

# PLANNING FOR WATER SYSTEM SUCCESS!

Eric Volk  
ND Rural Water

1

## Topics to be Covered Today

- Planning Strategies
- Asset Management
- Rates
- Money Saving Services & Products

2

## NDRWSA Scholarship Reminder

- Child or grandchild of a current city/rural water system employee or elected city/rural water system official (water system must be a current member of ND Rural Water).
- March 31, 2020 Deadline
- Up to \$8,500
- [www.ndrw.org](http://www.ndrw.org)

3

## O&M Training

- Nov. 12<sup>th</sup> – Lincoln
- Nov. 13<sup>th</sup> – Burlington
- Dec. 10<sup>th</sup> – Park River
- Dec. 11<sup>th</sup> – Horace

Watch your mail or visit [www.ndrw.org](http://www.ndrw.org) for more info!

4

## 34<sup>th</sup> Annual Water Systems EXPO

February 11-13, 2020  
Delta by Marriott-Fargo

5

## NDRWSA Apprenticeship Program

6

## Sustainable Systems & Effective Utility Management

7

## Effective Utility Management One on One Training

- 360° look at your utility and sets priorities
- Moves you from reacting to the “hot priorities” of the day to proactively planning for the future
- Engages your staff in the process of assessing and charting your own course for the future
- It is simple, actionable, affordable, and scalable to meet the needs of all utilities

8

## The Ten Areas

- |   |  |
|---|--|
| ■ Product Quality                                 | ■ Employee Leadership and Development                    |
| ■ Customer Satisfaction                           | ■ Operational Optimization – Energy and Water Efficiency |
| ■ Infrastructure Stability                        | ■ Operational Resiliency                                 |
| ■ Community Sustainability & Economic Development | ■ Water Resource Adequacy                                |
| ■ Stakeholder Understanding and Support           | ■ Financial Viability                                    |

9

## The Ten Areas

- Provide a clear set of reference points
  - *Measurable*
  - *“You can’t improve what you don’t measure”*

10

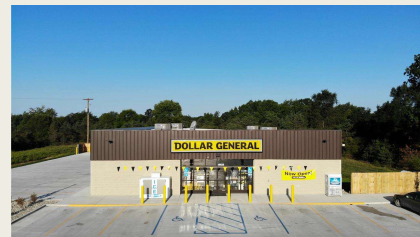
## Let’s Take a Poll!

What Size of System do you Represent?

- Less than 250 in population
- 250-500
- 500-1,000
- 1,000-3,300
- 3,300-10,000
- Greater than 10,000

11

## Do you have a Dollar General?



12

“SETTING A GOAL IS NOT THE MAIN THING. IT IS DECIDING HOW YOU WILL GO ABOUT ACHIEVING IT AND STAYING WITH THAT PLAN. ”

Tom Landry, NFL Head Coach

13

**Vision Statement:**  
*A company's road map, indicating what the company wants to become by setting a defined direction for the company's growth.*

14

**NDRWSA Vision Statement:**  
*All of North Dakota has access to affordable, ample, and quality water.*

15

*Do you know your Mission Statement?*

16

**Mission Statement:**  
A formal summary of the aims and values of a company

17

Board/Council policy decisions and the system's services reflect the mission.

18

The mission of NDRWSA...

*To educate, promote, support, and lead North Dakota's water industry in providing quality service to their customers.*

19

*Have you read and understand your current Policies, Ordinances, Handbooks, Rules & Regulations?*

20



ARE THEY UP TO DATE?

21



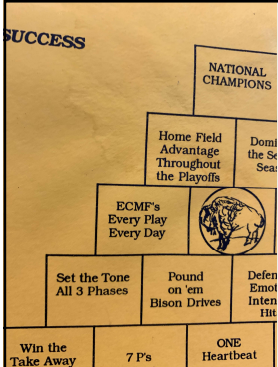
Have they been Dusted Off recently?

22

**Planning Basics**

- 7 P's
  - Prior
  - Proper
  - Planning/Practice
  - Prevents
  - P
  - Poor
  - Performance

23



**NDSU PYRAMID OF SUCCESS (MID 90S)**

SUCCESS

NATIONAL CHAMPIONS

Home Field Advantage Throughout the Playoffs

Dominate the Season

ECMF's Every Play Every Day

Set the Tone All 3 Phases

Pound on 'em Bison Drives

Defend Emotionally Intense Hits

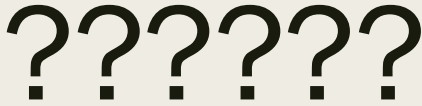
Win the Take Away

7 P's

ONE Heartbeat

24

## What do you Plan for?



25

## All Kinds of Plans to Choose From:

- Short Term
- Long Term
- Strategic
- Master
- Asset Management
- Capital Improvement
- Capacity Development
- Operational
- Financial
- Human Resource
- Emergency
- Source Water Protection
- And more...

26

## Short Term Planning (Yearly Budgeting)

- How do determine your Water Budget?
- Who is involved?

27

## Long Range Planning in General

- Assumes current trends will continue
- Focuses on setting long range objectives/goals
- Assumes a most likely future and emphasizes working backward to map out a year-by-year sequence of events
- Asks: "What should we be doing each year for the next so many years?"

28

## Steps of Long Range Planning

- Write goals – SMART
  - *Specific*
  - *Measurable*
  - *Action oriented*
  - *Realistic*
  - *Time Specific*
- Form planning task forces
  - *Who will be accountable and by when*

29

## Master Planning

- A comprehensive program that looks ahead maybe 30 years
- Evaluates the entire water system
- Quantifies future demands and source options
- Identifies necessary improvements, and
- Balances needs and costs of providing water to residents

30

*“The thoughtful, proactive investment in infrastructure and maintenance of the water system supports the water system’s ability to better control rates over the long run.”*

City of Honolulu

31

## Water Master Plan Steps

1. **Assess** existing condition of pipes, pumps, reservoirs, wells, treatment plants and other facilities (will discuss further in Asset Management).
2. **Compare** projections of future needs with existing water supplies and infrastructure
3. **Identify** needs for increasing existing supplies and improvements to existing facilities
4. **Prioritize** improvements over a 30-year period based on risks to the system and providing reliable service to customers (Capital Improvement Plan)
5. **Analyze** funding options to pay for improvements, including rates (Financial Planning)
6. **Develop** a comprehensive plan to implement improvements, including priorities, schedules, costs, financing, and rates.

32

## Capital Improvement Plan

- Turns Water Master Plan recommendations into proposed & prioritized projects
- Some will add **Capacity**
- Others will **renew or replace** parts of the existing system
- Some projects are needed **now**
- While others can **wait**

33

## Prioritization can be based on RISK

- What is the Likelihood of Failure?
- What is the Consequence of Failure?

34

## Financial Planning

35

## The fundamental question that the Long Range Financial Plan addresses is:

- How do we pay for **ALL** of this???

36

## Sound Financial Policies

- Working Capital (**Amount of Cash on Hand**)
- Purposes and Uses of Debt (**When and Why to Borrow**)
- Debt to Net Assets Ratio (**How Much Can be Borrowed**)
- Debt Service Coverage Ratio (**Ability to Make Loan Payments**)

37

## Water System Strategic Planning

- The intent of a Strategic Plan is to provide an **internal** and **external** perspective of the commitment of the Water System to deliver safe, dependable, and affordable water, now and into the future.

38

## Key Components in a Strategic Plan

- Vision
- Mission
- Values
- Strategic Goals/Objectives, and
- Key Action Plans.

39

## What is involved in Strategic Planning?

- 'Plan today for an **uncertain** tomorrow.'
- It can help you address both problems that you know will arise in the future, and problems that you **can't predict**.
- It can help your system succeed in a **changing environment**.
- It is typically a short document that summarizes
  - *what your water system does,*
  - *why it does it,*
  - *what it is trying to accomplish, and*
  - *how it will meet its goals and values.*

40

## How will Strategic Planning Benefit My Water System?

- Help you understand what services your system currently provides and what services you would like to provide in the future to best serve your customers.
- Allow you to concentrate on making good decisions now so that your system will be successful in the future.
- Focus your energy and resources.
- Ensure that system employees, owners, and managers are all working toward the same goals.

41

## 7 Steps to Strategic Planning:

1. Developing a strategic roadmap.
2. Defining your area of service.
3. Assessing your system's technical, managerial, and financial capabilities (i.e., its capacity).
4. Identifying your options for fulfilling your area of service.
5. Analyzing and assessing your options.
6. Implementing your options through an action plan.
7. Evaluating your options.

42

***“If it ain’t broke, don’t fix it” is not a sensible approach to planning. It does not allow your water system to prepare for and adapt to changing circumstances.***

***Strategic Planning will!***

43

**Step 1: Developing a Strategic Roadmap**

1. What is your system trying to accomplish, and why?
2. How can this be accomplished?

44

**Defining your Ideals, Goals and Values**

- **Ideals:** An image of what your system should become.
- **Goals:** The day-to-day and overall operation and management objectives or aspirations for your system.
- **Values:** The beliefs you would like to guide your system’s employees; explain what is most important to your system and your system’s employees.

45

**Worksheet: Defining Your Ideal, Goals, and Values**

Example - Strategic Roadmap	
<b>Ideals</b>	The XYZ Water System will provide safe, clean drinking water to its customers by ensuring the safety and security of its supply and the system, meeting or exceeding existing and new federal and state regulations, and consistently evaluating and improving management and operations.
<b>Goals (according to priority)</b>	To meet or exceed all water quality standards and customer expectations, have an adequate and safe supply of water, and provide water at a reasonable cost.
<b>Values</b>	To conduct our business in a way that builds consumer confidence, promotes a supportive work environment, protects public health, and minimizes cost while still providing superior service and product.

Strategic Roadmap	
<b>Ideals</b>	
<b>Goals (according to priority)</b>	
<b>Values</b>	

46

**Step 2: Defining Your Areas of Service**

- Defining your area of service involves deciding which functions or roles your system will or will not be responsible for.
- *It is important to note that not every system is suited to provide every service.*

47

**Example Worksheet: Current and Future Areas of Service**

Area of Service	Example	
	Current Role	Future Role
Source water development & protection	Conduct routine O&M, compliance monitoring, well head protection; implement source water protection plan	Continue current role, address and finance security related measures, and consider the development of a new source to meet future demand
Water treatment	Conduct routine O&M, compliance monitoring; lab analysis; asset maintenance; operator training	Continue current role but consider optimizing treatment processes, purchasing treated water, or installing additional treatment to meet new regulations
Treated water storage & distribution	Conduct routine O&M, compliance monitoring; leak detection and repair; storage tank inspection, repair, rehabilitation; corrosion control	Continue current role but consider contracting out for O&M service or consulting with nearby systems, and secure financing to replace pipes and mains on schedule
Retail customer service	Install new connections; conduct meter installation and rehabilitation; meter reading; billing and collections	Continue current role but consider partnerships with nearby systems to provide better retail customer services at a lower cost and begin to review rates on an annual basis
Security issues	Install and maintain fencing around critical system components	Maintain fencing; consider having staff patrol the system to discourage trespassing and trespassing; work with local and state officials to develop an Emergency Response Plan (ERP); conduct a vulnerability assessment

48



### Step 3: Assessing Your System's Technical, Managerial, and Financial Capacity

- Knowing your **strengths** and **weaknesses** in these three areas will help you:
  - *Refine your goals to focus on areas that need improvement and*
  - *Capitalize on your strengths.*

49

### Technical Capacity

- Physical Infrastructure and Operational Abilities
- This includes deciding whether processes need to be changed or improved upon and assessing the technical knowledge and qualifications of your system's operators.

50

### Managerial Capacity

- Institutional and Administrative Abilities
- Deciding whether your system's affairs are conducted in a manner that enables you to maintain compliance, operate efficiently, and meet customer expectations.

51

### Financial Capacity

- Ability to acquire and manage financial resources.
- Deciding whether you will be able to continue current operations, make necessary repairs and replacements, and afford upgrades.

52

#### Worksheet: Assessing Your System's Capacity\*

Capacity	Strengths	Weaknesses
Technical	Reliable source of drinking water; little trouble meeting SDWA standards; system operator is properly certified.	Outdated asset inventory and no asset management plans; have not addressed needed security upgrades.
Managerial	Good relationship with customers and regulatory; operator properly trained.	Part-time operator; board members not trained on upcoming regulatory requirements.
Financial	Books and records are maintained according to generally accepted accounting principles; budget reviewed annually.	Lacking detailed valuations of assets; reserve account not fully funded; rates have not been reviewed since rate setting hearing.
Capacity	Strengths	Weaknesses
Technical		
Managerial		
Financial		

\*Remember to consider:

- For technical capacity - the adequacy of your source water, physical infrastructure, operator expertise and knowledge, and overall operations and maintenance.
- For managerial capacity - your system's ownership structure, staffing and organization; and relationships with customers, regulators, and technical assistance providers.
- For financial capacity - your system's revenues, credit worthiness, and fiscal management and controls.

53

### Step 4: Identifying Your Options

- You should also have a good understanding of the strengths and weaknesses in your technical, managerial, and financial capabilities.
- This information will allow you to identify a range of options to best fulfill your goals and values.

54

## Step 4: Identifying Your Options

- One goal of strategic planning is to fully consider the **widest** possible range of alternatives over a long-term time frame and not just choose the **“quick fix”**.
- This involves thinking about options that can be implemented within your system’s **current** structures, and
- Options that may require reorganizing or fundamentally **changing** your system’s ownership, managerial, operational, and physical structures.

55

### Worksheet: Identifying Options

Area of Service	Options
Source water development and protection	
Water treatment	
Treated water storage and distribution	
Retail customer services	
Security issues	

56

## Strategic Options Examples

- Purchase wholesale treated water while continuing to serve as a distributor.
- Build stakeholder involvement and community interest in source water protection program.
- Physically interconnect with another system.
- Develop an asset management plan and capital improvement plan, and research potential funding sources for infrastructure improvements.
- Contact local authorities to discuss working with system staff to conduct frequent patrols of the system and developing an Emergency Contact List.

57

## Step 5: Analyzing and Assessing your Options

- In order to thoroughly assess your options and determine their **feasibility**, you must consider the long-term **economic, regulatory, and implementation** impacts the options will have on your system.

58

## To fully assess each option, consider the following questions:

- How will this option affect the technical, managerial, and financial capacity of the system?
- Is the option consistent with your system’s goals and values?
- Will implementing the option ensure continued compliance with current and future regulatory standards?
- Is the total cost of choosing and implementing this option within your system’s current or potential financial means?
- Will the option be accepted by the governing board, town managers, the community, and regulators?
- Will the option increase the quality or reliability of service and be accepted by customers?
- Will the option positively or negatively impact system security?
- Can this option be practically implemented by water system managers and operators?

59

### Example Worksheet: Assessing Your Options

Area of Service	Options	Pros	Cons	Optimum Solution
Source water development and protection	<ul style="list-style-type: none"> <li>Implement source water protection plans</li> <li>Develop alternative source of supply</li> </ul>	<ul style="list-style-type: none"> <li>Will lead to a better understanding of quality or safety concerns; ensure safe supply</li> <li>Will lead to a better understanding of quality or safety concerns; ensure safe supply</li> </ul>	<ul style="list-style-type: none"> <li>Understanding community/system support critical; be difficult; safety and time consuming; understand communications service</li> <li>System has had no significant water quality issues to date; up-front capital expenditures</li> </ul>	<ul style="list-style-type: none"> <li>Develop inventory of human and potential sources for contamination; build stakeholder involvement and community interest in source water protection programs</li> </ul>
Water treatment	<ul style="list-style-type: none"> <li>Continue with disinfection only</li> <li>Purchase treated water</li> </ul>	<ul style="list-style-type: none"> <li>Least expensive option; effective to date</li> <li>Options for complying with new regulations; will eliminate treatment step and required plant modifications</li> </ul>	<ul style="list-style-type: none"> <li>May not be sufficient for compliance with new regulations</li> <li>Significant change to system's area of service; may increase cost</li> </ul>	<ul style="list-style-type: none"> <li>Continue to use disinfection only; use source water protection measures will keep the system in compliance</li> </ul>
Treated water storage and distribution	<ul style="list-style-type: none"> <li>Increase storage capacity</li> </ul>	<ul style="list-style-type: none"> <li>Continued delivery to customers; area of supply is disrupted</li> </ul>	<ul style="list-style-type: none"> <li>Need updated asset management plan to assess need; would require up-front capital expenditures</li> </ul>	<ul style="list-style-type: none"> <li>Complete asset management plan and capital improvement plan; research funding sources</li> </ul>
Retail customer services	<ul style="list-style-type: none"> <li>Partner with town for system's) for operations and management services</li> </ul>	<ul style="list-style-type: none"> <li>Potential cost savings for customers; no change in ownership</li> </ul>	<ul style="list-style-type: none"> <li>Long of some autonomy for system managers; operators; and community</li> </ul>	<ul style="list-style-type: none"> <li>Use partnership to increase efficiency and reduce costs; develop oversight board to ensure authority and needed decision making authority</li> </ul>
Security issues	<ul style="list-style-type: none"> <li>Develop and implement a vulnerability management (VIA) and EOP; begin frequent system audits</li> </ul>	<ul style="list-style-type: none"> <li>Immediate response in emergency situations; decrease time to respond with system operators; eliminate threats to system security</li> </ul>	<ul style="list-style-type: none"> <li>Understaffed; local authorities may not be able to patrol; with limited system staff; frequent audits and proper system operations could be difficult; compliance EOP's may require outside (e.g., contractors) assistance and up-front expenditures</li> </ul>	<ul style="list-style-type: none"> <li>Conduct stakeholder survey for more information on EOP; meet with local authorities and system staff to discuss plan and patrol responsibility</li> </ul>

60

## Step 6: Implementing Your Options

- To implement your chosen options, you need to develop an action plan.

61

Example Worksheet: Implementation Action Plan and Challenges

Chosen Option	Required Actions <sup>1</sup>	Proposed Start/End Date <sup>2</sup>	Related Challenges <sup>3</sup>	Plans to Address Challenges <sup>4</sup>
Develop source water protection plan	Conduct and assess results of source water inventory	11/1/03 to 1/1/04	Limited staff resources to complete inventory; limited by personal knowledge of potential security/contaminations threats	Use available state resources (technical or financial assistance); look into possibility of countywide program or cooperation with nearby systems
	Identify potential contaminants and threats			
	Discuss follow-up actions			
Develop asset management plan	Meet with regulatory and affected land owners	1/1/04 to Ongoing	Gathering stakeholder interest in follow-up actions; limited financial resources	Publicize source water protection efforts to gain community support for involvement in the program; investigate available state resources
	Train staff			
	Conduct inventory	1/1/04 to 3/1/04		
Review current rates	Secure additional funding		Considerable time commitment; new process for system staff	Use existing guides to fully understand the process before getting started
	Meet with public utility agency			
	Hold public meetings	3/1/04 to 4/1/04		
Begin frequent system patrols	Meet with neighbor system		Any rate changes will require PIC approval; rate-review process is cumbersome and expensive; rate increases will be unpopular	Consider alternatives like consolidation with another system, further reducing rates of service, or seeking state or federal assistance
	Conduct local authorities			
	Set up meeting with local authorities and system staff	11/1/03 to Ongoing		
	Develop patrol schedule		Limited financial resources and available time of authorities and system staff; familiarizing local law enforcement with critical system components	Contact State Coordinator for available resources on system security to educate local authorities and system staff on the importance of security; look into alarm system installation if system patrols cannot be conducted as often as desired

62

## Step 7: Assess and Evaluate

- There may be elements that don't work, or problems that arise that need additional analysis and action.
- On-going monitoring and evaluation will help you assess whether your system is operating the way you want it to.

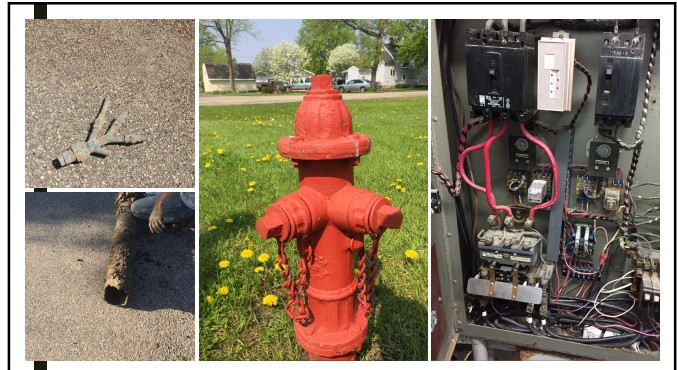
63

Plan  
Evaluate  
Revise  
Repeat

64

Do you have any Old, Aging, Broken, Not Working Efficiently, Well Past its Useful Life, Never Really Worked Right in the First Place, Can't Get Parts For Anymore or Duck Taped Infrastructure?

65



66



67



68

**AWWA's *Buried No Longer* draws the following conclusions:**

1. Water bills will increase
2. Water systems need investment year after year for decades, and delaying investment makes the problem worse
3. Investment needs will fall mostly heavily on small water systems
4. Slow or negative growth complicates investment for some Midwestern water systems

69

**ASSET  
MANAGEMENT**

70

**Simple Definition of an "Asset"**

- A valuable person or thing
- Property owned by a person or company, regarded as having value

71

**Challenges faced by Water Systems**

- Determining the best (or optimal) time to rehabilitate/repair/replace aging assets.
- Increasing demand for services or Decreasing demand
- Overcoming resistance to rate increases.
- Diminishing resources.
- Rising service expectations of customers.
- Increasingly stringent regulatory requirements.
- Responding to emergencies as a result of asset failures.
- Protecting assets.

72

## Asset Management Definition

- Maintaining a desired level of service for what you want your assets to provide at the lowest life cycle cost.
- **Lowest life cycle cost** refers to the best appropriate cost for rehabilitating, repairing or replacing an asset.

73

## Repair, Rehabilitate or Replace?



74

## Systems need Asset Management to:

- Address aging infrastructure assets before they **fail**.
- Keep assets productive, and not allow them to become **disruptive liabilities**.
- Treat all decisions as investment decisions to **maximize limited financial** resources.
- Make **costs transparent** to support financial decisions.

75

## 5-step Asset Management Process

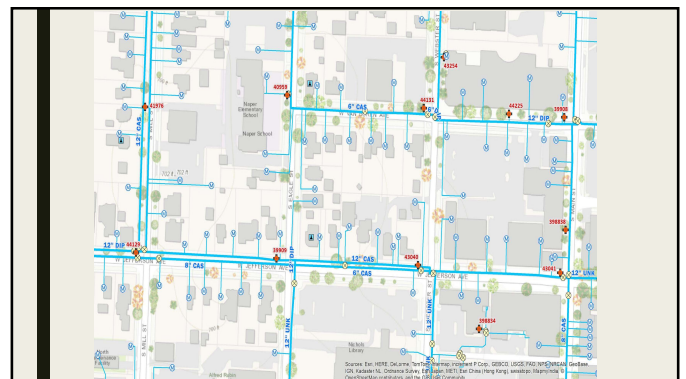
1. **Conducting** a thorough asset inventory.
2. **Prioritizing** the rehabilitation and replacement of your assets.
3. **Developing** an annual estimate of needed reserves and an annual budget.
4. **Implementing** the asset management plan.
5. **Reviewing** and **Revising** the asset management plan.

76

## What is the current state of my system's assets?

- What do I own?
- Where is it?
- What is its condition?
- What is its useful life?
- What is its value?

77



78

**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 (1999)	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
<b>Distribution System:</b>						
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

79

**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
Bulkheads	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

80

## How Do I Prioritize My Assets?

- How soon will you have to replace an asset (its remaining useful life).
- Existing threat to public health, safety, or environment;
- Potential public health, safety, or environmental concern;
- Internal safety concern or public nuisance;
- Improved system operations & maintenance (O&M) efficiency; and
- It would be nice to have...

81

**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
<b>Distribution System:</b>				
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

82

## How Do I Plan for the Future?

- Determine how much it will cost to rehabilitate and replace your assets as they deteriorate.

83

**EXAMPLE Required Reserve Worksheet**

Date Worksheet Completed/Updated: 8/14/02

Asset (list from highest to lowest priority)	Activity	Years until action needed	Cost (\$)	Reserve required current year
1. Chlorinator	Replace	2	\$2,000	\$2,000
	Purchase redundant unit	1	\$2,000	\$2,000
2. Pumphouse - Electrical	Replace with controller			\$2,000
3. Well Pumps	Replace Well 1 pump	1	\$5,000	\$5,000
	Replace Well 2 pump	1	\$5,000	\$5,000
4. Valves	Buy replacements (2 inch, 4 inch, 6 inch)	10	\$10,000	\$1,000
	(\$5 valves at \$2,000 each)			\$750
5. Hydrants	Replace 10 hydrants	11	\$60,000	\$4,908
	(\$6,000 hydrants at \$5,000 each)			
6. Pipe	Replace (1800 ft. at \$20/ft.)	31	\$360,000	\$9,225
	2 inch (2500 ft. at \$20/ft.) - replace 2 inch with 6 inch			
	4 inch (2000 ft. at \$20/ft.) - replace 2 inch with 6 inch			
	6 inch (1500 ft. at \$20/ft.)			
7. Storage	Rehabilitate 2 tanks	1	\$50,000	\$10,000
	(1 every 8 years, 1992 and 2000 tanks)			
	Replace - 2 tanks (1993 tanks)	21	\$40,000	\$1,900
	4 tanks - 2000 tanks	18	\$20,000	\$1,111
<b>Total reserve in the current year</b>				<b>\$36,399</b>

84

### How Do I Carry Out This Plan?

- Preparing a financial forecast (next 5 years) will help you determine if you will need to supplement your revenues to carry out your asset management plan.

85

### Budgeting Worksheet

- Your system's annual **revenues** from fees, loans and grants, interest from any accounts, and other sources of income.
- Your annual **expenditures** on maintenance, utilities, salaries and benefits, office supplies, professional services, taxes, and loan payments.
- Your **net** income.
- How much **additional** funding you will need to continue to operate and maintain your system and replace and repair your assets.

86

EXAMPLE Budgeting Worksheet		
Revenues	Expenses	Net Income
Service Fees: \$299,971	Maintenance: \$59,320	Total Revenues: \$255,430
Fees and Service Charges (late fee, connection fee, fire fee, etc.): \$5,289	Utilities (power, telephone): \$3,092	Total Expenses: \$295,072
Impact Fees (demand fee, system development fee, etc.): \$175	Salaries and Benefits: \$76,689	Net Income (Revenue - Expenses): -\$10,358
Secured Funding:	Equipment Cost: \$1,371	
Interest:	Chemicals: \$40,512	
Other:	Monitoring and Testing: \$8,096	
	Rent or Mortgage:	
	Insurance: \$1,553	
	Professional Services (legal, accounting, engineering, etc.): \$400	
	Training Costs: \$1,000	
	Billing Costs: \$2,300	
	Fees (state PWS fee, franchise fee, conservation fee, etc.): \$500	
	Security: \$609	
	Other (debt payments, taxes, miscellaneous, etc.): \$53,630	
<b>Total Revenues: \$255,430</b>	<b>Total Expenses: \$295,072</b>	<b>Additional Reserves Needed (Income - Required Reserves): -\$29,267</b>

87

### What is my best long-term funding strategy?

- Do we have enough funding to maintain our assets for our required level of service?
- Revising the rate structure.
- Funding a dedicated reserve from current revenues (i.e., creating an asset annuity).
- Financing asset rehabilitation, repair, and replacement through borrowing or other financial assistance.

88

### Making the Commitment

- Asset management requires an investment in time and resources.
- 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.

89

### Do not let the TTWWADI Syndrome Hold you back?



90

**Barriers to implementing an Asset Management Program may include:**

- Expecting to see immediate results.
- Changing from a focus on operations to a focus on assets.
- Reconciling a short-term focus (e.g., rate increases) with long-term view of system sustainability.

91

**In Summary...**

92

**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.

93

**EMERGENCY PLANNING FOR WATER UTILITIES**

Are you Prepared?

94

**Emergency Planning**

95



96





97



98



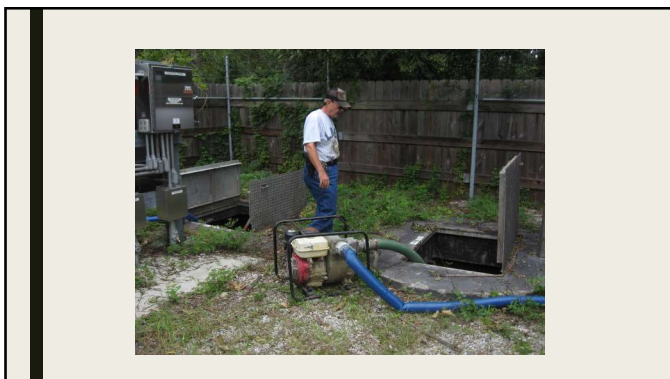
99



Wing Freeze up 2019

100

100



101



**DAKOTA BRIEFS**

**Red Cross delivers bottled water to Glen Ullin residents**

The American Red Cross is distributing bottled water throughout Glen Ullin this week, as city and public health crews work to disinfect the town's water system after a dead mouse was found floating in an underground water storage tank on Monday.

The city is under a boil order, meaning anyone who plans to consume tap water should boil it first. It is safe for flushing and showering.

LeeAnn Tillotson, an environmental scientist with the State Health Department, said she expects it will be Thursday at the earliest before the boil order can be lifted. She said the 250,000-gallon capacity tanks were being refilled with water and disinfectants and would have to sit overnight before sampling could be done Wednesday.

No illnesses were reported to health officials.

102

## Emergency Planning Road Map

- Hazards Summary
- Vulnerability Assessment
- Mitigation Actions
- Developing/Updating Preparedness Plan
- Emergency Response, Recovery & Training

103

## Hazard Summary

- Natural Disasters
  - Earthquakes
  - Hurricanes
  - Tornadoes
  - Floods
  - Forest or Brushfires (Firestorms)
  - Volcanic Eruptions

104

## Hazard Summary

- Natural Disasters (Continued)
  - Severe Weather (Area specific)
    - Extreme heat
    - Extreme cold
    - Heavy snows
    - Ice storms
    - High winds
    - Lightning

105

## Hazard Summary

- Natural Disasters (Continued)
  - Waterborne diseases
    - Giardia
    - Cryptosporidium
    - Salmonella
    - E. Coli

106

## Hazard Summary

- Human Caused Disasters
  - Hazardous materials release
  - Structural fires
  - Construction or transportation accidents
  - Accidents or explosions
  - Vandalism, riots, strikes & terrorism

107

## Vulnerability Assessment

- After a utility completes its Hazard Summary, the effects of those hazards on system components and on water quality should be determined.

108

## Mitigation Actions

- Before implementing any mitigation actions, ask the following questions:
  - *How critical is the component to the system?*
  - *What is the age of the component?*
  - *What are the present and projected expansion, replacement, or construction programs?*
  - *What is the cost of the mitigation action?*

109

## Developing/Updating Preparedness Plan

- Elements of a Plan
  - *Mission*
    - Be a safe provider of life-sustaining potable water to the community under both normal and emergency situations.
  - *Goals*
    - Provide specific ways to accomplish mission
  - *Objectives*
    - Specific enough to authorize staff actions to restore water to priority areas, but general enough to allow flexibility as the situation changes.

110

## Developing/Updating Preparedness Plan

- Sudden emergencies
  - *Automated system controls and/or personnel must be able to recognize and respond to an emergency situation.*
    - Pressure change
    - Flow change
    - pH change
    - Chlorine residual
    - Tank evaluation
    - Power failure

111

## Developing/Updating Preparedness Plan

- Communication Chart
  - *Suppliers*
  - *Contractors*
  - *Agencies*
  - *Special Contractor/Equipment list*
  - *City Hall*
  - *Others*
  - *Priority-Service lists*

112

## America's Water Infrastructure Act of 2018 (AWIA)

- Section 2013 of America's Water Infrastructure Act of 2018 (AWIA) requires community water systems that serve more than 3,300 people to complete a risk and resilience assessment and develop an emergency response plan.

113



RATE PLANNING

114

## Developing Water Rates

1. Determine the full cost of doing business by calculating your costs
  - *Fixed, Variable, Debt*

115

Example Annual Costs Worksheet	
Date Worksheet Completed Updated: 6/19/05	
Personnel Costs	\$126,627
Non-Personnel Costs (excluding debt service)	\$84,857
Debt Service	\$25,570
<b>Total Costs</b>	<b>\$235,054</b>

116

## Developing Water Rates

2. Determine Your Current Revenue
  - *Monthly Minimum*
    - How many customers in each class?
  - *Usage Charge*
    - How many gallons do you expect to charge for?
  - *This will be used as a starting point*
  - Fees
  - Other Charges

117

Example Annual Revenue Worksheet	
Date Worksheet Completed Updated: 6/19/05	
<b>Operating Revenue and Interest</b>	
Water Sales	\$221,965
Fees and Service Charges <small>(Include late fee, connection fee, fire fee, system development fee, etc.)</small>	\$9,001
Interest	\$967
Other	\$711
<b>Subtotal Operating Revenue and Interest</b>	<b>\$228,029</b>
<b>Additional Revenue (Subsidies)</b>	
Grants	\$1,829
Transfer Payments	\$9,000
Other	\$432
<b>Subtotal Additional Revenue (Subsidies)</b>	<b>\$8,256</b>
<b>Total Annual Revenue</b>	<b>\$234,280</b>

118

## Developing Water Rates

3. Set Aside Reserves, Asset Repair & Replacement and CIP
  - *Will we have money to handle repairs, replacements and unexpected expenses?*
  - *Smaller, Planned R&R*
  - *Larger, Planned CIP*

119

## Reserve Accounts

- Emergency Operating Reserve
- Debt Service Reserve
- Planned Repair/Replacement Reserve
- Planned Capital Improvement Reserve

120

## Emergency Operating Reserve

- Unexpected expenses
- Amount varies from system to system
- Typically 10-15% of the operating expenses
- Sometimes called the Working Capital Goal

121

## Debt Service Reserve

- Required by Lenders
- Allows systems to continue making debt payments should other funds be unavailable
- 1.20 for SRF, 1.90 for Bonds
- 20% or 1.20 additional revenue than expenses

122

## Planned R&R Reserve

- Planned repair, rehab, or replacement of short-lived assets.

123

Year Ending 31-	Replacement Item Description	Cost per Item in Current Dollars	# Items	Inflation Factor	Future Cost per Item	Yearly Total R & R Cost	Interest Earned (net Paid)	End of Year R & R Account Balance	Minimum Desired End of Year Balance
2014	Repair Elm St. line leaks	\$15,000	1	1.00	\$15,000	\$15,000	\$252	\$4,314	\$5,642
2015				1.04	\$0	\$0	\$237	\$15,913	\$5,868
2016	Rebuild Main St. pumps	\$23,000	1	1.08	\$24,877	\$24,877	\$875	\$3,274	\$6,102
2017				1.12	\$0	\$0	\$180	\$14,816	\$6,348
2018	Replace flow meter	\$2,500	3	1.17	\$2,925	\$8,774	\$815	\$18,219	\$6,600
2019	Repair flow leaks	\$15,000	1	1.22	\$18,250	\$18,250	\$1,002	\$12,333	\$6,864
2020				1.27	\$0	\$0	\$678	\$24,373	\$7,139
2021	Replace drive unit	\$1,500	2	1.32	\$1,974	\$3,948	\$1,341	\$33,128	\$7,424
2022				1.37	\$0	\$0	\$1,822	\$46,312	\$7,721
2023	Replace flow meter	\$2,500	2	1.42	\$3,558	\$7,117	\$2,547	\$53,104	\$8,030
2024	Repair flow leaks	\$15,000	1	1.48	\$22,204	\$22,204	\$2,921	\$45,184	\$8,352
2025				1.54	\$0	\$0	\$2,485	\$59,031	\$8,686
2026				1.60	\$0	\$0	\$3,247	\$73,639	\$9,033
2027				1.67	\$0	\$0	\$4,050	\$89,051	\$9,394
2028	Replace chemical feed system, flow meter, 2 high service pumps	\$42,000	1	1.73	\$72,730	\$72,730	\$4,898	\$32,981	\$9,770
2029	Rebuild clarifier, replace drive unit	\$28,000	1	1.80	\$50,426	\$50,426	\$1,792	(\$4,092)	\$10,161
2030	Repair flow leaks	\$15,000	1	1.87	\$28,095	\$28,095	(\$446)	(\$21,870)	\$10,567
2031				1.95	\$0	\$0	(\$2,078)	(\$12,586)	\$10,990
2032				2.03	\$0	\$0	(\$1,196)	(\$2,420)	\$11,430
2033	Replace flow meter	\$2,500	2	2.11	\$5,267	\$10,534	(\$290)	(\$1,822)	\$11,887

124

## Capital Improvement Reserve

- Dedicated to the payment of LARGE, future capital projects.
- Upgrades or New Construction
- Often only a part of the cost is included
- The other part is financed

125

## Capital Improvement Planning

- Multi-year Plan
- Provides Understanding of:
  - System's Infrastructure
  - Needed long range improvements
  - Cost Estimates
  - Financing Options

126

## Capital Improvements Plan Summary

YEAR	PROJECT	ESTIMATE OF COST	SOURCE OF FUNDING
2016 - 2017	Water Plant Improv.	\$ 800,000	SRF Loan
2017 - 2018	Seal Coat & Overlay	\$ 300,000	G.O. Bond
2018 - 2019	City Pavement Impr.	\$ 1,450,000	G.O. Bond
2019 - 2020	WTP Residuals Impr.	\$ 3,000,000	SRF Loan
2021 - 2022	Main Street Impr.	\$ 3,200,000	USDA Loan

127

## Developing Water Rates

4. Determine Actual Revenue Required from Your Customers

128

Example Short-term Revenue Required from Your Customers Worksheet

Date Worksheet Completed/Updated: 6/29/05	Year: 2006	Year: 2007	Year: 2008	Year: 2009	Year: 2010
Annual Operating Costs:	\$235,054	\$258,555	\$289,250	\$312,000	\$342,850
Annual Reserve Fund Contribution:	\$87,900	\$89,350	\$83,300	\$85,670	\$82,670
Total Annual Cost of Business:	\$322,954	\$347,905	\$367,550	\$397,670	\$425,520
Total Additional Revenue (subsidies):	\$6,256	\$8,100	\$7,900	\$8,000	\$8,600
Total Annual Revenue Needed: (Total Annual Cost of Business - Total Additional Revenue)	\$316,198	\$339,805	\$359,650	\$389,670	\$416,920
Projected Revenue:	\$228,024	\$230,500	\$235,620	\$239,600	\$245,200
Revenue Surplus or Deficit:	(\$88,174)	(\$109,305)	(\$123,830)	(\$150,070)	(\$171,720)
Cumulative Surplus/Deficit:	(\$88,174)	(\$197,479)	(\$321,309)	(\$471,379)	(\$643,099)

129

## Developing Water Rates

5. Design a Rate to Cover Your Costs

130

## Considerations for Choosing a Rate Structure

- Rate Stability – Avoid Rate Shock!
- Rate Predictability
- Number of Customers
- Water Use
- Customer Needs - Affordability
- Customer Classes

131

## Rates Based on Meter Size

- Standard Household Meter (5/8 x 3/4) = 20 gpm
- 3/4 = 30 gpm (1.5 x Standard)
- 1 = 50 gpm (2.5)
- 1 1/2 = 100 gpm (5)
- 2 = 160 gpm (8)
- 3 = 300 gpm (15)

132

## Common Rate Structures

- Flat Rate or Fixed Fee
- Proportional to Use
- Uniform Rate or Single Block Rate
- Decreasing Block Rate
- Increasing Block Rate
- Seasonal Rates
- Surcharges
- Cost to Serve

133

## Including a Usage Allowance

- “Give Away Volume” or “Free Water”
- \$15 Monthly Minimum, 2000 gallons included, \$4/1000 gallons after that
- Systems usually/should build part or all of the cost into their minimum
- Allowance should not exceed average usage

134

## Usage Allowance

- Guarantees Revenue if done properly
- Discourages Conservation
- A Retiree may actually pay a higher minimum
- Could end up favoring higher users

135

## Developing Water Rates

6. Implementing the Rate
  - *Educating the Public*
  - *Building Public Support*
  - *Timing is key*
  - *Rate Letter*
7. Adjust yearly with inflation
8. Minor Review Each Year with Budget
9. Substantial Review every 5 years

136

## Rural Water Products & Services Portfolio

- ServLine
- Smart Websites
- Rural Water Loan Fund
- Healthy Benefits
- IRIS
- Data Breach Insurance
- Fleet Program (Ford & Chrysler)

137