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Overview of Asset Management

Confidence to Completion

Overview of Asset Management

Heather Cannon

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Rural Community Assistance Partnership, Inc.

Western
Rural Community Assistance Corporation
916/447-2854
www.rcac.org

Midwest
Midwest Assistance Program
952/758-4334
www.map-inc.org

Southern
Community Resource Group
479/443-2700
www.crg.org

Northeast
RCAP Solutions
800/488-1969
www.rcapsolutions.org

Great Lakes
WSOS Community Action Commission
800/775-9767
www.glrcap.org

Southeast
Southeast Rural Community Assistance Project
866/928-3731
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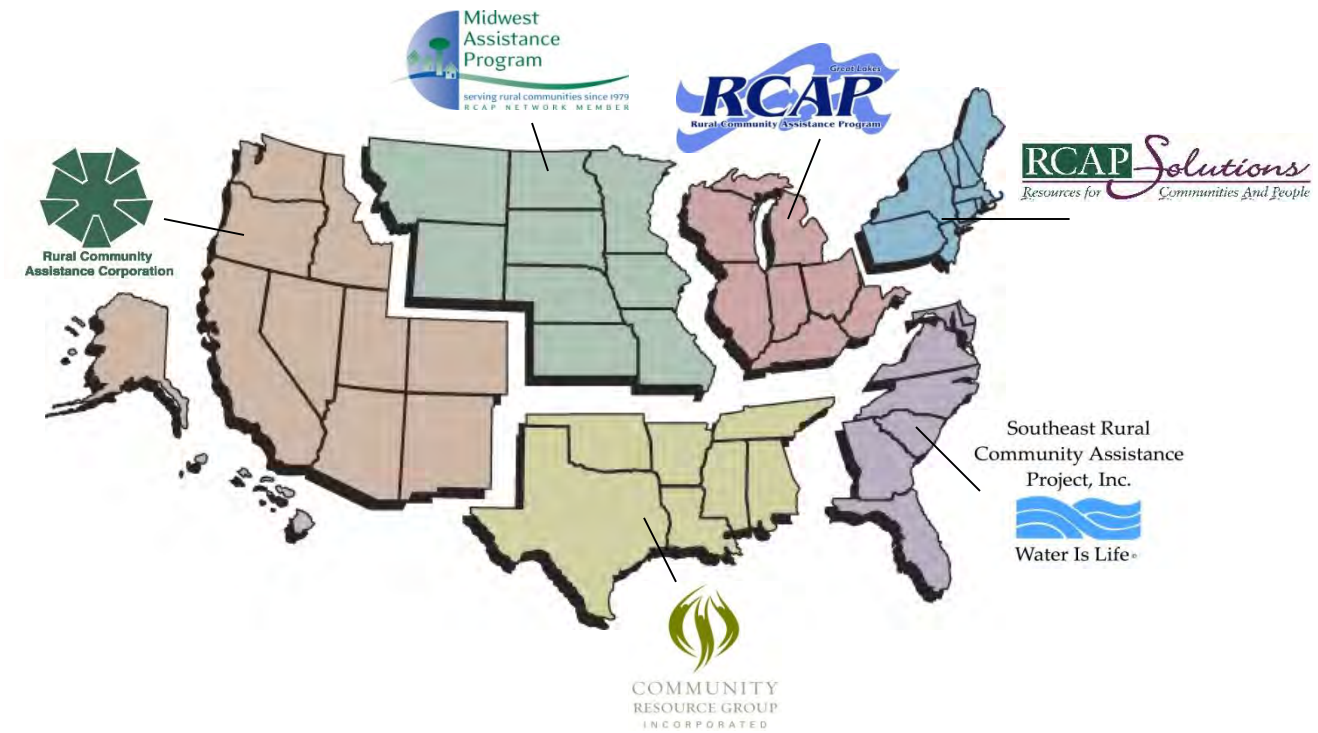

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Session Agenda

- What is Asset Management - the basics
- Where to find help and tools – resources shared
- What is the process to completion

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Session Objectives

By the end of the session you will…

- **Be able to explain** the benefits of an Asset Management Program to decision makers
- **Have the confidence** to start an Asset Management Program
- **Know the first steps** to toward completing an Asset Management Program

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Asset Management

Asset Management -

A **long term** program to attain and sustain the **chosen** level of service for the life of the asset in the **most cost effective** manner.

Before You Begin

Get Key People Together - Build Your Team

- Decision makers
- Community members
- Utility staff
- Business owners
- Financial staff
- Others?

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Best Practices Guides

EPA United States Environmental Protection Agency

Asset Management for Local Officials

This guide will help you understand:

- The basics of asset management.
- Local officials' vital role in successfully implementing an asset management progr

This fact sheet is intended for local officials, owners and operators of public water system state personnel.

Asset Management

Asset management is maintaining a desired level of service, that is, what you want your ass cycle cost. This means the best appropriate cost – not without cost. Public water systems

- Address aging water infrastructure assets before they fail.
- Keep assets productive, and not allow them to become disruptive liabilities.
- Maximize limited financial resources by treating all decisions as investment decisi
- Make costs transparent to help justify project priorities to the public.

Asset management requires:

- Support and involvement of local officials who have the authority and willingness personnel to maintain community assets.
- A commitment of time and money to make cost-effective asset decisions (spendi save more money over the long-term).
- A team made up of key decision makers.

Improving Service and Maintaining Infrastructure Through Asset Manage

A sustainable water service delivers safe, clean water to its customers' satisfaction while m maximize their useful life. An asset management program will help you "tell your story" t understandable. Small systems that have simple asset management plans can benefit as m complex plans. Asset management will enable your system to:

- Have more efficient and focused operations.
- Choose capital projects that meet the system's true needs.
- Base rates on sound operational decisions.
- Improve its financial health.
- Reduce environmental violations due to failed or poorly performing assets.
- Improve the security and safety of infrastructure assets.

The Five Core Questions of Asset Management

A good starting point for any system are five core questions, which walk you through all o asset management.

1. **What is the current system of my assets?**
   Your water infrastructure assets are part of your community's total assets. A decli infrastructure indicates insufficient funding of asset management.
2. **What is my desired "sustainable" level of service?**
   Your desired sustainable level of service is the set of features that describe your s desired level of service is the basis for justifying your user rates.
3. **Which assets are critical to sustained performance?**
   Identifying critical assets will help you make decisions about resource allocation a your sustainable level of service.

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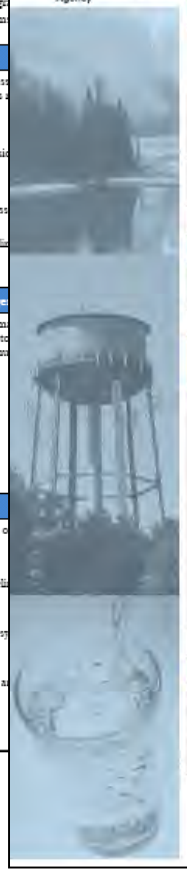
Asset Management: A Best Practices Guide



Introduction

Purpose	This guide will help you understand: • What asset management means. • The benefits of asset management. • Best practices in asset management. • How to implement an asset management plan.
Target Audience	This guide is intended for owners, managers, and operator systems, local officials, technical assistance providers, and

Asset Management

Maintaining a desired level of service (what you want your assets to provide cost (best appropriate cost - not without cost).

Challenges faced by Public Water Systems	Benefits of Ass
• Aging assets. • Increasing demand for services. • Resistance to rate increases. • Diminishing resources. • Determining the best (or optimal) time to repair, replace, or renew assets. • Rising service expectations of customers. • Increasingly stringent regulatory requirements.	• Budgets focused sustained perfo • Financial manag on sound opera • Efficient and fo maintenance to aid repair/repla • Ability to meet with a focus on • Improved respo • Security and saf

Implementing Asset Management: Five Core Question

There are many asset management best practices that are constantly being i will become more familiar with these approaches as you implement your a program. A good starting point for any size system is the five core questio framework walks you through all of the major activities associated with ass be implemented at the level of sophistication reasonable for a given system

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Building an Asset Management Team

This guide will help you understand:

- How a team can help your system successfully implement asset management.
- The components of a successful asset management team.

This fact sheet is intended for local officials, owners and operators of public water systems, technical assistance providers, and state personnel.

Making the Commitment

Asset management requires an initial investment in time and resources. The savings from asset management are realized over time. Asset management is not a 1-year project, or even a 5-year project. It is a continual, fundamental change in the way infrastructure assets are managed. Successful asset management programs are characterized by a commitment to:

- Spend time and money to implement the program.
- Focus on making cost-effective asset decisions.
- Provide a sustainable level of service for the community.

To achieve this level of commitment, asset management is implemented by a team that is:

- Supported by political leaders who have the authority and willingness to commit public resources and personnel.
- Made up of key decision makers who represent the departments involved with asset management.

Creating and Maintaining an Asset Management Culture

Thinking about your assets differently can be the first step towards having a sustainable water system. With the limited resources of most systems, shifting away from reacting to events and towards making strategic plans can lead to real savings. For example, a system can move beyond an unsophisticated pipe-replacement plan based on a simple formula that does not consider pipe condition (e.g., replace 5 percent per year). The asset management model focuses on the long-term life cycle of an asset and its sustained performance, not on the day-to-day aspects of the asset. It involves a shift in a water system's philosophy or "culture" characterized by:

- Changing the system's business environment.
- Understanding that all asset decisions are investment decisions.
- Focusing on continual improvement driven by results (sustainability).

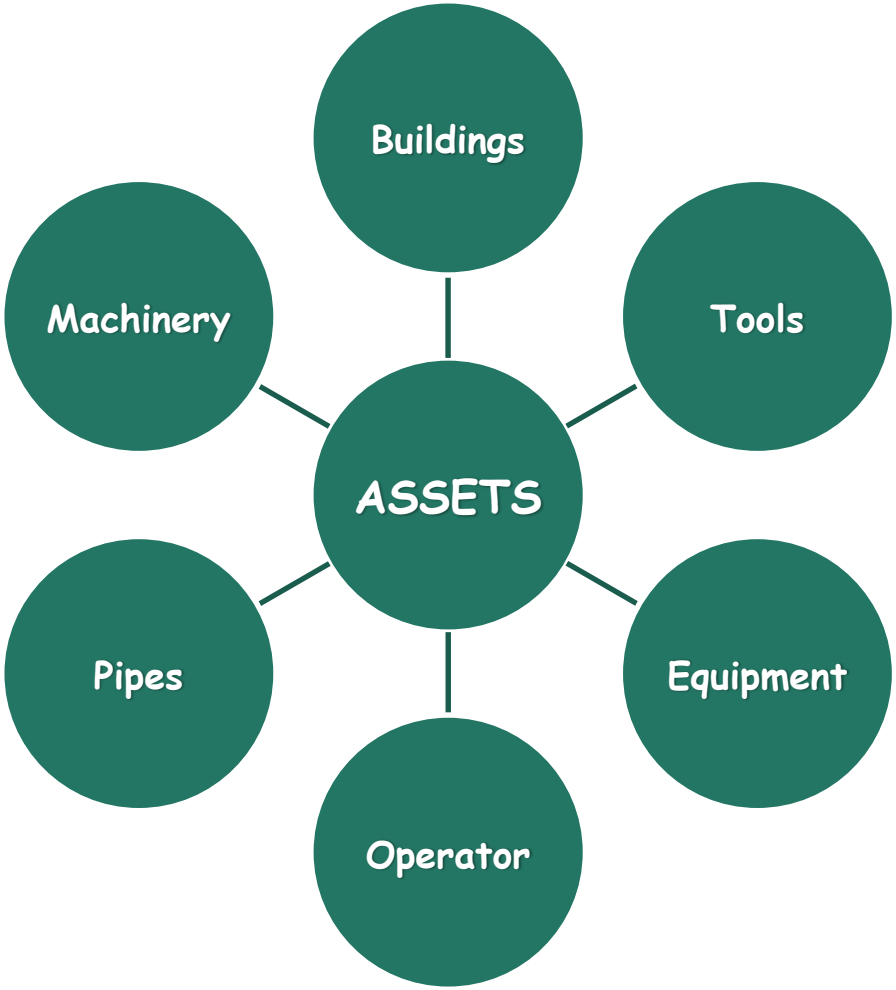
Changing the culture requires a champion to promote and articulate the benefits of asset management to decision makers, stakeholders, and employees. The champion can be an operator, manager, elected official, or stakeholder who coordinates the team as it develops and implements the asset management program.

Components of a Successful Asset Management Team

The team should have the authority and resources to answer the core questions that lead to asset investment decisions. An asset management team:

- Is flexible and encourages critical thinking.
- Creates opportunities for sharing ideas and information through open and transparent debate.
- Works through problems and shares the success, not the blame.
- Fosters an atmosphere that builds trust and develops partnerships.
- Uses existing elements of asset management as a basis for the program.
- Starts implementation during planning to achieve early gains.

What is an Asset?



All your "stuff"; pipes, pumps, computer programs, furniture, rolling stock, valves, motors, buildings…

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Asset Truths

- All assets are **not** created equal
- All assets eventually **fail**
- Failures **directly** affect system performance

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Asset Management Includes:

- Public Relations
- Maintenance
- Personnel and Training
- Planning
- Finance and Rates

Which do you think is more important?

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Asset Management Includes:

- Public Relations
- Maintenance
- Personnel and Training
- Planning
- Finance and Rates

A well trained & stable work force

Board / Council also!

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Asset Management Includes:

- Public Relations
- Maintenance
- Personnel and Training
- Planning
- Finance and Rates

None stands alone!!

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Good Management Comes With a Price…

What are the two questions you must always be able to answer?

- **Why are we doing this?**
- **What is it going to cost?**

Customers don’t need to “like” the answers.

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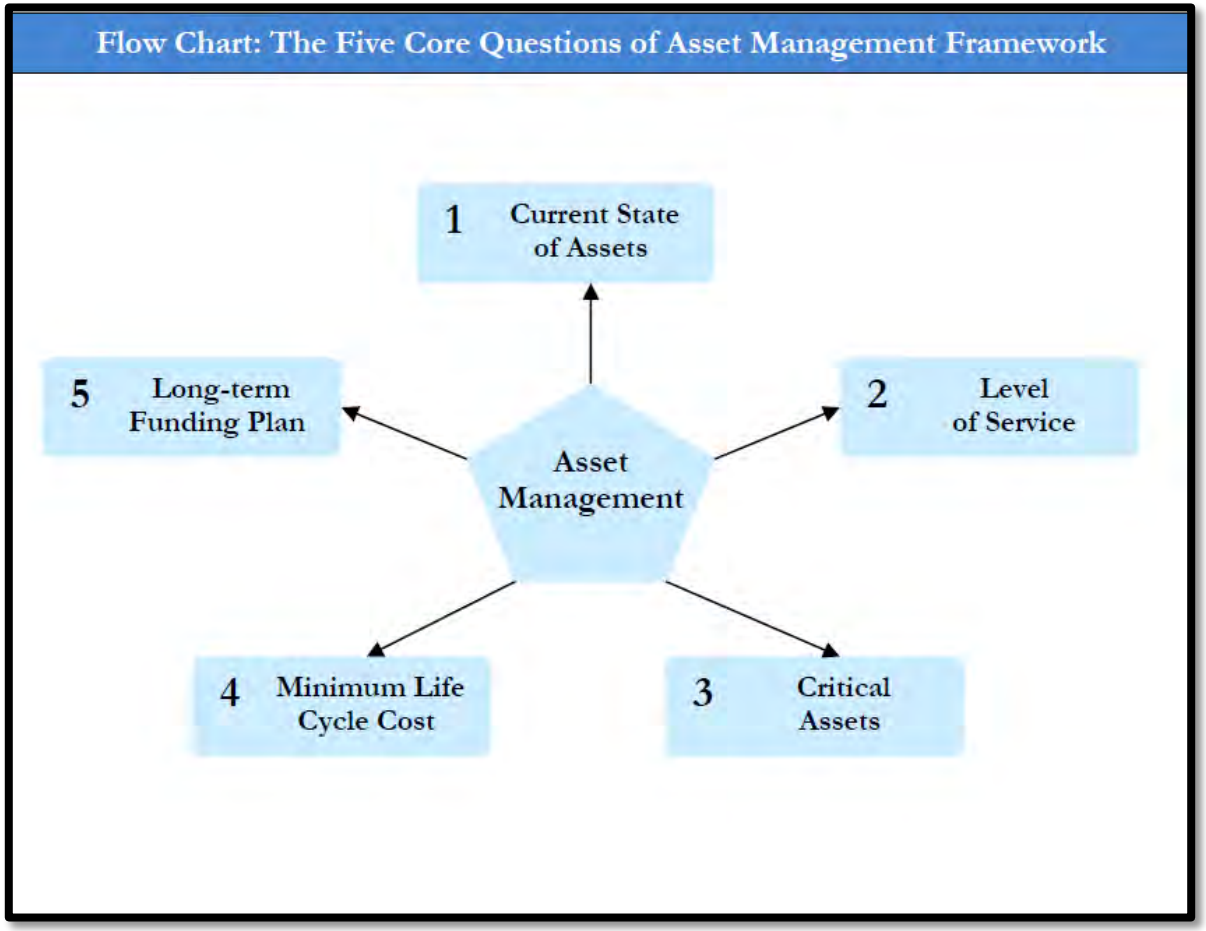
What is Asset Management



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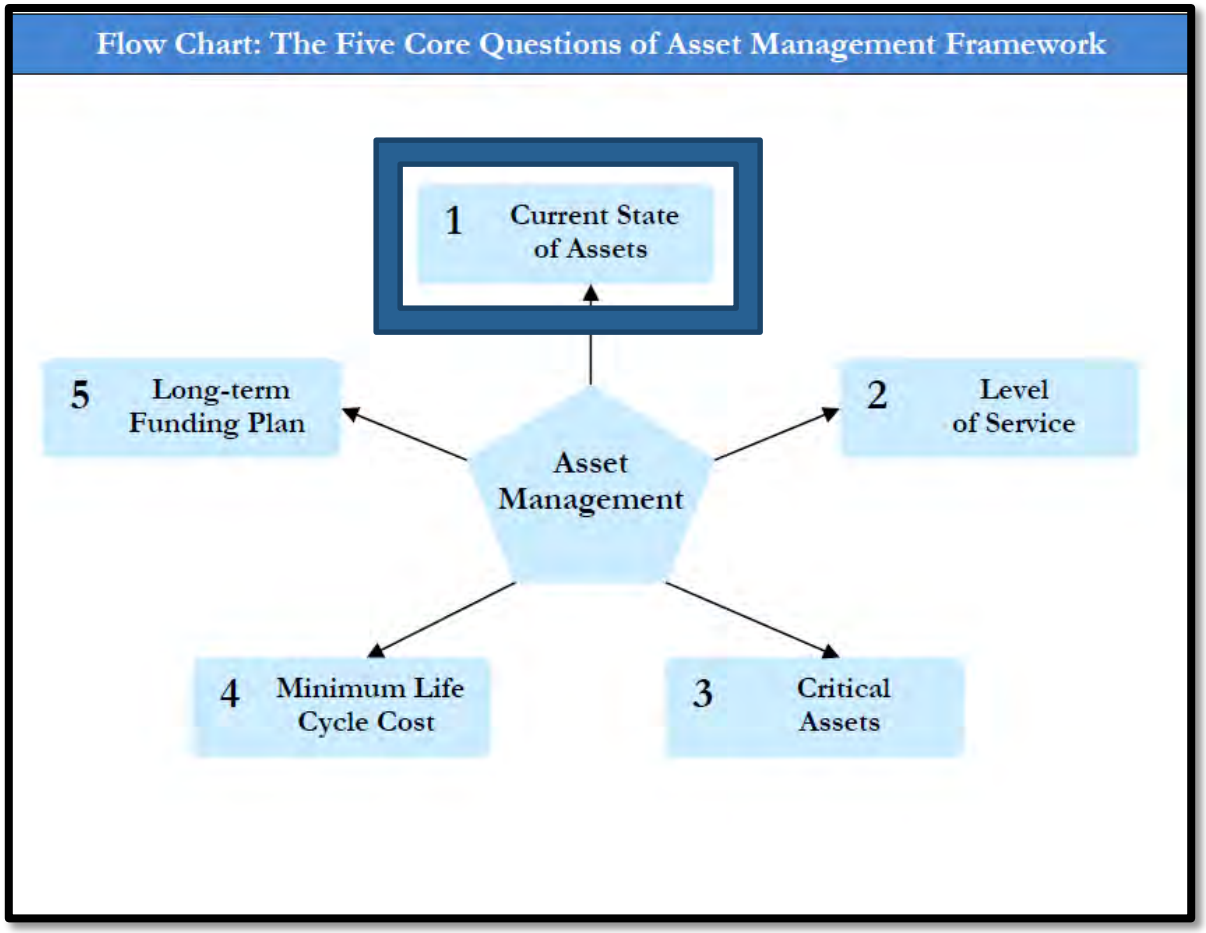
Step 1 Current State of Assets



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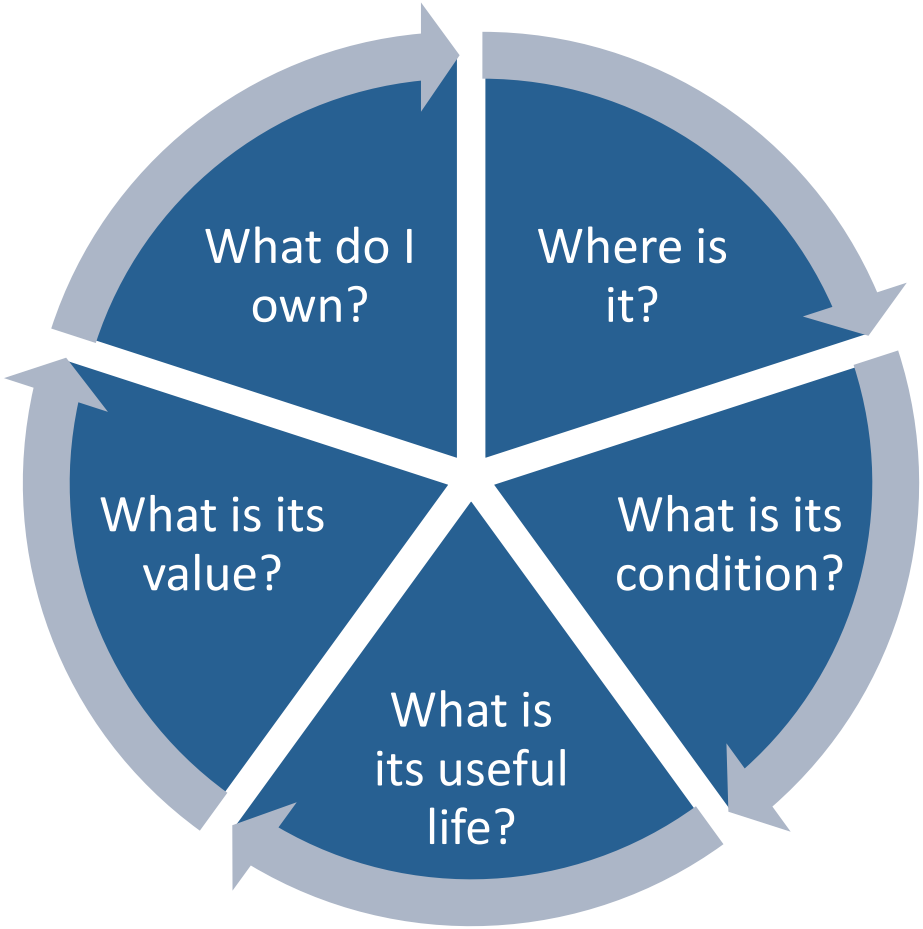
Step 1 Current State of Assets



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Step 1 Current State of Assets

What do we own?

- Prepare an asset inventory
- What type of asset is it?
  - Short lived – generally replaced by cash
  - Long lived (Capital Asset) generally financed but can be cash replaced

Step 1 Current State of Assets

Identify number/feet/type of all important components in your utilities

- ❑ *Year Installed
- ❑ Useful Life
- ❑ Condition
- ❑ Replacement Cost

No Fibbing

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Step 1 Current State of Assets

Where is the asset located?

- Prepare a system facility map and show where assets are located
- Are they located in the “best” place?
  - ❑ Computer back ups
  - ❑ Extra vehicle keys

Step 1 Current State of Assets

Collecting the data…. the biggest challenge!

- Facility Maps and Plans
- Bid/Construction documents
- "As-builts"
- Walk the line
  - Wheel or pace yardage
  - Count valves, hydrants etc.
- Your experience and observation

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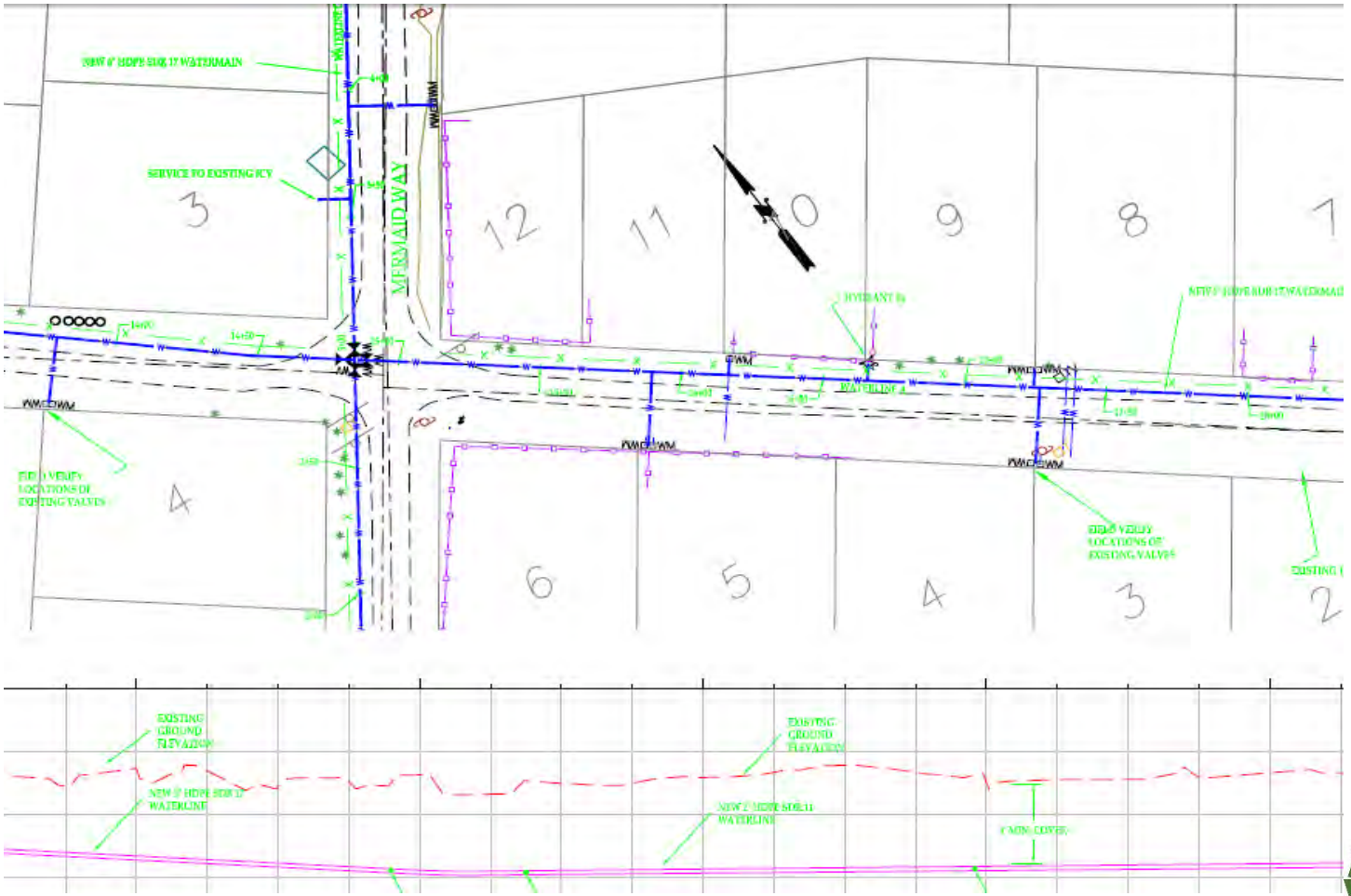
Step 1 Current State of Assets



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Step 1 Current State of Assets

Identify condition and importance of assets

- Use a value system, 1 – 10
- Determine which number means immediate replacement
- How important is this asset? Is it critical or is it for redundancy?

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Step 1 Current State of Assets

Assess useful life

- What is the total useful life of the asset
- Calculate the remaining useful life

Step 1 Current State of Assets

Asset Management:
A Handbook for Small Water Systems

One of the Simple Tools for Effective Performance (STEP) Guide Series

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Step 1 Current State of Assets

Introduction to the System Inventory Worksheet

The following System Inventory Worksheet will help you:

- Identify all of your system's assets;
- Record the condition of your assets;
- Record the service history of your assets;
- Determine your assets' adjusted useful lives;
- Record your assets' ages; and,
- Estimate the remaining useful life of each of your assets. Usually, there are two steps to estimating useful life:

    1. Determine the expected useful life by using the manufacturer's recommendations or the estimates provided in the box to the right. Adjust these numbers based on the specific conditions and experiences of your system.

    2. Calculate an adjusted useful life by taking into account the service history and current condition of your asset.

Two copies of the worksheet are provided. The first copy is followed by instructions that will help you understand how to complete it. The second worksheet is an example. Appendix A has blank worksheets that you can photocopy and use.

Estimated Useful Lives

Asset	Expected Useful Life (in years)
Intake Structures	35-45
Wells and Springs	25-35
Galleries and Tunnels	30-40
Chlorination Equipment	10-15
Other Treatment Equipment	10-15
Storage Tanks	30-60
Pumps	10-15
Buildings	30-60
Electrical Systems	7-10
Transmission Mains	35-40
Distribution Pipes	35-40
Valves	35-40
Blow-off Valves	35-40
Backflow Prevention	35-40
Meters	10-15
Service Lines	30-50
Hydrants	40-60
Lab/Monitoring Equipment	5-7
Tools and Shop Equipment	10-15
Landscaping/Grading	40-60
Office Furniture/Supplies	10
Computers	5
Transportation Equipment	10

Note: These numbers are ranges of expected useful lives drawn from a variety of sources. The ranges assume that assets have been properly maintained.

Step 1 Current State of Assets

Determine asset values and replacement costs

- Capital Facility Plan
- Parts suppliers
- Well drillers
- Engineering estimates

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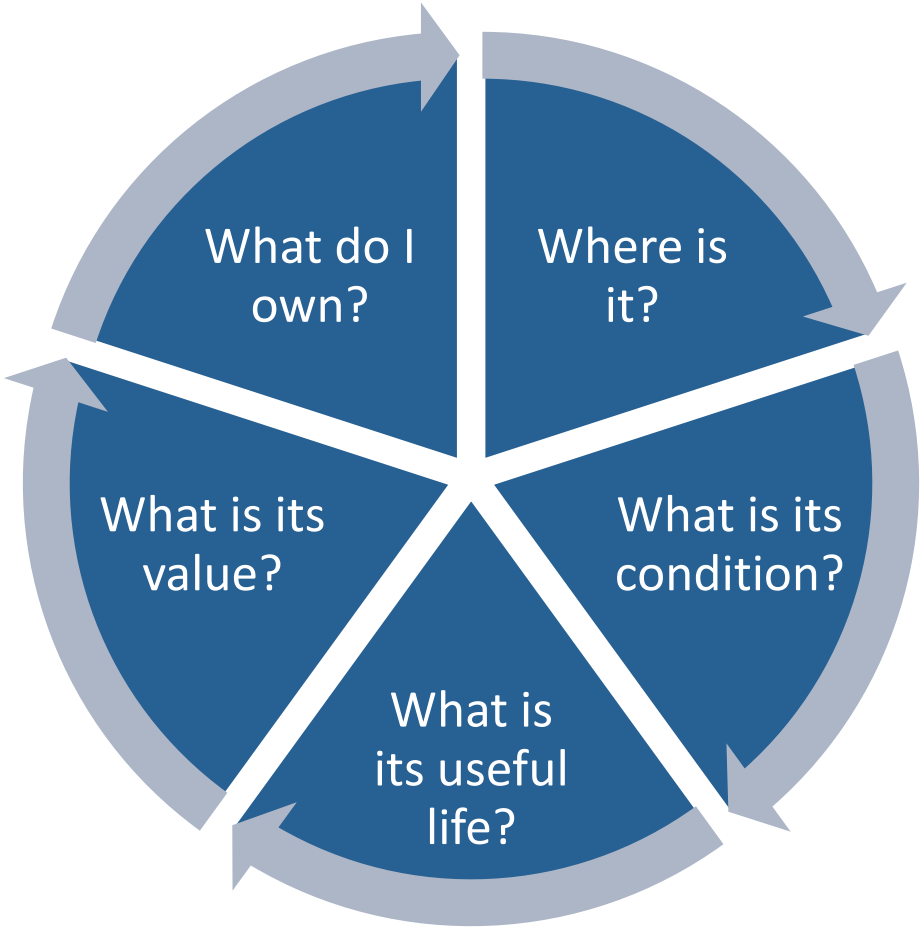
Step 1 Current State of Assets



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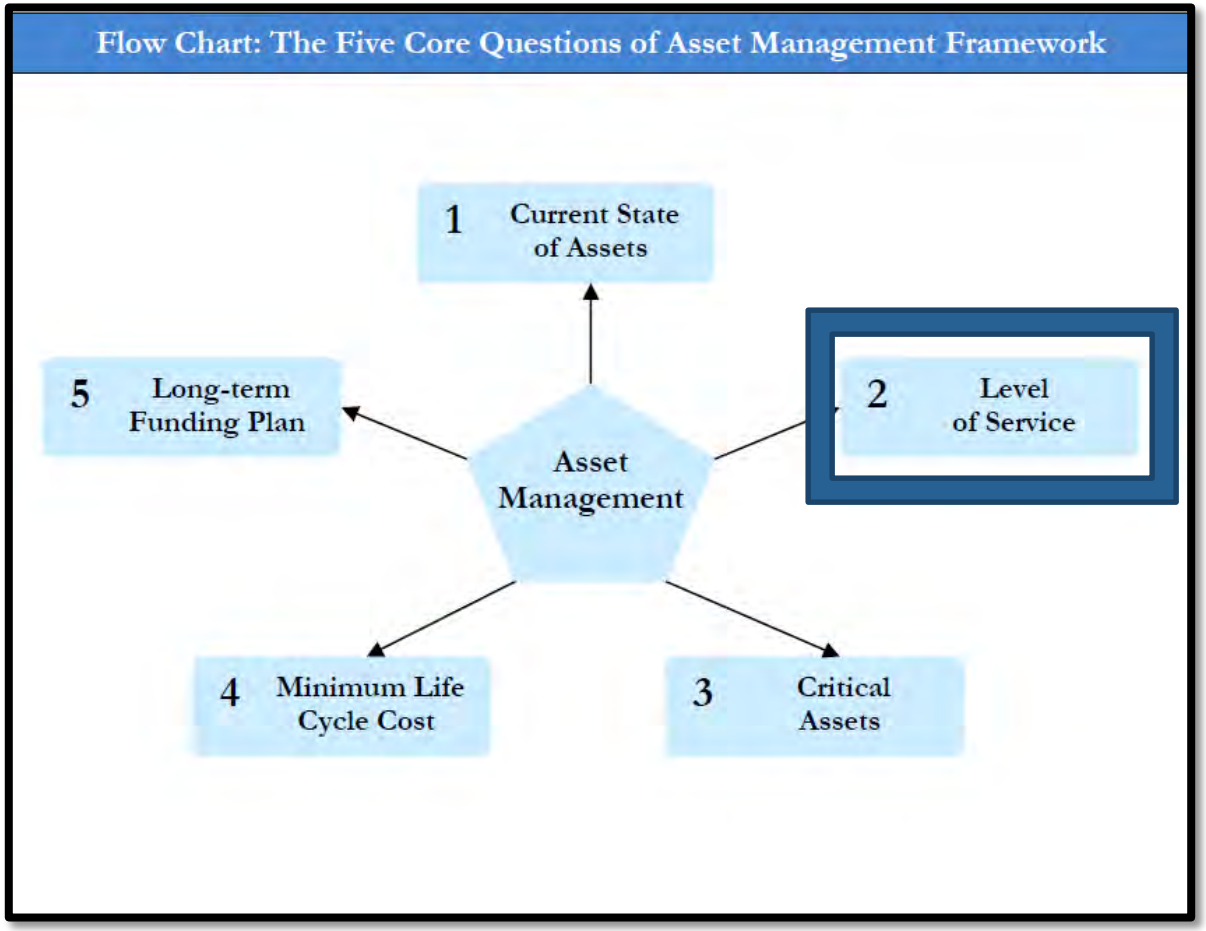
Step 2 Level of Service



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Step 2 Level of Service

A policy decision to provide an "amount" of service to meet (local standards):

1
- Reliability and safety of utilities
- Future needs
- Customer needs / wants

2
- Financial viability

What is the order of the above?

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Step 2 Level of Service

Financial Viability (WA ST DOH ODW)

"Sufficient funds to operate, maintain and manage a public water system, on a continuing basis, in full compliance of federal and state laws"

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Step 2 Level of Service

- No violations
- Planning requirement
- Backup generator
- Emergency plans
- Well trained personnel
- Nice truck w/emblem
- Clean facilities
- Your own backhoe

- Phone answered in 3 rings
- Good water pressure
- System optimization
- Repair parts on-hand
- Proactive maintenance
- Public relations
- Adequate Rates

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Step 2 Level of Service

- There must be communication

  management  operations

  utility  customers
- Planning exercise
- Written and adopted policies
- Track achievement

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Step 2 Level of Service

Tracking achievement

- Set criteria
- Based on adopted standards
- Meeting set standards shows customers you take this responsibility seriously

Public Relations

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Step 2 Level of Service

The higher the LOS, the higher the cost:

- Well trained personnel, backup power, modern billing programs

- Some LOS costs can be partially recovered

Good people = good service + good maintenance

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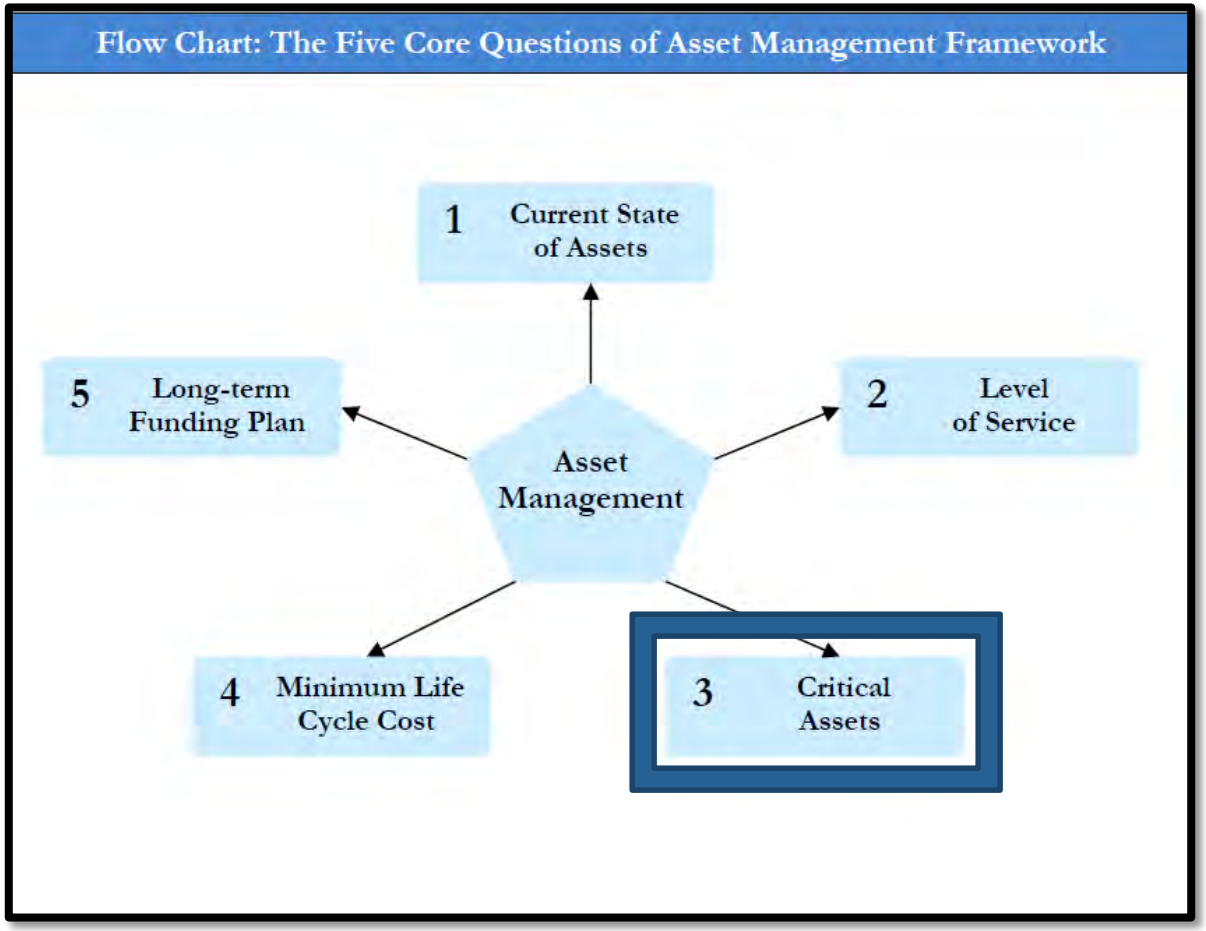
Step 3 Critical Assets



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Step 3 Critical Assets

Which assets are critical to sustained performance?

Conduct a **Vulnerability Analysis** to identify vulnerability from intrusion, terrorism, storms, flooding, earthquakes…

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Step 3 Critical Assets

Analyze failure consequences

Develop an **Emergency Response Plan** to show what you are going to do about failure, who does what, phone numbers…

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Step 3 Critical Assets

What's the probability of failure?

- Past history
- Age and condition
- Trends

List assets by failure type

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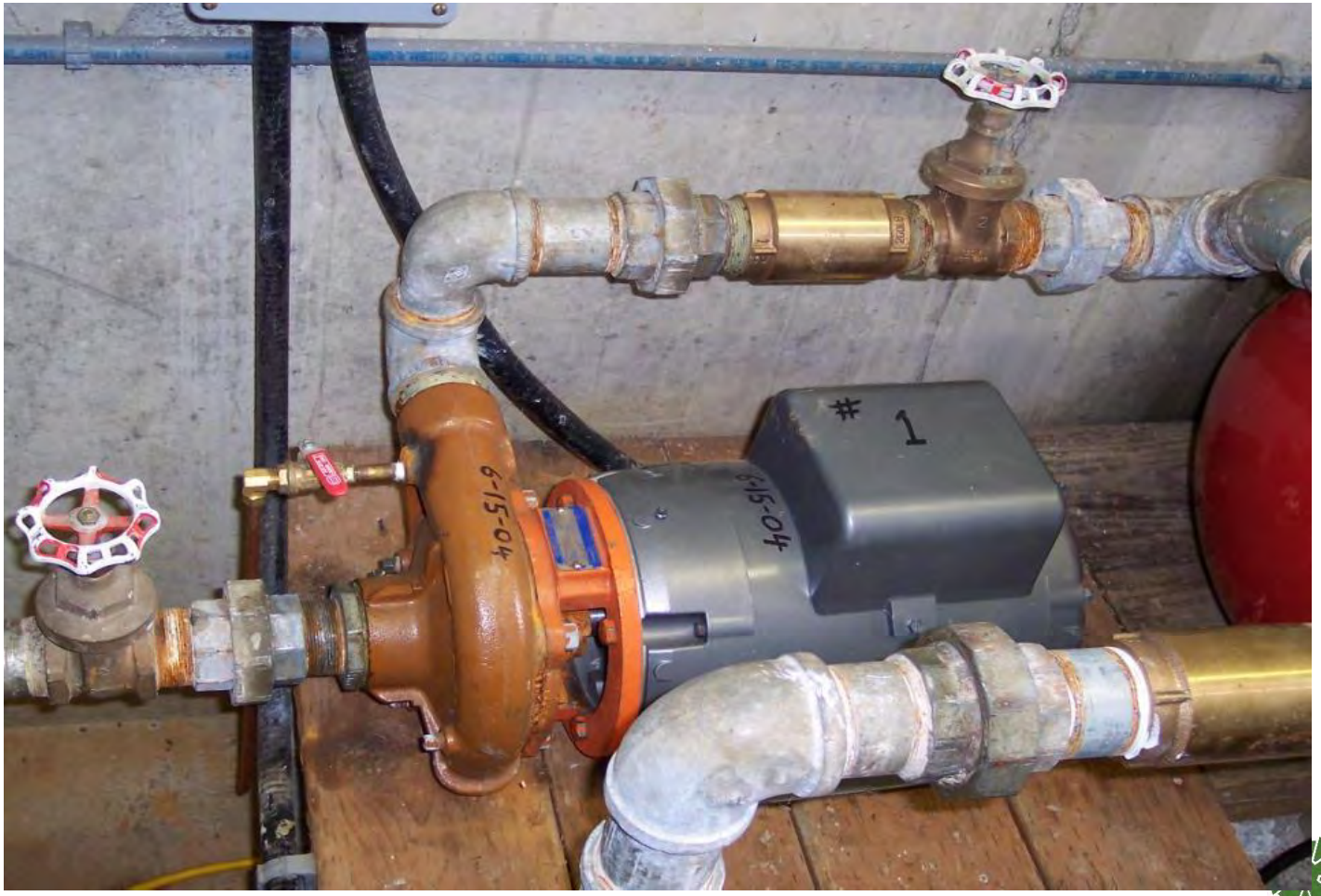
Step 3 Critical Assets



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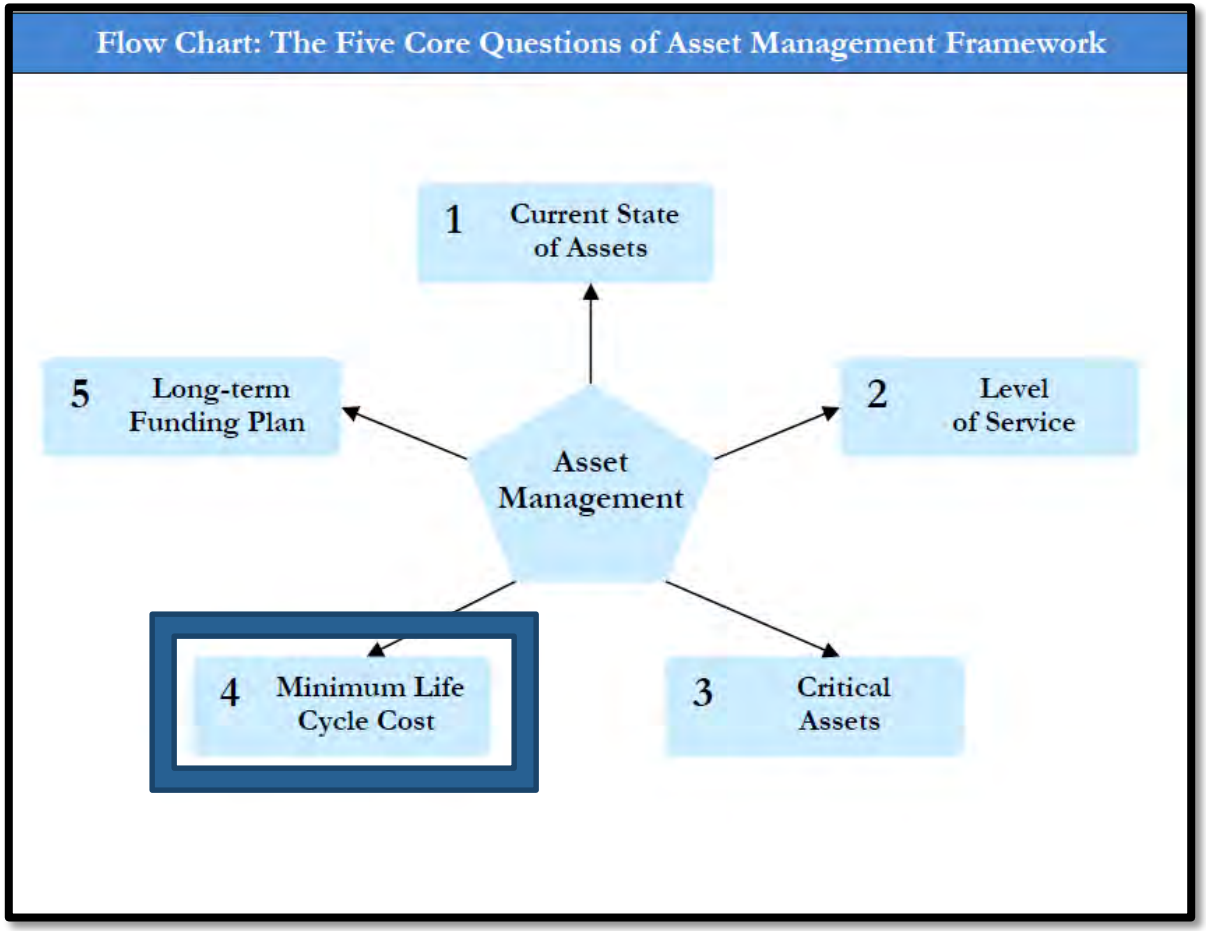
Step 4 Minimum Life Cycle Cost



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Step 4 Minimum Life Cycle Cost

Key Concepts:

- Scheduled Maintenance
  - Reactive vs. Proactive vs. Predictive
- Recordkeeping
  - Track trends
- Planning
  - Financial
  - Contingency

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Step 4 Minimum Life Cycle Cost

1. Move from reactive maintenance to predictive
2. Know costs & benefits of rehabilitation vs. replacement
3. Deploy resources based on asset conditions
4. Analyze possible asset failures & develop specific response plans

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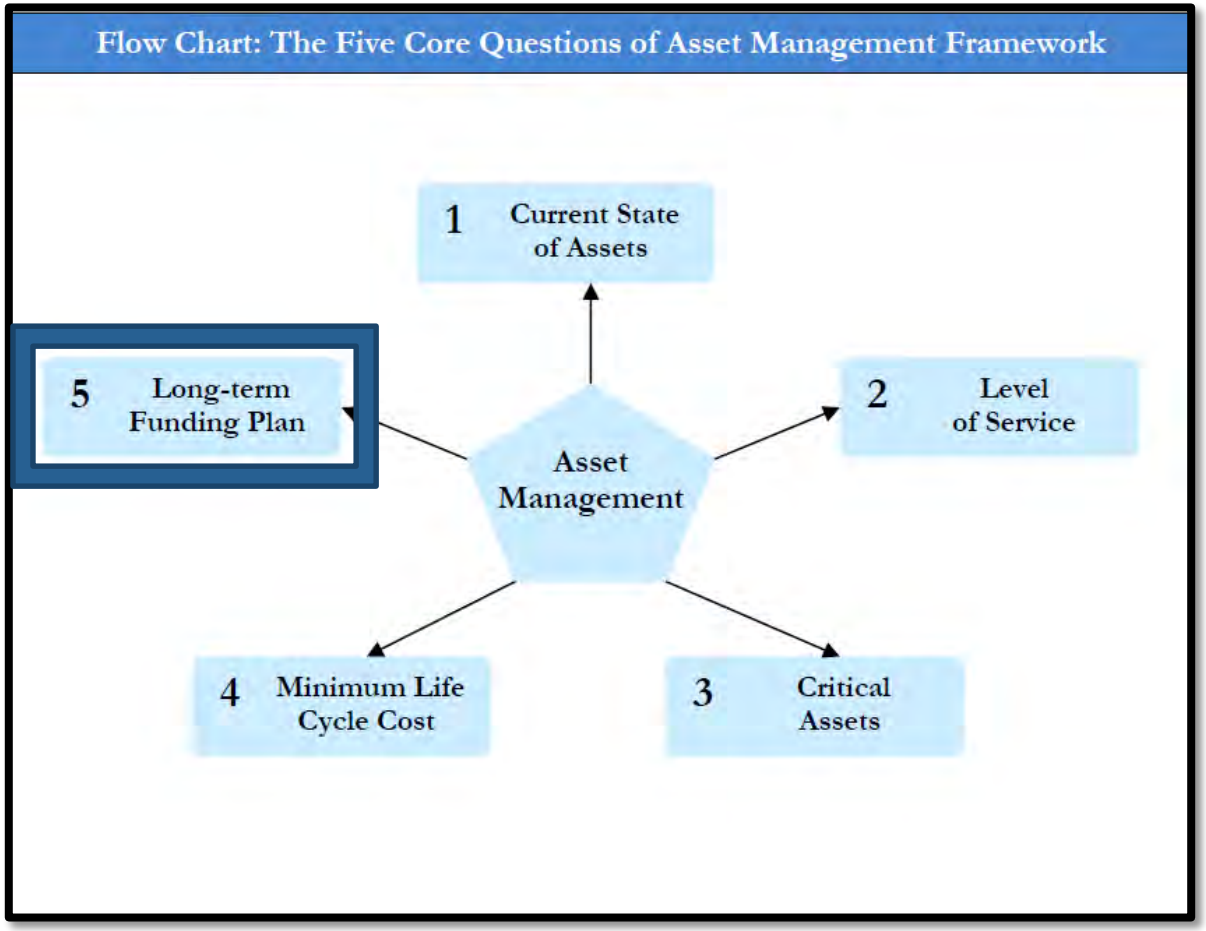
Step 5 Long-term Funding Plan



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Step 5 Long-term Funding Plan

- ✓ Inventory your assets
- ✓ Service policies
- ✓ Replacement schedule
- ❑ Determine needed reserve accounts
- ❑ Determine funding sources
- ❑ Translate the above into rates!

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Step 5 Long-term Funding Plan

Determine needed reserve accounts

- Short term asset replacement
- Cash components of capital projects such as preliminary engineering, matching funds

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Step 5 Long-term Funding Plan

Determine funding sources:

- Cash reserves
- Loan sources
  - **Learn prioritization of funding**
- Likelihood of grants
  - Community Development Block Grants
  - USDA Rural Development
  - DOH SRF “forgiveness”

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Step 5 Long-term Funding Plan

Keep in touch

- Prioritization for loans and grants is likely to be changed
  - You will need to show financial planning and “sustainability” skills
  - You will need to demonstrate “stewardship” of your utilities

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Step 5 Long-term Funding Plan

Support the Asset Management Plan

- Factual budget; 1 year, 6 year
- Budget projections include annual expenses, new loans & inflation
- Needed rate increases will be clearly shown

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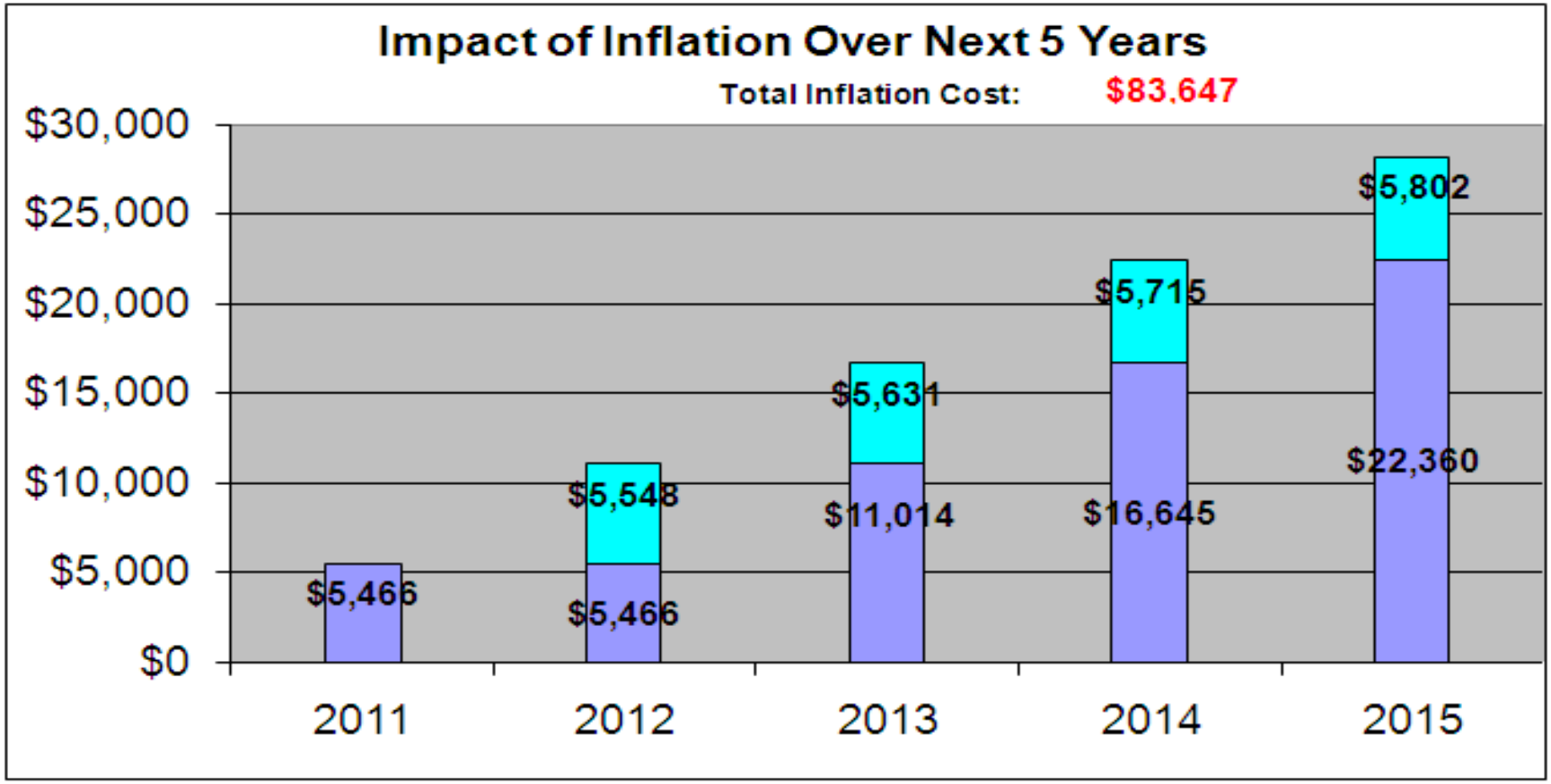
Step 5 Long-term Funding Plan



Total inflation paid to end of this year:	$5,466	$16,480	$33,125	$55,485	$83,647

Step 5 Long-term Funding Plan

- ❑ Create and follow a budget
- ❑ Create & fund a dedicated asset reserve
- ❑ Revise your rate structure
- ❑ Attend workshops…..IACC!

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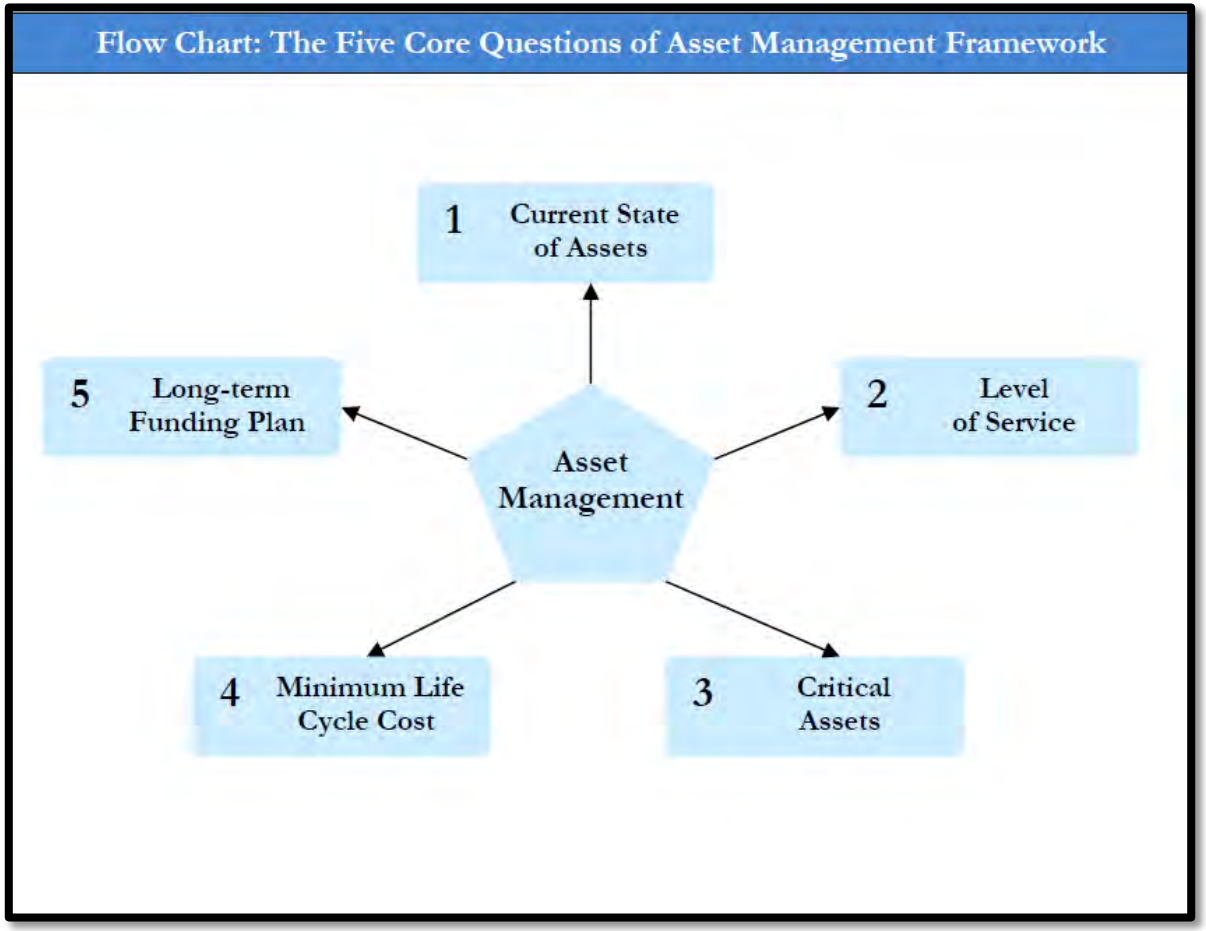
What is Asset Management



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Resources

"A living document to govern the managerial, technical, and financial aspects of your water system"

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Resources

2.4 Component Inventory and Assessment

Purpose

To create an inventory of system components (infrastructure), separate them into short-lived and long-lived assets, and determine each component's remaining useful life.

Background

The inventory is a list of your system's components. The assessment is an evaluation of each component to determine if you need to replace it in the next six years. Take the time to include the estimated cost to replace each component so you can include the outcome of this exercise in your financial planning activities (Chapter 3).

Resources

Table 2-4A
Short-Lived Asset Component Inventory and Assessment (service life is 6 years or less)

Short-Lived Asset Component	Size, Length, Diameter, and/or Capacity Where necessary, list each individual component separately	Year Constructed or Installed	Estimated Life Expectancy	Current Age	Estimated Cost to Replace	Replace in Next 6 Years?
Hypo-Chlorinator System			3-6 Years			☐ No ☐ Yes If Yes, Year
UV Light			1 Year			☐ No ☐ Yes If Yes, Year
Major Tools			3-6 Years			☐ No ☐ Yes If Yes, Year
Software (billing, SCADA, preventative maintenance)			3-6 Years			☐ No ☐ Yes If Yes, Year
Safety Equipment			3-6 Years			☐ No ☐ Yes If Yes, Year
Filters and Filter Media			3-6 Years			☐ No ☐ Yes If Yes, Year
Pressure Tanks (bladder)			3-6 Years			☐ No ☐ Yes If Yes, Year
Building Heaters/Cooling			3-6 Years			☐ No ☐ Yes If Yes, Year
Instrument Dividers and Gauges			3-6 years			☐ No ☐ Yes If Yes, Year
Other			years			☐ No ☐ Yes If Yes, Year

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Resources

Table 2-4B
Long-Lived Asset Component Inventory and Assessment (service life is longer than 10 years)

Long-Lived Asset Component	Size, Length, Diameter, and/or Capacity Where necessary, list each individual component separately	Year Constructed or Installed	Estimated Life Expectancy	Current Age	Estimated Cost to Replace	Replace in Next 6 Years?
EXAMPLE Well	Well #1 8-inch diameter and 200 feet deep Well #2 12-inch diameter and 145 feet deep	Drilled 1924 Drilled 1986	50-100 years	87 years 25 years		☐ No ☒ Yes (Well #1) If Yes, Year 2014
EXAMPLE Submersible Well Pump	Well #1 10 hp Well #2 25 hp	Installed 1996 Installed 2006	10-15 years	15 years 5 years		☒ No ☐ Yes If Yes, Year ____
Well			50-100 years			☐ No ☐ Yes If Yes, Year
Submersible Well Pump			10-15 years			☐ No ☐ Yes If Yes, Year
Turbine Well Pump			25-50 years			☐ No ☐ Yes If Yes, Year
Source Meter			15-30 years			☐ No ☐ Yes If Yes, Year
Well and Pump House			25-100 years			☐ No ☐ Yes If Yes, Year
Reservoirs			50-100 years			☐ No ☐ Yes If Yes, Year
Altitude, Pressure Reducing, Pump Control, Surge Anticipation Valves			20 years			☐ No ☐ Yes If Yes, Year

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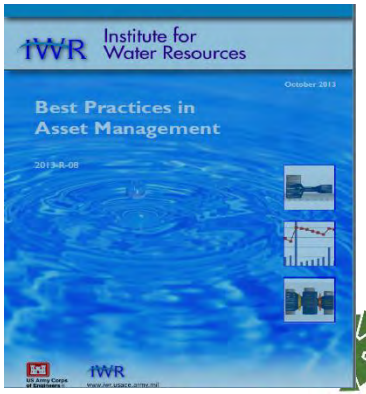
Resources

http://www.ohiowea.org/docs/Asset%20Management%20Plan%20-%20Cannon.pdf

https://www.epa.gov/sustainable-water-infrastructure/asset-management

http://www.iwr.usace.army.mil/Portals/70/docs/iwrreports/2013-R-08_Best_Practices_in_Asset_Management.pdf



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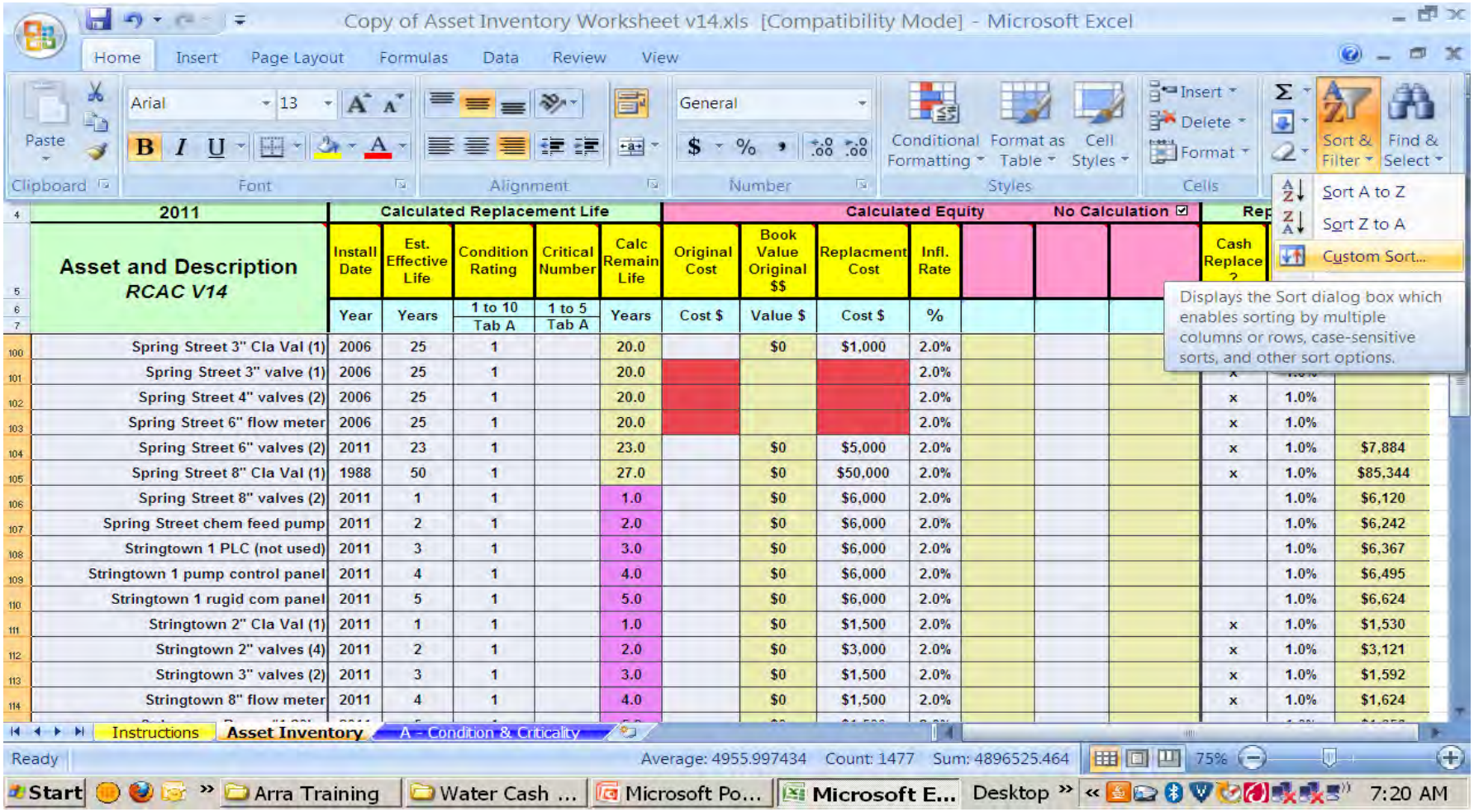
Copy of Asset Inventory Worksheet v14.xls [Compatibility Mode] - Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Sort & Filter
Sort A to Z
Sort Z to A
Custom Sort...
Displays the Sort dialog box which enables sorting by multiple columns or rows, case-sensitive sorts, and other sort options.
2011
Calculated Replacement Life
Calculated Equity
No Calculation
Asset and Description
RCAC V14
Install Date
Est. Effective Life
Condition Rating
Critical Number
Calc Remain Life
Original Cost
Book Value Original $$
Replacment Cost
Infl. Rate
Cash Replace ?
Year
Years
1 to 10 Tab A
1 to 5 Tab A
Years
Cost $
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Cost $
%
Spring Street 3" Cla Val (1) 2006 25 1 20.0 $0 $1,000 2.0%
Spring Street 3" valve (1) 2006 25 1 20.0 2.0%
Spring Street 4" valves (2) 2006 25 1 20.0 2.0% x 1.0%
Spring Street 6" flow meter 2006 25 1 20.0 2.0% x 1.0%
Spring Street 6" valves (2) 2011 23 1 23.0 $0 $5,000 2.0% x 1.0% $7,884
Spring Street 8" Cla Val (1) 1988 50 1 27.0 $0 $50,000 2.0% x 1.0% $85,344
Spring Street 8" valves (2) 2011 1 1 1.0 $0 $6,000 2.0% 1.0% $6,120
Spring Street chem feed pump 2011 2 1 2.0 $0 $6,000 2.0% 1.0% $6,242
Stringtown 1 PLC (not used) 2011 3 1 3.0 $0 $6,000 2.0% 1.0% $6,367
Stringtown 1 pump control panel 2011 4 1 4.0 $0 $6,000 2.0% 1.0% $6,495
Stringtown 1 rugid com panel 2011 5 1 5.0 $0 $6,000 2.0% 1.0% $6,624
Stringtown 2" Cla Val (1) 2011 1 1 1.0 $0 $1,500 2.0% x 1.0% $1,530
Stringtown 2" valves (4) 2011 2 1 2.0 $0 $3,000 2.0% x 1.0% $3,121
Stringtown 3" valves (2) 2011 3 1 3.0 $0 $1,500 2.0% x 1.0% $1,592
Stringtown 8" flow meter 2011 4 1 4.0 $0 $1,500 2.0% x 1.0% $1,624
Instructions
Asset Inventory
A - Condition & Criticality
Ready
Average: 4955.997434 Count: 1477 Sum: 4896525.464
75%
Start
Arra Training
Water Cash ...
Microsoft Po...
Microsoft E...
Desktop
7:20 AM

Resources

Your Utility Name	9/4/2010	Number of Connections or ERUs used to calculate Equity:	78	Total Equity:	$223,136	Equity per ERU: (Connection	$2,861	Monthly Cost Per Unit for Reserves:	$56.41
								Annual $$ to Reserves:	$52,800

Current Year: 2010	What is the Remaning Life of My Assets?						The Value of My Assests							My Cost to Replace		
Asset and Description *RCAC V12*	Install Date	Est. Effective Life	Condition Rating	Critical Number	Calc Remain Life	Calc Remain Life %	Original Cost	Book Value Original $$	Book Value Current Year Cost	Infl. Rate	Accum Loss of Value (Dep)	Debt and Grants	Equity	Cash Replace?	Saving Acc't Interest	Future Cost
	Year	Years	1 to 10 Tab A	1 to 5 Tab A	Years	%	Cost $	Value $	Cost $	%	Loss $$	Value $	Value $	X	%	Value $
8 " water well, 160 feet deep	1981	50	1		21.0	42%		$0	$10,000		$5,800		$4,200			$10,000
Pumphouse	1982	30	5		1.0	3%		$0	$20,000		$19,333		$667	x	1.0%	$20,000
Submersible Pump #1, Jacuzzi, 5 HP, 3 Phase	1982	30	5	1	1.0	3%		$0	$5,000		$4,833		$167	x	1.0%	$5,000
Submersible Pump #2, Jacuzzi, 5 HP, 3 Phase	1992	30	5	2	6.0	20%		$0	$5,000		$4,000		$1,000	x	1.0%	$5,000
Booster Pump #1, 7.5 HP, 3 Phase	2001	12	1		3.0	25%		$0	$3,500	2.0%	$2,625		$875	x	1.0%	$3,714
Booster Pump #2, 7.5 HP, 3 Phase	2001	12	1		3.0	25%		$0	$3,500	2.0%	$2,625		$875	x	1.0%	$3,714
Reservoir, Concrete, Mt. Baker Silo, 32,500 gal	1987	60	3		29.6	49%		$0	$52,800		$26,752		$26,048		1.0%	$52,800
Hydropneumatic Tank, 2560 gallon	1982	50	3		17.6	35%		$0	$8,000	2.0%	$5,184		$2,816		1.0%	$11,336
6" PVC, 2555 feet	1982	60	1		32.0	53%		$0	$102,200	2.0%	$47,693		$54,507		1.0%	$192,600
2 " PVC, 825 feet	1982	60	1		32.0	53%		$0	$16,500	2.0%	$7,700		$8,800		1.0%	$31,095
Standpipe Valves (4)	1982	30	5		1.0	3%		$0	$4,000		$3,867		$133	x	1.0%	$4,000
Blow-off valves (5)	1982	30	5		1.0	3%		$0	$2,500		$2,417		$83	x	1.0%	$2,500
Gate Valves (6)	1982	34	9	3	0.3	1%		$0	$6,000		$5,947		$53	x	1.0%	$6,000
Electrical Service and Controls	1982	30	5		1.0	3%		$0	$7,000		$6,767		$233	x	1.0%	$7,000
Air-Vac (1)	1988	24	5		1.0	4%		$0	$1,000		$958		$42	x	1.0%	$1,000
6 " PVC, 1900 feet	1988	60	1		38.0	63%		$0	$76,000		$27,867		$48,133			$76,000
4 " PVC, 1825 feet	1988	60	1		38.0	63%		$0	$54,750		$20,075		$34,675			$54,750
3 " PVC, 2100 feet	1988	60	1		38.0	63%		$0	$52,500		$19,250		$33,250			$52,500

First Steps

First Steps to Success…

- ❑ Get key people together - **Build Your Team**
- ❑ Outreach to the community
- ❑ Choose a model or template
- ❑ Begin asset inventory
- ❑ Write and adopt LOS policies

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Take Away

- The AM Plan produces a "**visual picture**" of condition, location and replacement
- The AM Plan **supports** budget and rates
- There are tools and assistance to **help** you get started
- **First** step – get everyone on board

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Questions

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For More Information

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