



**King County**

# Asset Management Project Update Wastewater Treatment Division

Presented to the Metropolitan Water Pollution Abatement  
Advisory Committee

April 27, 2022



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Department of Natural Resources and Parks  
**Wastewater Treatment Division**

# Overview

- Asset Management Decision Making – AM Prioritization Criteria
- Asset Management Tier 1 Definition
- New Asset Management Tier 1 Projects in 2023-2032 Rate Plan
- New FTEs and Recent Project Launches



# AM Decision Making – AM Prioritization Criteria

## Asset Management Plants

### Asset Criticality

- Probability and consequence of failure

### Organizational Impacts

- Impacts of failure to operations

### Asset Condition

- Condition assessment and maintenance records

### Asset Obsolescence

- Availability of parts, vendor support, support hardware, software version/support, and cyber security

## Asset Management Conveyance

### Asset Criticality

- Probability and consequence of failure

### Asset Condition

- Pipeline Assessment Certification Program Codes, Structural Defects



# Asset Management Tier 1 Projects

- Asset Management Tier 1 investments:
  - Equipment or pipeline that is currently in poor condition, or unserviceable
  - Not meeting all intended functions
  - At risk of catastrophic failure due to condition
  - Spare parts unavailable
  - Increased maintenance needs
- The 2023 Proposed Sewer Rate plan includes
  - \$1.6 billion Tier 1 priority projects to be completed by 2033
  - \$438 million in newly identified or reprioritized Tier 1 projects



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# New AM Tier 1 Projects – Process Equipment & Piping



- **West Point Grit Classifier Replacement**
- **West Point Boiler Replacement**
- **West Point Heat Loop Refurbishment**
- **West Point C1/C2 Pipeline Replacement**
- **West Point Oxygen Generation System Refurbishment**
- Process equipment and piping replacements throughout WPTP to address critical assets in poor condition, some accelerated to be concurrent with RSP replacement to gain efficiencies
- Consequences of failure include process upsets and/or permit violations



# New AM Tier 1 Projects – Process Equipment & Piping



- **South Plant Biogas Scrubbing System Upgrade**
  - Failure would result in flaring of biogas, potential PSCAA permit violations
- **South Plant Return Activated Sludge (RAS) Pods 1-4 Piping and Component Replacement**
  - Pipe has failed several times, physical and non-destructive testing showed excessive corrosion/erosion
  - Nitrogen reduction optimization will likely add stress to this system



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# New AM Tier 1 Projects – Instrumentation and Control

- **Ovation Evergreen Control Systems Lifecycle Management Program**

- Replace critical hardware components and obsolete software in the Ovation control systems at the 3 Regional Treatment Plants

- **Vashon and Carnation TP Controls Replacement**

- Replace the aging controls system at Vashon and Carnation Plants including equipment controllers, operator interface stations, and networking to the central hub
- Obsolete systems could lead to control failures, permit violations and cyberattack



# New AM Tier 1 Projects – Electrical Equipment



- **Uninterruptable Power Supply Lifecycle Management Program**
  - Replace power supply assets once every ten years
- **Standby Power Systems Replacement**
  - Replace generators and other backup power equipment
- Consequences of failure include overflows during power outages





# New AM Tier 1 Projects – HVAC

- **Brightwater Operations Center Roof & HVAC Replacement**
  - Existing system is reaching its end of life and the building has several decommissioned systems that should be removed – the building was repurposed from the business that was originally on the plant site
  - Leaks in the roof cause damage to equipment and disrupt O&M work



# New AM Tier 1 Projects – Conveyance Pipes



- **Force Main Inspection Access**
  - Inspection access is critical in order to plan and implement needed repairs and replacements
  - Pipe failures lead to potential overflow and permit non-compliance
- **Medina Pump Station Pump Room Header Replacement**
  - Header in poor condition and there is currently no way to isolate pumps



# New AM Tier 1 Projects – Wastewater Gates



- **South Plant Influent Gates & Actuators Replacement**
- **West Point Critical Gate Refurbishment**
- **Denny Way Regulator Station Outfall Gate Replacement**
- Many gates are in corrosive environments
- Gates have deteriorated significantly
- Gates control plant flow, isolate facilities, and perform critical emergency plant bypasses - failure consequences range from manual workarounds to permit violations





# New AM Tier 1 Projects – Outfalls

- **Vashon WWTP Outfall Upgrade**
  - Outfall is in an area prone to landslides and there is a potential for NPDES permit violation and impact to resident access resulting from a break in the pipe caused by landslides





# New Asset Management FTE Positions

- As part of the 2022 Sewer Rate Proposal, WTD requested 13 additional FTEs phased over 2021-2023 to increase delivery capacity for additional Asset Management projects
- 2021: 6 new positions in PM, Engineering, Conveyance Inspection and Permitting/ROW
- New staff are fully integrated with existing capital delivery staff
- With the additional capacity, WTD was able to launch several large AM projects and start on backlog of smaller (<\$2.5M) AM projects over the past year
- Additional staff to be hired in 2022 include additional PM, Project Control, Engineering, and Construction Management



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# Recently Launched AM Projects

- Lakeland Hills PS Replacement
- M Street Trunk Rehabilitation
- South Plant Dewatering Chemical Odor Reduction Tower and Dewatering Carbon Scrubber Improvements
- South Plant Dissolved Air Floatation Thickener (DAFT) Tank Rehabilitation
- West Point Electrical Improvements
- West Point Intermediate and Effluent Pump Refurbishment
- West Point Effluent PS Isolation Gate Rehabilitation
- West Point Grit Classifier Replacement
- Several smaller asset replacement projects located throughout the wastewater system



# Questions?

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