North Sewer Service Area
Moratorium Public Hearing
March 29, 2021 – 6:00PM
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Jay Krauss
General Manager

Jay Regenstreif
Planning Engineer

Andy Tuchscherer
Operations Manager

Kevin DeRouen
Information Services Mgr.
Sammamish Plateau Water – Our Challenge

• After decades of aligning long-term sewer plans with King County, conveyance system improvements required by the District were deprioritized by King County.

• Improvements are required to serve mandated growth in the District. In spite of prior planning coordination and District advising King County of its needs, the District has approached capacity in the North Sewer Service Area.

• As a result, on February 22, 2021, the Board declared a 90-day moratorium.

• The District completed an Interim Improvement Evaluation, and is considering options to provide additional local conveyance capacity during the moratorium.
Sammamish Plateau Water – Our Sewer System

District-wide in 2020

168 Miles of Gravity Sewer Mains
5,629 Manholes
21 Miles of Pressure Mains
21 Lift Stations
13,077 Sewer Accounts

North Sewer Service Area
4,235 Sewer Accounts
King County Regional Conveyance System
## Rate Comparison & Benchmarking Analysis

Final Report – September 2016

### Jurisdiction Comparison

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Average Asset Age</th>
<th># of Connections to Regional System</th>
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<tbody>
<tr>
<td></td>
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<td>Number</td>
</tr>
<tr>
<td>SP Water</td>
<td>11 Years</td>
<td>1</td>
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<tr>
<td>Bellevue</td>
<td>20 Years</td>
<td>34</td>
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<tr>
<td>Issaquah</td>
<td>12 Years</td>
<td>24</td>
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<tr>
<td>Kirkland</td>
<td>16 Years</td>
<td>32</td>
</tr>
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<td>NE Sammamish SWD</td>
<td>23 Years</td>
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<tr>
<td>Redmond (City)</td>
<td>18 Years</td>
<td>60</td>
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<tr>
<td>Redmond (Novelty Hill)</td>
<td>10 Years</td>
<td>1</td>
</tr>
<tr>
<td>Skyway WSD</td>
<td>17 Years</td>
<td>10</td>
</tr>
<tr>
<td>Tukwila</td>
<td>18 Years</td>
<td>25</td>
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<tr>
<td>Woodinville WD</td>
<td>16 Years</td>
<td>13</td>
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Sammamish Plateau Water – Impacted Sewer Basins
District aligns long term plans with regional plans.

Regional improvements are required for growth. District coordinates plans with KCWTD

2018: The Sammamish Plateau Diversion (SPD) regional improvements deprioritized by KCWTD.

2018: KCWTD recognizes deferral of SPD impacts local system. District leads a KCWTD Interim Improvement Analysis, with implied potential to fund Interim Improvements.

2021: King County (Isaacson and Constantine) state the District’s capacity needs are a local problem, unrelated to prior SPD decisions.
North Sewer Service Area – Moratorium

North Sewer Service Area
2/22/2021: District’s Board of Commissioners declares a 90-day moratorium.

New Certificates of Sewer Availability
- Building a new house
- Remodeling an existing house
- New development

New Connections
- Existing house on septic

New Certificates of Availability
- If you have pre-paid connection charges

Not Allowed
- Developments in process, existing certificates

Allowed
- If your septic system is failing
- If you have pre-paid connection charges

Certificates of Availability indicate a service commitment.
## Sammamish Plateau Diversion Planning Chronology

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1950</td>
<td>Metropolitan Seattle Sewerage and Drainage Survey</td>
</tr>
<tr>
<td>1960</td>
<td>District/METRO Agreement for Sewage Disposal</td>
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<tr>
<td>1970</td>
<td>District Comprehensive Wastewater Plans - Northern Diversion Recognized in all Plans, <strong>Highlighted in 2013 Plan</strong></td>
</tr>
<tr>
<td>1973</td>
<td>Sammamish Plateau Diversion Planning Chronology</td>
</tr>
<tr>
<td>1980</td>
<td>Conveyance System Improvement Program</td>
</tr>
<tr>
<td>1983</td>
<td>2007 High Priority</td>
</tr>
<tr>
<td>1987</td>
<td>2017 Low Priority - Funding Removed, Deferred 2050-2070</td>
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<tr>
<td>2000</td>
<td>2016 Sammamish Plateau Diversion is funded</td>
</tr>
<tr>
<td>2010</td>
<td>2017 Initial Project Charter underway</td>
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<tr>
<td>2013</td>
<td>2018 Project deferred, funding removed</td>
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<tr>
<td>2020</td>
<td>2021 Position “It’s a Local Problem”</td>
</tr>
<tr>
<td>2021</td>
<td>2019 North Diversion 2nd Interim Improvement Analysis</td>
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### King County Positions

- **“… the Board is not inclined to invest funds for interim capacity improvements in light of the County’s obligation and awareness of our conveyance needs. ...”** - 9/26/2016
### Sammamish Plateau Diversion – King County Estimated Installation Dates

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<td>2007 CSI Program</td>
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<td>2016 Evaluation</td>
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<td>2017 CSI Program</td>
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<td>2028</td>
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<td>2019 Letter</td>
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<tr>
<td>2021 Analysis</td>
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</table>

### North Sewer Service Area – Growth Factors and Challenges

#### Domestic Flow Factors

<table>
<thead>
<tr>
<th>Year</th>
<th>Customers (ERUs)*</th>
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</thead>
<tbody>
<tr>
<td>2011</td>
<td>3,693</td>
</tr>
<tr>
<td>Estimated Growth</td>
<td>956</td>
</tr>
<tr>
<td>Actual Growth</td>
<td>1,368</td>
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<tr>
<td>Percent above Estimate</td>
<td>43%</td>
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<tr>
<td>2020</td>
<td>5,061</td>
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</tbody>
</table>

*ERUs = Equivalent Residential Units (Single-Family Home)

#### Infiltration & Inflow Factors

<table>
<thead>
<tr>
<th>Year</th>
<th>Sewer Main (in Miles)</th>
<th>Manholes</th>
<th>Service Area (in Acres)</th>
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</thead>
<tbody>
<tr>
<td>2011</td>
<td>47</td>
<td>1,567</td>
<td>1,285</td>
</tr>
<tr>
<td>2020</td>
<td>57</td>
<td>1,952</td>
<td>2,222</td>
</tr>
<tr>
<td>Percent Growth</td>
<td>21%</td>
<td>25%</td>
<td>73%</td>
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</tbody>
</table>
2011-2014: 2013 Wastewater Comprehensive Plan

North Lake Sammamish Lift Station Triggers Identified:
Average Daily Domestic Flow: **581,250 gallons per day** (GPD)
Peak Inflow = **1,200 gallons per minute** (gpm)

2014-2016: 2016 Interim Improvement Evaluation:
September, 2016: Recommended Pump Study Completed, identified need for a new pump at Central Lake Lift Station

2017 King County CSI Program – Sammamish Plateau Diversion:
March, 2018: District notified. **Low Priority, Funding Removed**
August, 2019: Due to delay of the Sammamish Plateau Diversion
- Began Interim Improvement Analysis
- Update to the 2016 Interim Improvement Evaluation

June, 2019: New pump installed at Central Lake Lift Station as identified in the Pump Study following the 2016 Evaluation
North Lake Sammamish Lift Station Triggers:
2019: Average Daily Domestic Flow: 511,831 GPD < Domestic Trigger of 581,250 GPD Not Exceeded
  Peak Inflow: 12/20/2019 = 1,306 gpm
  Peak Inflow Trigger of 1,200 gpm - Trigger Exceeded
  5 total events. Maximum flow 1/13/2021 = 1,437 gpm

2019-2021: 2021 Interim Improvement Analysis Recommended:
  Interim Improvements to the Lakefront Sewer System
  • Force main, lift station and gravity system
  Long-Term Alternative Recommended
  • Bypass lakefront sewer system

Resolution 5018: 90-Day Moratorium 2/22/2021–5/24/2021

Resolution No. 5019 – Emergency Declaration
  • Obtain engineering services for capacity improvements

4/2021: Execute Contract for Engineering Services
  • Design interim improvements identified in 2021 analysis
Infiltration & Inflow (I&I) – Where Does it Come From?

**Infiltration**
- Groundwater seeps into sewer pipes through holes, cracks, joint failures, and faulty connections.

**Inflow**
- Stormwater flows into sewers via roof drain downspouts, foundation drains, storm drain connections, and holes in manhole covers.

The District’s capacity constraints occur during wet weather events.

Image source: kingcounty.gov – I/I resources
King County Infiltration & Inflow (I&I) – How Do We Compare with the Region?

When compared with the region, the District’s amounts of Infiltration & Inflow are low.

GPAD = Gallons per acre per day.
Sammamish Plateau Water – Pathway Out of the Moratorium

Establish metrics to evaluate system capacity
- Add and improve conveyance system flow measurement
- Development of infiltration & inflow dashboard to monitor water use versus peak flows

Determine basis for lifting moratorium
- Monitor improved system capacity versus triggers
- Timeline for installation of system improvements

Design and implement system improvements
- Engage engineer to design system improvements identified in prior Analysis
- Immediate, temporary improvements – Avoid overflows
- Interim improvements – improve capacity incrementally

Initiate long-term improvements
- Engage King County to get assurances of long-term improvements
- Evaluate District-initiated long-term/permanent improvements independent of King County
Interactive technology comparing potential I&I with hourly AMI water consumption and sewer lift station flows over selected periods of time within a Demand Management Area (DMA). I&I is then compared to hourly rainfall data during the same time period to see correlation. The dashboard allows users to assess potential sources of I&I.

Data that will be used include:

- Hourly AMI consumption data summarized for each DMA;
- Hourly sewer flow production data from existing lift stations in each DMA;
- Average hourly rainfall data from the District’s existing rainfall stations.

Alerts will help identify which DMAs and corresponding Lift Stations are exceeding 80% and 90% of existing capacity limits and will require improvements or I&I abatement.

➢ *It is anticipated the proposed Dashboard will be operational in the second quarter of 2021.*
Sammamish Plateau Water – Infiltration & Inflow (I&I) Dashboard

Demand Management Areas (DMAs)

INGLEWOOD DMA

Customer Demands + Potential I&I vs. Rainfall

Date/Time Selected: January 14, 2021 – 7:00am

Pick Start/End Date and Time
Sammamish Plateau Water – Infiltration & Inflow (I&I)
Proactive I&I Measures

**Project Constraints**

- Detailed I&I investigation takes time and resources to effectively evaluate a sewer conveyance system.
- Weather events are important sources of information. Weather events cannot be scheduled.

**Resources**

**In-House Expertise**

- Flow Monitor placement has been researched and a plan for the North Sewer System evaluation is in place.
- Data collection of flow monitoring equipment can be done in-house.

**Consultant Expertise**

- More detailed I&I research requires outside services. I&I investigatory procedures could include:
  - Mainline and side sewer analysis.
  - Smoke testing for illicit connections at a home or conveyance pipe deficiencies.
  - Voluntary customer surveys.
  - Other industry investigative techniques.
District Conveyance System Interim Improvements

- **North Lake Lift Station**: February, 2023
- **Central Lake Force Main**: September, 2022
- **North Lake Force Main**: June, 2023
- **North Lake Gravity Main**: 2023-2025 TBD

Interim Improvements add system capacity

Monitor infiltration and inflow trends, and previously promised service capacity

New connections and Certificates will be tracked to stay within the added capacity

Repeat with each Interim Improvement completed
Sammamish Plateau Water – Cost and Fiscal Impacts

Interim Improvements
Total Cost – $14,000,000

Annual Debt Service Payment
$1,124,099/year for 20 years

Sewer General Facility Charge (GFC)
3.1% Increase:
$136 → $4,479 per ERU

Rate Impacts
14.7% increase:
$5.58 → $43.54/month

Long-term Improvements
Total Cost – $24,200,000

Annual Debt Service Payment
$1,943,085/year for 20 years

Sewer General Facility Charge (GFC)
12.1% Increase:
$524 → $4,867 per ERU

Rate Impacts
25.4% increase:
$9.64 → $47.60/month
Sammamish Plateau Water – Points of Clarification

Length of Moratorium
Sammamish Plateau Water – Points of Clarification

Regional vs. Local Issue
King County Regional Conveyance System
Sammamish Plateau Water – Points of Clarification

Transfer of Assets to King County
Sammamish Plateau Water – Points of Clarification

Transfer of Assets to King County

Map source: King County Wastewater Treatment Division
Sammamish Plateau Water - Sewer Conveyance of Interest
Sewer System Improvement Work Plan

<table>
<thead>
<tr>
<th>Quarter 2</th>
<th>Quarter 3</th>
<th>Quarter 4</th>
<th>Quarter 1</th>
<th>Quarter 2</th>
<th>Quarter 3</th>
<th>Quarter 4</th>
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<tr>
<td>I&amp;I Dashboard</td>
<td>Review Options and Feasibility for Advanced I&amp;I Tool</td>
<td></td>
<td>I&amp;I Dashboard Trends &amp; Results inform investigation</td>
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<td>I&amp;I Flow Monitor Placement and Reading Based on Dashboard Analysis</td>
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<td>I&amp;I Consultant Analysis</td>
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<td>I&amp;I Abatement (On going maintenance practices and more detailed private sewer investigation)</td>
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Sammamish Plateau Water – Integrated Work Plan
Stay informed...

Visit LetsTalkAboutOurSewer.org