CONNECTICUT DEPARTMENT OF PUBLIC HEALTH

Keeping Connecticut Healthy

Taking Stock of Your Water System – what do you have and how old (or new) is it?

Sara Ramsbottom, P.E.

Sanitary Engineer 3

CT Department of Public Health

Drinking Water Section

ATCAVE - February 26, 2008

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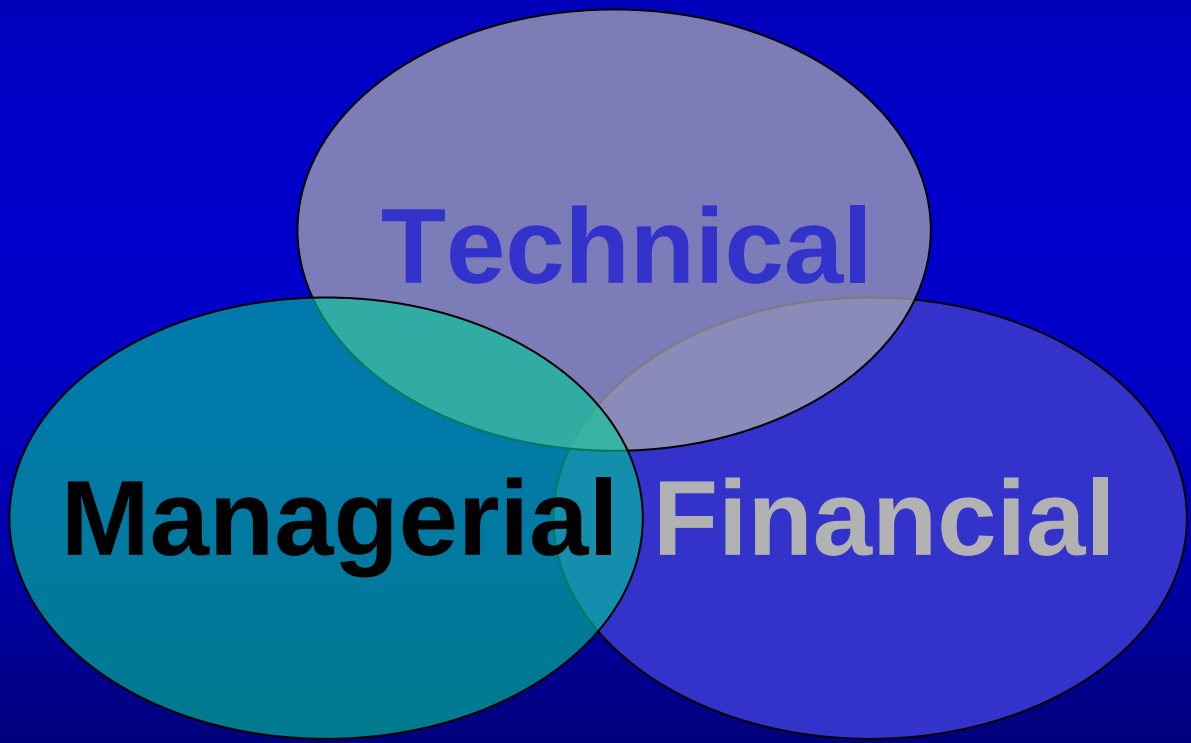
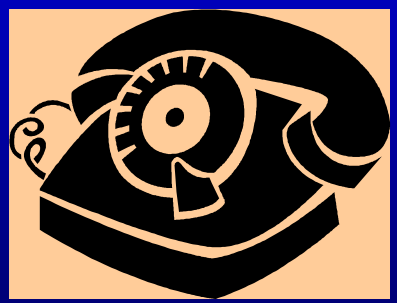
Drinking Water System Capacity



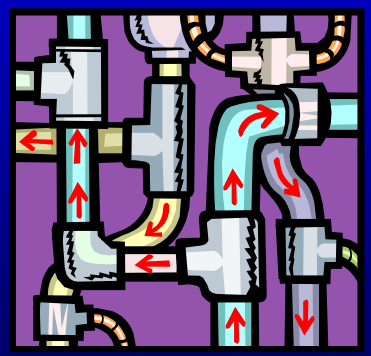
Managerial Capacity

- A water system with the institutional and administrative resources needed to comply with drinking water regulations



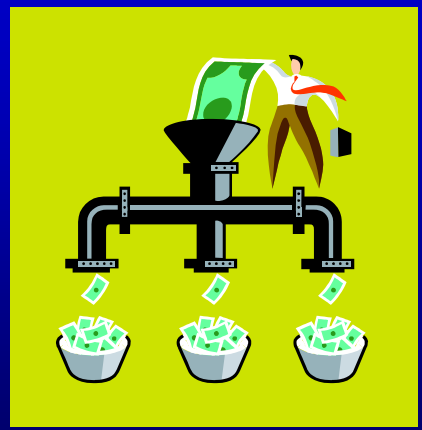
Technical Capacity

- A water system that has the necessary technical infrastructure and a competent trained staff for compliance with drinking water regulations



Financial Capacity

- A water system that possesses the financial resources necessary to meet short and long term drinking water requirements



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What is "Taking Stock"?

- Developing a list of all water system components and their condition
- An "Asset Inventory"

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Why Take Stock of Your Water System?

- Knowing what components you have and their condition will help you maintain the:
  - Safety
  - Security
  - Reliability

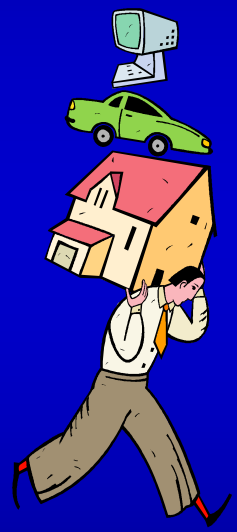
...of the drinking water that your system provides

Who is Responsible to Take Inventory?

- The water system owner is ultimately responsible for the water system (Managerial Capacity)

  However....

- Both owner and operator (technical capacity) need to work together to make it effective – in many cases the operator is more aware of the technical needs of the system



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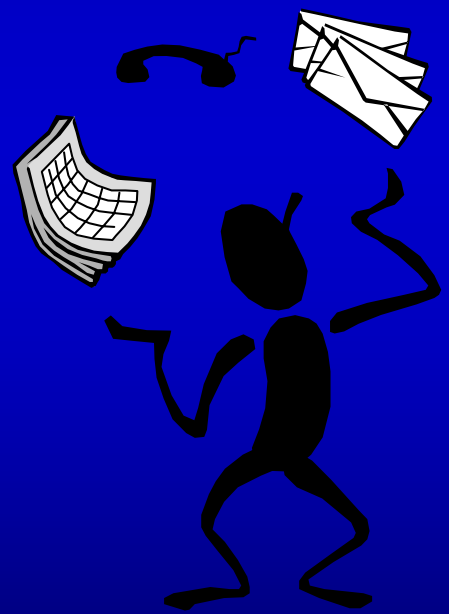
Roles & Responsibilities (EPA Guidance)
Owners & Operators

- System Operation
- Regulatory Compliance
- Communication
- System Security



How an Inventory Can Help: Compliance

- Prepare accurate budgets
- Identify concerns and possible violations
  - Come to us if you need help
  - Correct these *before* we do a sanitary survey
    - Remember we may need to review a project
- Prepare for future needs
  - Financial,
  - Growth, or
  - Regulatory (I.e. Ground Water Rule)

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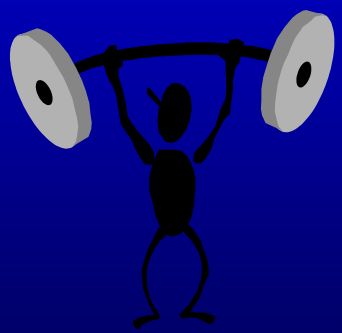
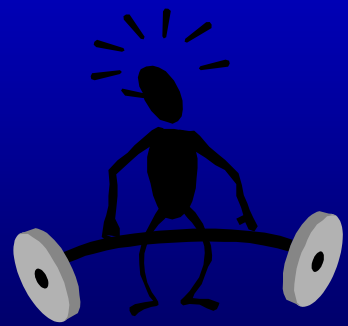
How an Inventory Can Help: System Strengths & Weaknesses

- Do you know what yours are?
- Knowing these will help if you have sudden or unexpected problems with system operation or water quality





How an Inventory Can Help: Security

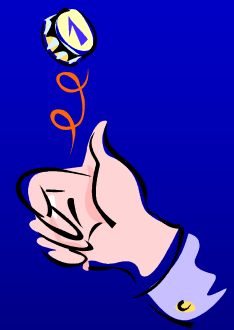
- Gaining a better overall picture of your system can help you:
  - Spot gaps in your system's security
  - Take steps to address those gaps
  - Enhance measures you have already taken

How an Inventory Can Help: Managerial Capacity

- Knowing the details of your system will enable you to explain its current condition and how it operates
  - Answer questions from customers
  - Answer questions from local health officials
  - Help us perform better sanitary survey inspections

How an Inventory Can Help: All Three Capacity Components

- Increase your knowledge of the physical components of your system
  - Make better technical and managerial decisions
- Identify components that need to be replaced or repaired in the near future
  - Develop a financial plan and research cost-effective options



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Record Keeping Requirements
RCSA Section 19-13-B102(l)

Item to maintain on record	Time frame
Total coliform bacteria test results	Five years
Chemical test results	Ten years
Actions taken to correct violations	Three years
Sanitary survey reports and responses to such	Ten years
Records concerning a variance granted to the water system	Five years
Maps and records showing location of mains, hydrants and other facilities (community water systems)	Integrated map to be filed and updated every five years
Complaint log (community water systems)	Three years following resolution
Lead and copper records	Twelve years
Cross-connection control records	Five years
Consumer confidence reports (community water systems)	Five years
Filter turbidity measurements (typically for larger community water systems served by surface water)	Three years
Public notices issued and certification forms	Three years
Meter readings (community water systems)	Readings taken weekly from each source of supply

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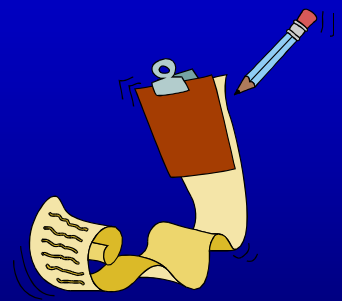
Planning for:

- Infrastructure needs
- Maintain compliance
- The financial future & financial impacts
  - Do you have a reserve or capital improvement fund?

How…you ask?

First: Inventory System (Take Stock)

- What do you have? Where is it? How Many?
  - Well (source)
  - Well house
  - Treatment components
  - Storage tank
  - Valves
  - Distribution system
  - Electrical components
  - Service Lines
  - Etc....



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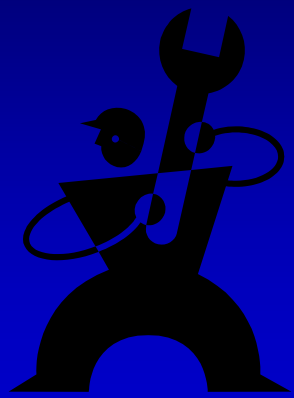
Second: What are the Characteristics of each Asset?

- Size
- Location
- Age
- Manufacturer
- Etc...

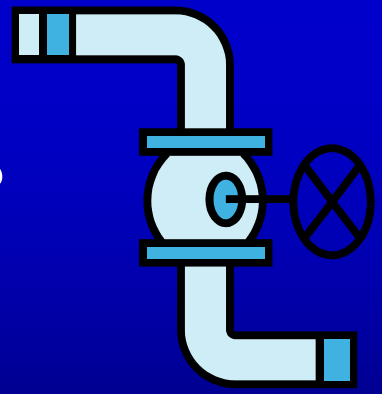
Sample Inventory Sheet

Asset	Date installed	Age	Manufacturer (Make/Model)	Location
Well #1				
Well #1 pump				
Well #2				
Well #2 pump				
xxx				
xxx				
xxx				
xxx				
Date completed/updated:				

Third: Assess Condition



- Original useful service life
- Condition
- Maintenance history
  - Who installed it?
  - When was it repaired?
  - Do you perform routine maintenance?
    - What is done?
- Estimated remaining service life
  - It may be beyond its service life



Inventory Worksheet

System Inventory Worksheet						
Date Worksheet Completed/Updated:						
Asset	Expected Useful Life	Condition	Service History	Adjusted Useful Life	Age	Remaining Useful Life

Start here… list your assets

How Long is the Expected Useful Service Life?

Expected useful life

System Inventory Worksheet

Date Worksheet Completed/Updated:

Asset	Expected Useful Life	Condition	Service History	Adjusted Useful Life	Age	Remaining Useful Life

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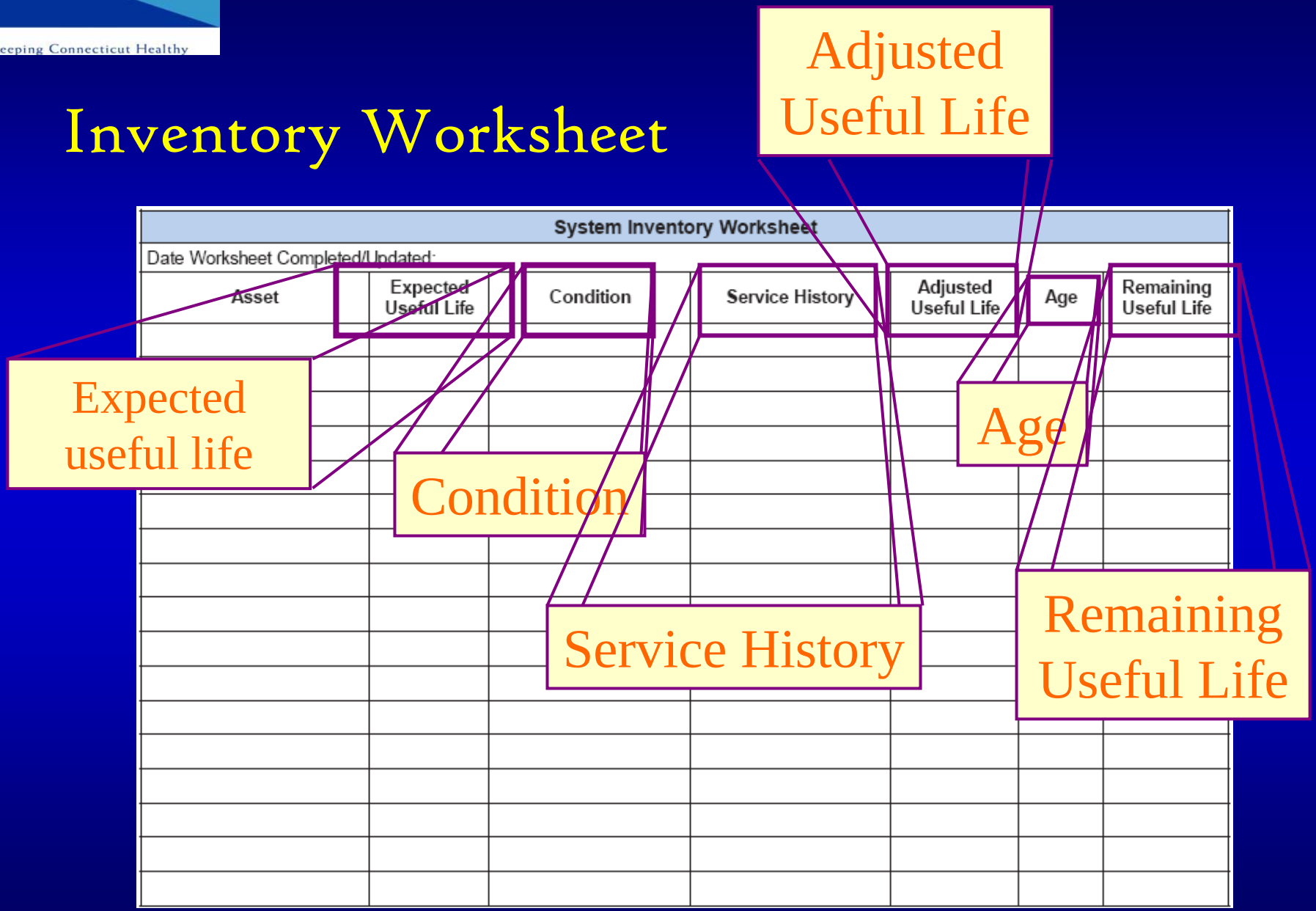
Estimated (Expected) Useful Service Life

Asset	Years	Asset	Years
Wells	25-35	Transmission Mains	35-40
Chlorinators	10-15	Distribution Pipes	35-40
Misc. Treatment Equipment	10-15	Service Lines	30-50
Pumps	10-15	Valves	35-40
Electrical Systems	7-10	Meters	10-15
Storage Tanks	30-60	Hydrants	40-60

Source: Asset Management: A Handbook for Small Water Systems
EPA Publication 816-R-03-016

Inventory Worksheet



Example from "Asset Management" EPA STEP Guide

Example System Inventory Worksheet

Date Worksheet Completed/Updated: 8/14/02

Asset	Expected Useful Life	Condition	Service History	Adjusted Useful Life	Age	Remaining Useful Life
Well 1 (1993)	30	Good		30	9	21
Well 1 pump	10	Good	Rehab (1996)	10	9	1
Well 2 (1993)	30	Good		30	9	21
Well 2 pump	10	Good	Rehab (1998)	10	9	1
Pumphouse (1993)	30	Good		30	9	21
Electrical components	10	Some corrosion	Rehab (1994)	10	9	1
Chlorinator (1993)	10	Good	Rehab (1998)	5	3	2
Storage tank 1 (1993)	40	Good	Rehab (2000) - $17,000	40	9	31
Storage tank 2 (1993)	40	Good	Rehab (2000) - $17,000	40	9	31
Storage tank 3 (2000)	40	Almost new		40	2	38
Distribution System:						
Hydrants (15)	40	Unknown		40	9	11
Valves (45)	40	Unknown	6 valves don't work	40	9	11
6-inch (PVC)	60	Unknown		60	9	51
4-inch (PVC)	60	Unknown		60	9	51
2-inch (PVC)	60	Unknown	Repair breaks (2/year)	60	9	51

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Individual Inventory Info

Well Construction

Drilling Contractor	Adjusted Useful Life	- Estimated Age	= Remaining Useful Life
J&C Construction	25 years	- 8 years old	= 17 years

Whom would you call to service your well? This may be the well driller.

Company/Agency	Contact	Telephone Number
J&C Construction	John Smith	(800) 555-7788

Well Pump and Controls

Look at receipts or records from the time of installation for the following information:

Pump Manufacturer	Well Pump Model Number (typically located on pump casing. If buried, look for information near the electrical system.)
Peter's Pumps	ZZ-0001234

Remember that maintenance, water quality, use, and soil conditions can affect useful life. Subtract estimated age from adjusted useful life to determine remaining useful life.

Adjusted Useful Life	- Estimated Age	= Remaining Useful Life
10 years	- 5 years old	= 5 years

Whom would you call to service your pumps and controls? This may be the pump manufacturer or installer.

Company/Agency	Contact	Telephone Number
Peter's Pumps	Peter Williams	(800) 555-1212

Date Worskheet Completed or Revised
8/1/04

From the "Taking Stock" EPA STEP Guide

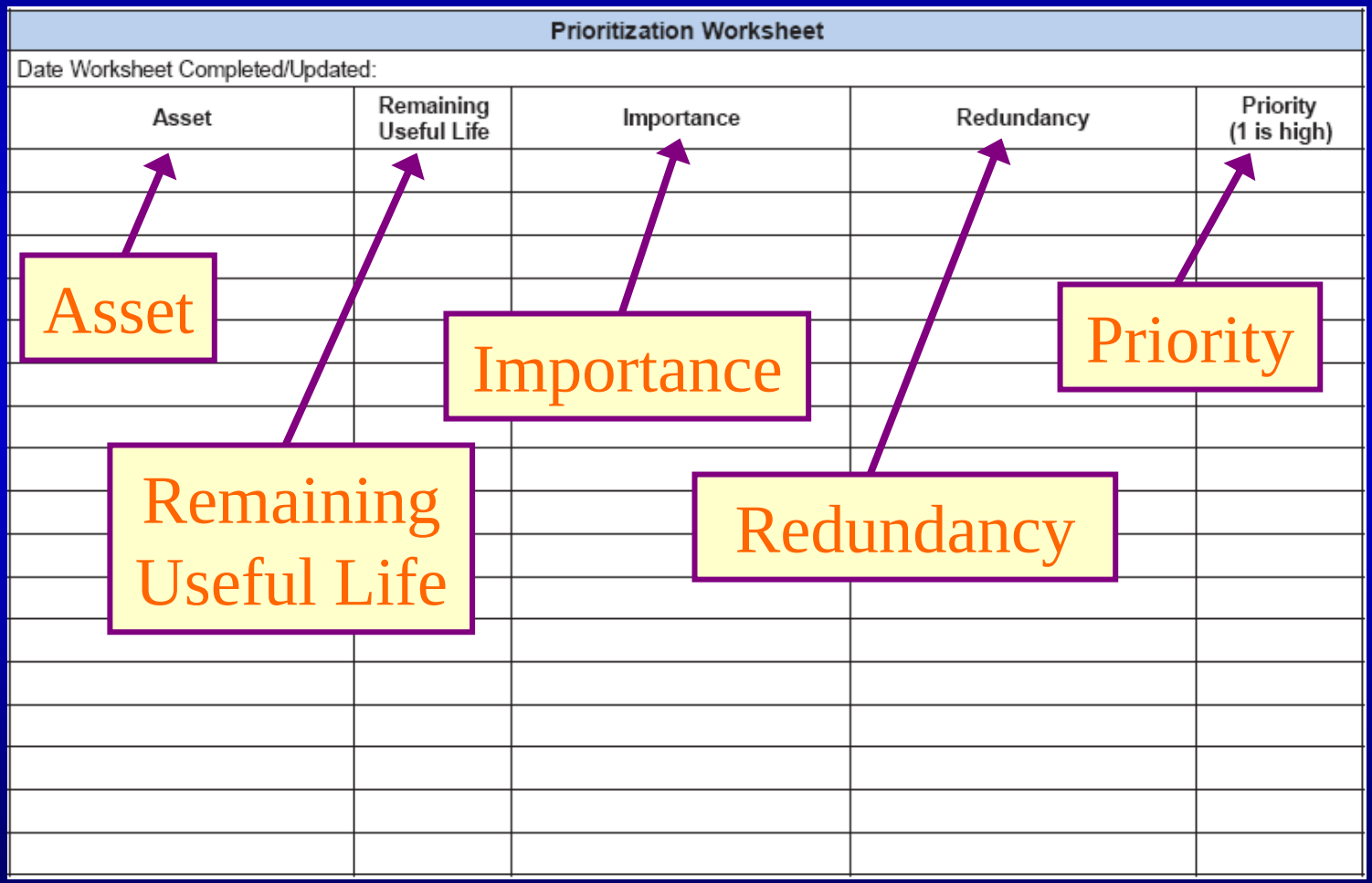
Drinking Water Section

A Storage Tank that Has Outlived Its Useful Life!

Fourth: Prioritize Your Assets

- Importance – High, medium, low, etc.
  - How important or critical is it to your system?
- Priority – rank the priority of each asset (1, 2, 3, etc.)
- Strategic Planning (EPA Guide)
  - Seven steps
  - Assess your system's technical, managerial, and financial capacity!!
  - What are your options?

Prioritization Worksheet



Prioritization Worksheet				
Date Worksheet Completed/Updated:				
Asset	Remaining Useful Life	Importance	Redundancy	Priority (1 is high)

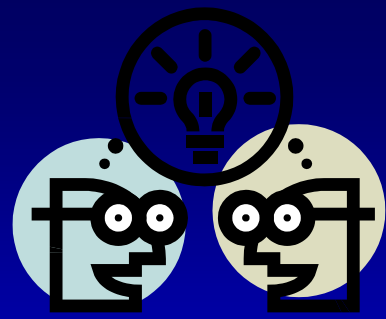
Prioritization Worksheet Example

EXAMPLE Prioritization Worksheet

Date Worksheet Completed/Updated: 8/14/02

Asset	Remaining Useful Life	Importance	Redundancy	Priority (1 is high)
Well 1 (1993)	21	Needed for service	Other well, but need backup	6
Well 1 pump	1	Needed for service	Other well, but need backup	3
Well 2 (1993)	21	Needed for service	Other well, but need backup	6
Well 2 pump	1	Needed for service	Other well, but need backup	3
Pumphouse (1993)	21	Needed for service	Other well, but need backup	6
Electrical components	1	Needed for control	No redundancy - corrosion	2
Chlorinator (1993)	2	Mandatory	No redundancy - need backup	1
Storage tank 1 (1993)	31	Need for fire flow and demand	Other tanks	6
Storage tank 2 (1993)	31	Need for fire flow and demand	Other tanks	6
Storage tank 3 (2000)	38	Need for fire flow and demand	Other tanks	6
Distribution System:				
Hydrants (15)	11	Needed for public safety	Other hydrants	5
Valves (45)	11	Needed for isolation	Other valves, but some are out of service	4
6-inch (PVC)	51	Needed for delivery	No redundancy	6
4-inch (PVC)	51	Needed for delivery	No redundancy	6
2-inch (PVC)	51	Needed for delivery	No redundancy	6

Capital Improvement Plan



- A budgeting and financial tool that a water system can use to establish asset rehabilitation and maintenance priorities and to establish funding for repairs and improvements
- Budget for rehabilitation and replacement of assets
  - How much money do you need?
  - When will you need it?

Asset Management

- A planning process for maintaining and replacing your water system's infrastructure in the most efficient manner

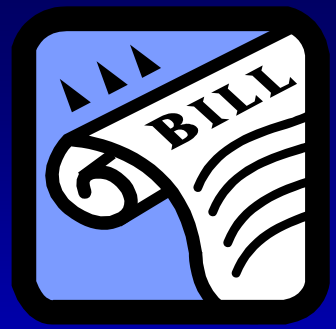
1. 1. Realize that your Public Water System is an asset that depreciates over time
2. 2. Taking care of facilities and equipment is necessary to maintain this asset
   - Developing an Asset Management Plan will assist in meeting this goal

   (EPA Manual)

Asset Management Plan

- Now that you have determined what you need to spend money on…
- Estimate how much money you will need each year to maintain the operation of your system and amount to set aside for rehab/replace
- Develop a budget and calculate amount of required reserves, including emergency fund
  - What are your water rates? Do they cover all expenses, including putting money in reserve?

Financial Capacity



- Revenues that meet or exceed expenses
- Review of operating and capital budgets
- Asset Management
- Capital improvement plan
- Use of fiscal controls to ensure operational efficiency

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Drinking Water State Revolving Fund DWSRF

- Low-interest loan program
- Available to all community water systems and non-profit non-transient non-community systems (NTNC) (schools, community organizations, etc.)
- See our booth today or call us for more information

EPA Guidance Documents

- Taking Stock of Your Water System: An Asset Inventory for Very Small Water Systems
- Strategic Planning: A Handbook for Small Water Systems
- Asset Management: A Handbook for Small Water Systems
- Setting Small Drinking Water System Rates for a Sustainable Future
- Small Systems Guide to Safe Drinking Water Act (SDWA) Regulations
- Sources of Financial and Technical Assistance for Small Systems

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EPA Best Practices Guides

- Water System Operator Roles & Responsibilities
- Talking To Your Decision Makers
- Water System Owner Roles & Responsibilities
- Distribution Systems

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Helpful Information

- DPH website: http://www.ct.gov/dph
- DWS Phone: (860) 509-7333 (during business hours: M-F 8:30 am – 4:30 pm)
- DPH Main/Emergency phone: (860) 509-8000 (outside of business hours)
- US EPA website: http://epa.gov/safewater/
- EPA Small system info (including STEP guides): http://www.epa.gov/safewater/smallsys/ssinfo.htm

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Reminder – Capacity Development Survey

- Sent to all Community water systems (administrative contact)
- Please return by March 14th
- One per individual water system
- Please make every effort to complete and return the survey

Feedback

- Questions??
- Comments??