Water and Wastewater Management for Municipal Elected Officials

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Welcome and Introduction

- Opening Remarks
- Introductions – Who’s in the Room?
  - Name
  - City
  - Job/Role
  - What would you like to get out of this course?
Course Overview

• Course Description
• Learning Objectives
• Content
• Teaching Methods

Course Description

Water and wastewater services are fundamental to the operation of a city. This course will provide an overview of the management of these services and introduce participants to the important role of water in community health, quality of life, and economic development. This course will also describe various service delivery methods and discuss the challenges and opportunities that municipal officials face in providing water and wastewater services to their customers.
Learning Objectives

Participants will:
• Recognize the importance of water and wastewater in community health, quality of life and economic development.
• Demonstrate an understanding of the services and programs necessary for effective water and wastewater management.
• Understand the attributes of effective water and wastewater management and keys to management success.
• Describe the “Plan/Program/Implement/Sustain Model” and its use to effectively manage water and wastewater services.
• Understand the challenges and opportunities of water and wastewater management.
• Apply the concepts of water and wastewater management best practices to better serve their communities

Course Content

• Role of water and wastewater management in delivery of municipal services
• Water and Wastewater Management Overview
• Planning, Funding, Building, and Operations & Maintenance of Water and Wastewater Systems
• Wrap-up
Teaching Methods

- Shared experiences and discussion
- Lecture (via power point presentation)
- Breakout sessions ~ discussion and presentation
- Reflection ~ learning to action (“now what?”)

Ground Rules

- Academic Freedom/Non-Attribution
- Interaction (learn from each other)
- Respect for the Speaker (that may be you!)
- Identify and Highlight “Best Practices” and Innovations
How Water and Wastewater Management fits in City Government

• How does Water & Wastewater Management support the mission of local government?

Summary of Local Government Functions

Exercise Instructions

Using the handout provided ...

• Identify services in your city that are provided directly or supported indirectly with water and wastewater
• Summarize and report back to the class
Water & Wastewater Management Overview

Purpose

To achieve the greatest economic, environmental, and social benefits from the public’s investment of tax money, land, and other resources that go into building and operating our water and wastewater infrastructure both now and in the future.
Goals

- Public health, safety and welfare and quality of life for our citizens
- Environmental stewardship
- Economic development

Triple Bottom Line of Sustainability

- Economy
- Community
- Environment

Goal is to balance these three interests.
Exercise Instructions

• Appoint a leader, scribe, timekeeper, and spokesperson (everyone participates)
• Take a few minutes to discuss and identify the components, stakeholders and benefits associated with water and wastewater management
• Summarize and report back to the class

Components Related to Water and Wastewater Management

• __________________________________________
• __________________________________________
• __________________________________________
• __________________________________________
• __________________________________________
• __________________________________________
• __________________________________________
• __________________________________________
• __________________________________________
Stakeholders Associated with Water and Wastewater Management

- ________________
- ________________
- ________________
- ________________
- ________________
- ________________
- ________________
- ________________
- ________________
- ________________

Benefits Resulting from Water and Wastewater Management

- ________________
- ________________
- ________________
- ________________
- ________________
- ________________
- ________________
- ________________
- ________________
- ________________
Water and Wastewater Management Services and Programs

Water Management

Water Treatment

• Source Water Protection
• Facility O&M
• Preventive Maintenance
• Water Quality Testing Control
• Residuals Management
• Records
• Environmental Compliance
**Water Management**

**Water Distribution**
- Inventory/Mapping
- System O&M
- Service Taps
- Metering
- Fire Flow Testing
- Cross-Connection Control
- Sampling/Testing
- Water Conservation/Loss Control

**Wastewater Management**

**Wastewater Treatment**
- Watershed Protection
- Facility O&M
- Preventive Maintenance
- Water Quality Testing/Controls
- Biosolids Management
- Industrial Pre-Treatment
- Records
- Environmental Compliance
Wastewater Management

Wastewater Collection
- Inventory/Mapping
- System O&M
- Service Taps
- Fat/Oil/Grease
- Inflow/Infiltration

Water and Wastewater Compliance

Federal
- Safe Drinking Water Act
- Clean Water Act (Sections 402 and 404)
- Migratory Bird Treaty Act
- Endangered Species Act
- Marine Mammal Protection Act
- Fish & Wildlife Coordination Act
- National Forest Management Act
- Federal Land Policy and Management Act
- Resource Conservation and Recovery Act
- Federal Insecticide, Fungicide, and Rodenticide Act

State
- Administrative Procedures Act
- Ground Water Use Act
- Safe Drinking Water Act of 1977
- Water Supply Act
- Water Well Standards Act
- Water Quality Act
- Comprehensive Statewide Water Management Planning Act
- Erosion and Sedimentation Control Act
- Safe Dams Act
- Planning Act of 1989
- Environmental Policy Act
- Flint River Drought Protection Act
- Programs for Voluntary Water Conservation and Enhancing Water Supply
Attributes of Effective Water and Wastewater Management Programs

Water and Wastewater Management Competencies

• Technical
• Administrative/Managerial
Technical Competencies

• Water Resources
• Right of Way / Utilities
• Emergency Management
• Fleet and Equipment
• Engineering and Technology

Right of Way / Utilities
• Right of Way Management
• Encroachment Permitting
• Utility Coordination, Locating and Damage Prevention
• Vegetation Management
Emergency Management

- Hazard Mitigation Planning & Response
- Incident Management Procedures
- NIMS
- Mutual Aid Agreements

Fleet and Equipment

- Preventive Maintenance
- Corrective Maintenance
- Fleet Replacement (include Vehicle and Equipment Specification)
- Inventory Control
- UST Compliance
Engineering and Technology

Mapping/GIS/Surveying
• Stormwater
• Wetlands/Buffers
• Flood Plain
• Water
• Sewer

Engineering and Technology

Design Criteria & Standards
• Stormwater
• Water
• Sewer
• Erosion Control
Engineering and Technology

Development Plan Review

• Site Layout
• Grading
• Roadway
• Access/Traffic Impact
• Stormwater/Hydrology
• Utilities (Water/Sewer)
• Erosion Control

Engineering and Technology

Project Management

• Project Scoping
• Consultant Selection/Management
• Design/Plan Review
• Bid/Award Process
• Contract Administration
• Construction Inspection
• Closeout
Administrative/Managerial Competencies

- Leadership
- Strategic Planning
- Human Resources
- Law and the Regulatory Environment
- Finance/Budgeting/Purchasing
- Urban Planning
- Communications
- Advocacy (see Infrastructure Report Card)

Service Delivery Strategy (Business Plan)

- Define Mission, Vision, Values (why we exist & what we believe)
- Identify Major Services and Programs (what we do)
- Set Goals, Objectives, Performance Targets (expectations)
- Identify Key Players & Stakeholders (roles and expectations)
- Establish Organizational Structure (Direct Services)
- Establish Organizational Infrastructure (Support Services/SOP’s)
- Create Financial Plan (Budget – O&M and Capital)
- Develop Work Program (major organizational tasks)
- Performance Management (monitor/report results, and make adjustments as necessary)
Water and Wastewater Management Keys to Success

- Assets
- Money
- Practices
- People

Break
Planning, Funding, Building, and Operations & Maintenance

Plan/Program/Implement/Sustain Model

1 - Plan
2 - Program
3 - Implement
4 - Sustain

Water & Wastewater Management
Plan/Program/Implement/Sustain Model

Model is useful whether dealing with a:
• Strategic or Master Plan
• Project
• Service
• Program

Vision Continuum

Vision:
important work an organization exists to accomplish

Mission:
the tangible image of that important work

Strategic Priorities:
the efforts necessary to create the tangible image

Human Capacity & Financial Resources:
how those priorities are met
Planning for Water and Wastewater Services

Identification of Levels of Service

• Identifying the levels of service is one of the most basic and fundamental parts of water and wastewater management.
  o Provides foundation
  o Establishes the quality of service that is to be provided to the community
  o Additionally, it identifies organizational responsibilities
Categories of Levels of Service (LOS)

- LOS directed by the governing board
- LOS determined by a survey of citizens
- LOS adopted for your community when compared to similarly situated communities
- LOS your community can afford or that is prioritized for your organization through some other means
- LOS that you determine or recommend given the resources you have been provided

Extent of Service

- Service Area
  - Geographic
  - Jurisdictional
- Customers Served
  - Residential
  - Commercial
  - Industrial
- Type of Service
  - Water, Sewer, Stormwater
Master Planning

• Vision (concept / service delivery agreements)
• Inventory and Mapping
• Existing Conditions Assessment
• Constraints / Opportunities
• Future Conditions Scenario (long range / short range)
• Work Program (CIP, staffing plans, funding, and implementation strategies)

Discussion Topics

• Consider your organization and the water and wastewater services your provide:
  o What are the levels of service (LOS) set by your organization?
  o Do you know and have the resources (financial, staffing, equipment) needed to meet your LOS?
  o Do you have practices in place to meet your LOS?
• What is the extent of your service for water and wastewater?
Financing for Water and Wastewater Services

Finance Principles

• Revenues must cover expenditures
• Operating expenses should not exceed operating revenues
• Capital expenses should be covered with capital revenue sources and/or reserves built from operating revenues in excess of operating expenses
• Rates and Fees:
  o Commodity rates typically cover operations, debt service and reserves for capital maintenance and repair
  o Connection fees typically used to fund capital additions and expansions
Water and Wastewater Funding

- General Fund
- SPLOST
- TSPLOST
- GEFA Loans
- GA DCA CDBG Grants
- Water and Sewer Enterprises (rates and connection/tap fees)
- Development Impact Fees
- CID
- TAD
- Bonds
- Public Private Partnerships

Capital Projects and Planning
Historical Significance

• With water and wastewater projects, you are creating the history for future generations.
• In your community, identify five historically significant water/wastewater projects and impact of each:

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<tr>
<th>#</th>
<th>Project</th>
<th>Community Impact</th>
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Should support the Master Plan
Should be included in the CIP
Capital funding source(s) must be identified/appropriated and allocated
Must determine method of accomplishment
Develop a project management plan for project development and delivery
Capital Maintenance and Repair

• Should support the asset management plan
• Should be included in the CIP
• Capital funding source(s) must be identified/appropriated and allocated
• Must determine method of accomplishment
• Develop a project management plan for project development and delivery

Asset Management - Life Cycle Approach

• Expected life of the asset (in years or operating hours)
• Replacement cost of the asset
• Salvage value at the end of expected life
• Annual life cycle cost
• Preventive maintenance to extend expected life
Inventory and Mapping

• Important to account for the extent of your infrastructure and assets (length, width, size, number, areas, etc).
• GIS is a great management tool for documenting and mapping infrastructure assets.
• On going process that never ends.
• Provides the data necessary to communicate the scale and extent of your infrastructure and assets.

Condition Assessment

• Age/Hours of Operation
• Deficiencies/Distresses
• Maintenance History
• Level of Performance
• Along with inventory and mapping, provides the data necessary for infrastructure and asset management decisions.
Financial Forecasting Model

• Includes unit costs for maintenance/repair activities.
• Based on LOS and goals, the forecasting model uses the inventory and condition assessment data to generate various funding scenarios.
• Provides information necessary to make infrastructure and asset management funding recommendations.

Work Program Development

• Work program is developed based on the results of inventory, mapping, condition assessment and financial forecasting model.
• Work program is not always about “worst, first”, but is a balanced approach focused on:
  • Preventive maintenance
  • Capital maintenance and repair
  • Reconstruction/replacement
Performance Management

• Monitors program results based on:
  • LOS, goals and objectives established
• Assists in communication of infrastructure and asset status to:
  • Community
  • Elected Officials
  • Staff
• Provides justification for staying the course with asset management

Operations & Maintenance
Service Delivery Methods

- Self Performance (in house)
- Outsource
  - Privatization
  - Intergovernmental
- Free Market

Self Performance (in house)

- Organize (acquire and assign staff)
- Train (train staff to perform mission)
- Equip (provide the necessary resources)
- Perform (use staff, training, and equipment to perform the mission)
Service Delivery Methods
Outsource - Privatization

• Organizations often rely on the private sector to provide supplemental services as opposed to in-house permanent staffing.

• There is a trend in public and non-profit management that encourages outsourcing:
  o Can be more cost effective because organizations pay for only those services they need, when they need them. Not paying for benefits and leave associated with full-time, permanent employment.
  o Outsourcing also carries some risks. Oversight is essential, and because of the opportunity for preferential treatment of some vendors and contractors over others, opportunities for actual or perceived impropriety can be elevated.

Service Delivery Methods
Outsourcing – Privatization

• Keys to Success
  o An amenable statutory and political environment
  o The public agency remains active in the organized structure of the partnership
  o A detailed business plan exists, and contracts readily support that business plan
  o A reliable and solid revenue stream is in place
  o Sufficient stakeholder support
  o Careful selection of the private entity partner on the part of the public works organization
Service Delivery Methods
Outsource – Intergovernmental

• Another common strategy for outsourcing involves contracting with another public entity for services.
  o In these cases, often the larger entity contracts to a smaller entity
  o A common impediment is sensitivity to risk. When organizations contact for services to a private contractor, risk is assumed by the contractor as part of the negotiation. When the contractor is another government organization, exposure to risk and liability may be greater or more difficult to control.

Service Delivery Methods
Outsource – Intergovernmental

• Keys to Successful Intergovernmental Partnerships:
  o Understand your Situation, Goals and Needs
  o Have a Plan and Implementation Strategy
  o Seek out Partners with Common Vision and Goals (Must Build a Trust Relationship)
  o Must Have Win-Win Proposals/Solutions
  o Successful Partnerships Require:
    ▪ Political Will
    ▪ Commitment
    ▪ Perseverance
Service Delivery Methods
Free Market

• Local government relies on the private sector to deliver the service (common example is trash collection)
• Often the jurisdiction may choose to establish franchise agreements to ensure level of service

Water and Wastewater Organizational Models

• Whether you serve a community of 5,000 or a half a million people, the local government is organized to provide service to the public.
• Not a day goes by that citizens are not served by water and wastewater. In fact, people may not think about the service you provide until the service doesn’t work or isn’t there.
• It is in these “crisis” situations that W & WW staff are put to the test
• Efficiency and effectiveness are key
• Work we do must always be to the benefit of our constituents, clients, and customers.
• Educating the public garners public support – and this is important in delivering services
Water and Wastewater Organizational Models

- Organizations are defined as having a group of people who work together to achieve some goal or objective.
  - In this sense, any collective of two or more people can serve as an organization
- At the core of the organization are these elements:
  - Individuals
  - Goals
  - Structure

Function Based Organization

- A common organizational structure is to organize water and wastewater management around functions
  - Treatment, distribution and collection, facilities maintenance, metering operations, engineering, quality monitoring among others can all be viewed as separate entities within the same department
- Sometimes, this type of organization can make it difficult to prioritize requirements and activities
- A common disadvantage is that divisional goals tend to take precedence over organizational goals in such a way that the synergistic relationship within the organization can be compromised.
Synergistic Environments

• A unique feature of water and wastewater management organizations is that they do not exist in a vacuum.
  ○ Unlike other kinds of organizations, they tend to be very dependent on other organizations, regional offices, state regulations, and federal interests.
• This, necessarily, leads to high levels of collaborative efforts.
• As a result, W & WW managers must develop strategies to communicate and work with other organizations that have interests in the same services your organization facilitates.

Many factors affect the organizational structure of water and wastewater management agencies
  ○ Size of the jurisdiction
  ○ Mission, vision, goals, scope of services
  ○ Nature of the work environment

• Recommend using the “Plan/Program/Implement/Sustain Model” to determine the right fit for your community.
Challenges and Opportunities

Challenges

• Most significant challenge is to do more with less
• However these other challenges can be costly and reduce productivity as well:
  o Aging infrastructure
  o A rapidly changing and evolving regulatory environment
  o Impacts associated with technology
  o Public’s demand for greater accountability in publicly provided services
  o Determining service delivery strategies and methods
Advocacy

• Agencies often face challenges in advocating for federal, state, and local support for funding related to critical water and wastewater infrastructure assets.

• However, many have developed tools and practices to engage citizens, businesses, elected officials to build support for water and wastewater services and projects.

For Effective Advocacy

• Discover methods to build community support for water and wastewater services and projects.

• Assess those methods for applicability and utilization in your own community.

• Determine a strategy to engage your community and build a constituency to support your delivery of critical, but often forgotten, services.
Keys to Success

• Understand your Situation, Goals & Needs
• Have a Plan and Implementation Strategy
  o Clear Message, Target Audience, Delivery Methods
• Seek out Partners with Common Vision and Goals
• Success Requires:
  o Commitment
  o Perseverance
  o Participation

Course Wrap Up
Review Learning Objectives

- Recognize the importance of water and wastewater in community health, quality of life and economic development.
- Demonstrate an understanding of the services and programs necessary for effective water and wastewater management.
- Understand the attributes of effective water and wastewater management and keys to management success.
- Describe the “Plan/Program/Implement/Sustain Model” and its use to effectively manage water and wastewater services.
- Understand the challenges and opportunities of water and wastewater management.
- Apply the concepts of water and wastewater management best practices to better serve their communities.

Closing Remarks
Questions/Discussion

Learning to Action