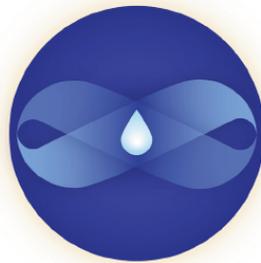


Wellspring

Presented by



pureblue

Smart Water - Smart Solutions

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Tacoma, Washington

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Peer to Peer Table Discussions Summaries

Discussion Overview

Table	Topic	Problem Overview
1	Intelligent digital solutions for stormwater and wastewater management	<ul style="list-style-type: none"> • Increasing inspection costs • Ensuring proper AMI implementation • Lack of city-wide digital network planning
2	Innovative solutions in stormwater, green infrastructure, and wastewater considering longer-term operation and maintenance	<ul style="list-style-type: none"> • Green Stormwater Infrastructure (GSI) effectiveness is unknown • Uncertainties around O&M of GSI • Aging workforce and infrastructure
3	Stormwater and wastewater as a resource, and associated market and policy challenges	<ul style="list-style-type: none"> • Clean water pricing and actual costs are not aligned • Mismatch in demand and delivery due to seasonal variability and geography
4	One Water: systems thinking, watershed-scale approaches, and opportunities for trading, cost optimization, and innovation	<ul style="list-style-type: none"> • Lack of leadership to transition agendas to actions in integrated water management • Regulatory variations between jurisdictions • Overly centralized systems

Topics were defined in consultation with table leads in advance of the conference, and participants selected which specific topics they would contribute to on the day. Four final topics were addressed across six working groups, presented in this report.

TABLE 1: Intelligent digital solutions for stormwater and wastewater management

Description: Current advances in sensing, automation, and data analysis mean that information technologies are positioned to play a key role in revolutionizing how we monitor and make decisions across utilities and industries. Early adopters see not only efficiency gains and cost reductions, but also improvements in how they manage current resources and reduce pollutant loads and regulatory exceedances.

Key developments and existing needs assessments provided to participants:

Examples of key developments undertaken by two technology providers in the PureBlue Aqualyst program include the following discussed in plenary:

- StormSensor flooding case study: <https://www.stormsensor.io/urban-flooding-a-doozy-of-a-problem-with-a-growing-economic-burden-and-a-growing-media-presence/>, and
- Emagin and Drinking Water: <https://www.emagin.ai/posts/united-utilities-becomes-the-first-water-utility-to-adopt-ai-2>.

Lead: Douglas D. Navetski (King County) and presented by Michael Gardner (Aquix) and Stephanie Seivert Wilson (City of Tacoma)

Priority needs (problem) and opportunities (solutions) identified:

Problem 1 - Increasing inspection costs: Increasing personnel costs and quantity of installed infrastructure are impacting the viability of comprehensive inspections. The group raised the point that “it costs a lot to send out field inspectors...so how do you make sure that aspect is still viable?” Solutions discussed included:

- Consider current advances in automation and sensing to better support field inspectors and provide wider autonomously collected data on infrastructure.
- The field of robotics and automation of waste treatment, maintenance validation, and stormflow and detention management could be expanded.
- Apply technologies on the forefront of automation of monitoring and field inspection for green infrastructure. The use of Lidar is an example of successfully applied technology (see application in Chesapeake Bay area).

Problem 2 - Awareness and trust of Advanced Metering Infrastructure (AMI): Implementing AMI can be confusing for stormwater and wastewater managers and for the vendors of the technology. If you are responsible for implementing AMI programming, it can be confusing when engaging new vendors. How do you make sure vendor A and vendor B parts are going to be able to work together? A solution discussed included conducting more case studies that are relevant and accessible to build trust around AMI implementation and metering integration.

Problem 3 - Lack of city-wide digital network planning: There is a lack of understanding and planning in the networks that cities are building across the various use-cases both in wastewater and stormwater, and more widely. Since these networks carry many different data packets, it can be challenging to get your own devices to integrate as a vendor. Group members raised the questions: “What is the roadmap for how to do that?” and for “...network evolution over the next 5-10 years?” A solution discussed included creating a city and national roadmap for communication and network evolution. At the city level, a solution discussed was to provide planned network evolution and expected standards for inter-operability over the 5- to 10-year horizon.

What – Opportunities 6 months, 2 years, and 5 years: *Which opportunities have both the greatest impact and are achievable within the time frame? What are the activities and tangible outcomes of change expected?*

The group decided to focus on a common need across problems 1-3, namely the opportunity for smart technology and digital innovation in improving the operation, maintenance and management of stormwater and wastewater.

A few broad areas of opportunity to focus action included:

- Improve operation and maintenance using smart technology. Smart technology can be broadly defined to include “self-monitoring, analysis, and reporting technologies”, allowing for more communication between different systems and devices.¹
- Raising awareness and increasing application of current advances in technologies providing greater information and data for GSI management. This included examples discussed for data (quantifying storm event and base level flows), video (inspection and integrity), and sensors (physical parameters).
- Focus on retrofit to have the greatest impact.
- The following are specific applications to consider:
 - Robotics and automation of waste treatment;
 - Maintenance validation in stormwater and wastewater;
 - Stormflow and green infrastructure (detention), including new remote sensing technologies such as Lidar;
 - National and city roadmaps for communication and network evolution, including AMI, and
 - Case studies of AI implementation, digital twinning studies, and mentoring programs.

Barrier: The procurement process can make it difficult to implement innovative projects within municipalities.

Funding source: Centennial Fund, Stormwater Action Monitoring (SAM), and other Ecology Funds.

Who, how and when - Key collaborators and venues: A key collaboration could occur between maintenance groups and innovators. Networking could be increased through conferences and professional networks like American Public Works Association (APWA). Increased collaboration across sectors was highlighted, as was the need for mentoring programs.

Tangible outcomes: In the short term, there will be more pilots that people can see and support. For example, more pilots are needed and expected in both stormwater orifice control and flow sensor technologies (e.g. Opti and Storm Sensor respectively), and for remote sensing in monitoring (e.g. see examples of use of Lidar for GI in Chesapeake Bay area).

¹ <https://www.petra.com/blog/what-is-smart-technology/>



Annex 1. Roundtable notes presented in plenary

TABLE 1: Intelligent digital solutions for stormwater and wastewater management

Round 1

Value Drivers
Needs
 • reduce variability in capital costs (thing)
 Smart grid, shaper, (Paving)
 600m x 1 mile rd, 72 phase rd, need to integrate network
 Digital twin in HUII
 studies or cases of (water deployment)
 National road map for Comm's network evolution so can plan

Barriers
 Data collect
 Data communication
 Data Analysis

Digital
 OIPs
 • Robotics + automation of waste treatment
 maintenance vehicles
 stormflow
 green (detention)
 • Lidar
 • National Roadmap for Comm's network evolution
 • case studies of full implementation + metering integration

Round 2

Opportunities
 ① O+M AS needed - Smart tech
 ② Understand systems - through technology
 - ex - data (flow)
 - video (retrofit)
 - sensors
 Impactful -> to help w/ cost / funding
 prioritize retrofits / procurement
 What is **Key** Pilot w/ sensor
 Start w/ one area / to achieve #1 in 2-5 years can be
 prove
 - SAM (who helps it are the players)
 HOW: Conference, Professional Networks, etc
 Maintenance groups
 Funding From Ecology
 Innovators