

US EPA ARCHIVE DOCUMENT



## CASE STUDY

# City of San Diego Watershed Asset Management Planning

### Overview

With increasing pressure to meet water quality targets, anticipate flood risk, 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 for water and wastewater systems, but has hardly been explored in a stormwater context.

In order to anticipate and justify current and projected costs of complying with federal, state and local stormwater regulations, the City of San Diego has developed an integrated Watershed Asset Management Plan (“WAMP”) for its stormwater management system.

### Background

The Clean Water Act’s Total Maximum Daily Load (“TMDL”) program requires States to address sources of pollution entering streams, lakes and coastal waters that cause them to not meet certain water quality criteria. Throughout the 2000’s, the San Diego Regional Water Quality Control Board adopted various TMDLs for pesticides, nutrients, metals, bacteria, and sediments for local waterbodies. As indicated in the TMDLs, responsibility for reducing pollutant loading in these waters falls partially to the City of San Diego and their stormwater management program. These requirements have come simultaneously with tightening national standards for stormwater management for both water quality and flood control.

### City of San Diego *By the Numbers...*

*Population*  
1.34 Million

*Area*  
372 Square Miles

*Valuation of Stormwater System*  
\$1.99 Billion

*Replacement Cost of SW System*  
\$3.49 billion



Incidentally, in 2008, the City of San Diego adopted a zero-based budgeting approach requiring City staff to show justification for every budget dollar requested each year. As a result, the City found itself in a difficult position of having to comply with TMDL, and other stormwater requirements, while being unable to justify to their officials how the requested funding would lead to regulatory compliance.

In response to these pressures, the City decided to develop a WAMP to lay the groundwork for meeting regulatory requirements as well as expectations of citizens regarding functions of the storm drain system and the quality of water and related services to be maintained in local streams, estuaries and beaches. The Plan was finalized on July 19, 2013.

### Assessing and Prioritizing Resources

The first element of the WAMP was to assess the current inventory, costs, and condition of the system. In the plan, assets are categorized as “hard,” “natural,” or “soft” and valued accordingly.

Each asset was identified by the level(s) of service it provides and the current condition of the asset. From there, assets were given a “probably of failure” (“PoF”) on a scale from 1 to 5. The City then weighed that against a similar scale quantifying “consequence of failure” (“CoF”). CoF scores incorporated a triple bottom line approach equally weighing economic, environmental and social consequences.

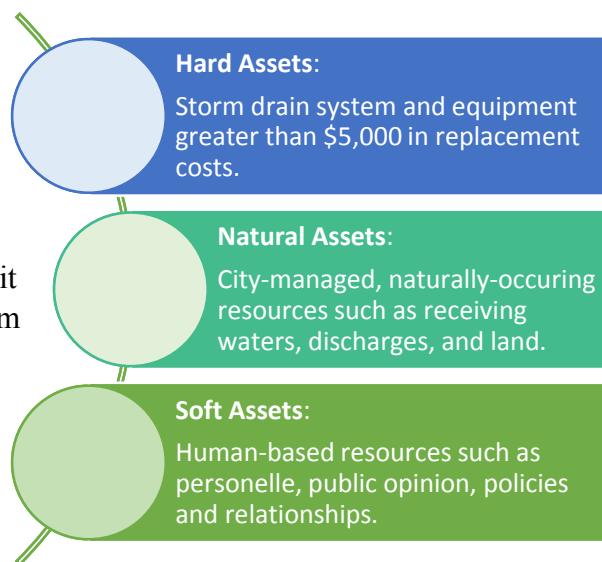
By balancing the PoF with the CoF, the City was able to prioritize urgency of asset replacement distinguishing between those assets needing immediate attention from those that resources can be diverted away from due to unlikely or low consequence of failure.

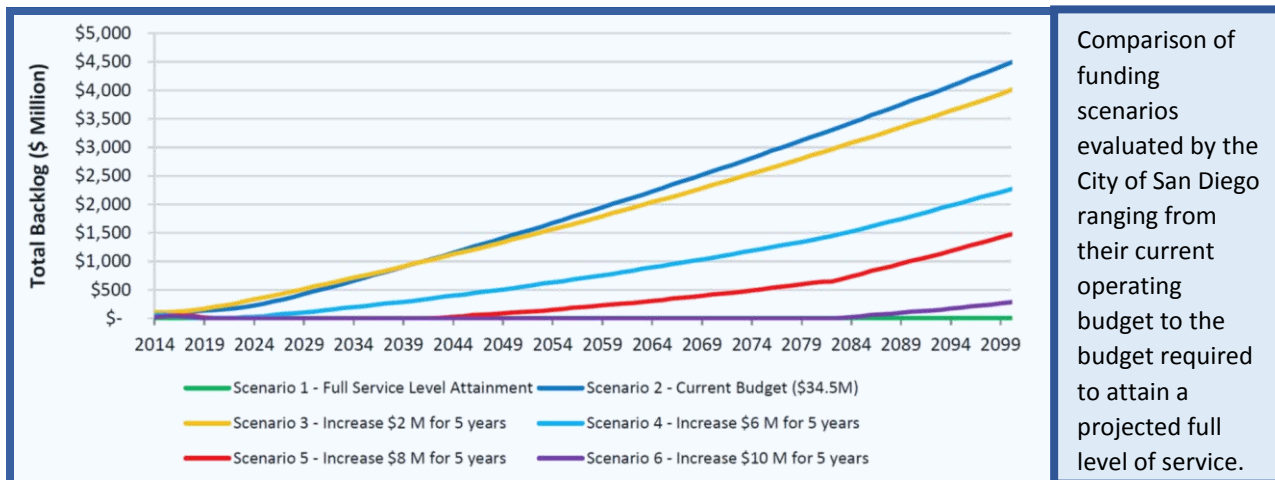
### The Bottom Line

After assessing the current state of City-managed assets, the WAMP goes on to quantify a long-range forecast of funding necessary to maintain a baseline level of service. The projections are calculated using a custom-built database which balances refurbishment and replacement costs to keep assets functionally above a minimum acceptable threshold.

The result of the long-range forecasting projected a 100 year need of nearly \$20 billion (in 2013 dollars). That equates to about \$200 million per year, accounting for regulatory compliance, capital and O&M costs.

Lastly, the plan articulates various potential funding sources and scenarios for achieving their targeted level of service. Scenarios range from current budget to full funding attainment and layout resulting backlog of needed infrastructure upgrades that would result from each scenario.





Comparison of funding scenarios evaluated by the City of San Diego ranging from their current operating budget to the budget required to attain a projected full level of service.

**Barriers**

Embracing adaptive management planning, particularly from a stormwater perspective, has been met with much skepticism from municipalities who struggle to look beyond traditional hard assets, such as drinking and wastewater infrastructure. Over the past 6 years, the City of San Diego has overcome this bias and morphed their watershed asset management culture from *reactive* to *proactive*.

Many municipalities are staff- and resource-constrained, limiting their ability to allocate resources towards planning ahead. Paradoxically, planning ahead is most essential during times of constraint. Projecting asset management needs creates a basis for increased funding, but also is a mechanism for efficiently managing limited resources to pay for upgrades prior to costly system failures.

The City of San Diego made the commitment to invest over \$1 million over 5 years towards asset management planning development. This investment, however, has resulted in a WAMP that can be the basis of their funding needs indefinitely and will easily pay for itself in saved maintenance and reparation costs over the life of the City’s watershed assets.

Another challenging outcome of asset management is financial transparency. Opening up budget projections to inter-governmental and public scrutiny has the added liability of opposition from adversarial parties. Transparency, however, is an essential part of asset management since its purpose is communicating needs to officials as well as the taxpayer and San Diego has embraced the additional scrutiny.

**Iteration and Collaboration**

Developing a WAMP is an iterative process requiring continual input from stakeholders, new or improved data, and updates to fiscal modelling efforts as awareness of costs becomes more sophisticated, particularly in accounting for effects of climate change.

The process of developing a WAMP can also serve to inform the regulatory process. In particular, an asset management perspective in context of a TMDL could substantiate reasonable

compliance schedules for water quality attainment. In the context of stormwater permitting, an asset management plan could be used as a compliance mechanism alternative to meeting water quality-based limitations.

This is particularly true given the extensive collaboration and validation process used by the City of San Diego as it developed its WAMP. The City convened working groups of senior staff members that provided input and direction to a collaborative team of three outside consulting firms. The outside team, led by URS and supported by GHD and HDR, offered the City's working groups independent confirmation and access to best practices for asset specific and general storm water management efforts.

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

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