AWWA Utility Management Standards as Tools for Optimization of Utility Operations

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Agenda

• Why is utility management important?
• What is available?
• Benefits of the Standards and Guidebooks.
• Examples.
• Promoting use of the standards.
American Water Works Association

- Founded in 1881 by 22 individuals representing water utilities in Illinois, Indiana, Iowa, Kansas, Kentucky, and Tennessee.

- Purpose: “for the exchange of information pertaining to the management of water-works, for the mutual advancement of consumers and water companies, and for the purpose of securing economy and uniformity in the operations of water-works.”
AWWA Strategic Goals

• **Member Engagement & Development**
  
  *AWWA will be the association of choice for water utilities, professionals, and organizations*

• **Organizational Stewardship**
  
  *AWWA will effectively and efficiently use its resources to serve its member and the water community*

• **Knowledge Creation & Exchange**
  
  *AWWA will be the authoritative resource on water*

• **Water Policy & Leadership**
  
  *AWWA will be recognized as the valued and credible voice for water*
Water Utility Concerns

- Heightened public health & regulatory requirements
- Tightening budgets
- Needs to reduce cost – do more with less (affordability)
- Manage risks (and communication)
- Increased public scrutiny
- Loss of public trust (Flint effect)
- Stakeholders interest in proven utility efficiency & effectiveness
Resources to Address Utility Concerns

AWWA Utility Management (G-Series) Standards
AWWA Governance. Councils & Committees

AWWA Board of Directors
- 5 Presidential Officers
- 44 Section Directors
- 4 Directors-at-Large
- 6 Council Chairs
- 1 Water Research Foundation Chair

Executive Committee
- 5 Presidential Officers
- 6 Vice-Presidents
- 6 Council Chairs
- 1 Water Research Foundation Chair

Board Committees
- Finance
- Pension
- Compensation
- Nominating

Standing Committees
- Audit
- Canadian Affairs
- Diversity & Member Inclusion
- Member Engagement & Development
- Strategic Planning
- Young Professionals

3 Committees
- International Council
- Standards Council
- ~78 Committees

5 Committees
- Manufacturers/Associates Council
- Technical & Educational Council
- ~61 Committees

6 Committees
- Public Affairs Council
- Water Utility Council
- 4 Committees
AWWA Standards are documents that serve as a basis for the manufacture and contract specifications for the purchase and use of water works products and services. There are over 170 AWWA standards to date, all ANSI approved.

In addition, AWWA Manuals (overseen by various Councils) contain useful information, best practices, and recommendations to assist operations personnel. There are 16 published manuals from the Standards Council to date, 50+ in total.
Utility Management (G-Series) Standards

- Standards developed by AWWA volunteers
  - Operators, consultants, regulators.
- Encourages continuous improvement.
- Provides a framework for self-evaluation, counsel, and assistance to utilities.
- ANSI (American National Standards Institute) approved.
Utility Management (G-Series) Standards

• G100 Water Treatment Plant Operation & Management
• G200 Distribution System Operation & Management
• G300 Source Water Protection
• G400 Utility Management System

Self assessment Operational Guides available.
Utility Management (G-Series) Standards

• G410 - Business Practices
• G420 - Communications & Customer Relations
• G430 - Security Practices
• G440 - Emergency Preparedness Practices
• G480 - Water Conservation Program
• G481 - Reclaimed Water Programs
• G485 – Direct Potable Reuse Program
• G510 - Wastewater Treatment Plant Operation
• G520 - Wastewater Collection Systems

Standards are complete but no Operational Guide.
G-Series Standards Under Development

• Biosolids Handling and Management
• Wastewater Pretreatment
• Stormwater Programs Operation
G-Series Standards and Effective Utility Management (EUM)
### G-Series Standards & EUM

<table>
<thead>
<tr>
<th>Title</th>
<th>Standard</th>
<th>Guidebook</th>
<th>EUM Attribute(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Treatment Plant Operation and Management</td>
<td>Yes</td>
<td>Yes</td>
<td>PQ, OO</td>
</tr>
<tr>
<td>Distribution System Operation and Management</td>
<td>Yes</td>
<td>Yes</td>
<td>PQ, OO</td>
</tr>
<tr>
<td>Source Water Management and Protection</td>
<td>Yes</td>
<td>Yes</td>
<td>WA</td>
</tr>
<tr>
<td>Utility Management System</td>
<td>Yes</td>
<td>Yes</td>
<td>All Attributes</td>
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<tr>
<td>Business Practices for Operations and Management</td>
<td>Yes</td>
<td></td>
<td>IS, FV</td>
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<tr>
<td>Communications and Customer Relations Program</td>
<td>Yes</td>
<td></td>
<td>CS, SU, SS</td>
</tr>
<tr>
<td>Security Practices for Operations and Management</td>
<td>Yes</td>
<td></td>
<td>OR</td>
</tr>
<tr>
<td>Emergency Preparedness Practices</td>
<td>Yes</td>
<td></td>
<td>OR</td>
</tr>
<tr>
<td>Water Conservation Program Operation and Management</td>
<td>Yes</td>
<td></td>
<td>SU</td>
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<tr>
<td>Reclaimed Water Program Operation and Management</td>
<td>Yes</td>
<td></td>
<td>PQ, SU</td>
</tr>
<tr>
<td>Direct Potable Reuse Program Operations and Management</td>
<td>Yes</td>
<td></td>
<td>PQ, SU, WA</td>
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<tr>
<td>Wastewater Treatment Plant Operations and Management</td>
<td>Yes</td>
<td></td>
<td>PQ, OO</td>
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<tr>
<td>Wastewater Collection System Operations and Management</td>
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<tr>
<td>Biosolids Handling and Management</td>
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<td></td>
<td>PQ, OO</td>
</tr>
<tr>
<td>Wastewater Pretreatment Program Management</td>
<td>In progress</td>
<td></td>
<td>OO, SS</td>
</tr>
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</table>

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<tr>
<th>Attribute(s)</th>
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<tbody>
<tr>
<td>PQ Product Quality</td>
</tr>
<tr>
<td>CS Customer Satisfaction</td>
</tr>
<tr>
<td>ED Employee and Leadership Evaluation</td>
</tr>
<tr>
<td>OO Operational Optimization</td>
</tr>
<tr>
<td>FV Financial Viability</td>
</tr>
<tr>
<td>SU Community Sustainability</td>
</tr>
<tr>
<td>OR Operational Resiliency</td>
</tr>
<tr>
<td>WA Water Resource Adequacy</td>
</tr>
<tr>
<td>SS Stakeholder Understanding and Support</td>
</tr>
<tr>
<td>IS Infrastructure Stability</td>
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</table>
Operational Guide to G-Series Standards

Operational Guide for the first four G-Series Standards have been developed to support the implementation of the standards.

The Utility Quality Management Committee – under the Management & Leadership Division of the Technical & Educational Council is working to promote the use of the G-series standards.
G100 describes the critical requirements for a treatment plant.

- Compliance with regulations.
- Operational management practices.
- Facility maintenance.
- Water Quality Management.
## G100 Operational Guide

<table>
<thead>
<tr>
<th>SECTION</th>
<th>CHECKLIST QUESTION</th>
<th>YES/NO</th>
<th>REMARKS &amp; EVIDENCE</th>
<th>PERCENT COMPLETE</th>
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<tbody>
<tr>
<td>4.2.7.7 Equipment and instrument calibration</td>
<td>all equipment and instruments, which includes frequency of calibration as recommended by the manufacturer or regulatory agency? Does the calibration process follow recommended and authorized industry protocol? Is the chemical feed equipment being calibrated and physical inventories being taken on a monthly basis? Review procedures and records.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2.8 Environmental impact management</td>
<td>Does the utility dechlorinate water to be disposed of into natural waters? Review procedures and records for this operation.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Utility Perspective - Benefits

• Washington County Water Conservancy District, UT
  – Developed improved procedures for chemical use, power consumption, lab practices, and water quality goals
  – Saved 15K on energy costs
  – Decreased filter backwash water use by 25%
G200 describes the critical requirements for a distribution system.

- Water Quality maintenance
- Distribution system management
- Facility operation and maintenance
A. Does the utility have an implemented and documented program for the internal corrosion and deposition monitoring and control in the distribution system?

B. Does the utility utilize treatment technology to ensure the internal corrosion and deposition are effectively controlled and maintained in the distribution system?

C. Does the utility effectively monitor and measure the water quality parameters such as pH, alkalinity, conductivity, phosphate, silicate, calcium, metals, and measure the calcium carbonate precipitation potential (CCPP) or the Langelier Saturation Index (LSI) or other parameters on a regular basis to ensure that internal corrosion and deposition in the distribution system is effectively controlled?
Utility Perspective - Benefits

- Montrose, CO
  - Implemented new valve exercising program
  - Identified and eliminated water losses of 2.6 MGD
G300 identifies 6 primary elements for a source water protection program.

- Vision.
- Source water characterization.
- Source water protection goals.
- Action plan.
- Implementing action plan.
- Periodic evaluation & revision of program.

Note: Involvement of stakeholders throughout the process
G-300 Guidebook Vision Questions

1. Is there a utility vision, mission statement, or policy that specifically addresses SWP?
2. Has the vision, mission statement, or policy been adopted by the utility?
3. Is the SWP vision, mission statement, or policy distributed and understood throughout the organization?
4. Does the mission statement recognize that SWP is one of the multiple barriers for drinking water production?
5. Does the policy or utility mission statement include commitment or intention to commit, sufficient resources?
6. Is there a process for regular or periodic review of the SWP vision? (and when was the SWP vision last reviewed?)
7. Is the SWP vision available to the public (in consumer confidence report, annual report, other outreach materials, and/or the utility’s website)?
Beaver Water District, Arkansas – Experience with G300

• G300 and the operational guide support organizing data and information on SWP plan into a coherent document.

• The checklists in the operational guide walked BWD through all of the elements of a SWP program. Because of the checklists, BWD thought about items that were previously not considered as part of SWP.

• Having a program that is in accordance with the AWWA standard gives BWD credence with many of the stakeholders that were somewhat reluctant at first.
AWWA G400 Standard & Operational Guide

G400 defines the minimum requirements for establishing a utility management system that promote continuous improvement.

- Commitment to resources
- Legal, regulatory, and other requirements
- Standard compliance
- Tracking & measuring improvement
- Communication
- Training
- Emergency preparedness
G400: Utility Management System

• Describes consensus practices for establishing a utility management system for a water or wastewater utility that will promote continuous improvement.

• Created to respond to a widespread need of utility managers to have some consistency in approach and some reliability in knowing what is generally expected of utilities in all areas of utility management.
G-400 Guidebook Content

- **Section 1:** Acknowledgements
- **Section 2:** Forward
- **Section 3:** Introduction
- **Section 4:** Requirements
  - 4.1 –Commitment to Resources
  - 4.2 –Legal, Regulatory, and Other Requirements
  - 4.3 –Standard Compliance
  - 4.4 –Tracking and Measuring Improvement
  - 4.5 –Communication
  - 4.6 –Training
  - 4.7 –Emergency Preparedness
- **Section 5:** Verification
  - 5.1 –Documentation
  - 5.2 –Human Resources
- **Section 6:** Glossary of Acronyms
- **Section 7:** References and Resources
- **Section 8:** Audit Checklist
- **Append. A:** Additional Examples

**Note:** Best places to start
Implement Utility Quality Management Program and Benefits
Utility Quality Management Program Overview

- Voluntary effort
- All utilities – All sizes
- “Above and Beyond” regulations
- Outcome-oriented: Water quality, Compliance, Public Health & Environmental Protection, Efficiency Improvement
- Performance can be verified by peer evaluators
- Self-assessment by staff
Optimization of Utility Operations

- Encourages continuous improvement
- Provides framework for self-evaluation
- Instills customers with confidence and trust
- Conveys confidence between Utility & Regulators
- Provides opportunity for counsel and assistance to other utilities
Utility Performance Optimization Tool

“Conformance with Utility Management Standards will enhance public confidence while demonstrating continuous improvement efforts”
"Applying the G-Series voluntary standards to utility operations helps to manage utilities in a way which guarantees peace of mind"

- Assures continuity in performance optimization
- Guarantees development of SOPs
- Institutional knowledge retention
- Tool to maintain safe performance based on good practices – NOT good luck
Comprehensive Program Based on Utility Management Standards

- Compliance
- Business practices
- Budget & financial
- Plant CIP
- Energy management
- Plant production
- Production capacity
- Plant cleanliness
- Operating permits
- Plant management
- Training program
- Quality assurance
- SOPs
- Chemical QA
- Calibration
- Emergency preparedness
- Security planning
- Customer care
Keys to Management Success

- Leadership
- Strategic planning
- Knowledge management
- Measurement
- Continual improvement management framework
• AWWA Intermountain Section organized its own Utility Quality Management Committee
• “Train the Trainer” sessions conducted on source water, treatment, and distribution standards
• Promotion of all G-series standards and guidebooks, self-assessments, and peer reviews
• 13 utilities completed self assessments and submitted for peer reviews in G100, G200 and G300
• Certificates awarded to utilities for completion of self-assessments and peer reviews
IMS - New Manager Experience

• We started the audit with the attitude of checking the boxes “yes” – then we decided it was OK to recognize that we have some work to do

• I thought we were doing well – but now I know “how well” we are doing using industry standards

• We now have real goals for improvement

• We have confidence that we are not missing something important

• This has been a real team builder

• And I sleep a lot better at night
What Would the AWWA Utility Quality Management Committee Like to Do?
What Would We Like?

• We want to promote Utility Management Standards and Guidebooks in each AWWA Section

• Identify a person or committee in each Section to work with the Utility Quality Management Committee
  • Conduct presentations and workshops
  • Promote self assessments
Current UQMC Workshop Team

• Eva Nieminski, Utah Division of Drinking Water
• Kan Oberoi, Charleston Water System
• Dave Purkiss, NSF International
• Chi Ho Sham, Eastern Research Group
• Gerard Yates, Central Utah Conservancy District
Questions?

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THANK YOU FOR YOUR ATTENTION AND HARD WORK TO PROTECT OUR DRINKING WATER

It takes less time to do a thing right, than it does to explain why you did it wrong.

Henry Wadsworth Longfellow