

# Asset Management

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Thank you for joining us this morning. The webinar will start at 9:00. You can use computer audio or phone audio. The phone number is:

United States: 1-646-749-3129

Access Code: 495-167-789

All training materials are available at

[doh.wa.gov/dwsrf](https://doh.wa.gov/dwsrf)



We work with others to protect the health of the people of Washington State by ensuring safe and reliable drinking water.



## **ASSET MANAGEMENT**

Washington State Department of Health  
Office of Drinking Water

# Overview

- Asset management components
- Asset management spreadsheet
- Asset management activities
- This training counts as bonus points on DWSRF application

# Asset Management

- We will be doing a number of examples
- All information is available on the DWSRF webpage [doh.wa.gov/dwsrf](https://doh.wa.gov/dwsrf)
  - AM Webinar 2020 PWB.pdf (presentation)
  - Excel spreadsheets (2 total)
  - Water System A1 asset inventory exercise.pdf
  - Asset Inventory RCAC Instructions.pdf
  - North tank inspection report.pdf



# Asset Management

- DOH Definition

The practice of managing all utility assets to address the total cost of owning, operating, upgrading, and replacing them, while delivering the appropriate level of service.



# Asset Management

- Findings of 2019 American Society of Civil Engineers (ASCE) Washington Infrastructure Report Card for Drinking Water and Wastewater
  - More funding needed
  - Continue to make funds available for improvements/replacements
  - Important to make systems resilient to seismic and extreme weather patterns

# Asset Management

- ASCE report card findings (*continued*)
  - **Asset management vital**
  - Ensure rates provide for full cost of service including operation, maintenance, and capital improvements



# Asset Management

## ● Drinking Water

- Interesting fact

*According to the 2015 Drinking Water Needs Assessment, Washington will need, on average, \$600 million per year for the next 20 years to maintain the infrastructure for public water supplies. Over half of the need is for distribution water line replacement.*

- Existing funds not sufficient to meet these demands
- Need to set rates accordingly



# Asset Management

## ● Drinking Water

- 2018 DWSRF construction loan applicants rates ranged from \$30 to \$100 per month, average of \$49 per connection per month
- 2019 DWSRF construction loan applicants rates ranged from \$26 to \$91 per month, average of \$56 per connection per month



# Asset Management

- Why do asset management?
  - Tool to discuss water system improvements with decision makers
  - Tool to develop adequate rates to operate and maintain water system
  - Prioritization of capital projects
  - Proactive vs. reactive
  - Bonus points on DWSRF application

# Asset Management

- Asset Management Overview
  - List of major assets
  - Age and expected life of assets
  - Condition and criticality of assets
  - Cost of replacing assets
  - **Impact to rates**

# Asset Management

## LIST OF ASSETS

# Asset Management

- List of major assets
  - Well
  - Pump
  - Pipe—size, type, length (estimated)
  - Reservoir
  - Building
  - Treatment



# Asset Management

- Can be as detailed as you make it
  - More sophisticated programs include valves, hydrants
  - Links GIS and work tickets
- Update as needed



# Asset Management

- Buried assets difficult to quantify and assess
- Refer to
  - As-builts
  - Maintenance records
  - Field location of valves and estimate distance
- Start collecting information and update as information is available—asset management is an on-going effort

# Asset Management

- Rural Community Assistance Corporation has Excel spreadsheet to help
- Free and available on DWSRF webpage
- Blank copy available in training material  
Asset Inventory RCAC blank Spreadsheet.xls
- Also have instructions in training material  
Asset Inventory RCAC Instructions.pdf

# Asset Management

- Open RCAC spreadsheet

Asset Inventory RCAC Blank Spreadsheet.xls

- Enable Macros

- Click on "file" and scroll down to "options"
- Click "Trust Center Settings"
- Click "Macro Settings" and click "Enable"
- Then click "OK"

# Asset Management

- Review RCAC spreadsheet



# Asset Management

- Exercise 1—Complete Asset Inventory

- Using RCAC spreadsheet

Asset Inventory RCAC Blank Spreadsheet.xls

- System A1

Water System A1 asset inventory exercise.pdf

# Asset Management

- Exercise 1—Complete Asset Inventory
- System A1 assets
  - Well #1, North Well
  - 4,000 ft 4-inch PVC main
  - Well #1 Pump
  - Reservoir #1, North Tank
- Take 5 minutes to add these assets to spreadsheet

# Asset Management

- Review Exercise 1 Excel Spreadsheet

# Asset Management

## AGE AND ESTIMATED LIFE OF ASSETS

# Asset Management

- Once you have list of assets, next step is
  - Age of assets
  - Estimated life of assets





# Asset Management

- Age of assets
  - Need to know date of installation
  - Estimate as best possible
  - Refer to as-builts, equipment manuals, current and former water system staff

# Asset Management

- Estimated life of assets
  - Can use general guidelines in RCAC spreadsheet
  - Refer to owner's manuals
  - Professional judgement
  - Number of repairs performed on asset—balance cost of continued repairs with replacement

# Asset Management

## Estimated life of assets

Asset Type	Average Effective Life (years)	Asset Type	Average Effective Life (years)
Intake Structures	40	Lab Monitoring Equipment	5–10
Wells/Springs	40	Tools & Shop Equipment	10
Chlorination Equipment	7–10	Office Furniture	10
Small motors	10–15	Computers	5
Storage Tanks	60	Vehicles	10
Pumps	10–15	Civil Structures	75
Pipe	60–90	Electrical Motors (large)	30
Valves	20–30	Electrical panels	20–25
Backflow Devices	15–20	Controls	15–25
Meters	10–15	Building assets	60
Hydrants	30–45		

# Asset Management

- Exercise 2—Install Date and Estimated Life of Assets
- System A1 assets
  - Well #1, North Well, installed 1995
  - 4,000 ft 4-inch PVC main, installed 1975
  - Well #1 Pump, installed 2015
  - Reservoir 1, North Tank, installed 1975

# Asset Management

- Exercise 2—Enter installation date and estimated effective life of each asset
- Take 5 minutes to add information to spreadsheet



# Asset Management

- Review Exercise 2 Excel Spreadsheet

# Asset Management

## CONDITION AND CRITICALITY OF ASSETS

# Asset Management

- Once you have list of assets, installation date, and estimated life, next step is
  - Condition of assets
  - Criticality of assets

# Asset Management

- Condition of assets
  - Easy to do for above-ground assets
  - Buried assets may be challenging
  - Do your best to assess condition of pipe based on maintenance records and operator knowledge



# Asset Management

## ● Condition of assets from RCAC

Condition Rating	Description	Maintenance Level	Condition Multiplier
1	Good/Expected Condition	Normal Preventive Maintenance (PM)	1
2			0.95
3	Minor Defects Only	Normal PM, Minor Contract Maintenance (CM)	0.8
4			0.7
5	Moderate Deterioration	Normal PM, Major CM	0.5
6			0.35
7	Significant Deterioration	Major repair, rehabilitate	0.2
8			0.1
9	Virtually Unserviceable	Rehab unlikely	0.05
10	Unserviceable	Replace	0

# Asset Management

## ● Criticality of assets

- If water system is out of water for extended period of time when asset fails, then it is very critical to maintain operation of the asset
- If water system can continue to operate with conservation measures and operate from storage, asset not as critical but still important to repair/replace in timely manner
- If loss of asset has minimum impact on water system operations, then not critical

# Asset Management

- Criticality of assets—Level of Service
  - Assess customer needs for continued water service and impacts if water service is reduced or lost
  - Hospitals
  - Industrial users
  - Customer with home dialysis

# Asset Management

- Criticality and level of service important to understand to assist with prioritizing projects



# Asset Management

- Criticality of assets from RCAC Spreadsheet
- 1—Loss of asset results in system being out of water.
  - Example: Loss of well for system that has only one well and no other water source.
- 2—Loss of asset impacts water service, but can be resolved in a reasonable amount of time.
  - Example: Loss of well pump in only well, able to replace with local supplier within 24 hours. System can operate from storage during outage.

# Asset Management

- Exercise 3—Condition and Criticality of Assets
- System A1 assets
  - Well #1, North Well, installed 1995, excellent condition
  - 4,000 ft 4-inch PVC main, installed 1975, lots of breaks due to poor installation and construction
  - Well #1 Pump, installed 2015, excellent condition
  - Reservoir 1, North Tank, installed 1975, review inspection report

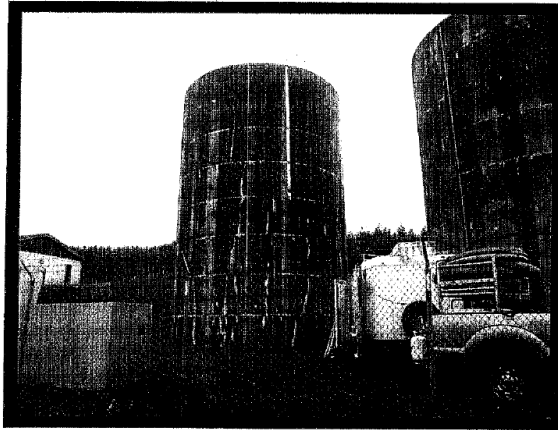
# Asset Management

- Reservoir 1, North Tank Inspection Report  
North tank inspection report.pdf



# Asset Management

## Reservoir Inspection Report



**Reservoir 1** *North Tank*

**Water District**

Report of Findings

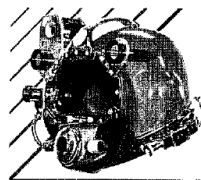
From the

Diving Operations

Conducted on

**November 6, 2015**

By



**LIQUIVISION**  
**TECHNOLOGY**  
**DIVING SERVICES**

# Asset Management Reservoir Inspection Report

## Reservoir 1

### OVERVIEW OF STORAGE TANK INSPECTED:

Customer Name:	Water District	Tank Name:	Reservoir 1
Manager:		Construction:	OG Concrete
Job Number:	WA2044015R1T4	Capacity (gal.):	150,000
Date of Inspection:	November 6, 2015	Diameter or L x W:	25'
Report Writer:	Colton Leatherwood	Height:	40'
Diver:	David Aufai	Floor Square FT:	490.9
Tender:	Alec Althuisius	Date Built:	1975

**N/A** –not applicable **Excellent** (Ex.) –like new condition, no repairs needed. **Good** – Cosmetic only problems, repairs if wanted. **Fair**-Minor problems, repairs needed, not immediate. **Poor** –Major problems, structural or like, immediate repairs needed.

original cost: \$120,000  
est. replacement cost - \$300,000

# Asset Management Reservoir Inspection Report

## Reservoir 1

### RECOMMENDATIONS:

Recommendation	Estimated Time - Hrs.
Repair and/or install fine mesh screens on exterior vents to limit the risk of bugs and other matter from entering the storage tank.	1.0
Install weather stripping on entry hatch to limit the risk of bugs and other matter from entering the storage tank.	1.0
Install new entry hatch lid.	Please contact our sales office for an estimate.
Perform a regular cleaning, inspection and repair cycle every 2-3 years in order to ensure superior water quality and proper maintenance of coating condition and appurtenances is performed.	Please contact our sales office for an estimate.

# Asset Management

- Exercise 3—Condition and Criticality of Assets
- System A1 assets
  - Well #1, North Well, installed 1995, excellent condition
  - 4,000 ft 4-inch PVC main, installed 1975, lots of breaks due to poor installation and construction
  - Well #1 Pump, installed 2015, excellent condition
  - Reservoir 1, North Tank, installed 1975, Some minor concerns with exterior cracking, hatch, vents

# Asset Management

- Exercise 3—Enter condition and criticality for each asset
- Take 5 minutes to add information to spreadsheet



# Asset Management

- Exercise 3—Condition and Criticality of Assets
- System A1 assets
  - Well #1, North Well, installed 1995, excellent condition
  - 4,000 ft 4-inch PVC main, installed 1975, lots of breaks due to poor installation and construction
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  - Reservoir 1, North Tank, installed 1975, Some minor concerns with exterior cracking, hatch, vents

# Asset Management

- Exercise 3—Condition and Criticality of Assets Review

# Asset Management

## ORIGINAL AND REPLACEMENT COSTS

# Asset Management

- Once you have list of assets, installation date, estimated life, condition, and criticality, the next step is
  - Original cost
  - Replacement cost



# Asset Management

- Original cost
  - Obtain from records, local suppliers, consultant, operator
  - Estimate as best possible

# Asset Management

- Replacement cost
  - Obtain from local suppliers, consultant, operator
  - Estimate as best possible
  - Include all costs—design, permitting, equipment purchase, installation
  - Use current value—the spreadsheet adjusts for the future value based on expected life of the asset

# Asset Management

- Exercise 4—Installation and Replacement Costs
- System A1 assets
  - Well #1, North Well: \$50,000 original cost, \$200,000 replacement cost
  - 4,000 ft 4-inch PVC main: \$250,000 original cost, \$1,000,000 replacement cost
  - Well #1 Pump: \$5,000 original cost, \$10,000 replacement cost
  - Reservoir 1, North Tank: \$120,000 original cost, \$300,000 replacement cost
  - Assume inflation rate of 1.5 percent

# Asset Management

- Exercise 4—Enter original cost, replacement cost, and inflation rate
- Take 5 minutes to add information to spreadsheet



# Asset Management

- Exercise 4—Original and replacement costs
- System A1 assets
  - Well #1, North Well: \$50,000 original cost, \$200,000 replacement cost
  - 4,000 ft 4-inch PVC main: \$250,000 original cost, \$1,000,000 replacement cost
  - Well #1 Pump: \$5,000 original cost, \$10,000 replacement cost
  - Reservoir 1, North Tank: \$120,000 original cost, \$300,000 replacement cost
  - Assume inflation rate of 1.5 percent

# Asset Management

- Exercise 4—Original Cost and Replacement Cost

# Asset Management

## IMPACT TO RATES

# Asset Management

- RCAC spreadsheet has a number of cells for financial information and resulting rates
- Open the spreadsheet and we will review the rate information

Asset Inventory Worksheet Ex 5

# Prioritize Projects

- What is your decision making process?
  - Urgency of project—public safety or health issue?
  - Level of service—is infrastructure critical for continued service?
  - Can only afford to do one project at a time
  - Cost of repair vs. replacement
    - Cheaper to repair now, but what is cost of failure?

# Project Funding

- How will you fund the project?
  - Raise rates
  - Seek funding, which will most likely result in a rate increase for loan repayment
  - Remember—Securing funds takes time



# DWSRF Funding Programs

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- Water main replacement loan applications accepted in August
- Consolidation feasibility grant applications accepted in August
- Construction loan applications accepted October and November
- Emergency loans available year-round

# Reminder

- DWSRF bonus points for attending today
- Need asset inventory, age of asset, expected life of asset, replacement cost, and criticality to receive additional bonus points
- Start gathering information for RCAC spreadsheet and update as needed. Don't let lack of information prevent you from starting.
- Potential infrastructure stimulus funding
- COVID 19 resources on Office of Drinking Water webpage



# Upcoming Training Opportunities

- Webinars in July, August, September, and November for all DWSRF funding cycles—check the DWSRF webpage in July for webinar information
- IACC Annual Conference
  - Late October in Wenatchee
  - Learn about funding projects
  - Can also request a tech team

# DWSRF Contact Information

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