King County CSO Long Term Control Plan

2015 Science Seminar

November 5, 2015
Overview

• King County CSO Control Program
• CSO Regulations
• CSO Planning and the current Long term Control Plan
• SPU-WTD Coordination
• 2018 Long term Control Plan Update
King County CSOs

38 CSOs
- 19 controlled
- 5 projects under construction or recently completed
- 14 uncontrolled
  - 4 CSO treatment plants
King County CSO Control Progress

- Metro becomes operating wastewater agency under Comprehensive Sewerage Plan
- Regional treatment plants begin operation
- Major interceptors begin operation
- Computer control system online
- Estimated 20 billion-30 billion gallons
- Seattle sewer separations under "Forward Thrust" bonds
- Regulator stations begin operation

1979 King County CSO Control Plan and 1980 Seattle CSO Control Plan approved

- Sewer separations
- 1988 King County CSO Control Plan approved
- Metro merges with King County
- CSO treatment plants begin operation
- Regional Wastewater Services Plan approved
- Denny Way/Lake Union and Henderson Street Storage Treatment Tunnels

Remaining King County CSO volume in million gallons

WA Standard of 1 untreated event/year/oufall

Produced by DNR/IT Services, Web Development/Visual Communications Group
File name: 11040_gallons_1860-2030.pdf/INSET TeX showu

King County
Department of Natural Resources and Parks
Environmental Management Division
King County CSO Regulations

- WA State Ecology Regulations
  - CSO Control Target
- Consent Decree
  - “Implement only”
CSO Control Target

WA State Ecology Regulations (WAC 173-245)

• One untreated event per outfall 20-year moving average
• or CSO Treatment
  ✓ 50% reduction of TSS (annual average)
  ✓ 0.3 mg/L/hr Settleable solids (annual average)
  ✓ Chlorination and dechlorination (maximum daily)
  ✓ pH 6.0-9.0 (instantaneous minimum and maximum monthly)
  ✓ Fecal Coliform limits (monthly geometric mean) 400 colonies per 100 mL

• Meet ambient water quality standards
• Be protective of sediment quality
# Consent Decree

<table>
<thead>
<tr>
<th>Project</th>
<th>CSO Control Measure(s) and Description</th>
<th>Design Criteria*</th>
<th>Performance Criteria</th>
<th>Critical Milestones</th>
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</thead>
<tbody>
<tr>
<td>Hanford #1</td>
<td>Increased conveyance and storage tank: increased conveyance to the Bayview Tunnel and storage tank near Rainier Avenue</td>
<td>0.34 MG of peak CSO storage with conveyance *may allow parameters to change by defined %</td>
<td>Reduce to one overflow event per year on a 20-year moving average</td>
<td>Facilities Plan Dec. 31, 2014, Bidding (NTP for Construction) Dec. 31, 2016, Construction completion Dec. 31, 2019</td>
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King County CSO Long Term Control Plans

- Review LTCP on 5-year cycle w/ NPDES Permit
  - New technology, changes in flows and regs
  - Uncontrolled basins
- Council approved update of LTCP (budget)
- Control of all remaining CSOs by 2030
- 2012 last update
- Now-2019: 2018 LTCP Update occurring
2012 LTCP

- Nov 2012 – Council approved Plan
- March 2013 – EPA approved as a LTCP
- Nov 2013 – WA Dept of Ecology approved LTCP
- July 2013 – King County entered into Consent Decree
2012 LTCP

- 9 projects to control remaining 14 uncontrolled CSOs by 2030
- Incorporate GSI where cost-effective
- Collaborate with City of Seattle CSO
- Complete water quality assessment to reduce project costs and maximize environmental benefits
Approved Schedule of CSO Projects

Schedule to Complete CSO Control Plan by 2030

- Hanford #1 (Storage/Conveyance)
- Brandon St – S Michigan (CSO Treatment Facility)
- Water Quality Assessment and Monitoring Study
- Chelan Ave (Storage)
- 3rd Ave W (Storage – Joint Project with Seattle)
- W Michigan – Terminal 115 (Storage)
- University (Storage – Joint Project with Seattle)
- Montlake (Storage – Joint Project with Seattle)
- Hanford #2 – Lander St – King St – Kingdome (CSO Treatment Facility)
- 11th Ave NW (Conveyance)
- CSO Control Program Reviews

Note: All project timelines include planning, design, and construction phases.
Overview of 2018 CSO LTCP Update

For 11 remaining uncontrolled CSO locations:

• Assemble background information
• Develop and analyze alternatives
• Make recommendations and prepare 2018 LTCP Update
• Public Involvement throughout
• Consider Integrated Plan option
Overview of 2018 CSO LTCP Update (cont.)

Alternative Analysis – Two Parallel Tasks:

1. Detailed evaluation of projects identified in 2012 LTCP
   • Bottom-of-basin storage and treatment

2. Develop alternative ‘packages’ of control options
   • Multiple options and approaches: single or multi-basin; upstream and bottom of basin; area-wide GSI; sub-basin GSI; upstream GSI; in-line or offline storage, conveyance, treatment; optimization of existing controlled CSO locations; collaborative or joint projects with SPU; demand management; conveyance improvements; and sewer separation
Using WQA Results

• Understand current water quality conditions - benchmark for future compliance
• Prioritize the order and sequence of CSO projects given other regional projects, economics, SPU projects, etc.
• Look at partnerships during CSO implementation
• Influence regional discussion on non-CSO efforts to improve water quality
2018 LTCP Update

2018 CSO LTCP Update Process Overview

2015
Q3
Hire consultant
Update summary of past projects
Update cost models (Project Control)

Q4
Assemble background data

2016
Q1
Research and choose Alternative ranking/rating model

Q2
Develop Alternatives
Brief WTD Management

Q3
Hydraulic modeling of 11 CSO basins
Review information on CSO facility locations
Compare KC to other CSO programs
Review recent regulations, plans, studies
Assess existing treatment facilities
Identify possible public-private partnerships
Perform desktop geotechnical evaluation

Q4
Review basin delineation and revise maps
Provide recommendations to team on CSO basin boundaries
Provide recommendations to team on GSI and separation
Provide recommendations to team on optimizing treatment and storage
Provide recommendations to team on optimization, cost control, risk management, and risk mitigation

2017
Analysis
Apply Alternative ranking/rating model and rank by categories
Estimate alternative costs
Optimize alternatives

2018
Prepare Plan
Apply Alternative ranking/rating model and identify recommended alternatives
Develop schedule and rate impacts

2018 CSO LTCP Update Process Overview

Management Decision Point
Process from 2012 LTCP
Consultant + WTD tasks
WTD tasks
Expert Review Panel
Major Task
Draft Final Version

Water quality assessment and decision support for integrated plan

Public involvement
Questions?

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