Resiliency and Recovery Program

Resiliency Work to Date
MWPAAC Engineering and Planning Subcommittee Briefing
Thursday, October 5, 2017
Purpose

Develop a comprehensive strategy for preparing WTD’s conveyance and treatment facilities for the impacts of a major earthquake, flooding or natural hazard events.
Project Team

Wastewater Treatment Division

Consultant – HDR Engineering Inc.
- Ballantyne Consulting – Regional Seismic Expert
- Shannon & Wilson and Reid Middleton Engineering

MWPAAC Taskforce
- Alderwood Water and Wastewater District
- City of Redmond
- City of Seattle
Seismic Scenarios

Cascadia Subduction Zone
- Primary focus as the most likely scenario

Seattle Fault
- Very strong ground motion along I-90 corridor
- Surface fault rupture can result change in sewer grade

South Whidbey Island Fault
- Very strong ground motion near Brightwater
- Surface fault rupture/change in sewer grade
Natural Hazards & Flooding Scenarios

Hazards identified in *King County Regional Hazard Mitigation Plan 2014*, presenting High and Medium Risks:

- **Extreme Weather**
  - Windstorms, lightning, tornadoes/funnel clouds, and windstorms
  - Significant snowfall, ice, and/or freezing rain

- **Flooding**
  - Riverine Flooding and Urban Flooding

- **Landslide & Liquefaction**
Approach

**Phase 1**  Existing Data Collection: Desktop Studies of Facilities and Conveyance

**Phase 2**  Fieldwork: Facility Condition Assessments

**Phase 3**  Develop Resiliency and Recovery Approach
Schedule

January 2017

Begin Facility Desktop Data Collection

February 2018

Begin Facility Condition Assessments

PHASE 1

Recovery Strategy Development

Draft Resiliency and Recovery Plan

PHASE 2

December

Deliver Draft-Final Resiliency and Recovery Plan to Executive

PHASE 3

February 2018

Deliver Final Resiliency and Recovery Plan

WORK TO DATE
Resiliency Plan Approach

- Identify vulnerable facilities
- Conduct fieldwork investigations
- Identify potential issues related
- Develop conceptual solutions
- Determine and prioritize
Criticality Factors

Life Safety:
- Building collapse

Public Health:
- Sewage backup

Consequential Damage:
- Impacts to adjacent critical infrastructure

Environmental:
- Sewage discharge location & level of treatment

Other: Operational Capability & Response/Restoration Capability
Prioritization of Capital Projects

1. Criticality Factors
   - Life Safety
   - Public Health
   - Consequent Damage
   - Environmental

2. Risk
   - Consequence of Failure: Expected System Performance
   - Probability of Failure: Vulnerability to Hazard

3. Team Validation
Seismic – Issue Identification

- Significant or moderate structural damage
- Building, wall, roof collapse risk
- Pounding damage
Extreme Weather – Issue Identification

- Falling trees or airborne limbs/debris could affect facility operations - facility structures, systems, and/or power
- Impede facility access for employees
Flooding – Issue Identification

- Damage of underground mechanical and electrical equipment
Landslide & Liquefaction – Issue Identification

- Structure may float, sink, rotate, or move laterally
Recovery Plan Approach

- Develop comprehensive strategies for implementation
- Strategies are designed to drive timely, efficient and safe system recovery

- Preparedness and Recovery Strategies:
  - Team Development & Training
  - Contracting
  - Design and Data Collection
  - Management and Administration
Next Steps

October 2017
- Develop conceptual solutions for problems identified
- Develop Class 5 Cost Estimates for preliminary solutions

November 2017
- Refined Capital Projects List developed
- Draft Resiliency and Recovery Plan for WTD Management Review

December 2017
- Deliver Draft-Final Resiliency and Recovery Plan to WTD Management and Executive for review

February 2018
- Deliver Final Resiliency and Recovery Plan
Thank You

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