North Sewer Service Area
Moratorium Discussion
May 17, 2021
North Sewer Service Area – Moratorium

2/22/2021: 90-day moratorium declared.
4/19/2021: Modified for certain septic requests

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

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

New Connections
- If your septic system is failing
- If you have pre-paid connection charges
- Developments in process, existing certificates

Certificates of Availability indicate a service commitment.
Path to Interim Improvements

2013 Wastewater Comprehensive Plan

2016 Interim Improvement Evaluation
- 2025-2028 Sammamish Plateau Diversion Available

Implementing Initial 2016 Evaluation Recommendations

2018 – Sammamish Plateau Diversion Delayed Significantly
- 2050-2070 Sammamish Plateau Diversion Available

Refined Scope Report & Implementing 2021 Analysis Recommendations

2021 Interim Improvement Analysis

Immediate, Temporary Improvements Update in July 2021

Interim Improvements I-4 Phase 1 & 2 Construction
- 2022-2025

Permanent Solutions
- 2021 Analysis A-X: TBD OR
- Sammamish Plateau Diversion: 2030

Update in July 2021
Sammamish Plateau Water – Current Facility Bottleneck

North Lake Lift Station
Peak Inflow Trigger
1,200 gpm

2013 Wastewater Comprehensive Plan
2016 Interim Improvement Evaluation

North Lake Lift Station
Inglewood Lift Station
Central Lake Lift Station

Peak Inflow Trigger
1,200 gpm

5/17/2021
Sammamish Plateau Water – Measured Storm Flows

North Lake Lift Station
Peak Inflow Trigger = 1,200 gpm

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Flow Rate</th>
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</thead>
<tbody>
<tr>
<td>12/20/2019</td>
<td>4.2”</td>
<td>1,305 gpm</td>
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<tr>
<td>2/5/2020 to 2/7/2020</td>
<td>3.25”</td>
<td>1,300 gpm</td>
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<tr>
<td>1/3/2021</td>
<td>2.72”</td>
<td>1,227 gpm</td>
</tr>
<tr>
<td>1/13/2021</td>
<td>4.2”</td>
<td>1,437 gpm</td>
</tr>
</tbody>
</table>

Existing Facilities
- Gravity Main
- Lift Station
- Force Main
Flow Rate Basis

Peak Hour Domestic
• ERUs
• Winter Consumption Rate
• Peaking Factor (Daily peak hour)

Infiltration & Inflow
• Sewered Area
• I/I Rate (gpad)

Total Peak Hour Flow
• Dry Weather = 0.16 gpm/ERU
• Wet Weather = 0.38 gpm/ERU
• High I/I Assumed = 0.48 gpm/ERU
Dry & Wet Weather Flow Rate Comparison

<table>
<thead>
<tr>
<th>North Lake Lift Station - Dry Weather</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Weather Total Flow</td>
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<tr>
<td>0.16 gpm/ERU</td>
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</table>

<table>
<thead>
<tr>
<th>North Lake Lift Station – Wet Weather</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet Weather Total Flow</td>
</tr>
<tr>
<td>0.38 gpm/ERU</td>
</tr>
</tbody>
</table>

Sewered Area
I&I Rate

Infiltration & Inflow

ERUs & Customer Type + Peaking Rate

Domestic Flow

North Lake LS is the current bottleneck

12/30/2020 – 4,782 ERUs
Average Daily Flow = 134 gpd/ERU
Based on 2019 Winter Water Use Rate
## ERUs in the Pipeline → Added Flow

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Inglewood</td>
<td>0.0</td>
<td>2.0</td>
<td>43.0</td>
<td>0.0</td>
<td>99.0</td>
<td>144.0</td>
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<tr>
<td>North Lake</td>
<td>18.0</td>
<td>2.0</td>
<td>80.0</td>
<td>22.0</td>
<td>242.0</td>
<td>364.0</td>
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<tr>
<td>Central Lake</td>
<td>22.0</td>
<td>17.0</td>
<td>82.0</td>
<td>22.0</td>
<td>245.0</td>
<td>388.0</td>
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</table>

### ERUs added at the North Lake Lift Station

<table>
<thead>
<tr>
<th>Year</th>
<th>Pipeline</th>
<th>Septic Convert (assumed)</th>
<th>Total Added</th>
<th>Cumulative Added ERUs</th>
<th>Wet Weather 0.38 gpm/ERU</th>
<th>High I/I 0.48 gpm/ERU</th>
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</thead>
<tbody>
<tr>
<td>2021</td>
<td>20.0</td>
<td>20.0</td>
<td>40.0</td>
<td>40.0</td>
<td>15.2</td>
<td>19.2</td>
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<tr>
<td>2022</td>
<td>80.0</td>
<td>20.0</td>
<td>100.0</td>
<td>140.0</td>
<td>53.2</td>
<td>67.2</td>
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<tr>
<td>2023</td>
<td>22.0</td>
<td>20.0</td>
<td>42.0</td>
<td>182.0</td>
<td>69.2</td>
<td>87.4</td>
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<tr>
<td>2024</td>
<td>121.0</td>
<td>20.0</td>
<td>141.0</td>
<td>323.0</td>
<td>122.7</td>
<td>155.0</td>
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<tr>
<td>2025</td>
<td>121.0</td>
<td>20.0</td>
<td>141.0</td>
<td>464.0</td>
<td>176.3</td>
<td>222.7</td>
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<tr>
<td>TOTAL</td>
<td>364.0</td>
<td>100.0</td>
<td>464.0</td>
<td></td>
<td></td>
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District Conveyance System Interim Improvements – Capacity Provided

North Lake Lift Station • February, 2023

Central Lake Force Main • September, 2022

Phase 1: 500 gpm Capacity Increase

North Lake Force Main • June, 2023

Phase 2: 250 gpm Capacity Increase

North Lake Gravity Main • 2023-2025

Phase 3 = TBD Based on Surcharge Monitoring
Interim Phasing and Estimated ERU Capacity

I-4 Interim Improvements

Phase 1 = 1,042 ERUs

- **Central Lake Lift Station, 2,100 gpm**
  - Upgrade 8-in Central Lake Force Main
  - Adds 600 gpm capacity to Central Lake Lift Station

Phase 2 = 521 ERUs

- **North Lake Lift Station, 1,750 gpm**
  - Upgrade Lift Station Pumping Capacity
  - Adds 500 gpm capacity to North Lake Lift Station

Phase 3 = TBD

- **North Lake Gravity, 2,138 gpm**
  - Upgrade 12-in, 15-in and 18-in Gravity Section
  - Estimated 721 gpm added pipeline capacity to alleviate suspected surcharging

Added ERU Capacity is calculated on the basis of Peak I/I with assumed High I/I = 0.48 gpm/ERU
Immediate, Temporary Improvements

**Goals**
- Brainstorm Ideas
  - June 2, 2021
- Refine Ideas
  - June - July
- Options Report
  - Late July
- Construct, Install, and Implement
  - August-November

**IDEAS IN DEVELOPMENT**
- Avoid Overflows
- Implement in Short Time
- Above Ground Storage
- Higher Capacity Bypass Pumping
- Storage @ Inglewood, Use Small Pump
Infiltration & Inflow (I/I) – Program Status

**Project Constraints**

- Detailed I/I investigation takes time and resources to effectively evaluate a sewer conveyance system.
  - Engage with ADS for Scope of Work on high I/I locations identification
  - Identify assistance for Smoke Testing in areas with suspected I/I
- Weather events are important sources of information. Weather events cannot be scheduled.

**Program**

**Infiltration & Inflow Dashboard**

- Fixed flow monitors at Lift Stations
- I/I trends can be monitored
- Areas with higher I/I can be identified

**Infiltration & Inflow Refinement**

- Portable Flow Monitors
- Fine tune identification of areas for abatement

**Infiltration & Inflow Abatement**

- Ongoing I/I maintenance activities
  - Mainline and side sewer analysis.
  - Smoke testing for illicit connections at a home or conveyance pipe deficiencies.
- Other industry investigative techniques.
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
## Schedule

### Construction Project Board Touches

<table>
<thead>
<tr>
<th>Construction Project Board Touches</th>
<th>Phase 1 Central Lake Force Main</th>
<th>Phase 1 North Lake Lift Station</th>
<th>Phase 2 North Lake Force Main</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiate Project</td>
<td>4/2021</td>
<td>4/2021</td>
<td>4/2021</td>
</tr>
<tr>
<td>30% Design</td>
<td>8/2021</td>
<td>8/2021</td>
<td>11/2021</td>
</tr>
<tr>
<td>90% Design</td>
<td>1/2022</td>
<td>1/2022</td>
<td>6/2022</td>
</tr>
<tr>
<td>Complete Construction</td>
<td>9/2022</td>
<td>2/2023</td>
<td>6/2023</td>
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</tbody>
</table>

### Notes
- 3/29/2021: Approve Design Contract
- 5/2021: Refined Scope Report Completed
- 5/2021: Initiate Immediate Temporary Improvements Identification

5/17/2021
Sammamish Plateau Water – Status Recap

System Capacity = 1,200 gpm at North Lake Lift Station

Storm Events – Maximum Flow = 1,437 gpm at North Lake

Project 182 ERUs Connections through 2023
(Pipeline + Septic Conversion)

182 ERUs add 69 – 88 gpm increasing flow to 1,506 – 1,525 gpm

Added Capacity is Not Anticipated before 1st Quarter of 2023
(North Lift Station = 500 gpm)

5/17/2021
Sammamish Plateau Water – Moratorium Decisions

**Release Moratorium**
- Allow additional service and increase risk of overflows

**Extend Moratorium**
- Monitor infiltration & inflow trends
- Monitor ERUs in the pipeline
- Monitor ERUs added through exceptions

**If the Moratorium is lifted, consider**
- Modifications to financial requirements to obtain Certificates of Availability
- Terms under which the Moratorium would be re-established

5/17/2021
Questions?
& Board Direction