Welcome to
TUESDAYS AT APA | DC
Get Engaged!

APA Water and Planning Network

The mission of the Water and Planning Network (WPN) is to provide a professional forum for the interdisciplinary exchange of ideas and planning methods and will operate as a communications and information sharing network to connect members to the best planning practices that reflect current research, science, policy and technology regarding the protection, management and use of water resources and utilities.

APA website: [https://www.planning.org/divisions/groups/water/](https://www.planning.org/divisions/groups/water/)
LinkedIn: [https://www.linkedin.com/groups/8596612](https://www.linkedin.com/groups/8596612)
One Water: Coordination Efforts for Sustainable Communities

Speaker: Katy Lackey
Research Manager
Water Environment & Reuse Foundation

June 20, 2017
One Water: Coordination Efforts for Sustainable Communities

Katy Lackey
Research Manager, WE&RF

20 June 2017
Tuesdays at APA
Washington, D.C.
Today’s Challenges Demand a New Approach
Tonight’s Agenda

I. One Water and the Utility of the Future

II. Research efforts to achieve One Water goals

III. Coordination and partnerships with planners

IV. The future of water management and urban planning!
About the Water Environment & Reuse Foundation

Dedicated to research on re-NEW-able resources from wastewater and stormwater while maintaining the quality and reliability of water for natural systems and communities.

-established 1989
-established 1993
-merged july 2016
What is ‘One Water’ management?
Paradigm Shift to ‘One Water’

One Water is an effort to:

“integrate the planning and management of water supply, wastewater, and stormwater in a way that minimizes impact on the environment and maximizes contribution to social and economic vitality in a community.”

~Mukheibir et al., 2015

(WE&RF Project No. SIWM1T12)
Water Infrastructure Continuum

Source: Brown, Keath and Wong, 2009 in Mukeheibir et al, 2015 (WE&RF Project No. SIWM2T14).
The New Resource Management Paradigm

Source water

Drinking Water Treatment

Wastewater Generation

Water Resource Recovery Facility

Biosolids

Nutrient Products

Other products e.g., bioplastics, cellulose

Energy

Source: WEF and WE&RF, 2016
The Utility of the Future

From managers of waste to managers of valuable resources

Source: NACWA, WERF, WEF, 2013 (WE&RF Project No. WERF3C12)
What efforts are underway to achieve One Water goals?
Research: Onsite Water Reuse

Sources: WE&RF and SFPUC
Key Findings:

- LRTs for different water sources/end uses.
- 3 risk-management categories.
- Unit operations to meet pathogen reductions.

Implications:

- Performance treatment standards.
- Local, state, national regulations for onsite reuse.

Source: Sharvelle et al., 2017
(WE&RF Project No. SIWM10C15)
Onsite Reuse & Planners

- Increase water supply reliability and optimize water services.
- Reduce city’s carbon, energy, water, and waste footprint.
- Opportunity for green building and eco-districts.

Source: NORM by Biohabitats
Photo Credit: Katy Lackey
Source: NORM by Biohabitats

Photo Credit: Katy Lackey
Clean Water Act Goals
“Fishable & Swimmable”

- Agricultural, Forestry, Transportation BMPs
- Construction BMPs
- Urban Stormwater BMPs (Source Controls, Structural, GI/LID)
- Stream Restoration
- Urban Stormwater Quality Database (NSQD)

Research: Stormwater & Green Infrastructure

Est. 1996
Research: Stormwater & Green Infrastructure

CLASIC: Community-enabled Lifecycle Analysis of Stormwater Infrastructure Costs
Research: Stormwater & Green Infrastructure

Source: Law & Hanson, 2016
Stormwater & Planners

- Improve water quality.
- Reduce flooding and increase resiliency.
- Co-benefits of green infrastructure (heat island effect, health, recreation).

Photo Credit: WE&RF / Shutterstock
Water and wastewater services: 1-4% of U.S. electricity use.

1996-2013: Energy use grew 74% in the U.S. wastewater sector.

Photo Credit: WE&RF and Urban Fabrick

Aeration process at a treatment plant.
Wastewater contains 5x the amount of energy needed to treat it!
Energy Management & One Water

Cali Watershed & Water Guardians Icon.

Source: Lackey & Fillmore, 2017 (WERF1T14)
Photo Credit: EMCALI, Colombia

View from Cornell’s campus. Ithaca Area WRRF.

Source: Tarallo et al., 2015 (ENER1C12); Lackey & Fillmore, 2017 (WERF1T14)
Photo Credit: EMCALI, Colombia
Energy Recovery & Planners

✓ Reduce city’s carbon and energy footprint.
✓ Increase renewable energy use.
✓ Future opportunity for resilient energy supply.

Newton Creek, NYC
Photo Credit: Katy Lackey
Where is coordination taking place and how can planners be involved?
Current Coordination

Do you think the role planners currently play [in urban water management] is…

Planners and water managers know they should be coordinating!

Source: APA, Stoker et al., 2017
(WE&RF Project No. SIWM5R13)
Coordination Strategies: Identify Priority Areas

**Survey**

**Most Important Actions:**
- Floodplain Land Use Controls
- Stream Protection and Restoration
- Riparian Protection
- Create and Preserve Wetlands
- Clustering Development on Least Porous Soils
- Septic Systems Management, Green Treatment, Onsite Septic Permitting

**Expert Interviews**

**Most Important Actions:**
- Densification, Infill and Redevelopment
- Multiple Purpose Corridors
- Rainwater/Stormwater Harvesting and Associated Laws
- Create and Preserve Wetlands
- Riparian Protection
- Stream Protection and Restoration
- Floodplain Land Use Controls
- Efficient Landscape Practices and Irrigation Including Ordinances

*Source: Stoker et al., 2017 (WE&RF Project No. SIWM5R13)*
Coordination Strategies: What’s Most Useful?

**Top 5 Tools for Coordination:**

1. State and/or federal mandates for collaboration or consistency.
2. Developing an MOU between the water & urban planning agencies.
3. Appointing internal coordination leaders/facilitators.
4. Mandatory consistency between decisions.
5. Consolidation or merger of departments or agencies.

**Top Tools for Coordination Barriers:**

1. Developing an MOU between the water & urban planning agencies.
2. Mandatory consistency between decisions.
3. Appointing internal coordination leaders/facilitators.
4. State and/or federal mandates for collaboration or consistency.
5. Permanent cross-program coordinating groups, councils, commissions.

*Source: Stoker et al., 2017 (WE&RF Project No. SIWM5R13)*
## Coordination Strategies – Self Assessment

### Barriers-Bridges Matrix

<table>
<thead>
<tr>
<th>Barriers to Coordination</th>
<th>Tools for Overcoming Barriers to Coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Joint future scenarios planning, visioning, or goal setting</td>
</tr>
<tr>
<td>Lack of time - too many other priorities to deal with</td>
<td>1</td>
</tr>
<tr>
<td>No mandates or incentives to work together</td>
<td></td>
</tr>
<tr>
<td>No one responsible for coordinating</td>
<td>0.5</td>
</tr>
<tr>
<td>Concerns over losing organizational power, resources, or status</td>
<td>1</td>
</tr>
</tbody>
</table>

*Source: Stoker et al., 2017 (WE&RF Project No. SIWM5R13)*
Part IV

The Future of Water and Planning
One Water Goals and Planning

Source: Howe & Mukheibir, 2015 (WE&RF Project No. SIWM1T12a)
### Where do planners fit in?

<table>
<thead>
<tr>
<th>Cleaner Waterways</th>
<th>Green Planning</th>
<th>Smart Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Street cleaning.</td>
<td>• Coordinated, prioritized GSI / LID sites.</td>
<td>• Irrigation / golf course reuse.</td>
</tr>
<tr>
<td>• Waterway protection.</td>
<td>• Maintain key floodplains, riparian barriers.</td>
<td>• Onsite treatment.</td>
</tr>
<tr>
<td>• Infrastructure and CIPs / Climate Action Plans.</td>
<td></td>
<td>• Renewable energy.</td>
</tr>
</tbody>
</table>
“If there is magic on this planet, it is contained in water.” ~ Loren Eiseley
Key Resources for One Water & Coordination

**WE&RF Projects:**

Integrating Water Management with Urban Design  
(SIWM5R13) Stoker & Pivo, 2017 (pending publication)

Pathways to One Water: A Guide for Institutional Innovation  
(SIWM12T12a) Howe & Mukheibir, 2015

Institutional Issues for Integrated ‘One Water’ Management  
(SIWM12T12) Mukheibir et al., 2015

Blueprint for Onsite Systems  
(SIWM ) WE&RF, WRF, SFPLIC, 2015

Risk-Based Framework for the Development of Public Health Guidelines for Decentralized Non-Potable Water Systems  
(SIWM10C15) Sharvelle et al., 2017

**APA Projects:**


Water Working Group Survey Summary of Results, 2016

PAS Water & Planning Book, TBD

**Other:**

Integrating Land Use and Water Resources: Planning to Support Water Supply Diversification  
Fedak & Beckwith, 2017 (pending publication, WRF 4623)

One Water Roadmap: The Sustainable Management of Life’s Most Essential Resource  
US Water Alliance, 2016

Blueprint for One Water  
Paulson et al., 2017 (WRF 4660)
References


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Thank You!

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