United States
Environmental Protection
Agency

CASE STUDY

City of Minneapolis Stormwater Asset Management System

Overview

With increasing pressure to meet water quality targets, address population growth, meet regulatory requirements, and account for the effects of climate change, municipalities have a growing obligation to manage their aging infrastructure with limited budget and resources. Asset management planning is a popular tool in maintaining levels of service and managing infrastructure capital assets to effectively maximize the value of capital as well as minimize total cost of ownership and maintain system sustainability.

Background

In water systems an "asset" is a component of the system with an independent physical and functional identity (e.g., manholes, catch basins, pump stations, outfalls). In order to improve documentation, recordkeeping, information dissemination, and drive future decision making processes, the City of Minneapolis (City) is in-process of developing and implementing a stormwater asset management system for their water assets.

City of Minneapolis, MN

By the Numbers…

Population
392,880 (2012)

Area
58 Square Miles

Minneapolis
City of Lakes

Replacement Cost of SW System
$713 million

The City is a fully developed city located in Hennepin County, Minnesota. The City is served by an estimated 600 miles of main line storm drain and 17 miles of storm tunnels.

The storm drainage system conveys runoff from an approximately 50 square mile catchment area. The tributary land use is approximately 58 percent residential. The system includes stormwater ponds and basins, bio-infiltration areas, outfalls, and other controls and treatment

facilities. Approximately 25 miles of the Mississippi River, Shingle Creek, Bassett Creek, and Minnehaha Creek wind through the City. These streams and their tributary lakes and wetlands are the primary surface waters receiving stormwater runoff.

The City began formally developing an asset management system for stormwater in approximately 2012. Motivating factors for the City to develop an asset management system included, but were not limited to: 1) Improve system, 2) Identify criticality of system components, 3) Identify life-cycle costs, 4) Improve documentation/recordkeeping, 5) Improve future decision making as a result of data and analysis, and 6) Take a proactive versus a reactive approach.

Since March 2005, the City implemented a stormwater utility fee for residents, which is included as a line item on the City's utility bills, and provides for the funding for stormwater management, including the asset management system. Elected official are also supportive of the stormwater asset management system. The stormwater utility fee is dependent upon work completed and the City's ability to meet the six motivating factors mentioned above. Successful completion of work and achievement of goals should enable staff to minimize rate fluctuations and remain competitive via effective and efficient use of the funds available.

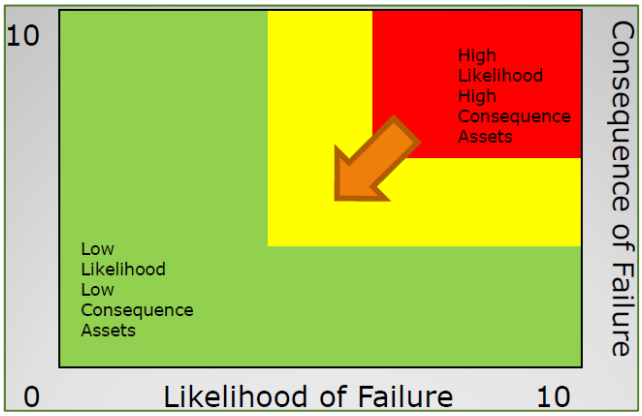
Development, Components, and Implementation of Asset Management System

In 2012, the City started operations on a 4- to 5-year program for a stormwater asset management system. In developing the asset management system, the City has set the following guiding principles:

- Protect people, property and the environment.
- Maintain and enhance infrastructure.
- Provide cost-effective level of services in a sustainable manner.
- Meet regulatory requirements.
- Enhance livability and safety.

The City's overall goals in implementing an asset management program include:

- Identifying current state of assets and asset attributes (e.g., age, condition, etc.).
- Develop a standardized rating process for assets and asset attributes (e.g., National Association of Sewer Services Companies (NASSCO) Pipeline Assessment and Certification Program (PACP)).



Asset Management Creates a Paradigm Shift to Risk Management and Optimal Decision Making

- Identifying risk areas.
- Identifying criticality of system.
- Identify life-cycle costs.
- Improve future decision making as a result of data and analysis (e.g., succession planning, level of maintenance response, capital improvement project (CIP) prioritization).
- Improve documentation and recordkeeping of assets (e.g., Maximo software).
- Improve coordination and communication.
- Lower long-term operation and maintenance costs.
- Improve regulatory compliance.
- Use as a communication tool for staff and regulators for effective information transfer and knowledge retention.

As a component of the City's asset management system, it is in-process of conducting closed-circuit television (CCTV) inspections of approximately 3.4 million feet of mainline storm pipe, and is collecting structural and operation and maintenance data in accordance with NASSCO PACP criteria as part of this process. In 2012, CCTV inspections were completed on 214,618 feet of storm pipe, and for 1,783,495 feet of storm pipe in 2013, with the remaining 1,409,947 feet of storm pipe to be inspected by mid-2015. The data is being used by the City as part of their asset management system to identify and prioritize maintenance and capital project opportunities ranging from cleaning to significant capital investments.

The City is also planning to implement the Maximo 7.5 computerized maintenance management system (CMMS) software, which is intended to be the major component in fully developing and implementing the City's asset management system. The City plans to integrate the NASSCO PACP rating and information from CCTV inspections into Maximo along with other current asset inspections (i.e., outfalls, pump stations) and utilize the software for effective work order generation.

Barriers

Typically many municipalities struggle with staff and resource constraints in embracing stormwater asset management system; however, through positive City council support along with a successful funding mechanism (stormwater utility fee for properties), the City has been able to overcome many of these constraints.

The City has had to adapt and overcome some challenges in developing a stormwater asset management system. One of the biggest challenges has been incorporating the City's overall storm sewer system complexity into an asset management system. For example, the City has struggled with what level of detail to evaluate its assets and associated attributes (small segments vs. large segments). The development of a standardized rating process also did not exist prior to the development of their asset management system; therefore, deciding on which standardized process to implement and staff training was a challenge. The City has had to overcome the culture of being *reactive* versus *proactive* in implementing a stormwater asset management system. This has included the need to effectively manage resources to pay for upgrades to prevent potential costly system failures.

Collaboration

U.S. EPA has a strong interest in working with State regulators and municipalities to find solutions to encourage asset management planning for stormwater, wastewater, and drinking water systems. EPA is encouraged by the progress demonstrated by the City and hopes to work with other municipalities and regulators to achieve similar success.

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