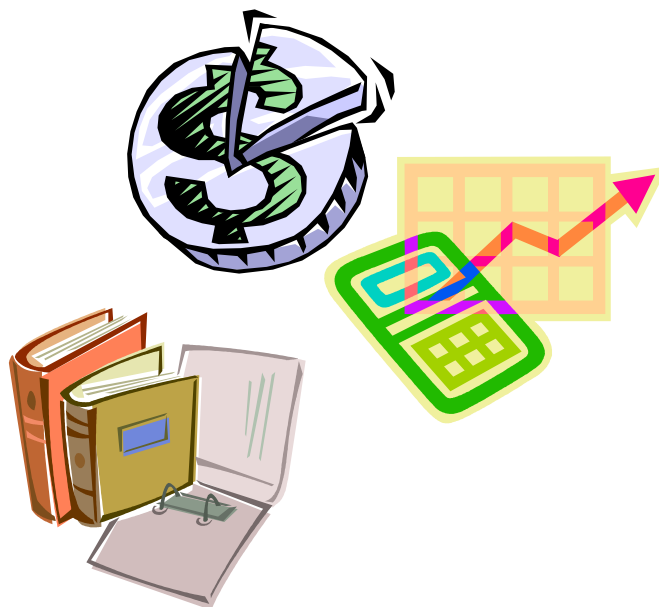


# Module 5

## Basics of Accounting and Finance for Small Water Systems

### Workbook



### Financial/Managerial Series

This course includes content developed by the Pennsylvania Department of Environmental Protection in cooperation with the following grantees:

RCAP Solutions, Inc.  
Penn State Harrisburg Environmental Training Center



# Training Module 5

## *Basics of Accounting and Finance for Small Water Systems*



### **Objectives:**

The purpose of this training module is to:

- Identify Assets, Liabilities, Retained Earnings, Revenue, and Expenses on a financial statement.
- Identify the components of a Balance Sheet, Income Statement and Statement of Cash Flows.
- Identify the difference between the Cash Basis and Accrual Basis of Accounting.
- Determine the importance of auditing and internal controls.

### **Table of Contents**

• Introduction	p. 2
• Definitions	p. 2
• Accounting Systems Considerations	p. 5
• Financial Statements	p. 10
• Controls	p. 15
• Summary	p. 16
• Resources and References	p. 18

## Introduction



During this training module, we'll be describing:

- Assets, Liabilities, Retained Earnings, revenue, and expenses that appear on a financial statement;
- Components of a Balance Sheet, Income Statement and Statement of Cash Flows;
- Difference between the Cash Basis and Accrual Basis of Accounting; and
- Importance of auditing and internal controls.

This training module will provide a *basic* introduction to the aspects of accounting and finance that will be encountered during the operation of a small water system. This is not intended to be a comprehensive review. You may wish to speak to your auditor or accountant for more information.

## Definitions



To do this, let's start with a few basic terms that you need to know.

You need to be familiar with these terms in order to understand the accounting system and financial reports.



Assets are resources that are expected to increase future cash flows into the system or reduce the cash flows out.

Examples include Cash, Inventories, Equipment, Plant, and Lines.

Assets are identified on the Balance Sheet, which will be discussed later.



Liabilities are obligations of the system to outside parties or outside claims on the system assets.

Examples include Notes Payable (debt) and Accounts Payable (outstanding bills).

Retained Earnings (RE) is the remaining value after the system's Liabilities have been subtracted from the Assets.

These are also identified on the Balance Sheet.



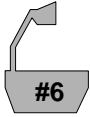
Revenues are increases in Assets resulting from delivery of goods or services to customers.

An example is water sales.

Expenses are decreases in Assets resulting from delivery of goods or services to customers

An example is electrical use in pumping water.

Income is Revenues less Expenses and all are identified on the Income Statement, which will be discussed later.



When is a purchase an asset and when is it an expense?

A purchase is an asset when the purchase will provide future economic benefit to the system and an expense when it relates only to the current time period.

Examples are a Line Extension (asset) and Testing (expense).

This is an importance distinction since in many cases one asset (Cash) is exchanged for another (Lines or Plant Expansion).



Let's complete an exercise to see if you understand the difference between the terms.

For the following five questions, identify whether the purchase of each item is an Asset or an Expense:

- |                 | <u>Answers</u> |
|-----------------|----------------|
| 1. Electricity  | _____          |
| 2. Pump station | _____          |
| 3. Meters       | _____          |
| 4. Salaries     | _____          |

Now that we've reviewed or discussed some of the basics, let's discuss some aspects of accounting systems.

## Accounting Systems Considerations



On the next few slides we will discuss the following points:

- Income Measurement
- Chart of Accounts
- Data Management
- Financial Reporting
- Internal Controls
- Auditing



While there are several ways to measure, there are two main ways to measure Income that will be covered here.

The first is the Cash Basis.

The Cash Basis of Accounting records Revenue and Expenses when cash is received or disbursed.

For example, it records an Expense when a bill is paid and cash is disbursed.

The Cash Basis of Accounting focuses on the system's ability to generate cash from its current operations.

Many small water systems use the cash method for reporting to the board. However, the accrual basis is used during the preparation of an annual audit.



The second way to determine income is the Accrual Basis.

The Accrual Basis of Accounting records Revenue and Expenses when these are earned or incurred.

Examples are delivery of water to customers (Revenue) or receipt of chemicals from a supplier (Expense), even though no Cash has changed hands.

The Accrual Basis of Accounting focuses on the system's activities that increase or decrease all assets and liabilities (such as Accounts Receivables or Accounts Payables), not just Cash.



A further consideration of the Accrual Basis of Accounting is when to recognize Revenues and Expenses.

Revenue should be booked when earned, not realized (actual payment received).

For example, if a customer prepays for water delivery it should be recorded as revenue over time as water is delivered, not right away when it is received.

The opposite example also applies to delinquent customers. The revenue should be booked when the water is delivered to the customer (when the revenue is earned), not when the customer eventually pays (when the revenue is realized).

From a practical standpoint, you record Revenue when bills are sent and record Expenses when bills are received.





Which one should be used?

Accrual Basis is preferred and is now required of many governmental units.

Accrual Basis provides a more complete system of accounting for the activities that affect system assets. It provides a picture of the financial shape of the system that includes *outstanding* income or expenses. For example, a board may meet and see that the system has \$10,000 cash in the bank. Under the cash basis of accounting, it may seem that things are going well. However, the accrual basis will show that next month, there is a \$12,000 bill due. Without that knowledge you wouldn't know that the system is in fact in trouble and action needs to be taken.



#### **Accrual Basis Accounting Tip:**

- GASB-34 (pronounced “gazby 34”) is the Governmental Accounting Standards Board Statement No. 34 and it requires many governmental units to use accrual basis accounting. Soon nearly all governmental units will have to switch to this type of accounting.
- Additional information on GASB-34 can be found at <http://accounting.rutgers.edu/raw/gasb/repmode/>.



The Chart of Accounts is a listing of all accounts within the accounting system, such as Water Billing, Tap Fee Fund, Interest Income, Salaries, etc.

Account numbers need to be assigned to each account.

“Space” should be included between accounts so future accounts can be added. To allow for this “space,” the account numbers shouldn’t be consecutive.

You may obtain guidelines from government agencies or your auditor to help guide you on setting up Chart of Accounts used in this industry. The PA Dept. of Community and Economic Development website, [www.inventpa.com](http://www.inventpa.com), has information available on the Chart of Accounts for municipalities.



Your accounting system will generate a considerable amount of data. You need a way to manage this data.

This data will likely be best managed through the use of an electronic ledger. Most existing programs provide preset templates and charts of accounts and there are many good software programs out there that are used extensively such as QuickBooks and Peach Tree as well as many proprietary systems. Some things to consider when choosing an electronic ledger:

- Does the math for you and generates financial reports
- Provides for easy back ups
- Requires purchase of computer software programs and hardware
- Requires accounting and computer skills



The other way to manage the data from your accounting system is to use a paper ledger. Consider the following:

- Low cost
- Requires math and accounting skills

Only very small systems should use this type of ledger system where the purchase of computer equipment and software would be prohibitively expensive.



Let's take a few minutes to review the information so far.

In the following exercise, identify **the date** when the revenue or expense (or asset purchase) should be recorded under both the Cash Basis and the Accrual Basis.

Let's do the first question together.

1. A customer prepays his upcoming bill on 4-23. The water system's next billing cycle ends on 5-01.
  - a. Cash Basis - \_\_\_\_\_
  - b. Accrual Basis – \_\_\_\_\_
2. Your auditor starts the audit of your system on 3-01 and completes his audit on 3-15. He submits a bill on 4-01 and is paid on 4-15.
  - a. Cash Basis – \_\_\_\_\_
  - b. Accrual Basis – \_\_\_\_\_
3. You send out water samples for testing on 9-30. The lab sends you results and a bill on 10-15. The water system sends the lab a check on 11-01.
  - a. Cash Basis – \_\_\_\_\_

- b. Accrual Basis – \_\_\_\_\_
4. Your engineer agrees to do an environmental report on 5-02 and completes work on 6-15. He submits his results and a bill on 6-22. The engineer is paid on 7-01.
- a. Cash Basis – \_\_\_\_\_
- b. Accrual Basis – \_\_\_\_\_
5. Water bills are generated and sent to customers on 1-15. Payments are received on 1-30.
- a. Cash Basis – \_\_\_\_\_
- b. Accrual Basis – \_\_\_\_\_

How did everyone do? These were just some basic examples.

There are many instances where it can be much more complicated and more difficult to determine when to record the Revenue or Expense. In such cases, it is advisable to consult your auditor or other expert source for guidance.

## Financial Statements



Now that you know some of the basics and are familiar with some accounting terms, we're going to discuss financial statements. The four main types of financial statements are:

- Balance Sheet
- Income Statement
- Statement of Cash Flows
- Statement of Retained Earnings (dealing with stockholders)

The first three will be discussed further in this section. Since you are not generally dealing with stockholders, you don't need to worry too much about the Statement of Retained Earnings.



The Balance Sheet provides the financial position of the company at a given point in time. It has three main parts:

- Assets
- Liabilities
- Retained Earnings (RE)

The Assets section includes the resources needed to operate the system such as Cash, Equipment, and Plant. The value of some long-term assets is reduced every year by the amount of depreciation and this accumulates each year.

The Liabilities section includes the debt of the system such as Loans and Accounts Payable.

The RE section includes the net worth of the system after Liabilities are subtracted from Assets.



Let's take a look at an example of a Balance Sheet. Refer to Appendix 1.

It is called a "Balance" Sheet because the Asset side equals the Liabilities and Retained Earnings side.



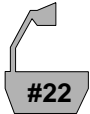
The Income Statement provides the financial results of system operation over a specified time period (generally a year, quarter, or

month) and gives the Net Income which is the Revenue less the Expenses for the period.

It provides information on the resources used in the operation of the system and is also known as the Profit and Loss (P&L) statement. The financial success of the system can be gauged by the amount of Net Income.



Let's take a look at an example of an Income Statement. Refer to Appendix 2.



The Statement of Cash Flows provides information on Cash Flows (CF), where cash came from and where it went, during a specified time period. It has three main parts:

- CF from Operating Activities
- CF from Investing Activities
- CF from Financing Activities

The CF from Operating Activities includes Cash from transactions relating to the operation of the system.

The CF from Investing Activities includes Cash from changes in long term assets and securities.

The CF from Financing Activities includes Cash from borrowing or repaying loans.



Let's take a look at an example of a Statement of Cash Flows. Refer to Appendix 3.

Note that Depreciation is added back in to cash flow since it is originally deducted from Net Operating Income to determine taxable income.



So how are these statements related?

Net Income from the Income Statement gets added to the Retained Earnings on the Balance Sheet.

Beginning cash balance on the Statement of Cash Flows comes from the last Balance Sheet.

Ending cash balance on the Statement of Cash Flows goes onto the current Balance Sheet.

This can be difficult to see on the handouts since these statements relate *over time*. The Appendices you have are for a specific year.



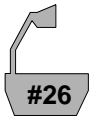
So how do these statements differ?

The Income Statement provides a record of Revenues and Expenses over time.

The Statement of Cash Flows provides a record of the actual Cash that has come into or left the system over time.

The Balance Sheet provides a listing of the Assets, Liabilities, and Retained Earnings at a point in time.

The point is that it is important to review all financial statements and not just rely on one.



Review the provided financial statements to find the following information. Determine which Financial Statement has the information and the amount of the item.

	<u>Statement:</u>	<u>Amount:</u>
1. Investment income:	_____	_____
2. Total operating revenue:	_____	_____
3. Loan interest expense:	_____	_____
4. Accounts payable:	_____	_____
5. Salaries:	_____	_____
6. Ending cash balance:	_____	_____
7. Land:	_____	_____
8. Net income:	_____	_____
9. Total current assets:	_____	_____
10. Payroll taxes:	_____	_____

Now that we've covered financial statements, let move on to the important topic of internal and external controls.



## Controls



An effective accounting system needs to have internal controls to ensure the proper use of system funds and prevent fraud. Internal controls can be written such as in a procedural manual or the chart of accounts.

They can also be functional such as through the separation of employee function, i.e. purchasing vs. accounting, and requiring two signatures on checks. This may not be possible for a small system and typically is noted on the auditor's findings, but the system should research alternatives for checks and balances.



You can also maintain internal control through review and approval such as the following:

- Board approves operating budget
- Board approves major expenditures
- Board reviews financial statements for inconsistencies
- Board treasurer or other official can review bank statements

The board is ultimately responsible for ensuring that internal controls are in place and effective, not the employees.



**Instructor Note:** Display Slide #29.

Generally, any water system that has received federal funding is required to have an audit performed by an independent auditor.

The use of an auditor provides an external control.



**Instructor Note:** Display Slide #30.

The auditor provides an “opinion” on the water system’s financial statements and accounting system.

This opinion may include “findings” that identify deficiencies in areas such as internal controls or Generally Accepted Accounting Principles (GAAP).

If the auditor’s opinion includes findings, these will need to be addressed by the board.

## Summary



Before we summarize, let’s complete a short exercise to see what you’ve learned.

### Fill In-the Blank

1. \_\_\_\_\_ are resources expected to increase future cash flows into the system or reduce the cash flows out of the system.
2. Obligations of the system to outside parties or outside claims on the system assets are considered \_\_\_\_\_.
3. Retained Earnings is the remaining value after the system’s liabilities have been subtracted from the \_\_\_\_\_.

4. A(n) \_\_\_\_\_ in Assets resulting from the delivery of goods or services to customers is considered an expense.
5. A purchase is an Asset when the purchase will provide \_\_\_\_\_ economic \_\_\_\_\_ to the system and an Expense when it relates only to the current time period.
6. The \_\_\_\_\_ Basis of Accounting records Revenue and Expenses when cash is received or disbursed.
7. The \_\_\_\_\_ Basis of Accounting records Revenue and Expenses when these are earned or incurred.
8. Four main types of financial statements include a) the Balance Sheet, b) the Income Statement, c) \_\_\_\_\_ and d) Statement of Retained Earnings.
9. Three main parts of the Balance Sheet are \_\_\_\_\_, Liabilities, and Retained Earnings.
10. The \_\_\_\_\_ provides the financial results of system operation over a specified time period.
11. Requiring two signatures on checks is an example of a(n) \_\_\_\_\_.
12. Internal controls are important in preventing \_\_\_\_\_.



The key points of this training module are:

- An effective accounting system is crucial to the financial tracking of system revenues and expenses and to the prevention of fraud and misuse of system funds.

- An understanding of financial reports is necessary for the board when planning for the system's future finances.
- Many governmental entities and utilities (water systems) track revenue on a cash basis; however, most will be required to move to an accrual basis.
- The three main financial reports are the Income Statement, Statement of Cash Flows, and the Balance Sheet.
- Auditing and internal controls help to prevent the misuse of system funds.

## Resources and References



The following are references and resources you can use when you need additional information on the topics presented today.

PA Dept. of Environmental Protection, Technical Assistance and Outreach, (717) 772-4058, Dennis Lee

RCAP Solutions, Inc, (814) 861-6093  
Don Schwartz, PA/NJ Program Manager

The complete list of training modules includes:

- Module 1, Water Supply System Basic Operations
- Module 2, Responsibilities of Governing Boards
- Module 3, The Safe Drinking Water Act
- Module 4, Dealing with Consultants, Technical Assistance Providers, Regulators, and Funding Agencies
- Module 5, The Basics of Accounting and Finance for Small Water Systems
- Module 6, Business Planning for Small Water Systems

- Module 7, Budgeting and Capital Improvements Planning Overview for Small Water Systems
- Module 8, Rate Design Overview for Small Water Systems
- Module 9, Bidding, Purchasing, and Leasing
- Module 10, Project Management Overview for Small Water Systems

# Appendix 1

## Littletown Water Authority

### LITTLETOWN WATER AUTHORITY

#### BALANCE SHEET 12/31/02

<b>Assets</b>		
<b>CURRENT ASSETS</b>		
Cash and cash equivalents		\$ 92,540
Accounts receivable		<u>8,945</u>
Total current assets		\$ 101,485
<b>PROPERTY, PLANT, AND EQUIPMENT</b>		
Land	\$ 13,535	
Plant and equipment	<u>2,456,897</u>	
	\$ 2,470,432	
Less accumulated depreciation	<u>45,342</u>	
Net property, plant, and equipment		<u>2,425,090</u>
Total assets		\$ <u>2,526,575</u>
<b>Liabilities and Retained Earnings</b>		
<b>CURRENT LIABILITIES</b>		
Current maturities of long-term debt		\$ 16,982
Accounts payable		6,572
Accrued interest payable		<u>14,769</u>
Total current liabilities		\$ 38,323
LONG-TERM DEBT, less current maturities		<u>1,365,231</u>
Total liabilities		\$ 1,403,554
<b>RETAINED EARNINGS</b>		
Capital grant, federal, for construction	\$ 916,568	
Capital grant, state, for construction	<u>86,927</u>	
	\$ 1,003,495	
Retained earnings, unreserved	<u>119,526</u>	
Total retained earnings		\$ 1,123,021

## Appendix 2

### LITTLETOWN WATER AUTHORITY

#### INCOME STATEMENT Year ended 12-31-02

##### OPERATING REVENUE

Water billing	\$ 136,572
Tap-in and inspection fees	<u>7,835</u>

Total operating revenue \$ 144,407

##### OPERATING EXPENSES

Salaries	\$ 13,503
Advertising	78
Professional Services	6,014
Depreciation	22,671
Office Expense	1,041
Plant operation	14,789
Insurance	703
Payroll Taxes	1,276
Repair and maintenance	875
Supplies	1,463
Travel	159
Utilities	6,794
Miscellaneous	<u>569</u>

Total operating expenses 69,935

Net operating income \$ 74,472

##### NON-OPERATING INCOME (EXPENSES)

Interest income	\$ 2,178
Interest expense	<u>(17,983)</u>

Total non-operating income (expense) (15,805)

NET INCOME \$ 58,667

## Appendix 3

### LITTLETOWN WATER AUTHORITY

#### STATEMENT OF CASH FLOWS Year ended 12-31-02

BEGINNING CASH BALANCE		\$ 12,786
CASH FLOWS FROM OPERATING ACTIVITIES		
Net operating income	\$ 74,472	
Depreciation	22,671	
Changes in assets and liabilities:		
(Increase) in accounts receivable	(2,353)	
(Decrease) in accounts payable	(1,387)	
Increase in accrued expenses	<u>2,156</u>	
Net cash provided by operating activities		\$ 95,559
CASH FLOWS FROM INVESTING ACTIVITIES		
Investment income	\$ <u>2,178</u>	
Net cash provided by investing activities		\$ 2,178
CASH FLOWS FROM FINANCING ACTIVITIES		
Loan interest expense	<u>(17,983)</u>	
Net cash provided by financing activities		\$ <u>(17,983)</u>
ENDING CASH BALANCE		\$ <u>92,540</u>