



Good Asset Management Can Enhance Water Quality

Pennsylvania AWWA
March 15, 2018



Presentation Outline



- Components of a good asset management program
- Enhanced distribution maintenance programs
- Capturing and leveraging data

Intended Value



- Illustrate how water quality can be affected by aging infrastructure
- How asset management principles can improve status quo

Asset Management



GIS

Buzz word

Managing Assets

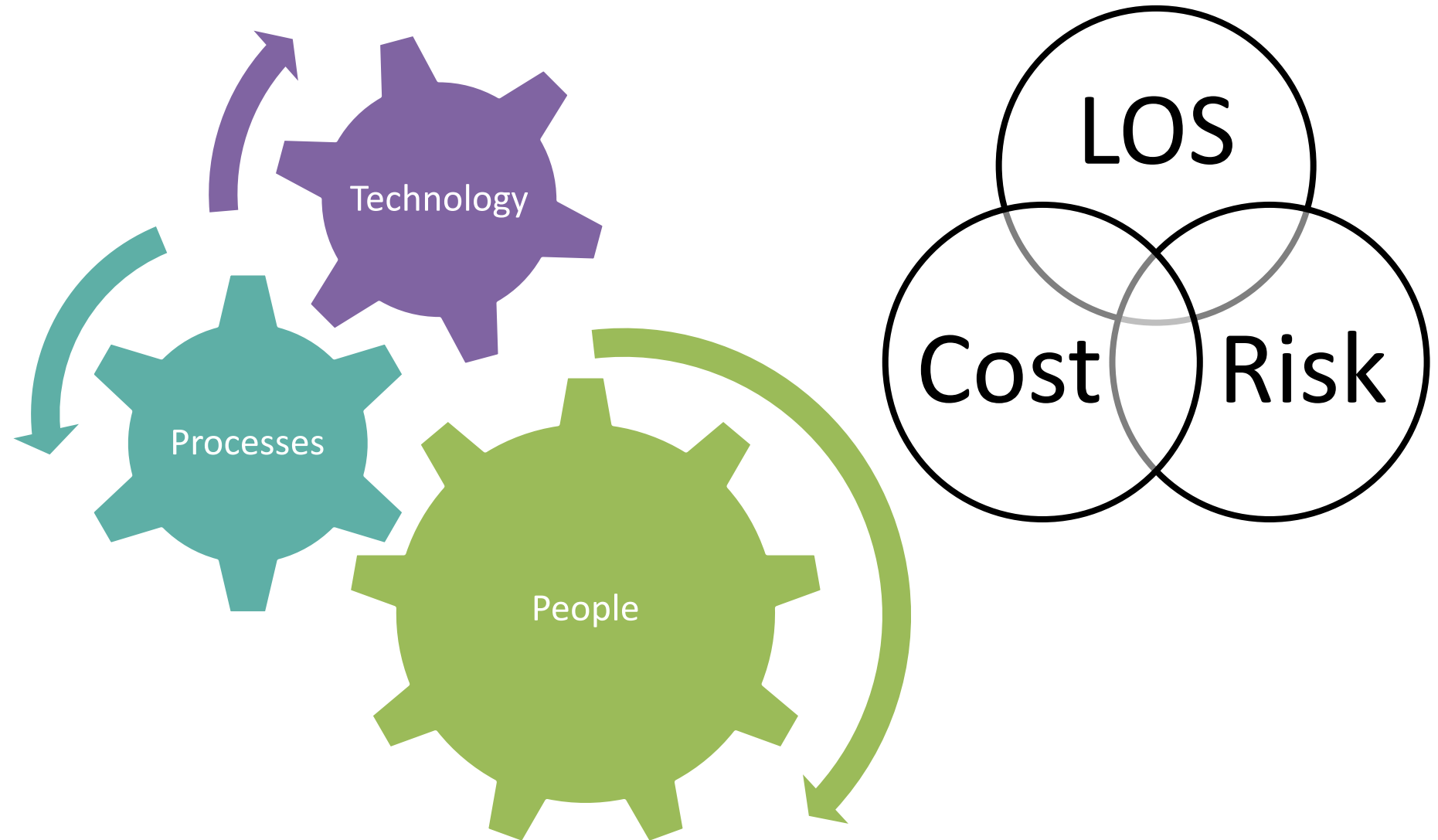
Software

Lifecycle Delivery

Scope of Asset Management



Value of Asset Management



Water Quality Concerns



- Customer complaints of discolored water
 - Aging distribution infrastructure
 - Closed valves
- Inadequate chlorine residual
 - Iron build up in pipes
 - Dead ends
- Main break response
 - Ability to isolate broken main
 - Number of affected customers

Discolored Water



“Traditional” Response



- Flush closest hydrant for hours
 - Conventional flushing
- “Check” nearby valves
- Keep increasing the footprint of shut-down until operable valves are identified

Enhanced Approach

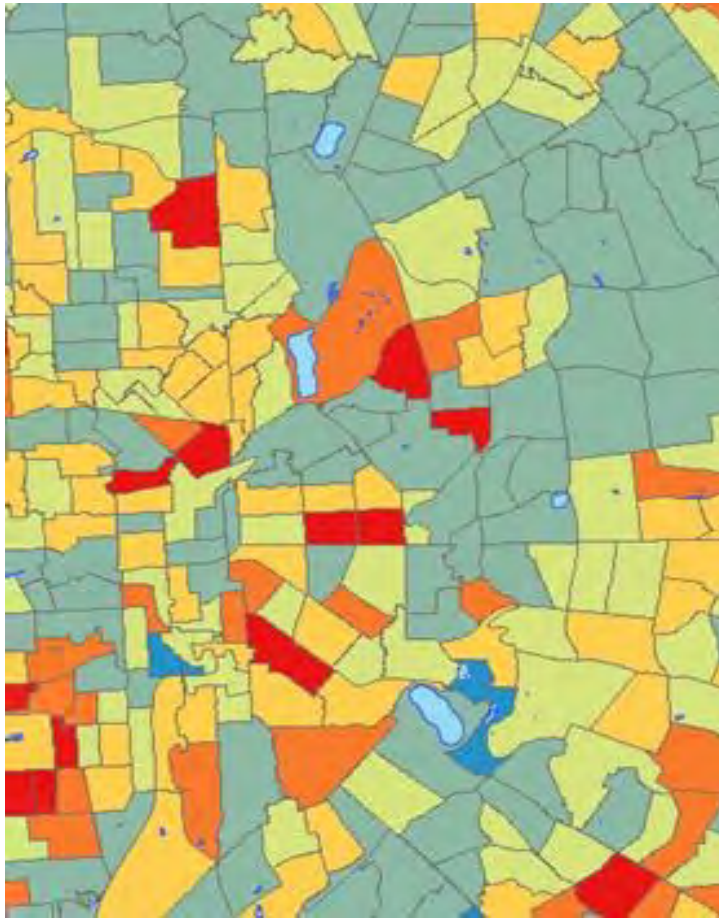


- Common Key Objectives:
 - Become less reactive
 - Develop a strategic approach to distribution maintenance
 - Prioritize investments
 - ❖ O&M
 - ❖ Capital
 - Understand the condition of the assets
 - Reduce complaints of discolored water
 - Leverage field data to make informed renewal decisions

Scope of Asset Management



Strategy and Planning

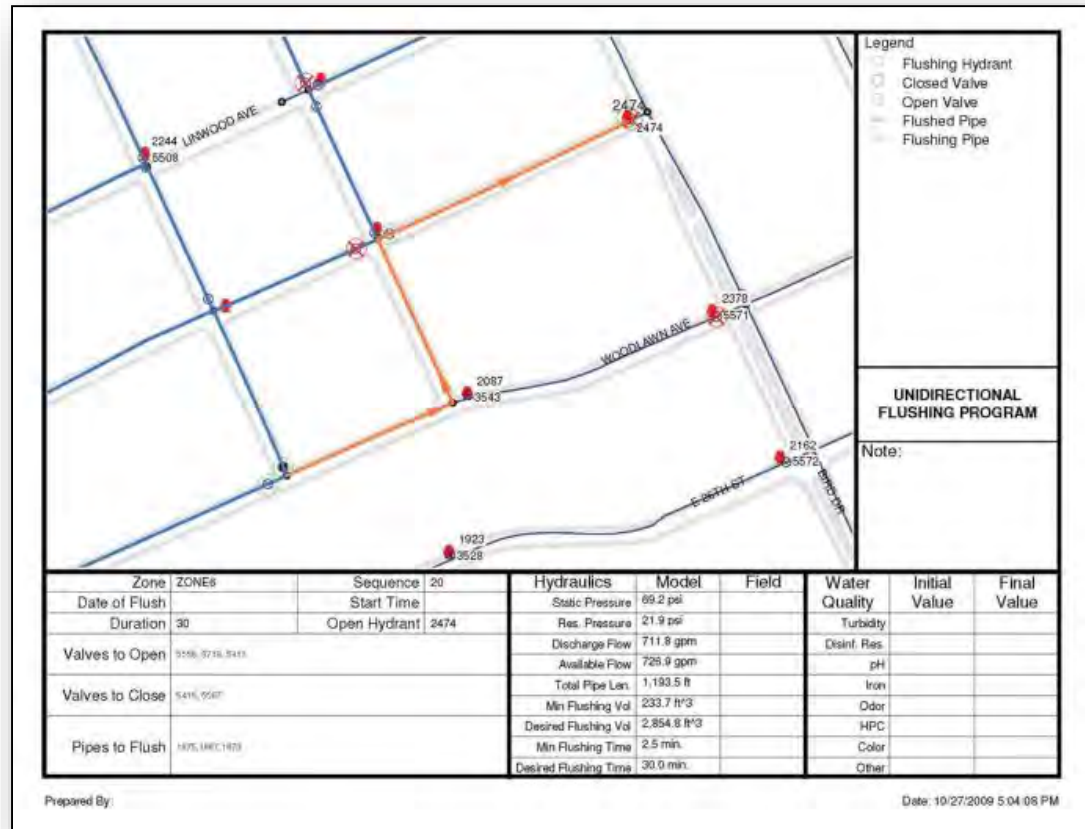


- Prioritize system by geographic boundary
 - Normalize complaints per 1000 LF of pipe
- Promotes scalability of program

Strategy and Planning



- Design flushing sequences
 - Theoretical hydraulics
 - Valve sequencing
 - Water quality



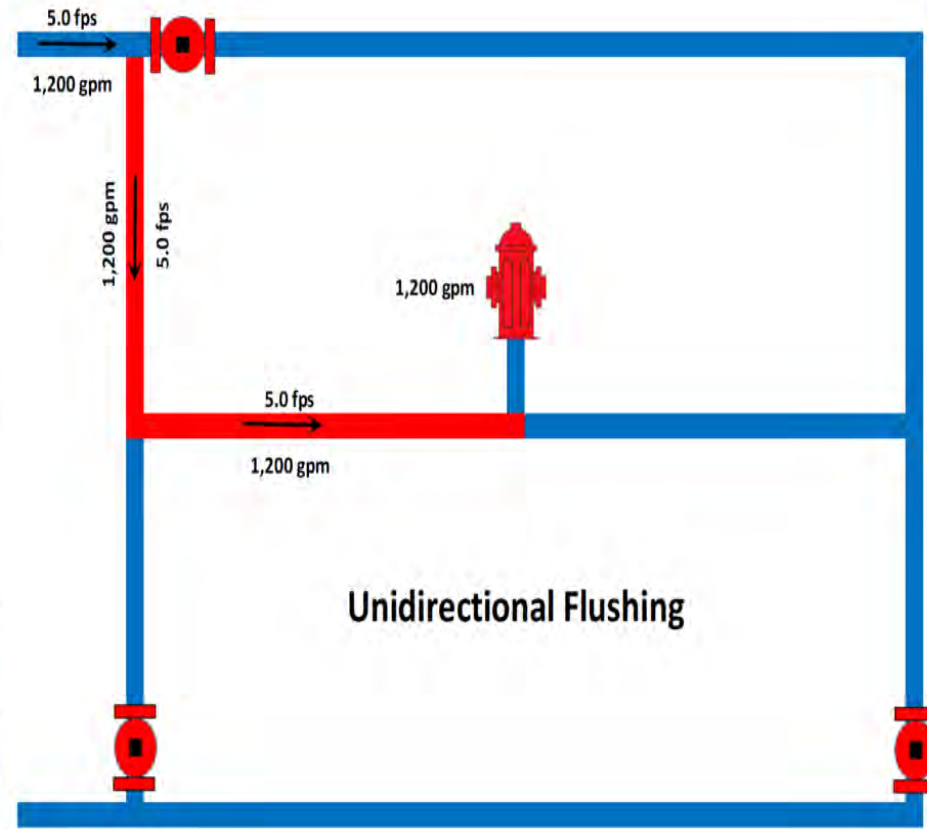
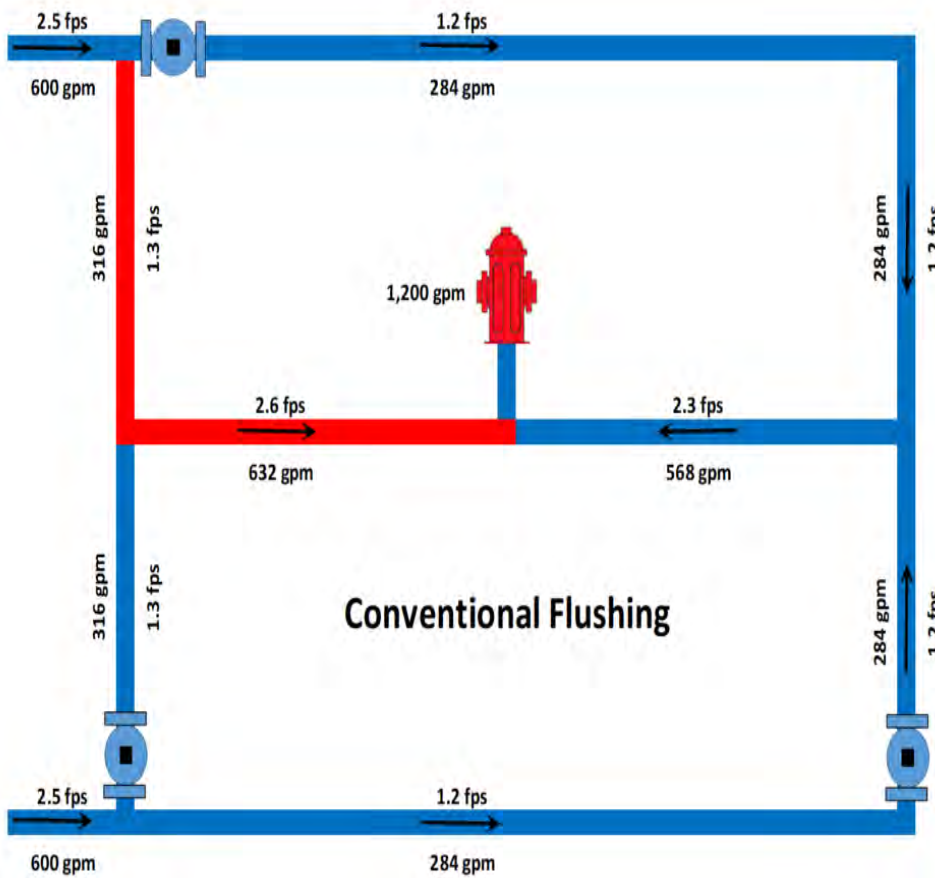
Lifecycle Delivery



- Proactive maintenance
 - Systematic uni-directional flushing
 - Routine valve exercising
- Condition assessment of mains and valves
- Prioritized rehabilitation or renewal



Conventional vs. UDF



Asset Information



- Field data is valuable
- Capture it!

- Field logs
- Spreadsheets
- Database
- CMMS
 - Work orders
 - Inspections
- Custom Application

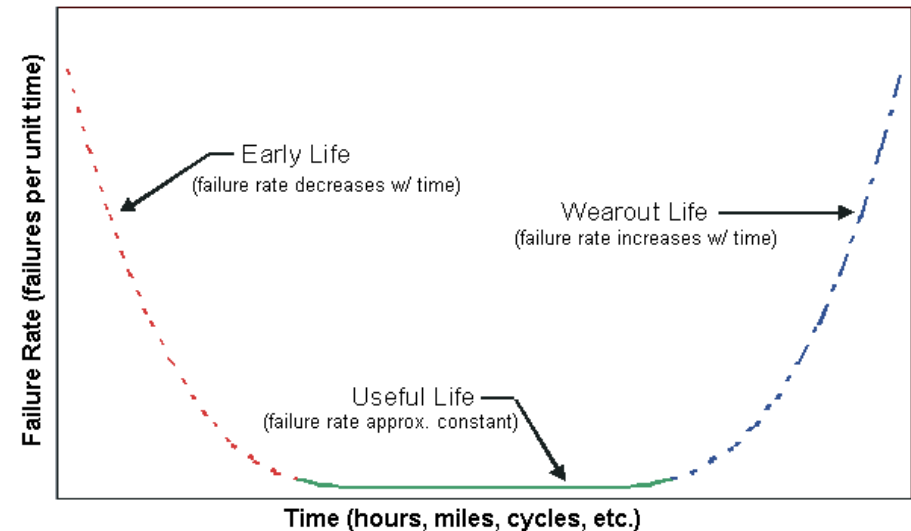
The screenshot displays a software interface for 'Valve Status'. The interface is organized into sections: 'Position', 'Condition', and 'Exercise'. Each section contains a list of attributes and their corresponding values.

Valve Status	
Last Editor	INITIAL DATA LOAD (Wachs)
Edit Date	05/07/2013
Position	
Position Found*	Open
Position Left*	Open
Turns Position Change*	1
Date Charged	01/01/1900
Condition	
Condition*	Good
Update Date	07/09/2007
Valve Access	
Valve Problem	
Exercise	
Exercised*	Full
Update Date	07/09/2007
Turns Exercised*	15
Initial Torque Max	100

Leveraging Asset Information



- Update asset condition scores
 - Down valve, main is in good condition
 - Periodic flushing
 - Immediate replacement
- Develop useful life curves for similar asset cohorts
- Calculate and track performance metrics

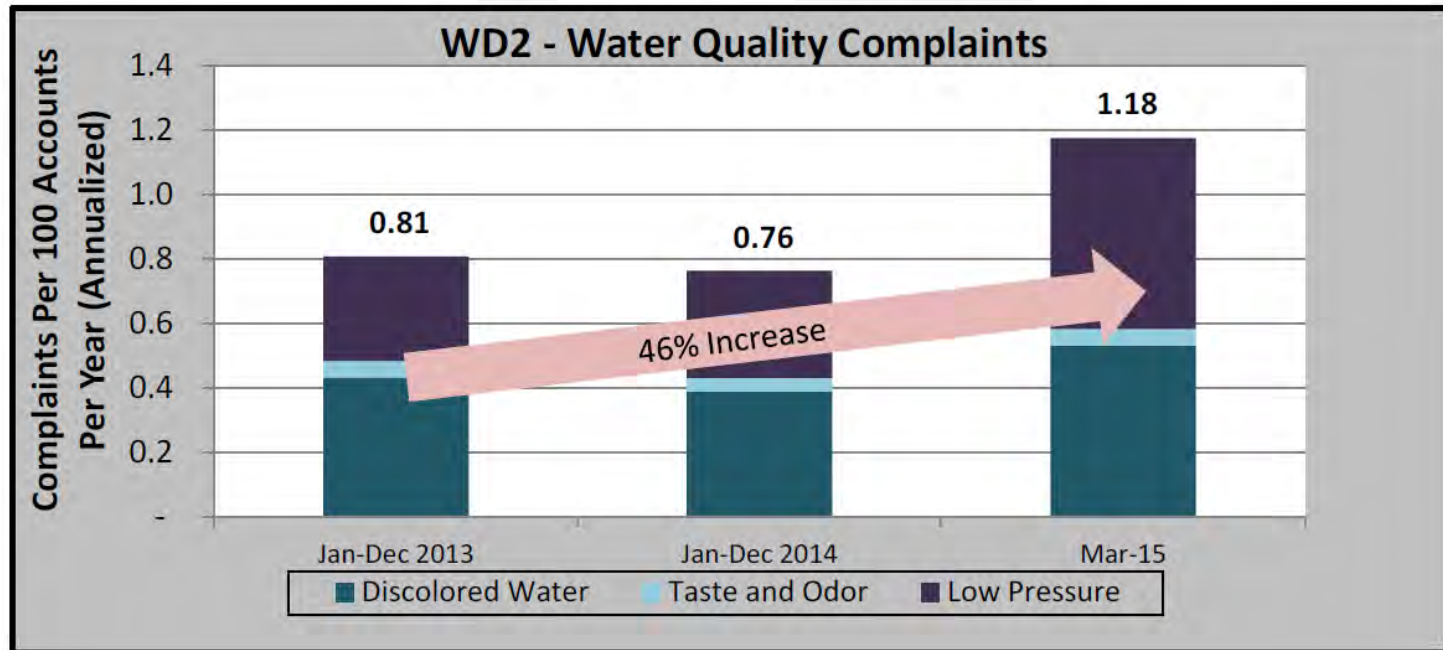


Performance Metrics



Level of Service

- Customer Service Complaint Rate
 - Number of complaints per 1000 active accounts
 - AWWA Utility Benchmarking metric



Operational Metrics



Valve Exercising

- No. of valves **planned** vs. **assessed** to maintain desired cycle/frequency
- No. of **inoperable valves** in the system per total number of valves
- No. of valves found **inappropriately closed**

Water Main Flushing

- LF of flushing **executed** per LF of flushing **planned**
- No. of flushing runs **aborted** per total number of flushing runs
- Initial **disinfection residual** vs. post-flush disinfection residual

People

- Often the hardest part
 - Resistant to change
 - New way of doing business can be intimidating
 - Unfamiliar technology
- Keys to success
 - Incremental changes
 - Early communication
 - Clear and realistic expectations
 - Training



Concluding Thoughts



- Get ahead of customer complaints by implementing best practices sooner than later
- Upfront planning is worth the initial effort
- Change happens incrementally

Questions



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