Agenda

Innovation in Urban Water Systems
May 29-30, 2014
San Francisco Port Commission Room
Ferry Building Marketplace
Second Floor
San Francisco, California

Wednesday, May 28

6:00-7:30pm Optional Meet and Greet
Light Snacks Provided, No Host Bar
Bar 333, Le Meridien Hotel, 333 Battery Street

Thursday, May 29

8:30-9:00am Registration and Breakfast

9:00-9:30 Welcome and Introductions
Francesca Vietor, Program Director, Environment, Public Policy, & Civic Engagement, The San Francisco Foundation

9:30-10:45 Setting the Stage
This opening session will focus on the common opportunities and challenges that cities face as they are implementing on-site water reuse.

Facilitator: Erin Hagan, Policy and Government Affairs Manager, San Francisco Public Utilities Commission (SFPUC)

Discussion Starters:
  • Vlada Kenniff, Managing Director, New York City Department of Environmental Protection
  • Paula Kehoe, Director of Water Resources, SFPUC

10:45-11:00 Break

11:00-11:30 Brainstorm—Key Elements of the Blueprint
A goal of this meeting is to collectively develop a blueprint for implementing and scaling on-site water reuse programs. During this discussion we will brainstorm the key topics for inclusion in the blueprint.
11:30-12:30pm  Lunch

12:30-2:30  The Devil’s In the Details (Concurrent Small Group Discussions)
Session participants will break into two groups for in-depth discussion focused on identifying solutions for commonly encountered challenges associated with on-site water reuse programs.

- **Building the Foundation.** This discussion will focus on the process and procedures for changing the plumbing code and adopting water quality standards that are the foundation for implementing on-site water reuse projects.

  *Discussion Starter: Sina Pruder, Wastewater Branch Engineering Program Manager, State of Hawaii Department of Health*

- **Getting to Scale.** This discussion will focus on strategies to institutionalize on-site water reuse through policy change, incentives, and partnerships.

  *Discussion Starter: Neal Shapiro, Supervisor, Watershed Section, City of Santa Monica*

2:30-2:45  Break

2:45-3:15  Report Back from Small Group Discussions

3:15-3:30  Wrap Up
Recap and reflections from the day.

3:30  Board Cable Car to SFPUC Headquarters

4:00-4:45  Tour of SFPUC Headquarters – 525 Golden Gate Avenue
The LEED Platinum building includes an onsite “Living Machine”, which treats and recycles the building’s wastewater for on-site toilet flushing and irrigation.

*Welcoming Remarks: Harlan L. Kelly, Jr., General Manager, SFPUC*

5:00-7:00  Reception
The Hidden Vine
408 Merchant Street
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Friday, May 30

8:30-9:00am  Breakfast

9:00-9:15  Welcome Back

9:15-11:45  Building the Blueprint
   The full group will work together to identify, describe and agree upon
   the content that will be addressed in each section of the Blueprint.
   
   Facilitator: Radhika Fox, Director, Policy and Government Affairs,
   SFPUC

11:45-12:15pm  Next Steps
   Identify concrete steps that need to be taken in order to build upon
   the momentum from this convening. Highlight questions and concerns
   to be addressed through the development of a research agenda.
   Discuss opportunities for future interaction of the group.
   
   Facilitator: Erin Hagan

12:15-12:30  Wrap Up
   Opportunity for participants to share reflections about the meeting.

12:30-1:00  Pick Up Boxed Lunches

1:00-2:00  Exploratorium Tour
   Optional tour of the Exploratorium’s rainwater harvesting system.
Introduction

On May 29-30, 2014, representatives from state and municipal agencies from across the country are coming together in San Francisco to discuss the critical issues associated with introducing and scaling on-site water reuse systems in our cities and states. The purpose of this meeting is to share knowledge and lessons learned in order to achieve our mutual goals of overcoming institutional barriers to on-site water reuse. This document synthesizes the challenges and opportunities we face in implementing on-site water treatment systems and is intended to help frame the conversation and prepare participants to engage in constructive dialogue during our time together. The strategies identified during this meeting will be translated into a Blueprint “How To” Guide to assist public agencies in advancing on-site water reuse across the country.

Overview

Managing water supplies and controlling stormwater is one of the most critical natural resource challenges facing the United States and the world. Dwindling water supplies, droughts, extreme weather events, and population growth exacerbate the strain on our centralized water and wastewater facilities; but our options for new water supplies and management strategies tend to be controversial and expensive. As good stewards of our water resources, we are working to meet these challenges by evaluating new ways to collect, treat, and reuse local water resources.

On-site water reuse is one of the emerging strategies that, when taken in concert with other creative design techniques and technology, can help transform buildings into tools for supplementing our water supply and relieving pressure off our wastewater systems.

Buildings produce alternate water sources—such as rainwater, stormwater, graywater, and blackwater—that, following treatment, can meet their own non-potable water needs. In some cases, foundation drainage, cooling tower blow down, or air conditioner condensate may be available for reuse as well. We need to ask ourselves: Can we see more buildings reusing their own water? Can this be more of an accepted building practice rather than an exception or mandate? Can we be proactive rather than reactive? Now is the time to embrace this type of design, not just as flagship projects, but to facilitate the widespread reuse of water.

Key Terms

**On-site water treatment/reuse system**: A decentralized system of collecting, treating, and reusing alternate water source(s) that are generated within an individual building or a group/district of neighboring buildings for non-potable purposes. This does not include wells or on-site wastewater disposal systems, such as a septic system.

**Alternate water source**: Non-traditional water sources such as rainwater, stormwater, graywater, and blackwater that can supplement water supplies for limited application.

**Rainwater**: Precipitation collected from roofs or other manmade above grade surfaces.

**Stormwater**: Precipitation collected from at- or below-grade surfaces.

**Graywater**: Wastewater from bathroom sinks, bathtubs, showers, and clothes washing machines.

**Blackwater**: Wastewater from toilets, dishwashers, kitchen sinks, and utility sinks.
Key Issues for Discussion

During the interviews conducted with session participants in preparation for this meeting, it was clear that while progress varies by city and state, there is a core set of challenges that inhibit widespread implementation of on-site water reuse. Changing the plumbing code and adopting water quality standards serves as the first critical step and foundation for implementing on-site water reuse. Establishing effective processes and procedures for this phase of the process is key to developing a sustainable reuse program. Once the appropriate standards and protocols are in place, there are a number of strategies that will help institutionalize on-site water reuse and bring it to scale, including changes to public policy and business operations and incentives to assist in establishing a viable market. Finally, a targeted research agenda is needed to help support the development and implementation of on-site water treatment systems. During our time together we will delve more deeply into these issues.

New Plumbing Codes and Water Quality Standards

Defining the appropriate water quality standards to allow the safe reuse of rainwater, stormwater, blackwater, and/or graywater may be one of the biggest challenges facing the widespread implementation of on-site water treatment systems. The technology to treat alternate water sources exists, yet the process for adopting the necessary standards to permit implementation can be arduous. Plumbing codes, such as the Uniform Plumbing Code and the International Plumbing Code (known as model codes) must be updated to include construction and water quality criteria for certain alternate water sources. The recently published NSF/ANSI Standard 350 for on-site water reuse provides a standard for certifying products that treat on-site graywater and blackwater for nonpotable reuse. However, not every municipality has adopted the most recent model plumbing code; some states and municipalities only adopted standards for a limited number of alternate water sources, and some states adopted their own code entirely.

One of the most challenging aspects of updating the plumbing code is meeting the requirement for adopting water quality standards for the reuse of these new water sources. The need for defined, uniform and appropriate water quality standards was expressed by every agency that was interviewed. Some agencies discussed their efforts thus far to independently develop these standards. For example, the State of Hawaii has established a collaborative working group to prepare water quality standards in order to adopt the latest version of the Uniform Plumbing Code. The working group includes members from the Governor’s Office, public officials, landowners, and union members. The State of Minnesota is conducting a risk assessment study on stormwater used for irrigation and toilet flushing in order to develop water quality standards for future projects.

A Proactive Policy and Regulatory Framework

The on-site water treatment systems that are online today are frequently a result of exception or variance to an existing code. All of the session participants recognize the need to realign administrative policies and establish regulatory frameworks to manage the reuse of alternate water sources. The ability to provide clear direction for project sponsors and developers—especially with respect to building standards, permits, and fees—will be a key strategy for promotion. Partnerships between entities that oversee public health, building permitting, and water and wastewater services will be crucial not only to uphold rigorous requirements, but also to foster innovation.

One example of institutionalizing on-site water reuse is in the City of San Francisco, where the San Francisco Public Utilities Commission established a city ordinance to streamline the permitting process for on-site water treatment systems. Making these changes to the local law is a critical factor in
smoothing the way for developers to install on-site water reuse systems. It establishes a process and framework for permitting and sets a precedent for incorporating these systems into building design. The partnership between the SFPUC, the San Francisco Department of Public Health, and the San Francisco Department of Building Inspection is also an essential component of success. The partnership has enabled the installation and ongoing oversight of on-site water treatment systems that ensure the protection of public health.

**Incentives to Drive the Market**

Our centralized water and wastewater systems provide critical services in our communities, but are under extreme stress due to aging infrastructure, increasing urban infill and extreme weather patterns that impact how we manage and operate our conventional water and wastewater systems. Smaller decentralized systems can help us adapt to these changing conditions. We can embrace on-site water systems and integrate them in new development projects as a solution to lessen the strain on our centralized infrastructure.

Additionally, as the development industry is shifting toward more environmentally conscious design standards, we have the opportunity to connect with green building programs and incorporate decentralized, on-site water treatment systems in new eco-friendly buildings, neighborhoods, and districts. We can provide leadership in water sustainability and develop partnerships with industry experts. A number of public agencies attending the meeting are taking this approach and incorporating alternate water use to raise the bar in sustainable building design. The City of Seattle launched The Living Building Pilot Program in 2011 to encourage innovative green buildings. One example is the Bertschi School, which includes rainwater cisterns, an interior green wall that treats graywater, and a composting toilet.

In addition to creating supportive environments for the use of alternate water sources, financial incentives can also go a long way in helping bring on-site water use to scale. Some of the participating cities, such as San Francisco and Cincinnati, offer financial grants or low-interest loans for innovative projects. Santa Monica waives building permit fees and New York City charges discounted service rates for projects and properties that include reuse systems. Many cities offer rebates for rain barrels and other stormwater-reducing or water-saving projects. There are a myriad of ways to move the market on reuse projects; by combining our ideas and experiences we can develop a menu of options to suit the needs of different agencies.

**An Action Based Research Agenda**

We are still at the forefront of implementing on-site water treatment systems, which means there are numerous unanswered questions about how best to move forward. Now is the time to identify the research agenda that will inform the promotion of innovative and sustainable water systems. Particularly, additional research is needed to support the establishment of more appropriate water quality standards and monitoring practices that will ensure the protection of public health. New studies can also shed light on emerging collection and treatment technologies; as well as demonstrate the effectiveness of certain policy approaches and financing strategies to promote on-site water systems. During the meeting, we will have an opportunity to identify and discuss these research needs.
Conclusion

Our time together in San Francisco is an opportunity for public agency conversation about the important issues associated with scaling on-site water treatment systems in our communities. The Innovation in Urban Water Systems meeting will create a venue for leaders in on-site water reuse to come together to spur innovation and action. The meeting is a forum for collaboration, sharing of technical resources, assessing the need for new research, and networking to improve water management strategies. Together, we can build upon our combined experiences and initiatives to scale up the implementation of on-site water systems to collect, treat, and use alternate water sources in our cities and states.
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Dear Participants,

On behalf of the San Francisco Public Utilities Commission, it is with great pleasure that I welcome you to the Innovation in Urban Water Systems convening. This is the first time municipal agencies have come together from across the country with a focus on overcoming institutional barriers to on-site water reuse. I’m proud that the SFPUC is part of this pioneering effort.

On-site and decentralized water systems are shifting the way we think about water in our urban cores and allowing us to customize our approaches to reusing water. The SFPUC is modeling this practice in San Francisco by implementing on-site water treatment and reuse at our headquarters, which you will have an opportunity to tour while you are here. As we move toward this new paradigm, smaller on-site water systems also hold great promise for reducing fresh water demands, and controlling and managing stormwater flows in dense urban centers.

During the meeting, I hope you will learn from the challenges, successes and strategies implemented by your fellow participants. Together, I know we have the knowledge and ingenuity to make on-site reuse systems an integral part of normal building design in the future.

Sincerely,

Harlan L. Kelly, Jr.
General Manager, San Francisco Public Utilities Commission