

Asset Management

Presenters:

- Luke Dehtiar, P.E. – GR District Supervisor
- Bob Schneider – Revolving Loan Section
- Mark Conradi – Revolving Loan Section
- Dan Lewis, P.E. – Prein & Newhof

Topics Covered Today:

- Asset Management Basics
- Overview of Available Tools
- DEQ Requirements
- Financial Considerations
- Practical Perspectives



Asset Management Basics

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Overview

- What asset management is.
- Why asset management programs are necessary.
- How asset management benefits you.
- How to get started.

Definition of Asset Management

- From the MI SDWA:

"Asset management program" means a program that identifies the desired level of service at the lowest life cycle cost for rehabilitating, repairing, or replacing the assets associated with the waterworks system.

- EPA's "Asset Management 101":

"A process for maintaining a desired level of customer service at the best appropriate cost."

What is an Asset?

- All of the “things” that are needed for the water system to function.
 - Intakes/Wells
 - Treatment equipment
 - Pumps
 - Pipes and appurtenances
 - Tanks
 - Buildings and land
 - Tools
 - People
 - Controls and computer systems

Why Asset Management?

EPA estimates the nationwide need for DW improvements is **\$384.2 Billion**.

On average, the overall condition of assets is not improving. Repair and replacement projects are not keeping up with the rate of degradation.

Asset management guides decisions for where and when to best spend money.

What is Required?

- Requirements are defined in Rule 1606 within the Administrative Rules for Act 399. (1976 PA 399, as Amended)
- Requires Asset Management Programs (AMP) to be completed for all water systems serving more than 1,000 people.
- AMPs must be implemented by January 1, 2018.

Asset Management Benefits

- Prioritizes the best areas to spend money.
- Identifies the funding necessary for a sustainable utility.
- Spreads the decision making responsibility over the entire organization.
- Could improve efficiency of maintenance activities through integrated work order generation.
- Could capture knowledge from current operators that would otherwise be lost when they depart.

Assemble a Team!

- Asset management must include input from all knowledge-keepers and decision-makers.
 - Operators
 - Engineers
 - Officials
 - Treasurer
 - Accountants
 - IT Support
 - Community Members

Asset Management Programs

5 Principles of Asset Management:

- Inventory of assets
- Criticality assessment
- Level of service goals
- Capital improvement plan
- Funding structure and rate methodology

Asset Management Programs

Asset Inventory:

- A list of all of the assets the water system chooses to track.
- The detail of each asset class should be chosen carefully. Rule of thumb: use the detail of a work order.
- Scale:
 - Entire pump station
 - Individual pumping units
 - Motor, case, impeller, VFD...etc separately

Asset Management Programs

Asset Inventory:

- The inventory is the most time consuming part of the process.
- Good task for a summer intern – it provides them with a physical product to show for their work.
- Many options for recordkeeping tools.

Asset Management Programs

Criticality Assessment:

- Based on the combined results of a condition assessment (likelihood of failure) and consequence of failure.
- Uses a numerical scale to judge the most high priority assets.

Asset Management Programs

Criticality Assessment:

- Condition assessment for above ground assets is relatively easy, while buried assets are quite difficult.
- Active condition assessment technologies are available, but can be expensive.
- The “consequence of failure” rating could be an indicator to determine which pipes are more intensively evaluated.

Asset Management Programs

Criticality Assessment:

- Some amount of water main will not be specifically assessed. A method to gauge the condition should still be developed.
 - Age
 - Material
 - History of complaints
 - History of breaks
 - Hydraulic modeling

Asset Management Programs

Criticality Assessment:

- Consequence of failure determination
 - Often difficult to quantify
 - Can use a scale to give guidelines (example)
 - 1 – Little to no impact to customers or environment
 - 2 – Inconvenience to customers
 - 3 – Minor impacts to property or environment
 - 4 – Major property impact and/or limited health risks
 - 5 – Imminent hazard to health and/or environment

Asset Management Programs

Criticality Assessment:

- Develop numerical scale and methodology

Example 1:

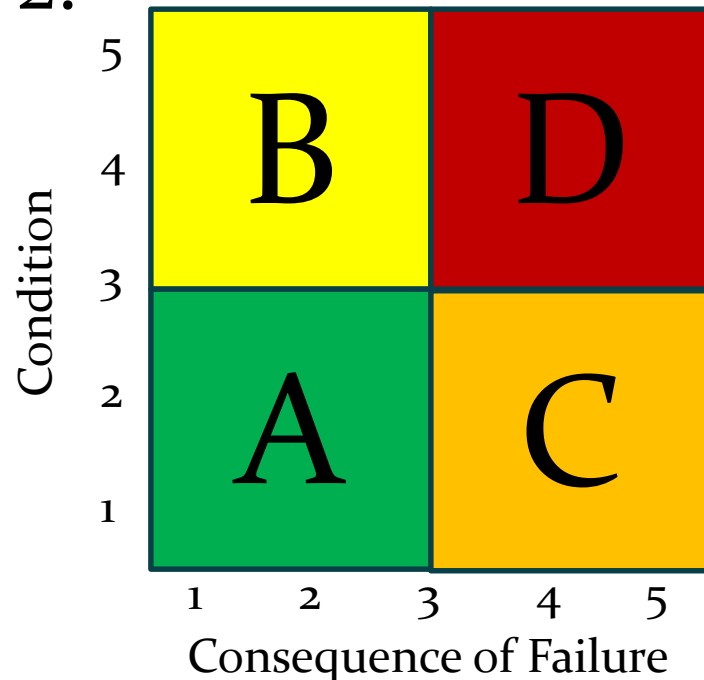
- Likelihood of failure: 1 to 5
- Consequence of failure: 1 to 5
- Criticality = Likelihood x Consequence

Asset Management Programs

Criticality Assessment:

- Develop numerical scale and methodology

Example 2:



Asset Management Programs

Level of Service Goals

- Define the expectations your customers have for your water system.
- Be clear about the level of service you expect to provide.
- Use these goals to provide meaning to the criticality scores.

Asset Management Programs

Level of Service Goals

- Goals should be meaningful and measureable.
- The goals establish clear expectations.
 - Level of treatment provided (aesthetic?)
 - Weigh services versus costs

Asset Management Programs

Level of Service Goals

- Examples:
 - Meet all Federal and State standards
 - Maintain pressures between X psi and Y psi
 - Limit water system disruptions to X hours
 - Limit non-revenue water to less than X%
 - Maintain the average water bill at less than X% of the community's median household income
 - Replace all lead service lines by 20XX
 - Ensure all operators are certified at the X level and receive Y hours of relevant education per year.

Asset Management Programs

Capital Improvement Plan

- The previous 3 exercises have collected all the pieces necessary to assemble the CIP.
- The CIP lists the projects the water system intends to complete, and has budgeted for at a certain time.
- The CIP does **NOT** establish an enforceable schedule for completion.

Asset Management Programs

Capital Improvement Plan

- The CIP must identify the 5 and 20 year needs for the water system.
- The CIP should focus the timing of projects based on the criticality factor, but other factors can alter the order.
- Funding sources should be identified for the projects on the short term plan.

Asset Management Programs

Funding Structure and Rate Methodology

- This last element is the entire reason for the AMP.
- The system must determine if there is enough funding available to maintain the assets to a degree that meets the level of service goals.
- The costs identified in the CIP, plus the rest of the system's operating budget need to be offset with income.

Asset Management Programs

Funding Structure and Rate Methodology

- Once to this point, there is a great opportunity to evaluate whether the current rate structure is appropriate.
- If a funding gap is present, there are 2 possible resolutions:
 - Restructure/raise rates (can be stepped over time)
 - Lower level of service goals

Recordkeeping Tools

Asset management workbook

- DWRF Forms and Guidance
 - [Asset Management Guidance for Water Systems](#) (pdf) - revised 7/2013
 - [Asset Management Plan Workbook for Water Utilities](#) (Excel) - revised 10/2013

Asset Inventory Table 1

Directions

- A. List assets
- B. Enter asset information
- C. To add more assets use insert function and add rows then copy first asset row to new rows to transfer formulas

D. Enter information in highlighted cells

E. Remaining cells will calculate automatically.

A	B	C	D	E	F	G	H	I	J	K	L
Source Assets	Material	Location	Manufacturer	Original Cost	Replacement Cost	Remaining Useful Life in Years	Condition	Redundancy	Likelihood of Failure	Consequence of Failure	Criticality Factor
well #1 pump						0	0		5	5	25
Enter asset						0					0
Enter asset						0					0
Enter asset						0					0
Enter asset						0					0
Enter asset						0					0
Enter asset						0					0
Enter asset						0					0

If Criticality Factor is greater than 16 cell will turn RED

If Criticality Factor is greater than 16 [add to CIP table](#)

A	B	C	D	E	F	G	H	I	J	K	L
Treatment Assets	Material	Location	Manufacturer	Original Cost	Replacement Cost	Remaining Useful Life in Years	Condition	Redundancy	Likelihood of Failure	Consequence of Failure	Criticality Factor
chlorinator						0			4	5	20
Enter asset						0					0
Enter asset						0					0
Enter asset						0			2	3	6
Enter asset						0			4	4	16
Enter asset						0			5	5	25
Enter asset						0					0

If Criticality Factor is greater than 16 cell will turn RED

If Criticality Factor is greater than 16 [add to CIP table](#)

Rate Methodology Table 3

Directions

A. To add more line item expenses use insert function and add rows then copy first line item row to new rows to transfer formulas

B. Enter information in highlighted cells

C. Remaining cells will calculate automatically.

(select one)	<<< Click at left and select flow units (million cubic feet or millions of gallons)
0.00	<<< Enter annual billable flow in units selected above
0	<<< Enter typical quarterly flow of single-family home in units selected above
(select one)	<<< Click at left and select the type of fixed units
0	<<< Enter number of fixed units

Calculate Operating Reserve (optional if creating budget for only OM&R)	
\$	6 Total OM&R from Expenditures in table below
\$	3 Targeted Operating Reserve Amount (this is 50% of OM&R)
	<<< Enter amount of cash or equivalents
\$	3 Additional Operating Reserves Needed (If negative number, stop here)
	<<< Enter # of years to accumulate reserves (rule of thumb is 5 years)
\$	- Annual Contribution To Achieve Targeted Operating Reserve Amount

1. Edit budget items below, if needed

2. Enter budget amount for each item in highlighted cells

3. Under Options 3 and 4, enter percent of entire budget allocated to billable flow (Variable). The remainder is allocated to Fixed.

4. Under Option 5, enter percent of each budget item allocated to billable flow. The remainder is allocated to Fixed.

5. Click on Capital Improvements tab and Replacement tab to complete those worksheets

Expenditures	Budget	Option 1		Option 2		Option 3		Option 4		Option 5		
		Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	%	Variable	Fixed
		100%	100%	80%	20%	20%	80%				0%	0%
Operation, Maintenance and Repair (OM&R)												
Salaries	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
* Insurance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
* Dental	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
* MERS	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
* Medicare	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
* FICA	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
* Disability	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Unemployment Insurance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Postage	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Bank Charges	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Operating Supplies	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Contract Services	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Telephone	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Dues	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Printing	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Insurance & Bonds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Utilities	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Repairs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Maintenance	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 0	\$ 0	\$ 2	0%	\$ -	\$ -
Rentals	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 0	\$ 0	\$ 2	0%	\$ -	\$ -
GIS software	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 0	\$ 0	\$ 2	0%	\$ -	\$ -
Replacement (See Table 4)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Total OM&R	\$ 6	\$ 6	\$ 6	\$ 5	\$ 1	\$ 1	\$ 5				\$ -	\$ -
Capital Improvement (See Table 6)	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 0	\$ 0	\$ 2	\$ 2	0%	\$ -	\$ 2
Operating Reserves	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 0	\$ 0	\$ 2	\$ 2	0%	\$ -	\$ 2
Debt Expenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Miscellaneous	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	\$ -	\$ -
Total Water System Expenses	\$ 10	\$ 10	\$ 10	\$ 8	\$ 2	\$ 2	\$ 8				\$ -	\$ 4

Calculate Rate	Option 1	Option 2	Option 3	Option 4	Option 5
Select flow unit in cell A4	\$ -	\$ -	\$ -	\$ -	\$ -
Enter type of fixed units into cell A7	\$ -	\$ -	\$ -	\$ -	\$ -
Quarterly Bill for single-family home	\$ -	\$ -	\$ -	\$ -	\$ -

Replacement Expenses

Table 4

Directions

- A. List assets to be replaced or rehabilitated
- B. Determine how long before action must take place
- C. Enter cost to replace or rehabilitate
- D. To add more replacement items use insert function and add rows then copy first line item row to new rows to transfer formulas
- E. Enter information in highlighted cells
- F. Remaining cells will calculate automatically.

A	B	C	
Projects	Remaining Useful Life in Years	Replacement Cost	Reserve Required Each Year
Replace valves (45 valves at \$500 each)	0	\$ -	\$ -
Replace well #1 pump	0	\$ -	\$ -
Paint elevated storage tank	0	\$ -	\$ -
Rehabilitate ground storage tank	0	\$ -	\$ -
Replace hydrants (30 at \$2,000 each)	0	\$ -	\$ -
Replace chlorinator	0	\$ -	\$ -
Enter asset to be replaced or rehabilitated	0	\$ -	\$ -
Enter asset to be replaced or rehabilitated	0	\$ -	\$ -
Enter asset to be replaced or rehabilitated	0	\$ -	\$ -
Enter asset to be replaced or rehabilitated	0	\$ -	\$ -
Enter asset to be replaced or rehabilitated	0	\$ -	\$ -
Enter asset to be replaced or rehabilitated	0	\$ -	\$ -
Total Replacement reserves required in the current year			\$ -

Click Total to add to Budget

Capital Improvement Project Plan

Directions

- A. List projects to be completed
- B. Determine how long before the project must begin
- C. Enter the total projected cost of the project
- D. To add more CIP's use insert function and add rows then copy first CIP row to new rows to transfer formulas
- E. Enter information in highlighted cells
- F. Remaining cells will calculate automatically.

5 year CIP

A	B	C	
Projects	Years Until Project Must Begin	Cost	Reserve Required Each Year
well #1	3	\$ 23,000	\$ 7,667
well #2	8	\$ 23,000	\$ 2,875
Build elevated storage tank	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Total Capital Improvement reserve required in the current year			\$ 10,542
			Click Total to add to Budget

20 year CIP

A	B	C	
Projects	Years Until Project Must Begin	Cost	Reserve Required Each Year
Install arsenic treatment on well #1	0	\$ -	\$ -
Expand transmission main	10	\$ 100,000	Bond
Build elevated storage tank	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Enter project	0	\$ -	\$ -
Total Capital Improvement reserve required in the current year			\$ -
			Click Total to add to Budget

Ten Year Budget*

Table 7

Directions

- List current year budget expenses
- Determine inflation factor
- To add more line item expenses use insert function and add rows then copy first line item row to new rows to transfer formulas
- Enter information in highlighted cells
- Remaining cells will calculate automatically.

INFLATION FACTOR (%) - 1.0 **

	EXPENSES	Current Year	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	OPERATIONS & MAINTENANCE										
	Wages & Taxes	\$ 11,159	\$11,271	\$11,383	\$11,497	\$11,612	\$11,728	\$11,846	\$11,846	\$11,846	\$11,846
	BASA Contract Costs	\$ 42,828	\$43,256	\$43,689	\$44,126	\$44,567	\$45,013	\$45,463	\$45,917	\$46,377	\$46,840
	Insurance	\$ 4,016	\$4,056	\$4,097	\$4,138	\$4,179	\$4,221	\$4,263	\$4,306	\$4,349	\$4,392
	Utilities	\$ 9,557	\$9,653	\$9,749	\$9,847	\$9,945	\$10,045	\$10,145	\$10,246	\$10,349	\$10,452
	Suplies & Maintenace	\$ 10,413	\$10,517	\$10,622	\$10,729	\$10,836	\$10,944	\$11,054	\$11,164	\$11,276	\$11,389
	Comm, Pub, Training	\$ 544	\$549	\$555	\$560	\$566	\$572	\$577	\$583	\$589	\$595
	Prof Services	\$ 1,500	\$1,515	\$1,530	\$1,545	\$1,561	\$1,577	\$1,592	\$1,608	\$1,624	\$1,641
	Depreciation	\$ -	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$ -	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$ -	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$ -	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$ -	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$ -	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$ -	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$ -	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$ -	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$ -	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$ -	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	GIS Software	\$ 2,500	\$2,525	\$2,550	\$2,576	\$2,602	\$2,628	\$2,654	\$2,680	\$2,707	\$2,734
	Replacement (See Replacement sheet)	\$ 4,760	\$4,760	\$4,760	\$4,760	\$4,760	\$4,760	\$4,760	\$4,760	\$4,760	\$4,760
	TOTAL OM&R EXPENSES	\$87,277	\$88,102	\$88,936	\$89,777	\$90,628	\$91,486	\$92,353	\$93,111	\$93,876	\$94,649
	Capital Improvement (See CIP sheet)	\$ 6,500	\$6,500	\$6,500	\$6,500	\$6,500	\$6,500	\$6,500	\$6,500	\$6,500	\$6,500
	Reserves Cap Impr. Savings	\$ 6,000	\$6,060	\$6,121	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562
	USDA Loan Principal	\$ 26,500	\$26,790	\$27,080	\$27,370	\$27,660	\$27,950	\$28,240	\$28,530	\$28,820	\$29,110
	USDA Loan Interest	\$ 40,828	\$40,993	\$41,157	\$41,322	\$41,486	\$41,651	\$41,815	\$41,980	\$42,144	\$42,309
	Bond Reserve*	\$ 4,800	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800
	RRI Savings*	\$ 5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
	Miscellaneous	\$ -									
	TOTAL EXPENSES	\$176,905	\$178,245	\$179,593	\$180,951	\$182,317	\$183,693	\$185,078	\$186,353	\$187,637	\$188,929
	REVENUES										
	User charge Revenue	\$127,885	\$127,885	\$127,885	\$127,885	\$127,885	\$127,885	\$127,885	\$127,885	\$127,885	\$127,885
	Rental Revenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Miscellaneous Revenue	\$52,020	\$52,020	\$52,020	\$52,020	\$52,020	\$52,020	\$52,020	\$52,020	\$52,020	\$52,020
	Interest Income	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	TOTAL REVENUES	\$179,905	\$179,905	\$179,905	\$179,905	\$179,905	\$179,905	\$179,905	\$179,905	\$179,905	\$179,905
	BUDGET SURPLUS/DEFICIT	\$3,000	\$1,660	\$312	-\$1,046	-\$2,412	-\$3,788	-\$5,173	-\$6,448	-\$7,732	-\$9,024

CUPSS system

- Free, easy-to-use software
- Asset Management 101 for water/wastewater systems
- Prepare an asset management plan in 7 steps



CUPSS Resources

How to get CUPSS Resources:

- Electronic Versions:
CUPSS Website
(www.epa.gov/cupss)
- Print Versions:
User's and Trainer's Kits

CUPSS Homepage



Check Up Program for Small Systems

Set-up | Switch Utility | Create User | Help | Training | Exit

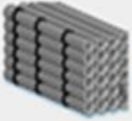
[My Home](#)[My Inventory](#)[My O & M](#)[My Finances](#)[My Check up](#)[My CUPSS Plan](#)

Welcome Back Helen, Beauty View Acres Subdivision - DW

What would you like to do today?

[Do Some Training](#)

[Create or Update My Schematic](#)

[Create or Update My Inventory](#)

[Print My Check Up Reports](#)

[Enter a New Task or Work Order](#)

[Search Asset and Maintenance](#)

[Enter My Finances](#)

[Work on My CUPSS Plan](#)

My Calendar

April 2008

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3
4	5	6	7	8	9	10

My Messages and Alerts

Popup Messages Are Off. Click To Turn On.

Reminder - Today's Tasks	8
Tasks Currently Past Due	160
Assets Needing Update	0
Number of High Risk Assets	2

Beauty View Acres Subdivision - DW Asset Inventory

The My Inventory section allows you to create/edit a schematic, create/edit an asset inventory list, view asset information and search your data.

[Create or Edit My Schematic](#)

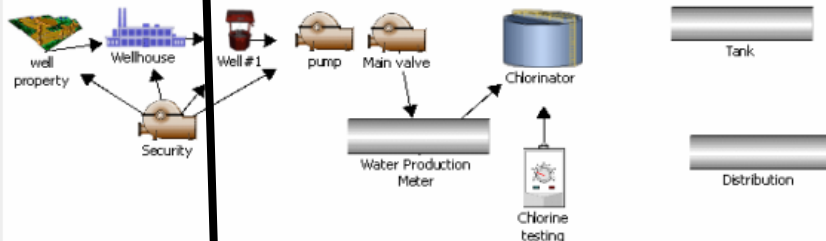
[View My Inventory List](#)

[Search](#)

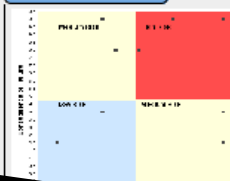
[Create or Edit My Inventory List](#)

[View My Capital Improvement Projects](#)

Beauty View Acres Subdivision - DW Schematic



Asset Risk Matrix



Beauty View Acres Subdivision - DW

[Print Blank Worksheet](#)

The asset inventory form allows you to enter information about your assets. This information will then be used in several of the CUPSS reports and to generate your prioritized asset list.

(*) Indicates required fields

Inventoried Assets

Source

Well #1

pump

Wellhouse

well property

Pumping Facility

Main valve

Security

Treatment

Chlorinator

Distribution

Water Production Meter

Tank

Distribution

Basic Information

* Asset Name Select Associated Asset

* Location Select Associated Location [Add](#)

* Asset Category * Asset Type

Notes

Status and Condition - Required to Calculate Priority

* Condition Select Condition Rating * CoF Select CoF Rating

* Redundancy Select Redundancy Can this asset be repaired? ☐ Yes ☐ No

* Asset Status Select Status Can this asset be rehabilitated? ☐ Yes ☐ No

Select Asset Replaced Select Asset Being Replaced Show asset in the schematic? ☐ Yes ☐ No

Cost and Maintenance

* Installation Date Original Cost

* Expected Useful Life * Replacement Cost

Routine Maintenance Cost Select Frequency

☐ Maintained According to Factory Recommendation [Create a task](#)

Manufacturer and Supplier - Optional

Model Number

Supplier Select Existing Supplier Manufacturer Select Existing Manufacturer

Address

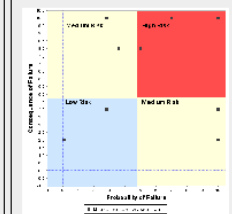
City, State, Zip

Phone, Fax

[Save and Add Another Asset](#)

[Save](#)

Asset Risk Matrix

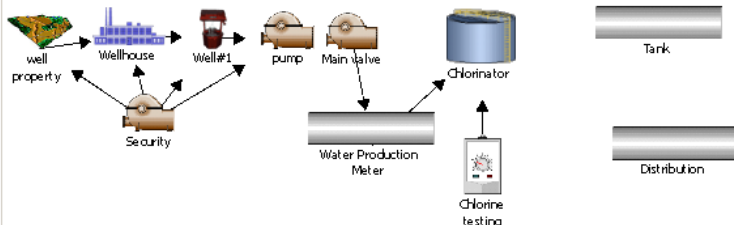
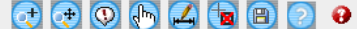


Inventoried Asset List

- Source
 - Well #1
 - pump
 - Wellhouse
 - well property
- Pumping Facility
 - Main valve
 - Security
 - Chlorinator
- Treatment
 - Chlorine testing
- Distribution
 - Water Production Meter
 - Tank
 - Distribution

Beauty View Acres Subdivision - DW

[Print Schematic](#)



Source

Wells and Springs

Intake Structures

Pumping Facility

Treatment

Storage

Distribution

Other

Beauty View Acres Subdivision - DW Operation and Maintenance

[Add A Task](#) | [Print Blank Worksheet](#) | [Search/Print](#)

The O&M section allows you to filter tasks by a utility. ?

Filter Utility Beauty View Acres Subdivision - DW Month April Year 2008 ☐ Show Completed Tasks

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	
		Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Co...	Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Co...	Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Co...	Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Co...	Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Co...
6	7	8	9	10	11	
Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Co...	Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Cle...	Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Co...	Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Co...	Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Co...	Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Co...	Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Co...
13	14	15	16	17	18	
Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Co...	Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Ch... Past Due: Cle...	Check and re... Check and re... Check instru... Check water ... Complete a d...	Check and re... Check and re... Check instru... Check water ... Complete a d...	Check and re... Check and re... Check instru... Check water ... Complete a d...	Check and re... Check and re... Check instru... Check water ... Complete a d...	Check and re... Check and re... Check instru... Check water ... Complete a d...

20	21	22	23	24	25	
Check and re... Check and re... Check instru... Check water ... Complete a d...	Check and re... Check and re... Check instru... Check water ... Clean pump h...	Check and re... Check and re... Check instru... Check water ... Complete a d...	Check and re... Check and re... Check instru... Check water ... Complete a d...	Check and re... Check and re... Check instru... Check water ... Complete a d...	Check and re... Check and re... Check instru... Check water ... Complete a d...	Check and re... Check and re... Check instru... Check water ... Complete a d...
27	28	29	30			
Check and re... Check and re... Check instru... Check water ... Complete a d...	Check and re... Check and re... Check instru... Check water ... Clean pump h...	Check and re... Check and re... Check instru... Check water ... Complete a d...	Check and re... Check and re... Check instru... Check water ... Complete a d...			

April 2008

This screen allows you to schedule one-time and recurring tasks within the O&M section. ?

(*) Required Fields (*) Required If Recurrence Exists

Task

* Task Name

* Task Type Select Type

[Enter Other](#)

Task Details/Notes

Cost of the Task 0.00

* Staff Name Select Staff

Asset Information - Asset Associated Tasks Only

Select Existing Asset Select Existing Asset

OR Enter New Asset

Asset Category Select Asset Category

Asset Type Select Asset Type

[Enter Asset Details](#)

Optional Parts Information

Manufacturer/Supplier Select Manufacturer - Supplier

OR [Add New Manufacturer / Supplier](#)

Parts Name

Parts Number

Parts Cost 0.00

Labor Maint Cost 0.00 [Add](#)

Man/Sup	Name	Number	Cost	Labor

[Save and Close](#) | [Cancel](#) | [Print Work Order](#)

Generate My Financial Check Up Report

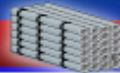


Check Up Program for Small Systems

Set-up | Switch Utility | Create User | Help | Training |



My Home



My Inventory



My O & M



My Finances



My Check Up



My CUPSS

Beauty View Acres Subdivision - DW, Financial Check Up Report

This screen allows you to fine-tune your budget projections. ?

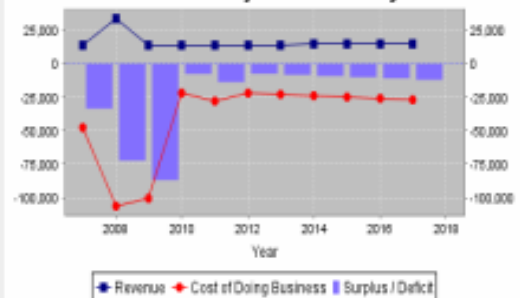
	2007	2008	2009	2010	2011	2012
Inflation ?	0.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Growth ?	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Cash on Hand & Reserve Fund ?	12707.26	53195.44	149350.13	163344.21	177514.22	19186
Annual Operating Expenses ?	5823.79	7369.69	7959.27	8596.01	9283.69	10026
Capital Improvements ?	0.00	2950.00	80000.00	0.00	5500.00	0.00
Annual Debt Payment ?	0.00	0.00	0.00	0.00	0.00	0.00
Capital Reserve ?	38686.93	94049.77	11099.77	11099.77	11099.77	9724.
CUPPS Recommends	38686.93	38686.93	37211.93	10545.26	10545.26	9445.
Emergency Reserve ?	1705.95	1705.95	1774.19	1845.15	1918.96	1995.
Total Annual Cost of Doing Business ?	47216.67	106075.41	100833.23	21540.93	27802.42	21746
Revenue from Fees ?	13860.00	13860.00	13998.60	14138.59	14279.97	14422
Revenue from Grants ?	0.00	0.00	0.00	0.00	0.00	0.00
Revenue from Loans ?	0.00	Amount	Amount	Amount	Amount	Amount
		0.00	0.00	0.00	0.00	0.00
		Term/Rate	Term/Rate	Term/Rate	Term/Rate	Term/
		0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00
Savings Withdrawal ?	0.00	0.00	0.00	0.00	0.00	0.00
Other Revenues ?	0.00	20000.00	0.00	0.00	0.00	0.00
Revenue Surplus/Deficit ?	-33356.67	-72215.41	-86834.63	-7402.34	-13522.45	-7324

Ratios ?

Year	Operate	Debt	Sales	Expense
2007	2.03	0.00	1.00	0.14
2008	4.59	0.00	1.00	0.07
2009	1.76	0.00	1.00	0.08
2010	1.64	0.00	1.00	0.40
2011	1.54	0.00	1.00	0.33
2012	1.44	0.00	1.00	0.46
2013	1.35	0.00	1.00	0.48
2014				

Click to Expand (Save to Update) ?

Financial Projection Summary



<<Previous

Save Report

Generate Report

Support For Users

CUPSS

Supporting Materials

- CUPSS User's Guide
- CUPSS Workbook
- Tutorials/training
- User E-mail List
- CUPSS Web site
(www.epa.gov/cupss)

Asset Management Supporting Materials

- STEP Guides
- Best Practices Guides
- Web cast training
- AM Web site

**Trainer
Network**

Asset Management Requirements

Luke Dehtiar, P.E.

Michigan Department of Environmental Quality

616-307-0322 / dehtiarl@michigan.gov



Drinking Water

Asset Management Programs

- Requirements are defined in Rule 1606 within the Administrative Rules for Act 399. (1976 PA 399, as Amended)
- Requires Asset Management Programs (AMP) to be completed for all water systems serving more than 1,000 people.
- AMPs must be implemented by January 1, 2018.

Rule Requirements

Rule 1606 lays out 5 specific requirements:

- Inventory of assets
- Criticality assessment
- Level of service goals
- Capital improvement plan
- Funding structure and rate methodology

DEQ Philosophy

- The AMP should be a useful tool for the water system to assure sustainability.
- In order to be most useful to all water systems, the structure of the AMPs must be flexible.
 - No templates or forms
 - Latitude for water systems to tailor the programs to fit their situation

DEQ Guidance Materials

- AM Guidance for Submission to the DEQ
- Common Q&A Regarding Asset Mgmt

Available on the DEQ's website

- Community Water Supply homepage
- Under “Programs and Activities”
- “Asset Management” Link

DEQ Submittal Requirements

Asset inventory

- “A summary detailing the system used to maintain an inventory of assets.”
- Which assets are included?
 - “Priority shall be given to an inventory of source, treatment, pumping, and distribution system assets.”
 - Wells, chemical eqpt, pumps, pipes, tanks
 - ...controls, structures, tools?

DEQ Submittal Requirements

Asset inventory

- Which parameters are tracked?
- Entire dataset is not necessary.
- The submittal should describe the data completeness and integrity.
 - Are there gaps in entries?
 - Are there data that you aren't confident about?
 - How and when will the dataset be complete?

DEQ Submittal Requirements

Criticality Assessment

- “A summary describing the method used to assess the criticality of assets considering the likelihood and consequence of failure”.
- If numerical rankings are used, a description of the scales and relevant calculations should be included.

DEQ Submittal Requirements

Criticality Assessment

- The methodology used to assess each asset should be described.
 - Condition assessment and likelihood of failure
 - Consequences of failure
 - Public health
 - Financial
 - Convenience (Traffic, displaced homes, boils)
 - Consumer confidence
 - Environmental

DEQ Submittal Requirements

Level of Service Goals

- Simply a statement of the goals adopted by the water system is all that is required.
- The purpose is so that all parties (public, manager/council, operators) are working towards the same objectives.
- Ensures shared responsibility among the parties.

DEQ Submittal Requirements

Capital Improvements Plan (CIP)

- The CIP must identify 5 and 20 year needs.
- All water systems will be required to have a CIP complete by Jan 2018. (all public by Jan 2016)
- Assets should be prioritized and assembled into the CIP.
 - The schedule does not have to exactly align with the criticality score
 - Other factors could adjust the priority ranking

DEQ Submittal Requirements

Capital Improvements Plan (CIP)

- Project info should include:
 - Projected cost
 - Anticipated completion date
 - Proposed funding source
- The CIP should be approved by the water supply's leadership to ensure all are in support.
- The CIP does **NOT** establish an enforceable schedule for completion of the projects.

DEQ Submittal Requirements

Funding Structure and Rate Methodology

- A summary of the funding structure and rate methodology must be included.
- Do the current rates support the water supply's needs?
- A budget should be included, showing all of the water system's costs compared with the anticipated revenue.

DEQ Submittal Requirements

Funding Structure and Rate Methodology

- The rate structure should be included, as the DEQ's review may reveal possible improvements to the rate setting and billing processes.
- If a funding gap is identified, a proposed course of action to close the gap should be included as well.

Update Frequency

- The AMP should be considered a “living document” and should receive continuous updates.
- The submission to the DEQ does NOT need to be updated on the same timeframe.
- The asset management program is considered part of the system’s general plan.

Update Frequency

- General plans are required to be updated within 6 months of a request from the DEQ.
- The general plan is often updated with the reliability study (5 yr), as each provides information necessary to complete the other.
- Consider a practical minimum frequency to be 5 years, but the DEQ can request an update at any time.

Financial Considerations

Rates and Charges

- Sufficient – Are the rates sufficient to run the system?
- Equitable – Are the rates proportionate to the services received by the customer?
- Defensible – Is there a method to how the rates are calculated?
- Understandable – Can the rates be explained in terms so that the public understands where their money is going?
- Trust – Can the numbers be trusted?

Rate Methodologies

- Flat fee
- Meter equivalent unit
- Residential equivalent unit
- Billable flow
- Fixed/Variable

Fixed Expenses

Expenses that occur regardless of the amount of water that is produced or the number of customers on the system

- Debt
- Insurance
- Some salaries
- Some Operating Expenses

Variable Expenses

Vary depending on the amount of water produced or treated

- Electricity / Utilities
- Some Labor – Such as Meter Readers
- Chemicals
- Maintenance supplies

Rate Methodology

Table 4

Directions

A. To add more line item expenses use insert function and add rows then copy first line item row to new rows to transfer formulas

B. Enter information in highlighted cells

C. Remaining cells will calculate automatically.

Gallons (mil)	<<< Click at left and select flow units (million cubic feet or millions of gallons)	Calculate Operat
30,000.00	<<< Enter annual billable flow in units selected above	\$ 99,850
0	<<< Enter typical quarterly flow of single-family home in units selected above	\$ 49,925
REU	<<< Click at left and select the type of fixed units	
300	<<< Enter number of fixed units	\$ 49,925
\$		
		\$ -

1. Edit budget items below, if needed

2. Enter budget amount for each item in highlighted cells

3. Under Options 3 and 4, enter percent of entire budget allocated to billable flow (Variable). The remainder is allocated to Fixed.

4. Under Option 5, enter percent of each budget item allocated to billable flow. The remainder is allocated to Fixed.

5. Click on Capital Improvements tab and Replacement tab to complete those worksheets

Expenditures	Budget	Option 1	Option 2	Option 3	
		Variable	Variable	Variable	Fixed
		100%	100%	100%	0%
Operation, Maintenance and Repair (OM&R)					
Salaries	\$ 45,000	\$ 45,000	\$ 45,000	\$ 45,000	
* Insurance	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ -
* Dental	\$ 500	\$ 500	\$ 500	\$ 500	\$ -
* MERS	\$ 500	\$ 500	\$ 500	\$ 500	\$ -
* Medicare	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ -
* FICA	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ -
* Disability	\$ 500	\$ 500	\$ 500	\$ 500	\$ -
Unemployment Insurance	\$ 200	\$ 200	\$ 200	\$ 200	\$ -
Postage	\$ 50	\$ 50	\$ 50	\$ 50	\$ -
Bank Charges	\$ -	\$ -	\$ -	\$ -	\$ -
Operating Supplies	\$ 3,500	\$ 3,500	\$ 3,500	\$ 3,500	\$ -
Contract Services	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ -
Telephone	\$ 1,200	\$ 1,200	\$ 1,200	\$ 1,200	\$ -
Dues	\$ 200	\$ 200	\$ 200	\$ 200	\$ -
Printing	\$ 200	\$ 200	\$ 200	\$ 200	\$ -
Insurance & Bonds	\$ 3,500	\$ 3,500	\$ 3,500	\$ 3,500	\$ -
Utilities	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ -
Repairs	\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000	\$ -
Maintenance	\$ 12,000	\$ 12,000	\$ 12,000	\$ 15,000	\$ -
Rentals	\$ 500	\$ 500	\$ 500	\$ 500	\$ -
GIS software	\$ -	\$ -	\$ -	\$ -	\$ -
Replacement (See Table 4)	\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000	\$ -
Total OM&R	\$ 99,850	\$ 99,850	\$ 99,850	\$ 102,850	
Capital Improvement (See Table 5)	\$ 10,500	\$ -	\$ 10,500	\$ 3,000	\$ -
Operating Reserves	\$ 3	\$ 3	\$ 3	\$ 3	\$ -
Debt Expenses	\$ -	\$ -	\$ -	\$ -	\$ -
Miscellaneous	\$ -	\$ -	\$ -	\$ -	\$ -
Total Water System Expenses	\$ 110,353	\$ 99,853	\$ 110,353	\$ 105,853	\$ -

Calculate Rate	Option 1	Option 2	Option 3
Rate per 1000 Gallons	\$ 3.33	\$ 3.68	\$ 3.53
Readiness to serve charge/REU	\$ -		\$ -
Quarterly Bill for single-family home	\$ -		\$ -

- **Operating Expenses**
- 590-000-702.000 Salaries \$32,000
- 590-000-710.000 Pension \$ 4,300
- 590-000-715.000 Social Security Expense \$2,900
- 590-000-727.000 Office Supplies -
- 590-000-740.000 Operating Supplies \$17,500
- 590-000-775.000 Repair & Maintenance \$22,500
- 590-000-801.000 Professional \$3,300
- 590-000-910.000 Insurance \$30,000
- 590-000-920.000 Public Utilities \$7,000
- 590-000-940.000 Equipment Rental \$10,000
- 590-000-968.000 Depreciation - \$0
- 590-000-996.000 Interest Expense - \$0
- 590-000-999.100 Depreciation Trans To Cont - \$0
- 590-470-877.000 SAW Grant - \$0
- **Net Expenses Supported by Rates \$129,500**

- **Rate Revenue**
- Village REU's billed 580
- Village REU charge - Month \$16.00
- Village REU Revenue - Month \$9,280
- Times: 12 Months 12
- **Village REU Revenue \$111,360**
- Township REU's billed 132
- Township REU charge - Month \$23.00
- Township REU Revenue - Month 3,036
- Times: 12 Months 12
- **Township REU Revenue \$36,432**
- **Total Rate Revenue \$147,792**

- GAP \$0

COUNTY OF MUSKEGON, MICHIGAN

RESOLUTION NO. 15-06-10

RESOLUTION TO SET SEWER RATES AND CHARGES

Minutes of a special meeting of the Village Council of the Village of Ravenna, Muskegon County, Michigan, held in the Village Hall on the 19th day of October, 2015, at 7:00 p.m., Local Time.

PRESENT: Members: D. Wildfong, H. Drake, K. Bensinger, B. Leszinske and S. Dohm

ABSENT: Members: None

The following preamble and resolution were offered by Member Dohm and supported by Member Leszinske:

WHEREAS, Part 121 of the Ravenna Village Code, known as the Sewer Rate Ordinance (the "Sewer Rate Ordinance"), provides in Section 121.001 that the Village Council shall establish from time to time by resolution various rates and charges for use of the Village sewer system.

NOW, THEREFORE, BE IT HEREBY RESOLVED AS FOLLOWS:

1. Effective for sewer service commencing January 1, 2016, the Service Charge shall be as follows:

Sewer customers located inside the Village limits	\$16.00 per month per Unit
Sewer customers located outside the Village limits	\$23.00 per month per Unit

2. Effective for sewer service commencing January 1, 2017, the Service Charge shall be as follows:

Sewer customers located inside the Village limits	\$17.00 per month per Unit
Sewer customers located outside the Village limits	\$24.00 per month per Unit

Financial Assessments (FA)

- For water systems (wastewater)
- Populations of less than 10,000
- Any recommendations are voluntary
- No charge for assessment
- Asset Management overview



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