



Financial Management Evaluation

Appendices

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Environmental Protection
Agency

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Financial Management Evaluation

Handbook For Wastewater Utility

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This document was prepared after a series of one-day Financial Management Workshops were conducted in the various regions of the U.S. Environmental Protection Agency.

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December 30, 1988

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Wastewater Utility

**FINANCIAL
MANAGEMENT
EVALUATION
HANDBOOK**

December 30, 1988

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**U.S. Environmental Protection Agency
Office of Municipal Pollution Control
Washington, DC**

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FINANCIAL MANAGEMENT Evaluation Handbook

WASTEWATER UTILITIES

Introduction

Wastewater facilities are capital intensive and highly complex systems involving management techniques that are not typical of normal government operations. The United States Congress expects these wastewater utilities to have sophisticated management procedures, since these facilities are governed by the laws and regulations of the country. Many systems were built using funds appropriated by the Congress requiring that they be managed properly for the benefit of the people.

The U.S. Environmental Protection Agency and most state agencies have found in their inspections and contacts that many wastewater facilities do not have the necessary staff, skills, operation and maintenance budgets, and overall management plans to operate their systems as they were intended. Sometimes at great expense to the communities, the existing management concept has had to be reevaluated and completely reorganized since the utilities were constantly in trouble. This has caused a poor image, the loss of needed new commerce and industry to the community, and increased user fees for the customers' wastewater treatment service. The community often has to pay higher rates because of past mistakes and overdue improvements.

During the last few years, the U.S. EPA, state agencies, and many state training centers have become more involved with training in basic management concepts needed to operate these facilities. Many communities have participated in some of these training efforts and several positive changes have been made to improve the management of these systems. This handbook is based upon the findings and actions that have been taken by the author and several of the state agencies in conducting investigations of wastewater facilities.

This handbook has been specifically designed for on-site inspectors to use in evaluating the financial management capability of wastewater utility systems that have been funded by federal construction grants. It has been specifically designed for small systems treating less than 5 mgd of wastewater per day.

When the term management is used, it refers to a municipal sanitary board, commission of public works, mayor and council, or any other appointed or elected body responsible for the overall management of the wastewater utility. Day-to-day operations are usually supervised by a superintendent or chief operator at a middle management level.

This financial management evaluation is based on answering a series of yes or no questions about the utility and determining basic information on its status. This evaluation also requires the use of Appendices dated December 30, 1988, and the attendance at a one-day Financial Management Workshop.

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Introduction

This booklet contains an outline for making an intensive financial management evaluation of a wastewater utility and a compilation of various materials in associated Appendices that aid in such an evaluation.

This publication, however, is actually an extension of a condensed booklet entitled Wastewater Utility Financial Management Evaluation Handbook, December 30, 1988. The Handbook was designed for on-site inspectors to use in evaluating the financial management capability of small wastewater utilities treating less than 5 mgd of wastewater per day.

The use of this booklet is also dependent on the attendance at a one-day Financial Management Workshop.

Wastewater Utility

Financial Management Evaluation

(Facility)

Date: _____

Follow the accompanying Response Outline to aid in answering the following questions:

1. Are the last 5 years of budget information available? Y or N
2. Are actual vs. budget comparisons made at least quarterly? Y or N
3. Are officials and operators involved in the budget process? Y or N
4. Has the budget increased > 5%/year for the last 5 years? Y or N
5. Is there an equipment replacement and rehabilitation budget item? Y or N
6. Are total energy costs < 10% of the O & M budget? Y or N
7. Is the debt paid by billing < 25% of the total budget? Y or N
8. Will present debts be retired within 20 years of issuance? Y or N
9. Do revenues cover OM & R and debt service at all times? Y or N
10. Are revenues based on metered or estimated water use? Y or N

11. Do commercial and industrial users pay on volume/strength? Y or N
12. Is the minimum residential billing > \$6.00/mo. or \$72/yr.? Y or N
13. Is there always sufficient cash for all "accounts payable"? Y or N
14. Has there been a rate increase within the last 24 months? Y or N
15. Are delinquent accounts < 3% of the total budget? Y or N

Count the number of questions answered "Yes." _____

Rate the "Yes" answers according to the following:

- 14 - 15 = No major problems
- 12 - 13 = Some problems exist in areas answered "No"
- 10 - 11 = Significant problems exist in "No" areas
- < 10 = Major financial management problems exist

The on-site inspector should use information in this booklet, the Appendices, and the references to help resolve any financial management problems.

FINANCIAL MANAGEMENT APPENDICES

WASTEWATER UTILITIES

Basic Management Considerations

Wastewater facilities are capital intensive and highly complex systems involving management techniques that are not typical of normal town government operations. The United States Congress expects these utilities to have sophisticated management procedures, since these facilities are governed by the laws and regulations of the country. Many systems were built using funds appropriated by the Congress requiring that they be managed properly for the benefit of the people.

The U.S. Environmental Protection Agency and most state agencies have found in their inspections and contacts that many wastewater facilities do not have the necessary staff, skills, operation and maintenance budgets, and overall management plans to operate their systems as they were intended. Sometimes at great expense to the communities, the existing management concept has had to be reevaluated and completely reorganized, since the utilities were constantly in trouble. This has caused a poor image, the loss of needed new commerce and industry to the community, and increased user fees for the customers' wastewater treatment service. The community often has to pay higher rates because of past mistakes and overdue improvements.

During the last few years the U.S. EPA and many state training centers have become more involved with training in basic management concepts needed to operate these facilities. Many communities have participated in some of these training efforts and several positive changes have been made to improve the management of these systems. This publication is based upon the findings and actions that have been taken by the author and several of the state agencies in conducting financial management audits of many communities.

These Financial Management Appendices are intended for expanding the evaluation of the financial management capability of wastewater utility systems that have been funded by federal construction grants. They have been specifically designed for small systems treating less than 5 mgd of wastewater per day.

When the term management is used, it refers to a municipal sanitary board, board of selectmen, commission of public works, mayor and council, or any other appointed or elected body responsible for the overall management of the wastewater utility. Day-to-day operations are usually supervised by a superintendent or chief operator at a middle management level.

The financial management investigation is based on reviewing a series of topics with the utility and answering basic questions on their status to obtain the necessary information.

FINANCIAL MANAGEMENT EVALUATION

Use of Appendices

These Appendices are designed to assist in the investigation of the financial status of the wastewater utility. After an initial financial review has been made using the small Financial Management Evaluation Handbook, a more complex investigation may be desirable using the following intensive evaluation. This type of evaluation would normally require about four visits by the investigators. More visits may be made depending on the complexity of the system or the amount of time provided during each visit.

The in-depth Facility Review Outline starting on the next page contains a suggested schedule of activities to discuss on each of four visits. The visits may change due to a number of factors. It is merely presented as a starting schedule.

The series of questions starting on page 11 are intended to guide the interviewer in the intensive evaluation of the various units that make up a typical wastewater management system. Each of the questions may be answered yes or no to determine the status of the topic. If the utility is in perfect condition, all five questions for each topic would be answered yes.

Count the "yes" answers for each five-question unit:

- 5: Unit appears satisfactory
- 4: Minor problems
- 3: A few problems need attention
- 2: Detailed attention needed
- 1: Very serious problems need attention
- 0: Unit needs full scale training effort

The overall status for each major section indicates which areas need special emphasis:

	<u>Average "Yes" Answers</u>
Management	_____
Budgeting	_____
Cost Recovery	_____
Planning	_____
Financing	_____
Record Keeping	_____

FINANCIAL MANAGEMENT EVALUATION

Response Outline

This response action outline corresponds to each question asked in the evaluation form on Pages 4-5 and provides further information on how to obtain necessary financial information on the wastewater collection and treatment utility. The Appendices dated December 30, 1988, must be used to aid in obtaining the necessary financial information.

All questions answered "No" on the evaluation indicate areas of concern in the utility's financial management. These areas must be further investigated using the outline below.

1. 5-Year Budget Costs

It is important to obtain as much historical financial information as possible from the utility to aid in the evaluation. This should include actual cost figures, rate schedules, annual audits, and other financial reports.

- a. Try to obtain the last 5 years of budget and actual expense data.
- b. Place the information into an annual wastewater budget format. (Appendix B-96)
- c. Compare the annual cost information over the years of record to determine significant cost areas.
- d. Recommend future budget line items for any costs that currently do not have their own budget line.

TYPICAL BUDGET OUTLINE

	<u>Collection</u>	<u>Treatment</u>
<u>Personnel Services</u>		
Salaries/wages	\$	\$
F.I.C.A.		
Unemploy. ins.		
Worker's comp,		
Health insurance		
Retirement		
Subtotal:	\$ _____	\$ _____
<u>O & M Expenses</u>		
Office supplies	\$	\$
Postage		
Telephone		
Electricity		
Natural gas		
Water		
Veh. gas & oil		
Chemicals		
Operating sup.		
Equipment rep.		
Training		
Travel		
Subtotal:	\$ _____	\$ _____
<u>Capital Outlay</u>		
Replacement acc.	\$	\$
Improvement acc.		
Expansion account		
Depreciation acc.		\$ _____
Subtotal:	\$ _____	\$ _____
<u>Debt Service</u>		
Debt & interest	\$	\$
Cushion fund		
Contingency fund		
Subtotal:	\$ _____	\$ _____
 TOTAL:	 \$	 \$

FINANCIAL MANAGEMENT EVALUATION
FACILITY REVIEW OUTLINE
Possible Schedule

(Use Rating Sheets that correspond to outline)

I. Initial Visit - Management Review

- A. Explain financial program to management officials
- B. Provide program objectives to utility staff
- C. Review organizational structure
- D. Review staffing
- E. Review personnel policies
- F. Review employee relations
- G. Review utility procedures
- H. Review sewer collection and treatment plant operations plan
- I. Review regulatory procedures
- J. Tour collection and treatment facility
- K. Review safety program
- L. Collect important financial documents
- M. Summary

II. Second Visit - Budget Review

- A. Discuss any remaining questions from the first visit
- B. Collect any remaining financial data
- C. Review budget information for last 5 years
- D. Review overall budget
- E. Review revenue budget
- F. Review operations budget
- G. Review maintenance budget
- H. Review budget control
- I. Review equipment replacement budget
- J. Review capital improvement budget

III. Third Visit - Cost Recovery

- A. Review accounting issues
- B. Review cash flow procedures
- C. Review purchasing control
- D. Review cost recovery procedures
- E. Review billing and collection
- F. Review delinquent accounts
- G. Review wastewater volumes
- H. Review rate structure
- I. Review sewer use ordinances
- J. Review cost recovery status
- K. Review equipment reserve fund

IV. Final Visit - Planning, Financing, and Financial Reporting

1. Planning

- A. Planning policy
- B. Capital improvements

2. Financing

- A. Current financing
- B. Future financing

3. Financial Reporting

Current financial reports

2. Budget Comparison

The last 5 years of budget information can provide some valuable information of the financial condition of the utility. The wastewater utility's budget must be completely separate from any other activities. Actual expenditures must be used instead of the forecast budget figures for all previous years.

- a. Tabulate the budget and actual cost information.
(Appendix B-97.)
- b. Compare the budget vs. actual expenses to determine if past budgets have been within 5% of actual costs.
- c. Determine if consistent differences occurred with any specific expense items.
- d. Recommend that the utility perform this review at least quarterly and make adjustments as required.

BUDGET vs. ACTUAL EXPENDITURES

(Period of Record)

	% of Budget	Budget	Actual	+ or -
<u>Per. Serv.</u>				
Wages	%	\$	\$	
F.I.C.A.				
Benefits				
Subtotal:		\$	\$	
<u>O & M Exp.</u>				
Office	%	\$	\$	
Chemicals				
Supplies				
Energy				
Vehicles				
Repairs				
Operation				
Maint.				
Subtotal:		\$	\$	
<u>Capital Outlay</u>				
Replace.	%	\$	\$	
Improve.				
Deprec.				
Subtotal:		\$	\$	
<u>Debt Service</u>				
Debt & int.	%	\$	\$	
Cont. funds				
Subtotal:		\$	\$	
TOTAL:		\$	\$	

I. Management

It is important to review the overall management of the wastewater treatment facility. Each major activity must be carefully evaluated using the numerical rating system. Important information must be collected to facilitate the evaluation.

Additional information is provided in Appendix A to aid the investigator.

I. MANAGEMENT

A. Explain the Financial Management Program to Officials

It is important to obtain complete cooperation of the utility management, which can consist of a sanitary board, board of selectmen, mayor and council, commission of public works, or some other type of controlling board. Explain in detail that the purpose of the survey is to determine if the financial management status of the wastewater utility may be improved. Determine if management has a concept for solving problems. If improvement is needed, additional steps will be taken to suggest possible action.

There must be complete understanding and support by the management officials. This may have to be developed over a period of two or three meetings for some organizations. After completion of the initial meeting, answer the following questions according to instructions on page 8.

(1) Was there a majority of members present? _____

(2) Did they seem interested? _____

(3) Was there a positive attitude? _____

(4) Did they ask good questions? _____

(5) Do they seem willing to cooperate? _____

Score: _____

Summary:

(1) Do you feel there will be good cooperation? _____

(2) Does the score indicate any problems? _____

(3) See Appendix A: 73 - 75.

(4) Comments:

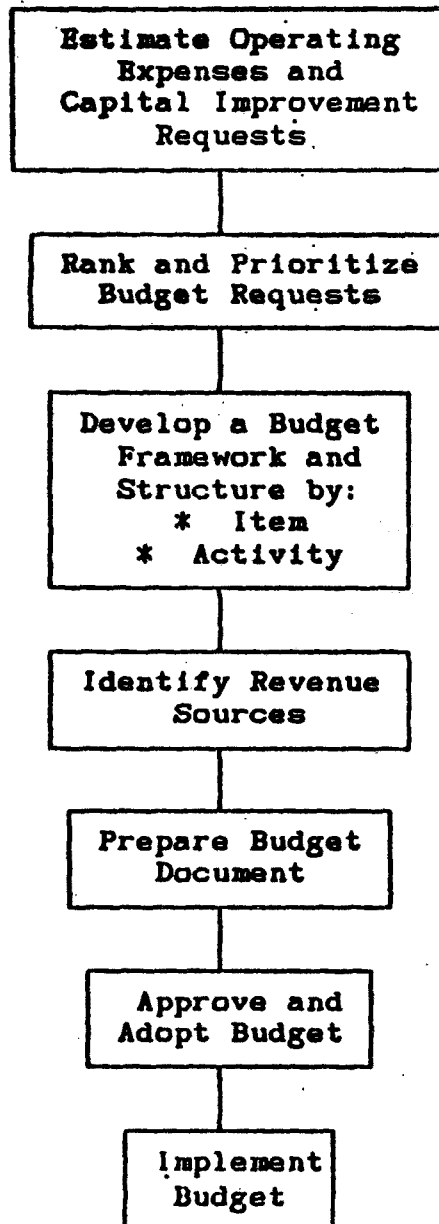
3. Budget Process

It is important that budgets be prepared based on actual need and not what management feels that customers will pay without complaining. Budgets should have exact reasons for every expenditure and include a companion section to discuss the budget document. The operation of the utility is budget driven. This is the primary course of operation.

The budget process includes the operator, superintendent, clerk, and officials working together. The operator and superintendent must present the needs for the coming year to the officials for a realistic budget preparation.

- a. Discuss the budget process with officials, clerks, and operators. (Appendix B 94).
- b. Discuss any specific information found in item 1 on Page 6 that is appropriate for any problem areas.
- c. Recommend that future budgets be developed using all leading staff members, if they are not currently involved.

BUDGET PROCESS STEPS



I. MANAGEMENT (cont.)

B. Discuss Program Objectives with Utility Staff

Meet separately with utility staff, if possible. At a minimum, this should consist of the superintendent, chief operator, sewer supervisor, and office manager or billing clerks. Explain that the purpose of the survey is to determine if the financial management status needs improvement and that you will need their full cooperation.

(1) Was the Superintendent or Chief Operator present? _____

(2) Was the chief billing clerk available? _____

(3) Did you meet all necessary staff? _____

(4) Does the billing office appear efficient? _____

(5) Does the office have adequate billing equipment? _____

Score: _____

Summary:

(1) Did you obtain good cooperation? _____

(2) Does the score indicate any problems? _____

(3) Comments:

I. MANAGEMENT (cont.)

C. Review Organizational Structure

It is important to determine the organizational structure, since many times a poor organization can contribute to overall financial management problems. Often, small systems have a very loose organization that does not always put authority at the right level. This needs to be formally addressed. Management should supervise with one voice. The superintendent or chief operator should report to just one person and not receive requests from each member of council or a commission.

- (1) Is there a distinct line of authority? _____
- (2) Did you obtain a formal organizational chart? _____
- (3) Does management supervise by one authority? _____
- (4) Does management review organization needs yearly? _____
- (5) Is the organizational structure satisfactory? _____

Score: _____

Summary:

- (1) Is the organizational structure satisfactory? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix A: 76.
- (4) Comments:

4. Budget Increase

Budgets should increase yearly at least by the national inflation rate of 4 to 7%. Every part of the wastewater utility operations must be evaluated to determine the areas that will require additional increases.

- a. Calculate the percent of budget change for the decrease or increase for each line item for each year of record. (Appendix B-97).
- b. List any budget line item that has not increased more than 5% for any year.
- c. Determine if there are any significant reasons why these items have not had any increases.
- d. If necessary, recommend budget increases in areas where a deficiency could be causing problems with OM & R.

BUDGET INCREASE

	<u>198</u>	<u>198</u>	<u>198</u>
<u>Personnel Services</u>			
Wages			8
F.I.C.A.			
Unemploy. ins.			
Worker's Comp.			
Health Insurance			
Retirement			
Subtotal:	—	—	8
<u>O & M Expenses</u>			
Office supplies			8
Postage			
Telephone			
Electricity			
Natural gas			
Water			
Veh. gas & oil			
Chemicals			
Operating sup.			
Equipment rep.			
Training			
Travel			
Subtotal:	—	—	8
<u>Capital Outlay</u>			
Replacement acc.			8
Improvement acc.			
Expansion account			
Depreciation acc.			
Subtotal:	—	—	8
<u>Debt Service</u>			
Debt & interest			8
Cushion. fund			
Contingency fund			
Subtotal:	—	—	8
 TOTAL:	 —	 —	 8

I. MANAGEMENT (cont.)

D. Review Staffing

Staffing size and expertise are extremely important for the proper operation of any wastewater utility. Many times people are hired for positions without any prior experience or training.

An evaluation of the current staffing is important to determine if it contributes to any management problems. A well-staffed and trained organization can often implement good cost effective operations.

(1) Is the present staff size sufficient? _____

(2) Are adequate salaries paid for their experience? _____

(3) Are all wastewater treatment operators certified? _____

(4) Is adequate training provided? _____

(5) Do key operators belong to the WPCF? _____

Score: _____

Summary:

(1) Is the present staffing satisfactory? _____

(2) Does the score indicate any problems? _____

(3) See Appendix A: 77.

(4) Comments:

I. MANAGEMENT (cont.)

E. Review Personnel Policies

It is important that each employee have a detailed job description that shows exactly what is required. Job descriptions are also necessary for each council member or board member stating his/her job function with respect to the utility activities. All job descriptions must be reviewed annually and updated as necessary.

The utility should have an employee appraisal system that is used at least annually. Management should have personnel procedures that include visiting the operators at the treatment plant to discuss important topics and reviewing financial needs. There should also be a training plan to allow each operator to attend at least one formal short course during the year.

(1) Does each employee have detailed job description? _____

(2) Are job descriptions updated annually? _____

(3) Is there a formal employee appraisal system? _____

(4) Is annual training allowed for each employee? _____

(5) Does management visit employees on the job site? _____

Score: _____

Summary:

(1) Are there any personnel policy problems? _____

(2) Does the score indicate any problems? _____

(3) See Appendix A: 78 - 80.

(4) Comments:

5. Equipment Replacement and Major Rehabilitation Line Item

An equipment replacement budget should include all pumps, motors, vehicles, and any other equipment that has a useful life less than the life of the total facility. The listed equipment should show date placed into service, useful life, and expected replacement cost. All equipment expected to be replaced within the next 5 years should be itemized by year. Set aside costs can be prorated throughout the life of the equipment.

- a. Obtain a list of all equipment and major rehabilitation that costs more than \$1,000.
- b. List year each equipment piece was placed into service.
- c. Project the remaining service life of each equipment piece.
- d. Estimate current replacement cost.
- e. Summarize this information.
(Appendix B-105).
- f. Determine the current set aside budget cost to replace equipment using appropriate Sinking Fund factors.
(Appendix B-110).
- g. Recommend this line item in B-96 be recalculated each year and included in the budget.

EQUIPMENT REPLACEMENT INVENTORY

	<u>Equip. & Reh.</u>	<u>Orig. Cost</u>	<u>Year Ser.</u>	<u>Remain. Life</u>	<u>Replac. Cost</u>
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

I. MANAGEMENT (cont.)

F. Review Employee Relations

Morale of wastewater treatment personnel is very important. Management sometimes does not make any particular employee relations effort, which leads to dissatisfied operators.

It is important to evaluate the current staff to determine if this causes any financial management problems.

(1) Has there been a low turnover of personnel? _____

(2) Has employee absenteeism been very low? _____

(3) Do all employees know exactly what is expected? _____

(4) Are there good communications from management? _____

(5) Are all salaries and benefits competitive? _____

Score: _____

Summary:

(1) Are there any employee relations problems? _____

(2) Does the score indicate any problems? _____

(3) See Appendix A: 80.

(4) Comments:

I. MANAGEMENT (cont.)

G. Review the Utility Office Procedures

It is important to review, in the beginning, the office where the utility bills are prepared and revenue is collected. Determine if billing procedures appear adequate and if collection procedures are uniform for all customers. Review the size of the office and number of employees. Collect some basic information on number of new sewer taps during the last 5 years, user charges increases, and the number of delinquent accounts. Review any financial reports.

(1) Is the ratio of clerk(s)-to-customers < 1:800? _____

(2) Is the office well organized? _____

(3) Are bills prepared using efficient equipment? _____

(4) Do customer relations appear satisfactory? _____

(5) Have office procedures kept pace with needs? _____

Score: _____

Summary:

(1) Do the office procedures appear satisfactory? _____

(2) Does the score indicate any problems? _____

(3) See Appendix A: 81 - 82.

(4) Comments:

6. Energy Costs

Energy costs are often the largest single expenditure. Electrical and fuel costs have been steadily rising every year. These must be adequately forecast.

- a. List electrical equipment nameplate voltage and amperage for all motors.
- b. Include energy requirements for lighting, heating, air conditioning, and major laboratory equipment.
- c. Estimate current yearly operating time for all units and determine percent in-use time.
- d. Calculate estimated KWH for each unit and determine daily average.
- e. Summarize the information. (Appendix B-101).
- f. Review any equipment class that exceeds usage > 10% of the total energy used.
- g. Recommend, if possible, that these high energy use items be investigated for possible energy reduction without losing operation efficiency. Reduce power use during peak periods.
- h. If necessary, recommend a detailed energy audit.

ELECTRICAL ENERGY

<u>Lift Sta.</u>	<u>KWH</u>	<u>% of Total</u>	<u>Cost/ KWH</u>	<u>Total Cost</u>
A				
B				
C				
Total:	_____	_____	_____	_____

Treatment
Plant

Raw Sew.Pump.				
Pretreat.				
Primary				
Secondary				
Sludge				
Other				
Total:	_____	_____	_____	_____

Summary:

Cost/KWH
Peak Demand
Total KWH
Total Cost
Cost/day
Total flow/mo.
Cost/MG

I. MANAGEMENT (cont.)

H. Review Sewer Collection and Treatment Plant Operation Plans

It is important that the utility have a formal operation policy that includes statements about keeping the utility in compliance by providing proper operation of the collection system and wastewater treatment plant. This written plan should be updated when significant changes are made and should be reviewed at least annually.

The operations plan should include review of any long range needs such as sludge deposition or upgrading operations. The operations plan should include topics on performance of certain units or process control goals.

- (1) Is there a good written operations plan? _____
- (2) Are long range operational problems addressed? _____
- (3) Does the operator keep operation plans updated? _____
- (4) Does the operator understand process control? _____
- (5) Is present sludge disposal practice satisfactory? _____

Score: _____

Summary:

- (1) Are there any operational problems? _____
- (2) Does the score indicate any problems? _____
- (3) Comments:

I. MANAGEMENT (cont.)

I. Review Regulation Procedures:

Management need to be familiar with state and federal regulations as they apply to the operation of the collection and wastewater treatment facilities. They should routinely review Discharge Monitoring Reports (DMRs) and know why any parameter may be out of compliance. Out of compliance items should have internal reports citing the reasons for NPDES violations.

The utility should have a proper sewer use and pretreatment ordinance, so that if violations are caused by any of these factors, they may be swiftly enforced. If any compliance problem is caused by lack of money to correct the situation, it must be properly funded. These regulatory policies may need to be emphasized during the course of the assistance program.

(1) Does management understand fed./state regulations? _____

(2) Was the WWTP in NPDES compliance during last year? _____

(3) Does management review DMRs monthly? _____

(4) Is a report prepared when out of compliance? _____

(5) Is there a sewer use/pretreatment ordinance? _____

Score: _____

Summary:

(1) Are there any regulatory problems? _____

(2) Does the score indicate any problems? _____

(3) Comments:

7. Total Debt

The total debt owed by the wastewater utility is extremely important. The total debt service should be less than 25% of the total budget paid by customer billing. Debts that exceed this amount place a severe burden on the customer for past capital costs.

- a. Determine the percentage that the total debt service payment represents of the total budget. (Appendix B-97).
- b. If the debt service payment is > 25% of the total budget, recommend review by a financial consultant.
- c. If short-term debts are not being paid off on time, adjust the budget to pay off these short-term debts.

TOTAL DEBT SERVICE

	<u>% of</u>		
	<u>Budget</u>	<u>Budget</u>	<u>Actual</u>
Per. Ser.			
Subtotal:			
O & M:			
Subtotal:			
Cap. Out.:			
Subtotal:			
Debt			
Interest			
Cushion			
Contingency			
Subtotal:	_____ %	\$ _____	\$ _____
TOTAL:			

I. MANAGEMENT (cont.)

J. Tour Collection and Treatment Facilities

It is important to tour the entire wastewater utility during the first visit, if you are not familiar with its operations. This tour should start with a visit to lift stations and a review of the sewer system to determine if there are any major problems which will require large expenditures in the future.

A visit should be made to the wastewater treatment plant to determine overall status with respect to equipment condition, immediate and long term needs, and compliance status.

A survey should also be made of the laboratory to determine if there are any problems with testing, equipment, and general reporting procedures.

- (1) Do sewers appear adequate? _____
- (2) Do lift stations appear satisfactory? _____
- (3) Does operation & maintenance appear satisfactory? _____
- (4) Is there an absence of odor at the fence line? _____
- (5) Does the laboratory appear satisfactory? _____

Score: _____

Summary:

- (1) Does the system have problems that need attention? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix A: 83 - 87.
- (4) Comments:

I. MANAGEMENT (cont.)

K. Review Safety Program

The utility should have a written safety policy that includes all activities of every employee. Separate safety rules should be written for each important operation and posted at the job site in addition to being compiled in a safety manual.

Employees should have had some type of formal safety training. It is important to review any lost time accidents, since these often affect the budget and can usually be prevented. All accidents involving the injury of any employee or the damage of equipment should have a formal report.

A good operating facility will have a safety file of reports and safety publications, such as those produced by the Water Pollution Control Federation.

- (1) Does management have a formal safety program? _____
- (2) Are safety rules written for each major operation? _____
- (3) Is there a formal accident report system? _____
- (4) Does management review each accident? _____
- (5) Does management receive any safety publications? _____

Score: _____

Summary:

- (1) Are there any safety problems? _____
- (2) Does the score indicate any problems? _____
- (3) Comments: _____

8. Debt Retirement

A wastewater treatment plant often lasts only about 20 to 25 years with good maintenance. If the years of the debt exceed this amount, an extreme financial burden will be placed on the customers for a facility that has outlived its usefulness.

- a. List all outstanding short-term and long-term debts, interest rates, issuance years, and year of retirement.
(Appendix C-135)
- b. Determine if any debts will not be retired within 20 years of issuance.
- c. Determine from officials if facility will need any equipment replacement or major rehabilitation before debt retirement that is not being funded from current set-aside funds.
- d. If major improvements are required before debt retirement, recommend that a consultant be used to evaluate and determine future costs.

CURRENT DEBT SUMMARY

<u>Type of Debt</u>	<u>Amount</u>	<u>Year Start</u>	<u>Int. Rate</u>	<u>End Yr.</u>
1.				
2.				
3.				
4.				
5.				

I. MANAGEMENT (cont.)

L. Collect Important Financial Data Documents

It is necessary to collect some basic documents such as user charge schedules, budgets, monthly financial reports, and other important documents that should be readily available for a well-managed facility. It is ideal to collect these reports for the last 5 year period for future use.

- (1) Did you obtain rate schedules for last 5 years? _____
- (2) Did you obtain budget records for last 5 years? _____
- (3) Did you obtain financial reports for last 5 years? _____
- (4) Did you obtain any other important documents? _____
- (5) Did you find the clerks willing to cooperate? _____

Score: _____

Summary:

- (1) Do you feel there are sufficient documents? _____
- (2) Does the score indicate any problems? _____
- (3) Comments:

I. MANAGEMENT (cont.)

M. Summary

1. The utility is managed by a:
2. This organizational structure is:
3. Management cooperation will probably be:
4. The physical condition of the overall utility is:
5. The fiscal condition of the utility is:
6. The total staff number is:
7. Personnel policies are:
8. The operations plan is:
9. Management's concept of state/federal regulations is:
10. The safety program is:

9. Revenue Review

The revenue must meet all budgeted financial requirements of the facility. It is important that all utility revenues remain in the system and are never used for any other purpose. Revenues must be based on actual need of the utility to meet its responsibility for providing a service to the customers and meeting both short-term and long-term regulatory commitments.

- a. Determine if annual revenues were sufficient to meet expense budget requirements for each record period.
(Appendix B-96 and B-99)
- b. List any period that had deficient revenues.
- c. Determine reason for revenue shortages.
- d. Recommend changes that would help increase revenue required for critical areas.

REVENUE BUDGET

The annual revenue budget reflects how much money the utility will receive from customers and other revenue sources to spend on the operation of the utility.

Estimated billing:	\$	_____
Penalties & Int.:		_____
Connection fees:		_____
Other:		_____

TOTAL:	\$	_____

O & M Budget

The revenue budget must reflect the needs of the operation, maintenance, and replacement budget, which include at least these important factors:

- Administration
- Billing & collection
- Operations
- Maintenance
- Replacement
- Support services
- Debt services
- Dedicated funds

Capital Budget

The capital budget reflects long-term objectives resulting from capital projects and generally relies on specific financing.

II. BUDGETING

Budgeting is the process where all revenues and expenditures are separated into appropriate categories for managing the funds. Estimates are made for each item and then compared to actual operation.

The budget should be strictly followed to determine if revenues match actual expenditures. If revenues decrease from expectations, adjustments will have to be made for revenues and expenditures.

Additional information is provided in Appendix B to aid the investigator.

II. BUDGETING

A. Discuss Any Remaining Questions from the First Visit

A follow-up meeting with some members of management may be necessary during the second visit, since they are sometimes not clear on the objectives after just one meeting. It is also advisable not to overwhelm them with too many questions in the first session.

A second meeting is also advisable so that some questions may be asked a second time and to expand on some of the earlier comments. You should also be prepared to offer some minor suggestions during a second visit from the findings found during the first visit.

It is ideal to again probe for answers that are not always easily obtained, such as number and amount of delinquent accounts, certain budget items, and hidden financial problems.

- (1) Does management understand their role? _____
- (2) Are delinquent accounts under control? (< 3%) _____
- (3) Are all single line items <20% of budget? _____
- (4) Is the minimum bill for 3,000 gals. > \$6.00? _____
- (5) Is the utility free of any financial problems? _____

Score: _____

Summary:

- (1) Does management fully understand their system? _____
- (2) Does the score indicate any problems? _____
- (3) Comments: _____

10. Residential Water Usage

It is important that water usage figures used for wastewater charges be accurately measured or estimated, so that proper billing will be provided. Customers must pay their fair share of actual services used.

- a. Obtain copy of residential rate structure document.**
- b. Review billing records to determine if charges are based on usage data.
(Appendix C-127)**
- c. If flat rates are used, recommend that all wastewater billing be performed on actual or estimated wastewater volumes discharged to sewers.**

USER CHARGE METHODOLOGY

The users must be divided into proper classes, so that it is known how many users are in each class and their respective volumes.

Management must determine:

- All classes of users
- Factors that determine classes
- Characteristics of all users
- Individual user volumes
- Appropriate rate

User classes:

- Residential
- Commercial
- Industrial
- Institutional

Residential rates:

1. Equivalent dwelling unit -
 - Used for unmetered water
 - Determined from best estimates
2. Volume measurements -
 - Actual metered usage
 - Similar waste concentration

II. BUDGETING (cont.)

B. Collect Any Remaining Financial Data

It is important to obtain all necessary documents and reports from the utility to aid in the evaluation. Any corrections should be made and the data become part of the investigation file. The basic documents include the last 5 years of rate schedules, annual budgets, and financial reports. Other information should include number and amount of delinquent accounts, and debt service information showing principal, interest rate, and duration of the loan or bonds.

If any of this information is not available, it indicates that some problems exist in their overall financial management.

- (1) Did you obtain rate schedules for last 5 years? _____
- (2) Did you obtain the last 5 years of budgets? _____
- (3) Did you obtain delinquent accounts information? _____
- (4) Did you obtain all financial reports requested? _____
- (5) Did you obtain all debt service reports? _____

Score: _____

Summary:

- (1) Did you obtain all necessary information? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix B: 91.
- (4) Comments:

II. BUDGETING (cont.)

C. Review Budget Information for Last 5 Years

The last 5 years of budget can provide some valuable information of the financial condition of the utility. First, review the budget to determine if the wastewater utility is completely separated from any other activities. Then, review the budget totals to determine the percent of yearly increases to see if they appear reasonable.

Other important factors to consider include the number of line items and if actual expenditures are compared monthly with the prescribed budget amount. It is also important to determine if they keep a fixed asset inventory and make yearly calculations of present worth.

- (1) Is there a separate wastewater utility budget? _____
- (2) Does the budget have sufficient line items? _____
- (3) Is there a monthly actual-to-budget comparison? _____
- (4) Is there a fixed asset inventory? _____
- (5) Does the inventory include present worth? _____

Score: _____

Summary:

- (1) Does the information indicate proper budgeting? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix B: 92 - 95.
- (4) Comments:

11. Commercial and Industrial Users

It is important that all commercial and industrial customers pay for the services they are provided. Volume discounts are usually not justified. Some wastewater discharges from these sources may require extra treatment that should not be passed on to residential users. Instead, they must have surcharges depending on the strength and type of waste.

- a. Interview the superintendent and chief operator to determine if there are high strength wastes from industries that exceed concentrations of > 300 mg/L BOD or TSS.
- b. Obtain commercial and industrial rate structure documents to determine if surcharges are included for high strength wastes.
- c. Review the surcharge information to determine if it is adequate for all commercial and industrial users.
- d. Recommend that appropriate surcharges be used where applicable and that commercial and industrial volume discounts not be used.

COMMERCIAL & INDUSTRIAL USERS

It must be known if the wastewater treatment plant has had any changes in the average and peak influent BOD, suspended solids, and other important characteristics. If these data are above normal values, it indicates that the user charges must be reevaluated.

User Charge Rates:

1. Surcharge -
Use for any wastewater that has a concentration over set values, such as 250 - 300 mg/L BOD or suspended solids.
2. Quality/Quantity -
Determine costs for unusual wastes
Incorporate minimum and/or maximum volumes charges
3. Establish Pretreatment Ordinance

II. BUDGETING (cont.)

D. Review Overall Budgets

This should include the review of the OM & R line items to determine if sufficient funds are available to provide adequate operations. A special contingency fund should also be available for unplanned events that might require substantial maintenance. A review should also be made to determine if previous line item activities have been neglected because of lack of money.

The investigator should determine if the accounts appear satisfactory for the size of the system. This can be done by making a comparison with some similar situations and knowing the needs of the utility.

- (1) Has the revenue budget always matched expenditures?_____
- (2) Is there a sufficient OM & R budget? _____
- (3) Is there a contingency fund for special needs? _____
- (4) Do all line items have sufficient funds? _____
- (5) Are all accounts satisfactory? _____

Score: _____

Summary:

- (1) Does the overall budget appear satisfactory? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix B: 96 - 98.
- (4) Comments:

II. BUDGETING (cont.)

E. Review Revenue Budget

The revenue budget should be reviewed by management to determine if the expected revenue from billing and any other sources will cover the needs. If the revenue does not match the total expenditure budget, a rate survey will be necessary.

It is extremely important that all utility revenues remain in the system and are never used for other purposes. There have been times when some salaries of councils or commission members that do other functions are paid totally from the utility. This should never happen.

- (1) Is there a separate revenue budget? _____
 - (2) Is there a forecast of future customer needs? _____
 - (3) Is the revenue budget compared with actual income? _____
 - (4) Are revenues recovering total costs? _____
 - (5) Are all revenues used only for the utility? _____
- Score: _____

Summary:

- (1) Is there a satisfactory revenue budget? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix B: 99 - 100.
- (4) Comments:

12. Minimum Billing

The minimum bill should pay for fixed costs that are not dependent on the volume of wastewater discharged. This should include such factors as normal salaries, office expenditures, lighting, heating, and debt service. Any customer cost less than about \$72 per year usually indicates trouble.

- a. Obtain minimum residential, commercial, and industrial rates.
- b. If minimum billing does not cover routine fixed expenses, recommend a financial consultant review of the minimum billing structure to cover such expenses.

TYPICAL MINIMUM BILLING

<u>No. of Cust.</u>	<u>Min. Bill</u>	<u>Rate per 1000 gal</u>	<u>3000 gal Example</u>
155	\$ 6.00	\$ 1.00	\$ 8.00
450	6.50	2.50	14.00
500	8.31	1.70	8.31
600	5.50	0.50	5.50
800	4.50	1.25	5.75
1,000	3.00	0.85	3.00
1,100	1.25	1.43	5.54
1,100	6.00	1.20	6.00
1,100	6.33	1.42	6.33
1,500	2.10	0.95	4.95
1,600	3.72	1.24	3.72
2,000	2.35	1.29	6.22
2,600	3.15	1.12	4.27

II. BUDGETING (cont.)

F. Review Operations Budget

The operations budget should include all activities required to operate the system properly and to stay in compliance. One of the key elements in the operation is the amount of energy and its associated costs. Energy costs should be measured on a monthly cost per wastewater unit treated, so that it is easier to determine differences and their causes.

Energy cost often is the single most important expenditure in operating a wastewater utility. If these costs exceed 10% of the total operations budget, there is probably a need for an extensive investigation to determine if these costs can be reduced. It is also important to review the overall operations budget to determine if it is sufficient.

- (1) Are all operating budget items satisfactory? _____
- (2) Is there a specific energy budget? _____
- (3) Does energy budget show costs by units (kwh/gal)? _____
- (4) Are power costs < 10% of the operations budget? _____
- (5) Is the operations budget satisfactory? _____
- Score: _____

Summary:

- (1) Does the operations budget appear satisfactory? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix B: 97, 102.
- (4) Comments:

II. BUDGETING (cont.)

G. Review Maintenance Budget

The maintenance budget must be adequate to keep all equipment operating in its best condition. The budget should reflect exact line items for certain pieces of equipment. The maintenance budget must be based on preventive maintenance, not just corrective maintenance.

Other important factors include a running inventory of small parts on hand and the use of good preventive maintenance records that show when maintenance is performed and its associated costs.

- (1) Is the maintenance budget satisfactorily itemized? _____
- (2) Is there an inventory of small parts? _____
- (3) Is Preventive Maintenance routinely performed? _____
- (4) Are there formal Preventive Maintenance records? _____
- (5) Do employees always have sufficient small parts? _____

Score: _____

Summary:

- (1) Does the maintenance budget appear satisfactory? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix B: 97.
- (4) Comments:

13. Cash Flow

A utility that has an adequate rate structure and collects all bills in a timely manner usually does not have a cash flow problem. Factors that contribute to lack of proper cash flow are usually poor revenue estimates and unplanned expenditures not properly forecast in the budget.

- a. Interview clerk and review records to determine if there has always been sufficient cash flow for all "accounts payable."
- b. Determine if the billing cycle is too long for proper cash flow, such as 30 days or longer.
- c. Compare current billing cycle with any state laws or regulations to determine if cycle may be shortened.
- d. List periods where cash flow was a problem.
- e. Determine if cash problems may be caused by poor budgeting.

CASH MANAGEMENT

Cash management is a system used to control the following items of the wastewater utility:

- Receipts
- Deposits
- Surpluses

The elements of a cash flow system should include the establishment of

- cash information systems
- timely billing
- short-term payment period
- proper disbursement procedures

Excess funds should obtain the best interest rate for the time the funds are available. Some of these funds may only be available for short-term benefits, while others may be available for long-term investments.

Short-term funds:

- Excess monthly cash
- Uncommitted accounts
- Operating accounts

Long-term funds:

- Deposit fees
- Improvement reserves
- Replacement set-a-sides

II. BUDGETING (cont.)

H. Review Budget Control

It is important that budgets are prepared based on actual need and not what management feels customers will pay without complaining. Budgets should have exact reasons for every expenditure and include a companion narrative section to discuss the budget document.

A review of past budgets and the time given to them would be important to know. If it is indicated that budgets are always a last minute activity, it generally means that very little thought is given to them. In addition to the line items, there should be a separation of certain activities such as sewer, treatment plant processes, laboratory, and administration.

- (1) Are annual budgets always prepared on time? _____
- (2) Are there sufficient line items for each area? _____
- (3) Does the budget contain activity levels? _____
- (4) Are new line items easily added as required? _____
- (5) Does the operator help prepare the budget? _____

Score: _____

Summary:

- (1) Is the budget control process satisfactory? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix B: 96 - 99.
- (4) Comments:

II. BUDGETING (cont.)

I. Review Equipment Replacement Budget

An equipment replacement budget should include all pumps, motors, vehicles, and any equipment that has a useful life less than that of the total facility. All equipment expected to be replaced within the next 5 years should be itemized by year. Costs can be prorated throughout the life of the equipment, so that funds will be available when needed for replacement.

It is important that all equipment be listed with its date of placing in service, useful life, and its expected replacement cost. These costs should include installed value, since labor is an important part of the total cost.

- (1) Are there line items for specific equipment? _____
- (2) Is there a listing of replacement equipment? _____
- (3) Does the listing include a useful life column? _____
- (4) Is the replacement cost prorated in the budget? _____
- (5) Does the replacement cost include labor? _____

Score: _____

Summary:

- (1) Are replacement costs included in the budget? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix B: 104 - 105, 108 - 115.
- (4) Comments:

14. Rate Increase

A well-maintained facility is one in which all necessary costs will be recovered through proper user charges that are increased as needed. The rate structure should be reviewed at least yearly.

It is important that there is an official policy stated in writing that the wastewater utility will be operated on a self-supporting basis,

- a. Obtain the date of the last rate increase.
- b. Determine why there has not been a rate increase for more than 24 months.
- c. Recommend a rate increase if the current rate does not adequately support the budget. An independent consultant may have to be used to provide adequate rates, if budget and rate structure are unknown.

**WASTEWATER
TREATMENT RATE**

(Gallons treated/month: _____, 19____
_____ X 1,000)

Per. Expenses:

Salaries	\$	_____	
F.I.C.A.		_____	
Benefits		_____	\$ _____

Utilities:

Electric	\$	_____	
Telephone		_____	
		_____	\$ _____

Supplies:

Chemicals	\$	_____	
		_____	\$ _____

Repairs:

	\$	_____	
		_____	\$ _____

Maintenance:

	\$	_____	
		_____	\$ _____

Capital Exp.:

Replacement	\$	_____	
Expansion		_____	
		_____	\$ _____

Debt Service:

Debt & Int.	\$	_____	
Cont. Fund		_____	
		_____	\$ _____
			=====

Total Expenses: \$ _____

Cost/1,000 g.: =====

Gals. treat.: _____ X 1,000

= \$ _____

II. BUDGETING (cont.)

J. Review Capital Improvement Budget

Capital improvement projects should be reviewed at least once per year and an estimated budget developed for the various activities. Many projects can be divided into several small parts and implemented over a period of a few years.

It is important to have a capital improvement policy with the goals to be accomplished. Long range projects should have their funding included as a part of the regular user charges.

- (1) Is there a capital improvement plan? _____
 - (2) Is there a capital improvement budget? _____
 - (3) Is the capital improvement budget sufficient? _____
 - (4) Are capital improvements considered in user fees? _____
 - (5) Is there a capital improvement schedule? _____
- Score: _____

Summary:

- (1) Is there a satisfactory capital improvement budget? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix B: 107.
- (4) Comments:

III. COST RECOVERY

Cost recovery is the process by which all operations, maintenance, and replacement costs are easily recovered through proper user charges.

The cost recovery procedure defines the need for revenue and determines how it will be met. The procedure includes adequate accounting techniques to track all financial transactions and generates the necessary status reports. Good cash management consists of forecasting, tracking, and investing of temporary surplus funds.

Additional information may be found in Appendix C.

15. Delinquent Accounts

Proper procedures must be enacted that provide for a termination of services for any customer that does not pay in a timely manner. An adequate advanced deposit system will also aid in providing the payment when termination does not produce a payment.

If termination of services is not feasible, other procedures such as property sale may be considered.

- a. Obtain delinquent account policies and procedures.
- b. Compare policies with appropriate state statutes.
- c. Determine the average number of delinquent accounts for each of the last 5 years or period of record.
- d. Determine the delinquent dollar amount for the last several billing periods.
- e. Calculate the percentage of the total budget that represents delinquent accounts.
- f. Recommend strong implementation of the collection of delinquent accounts.

DELINQUENT ACCOUNT PROCEDURES

The U.S. Supreme Court stated in 1978 in the Memphis Light, Gas, and Water vs. Willey S. Craft that there must be "DUE PROCESS" in any action against a delinquent utility customer. To help provide proper "DUE PROCESS," there must be proper procedures guided by legal council. Some of the items for these procedures include the following:

1. Bills must be submitted on a routine schedule.
2. Statements must show amount due and when payment is due.
3. A "Past Due Notice" must be mailed when account is delinquent.
4. A "Turn-off" notice must be mailed within stated time.
5. An attempt must be made to contact the head of the household by telephone or in person.
6. If customers have illness or some unusual conditions, time must be given for them to move in with friends or relatives or into public assistance shelters.
7. Services can be terminated only during normal business hours Monday to Friday.

III. COST RECOVERY

A. Review Accounting Issues

A wastewater utility must have an appropriate accounting system that has been set up by someone familiar with acceptable accounting practices. The overall method of accounting can be on a cash basis, accrual basis, or a modified accrual system. It is extremely important that every transaction be carefully recorded and that all financial activities are known.

A wastewater utility is generally operated as an enterprise fund, since it should be treated like a business. There should always be knowledge of the financial status. If possible, a visit to the accountant who maintains or audits the facility's books may provide useful information.

- (1) Is the utility set up as an enterprise fund? _____
- (2) Are proper journals and ledgers used for accounts? _____
- (3) Are total OM & R costs known? _____
- (4) Are indirect costs properly identified? _____
- (5) Is the accounting system reviewed by a CPA firm? _____

Score: _____

Summary:

- (1) Is the present accounting system satisfactory? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix C: 119 - 122.
- (4) Comments:

III. COST RECOVERY (cont.)

B. Review Cash Flow Procedures

A utility that collects sufficient user charges in a timely manner will generally have an adequate cash flow and will not have to be concerned with meeting its normal financial commitments. It will also be able to meet all OM & R costs without difficulty. If there is any indication that expenditures are directly controlled by cash in bank, then the utility has a cash flow problem.

Other factors to consider are the number of outstanding delinquent accounts. These overdue funds are sometimes the difference between good and poor cash flow. Such overdue accounts must be actively pursued and charged penalties and interest. It is also important that billing is timely and mailed as quickly as possible, since revenues are always behind the service provided.

- (1) Does the utility always have sufficient cash? _____
- (2) Are all OM & R costs recovered by user fees? _____
- (3) Is expense control related to available cash? _____
- (4) Are delinquent accounts charged penalties & int.? _____
- (5) Are billings timely & payment due within 30 days? _____

Score: _____

Summary:

- (1) Does the utility have a cash flow problem? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix C: 123.
- (4) Comments:

GLOSSARY

ACCOUNTING: The procedure that tracks all financial transactions and generates status reports.

ACCOUNTS RECEIVABLE: An amount that is owed to the utility by its customers that has not yet been received.

ACCRUAL BASIS: The method of accounting under which revenues are recorded when they are earned (whether or not cash is received at that time) and expenditures are recorded when goods and services are received (whether cash disbursements are made at that time or not).

AMORTIZATION: The process of allocating an asset, a liability, or an amount over future accounting periods. It is the gradual reduction or liquidation of an account according to a specified schedule of times and amounts.

ANNUITY: A series of equal money payments made at equal intervals during a designated period of time.

ASSESSMENT: (1) The process of making the official valuation of property for tax purposes.

(2) The valuation placed on property.

(3) The charge placed against property for the purpose of constructing improvements such as water and sewer.

ASSETS (Capital): Property of a permanent nature or intended for long continued use or possession, such as pumps, motors, trucks, and meters.

ASSETS (Fixed): Permanent property such as land, buildings, sewer collection pipes, and tanks.

ASSETS (Intangible): Any element of value applied to permanent property of a non-physical nature such as cost of organization and development.

ASSETS (Tangible): Permanent property of a physical nature such as lands, buildings, wells, plant equipment, and permanent improvements.

AUTHORITY: A government or public agency created to perform a single function such as a sewer authority. Usually such units are financed from service charges or fees.

BALANCE SHEET: A statement showing the financial position of an enterprise at a specific date, prepared from records to show assets, liabilities, and equities.

BETTERMENT: An addition or change made to a fixed or capital asset which is expected to prolong its life, expand its capacity, or increase its efficiency beyond initial design parameters, and over and above that arising from maintenance. The cost is added to the book value of the asset.

BILLING CYCLE: The time from date of bill to end of payment period, usually about 20 days.

III. COST RECOVERY (cont.)

C. Review Purchasing Control

It is important that the utility have a formal purchasing policy that includes the use of numbered purchase requisitions. Formal policies are necessary to outline the types of approval that are required for various levels of purchasing. It is important that a purchase cost review be made before any item is ordered, so that the best price may be obtained.

The chief wastewater operator should be authorized to make certain expenditures without prior approval, providing they are normal budget items. This would allow important items to be ordered without waiting several days for a formal council or board meeting. It is also important to have a formal record system showing when any item was received after purchase and what its condition is.

- (1) Is there a formal purchase requisition procedure? _____
- (2) Can the operator order items within the budget? _____
- (3) Is there accountability for items received? _____
- (4) Is there a satisfactory cost comparison? _____
- (5) Are all P.O.s entered into a specific journal? _____

Score: _____

Summary:

- (1) Is there a satisfactory purchasing policy? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix C: 124.
- (4) Comments:

III. COST RECOVERY (cont.)

D. Review Sewer Use Ordinance

All wastewater utilities must have a proper sewer use ordinance, which includes the types of wastes that can be introduced to the sewer. The ordinance should include conditions when the wastes require a surcharge because of abnormal conditions. The sewer ordinance should contain prescribed pretreatment conditions.

It is important that the ordinance meet all local, state, and federal legal requirements. The ordinance must be available for all customers. The wastewater management must also have procedures to fairly enforce the ordinance.

- (1) Is ordinance on file for all customers to review? _____
- (2) Is current management aware of its requirements? _____
- (3) Is the ordinance being actively enforced? _____
- (4) Are the surcharges adequate for special wastes? _____
- (5) Are public meetings held to inform customers? _____

Score: _____

Summary:

- (1) Is the sewer use/pretreatment ordinance adequate? _____
- (2) Does the score indicate any problems? _____
- (3) Comments:

BONDS: A written promise to pay a debt by specified sums of money at specified future dates. Bonds are typically used for long-term debt.

BONDS, GENERAL OBLIGATION: When a government pledges its full faith and credit to the repayment of bonds which it issues through various means including taxes or other revenues in some cases.

BUDGETING: Identifies needs for spending and allocates resources among needs.

CAPITAL BUDGET: A plan of proposed capital expenditures that is usually part of the complete annual budget, which includes both operating and capital outlays.

CAPITAL COSTS: Costs of major rehabilitation, betterments, expansion or upgrading.

CAPITAL OUTLAYS: Expenditures which result in the acquisition of or addition to fixed assets.

CASH BASIS: The method of accounting under which revenues are recorded when received in cash and expenditures are recorded when paid.

CASH MANAGEMENT: Forecasting, tracking, and investing of temporary surplus funds.

COMMERCIAL USER: All retail stores, restaurants, office buildings, laundries, and other private establishments.

COST RECOVERY: The system that defines the need for revenue and determines how it will be met.

DEBT MANAGEMENT: Includes locating funds for capital construction and the repayment of borrowed funds.

DEBT SERVICE: Payment of interest and repayment of principal to holders of a debt instrument.

DIRECT EXPENSES: Those expenses which can be charged directly as a part of the cost of materials or service, or charged directly to a department or operating unit, as distinguished from overhead and other indirect costs which must be prorated through many activities.

ENCUMBRANCES: Obligations in the form of purchase orders, contracts or salary commitments which are chargeable to an account that is reserved.

ENTERPRISE FUND: A fund established to account for water and sewer operations that are financed and operated in a manner similar to private business enterprises. The intent of the governing body is that all costs of providing services be financed or recovered through user charges.

EQUITY: The difference between assets and liabilities.

FLAT RATE: A rate that is not based on water usage, but is usually based on a fixed price.

GRANTEE: A municipality that has executed a federal grant agreement.

III. COST RECOVERY (cont.)

E. Review Rate Structure

The rate structure includes the necessary user charges that are required for the operation, maintenance, and replacement costs of equipment. This must be reviewed at least annually to determine if adequate revenues will be available to recover all costs. Some utilities establish the user charges and then adjust the expense budget accordingly. This, of course, is a very poor practice and usually catches up with the utility at some later period. The saying of "pay now" or "pay more later" is certainly very true of wastewater utilities.

There have been some cases where low rates have caused customers to use much more water than necessary and place a great burden upon the wastewater treatment plant. Proper user charges can promote or inspire water conservation in some cases.

- (1) Do charges include unusual treatment requirements? _____
- (2) Do the charges consider high power demand costs? _____
- (3) Do the user charges promote water conservation? _____
- (4) Do the user charges reflect demands on the system? _____
- (5) Do the user charges separate types of customers? _____

Score: _____

Summary:

- (1) Are the user charges properly reviewed annually? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix C: 125 - 134.
- (4) Comments:

III. COST RECOVERY (cont.)

F. Review Cost Recovery Procedures

Complete cost recovery is based on the premise that all wastewater utility costs will be recovered through proper user charges. In order to obtain this goal, the user charges must be reviewed each year to establish the proper level.

It is important that there is an official policy stated in writing that the wastewater utility will be operated on a self-supporting basis. This should also include a policy requiring the use of meters for measuring all water used by customers and ultimately discharging to the sewers. Special high strength waste should have a surcharge since treatment may be more costly.

- (1) Is there an annual user fee evaluation? _____
- (2) Is there a written self-supporting policy? _____
- (3) Is there proper public education on user charges? _____
- (4) Is there a surcharge for high strength wastes? _____
- (5) Are all users properly and accurately metered? _____

Score: _____

Summary:

- (1) Are there proper cost recovery procedures? _____
- (2) Does the score indicate any problems? _____
- (3) Comment: _____

GENERAL ACCEPTED ACCOUNTING PRINCIPLES (GAAP): Uniform minimum standards of guidelines for financial accounting and reporting.

INDIRECT COST: A cost necessary for the functioning of the organization as whole, but which cannot be directly assigned to one activity.

INFILTRATION: Water other than wastewater that enters a sewer system from the ground through such means as defective pipes, connections, or manholes.

INFLOW: Water other than wastewater that enters a sewer system from such areas as roof leaders, yard drains, cooling towers, storm water, and surface drainage.

INSTITUTIONAL: Includes schools, churches, hospitals, nursing homes, penal facilities and other similar users.

JOURNAL: A record in which entries are recorded in chronological order.

LIABILITIES: Amounts the utility owes to others.

LIABILITIES (current): Amounts due in the near future such as payroll earned, but not paid, and upcoming payments to vendors for goods received.

LIABILITIES (long-term): Items due beyond the end of the current fiscal year. This is almost always the amount of outstanding debt that is not due until the following years.

LIABILITIES (restricted): This would consist of any amounts due from other current assets such as bond payments.

MINIMUM BILLING: A fee charged even when services are not used.

MODIFIED ACCRUAL BASIS: The basis of accounting under which expenditures and liabilities are recorded when services are incurred, and revenues are recorded when received or when both measurable and/or available.

OPERATION & MAINTENANCE: Functions that result in expenditures during the useful life of the treatment works for materials, labor, utilities, and other items necessary for managing and maintaining the facility.

OVERHEAD: Those elements of cost necessary to perform the activity which cannot be determined readily, such as management services.

PURCHASING: The system that allows the utility to procure and store needed goods and services.

REHABILITATION/REPLACEMENT: Expenditures for obtaining and installing replacement or rehabilitated equipment, accessories, or appurtenances, which are necessary during the useful life of the treatment works to maintain the performance for which the works were designed.

III. COST RECOVERY (cont.)

G. Determine the Cost Recovery Status

There should be enough financial information available throughout the year to show if the wastewater system has proper cost recovery without waiting until the end of the year. Some questions to answer include what revenue would be available if everyone just paid the minimum bill or will individual customer deposit funds pay for all delinquent accounts.

- (1) Does the monthly cash balance indicate the status? _____
- (2) Is the minimum bill adequate for all fixed costs? _____
- (3) Is the cost of operating each activity known? _____
- (4) Is a cost recovery analysis determined annually? _____
- (5) Are industries paying by concentration of wastes? _____

Score: _____

Summary:

- (1) Can the cost recovery status be determined? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix C: 128 - 130.
- (4) Comments:

III. COST RECOVERY (cont.)

H. Review Billing and Collection Procedures

A formal policy should be provided that outlines the billing dates and collection procedures. These should also be incorporated in a customer information sheet, so that each customer knows exactly what is expected. It is important that all bills be mailed on time and overdue notices go out on time.

It is important that water cut-off be performed when required and that adequate payment be made when the water is turned back on. It is important that all customers know their rights as well as the rights of the utility.

- (1) Are bills mailed within 5 days after reading? _____
- (2) Are there information sheets for customers? _____
- (3) Are overdue notices mailed within 5 days? _____
- (4) Do late payments include interest and penalties? _____
- (5) Is there a formal cut-off procedure? _____

Score: _____

Summary:

- (1) Are bills and notices mailed on time? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix C: 138 - 139.
- (4) Comments:

REHABILITATION/REPLACEMENT COST: The cost of major rehabilitation or replacement of property as of a certain date, which can render similar service as originally intended. Major rehabilitation and replacement are incremental elements of operating costs. They are variable, depending upon levels of expenditures for maintenance. These are the expenditures to maintain the capacity and performance for which the works were designed. It is not a capital cost and does not increase the book value of an asset.

SERVICE CHARGE: A charge levied on a user of the treatment works which includes a user charge, a charge for capital reserve and debt service.

SOLVENCY: The ability to meet long-term obligations.

SURCHARGE: An additional or premium charge for services beyond the normal charges.

TRANSACTION: A business event that is recorded in the accounting records.

USER CHARGE: A charge levied on users of a treatment works for the costs of operation, maintenance, and replacement.

APPENDICES to HANDBOOK

This is a separate document entitled,
FINANCIAL MANAGEMENT EVALUATION
APPENDICES, December 30, 1988.

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III. COST RECOVERY (cont.)

I. Review Delinquent Accounts

Some systems have problems with customers not paying on time or moving away without paying their bills.

It is important that there be a sufficient deposit system to pay for any uncollectable bill before a turn-off procedure is initiated. This is usually a two-month period. There should also be a penalty fee and interest fee for overdue bills.

(1) Is there a proper delinquent account policy? _____

(2) Does billing require payment within 30 days? _____

(3) Are delinquencies < 5% of operating budget? _____

(4) Is there a penalty and interest policy? _____

(5) Does the deposit always pay for unpaid accounts? _____

Score: _____

Summary:

(1) Are delinquent accounts a problem? _____

(2) Does the score indicate any problems? _____

(3) Comments:

III. COST RECOVERY (cont.)

J. Review Wastewater Collection

Normal wastewater billing does not account for inflow and infiltration problems. There needs to be an adequate study and correction of this issue, so that this extra water does not enter the wastewater treatment plant. Another source of extra wastewater that is not billed is the use of private water supplies that may discharge into the collection system. Some customers use both public water and their own water for some large volume uses.

It has also been found in some areas that illegal sewer connections have been made without knowledge of the utility. Wastewater flow measurements in the collection system may help catch any of these situations. At the time of these measurements, sampling near some industries could help find any high strength wastes.

(1) Are sewer flows compared to actual billings? _____

(2) Have all infiltration/inflow problems been solved? _____

(3) See Appendix C: 140.

(3) Have all private water sources been identified? _____

(4) Is there a surcharge policy for industrial wastes? _____

(5) Is there an on-going program to find illegal taps? _____

Score: _____

Summary:

(1) Are all wastewater collections accounted? _____

(2) Does the score indicate any problems? _____

(3) Comments:

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III. COST RECOVERY (cont.)

K. Determine If There Is a Sufficient Equipment Reserve Fund

There should be a reserve fund for future replacement of equipment such as pumps, motors, and other important equipment. This reserve fund should be based on useful life of equipment, and it should provide for immediate replacement when needed. The reserve fund should be based on the normal life cycle. Salvage value of the original equipment should be considered.

- (1) Is there an equipment replacement policy? _____
- (2) Does the policy include specific equipment lists? _____
- (3) Is the fund set aside as a separate account? _____
- (4) Has the fund been sufficient in the past? _____
- (5) Is there a sufficient future reserve fund? _____

Score: _____

Summary:

- (1) Is the equipment replacement fund satisfactory? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix C: 108 - 115.
- (4) Comments:

IV. PLANNING

Planning is the process that a utility uses to determine future needs. A systematic plan is developed rather than just allowing the utility to react to situations as they occur.

Additional information may be found in Appendix D.

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IV. PLANNING

A. Review Past Planning

Management sometimes does not know why existing facilities were constructed or what criteria were used for design purposes. A well-planned utility will have records from consultants and meeting minutes outlining previous planning actions.

It is important to know the background of the facility and if management has any interest since this may affect the future operation of the utility.

- (1) Are minutes or records available for past actions? _____
- (2) Is there an adequate set of as-built drawings? _____
- (3) Are cost data available for the current facility? _____
- (4) Does planning of the facility appear satisfactory? _____
- (5) Is planning for the next 5 years adequate? _____

Score: _____

Summary:

- (1) Do past planning activities appear satisfactory? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix D: 149.
- (4) Comments:

IV. PLANNING (cont.)

B. Review Planning Policy

Many wastewater utilities do not adequately plan for the future. They often just drift along until some major incident happens that requires them to take corrective action.

Determine if there is a written planning policy that states any planning goals for at least the next 5 years. It is important to review the utility to observe if any problems need an immediate planning effort. The treatment plant operator should be a part of the overall planning effort.

- (1) Is there a written planning policy? _____
- (2) Are long range plans free of problems? _____
- (3) Does the operator participate in planning? _____
- (4) Does management understand planning policies? _____
- (5) Will the facility be satisfactory for next 5 yrs.? _____

Score: _____

Summary:

- (1) Is there adequate planning for the future? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix D: 150.
- (4) Comments:

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IV. PLANNING (cont.)

C. Review Operations Planning

Operations planning includes specific, measurable objectives such as compliance criteria to meet the NPDES permit. Resources are estimated to meet these requirements, so that the objectives may be met.

Certain cost factors should be estimated such as cost for treating 1,000 gallons of wastewater or cost for removing each pound of BOD or total suspended solids.

- (1) Does the utility perform operations planning? _____
- (2) Are managers involved in operations planning? _____
- (3) Does the planning establish operating objectives? _____
- (4) Does the planning estimate the resources needed? _____
- (5) Have performance standards been identified? _____

Score: _____

Summary:

- (1) Is the operations planning satisfactory? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix D: 151. _____
- (4) Comments: _____

IV. PLANNING (cont.)

D. Review Capital Improvement Plans

Most wastewater collection and treatment utilities should have some capital improvements plans that need implementation. It is important to review any actions that are pending and determine if a long range capital improvements budget has been initiated.

An important step for any utility is to have a schedule for future capital improvement projects. A capital improvement budget should be part of the overall budget.

- (1) Is there a formal capital improvement program? _____
- (2) Are there capital improvement plans for next 5 yrs? _____
- (3) Are capital improvements > 5% of operation budget? _____
- (4) Are improvement costs included in the next budget? _____
- (5) Is there a capital improvement reserve fund? _____

Score: _____

Summary:

- (1) Are there adequate capital improvement plans? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix D: 152 - 153.
- (4) Comments:

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IV. PLANNING (cont.)

E. Review Capital Improvement Schedule

Capital improvement plans must have a schedule for implementing the necessary improvements. It should be based on an actual needs schedule, not on other factors, such as elections.

The capital improvement schedule should also be based on specific objectives and priorities. These should be developed for at least the next five years with an annual review and updating.

- (1) Is there a capital improvement project schedule? _____
- (2) Is the schedule based on adequate priorities? _____
- (3) Does the 5 year plan include annual expenditures? _____
- (4) Does the schedule include a method of financing? _____
- (5) Does the budget include these scheduled costs? _____

Score: _____

Summary:

- (1) Is the capital improvement schedule adequate? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix D: 154.
- (4) Comments:

V. FINANCING

Financing is the process that allows the utility to borrow money that is not already available to complete a project.

Today's financial market permits opportunity to consider many different financing options.

Additional information may be found in Appendix E.

V. FINANCING

A. Review Current Financing

Most utilities have had to finance some portion of the construction of the facility . They often think that borrowing money is a way of life which will always be with them. Thousands of dollars are spent for interest each year.

It is crucial that utilities do not have debts that exceed 25% of their total budget. Utilities should not always be borrowing money to the maximum time limit, which is often 40 years. Many facilities last a much shorter period, and thus require refinancing at a later date.

- (1) Is the present debt payment < 25% of total budget? _____
- (2) Is the present principal < 3 times total budget? _____
- (3) Will the present loan be paid off in < 20 years? _____
- (4) Will the present WWTP outlast the current loan? _____
- (5) Is the present interest rate < 6 per cent? _____

Score: _____

Summary:

- (1) Is there a financing problem? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix B: 96 - 97, E: 157 - 158.
- (4) Comments:

V. FINANCING

B. Review Future Financing Needs

It is important to determine if the wastewater treatment facility will last at least as long as the loan or outstanding bonds. If it is apparent that major capital improvements or replacements will be necessary that require financing, the amount of future loans must be determined.

- (1) Is there a financial debt policy limit? _____
- (2) Is the current financing adequate for next 20 yrs? _____
- (3) Is it possible to reduce the current loan period? _____
- (4) Will any loan be paid off during next 20 years? _____
- (5) Will the facility be adequate after loan pay-off? _____

Score: _____

Summary:

- (1) Will future financing be required? _____
- (2) Does the score indicate any problems? _____
- (3) Comments: _____

V. FINANCING

C. Review Financing Options

Today's financial market presents many options for financing the initial construction, rehabilitation, or upgrading of wastewater utilities. Often a utility only looks at one conventional money source and does not review the many options or creative financial situations that are available.

Financing alternatives provide several choices to communities. They may include private participation in construction, ownership, operation, and financing. These alternatives must be evaluated.

- (1) Is the present financing arrangement satisfactory? _____
- (2) Will it be satisfactory for the next 5 years? _____
- (3) Is the utility capable of reviewing future options? _____
- (4) Can the utility obtain increased financing? _____
- (5) Can the customers afford additional financing? _____

Score: _____

Summary:

- (1) Can the utility handle future financing? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix E: 159 - 166.
- (4) Comments:

VI. FINANCIAL REPORTING

It is important that all financial actions be carefully reported, reviewed, and analyzed.

Additional information is available in Appendix F.

VI. FINANCIAL REPORTING

A. Review Financial Reports

A properly managed utility will have certain routine financial reports readily available. Detailed cost information and an understanding of operations are necessary to make an accurate assessment of operating costs. These reports should be reviewed to determine the true financial status.

Determine if the current reports are adequate to show important aspects of the utility.

- (1) Are all transactions posted daily? _____
- (2) Are all cash receipts deposited daily? _____
- (3) Are revenues & expenses compared with the budget? _____
- (4) Do delinquent accounts appear in monthly records? _____
- (5) Are adequate monthly financial reports prepared? _____

Score: _____

Summary:

- (1) Are there adequate financial reports available? _____
- (2) Does the score indicate any problems? _____
- (3) See Appendix F: 169 - 174.
- (4) Comments:

Appendix A

MANAGEMENT

INTRODUCTION

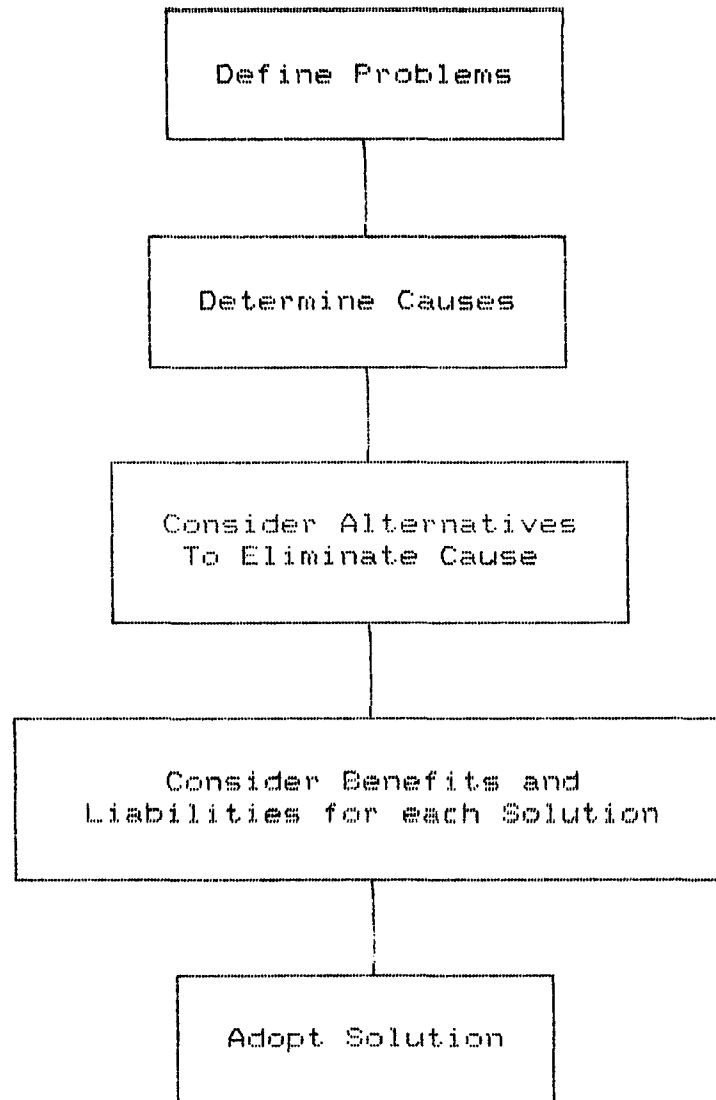
A well-run wastewater utility happens only when there is good management. Good management consists of a governing board that takes an active interest in all phases of the operation of the utility. This requires active review and problem solving of the utility activities. On-the-job visits to lift stations, sewer repair sites, and wastewater treatment facilities must be made.

Good management will speak with one voice, reward those who have performed above average, and discipline those who perform poorly.

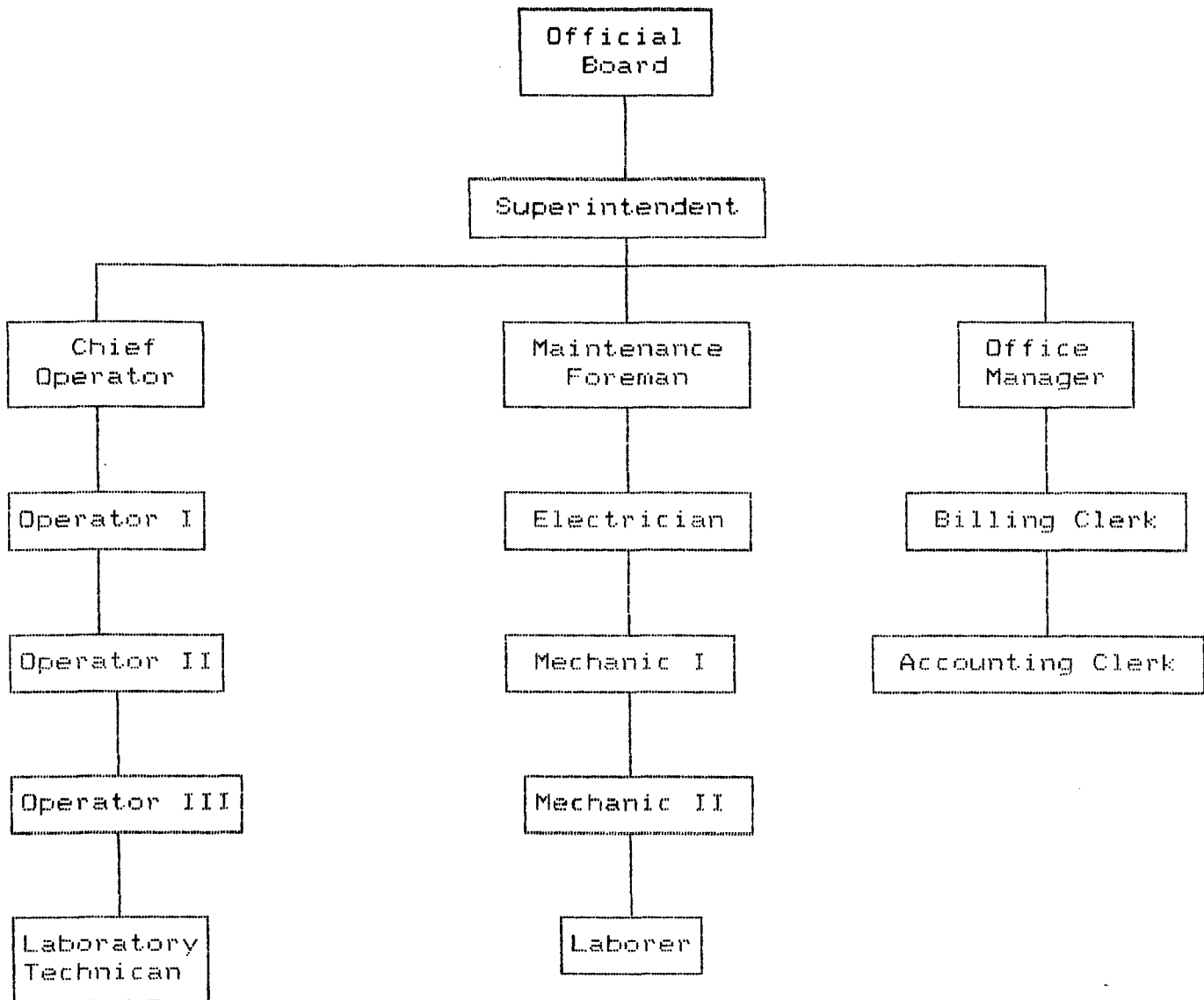
MANAGEMENT RESPONSIBILITIES

- Meet legal NPDES requirements
- Provide adequate accounting system
- Provide proper budgeting
- Plan for future
- Implement adequate user charges
- Provide adequate record system
- Provide good public relations
- Provide good working conditions

MANAGEMENT PROBLEM SOLVING OUTLINE



TYPICAL ORGANIZATION CHART
Wastewater Collection and Treatment



TYPICAL STAFFING

	Estimated Annual Requirements <u>Manhours</u>	<u>No. of Employees</u>
<u>Administration</u>		
Superintendent	_____	
Billing Clerk	_____	
Accounting Clerk	_____	
Subtotal:	----- _____	----- _____
<u>Operations</u>		
Chief Operator	_____	
Operator I	_____	
Operator II	_____	
Operator III	_____	
Laboratory Technician	_____	
Subtotal:	----- _____	----- _____
<u>Maintenance</u>		
Electrician I	_____	
Mechanic I	_____	
Mechanic II	_____	
Laborer	_____	
Subtotal:	----- _____	----- _____
Total Requirements:	_____	_____

(Manhours divided by 2080 = number of employees per year)

BRIEF JOB DESCRIPTION
Wastewater Utility

Superintendent: Responsible for administration, operation, and maintenance of entire wastewater utility. Exercises direct authority over all functions and personnel. Organizes and directs activities for planning, budgeting and operating the facility to keep in NPDES compliance.

Office Manager: Responsible for all office activities including billing, collection, accounting, purchasing, budget control, and payroll.

Billing Clerk: Responsible for billing, collection, and associated record keeping.

Accounting Clerk: Assists with billing and collection, and keeps proper journals and ledgers for recording all financial transactions.

Chief Operator: Supervises and coordinates activities of plant operators and other plant personnel. Prepares work schedules and determines process control needs to meet NPDES limits.

Operator I: Performs duties of normal operations, takes samples, and makes process changes as required.

Operator II: Assists Operator I as needed, records measurements such as flow, waste loads, and sludge return rates.

Operator III: Assists Operators I and II as directed and performs routine tasks.

Lab Technician: Performs all bacteriological, chemical, and physical tests as required to provide process control and final effluent data.

Maintenance Foreman: Supervises all preventive and corrective maintenance for entire plant. Plans, schedules, and directs all maintenance work. Submits maintenance budgets and keeps maintenance records for all equipment.

Electrician: Performs all electrical preventive and corrective maintenance. Keeps adequate spare parts and records.

Mechanic: Performs preventive and corrective maintenance on all machinery and equipment. Installs new equipment.

Laborer: Performs general cleaning tasks at plant, performs building and grounds maintenance, paints equipment and facilities, and operates equipment such as backhoes.

TYPICAL EMPLOYEE APPRAISAL

Job Knowledge:

- ☐ Poorly informed
- ☐ Lacks knowledge in some areas
- ☐ Moderately informed
- ☐ Understands almost all phases
- ☐ Has complete mastery

Quality of Work:

- ☐ Usually below minimum acceptable quality
- ☐ Often below minimum acceptable quality
- ☐ Acceptable quality most of time
- ☐ Often above acceptable quality
- ☐ Consistently exceeds acceptable standards

Quantity of Work:

- ☐ Does not meet minimum requirements
- ☐ Does just enough to get by
- ☐ Volume of work satisfactory
- ☐ Very industrious: does more than required
- ☐ Superior work production record

Stability During Crisis and Under Pressure

- ☐ Goes "to pieces"
- ☐ Occasionally "blows up"
- ☐ Has average tolerance for crisis
- ☐ Tolerates most pressure
- ☐ Thrives under pressure

Accuracy in Work Duties

- ☐ Makes frequent errors
- ☐ Makes recurrent errors
- ☐ Usually accurate
- ☐ Is precise most of time
- ☐ Is almost always accurate

Creativity in Finding Better Ways to Perform Work

- ☐ Rarely has a good idea
- ☐ Occasionally has new idea
- ☐ Has average number of new ideas
- ☐ Frequently suggests new ways to perform work better
- ☐ Continually seeks new and better ways of doing things

TYPICAL BENEFIT ITEMS

<u>Benefit Time</u>	<u>Typical Hours (Annual)</u>
Holidays	72
Sick Leave	56
Training	40
Vacation	80

<u>Fringe Benefit Costs</u>	<u>Typical Amount (% of Pay)</u>
Hospital Insurance	5
Life Insurance	3
Retirement	6

TYPICAL OFFICE PROCEDURES

- A. Contacts with the customer should be friendly and courteous both in person and on the telephone.

Good office procedures should include:

- * Answering telephone calls promptly
- * Extending a pleasant greeting to customers
- * Identifying yourself
- * Showing a real interest in the conversation
- * Being sympathetic with problems
- * Being responsive
- * Being patient

- B. Office correspondence is important to good public relations.

The following points should be apparent:

- * Friendly style writing
- * Clear, brief and accurate points
- * Important points first
- * Good language
- * Neat letters and reports

- C. Office Appearance

The office should have a pleasing appearance to the public.

The following items are important:

- * Neat and clean
- * Not cluttered
- * Good file system
- * Easy access to records
- * Customer information easily available

TYPICAL PURCHASE POLICY
Plant Operator Spending Authority

1. The plant operator can make purchases up to \$200 as long as a single purchase does not either exceed \$200, or cause the budgeted line item amount or the total budget to be exceeded.
2. The plant operator cannot make expenditures if expenses exceed the budgeted line item amount, the total budget, or \$200. The plant operator will submit quotes and data to officials concerning such purchases. Officials will make financial decisions and allocate the necessary funds for the plant operator to make necessary purchases.
3. The plant operator will give necessary purchase orders, invoices, and receipts to the treasurer within five days of the purchase.
4. The treasurer will then post the purchase in the treasurer's ledger and forward the purchase orders, invoices or receipts to the Board members within ten days.
5. The officials shall approve vouchers, purchase orders, invoices, receipts and return them to the treasurer.
6. In an emergency situation, when a major breakdown occurs and the facility would remain unoperable until expenditure is made, the plant operator has the authority to make the minimum expenditure necessary to achieve operable status after notifying one of the Board members.

Plant Operator:

Date:

Board Officials:

Date:

WASTEWATER UTILITY DESCRIPTION

Town: _____

Mailing address: _____

Contact Person: _____

Telephone: _____

I. Collection System

A. Number of customers:

- 1. Residential - _____
- 2. Commercial - _____
- 3. Industrial - _____

B. Area of collection system (acres or sq. miles): _____

C. Size of collectors: _____ in. X _____ lin. ft.
_____ in. X _____ lin. ft.
_____ in. X _____ lin. ft.
_____ in. X _____ lin. ft.

D. Separate or combined sewers: _____

E. Any overflow devices: _____

F. Latest I/I study: _____

G. Any I/I problems: _____

H. Any corrective sewer sealing action performed: _____

I. Type of collection system:

- 1. Gravity - _____
- 2. Number of lift stations - _____
- 3. Pressure system - _____
- 4. Number of pressure points - _____
- 5. Vacuum system - _____

J. Date collection system constructed: _____

K. Last modifications:

Type of action - _____

UTILITY DESCRIPTION (cont.)

L. Is system adequate?

1. Present - _____

2. Future - _____

M. List sewer use ordinance and conditions:

1. Residential - _____

2. Pretreatment - _____

II. Treatment System

A. Design size: _____

MGD

B. Average flow: _____

MGD

C. Type of system: _____

D. Describe each process unit (type, size, retention time):

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

E. Permit limits:

1. 5 day BOD -

2. Suspended solids -

3. pH -

4. Ammonia-N -

5. Nitrate-N -

6. Phosphorus -

7. D.O. -

Permit

DMRs

F. Treatment Problems:

1. _____

2. _____

3. _____

MANAGEMENT AUDIT

I. Institutional Status

- A. Organizational structure: _____
- B. Positive conditions: _____
- C. Negative conditions: _____
- D. Is there adequate management? _____
- E. Any changes needed? _____

II. Operations Personnel

A. Collection system personnel:

- 1. Number of people - _____
- 2. Adequate? - _____
- 3. Total years of service - _____

B. Treatment Personnel:

- 1. Number of people - _____
- 2. Adequate? - _____
- 3. Total years of service - _____

III. Administration

A. Organization:

- 1. Number on board, commission or council - _____
- 2. Elected or appointed - _____
- 3. Term - _____
- 4. Overall interest - _____

B. Office:

- 1. Number of clerks - _____
- 2. Number of supervisors - _____
- 3. Total years of service - _____

KEY MANAGEMENT ISSUES

- I. Are there Organizational Plans for both the wastewater facility and the governing body?
 - A. Shows lines of authority?
 - B. Reporting requirements?
 - C. Staff responsibilities?
 - D. Inter-department relationship?
- II. Are there Job Descriptions with appropriate Work Standards?
 - A. Work goals?
 - B. Performance evaluations?
 - C. Incentives?
- III. Does the Superintendent or Chief Operator have direct contact with the governing body?
 - A. As an organization?
 - B. With particular individuals?
- IV. Does the Superintendent or Chief Operator help develop the wastewater budget?
 - A. What is the involvement?
 - B. Is the routine staff informed?
 - C. Is there long range planning?
- V. Is there a formal comprehensive budget document?
 - A. Identify the cost of major function
 - B. Is there a contingency reserve?
 - C. Are the budget items realistic?
- VI. Is there a capital replacement fund?
 - A. Increasing accumulations?
 - B. Capped amount?
 - C. Has the fund been raided?

- VII. Does the Superintendent or Chief Operator have purchasing authority within the budget without further approval?
- A. Is there a maximum amount?
 - B. How are emergency situations handled?
- VIII. Is an annual independent audit conducted?
- IX. Are routine budget-to-actual reports made?
- X. Are sewer user fees adequate?
- A. Are they based on the system needs?
 - B. Are the revenues autonomous from other funds?
 - C. Are costs fairly distributed?
- XI. Are billing and collection procedures adequate?
- XII. Is the budget adequate to meet personnel needs?
- A. Staffing?
 - B. Training?
 - C. Incentives?
- XIII. Are Operation and Maintenance records adequate?
- XIV. Is there a formal documented safety program?
- XV. Is there a sewer use ordinance and pretreatment program?

Appendix B

BUDGETING

IMPORTANT FINANCIAL DOCUMENTATION TO REVIEW

Documents usually available by copies:

- Annual audits
- Annual budgets
- Budget vs. actual costs
- Debt summary
- Delinquent accounts by billing periods
- Rate schedules

Documents usually too voluminous to copy:

- Account ledgers
- Bank documents (check registers, statements)
- Billing records
- Daily journals (cash receipts, disbursements)
- Income statements
- Payroll records
- Purchasing records (invoices)

BUDGETING PROCEDURES

Management should first define what constitutes a capital expense and what items are considered operation, maintenance and replacement (OM & R) expenses.

A capital program involves development of short and long term plans to refurbish and expand the utility's physical facilities. This includes planned expenditures for improvements and betterments to buildings, land, sewers and major pieces of equipment which have significant value and extend the useful life of the treatment works.

The current operating expense budget includes those items considered to be routine operation, maintenance, and replacement expenses. The current budget generally involves a one-year plan for the day-to-day operations of the treatment system.

The budget should identify O,M & R costs for each activity such as the collection system, primary treatment, secondary treatment, laboratory, and administration.

Once the unit process costs have been established, the next step is to divide these costs by the total annual volume and/or loadings, as appropriate to produce unit costs.

Utilities need to be concerned with three types of budgets:

- * Revenue
- * Operation, Maintenance, and Replacement
- * Debt Service

DIRECT and INDIRECT COSTS

A Budget Is a Management Tool

Use it to :

PLAN

ADMINISTER

Budget Process:

- Illustrate how much will be spent
- Establish work priorities
- Measure the quality of work performed
- Ensure availability of resources

Line items may be direct or indirect:

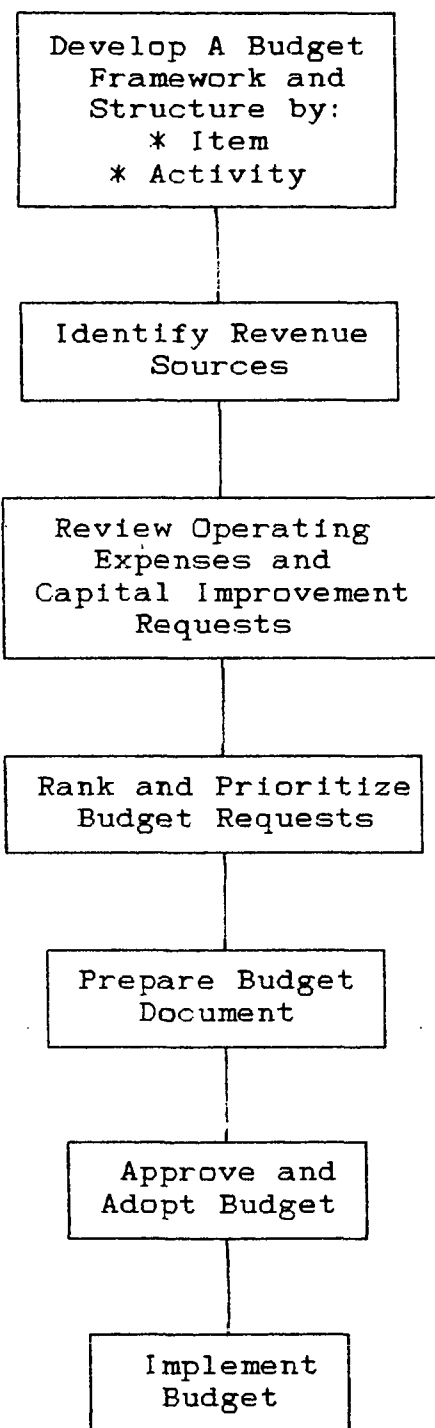
Direct

- Operating expenses
- Maintenance expenses
- Equipment purchases
- Salaries and wages
- Debt Service

Indirect

- Fringe benefits
- Bill collection
- Overhead for office, etc.

BUDGET PROCESS STEPS



RANKING BUDGET REQUESTS

Are Costs Realistic?

Are They Based on Past Performance?

Is Staff Being Used Efficiently?

Who Is Involved in Budgeting?

Chief operator

Clerk

Board, commission, or council

Problems in Budgeting

Not enough money

Capital budget cuts

Inadequate revenue budget

Excessive transfers from reserves

Inadequate budget controls

No activity budgets

TYPICAL BUDGET OUTLINE

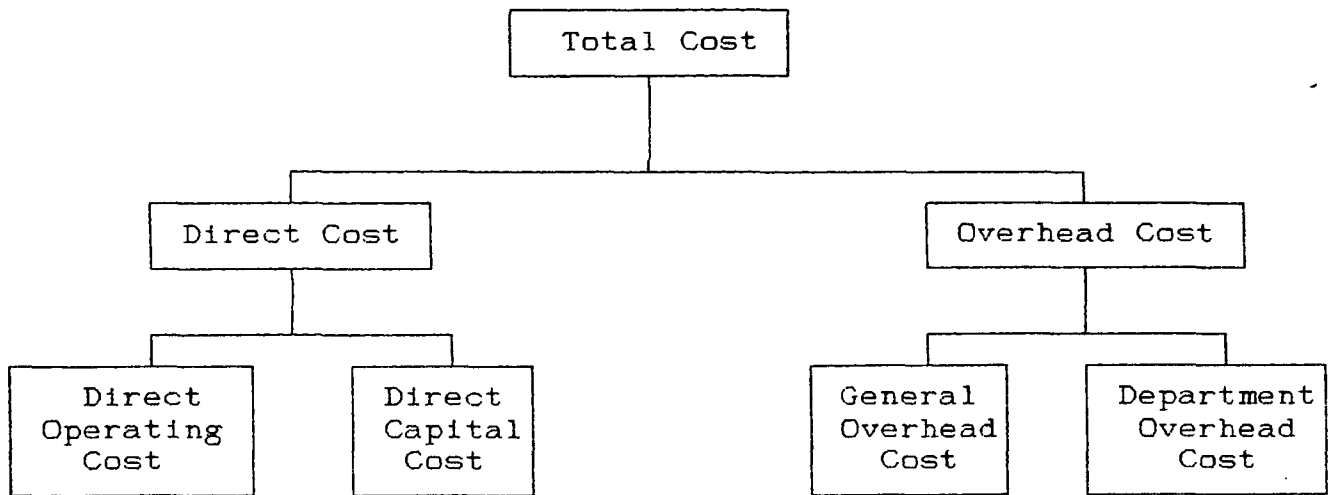
	<u>Activity</u>				
	<u>Sewers</u>	<u>Lift Station</u>	<u>Primary Treat.</u>	<u>Secondary Treat.</u>	<u>Lab Admin.</u>
<u>Personnel Services</u>					
Salaries/wages					
F.I.C.A.					
Unemploy. Ins.					
Worker's Comp.					
Health Insur.					
Retirement					
Total:					
<u>O & M Expenses</u>					
Office supplies					
Postage					
Telephone					
Electricity					
Natural gas					
Water					
Vehicle gas & oil					
Chemicals					
Operating supplies					
Equipment repairs					
Training					
Travel					
Total:					
<u>Capital Outlay</u>					
Replacement acc.					
Improvement acc.					
Expansion acc.					
Depreciation fund					
Total:					
<u>Debt Service</u>					
Debt & interest					
Cushion fund					
Contingency fund					
Total:					
 TOTAL:					

BUDGET vs. ACTUAL EXPENDITURES

(Period of Record)

	<u>% of</u>	<u>Budget</u>	<u>Actual</u>	<u>+ or -</u>	<u>% Change</u>
<u>Per. Services</u>					
Salaries					
Benefits					
Subtotal:					
<u>O & M Expenses</u>					
Office					
Chemicals					
Energy					
Operation					
Maintenance					
Subtotal:					
<u>Capital Outlay</u>					
Expan./improv.					
Replace./rehab.					
Sinking Fund					
Subtotal:					
<u>Debt Service</u>					
Debt & int.					
Cont. funds					
Subtotal:					
TOTAL:					

COST of SERVICE



Revenue Budget

The annual revenue budget reflects how much money the utility will receive from customers and other revenue sources to spend on the operation of the utility.

Estimated customer billing:	\$ _____
Penalties and interest:	_____
Connection fee:	_____
Other:	_____

Total:	\$ _____

OM & R Budget

The operations, maintenance, and replacement budget should reflect the major activities of the utility and include a listing of other important factors:

- Administration
- Billing and collection
- Operations
- Maintenance
- Replacement
- Support services
- Debt services
- Dedicated fund

Capital Budget

The capital budget reflects long-term objectives resulting from capital projects and generally relies on specific financing.

ESTIMATES of REVENUE REQUIREMENTS

Allocating annual costs and estimating the revenue requirements of each user group is a three-step process.

First, the unit costs of collection and treatment are developed, which include:

- * Collection Costs

- Lift stations

- Sewer repairs

- * Pre-Treatment

- Bar screens

- Grit chamber

- * Primary Treatment

- Physical

- Sludge

- * Secondary Treatment

- Aeration

- Sludge removal

Second, the unit costs are multiplied by the loadings for each user group:

- Residential

- Commercial

- Industrial

Third, other factors are considered such as:

- Administration

- Billing and Collection

- Dedicated Funds

ELECTRICAL ENERGY

Lift Stations

	<u>KWH</u>	<u>% of Total</u>	<u>Cost/KWH</u>	<u>Total Cost</u>
A				
B				
C				
	_____	_____	_____	_____
Total:				

Treatment Plant

Raw sewage pumping

Pretreatment

Primary treatment

Secondary treatment

Sludge treatment

Other

Total:

Summary

Cost/KWH

Peak Demand

Total KWH

Total Cost

Cost/day

Total flow/month

Cost/MG

TYPICAL OPERATING COSTS

<u>OPERATION</u>	<u>LABOR</u>	<u>OTHER</u>
Collection	Pump station & sewers	Repair parts, powers
Primary	Plant operations	Parts, power, chemicals
Secondary	Plant operations	Parts, power, chemicals
Advanced	Plant operations	Parts, power, chemicals
Sludge	Condition & transport	Parts, power, chemicals
Laboratory	Testing	Supplies, power
Customer Service	Meter reading Billing operations	Billiing supplies Postage
Administration	Managers	Office supplies, insur.

TYPICAL TRAINING EXPENDITURES

* WAGES DURING TRAINING

* REPLACEMENT DURING TRAINING

* TRAVEL

* REGISTRATION

* BOOKS

IDENTIFYING HIGH COST AREAS

The line items of the operating budgets (not including debt service) should be reviewed to determine if any item constitutes more than 20% of the total operating cost. The debt service accounts should not be more than 25% of the total budget. If these items exceed the stated amounts, this indicates a major financial problem that needs attention.

Another purpose of reviewing budget to actual costs is to determine if monthly costs are significantly higher than projections. If any operating cost exceeds the annual prorated cost by 20%, this indicates a significant overrun.

A third indication of high cost areas relates to any excessive item that is 20% or more than the previous year or when compared with a similar size plant.

The high cost items of most treatment plants are labor and energy. If these two items exceed 50% of budget, it is a sign of problems. If it exceeds 75%, it shows a very significant problem.

REPLACEMENT RESERVE

Section 212(3) of the Clean Water Act defines equipment replacement as expenditures for obtaining and installing equipment, accessories, or appurtenances during the useful life of the treatment works, necessary to maintain the capacity and performance for which the POTW was designed. The level of replacement reserve needed to meet these costs is that required to maintain capacity and performance of the physical plant.

To determine an annual reserve amount with an accounting basis, a calculated annual depreciated system can be used. This requires determination of the depletion of an asset's value. Most small POTWs do not practice any form of asset depreciation.

These replacement costs may be determined by:

Straight-line method - distributes the replacement cost of an asset in equal amounts in each accounting period during the estimated service life.

The annual replacement costs may be upgraded using EPA inflation factors or Engineering News-Record cost index.

EQUIPMENT REPLACEMENT INVENTORY
and
MAJOR REHABILITATION

	<u>Equipment & Rehab.</u>	<u>Original Cost</u>	<u>Year Placed in Service</u>	<u>Remaining Life(yrs.)</u>	<u>Current Estimated Replacement Cost</u>
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

ESTIMATED ANNUAL COST FOR EQUIPMENT REPLACEMENT FOR NEXT 5 YEARS

a. 198_ \$ _____
b. 198_ _____
c. 198_ _____
d. 198_ _____
e. 198_ _____

GROWTH PROJECTIONS (Next 10 years)

1. Population
2. Industrial

LIST MAJOR MAINTENANCE or REPLACEMENT ITEMS
(10 Year Period)

Major Units

Lagoons
Oxidation-ditch
Sludge handling

Grounds & Buildings

Riding mowers
Electrical panels
Heating system
Roofs
Ventilation

Pumps

Grinders
Raw sewage
Sludge

Sewers

Trunk lines
Lift stations

Treatment

Aerators
Blowers
Chlorinators
Diffusers
Flow meters
Gages
Valves

Safety

SCBA
Oxygen meters

TYPICAL FUTURE EXPANSION COSTS

Collection System Costs

Sewers \$ _____

Lift Stations _____

Subtotal: \$ _____

Treatment Plant Costs

Pretreatment facility \$ _____

Primary facility _____

Treatment _____

Sludge pumping _____

Secondary facility _____

Aeration _____

RAS pumping _____

WAS pumping _____

Sludge dewatering _____

Chlorination _____

Laboratory _____

Miscellaneous _____

Subtotal: \$ _____

Engineering cost \$ _____

Legal cost _____

Financing cost _____

Subtotal: \$ _____

Total Construction Cost: \$ _____

MAJOR EXPENDITURES

1988-1998

(Assume 3% Inflation)

ITEM	1988	1998
Lagoon Cleaning	\$ 20,000	\$ 27,000
3 Blowers (\$5,330 ea.)	15,990	21,490
2 Chlorinators (\$1,500 ea)	3,000	4,030
Flow Meter & Recorder	3,450	4,640
2 Pump Sta. Pumps (\$5,000)	10,000	13,440
Assorted Valves & Gages	3,000	4,030
5 Diffusers	3,120	4,190
Reroof Building	2,400	3,250
Rebuild Electrical Panel	3,000	4,030
TOTAL:	\$ 63,960	\$ 86,100

SINKING FUND EXAMPLE

A. SAVINGS ASSUMPTIONS

- 6% Savings interest rate compounded annually
- Yearly payments
- Expenditures occur within 10 or 20 year period
- 3% inflation rate

B. SINKING FUND PAYMENT EQUATION

- $F.V. \times S.F.F. = \text{Yearly payment}$
- F.V. = Future Value of estimated expenditures
- S.F.F. = Sinking Fund Factor (Interest Factor Table)

C. USING SINKING FUND EQUATION

- $\$86,100 \times .07587 = \$6,532/\text{year}$

SINKING FUND FACTORS

Interest

<u>Year</u>	<u>5%</u>	<u>6%</u>	<u>7%</u>	<u>8%</u>	<u>9%</u>	<u>10%</u>
1	1.000 00	1.000 00	1.000 00	1.000 00	1.000 00	1.000 00
2	0.487 80	0.485 44	0.483 09	0.480 77	0.478 47	0.476 19
3	0.317 21	0.314 11	0.311 05	0.308 03	0.305 05	0.302 11
4	0.232 01	0.228 59	0.225 23	0.221 92	0.218 67	0.215 47
5	0.180 97	0.177 40	0.173 89	0.170 46	0.167 09	0.163 80
6	0.147 02	0.143 36	0.139 80	0.136 32	0.132 92	0.129 61
7	0.122 82	0.119 14	0.115 55	0.112 07	0.108 69	0.105 41
8	0.104 72	0.101 04	0.097 47	0.094 01	0.090 67	0.087 44
9	0.090 69	0.087 02	0.083 49	0.080 08	0.076 80	0.073 64
10	0.079 50	0.075 87	0.072 38	0.069 03	0.065 82	0.062 75
11	0.070 39	0.066 79	0.063 36	0.060 08	0.056 95	0.053 96
12	0.062 83	0.059 28	0.055 90	0.052 70	0.049 65	0.046 76
13	0.056 46	0.052 96	0.049 65	0.046 52	0.043 57	0.040 78
14	0.051 02	0.047 58	0.044 34	0.041 30	0.038 43	0.035 75
15	0.046 34	0.042 96	0.039 79	0.036 83	0.034 06	0.031 47
16	0.042 27	0.038 95	0.035 86	0.032 98	0.030 30	0.027 82
17	0.038 70	0.035 44	0.032 43	0.029 63	0.027 05	0.024 66
18	0.035 55	0.032 36	0.029 41	0.026 70	0.024 21	0.021 93
19	0.032 75	0.029 62	0.026 75	0.024 13	0.021 73	0.019 55
20	0.030 24	0.027 18	0.024 39	0.021 85	0.019 55	0.017 46

LOAN EXAMPLE

A. BORROWING ASSUMPTIONS

- 8% Interest Rate
- Yearly Payments
- 10 Year Loan
- 3% Inflation Rate

B. LOAN PAYMENT EQUATION

- $L \times CRF = \text{Yearly payment}$
- $L = \text{Loan amount}$
- $CRF = \text{Capital Recovery Factor (Table of interest factors)}$

C. USING LOAN PAYMENT EQUATION

- $\$86,100 \times .149 = \$12,828/\text{year}$

CAPITAL RECOVERY FACTORS

Interest

<u>Year</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>12</u>
1	1.05	1.06	1.07	1.08	1.09	1.10	1.12
2	0.538	0.545	0.553	0.561	0.569	0.576	0.592
3	0.367	0.374	0.381	0.388	0.395	0.402	0.416
4	0.282	0.289	0.295	0.302	0.309	0.315	0.329
5	0.231	0.237	0.243	0.250	0.257	0.264	0.277
6	0.197	0.203	0.210	0.216	0.223	0.230	0.243
7	0.173	0.179	0.185	0.192	0.199	0.205	0.219
8	0.155	0.161	0.167	0.174	0.181	0.187	0.201
9	0.141	0.147	0.153	0.160	0.167	0.174	0.188
10	0.130	0.136	0.142	0.149	0.156	0.163	0.177
11	0.120	0.127	0.133	0.140	0.147	0.154	0.168
12	0.113	0.119	0.126	0.133	0.140	0.147	0.161
13	0.106	0.113	0.120	0.126	0.134	0.141	0.156
14	0.101	0.108	0.114	0.121	0.129	0.136	0.151
15	0.096	0.103	0.110	0.117	0.124	0.131	0.147
16	0.092	0.099	0.106	0.113	0.120	0.128	0.143
17	0.089	0.095	0.102	0.110	0.118	0.125	0.140
18	0.086	0.092	0.099	0.107	0.114	0.122	0.138
19	0.083	0.090	0.097	0.104	0.112	0.120	0.136
20	0.080	0.087	0.094	0.102	0.109	0.117	0.134
21	0.078	0.085	0.092	0.100	0.108	0.116	0.132
22	0.076	0.083	0.090	0.098	0.106	0.114	0.131
23	0.074	0.081	0.089	0.096	0.104	0.112	0.130
24	0.072	0.080	0.087	0.095	0.103	0.111	0.128
25	0.071	0.078	0.086	0.094	0.102	0.110	0.127

BORROWING VS. SAVINGS Comparison

Fund Method	Borrowing	Savings	Difference
Yearly Payments	\$ 12,828	\$ 6,532	\$ 6,296
User Cost:	128,280	65,320	62,960
Int.(Exp.)/Earn	(34,728)	20,780	-----
Pres. Val. Cost	81,422	55,719	25,703

1998 Expenditures: \$86,100

SINKING FUND

Accounting Work Sheet

Year	Action	Deposit	Withdrawal	Interest	Balance
1988	Payment	\$ 6532		\$ 0	\$ 6532
1989	"	6532		392	13456
1990	"	6532		807	20795
1991	"	6532		1248	28575
1992	"	6532		1714	36821
1993	"	6532		2207	45563
1994	"	6532		2734	54829
1995	"	6532		3290	64650
1996	"	6532		3879	75061
1997	"	6532		4504	86097
1998	Withdrawal		86097	0	0

TYPICAL SINKING FUND POLICY
For Wastewater Facility Major Expenditures

The purpose of the Sinking Fund Policy is to establish a list of expenditures, the time of expenditure saving, estimated expenditure costs and payment amounts for expenditures as required by the local sinking fund ordinance.

Attached is a list of major maintenance/replacement expenditures likely to occur within a 10-year period. By the year 1998, an estimated expenditure of \$_____ will be needed for these major maintenance/replacement expenditures. Starting in the year 1989 in the months of June and December, an amount of \$_____ shall be deposited in a savings account semi-annually. The funding for the expenditures will come from users, and payments will terminate to this fund when expenditures have been made or when the fund is at the acceptable level to cover the cost. The accumulated assets shall be liquidated only for the original purpose of this policy with the dedication of payment amounts set forth by authorized officials according to the sewer ordinance regulating a sinking fund.

Duly adopted by _____ on
_____, 1989.

Officials:

Appendix C

COST RECOVERY

ACCOUNTING SYSTEMS

Wastewater utilities must establish an accounting system that reflects the budget system and conforms with generally accepted accounting principles. Installing such a system requires:

- Establishing the books of account
- Plans for gathering information
- Determining types of accounts
- Establishing a chart of accounts
- Determining types of records
- Establishing billing and collection procedures

The revenue structure of the accounting system should list revenues by user classes, compare actual receipts to estimates and include amounts billed but not yet received.

The accounting system must allow separation of capital expenses from O,M & R expenses and include a formal encumbrance system so management can determine assets and outstanding liabilities in addition to the account balance. The cost structure should also reflect the operating budget of the wastewater utility and its unit processes. The accounting system should permit reports to be developed which compare budget figures to actual expenses.

Enterprise fund accounting is used to account for wastewater operations where there is a significant need for financing the utility's cost through service charges. An enterprise fund is designed to gather total costs and to indicate the extent to which user charges are sufficient to recover total costs.

The objectives of an accounting system include:

- Recording revenue receipts
- Billings by individual users
- Reporting total O,M & R costs
- Determining changes in assets, liabilities, & fund balances

ACCOUNTING SYSTEMS Cont.)

Each accounting transaction generates a source document, which includes the amount of money involved, who paid or received it, the purpose of the transaction, and the activity that is responsible. Source documents are summarized by the accounting system for the utility into "books of original entry."

Accounting reports provide a broad range of information necessary for effective financial management. These reports show what has been received in revenues and what was spent. They also show revenue and expenses for the year to compare with the budget. These records are summarized into "books of final entry" for monthly or annual reports.

The final stage of the accounting cycle is the audit process. This usually happens at the end of the fiscal year with a visiting auditor reviewing the accounting reports.

One important aspect of accounting is when a transaction is recorded in the books, which is the basis of accounting. In the cash method, revenues are entered when actual cash is received and expenditures are entered when checks are written. Some small wastewater systems operate in this manner, while many utilities use the accrual basis of accounting.

The accrual method means that revenues are accounted when billed rather than when payment is actually made. Expenses are obligated when purchased, not when the check is actually written.

The principle of accrual accounting methods is to match revenues and expenses that result from activities of a given month or year. It gives a clear picture of the financial implications of the facility's operations within a given period.

Items needed to generate source documents include:

- * Current chart of accounts
- * Forms for reporting transactions
 - Payroll checks
 - Purchase orders
 - Invoices
 - Customer bills
 - Customer receipts

In order to evaluate financial performance, the following accounting reports are needed:

- * Balance sheet which reports assets, liabilities and account balance at the end of the month.
- * Budget vs. actual reports for both revenue and expenses.
- * Operating statement on whether revenues exceed or fall short of expenses.

ACCOUNTING SYSTEMS MUST PROVIDE:

General Accounting

- Ledgers updated
- Journal entry
- Customer billing
- Inventory
- Purchasing
- Payroll data
- Financial reports

Facilities Inventory

- Existing assets
- Updated purchases

Customer Billing

- Meter data
- Billing statements
- Cash receipts
- Delinquency
- Reports

Payroll

- Timesheet processing
- Paycheck processing
 - Salary & wages
 - Health insurance
 - Life insurance
 - Social security
 - Unemployment
 - Wage tax
 - Workers' compensation

Personnel Records

- Awards
- Applications
- Payroll register
- Performance evaluation
- Promotion

Purchasing

- Ordering
- Receiving
- Payment

INTEGRATED ACCOUNTING SYSTEM FILES

- * Billing
- * Budget
- * Customer
- * Employee
- * General Ledger
- * Inventory
- * Invoice
- * Journal Entry
- * Purchase Order
- * Timesheet
- * Vendor

CASH MANAGEMENT

Cash management is a system used to control the wastewater utility's receipts and deposits to ensure that cash will be available to meet obligations when due and to invest excess cash on a short term basis. The goal of a cash management program is to maximize the amount of cash available for short term investment.

Surplus cash for investment can often be found in a variety of fund accounts (e.g., sewer operating accounts, collection funds, deposit fees, construction reserves, and capital improvement accounts). Any idle funds should be obtaining the best interest rate for the time the funds are available.

Interest earned from the investment of surplus funds can be an important source of supplemental income for the utility. It is prudent to maintain cash for unexpected demands and contingencies. Before initiating a cash management system, it is advisable to review local ordinances, state statutes, and federal regulations for any applicable restrictions.

The elements of a cash flow system should include the establishment of effective cash information systems, timely billing and collection, disbursement procedures, and cash budgeting.

PURCHASING SYSTEM

Purchasing involves buying required goods and services in the proper quantity at the right time for the most competitive price from the best supplier. Most small wastewater treatment facilities purchase at the last minute, preventing the most cost-effective procurement. These crisis purchases aid in keeping the facility in financial trouble.

All purchases should have numbered Purchase Orders or Requisitions. Small parts purchases may be set up at local vendors using "blanket" purchase orders for specific items often needed for routine repairs, sewer taps, and other recurring situations.

PURCHASING

- * Requisition form
- * Bids (Quotation)
- * Receipts documents
- * Invoice

INVENTORY

- * Inventory number system
 - * Receiving report
- * Inventory number assignment
 - * Maintenance data
 - * Annual report

USER CHARGE SYSTEM
(40 CFR 35.2140)

The user charge system must be designed to produce adequate revenues required for operation and maintenance including replacement. The user charge system includes:

(a) User Charge System Based on Actual Use

This system shall provide that each user pays its proportionate share of OM & R costs of treatment based on actual usage. This is the most common form of charges.

(b) User Charge System Based on Ad Valorem Taxes

- (1) System must have been in existence on December 27, 1977.
- (2) The ad valorem user charge system is for users that introduce no more than 25,000 gal/day of domestic sanitary wastes.
- (3) Each industrial and commercial user class which discharges more than 25,000 gal/day of sanitary wastes pays its share based upon actual use.

(c) Notification

Each user charge system must provide that each user be notified at least annually in conjunction with a regular bill of the rate and that portion of the user charges or ad valorem taxes which are attributable to wastewater treatment services.

(d) Financial Management System

Each user charge system must include an adequate financial management system that will accurately account for generated revenues. The system should show expenditures for operation and maintenance including replacement based on an adequate budget that identifies the basis for determining the annual OM & R costs, the costs of personnel, material, energy and administration.

(e) Charges for Operation and Maintenance for Extraneous Flows

The user charge system shall provide that the costs of O & M for all flow not attributable to users (I/I) be distributed among all users.

USER CHARGE GOAL

MUST MEET NPDES PERMIT LIMITS
AT ALL TIMES

OM & R costs are required to be paid by user charges to operate the facility at a specific treatment level to meet NPDES permit conditions.

USER CHARGE REQUIREMENTS

* The community must require that adequate revenues be collected for the operation, maintenance, and replacement (OM & R) of the treatment works. (Replacement generally refers to equipment which has a useful life of < 20 years).

* The community must require that each user which discharges pollutants that cause an increase in the cost of managing the effluent or sludge from the treatment works shall pay for such increased cost as a surcharge.

* Each user must pay its proportional share of the OM & R cost of the treatment works based on the user's proportionate contribution to the total wastewater loading. Flat rate charges and volume discounts are not acceptable.

* Each user must be notified at least annually of the sewer rates.

* The community must have an accurate record of revenues and expenditures for the wastewater treatment works, which must be separate from water service.

* The system must account for charges due to infiltration and inflow (I/I).

* The user charge must be enforceable for all customers.

* The user charge must take precedence over any terms or conditions of any other contracts which are inconsistent with federal laws.

* The user charge must be reviewed at least annually to insure that it is accurate for the life of the project.

USER CHARGE METHODOLOGY

It must be known if the wastewater treatment plant has had any changes in the average and peak influent BOD, SS and other important characteristics. If these data are above normal values, it indicates that the user charges must be reevaluated. The users must be divided into proper classes so that it is known how many users are in each class, their discharge characteristics, and their respective volumes.

Management must determine:

All classes of users

Factors that determine different classes

Characteristics of all users

Individual user wastewater volumes

Appropriate rates

User Classes:

1. Residential
2. Commercial
3. Industrial
4. Institutional

User Charge Rates:

1. Equivalent Dwelling Unit Rate -
Used for unmetered water from private wells
Determined from best estimates of water use
2. Volume rates -
Determined from actual water usage
Knowledge of waste strength
3. Surcharge -
Used for high strength wastes
Used with normal volume rates
4. Quality/Quantity -
Determine costs for unusual waste
Incorporate minimum volumes

Establish User Charge Ordinance

COST RECOVERY CONCEPTS

The management of every wastewater utility should understand cost recovery concepts and have a definite policy. Utilities need to recover enough money to pay the annual cost of operating, maintaining, and replacing equipment. Recouping all costs is essential if a wastewater utility is to be self-sufficient.

A program needs to be established to generate sufficient revenues to recover all system costs. The utility must operate as a business enterprise system.

The steps to develop a cost recovery system include:

1. Identification of each cost item
2. Allocation of costs
3. Compilation of facility operating data
4. Estimation of annual revenue requirements
5. Classification of users
6. Establishment of user charges
7. Billing and collection

COST RECOVERY OUTLINE

1. Identification of Cost Items

All expense items must be identified to recover 100% of the utility's costs. The major items include:

- * Labor
- * Materials, supplies, and equipment replacement
- * Capital costs
- * Administrative costs
- * Debt service

2. Allocation of Costs

Costs should be allocated to specific cost centers after the cost of treatment has been identified and classified. These centers reflect particular activities or processes that account for different types of treatment such as:

- * Collection
- * Primary treatment
- * Secondary treatment
- * Sludge disposal
- * Customer costs

3. Compilation of Facility Operating Data

The operating data must be compiled to provide the basis for allocating costs and establishing rates. Operating data include wastewater parameters such as:

- * Flow
- * BOD
- * Suspended solids
- * Heavy metals

COST RECOVERY OUTLINE (cont.)

4. Estimation of Annual Revenue Requirements

Annual revenue requirements are the amount of cash needed for the utility operations to be recovered through user charges. Federal regulations require that the user charge portion of the revenue requirements be identified.

5. Classification of Users

Customers must be identified individually or by user class to provide a basis for allocating utility cost to users in proportion to their use and wastewater strength. Commercial and industrial users should be charged according to the actual waste load to the system.

6. Establishment of User Charges

Sewer service charges, including the user charge portion, are established to recover the revenue requirements from each user or user class in proportion to their use of the system.

The type of rate structure used depends on the types of customers using the system and the ability to measure wastewater characteristics and/or water consumption. The common types of rate structures include:

- * Flat rate
- * Volume rate
- * Volume rate plus surcharge
- * Quantity/quality rates

7. Billing and Collection

The final step in developing a cost recovery system is to develop procedures for billing and collecting sewer service charges.

Billing procedures are established to collect usage data from individual customers, to compute bills based on the selected rate structure, and to prepare and mail invoices.

Collection procedures include tracking outstanding bills and following up on delinquent accounts.

USER FEE PROJECTION

	<u>Last Year Actual</u>	<u>Last Year Budget</u>	<u>Next Year Projection</u>
<u>Personnel Services</u>			
Salaries & wages			
F.I.C.A.			
Unemployment insurance			
Worker's compensation			
Health insurance			
Life insurance			
Retirement			
Total:			
<u>O & M Expenses</u>			
Office supplies			
Postage			
Telephone			
Electricity			
Natural gas			
Water			
Gas & oil			
Chemicals			
Operating supplies			
Equipment repairs			
Training			
Travel			
Subscriptions			
Uniforms			
Professional dues			
Total:			
<u>Capital Outlay</u>			
Depreciation fund			
Expansion account			
Improvement account			
Replacement account			
Total:			
<u>Debt Service</u>			
Debt & interest			
Cushion fund			
Contingency fund			
Total:			
TOTAL:			
Rate per 1,000 gal.:	<div style="text-align: right;"><u>Total Cost</u> Total gal. per yr./1,000</div>		

USER CHARGE SUMMARY

1. No. of customers:

Residential -	_____
Commercial -	_____
Industrial -	_____

2. Percent of total revenue:

Residential -	_____ %
Commercial -	_____ %
Industrial -	_____ %

3. Daily wastewater volume:

Residential -	_____ mgd
Commercial -	_____ mgd
Industrial -	_____ mgd

4. Minimum charge: \$ _____ for _____ gallons/month.

5. \$ _____/ 1,000 gallons per month over _____ gallons/month

6. \$ _____/ lbs. BOD (surcharge for extra BOD loading)

7. \$ _____/ s/s (surcharge for extra s/s loading)

8. \$ _____/ customer/month for debt retirement (for each class)

9. What is the average total sewer charge per user?

Residential -	\$ _____
Commercial -	\$ _____
Industrial -	\$ _____

WASTEWATER USER CHARGES
Distribution of Customers
 (Total Customers or Accounts: _____)

<u>Customer Class</u>	<u>No.</u>	<u>0-30</u> <u>(1000 gal.)</u>	<u>31-100</u> <u>(1000 gal.)</u>	<u>101-500</u> <u>(1000 gal.)</u>	<u>>500</u> <u>(1000 gal.)</u>
Residential					
5/8 in.					
3/4 in.					
1 in.					
Commercial					
3/4 in.					
1 in.					
1 1/4 in.					
1 1/2 in.					
Industrial					
2 in.					
3 in.					
4 in.					
6 in.					

USER CHARGE COMPARISON

<u>Community</u>	<u>No. of Customers</u>	<u>Minimum Charge</u>	<u>Rate Per 1,000 gal.</u>	<u>Example Bill 3,000 gal.</u>
A	155	\$ 6.00	\$ 1.00	\$ 8.00
B	450	6.50	2.50	14.00
C	500	8.31	1.70	8.31
D	600	5.50	0.50	5.50
E	800	4.50	1.25	5.75
F	1,000	3.00	0.85	3.00
G	1,100	1.25	1.43	5.54
H	1,100	6.00	1.20	6.00
I	1,100	6.33	1.42	6.33
J	1,500	2.10	0.95	4.95
K	1,600	3.72	1.24	3.72
L	2,000	2.35	1.29	6.22
M	2,600	3.15	1.12	4.27

CURRENT DEBT SUMMARY

	<u>Type of Debt</u>	<u>Amount</u>	<u>Year Started</u>	<u>Interest Rate</u>	<u>Ending Year</u>
1.					
2.					
3.					
4.					
5.					

FINANCIAL CONDITION SUMMARY

I. Initial Cost:

A. Collection -	\$	_____
B. Treatment -	\$	_____
C. Debt -		
1. Initial date -	\$	_____
2. Original loan amount -	\$	_____
3. Interest rate -	\$	_____
4. Loan duration -	\$	_____
5. Current loan principal owed -	\$	_____
6. Any changes needed in financing -	\$	_____

II. Budget:

A. Last 5 years breakdown -	198	_____
	198	_____
	198	_____
	198	_____

COST RECOVERY SUMMARY

1. How many wastewater customers are there in the system?

Residential: _____
Commercial: _____
Industrial: _____

2. What is the current average flow treated? _____ mgd

3. What is the current estimated wastewater flow for each category?

Residential: _____ mgd
Commercial: _____ mgd
Industrial: _____ mgd

4. What is the level of wastewater treatment at the facility?

_____ % Primary
_____ % Secondary
_____ % Advanced

5. How much money was required for constructing the treatment plant?

Total: \$ _____
Local share: _____
Federal grant: _____
Federal loan: _____
State grant: _____
State loan: _____

6. What are the annual operating costs? \$ _____
(Do not include debt service)

7. How much money is reserved annually for equipment replacement?

\$ _____
_____ %

8. How much money is required for annual debt service?

Principal: \$ _____
Interest: _____
=====

Total: _____

% of Budget: _____

9. What are annual revenues?

Connection fees: \$ _____
Customer penalties: _____
Interest: _____
User charges: _____
Other: _____
=====

Total: _____

10. What is the current average annual sewer service charge?

Residential: \$ _____/household
Commercial: _____/establishment
Industrial: _____/facility

CUSTOMER BILLINGS

- * Meter Reading Books
- * Payment Notice
- * Connection Application

BILLING DOCUMENTS

Billing summary
Statements
Delinquency notice
Penalty register
Shut-off notice
Customer status
Individual meter log
Customer listing

CONNECTION FEE COMPUTATION

Connection Address: _____
Date of Connection: _____

A. Labor:

1. _____ hours X \$ _____/hr. (Name: _____) = \$ _____
2. _____ hours X \$ _____/hr. (Name: _____) = \$ _____
3. _____ hours X \$ _____/hr. (Name: _____) = \$ _____
4. _____ hours X \$ _____/hr. (Name: _____) = \$ _____
=====

Labor subtotal: \$ _____

B. Equipment:

1. Vehicle(_____) _____ miles X \$0._____/mile = \$ _____
2. Vehicle(_____) _____ miles X \$0._____/mile = \$ _____
3. Vehicle(_____) _____ miles X \$0._____/mile = \$ _____
4. Equip. (_____) _____ hours X \$_____/hour = \$ _____
5. Equip. (_____) _____ hours X \$_____/hour = \$ _____
6. Equip. (_____) _____ hours X \$_____/hour = \$ _____
=====

Equipment subtotal: \$ _____

C. Parts & Supplies:

1. Part(_____) : No. _____ X \$_____/unit = \$ _____
2. Part(_____) : No. _____ X \$_____/unit = \$ _____
3. Part(_____) : No. _____ X \$_____/unit = \$ _____
4. Part(_____) : No. _____ X \$_____/unit = \$ _____
5. Part(_____) : No. _____ X \$_____/unit = \$ _____
6. Part(_____) : No. _____ X \$_____/unit = \$ _____
=====

Parts & Supplies subtotal: \$ _____

D. Administration & Management:

1. Clerk(_____) : _____ hours X \$_____/hour = \$ _____
2. Clerk(_____) : _____ hours X \$_____/hour = \$ _____
3. Mang.(_____) : _____ hours X \$_____/hour = \$ _____
4. Ch.Op(_____) : _____ hours X \$_____/hour = \$ _____
5. Other(_____) : _____ hours X \$_____/hour = \$ _____
6. Other(_____) : _____ hours X \$_____/hour = \$ _____
=====

Administration subtotal: \$ _____

Total Connection Cost: \$ _____
Prepared By: _____
Date: _____

REPAIR COMPUTATION

Repair Item: _____
Date of Repair: _____

A. Labor:

1. _____ hours X \$ _____/hr. (Name: _____) = \$ _____
2. _____ hours X \$ _____/hr. (Name: _____) = _____
3. _____ hours X \$ _____/hr. (Name: _____) = _____
4. _____ hours X \$ _____/hr. (Name: _____) = _____
=====

Labor subtotal: \$ _____

B. Equipment:

1. Vehicle(_____) _____ miles X \$0._____/mile = \$ _____
2. Vehicle(_____) _____ miles X \$0._____/mile = _____
3. Vehicle(_____) _____ miles X \$0._____/mile = _____
4. Equip. (_____) _____ hours X \$_____/hour = _____
5. Equip. (_____) _____ hours X \$_____/hour = _____
6. Equip. (_____) _____ hours X \$_____/hour = _____
=====

Equipment subtotal: \$ _____

C. Parts & Supplies:

1. Part(_____) : No. _____ X \$_____/unit = \$ _____
2. Part(_____) : No. _____ X \$_____/unit = \$ _____
3. Part(_____) : No. _____ X \$_____/unit = \$ _____
4. Part(_____) : No. _____ X \$_____/unit = \$ _____
5. Part(_____) : No. _____ X \$_____/unit = \$ _____
6. Part(_____) : No. _____ X \$_____/unit = \$ _____
=====

Parts & Supplies subtotal: \$ _____

D. Administration & Management:

1. Clerk(_____) : _____ hours X \$_____/hour = \$ _____
2. Clerk(_____) : _____ hours X \$_____/hour = \$ _____
3. Mang.(_____) : _____ hours X \$_____/hour = \$ _____
4. Ch.Op(_____) : _____ hours X \$_____/hour = \$ _____
5. Other(_____) : _____ hours X \$_____/hour = \$ _____
6. Other(_____) : _____ hours X \$_____/hour = \$ _____
=====

Administration subtotal: \$ _____

Total Repair Cost: \$ _____

Prepared By: _____

Date: _____

COLLECTION PROCEDURES

Delinquent Utility Accounts

1. DISCONNECT SERVICE
2. PERFORM TAX SALE
3. ATTACH A LIEN
4. SMALL CLAIMS COURT

COLLECTION POLICY

- * WRITTEN
- * ADOPTED BY GOVERNING BODY
- * PROVIDES A PLAN
- * ESTABLISHES FUNCTIONS
 - AMOUNT OF INTEREST
 - WHICH COLLECTION PROCEDURE
 - RESPONSIBILITIES
 - LEEWAY OF TAX COLLECTORS
- * INVOLVE KEY PARTICIPANTS
 - TAX COLLECTORS
 - TREASURER
 - WATER/SEWER PERSONNEL
 - COMMISSIONERS/TRUSTEES/SELECTMEN
 - HEALTH OFFICER

DELINQUENT ACCOUNT COLLECTION POLICY
(By Sale of Property)

EXAMPLE

1. SEWER CHARGES ARE DUE ON THE DATE INDICATED ON THE SEWER BILL AND ARE DELINQUENT AFTER THAT DATE.
2. DELINQUENT ACCOUNTS WILL BE CHARGED A 10% TAX COLLECTOR'S FEE AND INTEREST OF 1% MONTHLY OR PARTIAL MONTH FROM THE DUE DATE.
3. THE MUNICIPAL TREASURER SHALL FILE A LIEN ON THE PROPERTY AND ISSUE THE WARRANT ON DELINQUENT ACCOUNTS, IDENTIFYING ALL DELINQUENT PAYERS TO THE TAX COLLECTOR WITHIN 20 DAYS OF THE DUE DATE.
4. UPON RECEIPT OF THE TREASURE'S WARRANT, THE TAX COLLECTOR SHALL IMMEDIATELY GIVE NOTICE TO EACH DELIQUENT RATE PAYER OF THE FOLLOWING:
AMOUNT DELINQUENT
MONTHLY INTEREST CHARGE
TAX COLLECTOR'S FEE
DATE AND LOCATION WHERE PAYMENT CAN BE MADE
TOTAL AMOUNT INCLUDING FEES AND CHARGES

THE NOTICE SHOULD INCLUDE THE FOLLOWING STATEMENT:

IF YOUR BILL REMAINS UNPAID AFTER THE DUE DATE ON THIS NOTICE, YOU WILL BE RESPONSIBLE FOR ANY ADDITIONAL FEES AND COSTS ASSOCIATED WITH THE TAX SALE ACCORDING TO STATE STATUTES. THIS NOTICE SHALL BE GIVEN AT LEAST 20 DAYS BEFORE PAYMENT DATE.

5. IF PAYMENT IN FULL IS NOT RECEIVED WITHIN 90 DAYS OF THE ORIGINAL DUE DATE, THE TAX COLLECTOR SHALL BEGIN THE TAX SALE PROCESS BY FILING A FORMAL NOTICE AND AN ATTESTED COPY OF THE WARRENT IN THE TOWN CLERK'S OFFICE UNLESS AN ACCEPTABLE ARRANGEMENT TO MAKE A PAYMENT IS MADE WITHIN A 30-DAY PERIOD. IF FULL PAYMENT IS NOT MADE WITHIN 6 MONTHS OF THE ORIGINAL DUE DATE, THE TAX COLLECTOR SHALL BEGIN THE TAX SALE PROCESS.

DULY ADOPTED BY THE BOARD OF _____ FOR THE
_____ OF _____
ON THIS _____ DAY OF _____, 19____.

CONCURRENCE: _____ TAX COLLECTOR

(This document must drafted according to state and local statutes.)

WATER DISCONNECT

A. IMPLEMENTATION DEPENDS ON

- IS WATER SYSTEM MUNICIPALITY OWNED?
- WHAT IS THE QUALITY OF THE WATER SYSTEM?

B. ATTRIBUTES:

- NORMALLY RAPID PAYMENT
- LESS EFFORT THAN TAX SALE
- MORE EFFORT THAN LIEN
- CAN BLOCK SEWER SERVICE

C. IMPORTANT PROCEDURES

- BILL MUST BE DELINQUENT
- DISCONNECT NOTICE MUST BE SENT TO OWNER & RENTERS
- DEBTORS MUST BE GIVEN TIME TO PAY BY INSTALLMENT
- SERVICE MUST BE RESTORED WITHIN 24 HOURS AFTER PAYMENT

TAX SALE

A. IMPLEMENTATION DEPENDS ON FIRM POLICY OF TAX COLLECTOR

- CAN RESULT IN CONSISTENT COLLECTION
- NOT AS RAPID AS WATER DISCONNECT
- SAME PROCEDURE AS DELINQUENT PROPERTY TAX COLLECTION
- DON'T NEED A WATER SYSTEM FOR IMPLEMENTATION

B. IMPORTANT PROCEDURES

- WARRANT MUST BE FILED BY SPECIFIED DATE
- MUST ADVERTISE IMMEDIATELY THE LAND FOR SALE AT PUBLIC AUCTION
- MUST GIVE SUFFICIENT NOTICE TO TAXPAYER
- MUST GIVE NOTICE TO LENDING INSTITUTIONS
- MUST POST SALE NOTICE IN PUBLIC PLACE IN TOWN OF SALE

Appendix D

PLANNING

UTILITY PLANNING

1. Wastewater utilities must:

- Know their future direction,
- Have planning document:
 - a. Have written policy
 - b. List future needs for next 5 years
 - c. Tabulate estimated costs
 - d. State progress bench marks for each year
 - e. State present wastewater treatment demands
 - (1) Present treatment volume: _____mgd
 - (2) Number of customers: _____
 - (3) Total wastewater budget: \$ _____
 - (4) Average user charge per household: \$ _____
 - f. Predict factors for next 5 years for item e.
 - g. Include sewer and plant operators, clerks, and management in all planning activities.
 - h. Include public hearing with newspaper coverage.

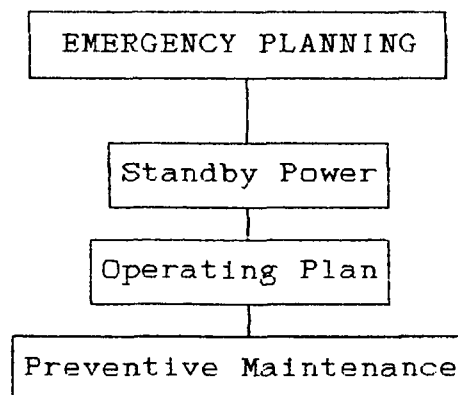
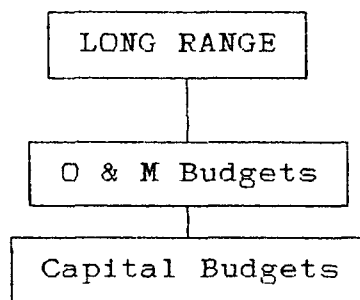
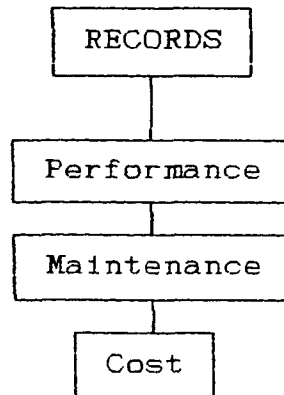
2. Planning elements:

- * Policy setting
- * Problem identification
- * Implementation

3. Two major planning units:

- * Operations
- * Capital improvements

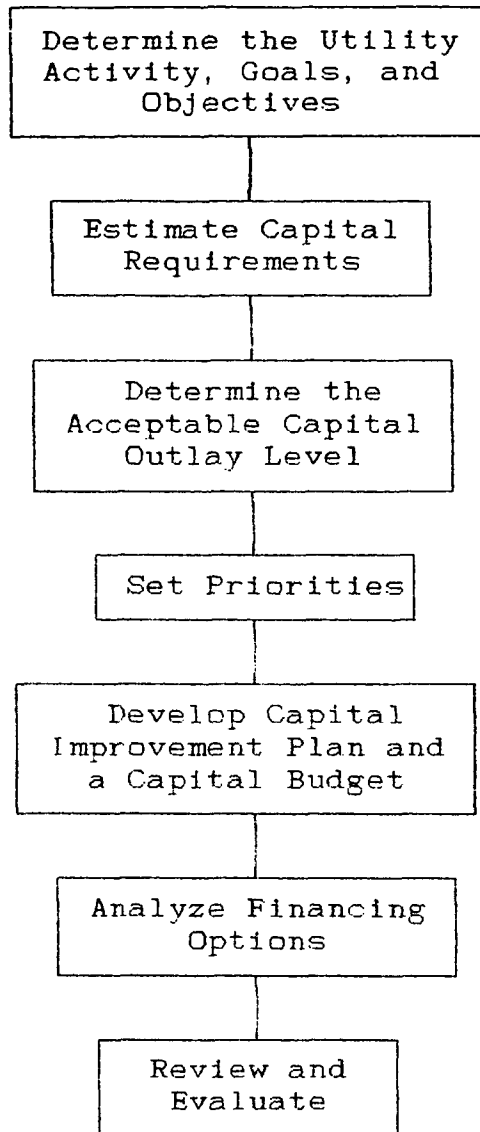
BASIS for PLANNING



OPERATIONS PLANNING

- * Determine Operating Objectives
- * Estimate Staff Needs
- * Set Performance Criteria
- * Set Priorities
- * Develop Operations Plan
- * Analyze Financing Options
- * Review and Evaluate

STEPS IN CAPITAL PLANNING



FINANCING AN EXPANSION PROJECT

EXAMPLE

Capital Project Cost Per Customer

Capital Cost = \$ 100,000

No. of Customers = 100

Cost/customer = \$ 1,000

Customer Cost

Years to pay:	5 yrs.	10 yrs.
Interest rate:	10 %	10 %
Debt service factor: (From debt table)	0.231	0.130
Annual cost/customer:	\$ 231.00	\$ 130.00
Total cost/customer:	\$ 1,155.00	\$ 1,300.00

CAPITAL PROJECT SCHEDULE

<u>Project Category</u>	<u>Current Estimate</u>	<u>Forecast Year</u>				
Collection	\$					
Primary	\$					
Secondary	\$					
Advanced	\$					
Sludge	\$					
Customer Service	\$					
Administration	\$					

Appendix E

FINANCING

DEBT MANAGEMENT

Some form of financing is usually necessary to construct any new wastewater treatment facility or to provide for treatment expansion. Debt management consists of repaying loans, deciding on future loans, and considering a quicker pay back on existing loans.

Borrowed money may be in the form of government guaranteed loans, conventional loans or various types of bonds. Some government sponsored loans may have lower than regular market interest rates, while conventional bank loans will have slightly higher interest rates. Bonds often have attractive interest rates, since they usually provide some tax advantage to the investors.

The most common type of bond is the revenue bond, which repays its value from the revenue of the utility. The pay back of these bonds is based on appropriate user charges.

Bonds may mature up to 40 years after issue. This maximum period is not the ideal period, since many wastewater treatment facilities may not last 40 years without spending great sums of money.

TYPES OF FINANCING

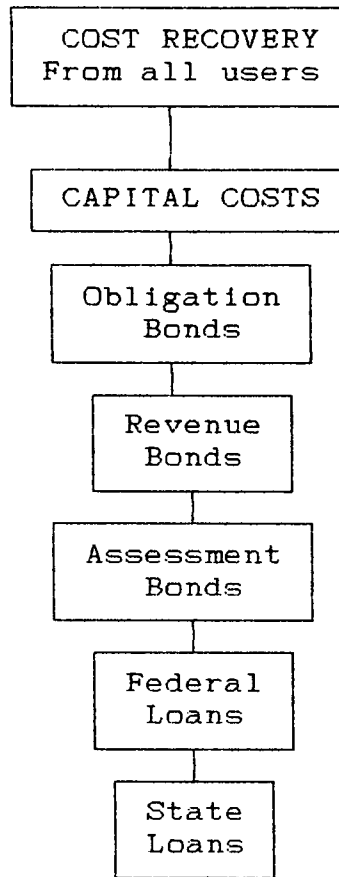
Capital financing may be used to expand, improve, or rebuild an existing facility or to build an entirely new plant.

Financing may be in the form of grants, loans, or existing set-a-side funds.

Types of financing for capital projects are:

- * U.S. EPA Construction Grants
- * Farmer's Home Administration
- * Housing & Urban Development
- * State Grants
- * State Loans
- * Investment Banks
- * Local Banks
- * Private Leaseback
- * Various Types of Bonds
- * Special Assessment

FINANCING



Debt Service Factor Table

<u>Interest Rate</u>	<u>Term (in years)</u>					
	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>
2	0.212	0.111	0.078	0.061	0.051	0.045
4	0.225	0.123	0.090	0.074	0.064	0.058
5	0.231	0.130	0.096	0.080	0.071	0.065
6	0.237	0.136	0.103	0.087	0.078	0.073
7	0.244	0.142	0.110	0.094	0.086	0.081
8	0.250	0.149	0.117	0.102	0.094	0.089
9	0.257	0.156	0.124	0.110	0.102	0.097
10	0.264	0.163	0.131	0.117	0.110	0.106
11	0.271	0.170	0.139	0.126	0.119	0.115
12	0.277	0.177	0.147	0.134	0.127	0.124

INFLATION FACTOR TABLE

Inflation affects costs each year a project is planned but not started. Generally, inflation for the years 1986 to 1988 have been between 4 and 6%. A value should be chosen when making 5-year projections.

<u>Inflation</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
2 %	1.000	1.020	1.040	1.061	1.082
4	1.000	1.040	1.082	1.125	1.170
6	1.000	1.060	1.124	1.191	1.262
8	1.000	1.080	1.166	1.260	1.360
10	1.000	1.100	1.210	1.331	1.464
12	1.000	1.120	1.254	1.405	1.574

FINANCIAL INDICATORS
(Balance Sheet Analysis)

<u>Indicator, %</u>	<u>Measure</u>	<u>Desired Level</u>	<u>Warning</u>
Debt Ratio	Relation to assets	20%	Rapid increase in ratio indicates over reliance on debt financing.
Current Ratio	Solvency of fund	Ideal: 200% Min. : 100%	Falling ratio indicates inability to pay future obligations.
Quick Ratio	Solvency of fund	100%	Falling ratio indicates inability to pay future obligations.
Debt/Equity Ratio	Reliance on debt for capital financing	-	Increasing ratio indicates bond financing that should be monitored.
Receivables as % of Current Assets	Unpaid user charge	-	Increase implies falling rate of collection and need to improve billing
Investments As a % of Current Assets	Whether max. assets are invested to earn interest	-	Decrease implies need for aggressive cash management

BALANCE SHEET ANALYSIS
(Worksheet)

<u>Current Assets</u>	<u>3 yrs. ago</u>	<u>2 yrs. ago</u>	<u>Last yr.</u>
1. Cash	\$	\$	\$
2. Investments			
3. Accounts receivable			
4. Other current assets	_____	_____	_____
5. Total current assets (Lines 1-4)	\$	\$	\$
<u>Restricted Assets</u>			
6. Customer deposits			
7. Construct. acc. bal.			
8. Funds for debt ser.			
9. Other restrict. assets			
10. Total restrict. assets (Lines 6-9)			
11. Property, plant & Equip. (Net of accum. deprec.)	_____	_____	_____
12. Total restricted assets (Lines 5 + 10 + 11)	\$	\$	\$
<u>Current Liabilities</u>			
13. Accounts payable			
14. Accrued bond interest			
15. Current portion of bonds			
16. Current lease-purchase			
17. Other cur. liabilities	_____	_____	_____
18. Total current liabilities (Lines 13-17)	\$	\$	\$

BALANCE SHEET ANALYSIS
(Worksheet - cont.)

<u>Current Liabilities</u> <u>Payable from</u> <u>Restricted Assets</u>	<u>3 yrs. ago</u>	<u>2 yrs. ago</u>	<u>Last yr.</u>
19. Matured revenue bonds	\$	\$	\$
20. Revenue bond interest			
21. Accrued bond interest			
22. Current bond portion			
23. Other current liabilities payable from rest. assets	_____	_____	_____
24. Total current liabilities (Lines 19-23)	\$	\$	\$
 <u>Long-Term Liabilities</u>			
25. Revenue bonds			
26. Gen. obligation bonds			
27. Lease purchase agreements			
28. Other long term liab.	_____	_____	_____
30. Total liabilities (Lines 18 + 24 + 29)	\$	\$	\$
 <u>Equity & Totals</u>			
31. Contributed capital			
32. Retained earnings			
33. Total fund equity (Line 31 + 32)	_____	_____	_____
34. Total liabilities and fund equity (Lines 30 +33)	\$	\$	\$

BALANCE SHEET ANALYSIS
(Worksheet - cont.)

<u>Ratios</u>	<u>3 yrs. ago</u>	<u>2 yrs. ago</u>	<u>Last yr.</u>
35. Net funded debt [(Lines 14-16 + 19-22 + 25-27) - line 8]	\$	\$	\$
36. Net working capital + net fixed assets (Line 5 + 17 - 18)			
37. Debt ratio (Line 35 + 36)			
38. Current ratio (Line 5 + 18)			
39. Cash investments & receivables (Line 1-3)			
40. Quick ratio (Line 39 + 18)			
41. Debt/Equity ratio (Lines 30 + 33)			
42. Receivables as % of current assets (Lines 3 + 5)			
43. Investments as a % of current assets (Lines 2 + 5)			

FINANCING SOURCES

<u>Source</u>	<u>Repayment</u>	<u>Advantages</u>	<u>Disadvantages</u>
General obligation bonds	10-30 years.	Immediate benefits. Lower interest rates.	Tied to property tax base. Property owners liable.
Revenue bonds	10-30 years.	Immediate benefits.	Higher interest.
Assessment bonds	10-30 years.	Immediate benefits.	Requires legislative approval.
Revolving loans	10-20 years.	Immediate benefits.	Increased rates.
Capital fees	Paid by new customers.	Provides additional funds.	Requires customer to pay for late hook-up.

TYPES OF BONDS

General Obligations

Usually based on property value

Low interest

May need voter approval

May have debt limitations

May have additional requirements over other methods

Financing costs are lower because less documentation required

Revenue Bonds

Supported directly by user charges only

Usually do not require voter approval

May have higher rates

May not lend as much as other methods

Require specified reserve funds

Can be used to finance projects beyond boundaries

Appendix F

RECORD KEEPING

1. RECORD-KEEPING CONCEPTS

All utility record keeping starts with customer usage and includes all facets of accounting.

Costs must be recorded for each piece of equipment and every treatment unit.

A normal accounting system usually uses an enterprise fund, which is treated like a business.

There should be a chart of accounts, which includes all items in the budget.

Record keeping includes equipment inventory, chemical usage, energy consumption, and all matters pertaining to the utility operation.

Assembling monthly expenditures of plant operations involves recording monthly expenses and disbursements. These include personnel services, energy, chemicals, and other normal operating costs.

Keeping records is important for the long-term operation of the system. Good records should:

- * Verify unit process efficiency.
- * Assist in making decisions affecting plant operations.
- * Assist in planning and maintenance.
- * Provide a basis for budgeting and staffing.
- * Provide a basis for justifying system expansions.

Are the following present?

- * Operating reports.
- * Work schedules.
- * Activity reports (i.e., time cards).
- * Expenditure reports (i.e., lab, supplies, energy).
- * Cost analysis reports.

2. TYPES OF REPORTS

- * Operating Reports
- * Financial Reports
- * Maintenance Reports
- * Purchasing Reports

3. REPORT INFORMATION

Reports should tell:

- * How the WWTP is operating
- * How much it is costing
- * If there is enough money to operate
- * When equipment needs maintenance
- * When equipment needs replacement

4. OPERATING REPORTS

- * Compliance Status
- * Treatment Efficiency
- * Energy Use
- * Chemical Use

5. MAINTENANCE REPORTS

- * What maintenance has been performed?
- * What maintenance needs to be performed?
- * Was the spare parts inventory reduced?
- * How much time was spent on individual equipment?
- * Does some equipment need replacement?
 - * Are there inventory records?
 - * Are there maintenance records?
 - Preventive
 - Corrective
 - Contract

6. PLANT PERFORMANCE REPORTS

- How is the WWTP performing?
- What volume of flow is treated?
- What is the raw wastewater strength?
- What is the compliance status?
- Are there sufficient chemical and physical data?
 - Are there energy records?
 - Rates by month?
 - Usage by month?

7. PERFORMANCE RECORDS

<u>Measure</u>	<u>Wastewater</u>	<u>Customers</u>
Workload	Gallons treated	No. of contacts
Efficiency	Cost/gallon	Manhour/contact
Effectiveness	Days out of compliance	Response time

8. FINANCIAL REPORTS

- * Statements for management
- * Information to control costs
- * Show:
 - Monthly budget to actual costs
 - Monthly revenue
 - Balance sheet
 - Cost of service
 - Trial balance
 - Encumbrances
 - Cash reconciliation
 - Bond report
 - Contingency fund

9. BALANCE SHEET

<u>Assets</u>	<u>Liabilities</u>
Cash on hand	Accounts payable
Investments	Notes payable
Accounts receivable	Bonds payable
Prepared expenses	Customer deposits
Materials & supplies	Debt service
Equipment (less depreciation)	
Facility (less depreciation)	
Improvements progress	
Total Assets	Total Liabilities

10. PURCHASE ORDERS

Purchase orders become expenditure records

All P.O.s must have consecutive numbers

Separate records are ideal for:

- Purchased equipment
- Vendor supplies
- Operating services

Purchasing guidelines:

Standards of conduct

- unprejudiced buying
- no hidden deals
- use proper conduct
- use quotations for high expenditures

Purchasing Limits & Authority

- Limited Purchase Item - used for goods or services costing < \$100. (No higher approval).
- Verbal Quotation - for goods or services costing < \$1,000 (at least three quotes).
- Written Quotation - for goods or services costing < \$5,000 (at least three written quotes and full approval).
- Sealed Bid Items - for goods or services costing > \$5,000 (formal public advertisement for bids and full approval).
- Emergency Orders - when the public health or safety is in jeopardy, order from the nearest vendor.

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