One Water
Collectively Managing Wastewater, Stormwater, and Drinking Water

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Outline for Today

- Introductions
- One Water Approach
- Arenas for action
- Case Studies
- Questions
One Water Approach

Created in 2008 by the US Water Alliance

All water has value

- Developing a mindset that all water is important
- Manage all sources carefully and collectively
- Identifying and advancing achievable solutions to most pressing water challenges
What is the One Water Approach?

- Managing water in an integrated, inclusive, and sustainable manner
  - Salvaging nutrient & energy from wastewater
  - Green infrastructure systems
  - Collaboration on water quality issues

- Effort to achieve multiple benefits
  - Social
  - Industrial
  - Environmental
What is the One Water Approach?

**Watershed-Level Planning**
- Minimize disturbance to geology and hydrology
- Conservation of ecosystems
- Reconciliation with communities
- Creation of social programs for low-income people

**Long term planning**
- Ensuring continuing supply for generations
- Assessing impacts of climate change
What is the One Water Approach?

- **Optimizing resource allocation**
  - Investing in storm water management infrastructure in areas more prone to flooding
  - Using natural geology and hydrology to improve water quality

- **Creating partnerships**
  - Recognizing every stakeholder group
  - Collaboration to solve problems

- **Inclusion and engagement**
  - All people have the right to quality drinking water
  - Recognizing that low income people and minority groups are often disproportionately impacted
Arenas for action

One Water Approach

#1 Reliable and Resilient Water Utilities

#2 Thriving Cities

#3 Competitive Business and Industry

#4 Sustainable Agricultural Systems

#5 Social and Economic Inclusion

#6 Healthy Waterways
#1: Reliable and Resilient Water Utilities

- Diversifying water supplies
  - Rapidly respond to changes in availability and demand
  - Increase water storage capacity
  - Extending water systems to new sources
  - Matching water quality to actual end use

- Transforming wastewater into a resource
  - Nutrient and Energy recovery
  - Water reclamation
  - Anaerobic digestion
#1: Reliable and Resilient Water Utilities

- Forging new business models
  - Increase cooperation and service sharing
  - Developing new funding and financing tools
  - Public-Private partnerships

- Green Infrastructure
  - Reduce volume of stormwater going into combined sewers
  - Provide aesthetic value to neglected communities
  - Eases surface water management
#2: Thriving Cities

- Integrated planning across water cycle
  - Overcome fragmented nature of water governance and transform into an integrated water resource planning
  - Balance water needs throughout each community

- Utilizing onsite water systems
  - Develop, conserve, and reuse water
  - Create policies to support and incentivize use of local and decentralized water systems
  - Increase local water efficiency
#2: Thriving Cities

- **Adopting a “dig once” approach**
  - Building common trenches for multiple utility lines including gas, electric, water, telecommunications, etc.
  - Coordinate schedules with road or utility related repairs
  - Simplify permitting and construction

- **Deploying technologies to improve decision-making**
  - Advanced sensors to detect vulnerable or leaking pipes
  - Measuring and improving performance
  - Collecting data on flow, pressure, distribution, etc.

- **Managing water to foster climate resilience**
  - Optimize land use planning
  - Flood protection
  - Utility strengthening
#3: Competitive Business & Industry

- Integrating water stewardship into company strategy
  - Establishing stewardship strategies including goals for conservation and sustainability
  - Reduction of “water footprint” as part of a company’s social responsibility goals

- Deploying water efficiency, stormwater management, & water reuse at industrial facilities
  - Improving water efficiency in manufacturing process
  - Water reuse systems for industrial and irrigation purposes
  - Strategically identifying risks and challenges in watershed

- Developing upstream & downstream partnerships
  - Recognizing offsite challenges to drive collective action
  - Collaborate across sectors and supply chain
#4: Sustainable Agricultural Systems

- Using on-farm strategies to reduce water consumption and manage nutrients
  - Keep nutrients in fields
  - Reduce nutrient loads on stormwater runoff
  - Utilization of field practices: Cover crops, filter strips, no till or strip till farming
  - Use of bioreactors to prevent nitrate and sediment runoff

- Partnerships between upstream & downstream communities
  - Collaboration between urban and rural entities
  - Promote water protection
  - Uniting stakeholders around a common vision and approach
#4: Sustainable Agricultural Systems

- Using watershed-scale planning and monitoring
  - Monitoring and mapping
  - Predictive watershed modeling
  - Standardized data collection
#5: Social & Economic Inclusion

- Building a water safety net
  - Providing everyone with a basic level of access to safe, reliable, and affordable water & sewer service
  - Determine financially sustainable approaches
  - Resolve water safety issues to ensure long-term and reliable access

- Leveraging water investments to generate community benefits
  - Economic growth by investing in water infrastructure
  - Creating well paid jobs with career growth opportunities
#5: Social & Economic Inclusion

- Fostering community resilience in the face of changing climate
  - Assessing environmental and economic challenges
  - Identify communities likely to be hit first and worst
  - Planning and investing to protect communities at risk

- Enhancing community capacity to engage in water planning and governance
  - Engage community organizations and local leaders
  - Generating community awareness of local water issues
  - Increase public participation in infrastructure planning
#6: Healthy Waterways

- Maximizing natural infrastructure for healthy ecosystems
  - Use forests, wetlands, & riparian habitat to control flow and prevent nutrient and sediment discharge
  - Minimize disturbance of natural flow

- Managing groundwater for the future
  - Prevent groundwater levels from falling further
  - Using rainwater to replenish aquifers
  - Enable large scale water reuse
#6: Healthy Waterways

- Protecting forests to protect water
  - Prevent further declines in forest cover
  - Protect forests adjacent to waterways to prevent nutrient runoff

- Utilizing citizen science for ecosystem monitoring and watershed restoration
  - Create awareness of water related issues
  - Treat community complaints as early warning systems
  - Create more actionable solutions by having support of the community
Case Studies

- Philadelphia Green City, Clean Waters
- One Water Los Angeles
Philadelphia Green City, Clean Waters

- Citywide plan to mitigate pollution caused by increased urbanization
- Construction of green infrastructure
- Billing incentives
- Stormwater management on private developments
Philadelphia’s Challenges

- Water quality
- Aging infrastructure
- Degraded waterways
- Flooding
- Combined sewer overflows
Green City, Clean Waters - Benefits

- Waterway Restoration
  - Identifying areas prone to water quality and flooding issues
  - Streambank engineering
  - Floodplain and wetland remediation
  - Riparian vegetation buffer

- On site stormwater management
  - Intrinsically decentralized
  - Decrease urban runoff
  - Increase groundwater recharge
Green City, Clean Waters - Benefits

- Green Stormwater Infrastructure
  - Enhance watershed health
  - Improve quality of parks and recreational areas
  - Reduce localized flooding
  - Reduce runoff volume

- Extending life of existing sewer infrastructure
  - Inlet cleaning and litter pollution prevention
  - Inspection and maintenance
  - Real time data collection
One Water - Los Angeles

- Integrated approach for water supply, wastewater treatment & stormwater management
- Managing water in areas affected by drought
- Develop framework for managing the city’s water resources
One Water LA - Challenges

- Dependence on imported water
- Droughts
- Flooding
- Inadequate funding
- Aging infrastructure
- Climate change
Assess objectives for water policy
- Improve health of local watershed
- Balance between social, economic and environmental goals
- Increase climate resilience and supply reliability

Water integration
- Reducing demand
- Reusing water by recycling for non-potable uses
- Capturing stormwater both locally and centrally
One Water LA - Goals

- **Collaboration**
  - Creating partnerships
  - Identification of funding strategies
  - Alternative analysis

- **Innovation**
  - Increase water recycling by construction of new reclamation plants
  - Increase sewer flows with runoff
  - Reconfigure sewer alignment
One Water LA - Benefits

- Public Use
- Habitat Restoration
- Open Space
- Climate Adaptation
- Jobs
- Flood Protection
- Water Supply
- Water Quality
Questions

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Websites

  - One Water Roadmap
- https://www.lacitysan.org/san/sandocview?docname=cnt016744
  - Stakeholder informational meeting One Water LA Overview
- http://www.phillywatersheds.org/what_were_doing/documents_and_data/cso_long_term_control_plan
  - Green City Clean Waters