King County

Background on Capital Portfolio and Asset Management Processes

Presented to the Metropolitan Water Pollution Abatement Advisory Committee

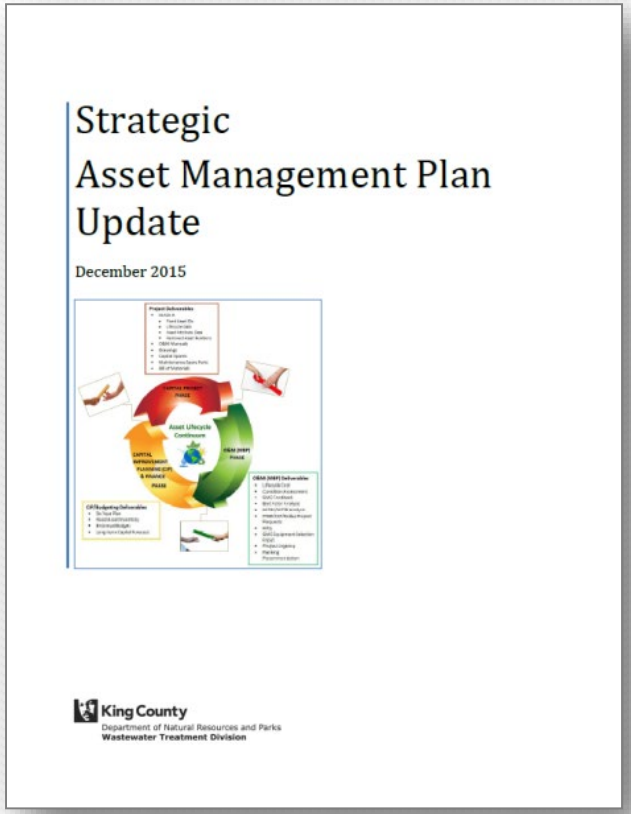
May 27, 2020

Today's Presentation

- Asset Management Program Maturity
- Portfolio Management Recap
- Project Prioritization Processes
- Portfolio Management Tool

Asset Management Program Maturity

- Formal program started in 2002
- Strategic Asset Management Plan (SAMP) – 2005
  - Updated about every 5 years
  - Most recent update in 2018
- Asset Management Work Plan – updated every year



Asset Management Program Maturity

- Developed using industry standards
- Headed by Senior Management
- Manage assets from beginning of life to end of useful life
- Minimize risks of equipment failures and sewer overflows
  - Ensure redundancy and resiliency for climate change and natural disasters
- Involves both Operations and Capital

Asset Management Program Maturity

- New processes in 2017 for
  - Asset data collection from new projects
  - Asset retirement
  - Capital Portfolio Management
    - Ranking asset management projects

Project Portfolio Management

In 2017, WTD introduced Project Portfolio:

- Allocate resources to the right projects at the right time
- Objective process to prioritize / balance / sequence refurbishment, repair and replacement of equipment
- Ensure transparent decision making
- Tools to document and communicate the “why” behind project prioritization

Project Portfolio Management

- Created inventory (or list) of all known project requests
- Created categories of similar type projects
- Prioritized projects based on each category's unique criteria (routinely reassessed)
- Aligned categories with WTD strategy
  - Ensures strategies are funded and implemented

Asset Management

Regulatory

Resources & Energy

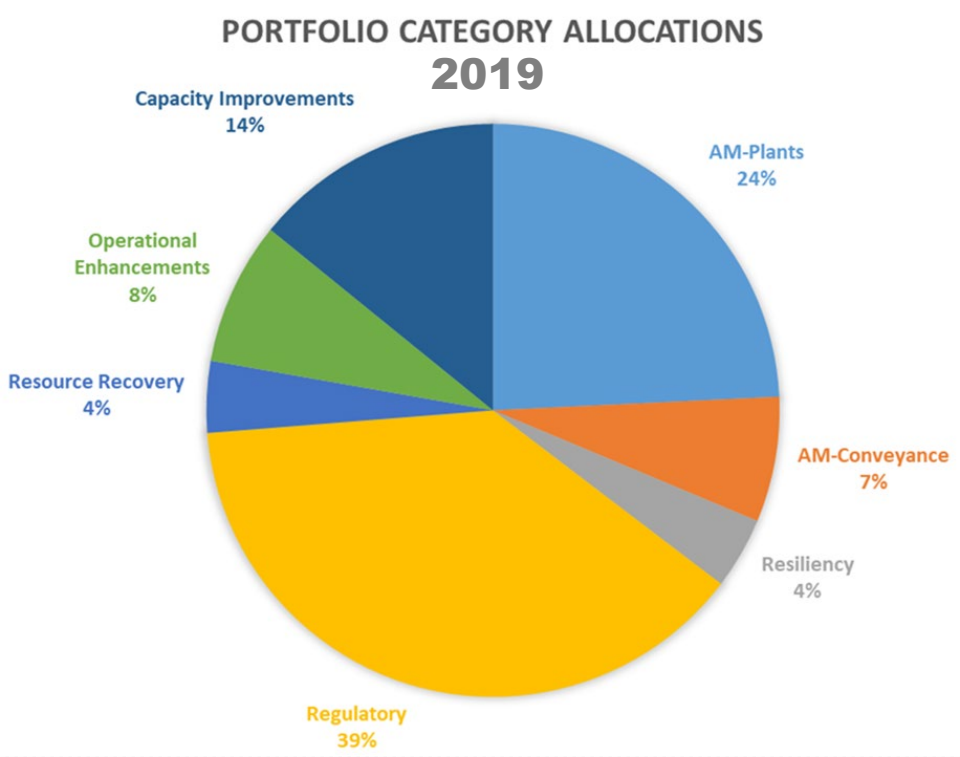
Operational Enhancements

Capacity Improvement

Resiliency

WTD Capital Categories

Investment in Asset Management



- Asset Management (AM) split into 2 sub-categories
- Funds are allocated by the Director and Senior Management
- Asset Management budget ~$83M annual average 2019-2024
  - 31% of capital budget

Portfolio Prioritization

- Each portfolio category has a curator (or supervisor) and a ranking team
- Ranking teams consist of subject matter experts (SMEs)
- Teams use multi-criteria analysis – objective/measurable
- Each criteria is ranked from 0 to 10 and then weighted
- Higher score = higher priority

Portfolio Prioritization

- Asset Management Sub-categories:

Plants Criteria (weight)

- Asset Criticality (35.3%)
- Organizational Impacts (28.9%)
- Asset Condition (20.8%)
- Obsolescence (15.0%)

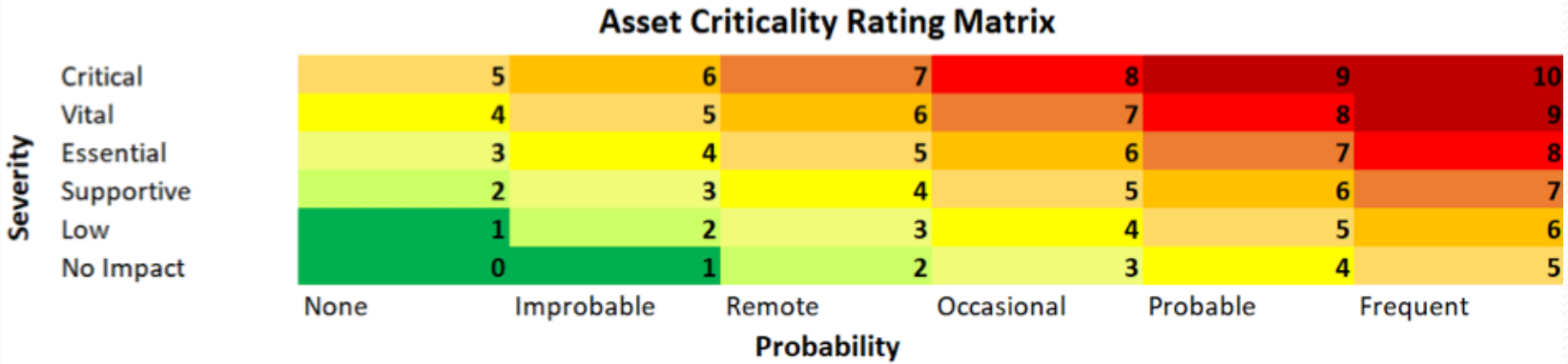
Conveyance Criteria (weight)

- Asset Criticality (65.7%)
- Asset Condition (34.3%)

Portfolio Prioritization – Plants

Asset Criticality:

- Considers the likelihood and consequence of failure
- Likelihood considers asset condition assessment, service environment, and end of service dates
- Consequence of impacts to the system, life safety, environment, and community



Portfolio Prioritization – Plants

Organizational Impacts:

- The degree of operational impacts incurred should the asset fail:
  - Reassignments within the workforce
  - Reassigning resources from other projects
  - Budgetary impacts
  - Violations, fines, litigation, etc.

Portfolio Prioritization – Plants

Asset Condition:

- Physical condition of the asset
- Review of historical maintenance and performance data
- SME knowledge of the asset's performance
- Remaining useful life

Portfolio Prioritization – Plants

Obsolescence:

- The degree of risk associated with keeping outdated equipment functional to maintain its required service level

- Considerations include availability of parts, vendor support, support hardware, software version/support, and cyber security

Portfolio Prioritization – Conveyance

Asset Criticality

- Considers the likelihood and consequence of failure
- Likelihood considers asset condition assessment, service environment, and end of service dates
- Consequence of impacts to the system, life safety, environment, and community

Portfolio Prioritization – Conveyance

Asset Condition

- Physical condition of the asset

- Review of historical condition assessment (CCTV) and performance data
  - Pipe material, soils, rate of corrosion, severity of corrosion, infiltration rates, etc.

- Remaining useful life

Example: Asset Management Sub-Category, Asset Condition

Rating	Label	Description
0.0	Full Operating Condition	The asset is functionally operational and predictive maintenance/failure rate does not indicate it is within 6 years of its predicted end of life.
2.0	Good Condition	The asset is functionally operational and predictive maintenance/failure rate indicates it is outside of the 6 years of its predicted end of life with some deficiencies noted but is not in need of immediate corrective action.
4.0	Fair Condition	The asset is functionally operational and predictive maintenance/failure rate indicates it is within 6 years of its predicted end of service life with some deficiencies noted and service life could be extended outside of the 6-year window through enhanced upkeep, refurbishment, shift in operational strategy, and/or enhanced maintenance.
6.0	Poor Condition	The asset is not reliably meeting its designed functionality in an acceptable manner and predictive maintenance/failure rate indicates it is within 2 years of the end of service life with many deficiencies noted and is in need of replacement/refurbishment. Service life could be extended outside of the 2-year window through enhanced upkeep, refurbishment, shift in operational strategy, and/or enhanced maintenance.
8.0	Very Poor Condition	The asset is not reliably meeting its designed functionality in an acceptable manner and predictive maintenance/failure rate indicates it is within 2 years of the end of service life with many deficiencies noted and is in need of replacement/refurbishment. Service life cannot be extended outside of the 2-year window through enhanced upkeep, refurbishment, shift in operational strategy, and/or enhanced maintenance.
10.0	Unserviceable Condition	The asset is in an unserviceable condition, has met or exceeded its usable service life, and is in a state of disrepair such that it cannot be recovered to any usable condition. The asset is no longer providing the beneficial service and originally designed functionality, which may include emergent issues.

Portfolio Management Tool

- Implemented a web-based portfolio data management tool
- Maintain project inventory (or list)
  - Improved project data available for project ranking
- Rank individual projects
- Collate and assess all project rankings
  - Within a category and across the entire portfolio
- The tool informs decisions – final decisions are made by the oversight processes

Questions?

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