PipeForce

An Interview with Hillary Waite

The Future of Municipal Stormwater Management

Hillary Waite's experience includes managing drainage and wastewater departments and programs for local governments. She serves as Vice Chair of the Massachusetts Statewide Municipal Stormwater Coalition and is currently the Sewer Superintendent for Rockland, Massachusetts. A proud double-Terrier, she holds a master's degree in Energy and Environment and a bachelor's degree in Environmental Analysis and Policy from Boston University.

1. Stormwater systems are largely invisible until flooding occurs. What are the biggest stormwater management challenges cities face that residents—or even some experts—may not fully appreciate?

A lot of problems are examples of the system working until the "last mile." That is, the drainage system gets water off the road and out of people's sight, except as it's traveling the last few hundred feet to a wetland or water body. Often at this point, the system is routed through private property (with or without an easement), causing a nuisance to one or two property owners in particular. We enter a really tricky zone here, where we owe our constituents, especially those who grant us easements, a system that works everywhere; but we also can't prevent flooding from every single storm. Our major challenge is protecting public and private property without disproportionately expending our resources.

2. With intensifying weather events these days, are municipalities rethinking how they evaluate stormwater capacity and risk? Many systems were designed decades ago using lesser rainfall assumptions.

Absolutely. In many cases, we assume that the system was designed for a 10- or 25-year storm; and as we all know, those storms will become more frequent within our lifetime. Prior rainfall assumptions create system limitations, as do prior assumptions about regulating development. Our communities are more built-out than ever, and they don't always convey drainage quite how we would expect based on the plans.

We're also focused on making sure new development and redevelopment don't create a new drainage concern. One thing I love about local government is a municipality's ability to customize a regulation based on its particular needs - so you may see different controls for different site types, different retention standards, or even a "mitigation bank" where development can provide off-site pollution control.

3. When flooding occurs, what are the priorities or criteria for deciding which parts of a system should be analyzed first?

When we've done a good job being proactive about system maintenance, it's the areas where major flooding actually occurs. That localized flooding indicates to us that the problem runs deeper than the storm and is an issue with elevations or capacity rather than a blockage. From there, we triage the same way we do many public works problems:

- Is the issue recurring, or did this seem to be due to a catastrophic storm?
- Is the issue on a major road? Will continued dysfunction (and repairs) cause traffic issues or delays?
- Are we already undertaking roadwork here (or have we recently?)
- More than once, we've seen issues caused during construction of other utilities that a contractor chose not to report to us.
- Are people stuck in their homes because of the issue?
- Is there an external factor at play, like nearby construction?

4. Given limited budgets, incomplete data, and aging infrastructure, what types of information or analysis are most valuable to decision makers for improving stormwater management?

Especially in very old systems, record plans are not complete and rarely include pipe elevations or sizes the way a sewer system plan typically does. Even just on major trunk lines, this info is costly to gather in time or budget, but we can use it to make good inferences about the system and its level of functioning. Proactive CCTV would be a huge step forward on a limited budget.

5. Aside from weather patterns, have you seen changes in how municipalities approach stormwater management, such as in planning, technology, or expectations from regulators and residents?

I think the communities that are communicating best about stormwater are emphasizing it as a utility. Many communities manage water and sewer systems; some also manage electrical utilities. Stormwater is often seen as an "afterthought" utility, when it should be mentioned in the same breath as water and sewer. Discussing utilities as a group elevates stormwater into its rightful slot as the third underground water conveyance, and boosts its importance when we're discussing community support, understanding, and budgets.

Expectations from regulators and residents continue to mount. Just like with drinking water, a new detectable level of contaminants sometimes means a new reportable level of the same. That means more investigations, more upstream labor, more lab tests and fees. We do this work hoping to identify illicit discharges, but we rarely find a "smoking gun." Plus, in drainage, infiltration and inflow are seen less as a "bug" and more as a "feature": I/I into drainage pipes promotes drainage; it's not like sewer where we're paying to treat every drop.

I think most managers look forward to when we'll have money to spare after ruling out illicit discharges. We'll be able to look for scalable ways to reduce pollution and control flooding, whether that means through green infrastructure or with new techniques.