chemicals and Supplies _____
Transportation _____
Repairs/Parts _____
Payments to Reserve Fund _____

Total O&M Expenses _____

III. General and Administrative (G&A) Expenses

Administrative Salaries
and Benefits _____
Office Supplies and Postage _____
Insurance _____
Legal and Accounting _____
Property Taxes (or payments
in lieu thereof) _____
Depreciation _____

Total G&A Expenses _____

IV. Total Operating Expenses (Total O&M plus Total G&A) _____

V. Income from Operations (Op. Revenue minus Op. Expense) _____

VI. Other Revenues and Expenses

Interest Income _____
Interest Expense _____
Miscellaneous Expense _____
Total Other Revenues and Expenses _____

VII. Surplus _____

VIIa. Adjustments to Net Income _____

VIIb. Adjusted Surplus _____

NOTES

IS YOUR WATER SYSTEM FINANCIALLY VIABLE? FIND OUT USING WORKSHEET #2

Instructions for Using Worksheet #2:

Worksheet #2 is a Balance Sheet. A Balance Sheet shows the financial standing of your water system. Use it if your system does not produce its own annual Balance Sheet already. It is used to answer two questions:

1. **Does your system owe more than it owns?** Water systems that have more liabilities than assets often go bankrupt.
2. **Can you afford to replace your plant and equipment when they wear out?**

Banks and government funding agencies will want to know the answers to both of these questions when you ask them for loans.

The Balance Sheet is divided into three categories: Assets, Liabilities, and Fund Balance. Using information from your financial records, fill in your Assets (what you own or what you are owed) and your Liabilities (what you owe). The difference is the Net Worth of the system. Balance Sheets are reviewed by loan officers when they make lending decisions and by regulatory agencies when they decide on rate increases.

Some of the items on the Balance Sheet are self-explanatory. Others are explained briefly below.

Assets:

Current Assets are those that are likely to turn into cash within a year. Fixed Assets are long-lived items that are used to produce water (or other goods) for use or sale.

Accounts Receivable are water charges or other bills that you are owed.

Prepaid Expenses include insurance, permit fees, and any other expenses paid in advance.

Plant and Equipment includes the pumping station, distribution pipes, storage tanks, treatment plant, and other buildings and equipment valued at their original installed cost.

Accumulated Depreciation accounts for the reduction in value of plant and equipment over time. If you have never included depreciation on your books before, this number is zero. If you have included book depreciation, this number is the sum of the annual depreciation amounts over all previous years.

Land and Water Rights should be valued at the price originally paid, without any depreciation. Also, do not include any appreciation in their value, even if they are worth much more now than when you paid for them. Banks or other lenders will make their own adjustments to account for such appreciation when you apply for credit. Note that accounting for water rights can be very complex. If

these are a major asset of your system, you should consult an accountant familiar with local law and practice.

A Capital Improvements or Reserve Fund should be maintained to cover the cost of equipment replacement, system repairs, and other emergencies.

Liabilities:

Accounts Payable are bills that you have received but not yet paid.

Accrued Payroll and Payroll Taxes are what you owe your employees plus FICA, withholding, and other payroll taxes.

Short-term Debt includes the principal on any loans that must be paid back within one year or less.

Long-term Debt includes the principal of any loans that can be paid back more than one year in the future.

Fund Balance:

This is the difference between Assets and Liabilities. If Assets are less than Liabilities, your Fund Balance is negative and your water system may go bankrupt. You should consider raising your rates or trying some of the suggestions in Parts C and D of this pamphlet. You may also wish to look into a joint management arrangement with a larger, more stable water system. As a last resort, it may be necessary to sell the water system to someone who has the resources to operate it effectively.

If your Assets are greater than your Liabilities, your Fund Balance is positive, and the water system is financially viable or solvent. The larger your Fund Balance, the more likely it is that you will be able to get bank or government loans to help with system improvements.

Worksheet #2

**Small Publicly-Owned Water System
Balance Sheet**

For the year ending _____, 19__

I. Assets

Current Assets

| | |
|--------------------------------|-------|
| Cash | _____ |
| Accounts Receivable | _____ |
| Materials and Supplies on Hand | _____ |
| Prepaid Expenses | _____ |

Total Current Assets _____

Fixed Assets

| | |
|-------------------------------|-----------|
| Plant and Equipment | _____ |
| less Accumulated Depreciation | (_____) |
| Land | _____ |
| Water Rights | _____ |

Total Fixed Assets _____

Other Assets

| | |
|-------------------------------------|-------|
| Capital Improvement or Reserve Fund | _____ |
|-------------------------------------|-------|

Total Assets _____

II. Liabilities

Current Liabilities

| | |
|---------------------------------|-------|
| Accounts Payable | _____ |
| Accrued Payroll & Payroll Taxes | _____ |
| Accrued Fines or Penalties | _____ |
| Short-term Debt | _____ |

Total Current Liabilities _____

Long-term Debt _____

Total Liabilities _____

III. Fund Balance

| | |
|--------------------------------------|-------|
| Total Assets minus Total Liabilities | _____ |
|--------------------------------------|-------|

NOTES

**WILL YOUR SYSTEM HAVE ENOUGH CASH TO OPERATE?
FIND OUT USING WORKSHEET #3**

Instructions for Using Worksheet #3:

Worksheet #3 is a Cash Flow Budget. A Cash Flow Budget tells you when you will need extra cash and how much you will need.

To do a Cash Flow Budget, start with the Cash Balance on the first day of the current month. ("Cash" means the contents of all checking accounts, savings accounts, and cashboxes.) Then estimate all cash receipts and payments for the month. Combine them to get the Total Cash Generated (net gain) or Used (net loss) in the month. Then add the gain to (or subtract the loss from) the Beginning Balance to get the Ending Balance for the month. This Ending Balance then becomes the Beginning Balance for the next month, and the whole process repeats. It is a good idea to do a Cash Flow Budget for several years into the future.

If the Ending Balance for any future month is negative, you will not have enough cash to operate in that month. There are several ways to address this problem. You can step up collections in earlier months to build up cash. You can ask your vendors to let you delay payments to months when cash will be more available. You may take a short-term loan, as long as the budget shows you will be able to pay it back (with interest). If the budget shows that you will usually be short of cash, however, you should raise your water charges to compensate.

The Cash Flow Budget counts all cash transactions. The terms in Worksheet #3 are defined just as they were in Worksheet #1, except that General and Administrative Expenses must not include depreciation, because that is not a cash transaction.

In the example below, the system operator plans to pay \$2,500 for a new piece of equipment in April, which would drive the system's Cash Balance negative by \$1,066. The operator may want to take a short-term loan for \$1,500, so as not to draw cash completely down to zero in April. The proceeds from this loan would be entered in April under "New Borrowings". Each future month's principal repayment would be entered under "Payments of Debt Principal". Interest payments would be subtracted from "Net Cash from Other Revenues and Expenses". Note that the Ending Balance at the bottom of each month's column is entered as the Beginning Balance at the top of the next month's column.

Monthly Cash Flow Budget: EXAMPLE

| | March | April | May | June |
|---------------------------------------------------------------------------------------------|----------------|-----------------|-----------------|----------------|
| Beginning Cash Balance | <u>1.082</u> | <u>1.298</u> | <u>(1.066)</u> | <u>(375)</u> |
| Collections from Water Sales, etc. | <u>988</u> | <u>801</u> | <u>1.025</u> | <u> </u> |
| Payments for O&M and G&A Expenses | <u>(841)</u> | <u>(498)</u> | <u>(525)</u> | <u>()</u> |
| Net Cash from Other Revenues and Expense | <u>128</u> | <u>(87)</u> | <u>208</u> | <u> </u> |
| Payments of Debt Principal | <u>(122)</u> | <u>(122)</u> | <u>(122)</u> | <u>()</u> |
| Payments for Capital Assets | <u>(0)</u> | <u>(2.500)</u> | <u>(0)</u> | <u>()</u> |
| Other Balance Sheet Cash (prepaid expenses, customers' deposits, payments to reserve funds) | <u>63</u> | <u>42</u> | <u>105</u> | <u> </u> |
| Total Cash Generated or (Used) for Month | <u>216</u> | <u>(2.364)</u> | <u>691</u> | <u> </u> |
| New Borrowings | <u>0</u> | <u>0</u> | <u>0</u> | <u> </u> |
| Ending Cash Balance | <u>1.298</u> | <u>(1.066)</u> | <u>(375)</u> | <u> </u> |

Worksheet #3
Small Publicly Owned Water System
Monthly Cash Flow Budget

For the year beginning _____, 19__

| | Month 1 | Month 2 | Month 3 | Month 4 | Month 5 | Month 6 | Month 7 | Month 8 | Month 9 | Month 10 | Month 11 | Month 12 |
|------------------------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|
| Beginning Cash Balance | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Collections from Water Sales, etc. | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Payments for O&M and G&A Expenses | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) |
| Net Cash from Other Revenues and Expenses | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Payments of Debt Principal | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) |
| Payments for Capital Assets | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) | (_____) |
| Other Balance Sheet Cash (Prepaid expenses, customer's deposits) | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Total Cash Generated (Used) for Month | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Net Borrowings | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Ending Cash Balance | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

NOTES

C. GETTING FINANCIAL HELP

1. *Do you know how much it will cost to make necessary water system improvements?*

Determine how much it will cost to meet current drinking water standards. Estimate the cost by contacting similar water systems and state technical assistance staff, or by hiring a consulting engineer (see Question 3 on page 3).

Find out which activities must be done first. You may find that work needed to meet the regulations cannot be done before you have upgraded the water system. Get help from regulators or technical assistance programs to develop a priority list for system improvements.

2. *Have you ever issued bonds to fund water system improvements?*

Publicly owned water systems may issue tax-exempt bonds to obtain long-term financing at costs that are lower than normal bond interest rates. If your municipality or water authority has a high bond rating and has issued bonds in the past, this may be an option. Review your state's statutes for municipal bonding authority and determine the impact of such a bond on water use charges. If your rating is low, you can improve your ability to sell tax-exempt bonds by obtaining Municipal Bond Insurance. Several states operate Municipal Bond Banks whose purpose is to help communities with low bond ratings get financing. Your system may qualify for tax-exempt financing for system improvements. A list of these state bond banks is provided in the attached Resource Guide.

In some states, you must get public approval, in the form of a referendum or petition, to issue bonds. A public education program on the importance of safe drinking water and the costs of providing it may help your customers understand the need for a bond issue.

3. *Have you ever borrowed money from banks for system improvements?*

Since public authorities can issue bonds for long-term financing, bank loans are generally appropriate only for short-term projects or for purchases of \$50,000 or less. Bank loans may be an affordable option if you shop for favorable terms. You may wish to approach the bank that holds local residents' mortgages or that is used for municipal deposits. Such banks may be interested supporting community improvements. Bank officers will look at:

- Your repayment ability (your assets and water charges)
- Your "creditworthiness" (your balance sheet and your assets' current value)
- Your credit history (your record of loan repayment and current debt).

Banks and other private lenders will look at ratios of various items on your financial statements. Two of the most important of these are:

The operating ratio. This measures your system's ability to pay for its operations. It is calculated by dividing operating revenue (Item I on Worksheet #1) by operating expenses (Item IV on Worksheet #1). A ratio of 1.00 says that your water operation is just supporting itself, without taking into consideration any debt. In general, the ratio should be above 1.00, particularly if you have any debt.

The coverage ratio. This measures your system's ability to meet its debt costs. It is calculated by adding Short Term Debt (fourth line of Item II on Worksheet #2) to Interest Expense (second line of Item VI on Worksheet #1) and dividing the result into Income from Operations (Item V on Worksheet #1). A coverage ratio of 1 is considered a bare minimum for small water systems.

It is a good idea to calculate these ratios for yourself on a regular basis, as a general index of whether your system is in good financial health.

4. *Do you know that you may be able to get financial help from government agencies?*

Publicly-owned water systems may qualify for financial assistance from a broad range of state and federal programs. The accompanying Resource Guide includes a list of funding alternatives. Federal funding programs often expect you to approach conventional lenders (banks and bonding institutions) first before you seek government assistance.

Even if you get a low-interest loan or a grant, you may have to raise water rates to meet the payments or to cover the cost of operation. As you evaluate different funding sources, make sure to figure in the effect of loan repayments on water rates. Government loan and grant programs will want to see this information. Farmers' Home Administration (FmHA), for example, considers the effect that its grants and loans will have on the water rate, and compares the rate with those of nearby systems.

Section B above stressed the importance of creating separate Income Statements and Balance Sheets for your system. You may not be eligible for some state loans if you do not keep separate accounts for your water system.

Information Sheet #1 on page 24 shows sources of financial help, the kinds of information they will ask you for, and the kinds of activities they will fund. Most of them will want to see an Income Statement and Balance Sheet for your water system.

Many government loan and grant programs require evidence that you need the funding to meet water quality standards and protect the health of local residents. You should be prepared to submit materials such as correspondence with regulatory agencies, newspaper articles, and letters from the public that document water quality problems in your community.

Most government programs have been set up to serve low-income residents. If you think your customers might qualify, you will need to obtain information about their incomes. Your county or regional planning office can help you gather this information. If you serve a district or neighborhood, several of the organizations listed in the Resource Booklet can help you conduct a confidential income survey.

Banks and government funding agencies usually provide money for capital costs such as treatment facilities, distribution lines, and water source development. Other costs, such as operation, maintenance, and water quality monitoring, must be paid for out of water charges. Before you apply for funding, find out what each source will pay for. A brief summary is given on Information Sheet #1.

5. *Will you need additional staff to administer government loan and grant programs?*

Most state and federal funding programs limit the amount granted for any one project. To cover the cost of system improvements, you may have to get funds from several sources. Each grant or loan program has different accounting and reporting requirements. Consider hiring someone, perhaps on a part-time basis, to keep track of grant conditions, loan payments, and reports.

For Further Information See:

Barry R. Segraves, John H. Peterson, and Paul C. Williams, *Financing Strategies for Small Systems*, AWWA Journal, August 1988, pp. 40-43.

Nancy Humphrey and Christopher Walker, *Innovative State Approaches to Community Water Supply Problems*, The Urban Institute, Dec. 1985.

How to Fund Public Water System Improvements, Vermont Department of Public Health, Oct. 1988.

Information Sheet #1

Summary of Funding Sources

(For detailed information, see the Resource Guide.)

| <u>Funding Source</u> | <u>Financial Information Required</u> | <u>Types of Improvements Funded</u> |
|-------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------|
| Bank | Credit History Repayment Ability Net Worth ^b | Construction and Repair New Equipment |
| HUD Small Cities Program | Customer Income Data | System Construction, Water Treatment |
| Small Business Administration | Balance Sheet ^b Income Statement ^a | System Improvements, Extensions, and Upgrading |
| Economic Development Administration | Economic Condition ^c | System Improvements and Expansion |
| State Loans and Grants | Varies by state | Varies by state |
| Water Rate Increases | Balance Sheet ^b Income Statement ^a Other Information Required by PUC | O&M Costs Water Quality Tests |
| Farmers Home Administration | Balance Sheet ^b Income Statement ^a Cash Flow Budget ^d | System Improvements and Expansion |

Notes:

^aSee Worksheet #1

^bSee Worksheet #2

^cSee Worksheets #1 and #2

^dSee Worksheet #3

D. IMPROVING YOUR OPERATIONS AND MANAGEMENT

Operation, maintenance and management of water systems are complex topics. This section covers only a few ideas you may wish to consider. For more detailed information, see the sources cited below.

1. *Do you have an accurate map of the system, including distribution mains, service connections, valves, and shutoffs?*

Get your water system records together: a map of the system, *including distribution mains, service connections, valves, and shut-offs*; equipment records (including the names and phone numbers of equipment manufacturers); records of repairs and replacements; and financial books. Set up a filing system for these items. Being able to reach them when you need them will help you plan your system's improvements and apply for the funding you need. If you do not have records for your system, you may wish to hire a consulting engineer to conduct a survey of the system.

2. *Do you know whether your system is losing water?*

If your system has meters at the customers' locations, you should compare the gallons billed with the gallons pumped. This will tell you if you have water leaks. Besides wasting water, leaks can damage pipes and nearby structures. Industry groups such as the American Water Works Association and the National Rural Water Association have developed booklets and training courses on how to find and fix water leaks. In addition, the Rural Community Assistance Programs (RCAPs) have sophisticated water audit programs to assist you in finding leaks.

3. *Do you follow a regular timetable for maintenance, repair, and replacement of equipment and pipe?*

Set up a schedule for regular maintenance to prevent problems before they occur. Review your repair schedule and find out which repairs and replacements need to be done now.

It is important that your schedule include all the activities that are part of taking care of your water system. As you think about what needs to be done to meet drinking water regulations, you need to consider how the regulations will affect your operations and management responsibilities. If you have an operator, you should discuss with him how the regulations will affect his work.

4. *Is the operator of your system properly trained and/or certified?*

Find out about the different levels of operator training and certification required by your state. Make sure that the person in charge of your system is qualified. If you have to upgrade or install new treatment equipment, find out what operator certification is required to run and maintain that equipment and when training for certification will be available.

5. *Is your operator qualified to handle new treatments that might be required in the future?*

You and your system operator must understand what current and future state and federal drinking water regulations require. Talking with state officials or attending workshops on new procedures or programs is a good way to learn about new developments in drinking water regulations.

6. *Do you take monthly water samples to test for bacteriological contamination?*

All public water systems are required to test monthly for bacteriological contamination. You should make sure that one person is responsible for taking samples and having them tested by a certified laboratory. If you have had problems with bacteriological contamination, be sure that the person taking samples has been trained in water quality monitoring. Call a water testing laboratory or your state regulatory office to find out how and where to take water samples.

7. *Do you discuss your water system's needs with other water system managers?*

It is likely that similar water systems in your area face problems similar to yours. Talking with their managers may uncover solutions you hadn't thought about. There are many kinds of inter-system cooperation. At a basic level, it may be possible to share equipment or staff if both systems have similar needs.

You can set up a water management authority with one or several other systems. The authority takes over the administrative functions, relieving its members of the expense and inconvenience. This can be done by incorporating an authority, or by setting up a county-wide district to manage several small water systems.

You can also become a satellite of a larger water system having more staff and financial resources. You can keep your water system physically separate and contract with the larger system for operations and management services. Alternatively, you can build interconnection lines and merge the two systems. You should consider these options if the cost of water system management and compliance is otherwise unaffordable.

Many private and public organizations put on training programs for water system operators. Contact your state drinking water office, local chapter of the American Water Works Association, or the state Rural Water Association for information on training in your area.

8. *Do you share physical plant, staff, or other items with other systems to reduce costs?*

You may be able to share costs and staff with other water systems. For example, a treatment plant operator might be able to serve more than one system. Buying equipment in cooperation with other utilities may yield cost savings. Review your needs and talk with other system managers. If your contamination problems are serious, it may be best to buy some or all of your water from another source.

For Further Information See:

Basic Management Principles for Small Water Systems, American Water Works Association, Data Processing Department, 1982.

Decision Makers Guide in Water Supply Management, U.S. EPA, Office of Drinking Water.

Regionalization Options for Small Water Systems, U.S. EPA, Office of Drinking Water.

Water and Revenue Losses: Unaccounted for Water, American Water Works Association, 1987.

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