

# CNMI O&M Manual Guidance Workshop

Monday/Wednesday August 28<sup>th</sup> and 30<sup>th</sup>, 2023  
Heather Himmelberger & Hayley Hajic



What is your favorite and least favorite operations or maintenance activities?



What I hope you get out of today:

Importance of an O&M Plan

How to develop an O&M Plan

Using your O&M Plan

What I hope you will do today:

Ask **Questions**

**Share** your stories

**Participate** in the workshops

# O&M Manual Guide

We will be using worksheets to practice developing O&M manual material.

This is separated into sections

Full guide available here:

<https://swefc.unm.edu/home/resource/wastewater-om-guide>

# Importance of O&M Manuals

Improve your  
system's  
reliability

Reduce costs

Meet current  
& future  
regulatory  
requirements

Train  
temporary or  
new staff

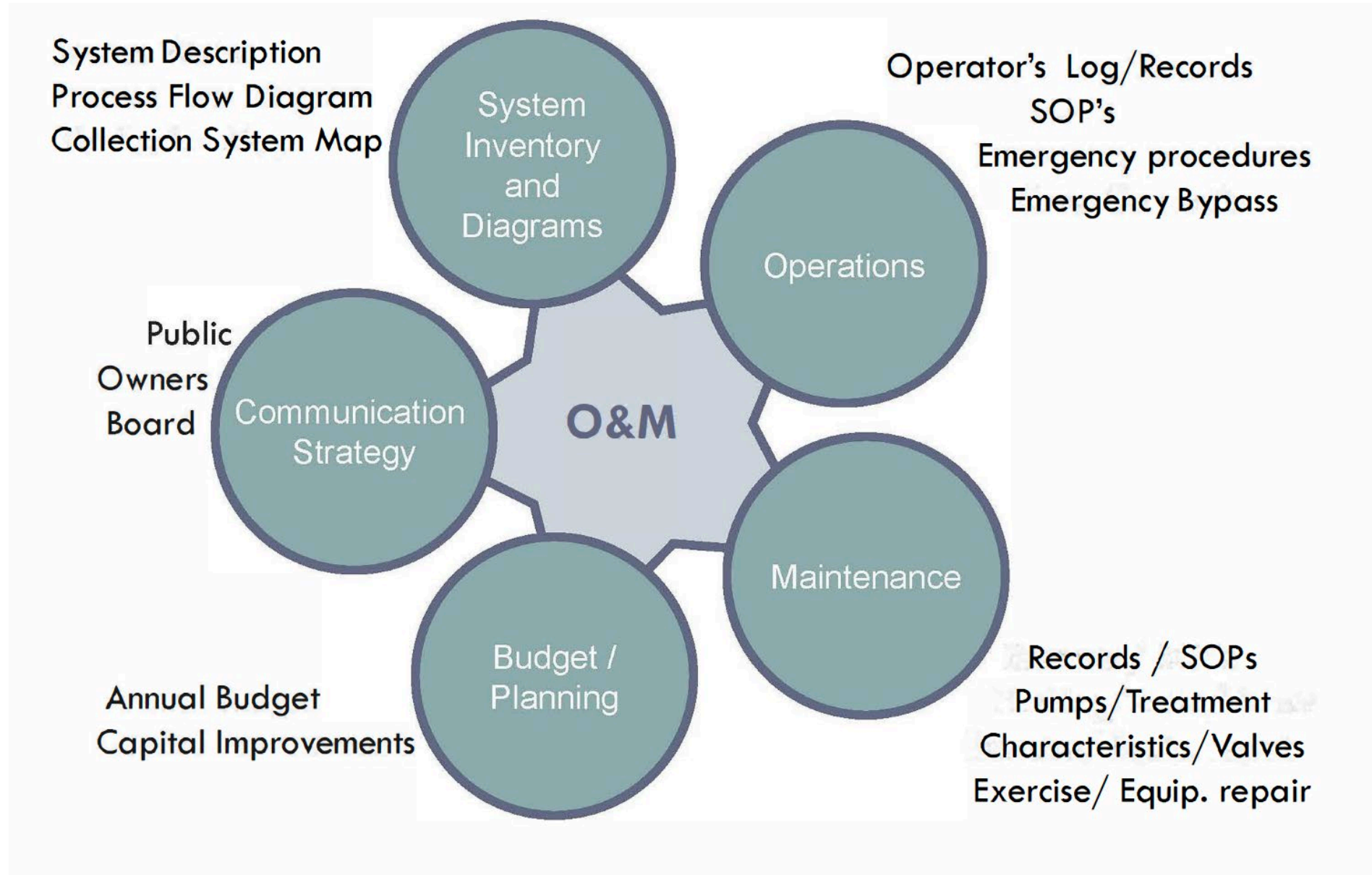
Prepares  
employees for  
emergencies

Facilitate state  
inspections

Improve  
communication

Improve  
consistency

# Components of O&M





Let's walk through all the pieces of the document



# Table of Contents

# Table of Contents

The first component and before all other content

Lists components used

Includes page numbers

# O&M Revisions Log

# O&M Manual Revision Log

---

A record of when updates are made

---

Who made updates

---

Regulatory or testing methods or other standards changes

---

Technology or equipment changes

---

If the O&M manual might be out of date



# General System Information

# GENERAL WATER SYSTEM INFORMATION

Component	Information
Water System Name	
System Identification Number	
Location/Town	
System Owner	
Person in Responsible Charge	

# GENERAL WATER

## Com

Water System N

System Identifica

Location/Town

System Owner

Person in Responsible Charge

## Why does this matter?

Keep key information in one place

Helpful in describing system to others

Sharing info if current personnel leave



# GENERAL WATER

Com

Water System N

System Identifica

Location/Town

System Owner

Person in Responsible Charge

Pretty straight forward.

Two items to discuss: **System Owner** and **Person in Responsible Charge**

Both of these people are going to be legally liable. Matters who is listed.

# GENERAL WATER SYSTEM INFORMATION

**An Example**

Component	Information
Water System Name	Town of Anywhere WTP
System Identification Number	X59686
Location/Town	Anywhere, ID
System Owner	Town of Anywhere
Person in Responsible Charge	Joe Schmoo

# Contact List

# Contact List

Contact Name	Position	Address	Phone Number	Email

# Contact List

Contact Name	Address	Phone Number	Email

**Who would you include on the list?**

Some suggestions: routine contacts, emergency contacts, people who you'd call for repairs, regulatory contacts, suppliers for key equipment/materials/chemicals, etc.

# Contact List

## Why does a contact list matter?

Easy & Accessible list of everyone you may need to contact through the course of running the system in routine & emergency times.

Improves communication.

Helps with transition from one operator to another.

Con  
Na

Email

# Contact List

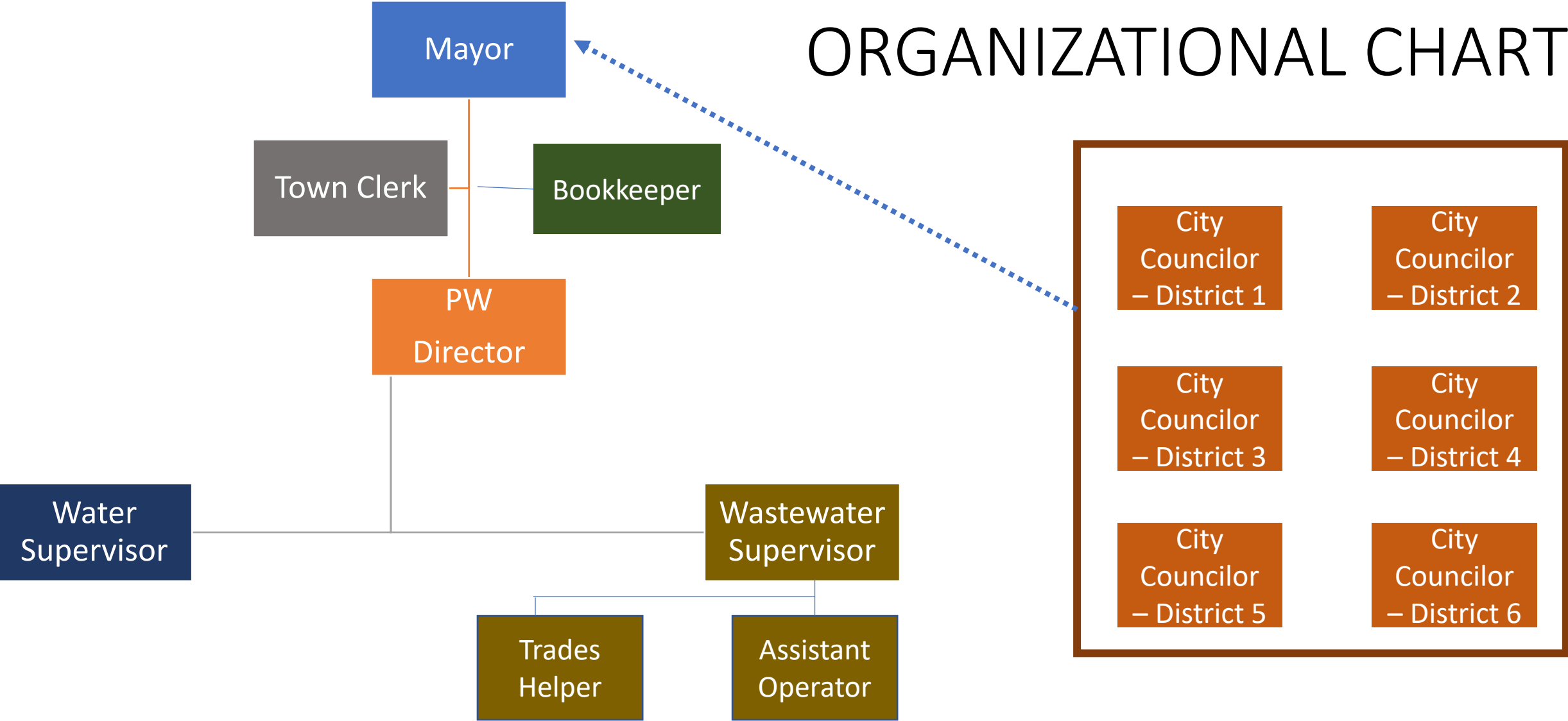
An Example

Contact Name	Position	Address	Phone Number	Email
Frank N. Stein	Mayor	111 Main Street Anywhere, ID 11111	555-555-5555	Frank@gmail.com
Jane E. Doe	City Councilor	111 Main Street Anywhere, ID 11111	555-555-5554	Jane@gmail.com
Tony T. Tiger	Operator in Responsible Charge	110 WW Blvd Anywhere, ID 11111	555-555-5553	tiger@gmail.com
Wiley E. Coyote	President, Chlorine is Us Co.	200 Elm Street Anywhere, ID 11111	555-555-2222	Wiley@gmail.com
Humphrey Dump	W Engineer, DEQ W Dept	400 Arch Street Anywhere, ID 11111	555-555-1212	Dump@gmail.com

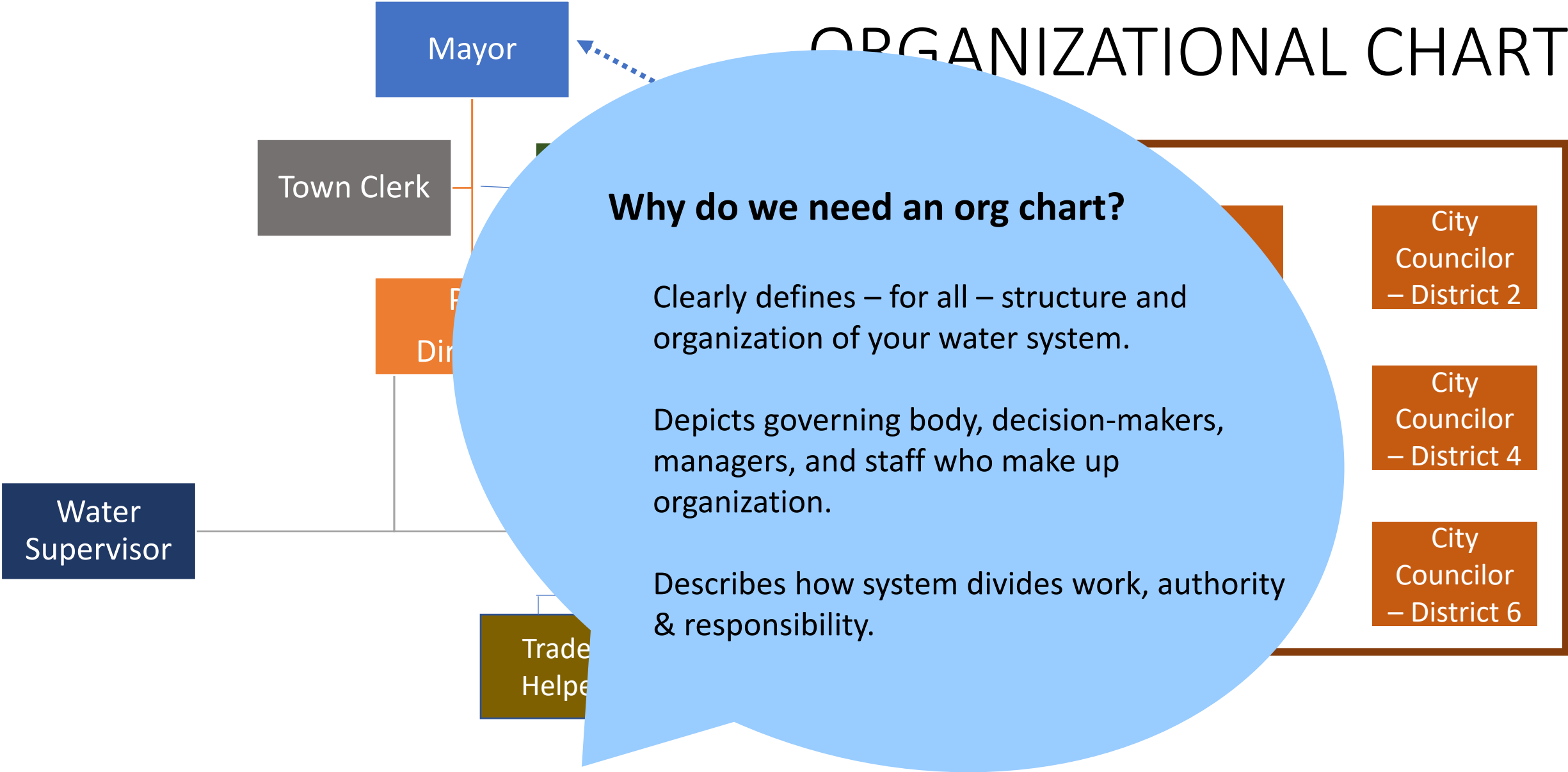
# Organizational Chart



# ORGANIZATIONAL CHART



# ORGANIZATIONAL CHART



## Why do we need an org chart?

Clearly defines – for all – structure and organization of your water system.

Depicts governing body, decision-makers, managers, and staff who make up organization.

Describes how system divides work, authority & responsibility.

City Councilor – District 2

City Councilor – District 4

City Councilor – District 6

## Your Turn

You can either use the template or a blank page. Fill in as many slots as you can.


# Job Descriptions

# JOB DESCRIPTIONS

## Owner/Legal Entity

Name: Clint Eastwood

### List of Primary Responsibilities:

<input checked="" type="checkbox"/>	Ensure the facility is operated by an Operator in Responsible Charge (ORC) with appropriate certifications
<input checked="" type="checkbox"/>	Ensure all process control and system integrity decisions about water quality or quantity affecting public health or environment are made by an ORC
<input checked="" type="checkbox"/>	Ensure a certified operator is available on-site or in contact as needed to initiate appropriate actions in a timely manner for each operating shift
<input checked="" type="checkbox"/>	Keep a current ORC Reporting Form on file with the Water Quality Control Division

### Requirements or Certifications

<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

### List of Additional Responsibilities:

<input checked="" type="checkbox"/>	Provide for adequate funding to maintain and operate the water system.
<input checked="" type="checkbox"/>	Work closely with operator to communicate regularly with the board/council.
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

# JOB DESCRIPTIONS

**Owner/Legal Entity**  
**Name:** Clint Eastwood

List of Primary Responsibilities:

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<input checked="" type="checkbox"/>	Keep a current ORC Reporting Form on file with the

Requirements or Certifications

<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

List of Additional Responsibilities:

<input checked="" type="checkbox"/>	Provide for adequate funding to maintain a the water system.
<input checked="" type="checkbox"/>	Work closely with operator to communicate regu the board /council.
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

## Why are job descriptions important?

Clearly written & current job descriptions help employees understand their roles and responsibilities and improve overall effectiveness.

Provides a system road map and improves overall system efficiency.

Provides a safeguard for employees.

# JOB DESCRIPTIONS

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Requirements or Certifications

<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

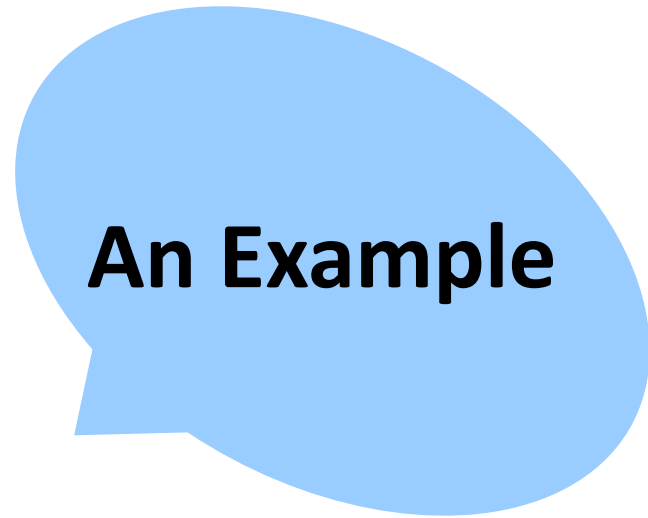
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<input checked="" type="checkbox"/>	Provide for adequate funding to maintain a the water system.
<input checked="" type="checkbox"/>	Work closely with operator to communicate regu the board /council.
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

## What should be included in job descriptions?

- Leadership responsibilities
- Regulatory responsibilities
- Customer service responsibilities
- Asset management responsibilities
- Operational responsibilities
- Maintenance responsibilities
- Record keeping
- Communications
- Certifications needed
- Specialized training required

# Job Description for an Operator



## Water Treatment Operator

Name: Paul Newman

### List of Primary Responsibilities:

<input checked="" type="checkbox"/>	Control the processing of raw, treated, and finished water
<input checked="" type="checkbox"/>	Prepare and control chemical addition for water
<input checked="" type="checkbox"/>	Observe and respond to variations in operating conditions
<input checked="" type="checkbox"/>	Interpret instrument readings and adjust
<input checked="" type="checkbox"/>	Operate valves, gates and pumps
<input checked="" type="checkbox"/>	Maintain logs and records
<input checked="" type="checkbox"/>	Collect and/or analyze process control samples
<input checked="" type="checkbox"/>	Inspect and test new, modified, or repaired facilities prior to placing them in service
<input checked="" type="checkbox"/>	Implement preventative maintenance programs for facilities
<input checked="" type="checkbox"/>	Comply with laws, regulations, and reporting requirements

### Requirements or Certifications

<input checked="" type="checkbox"/>	Class C Water Facility Operator License
<input type="checkbox"/>	
<input type="checkbox"/>	

### List of Additional Responsibilities:

<input checked="" type="checkbox"/>	Prepare and maintain Emergency Response Plan
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	



# Your Turn

Prepare a job description for your job at your system.

\_\_\_\_\_  
**Name:** \_\_\_\_\_

List of Primary Responsibilities:

<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

Requirements or Certifications

<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

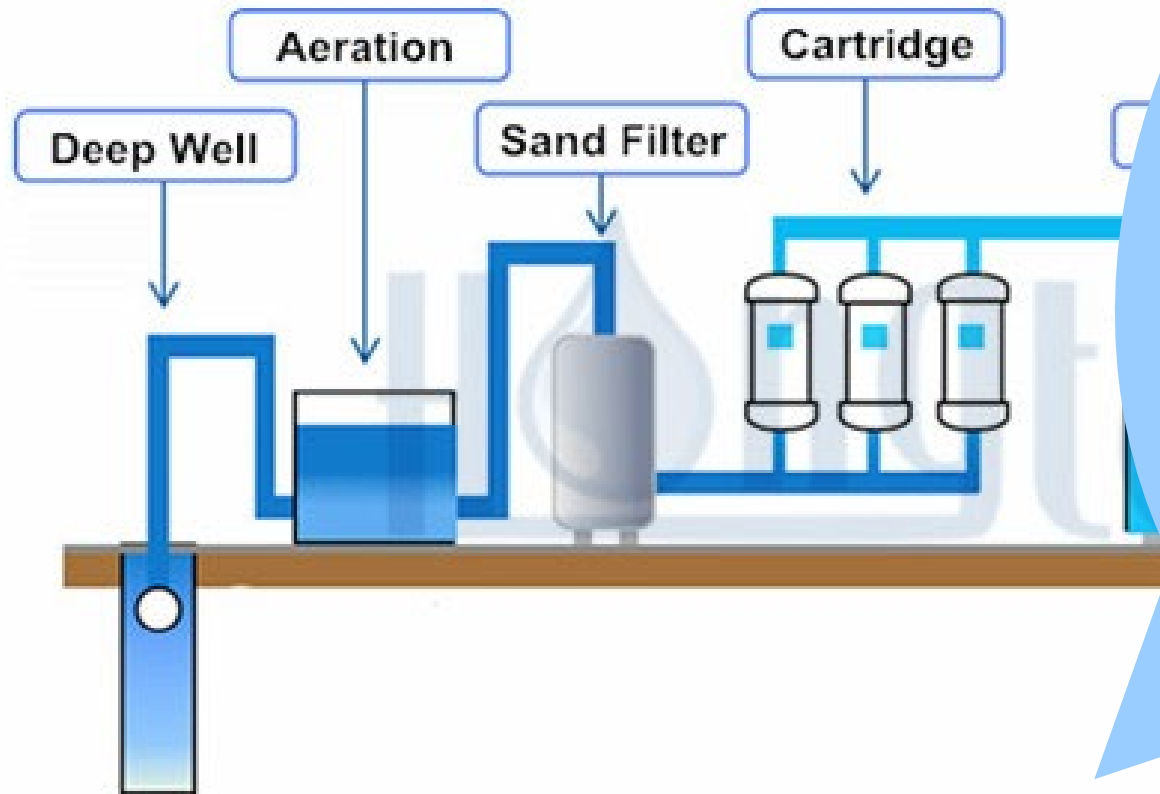
List of Additional Responsibilities:

<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

# Maps and Schematics

# Schematic

## Groundwater Treatment Process

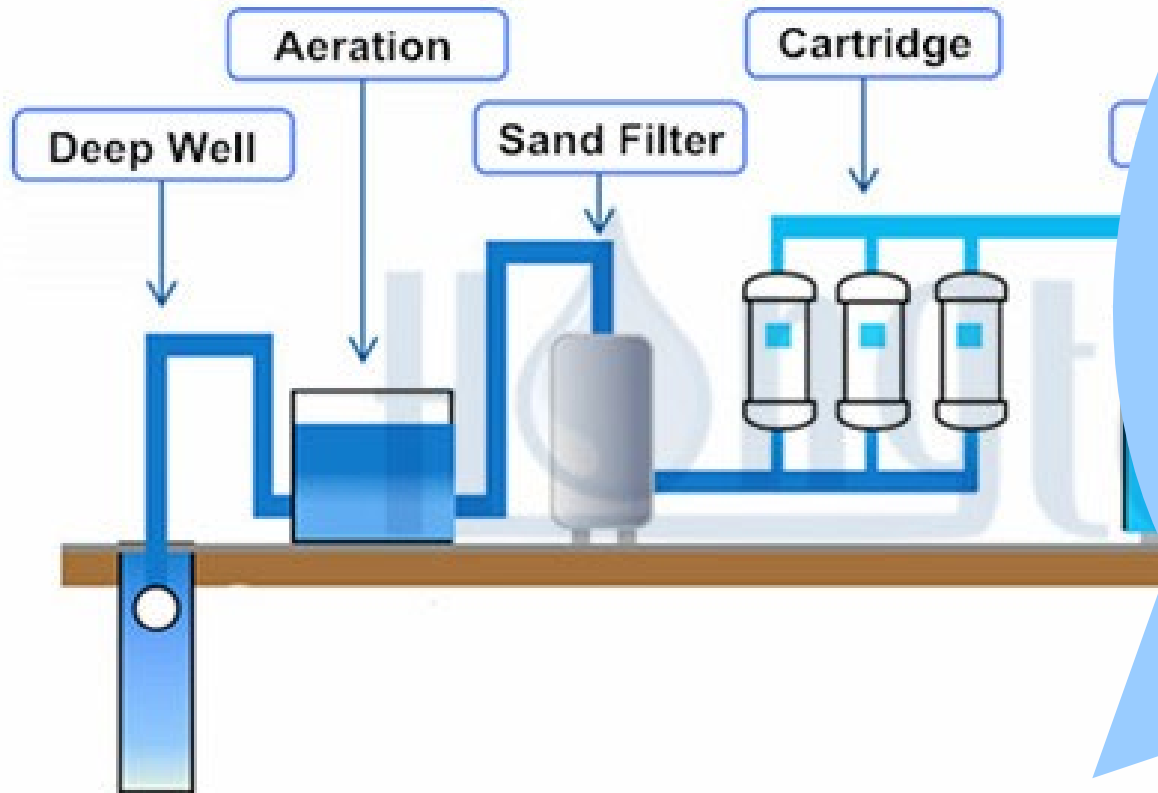


**Why is a schematic useful?**

Shows how the overall treatment process intersects and what happens in each tank or unit.

# Schematic

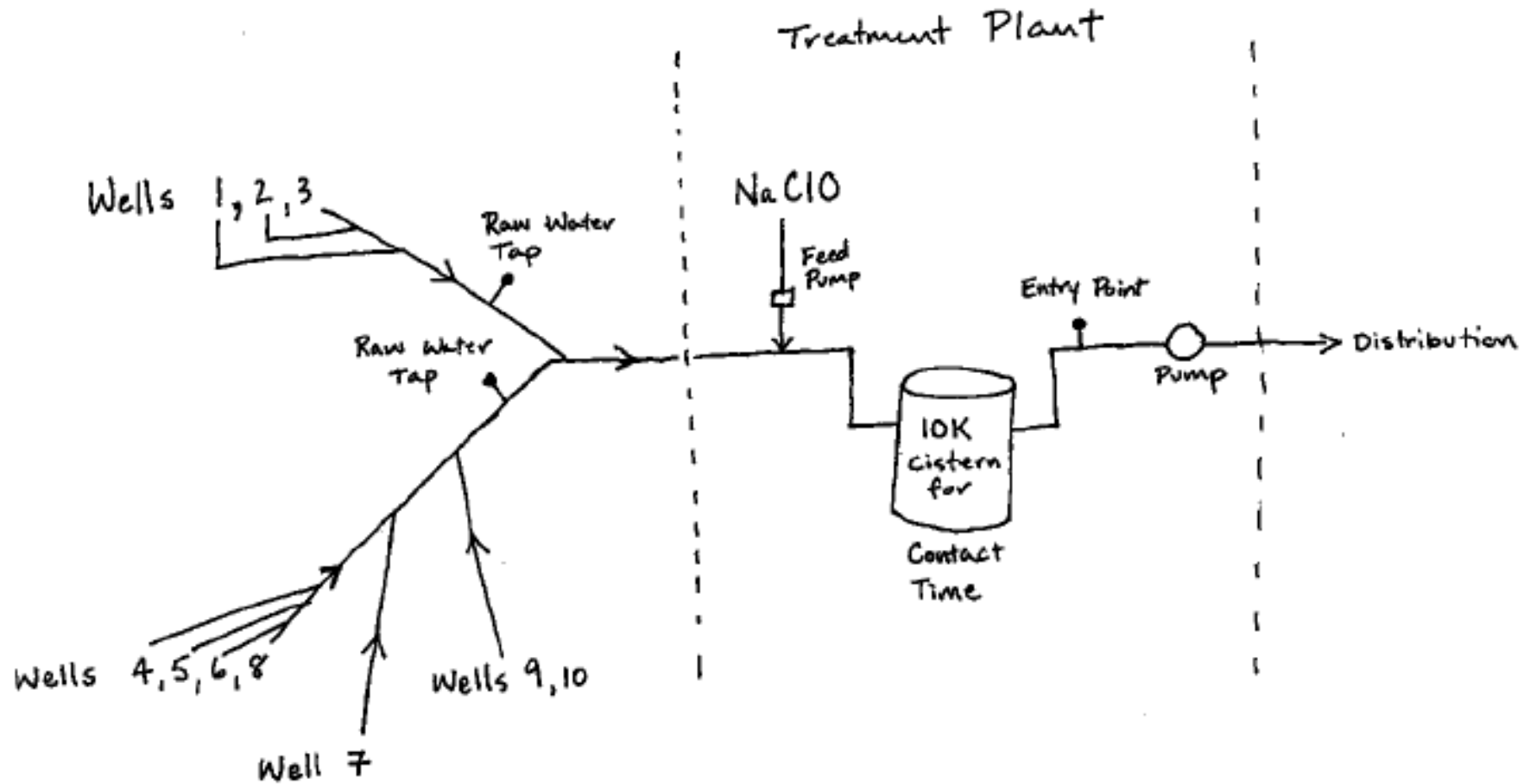
## Groundwater Treatment Process



**How is  
a schematic  
different  
from a  
map?**

# Create a Schematic

Town of Sierra Process Flow Diagram

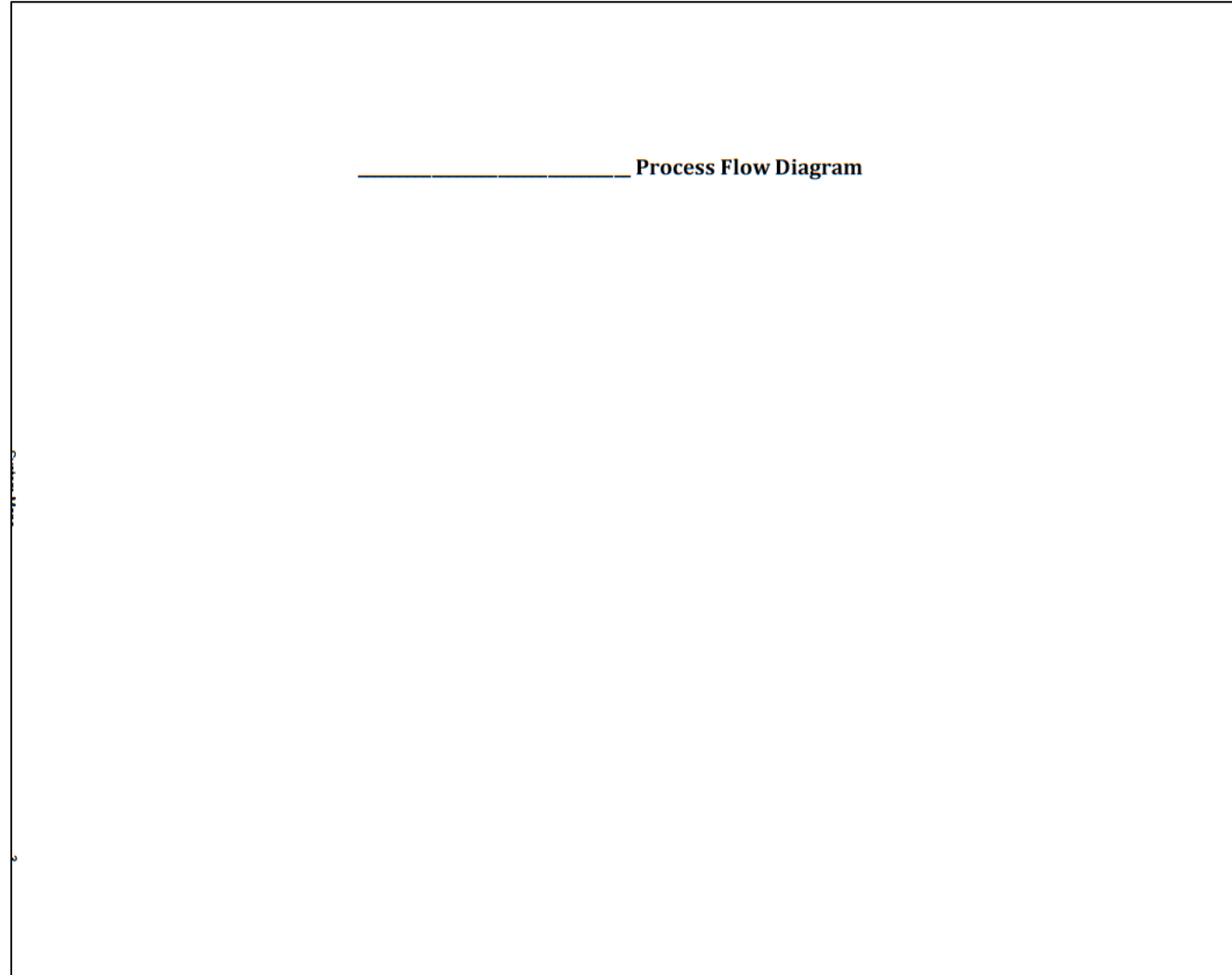


An Example

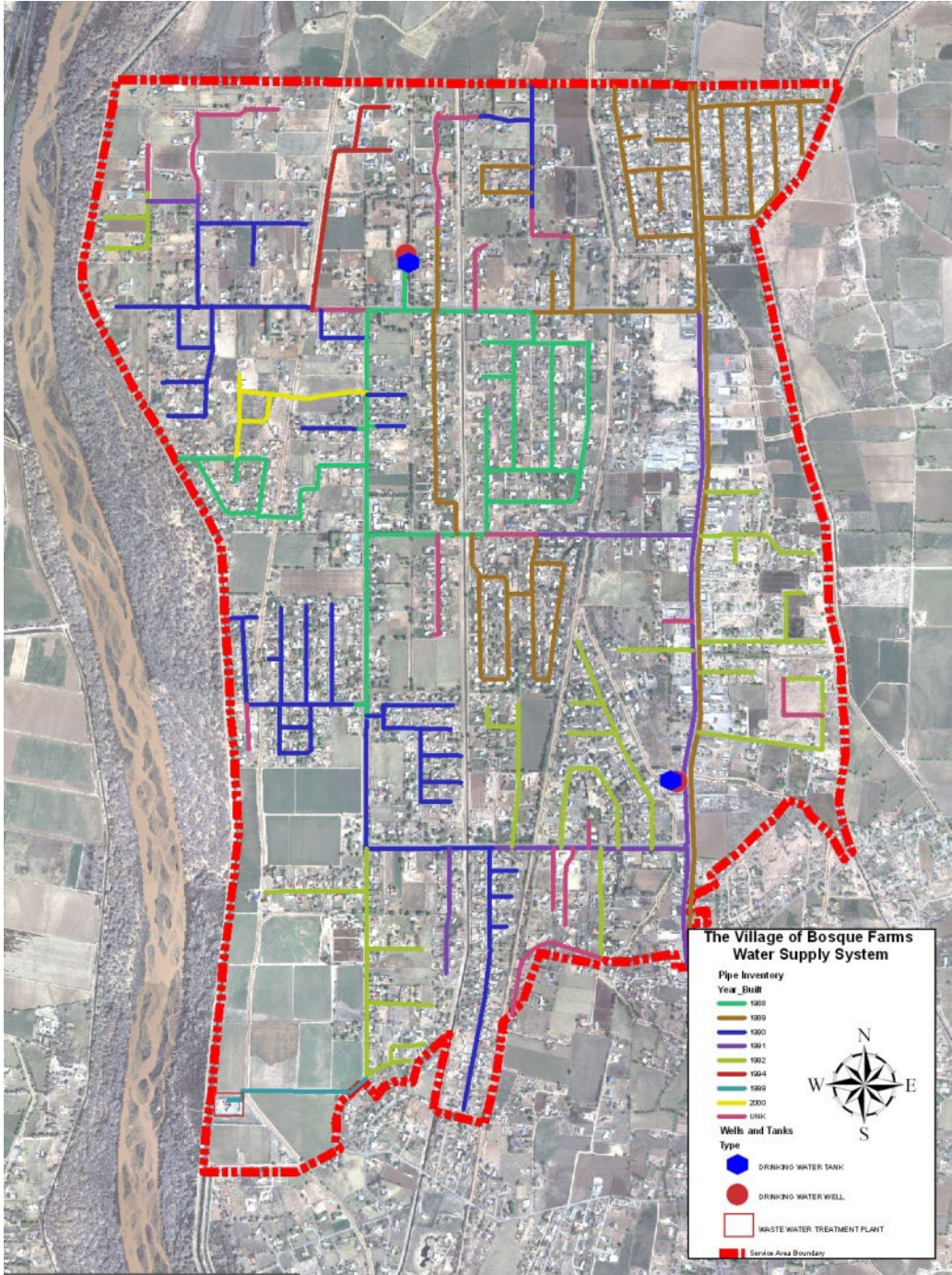
# Create a Schematic

## Your Turn

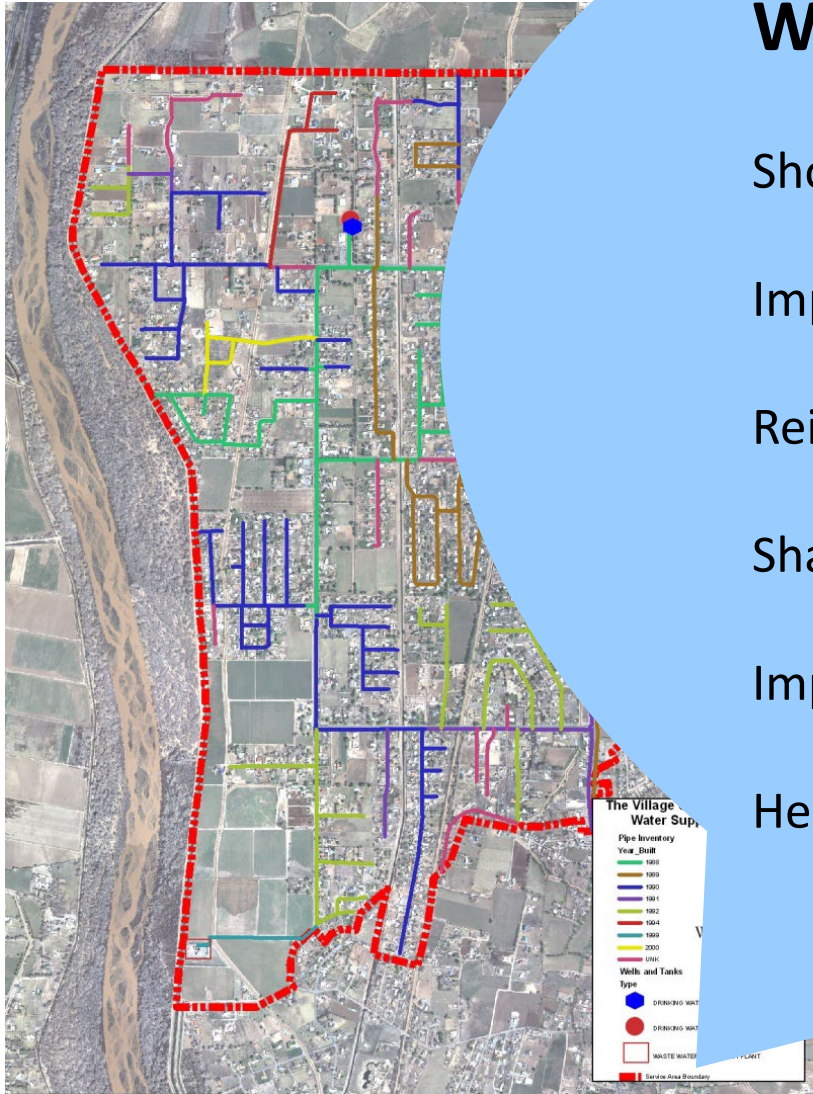
Prepare a schematic of your treatment system.



# System Map



# System Map



## Why is a map important?

Shows locations of key components of the system

Improves emergency response

Reinforces system understanding

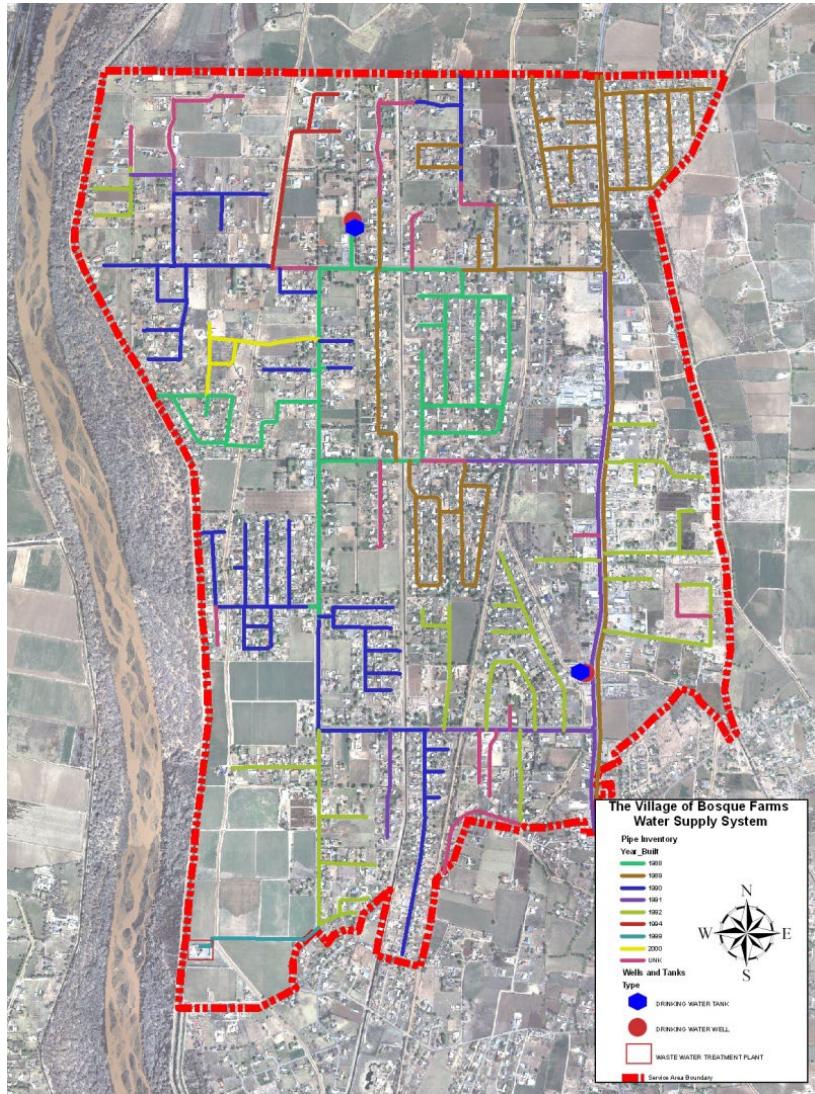
Shares information with others

Improves knowledge management

Help identify opportunities for system improvements



# System Map



**What should  
be on the map?**

# Master Plan

# Master Plan

Master Planning Template - Understanding Your Role as an Operator in Master Planning

## What can a master plan do?

Summarizes the components of the water treatment and distribution system

Assesses performance of the water system

Evaluates short and long term water short- and long-term water demand including fire protection and delivery needs

Identifies necessary improvements to remedy deficiencies and accommodate growth

Questions to Ask	Who Has Primary Responsibility for This?	What is My Role as Operator
Do we have enough capacity to meet demand over the next 10 years?		
Are we meeting all regulatory requirements?		
Are we meeting all customer needs?		
Are we meeting all fire protection needs?		
Are we meeting all delivery needs?		
Are we meeting all maintenance needs?		
Are we meeting all safety needs?		
Are we meeting all security needs?		
Are we meeting all environmental needs?		
Are we meeting all public health needs?		

Master Planning Template - Understanding Your Role as an Operator in Master Planning

Topic	Questions to Ask Yourself	Who Has Primary Responsibility for This?	What is My Role as Operator
<b>Source Water</b>	<ul style="list-style-type: none"> <li>Do you have enough source water to meet projected needs over the next 20 years?</li> </ul>	Owner of the system and/or governing unit of the community	Manage the system properly. Communicate to your supervisor/board about source water supply.
	<ul style="list-style-type: none"> <li>Do you have a source water protection program in place?</li> </ul>	Owner and/or primary operator	Following procedures established in the protection program, such as completing and submitting required reports. Bring source water protection up to your supervisor/board if you do not know if one is in place.
<b>Facilities and Resources</b>	<ul style="list-style-type: none"> <li>Is the capacity of the system appropriate to meet water demands through the next 20 years?</li> </ul>	Owner of the system	Help supervisor/owner/board understand current capacity of system.
	<ul style="list-style-type: none"> <li>Is your system in compliance with all applicable Federal and State of CO regulations?</li> </ul>	Owner of the system	Run the system according to the rules and regulations, as well as in accord with the established policies and procedures.  Communicate areas of non-compliance and what is needed to address the non-compliance.
	<ul style="list-style-type: none"> <li>Does your system have certified personnel adequate for now and in the future?</li> </ul>	Owner of the system	Obtain and maintain license and/or certifications that fit your system. Identify any assistance you need to get the job done, in particular, if/when dictated by changes in regulations.
	<ul style="list-style-type: none"> <li>Does your system prepare an annual budget?</li> </ul>	Owner and/or chief operator of the system	Either prepare it or gather information for the person(s) who do(es).
<b>Fire Protection</b>	<ul style="list-style-type: none"> <li>Does the water system have adequate storage to provide water to all customers and meet fire flow requirements?</li> </ul>	Owner of the system	Proper maintenance, monitoring, and reporting.  Communicate any deficiencies in fire protection storage or planning.

# Emergency Response Plan

# Emergency Response Plan

### Emergency Notification

Notification call-up lists - Use these lists to notify first responders of an emergency.

Emergency Notification List				
Organization or Department	Name & Position	Telephone	Night or Cell Phone	Email
Local Law Enforcement	Officer on Duty	726-11-9111 or 911	-	N/A
Fire Department	Officer on Duty	726-11-9111 or 911	-	N/A
Emergency Medical Services	Medic on duty	726-11-9111 or 911	-	N/A
Water Operator (if contractor)	N/A			
Primary Agency Contact (COPR)	Water quality division	203-642-3500	-	-
Hazard Hotline	24 hour env. release/incident report line	877-518-5608		
Interconnected Water System	N/A			
Neighboring Water System (not connected)	Town of Portage	714-274-944		

Service / Repair Notifications				
Organization or Department	Name & Position	Telephone	Night or Cell Phone	
Electric Utility Co.	Lights on -	726-841-6296	-	
Electrician	N/A			
Gas/Propane Supplier				
Water Testing Lab.	Labson/MS USA	726-819-7100	-	
Sewer Utility Co.	Sierra WWTTP (see previous)			
Telephone Co.				
Plumber				
Pump Supplier				
"Call Before You Dig"				

Why do we need an emergency response plan?

Establish procedures and organizational structure to prepare for and respond to emergencies

Helps to enhance system security, minimize damage, lessen liability, and protect public health

# System Information

Keep this basic information easily accessible to authorized staff for emergency responders, repair people, and the news media.

## System information

System Identification Number	C0123456	
System Name and Address	Town of Sierra	
Directions to the System	Exit 64 off highway/interstate 72	
Basic Description and Location of System Facilities	Groundwater well pumps to chlorinator + then into a storage tank which is then pumped to the customers	
Location/Town	Town of Sierra	
Population Served and Service Connections from Division of Drinking Water Records	<u>300</u> people	<u>        </u> connections
System Owner	Town of Sierra	
Name, Title, and Phone Number of Person Responsible for Maintaining and Implementing the Emergency Plan	Harrison Ford - Public works/ utilities	<u>394-714-1176</u> Phone <u>394-714-1176</u> Cell <u>N/A</u> Pager

# Chain of Command – Lines of Authority

The first step in any emergency is to inform the person at the top of the list, who is responsible for managing the emergency and making key decisions.

Chain of command – lines of authority

Name and Title	Responsibilities During an Emergency	Contact Numbers
Harrison Ford - Public works/ Utility Director	Responsible for overall management and decision making. The Public works director is the lead for managing the emergency, coordinating w/ supporting agencies + providing the public with information.	
Paul Newman - Operator	In charge of running water system, performing inspections, maintenance + sampling as well as relaying critical information, assessing facilities + providing recommendations to the utility director	726-827-1492



# Events that Cause Emergencies

List the events that may cause water system emergencies. They should be arranged from highest to lowest probable risk.

Events that cause emergencies

Type of Event	Probability or Risk (High-Med-Low)	Comments

# Emergency Notifications

Notification call-up lists - Use these lists to notify first responders of an emergency.

<b>Emergency Notification List</b>				
<b>Organization or Department</b>	<b>Name &amp; Position</b>	<b>Telephone</b>	<b>Night or Cell Phone</b>	<b>Email</b>
Local Law Enforcement				
Fire Department				
Emergency Medical Services				
Wastewater Operator (if contractor)				
Primacy Agency Contact				
Hazmat Hotline				
Interconnected Water System				
Neighboring System (not connected)				

# Service and Repair Notifications

Contact information

<b>Service / Repair Notifications</b>				
<b>Organization or Department</b>	<b>Name &amp; Position</b>	<b>Telephone</b>	<b>Night or Cell Phone</b>	<b>Email</b>
Electric Utility Co.				
Electrician				
Gas/Propane Supplier				
Wastewater Testing Lab				
Water Utility Co.				
Telephone Co.				
Plumber				
Pump Supplier				
"Call Before You Dig"				

# Priority Contacts

<b>State, Federal or Tribal Notification List</b>				
<b>Organization or Department</b>	<b>Name &amp; Position</b>	<b>Telephone</b>	<b>Night or Cell Phone</b>	<b>Email</b>
<b>State or Tribal Police</b>				
<b>Regulatory Agency State/Federal/Tribal</b>				
<b>Authorized Testing Laboratory</b>				

<b>Priority Contacts</b>				
<b>Organization or Department</b>	<b>Name &amp; Position</b>	<b>Telephone</b>	<b>Night or Cell Phone</b>	<b>Email</b>
<b>Regulatory Contact</b>				
<b>Downstream Communities</b>				
<b>Downstream Communities</b>				
<b>Downstream Communities</b>				

# Response Actions for Specific Events

In any event, there are a series of general steps to take:

1. Analyze the type and severity of the emergency;
2. Take immediate actions to save lives;
3. Take action to reduce injuries and system damage;
4. Make repairs based on priority demand, and
5. Return the system to normal operation.

The tables identify the assessment, set forth immediate response actions, define what notifications need to be made, and describe important follow-up actions.

<b>Assessment</b>	
<b>Immediate Actions</b>	
<b>Notifications</b>	
<b>Follow-up Actions</b>	

# Response Actions for Specific

In a table, list the general steps to take in an emergency;

## Your Turn

Pick an emergency and write up your response actions

emergency;

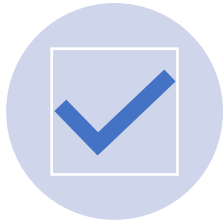
em damage;  
d, and  
n.

t forth  
what notifications  
important follow-up

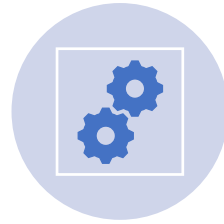
Assessment	
Immediate Actions	
Notifications	
Follow-up Actions	

# Operation and Maintenance Resources & SOPs

# Operation and Maintenance Resources



Should include checklist of O&M resources



This includes manual, SOPs, logs, etc.



Helps keep resources organized



Can categorize as maintenance, operational, etc.



Includes operational and maintenance schedules





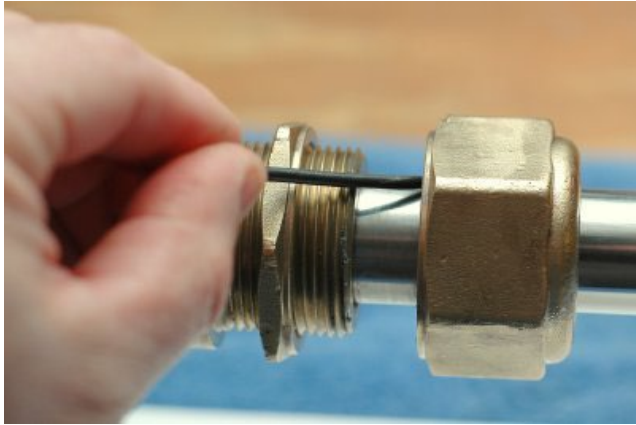
# Operation Tasks



Helps ensure operators understand how the process is supposed to work



# Maintenance Tasks



Preventative



Routine



Predictive

# Purpose of Maintenance: Prevent Failures

Complete asset failure

Disruption of service  
to customers

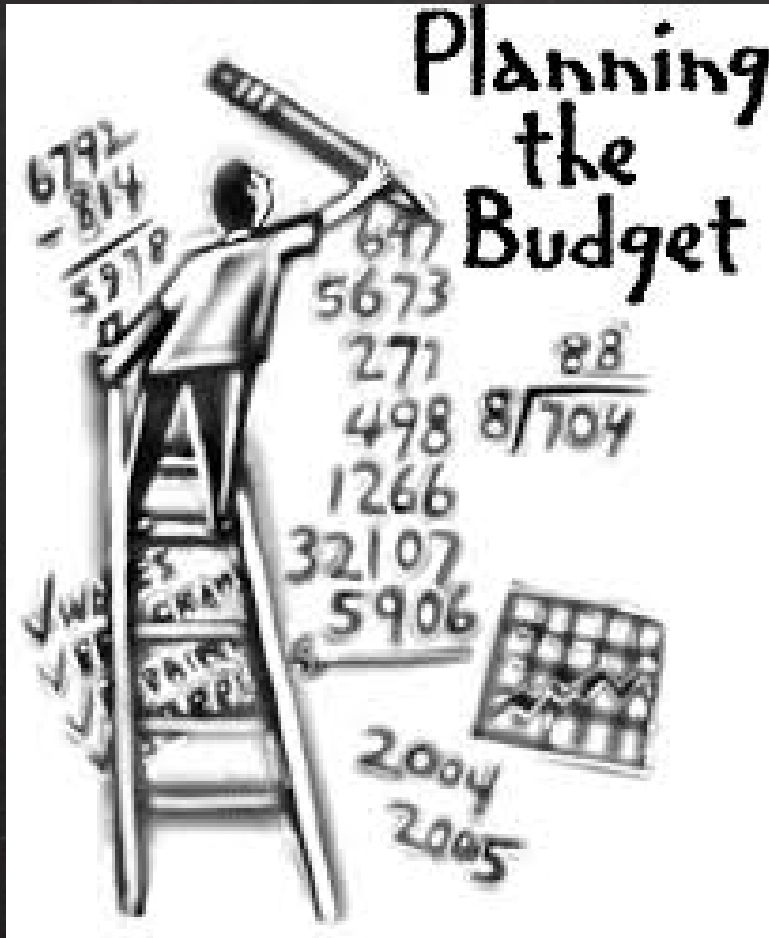
SDWA or other violations

Failure of another asset  
caused by failure of this  
asset

Reduction in Level of  
Service

The benefits of maintenance are well known

Three to four times more expensive to operate without proper maintenance, but....



Maintenance is a common item cut from the budget (or not adequately included)



If a plane was  
maintained like  
your utility...



...would you fly  
in it?



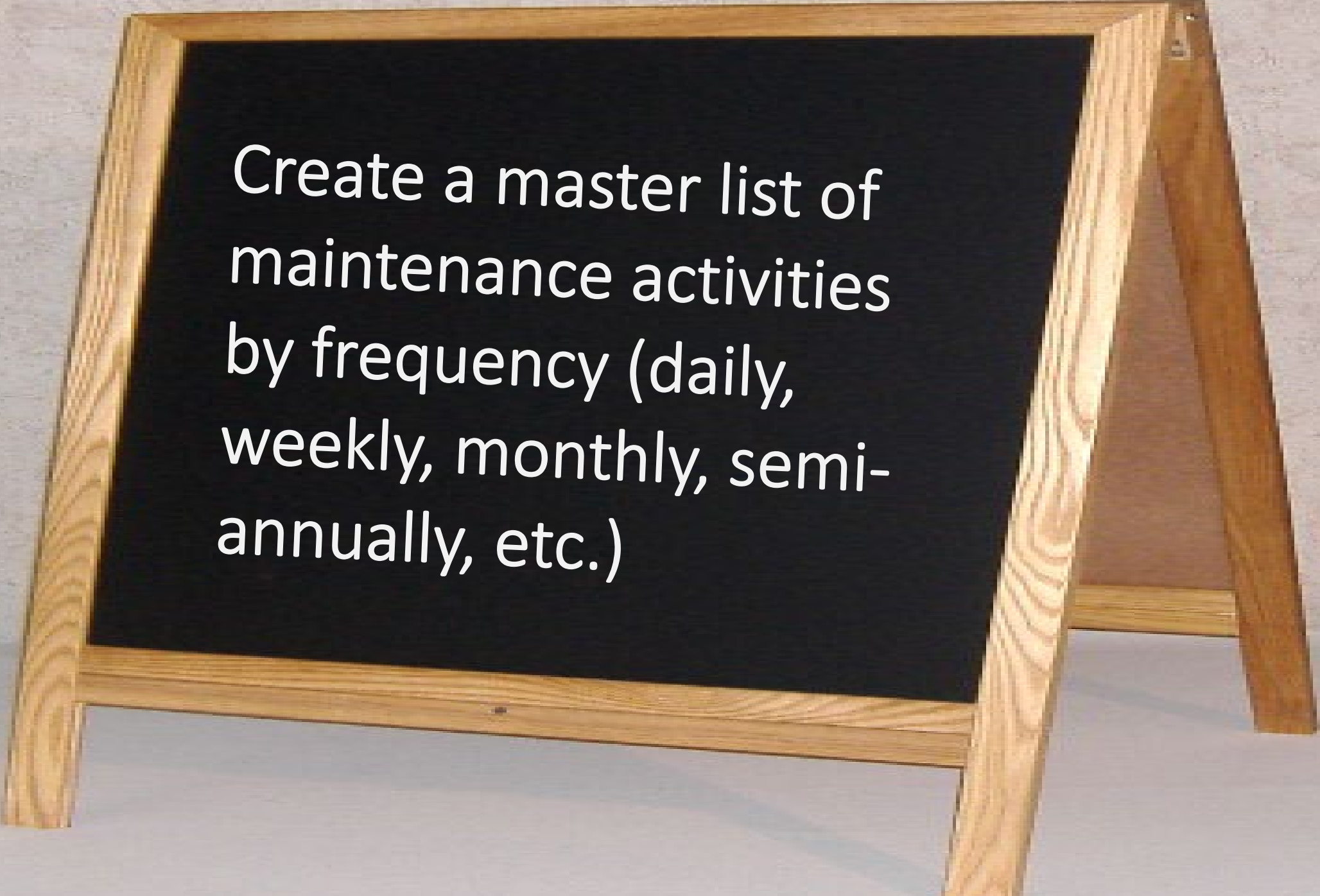
# What Happens When Maintenance Gets Cut?



We move  
toward  
complete  
reactive mode

Where do you fall on the scale of reactive vs. proactive?



A wooden easel with a blackboard. The blackboard has white text written on it. The easel is made of light-colored wood and stands on a light-colored surface against a light-colored wall.

Create a master list of  
maintenance activities  
by frequency (daily,  
weekly, monthly, semi-  
annually, etc.)

A wooden A-frame chalkboard stands on a light-colored surface against a light-colored wall. The chalkboard is black and has the text "Create SOPs on how to do the tasks" written in white. The wooden frame is made of light-colored wood with a visible grain. The text is centered on the board and is written in a clean, sans-serif font.

Create SOPs on how to  
do the tasks

SOPs



List of Available O&M Resources

	Activity	Resources					
		SOP		Manufacturer's Specification		Log/Record Keeping Form	
		Have	Need	Have	Need	Have	Need
Operational		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maintenance							
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Let's develop an SOP

SOP For: Total Coliform Sampling  
Date Prepared: 10/7/2011

### Background

# of samples per month = 1  
Sample location: (see monitoring plan siting plan)  
# of repeat samples if (+) = 4 samples

### Procedure

- Step 1 - Pre-label the bottle and fill out the Chain of custody (COC) prior to sampling
- Step 2 - Wash your hands prior to testing. Remember, you are working with a sterile bottle.
- Step 3 - Remove faucet screen as it is a safe haven for bacterial growth
- Step 4 - Disinfect with a 10% solution of clorox solution or rubbing alcohol from a spray bottle. (Do not flame as this is old school, and can be dangerous or could destroy the new age plastic faucets)
- Step 5 - Run cold water for at least four to five minutes before collecting a sample.

Include all required steps

Steps are in order

Important information presented

Try it without doing the activity yourself

Give it to a neighbor

The other person can ONLY do what is on the paper

Share when you get stuck and revise the SOP accordingly.

How to Tie Your Shoes

How to open the door

How to stack six pieces of paper on the desk in a design



Let's create an SOP  
together

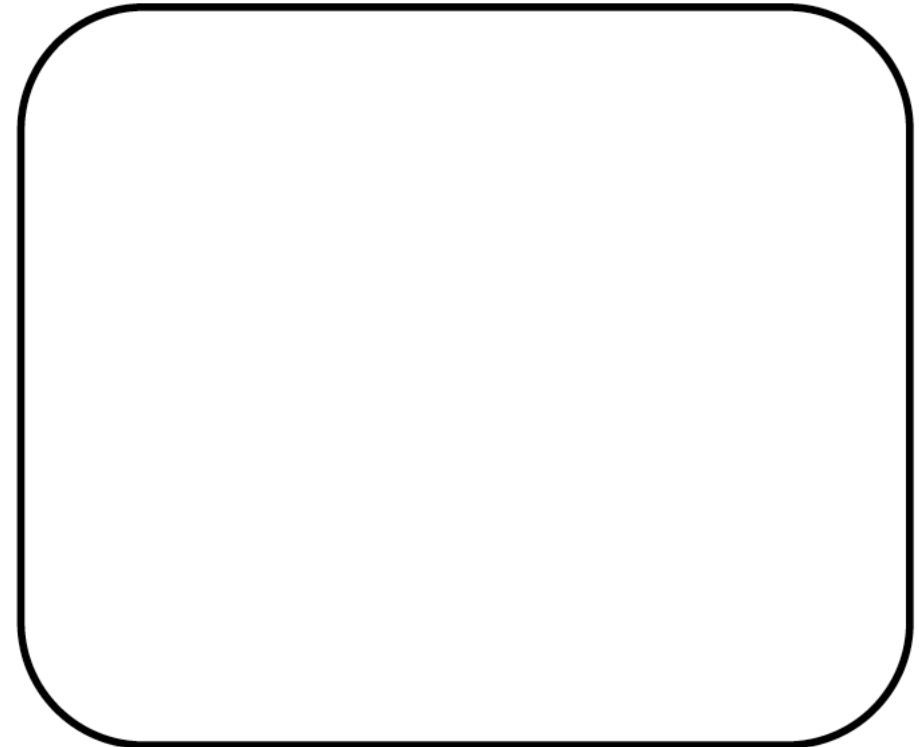
SOP For: \_\_\_\_\_

Date Prepared: \_\_\_\_\_

**Background**



**Procedure**



# Maintenance Logs

# Record Keeping/Maintenance Logs

MAIN

Maintenance Item	LMJ
Vendor Contact #	1-21
Model #	E7
Serial #	9
Installation Date	
Installation Location	

Maintenance
Replaced valve seal ring
Replaced
Replaced T
Checked zero re-zeroed p

Spare Part List (From Manufacturer)	
Part	Item #
Rebuild kit	APM-362/368
Valve Balls	E70-498SP
Tubing	Pipe 1/2" NPT-M
Seal Ring	E70-498SR
Cartridge Valve	E70-512CV
End Assembly	LE-362-SI

## Why is this important?

Document how you are maintaining and operating your system

Provides proof activities were performed

Identify recurring or costly maintenance problems

Supports requests for funding new equipment

Satisfy regulatory requirements

# Paper Logs

# Computer Options

## MAINTENANCE LOG

Maintenance Item	LMI Chemical Metering Pump
Vendor Contact #	1-215-293-0401
Model #	E722-363-SI
Serial #	960113428
Installation Date	9/14/2002
Installation Location	Chem. Feed Building

### Maintenance

Maintenance Activity	Date Performed	Notes
Replaced valve ball & seal rings	10/1/2010	Seal rings worn - Leaking at tubing
Replaced Diaphragm	12/17/2010	Yearly replacement of Diaphragm Also replaced valve/springs
Replaced Tubing	3/12/2011	Tubing had worn ends
Checked zero on pump/ re-zeroed pump	6/12/2011	Incorrect pump stroke length

CMMS Programs

Asset Management Programs

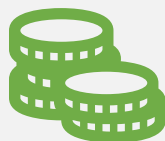
Budget



Ensures system has adequate resources



Includes daily, monthly, and yearly expenses



Also includes sources of revenue and income



	2015	Expenses	2011	2012	2013	2014	2015
0	\$ 55,000.00	Operations and Maintenance					
0	\$ 2,000.00	Salaries and Benefits	\$ 30,000.00	\$ 30,900.00	\$ 31,827.00	\$ 32,781.00	\$ 33,765.00
	\$ -	Contract Operation	\$ -	\$ -	\$ -	\$ -	\$ -
		Maintenance	\$ 1,000.00	\$ 1,030.00	\$ 1,060.90	\$ 1,092.73	\$ 1,125.51
0	\$ 200.00	Power and Other Utilities	\$ 2,500.00	\$ 2,575.00	\$ 2,652.00	\$ 2,731.00	\$ 2,813.00
		Regulatory Fees	\$ 500.00	\$ 515.00	\$ 530.00	\$ 546.00	\$ 563.00
		Treatment Chemicals	\$ 100.00	\$ 103.00	\$ 106.00	\$ 109.00	\$ 112.00
		Monitoring/Testing	\$ 2,000.00	\$ 2,060.00	\$ 2,121.00	\$ 2,185.00	\$ 2,250.00
		Transportation	\$ -	\$ -	\$ -	\$ -	\$ -
		Materials, Supplies, and Parts	\$ 150.00	\$ 154.50	\$ 159.14	\$ 163.91	\$ 168.83
		Office Supplies	\$ 200.00	\$ 206.00	\$ 212.18	\$ 218.55	\$ 225.10
		Miscellaneous	\$ 300.00	\$ 309.00	\$ 318.27	\$ 327.82	\$ 337.65
		General and Administrative					
		Engineering and Professional Services	\$ -	\$ -	\$ -	\$ -	\$ -
		Insurance	\$ 1,000.00	\$ 1,030.00	\$ 1,060.90	\$ 1,092.73	\$ 1,125.51
		Debt Service					
		Miscellaneous	\$ 100.00	\$ 103.00	\$ 106.09	\$ 109.27	\$ 112.55
		Reserve Funds					
		O&M Reserve	\$ 7,500.00	\$ 7,500.00	\$ 7,500.00	\$ 7,500.00	\$ 7,500.00
		CIP Reserve					
		Other Reserve	\$ -	\$ -	\$ -	\$ -	\$ -
		Capital Projects					
		Multi-year/Recurring	\$ 7,000.00	\$ 7,000.00	\$ 7,000.00	\$ 7,000.00	\$ 7,000.00
		One time				\$ 2,500.00	
0	\$ 57,200.00	Total Expenses	\$ 52,350.00	\$ 53,485.50	\$ 54,653.48	\$ 58,357.00	\$ 57,098.15

Number of Taps:  
Average Monthly Revenue Needed per Tap:  
(total expenses ÷ # of customers ÷ 12)

	2011	2012	2013	2014	2015
	250	250	250	250	250
	\$ 17.45	\$ 17.83	\$ 18.22	\$ 19.45	\$ 19.03



Revenue/Income	2011	2012	2013	2014	2015	Expenses	2011	2012	2013	2014	2015
Rates						<b>Operations and Maintenance</b>					
Fees and Services						Salaries and Benefits					
Hookup Charges						Contract Operation					
Grants & Loans - e.g. SRF						Maintenance					
Other Sources - e.g. interest						Power and Other Utilities					
						Regulatory Fees					
						Treatment Chemicals					
						Monitoring/Testing					
						Transportation					
						Materials, Supplies, and Parts					
						Office Supplies					
						Miscellaneous					
						<b>General and Administrative</b>					
						Engineering and Professional Services					
						Insurance					
						Debt Service					
						Miscellaneous					
						<b>Reserve Funds</b>					
						O&M Reserve					
						CIP Reserve					
						Other Reserve					
						<b>Capital Projects</b>					
						Multi-year/Recurring					
						One time					
<b>Total Revenue/Income</b>	\$ -	\$ -	\$ -	\$ -	\$ -	<b>Total Expenses</b>	\$ -	\$ -	\$ -	\$ -	\$ -

Number of Customers:  
Average Monthly Revenue Needed per Customer:  
(total expenses ÷ # of customers ÷ 12)

2011	2012	2013	2014	2015

## Group Discussion:

How does your system do its budgeting process?

Are you involved in the process? In what way?

Is your budget zero based or start from last year?  
(pros and cons)

Does your budget cover your needs for operations and maintenance?

# Communication Strategy

Operators have the best point of view to educate stakeholders

Requires consistent communication

Identify information that can be gathered from stakeholders and best data to lobby for needs

Refer to EPA's "Talking to Your Decision Makers A Best Practices Guide"

## Communication Assessment and Strategy Tool

<b>Audience (Stakeholders)</b>	<i>Customers</i>	<i>Board</i>	<i>Specific Customers</i>		
<b>Topic/Information Required</b>	<i>Consumer Confidence Water Quality Report</i>	<i>Routine water system report</i>	<i>Notice about upcoming line flushing</i>		
<b>Frequency of Communication</b>	<i>Annually</i>	<i>Monthly</i>	<i>Two weeks in advance of activity</i>		
<b>Methods of Communication</b>	<i>Included in bill</i>	<i>Presentation at Board meeting</i>	<i>Door hanger or email or reverse 311</i>		

# Communication Planning Tool

Circle the type of activity, method and audience:

(1) Type of Activity: (a) Purchase Equipment (b) Project Update (c) Announcement  
(d) Other

(2) Method: (a) Memo (b) Email (c) Presentation (d) Other

(3) Audience: (a) Board or Council (b) System Owner or Supervisor (c) Customers (d)  
Other

Primary Purpose for Communication:

Need a new valve at the well head

Is there a specific action or decision required?

Approval of \$1000.00 for a new valve

Why is this Important?

1. Valve is in poor condition and needs replacing before it fails.
2. There is no redundancy for this valve, so if it fails, the water system must shut down
- 3.

Impacts of Your Decision (Positive or Negative):

If this fails, there is no redundancy and the town will be without water.

Financial (if applicable)

1) Cost \$1,000.00

2) Options considered/multiple bids (if applicable) N/A

3) Source of funding Capital Projects Budget

Timing, Deadline(s)/Due Date(s):

ASAP

Follow Up Plan and Contact Information:

If approved, construction will begin immediately

Wrap Up



From today, I hope you:

Understand the **Importance** of an  
O&M Plan

Know how to **develop** an O&M Plan

**Use** your O&M Plan



# CONTACT INFORMATION



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