



# **North Sewer Service Area Moratorium Public Hearing**

**March 29, 2021 – 6:00PM**



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**Jay Krauss**  
General Manager

**Jay Regenstreif**  
Planning Engineer

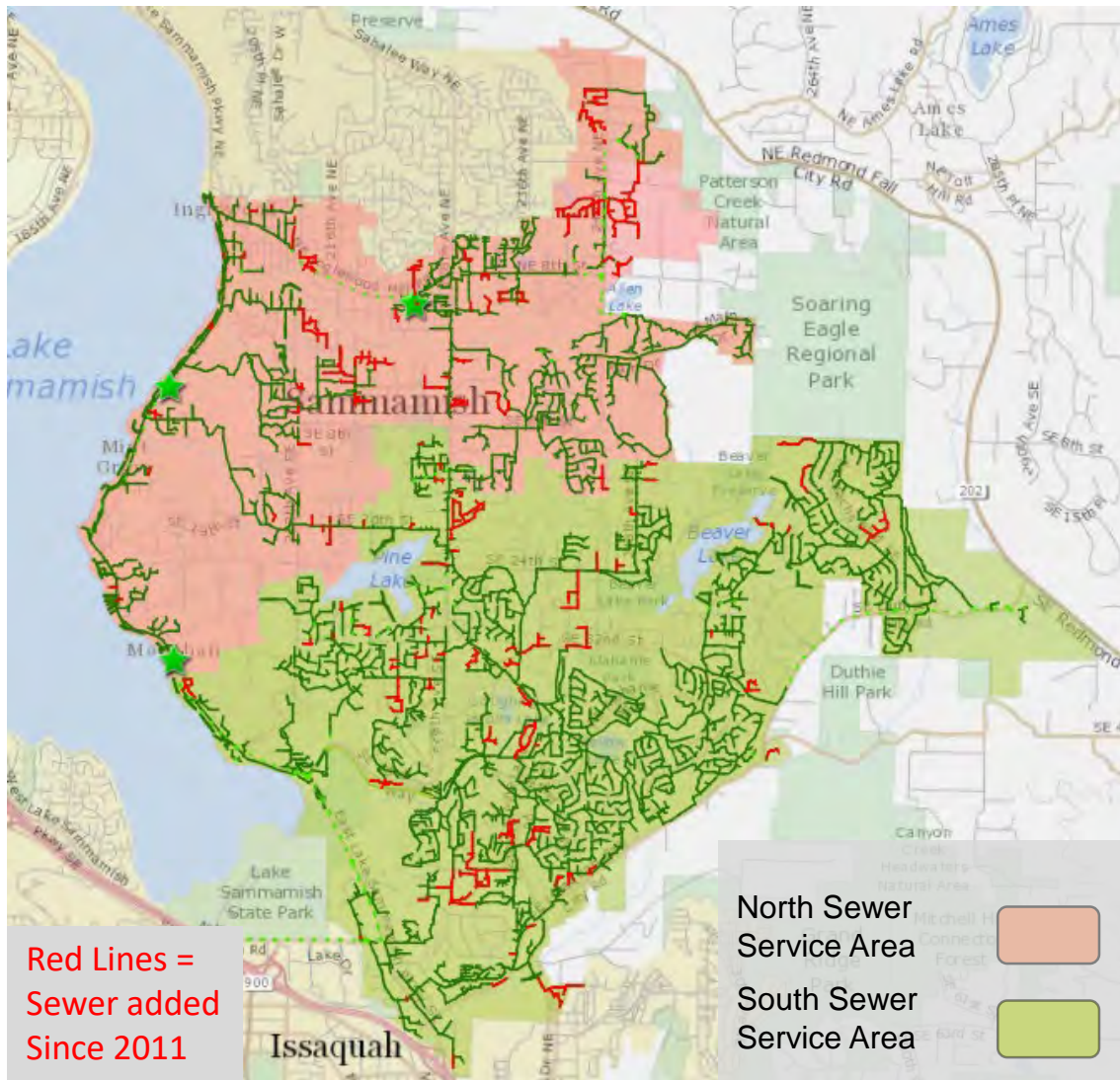
**Andy Tuchscherer**  
Operations Manager

**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**

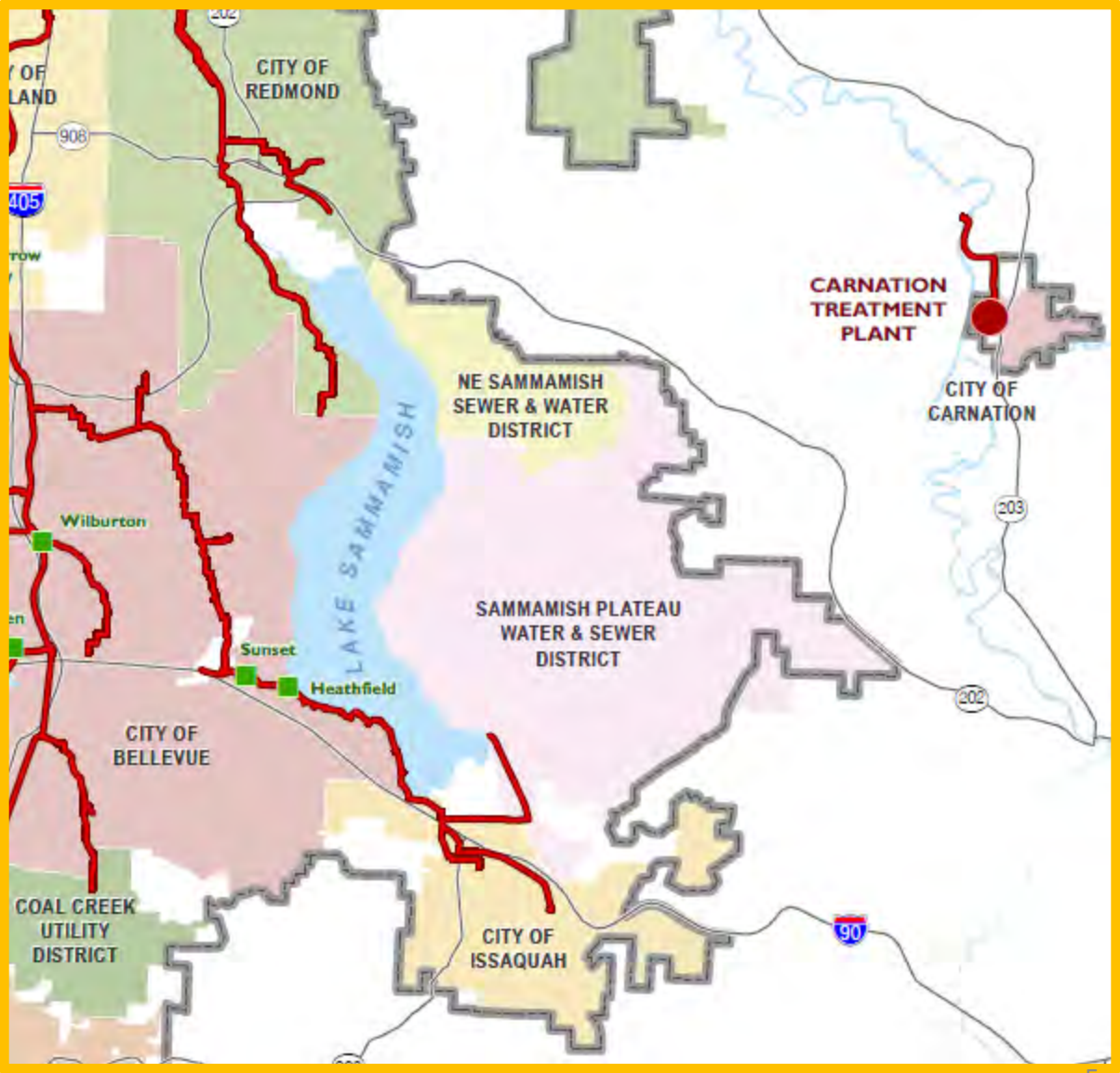
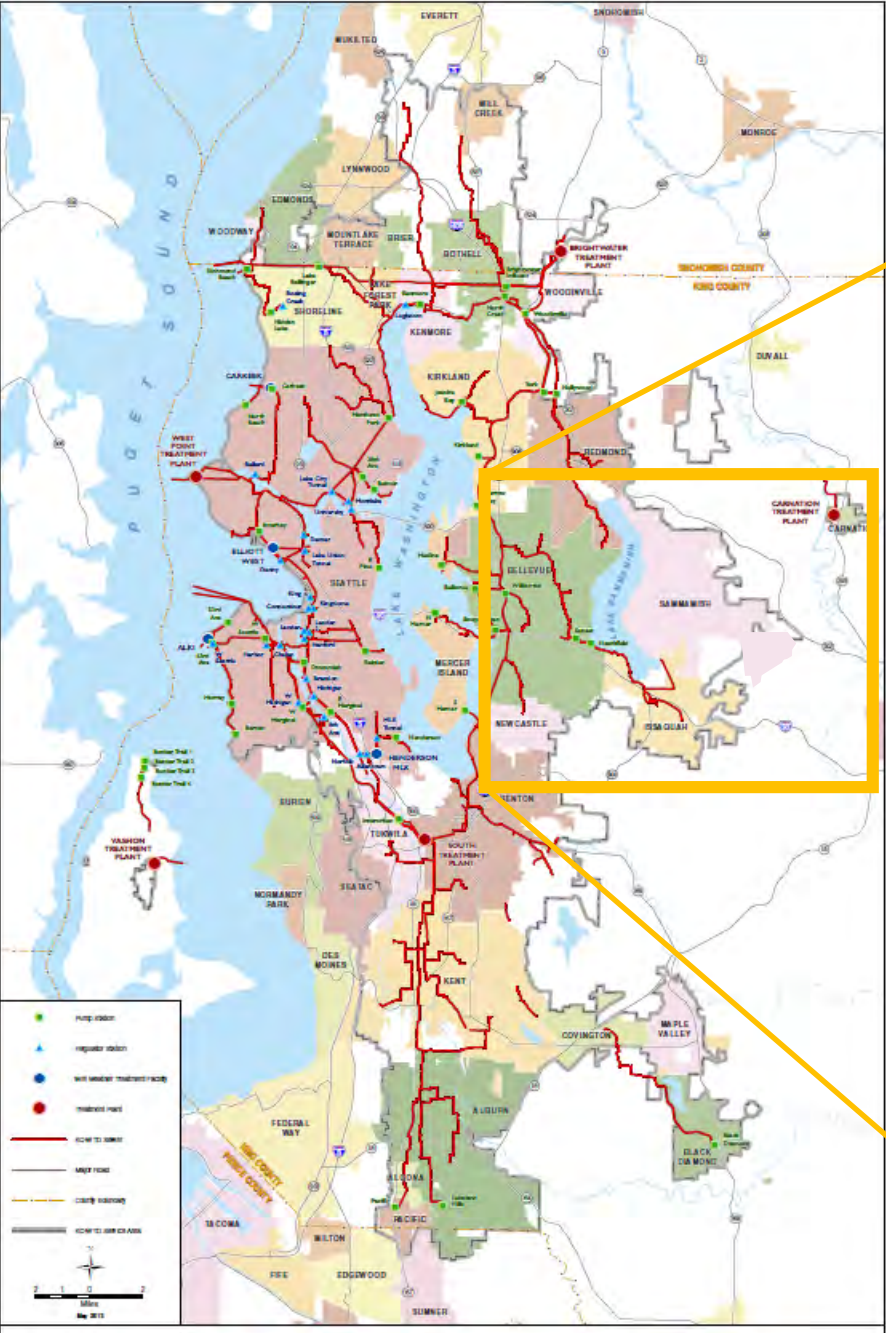
**21 Lift Stations**

**13,077 Sewer Accounts**

**North Sewer Service Area  
4,235 Sewer Accounts**



# King County Regional Conveyance System



# Rate Comparison & Benchmarking Analysis

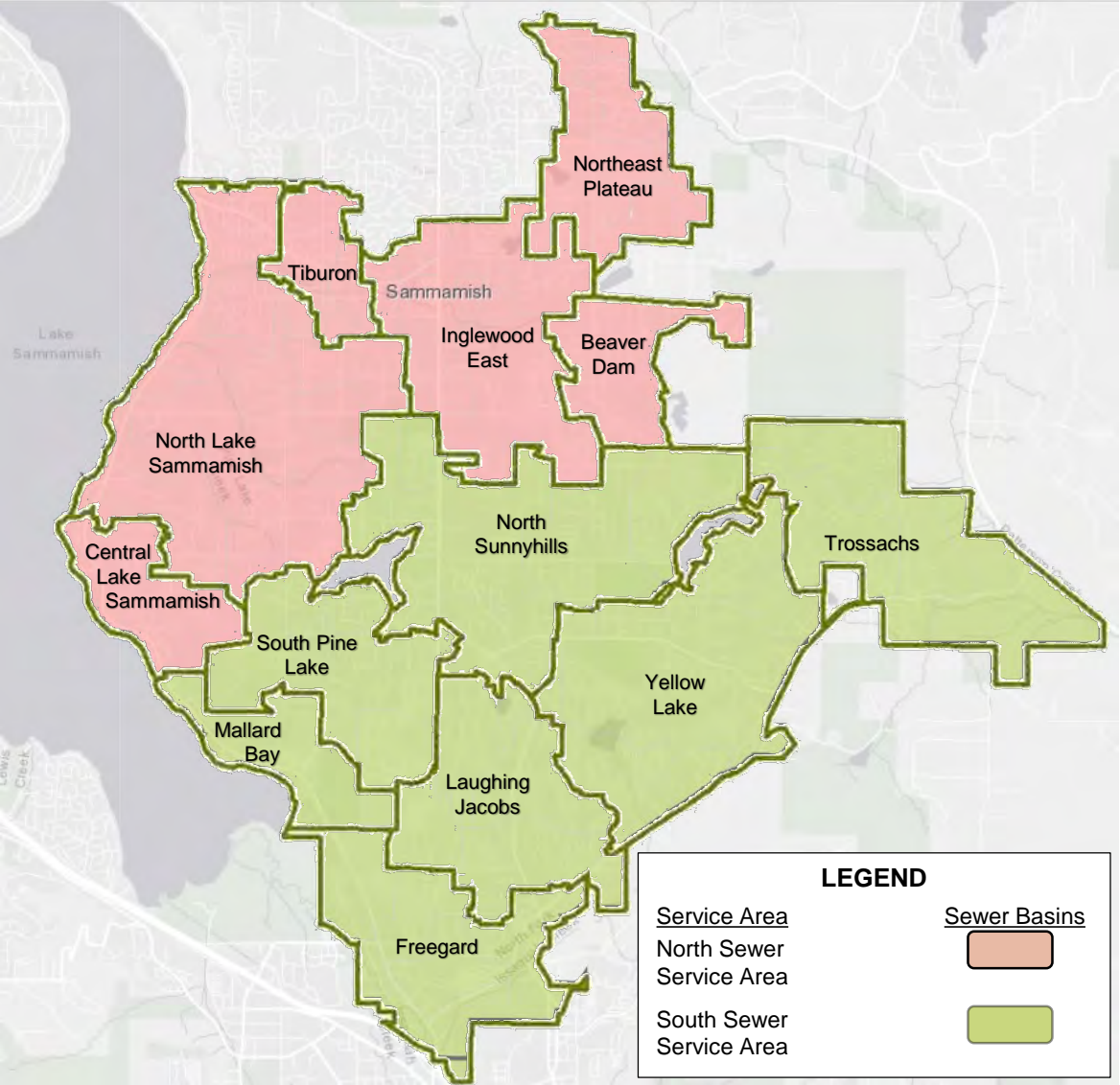
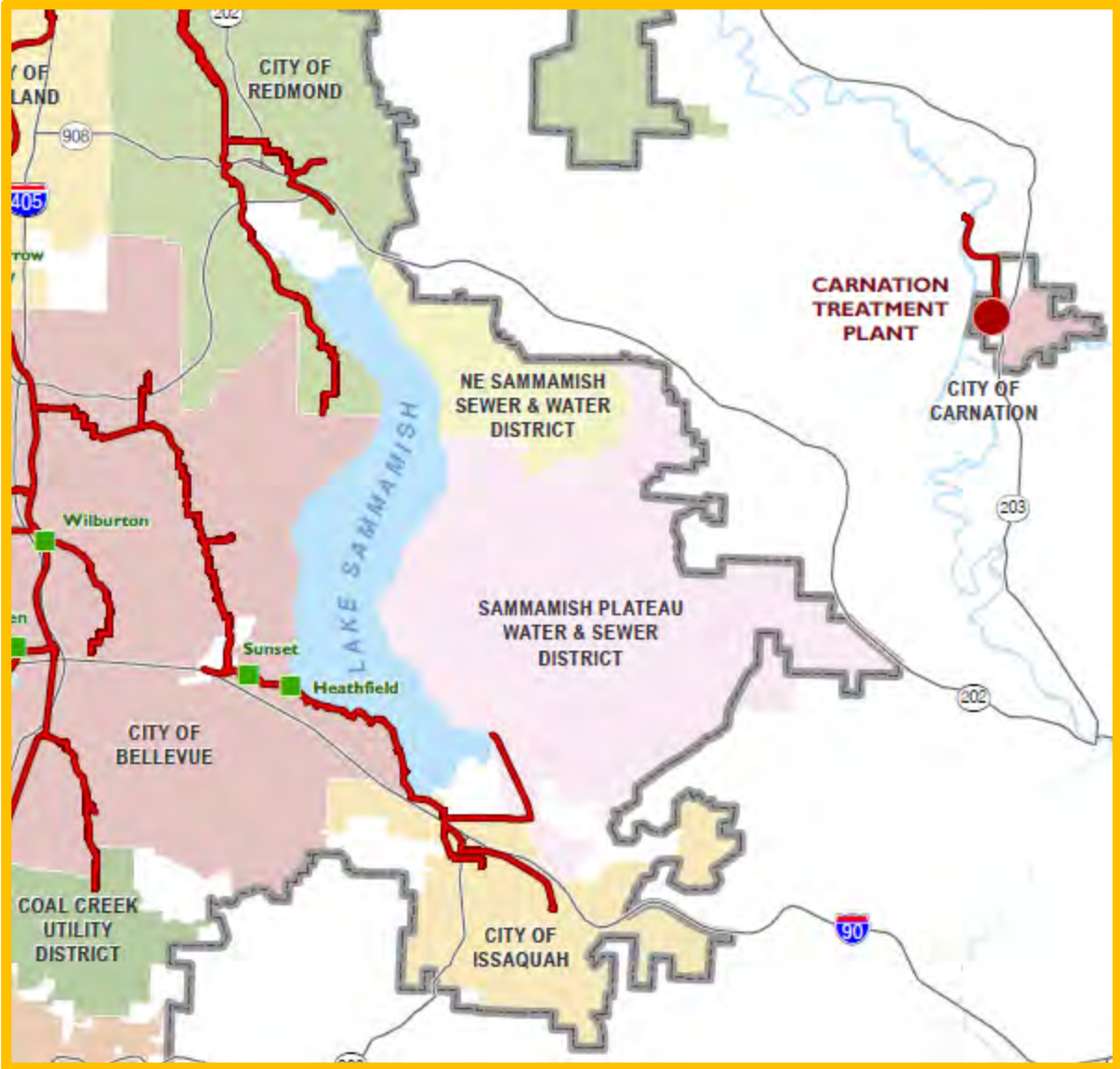
Final Report – September 2016



Jurisdiction	Average Asset Age <sup>2</sup>	# of Connections to Regional System		
		Number	Number Per 1,000 Acres	Rank <sup>3</sup> (n <sup>th</sup> Lowest)
<b>SP Water</b>	<b>11 Years</b>	<b>1</b>	<b>0.1</b>	<b>1</b>
Bellevue	20 Years	34	1.4	4
Issaquah	12 Years	24	4.4	7
Kirkland	16 Years	32	5.7	8
NE Sammamish SWD	23 Years	2	0.6	3
Redmond (City)	18 Years	60	5.8	9
Redmond (Novelty Hill)	10 Years	1	0.3	2
Skyway WSD	17 Years	10	6.4	10
Tukwila	18 Years	25	4.1	6
Woodinville WD	16 Years	13	2.5	5



# Sammamish Plateau Water – Impacted Sewer Basins



# Sammamish Plateau Water – Planning with King County

District aligns long term plans with regional plans.



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



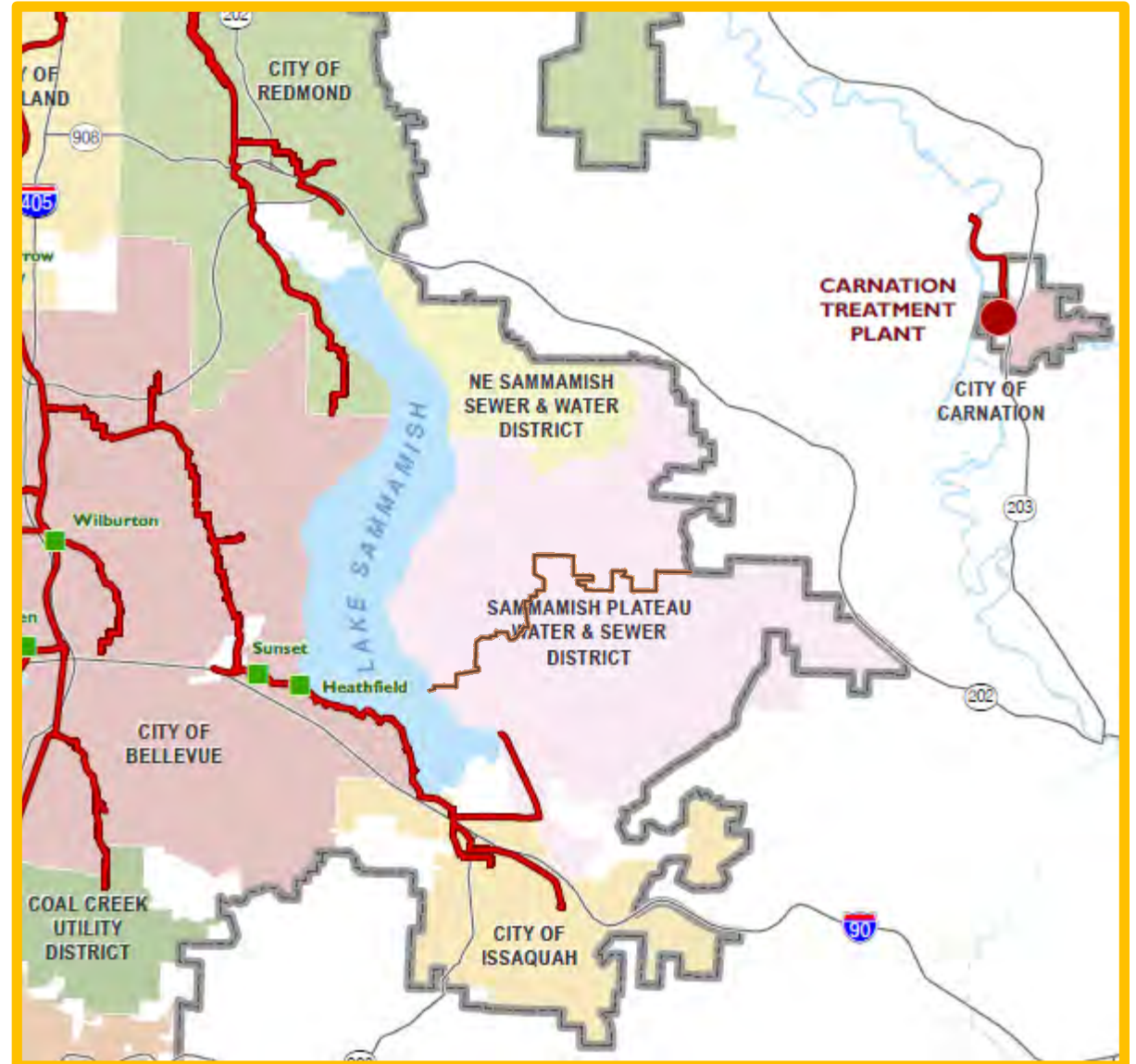
2018: The Sammamish Plateau Diversion (SPD) regional improvements deprioritized by KCWTD.



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

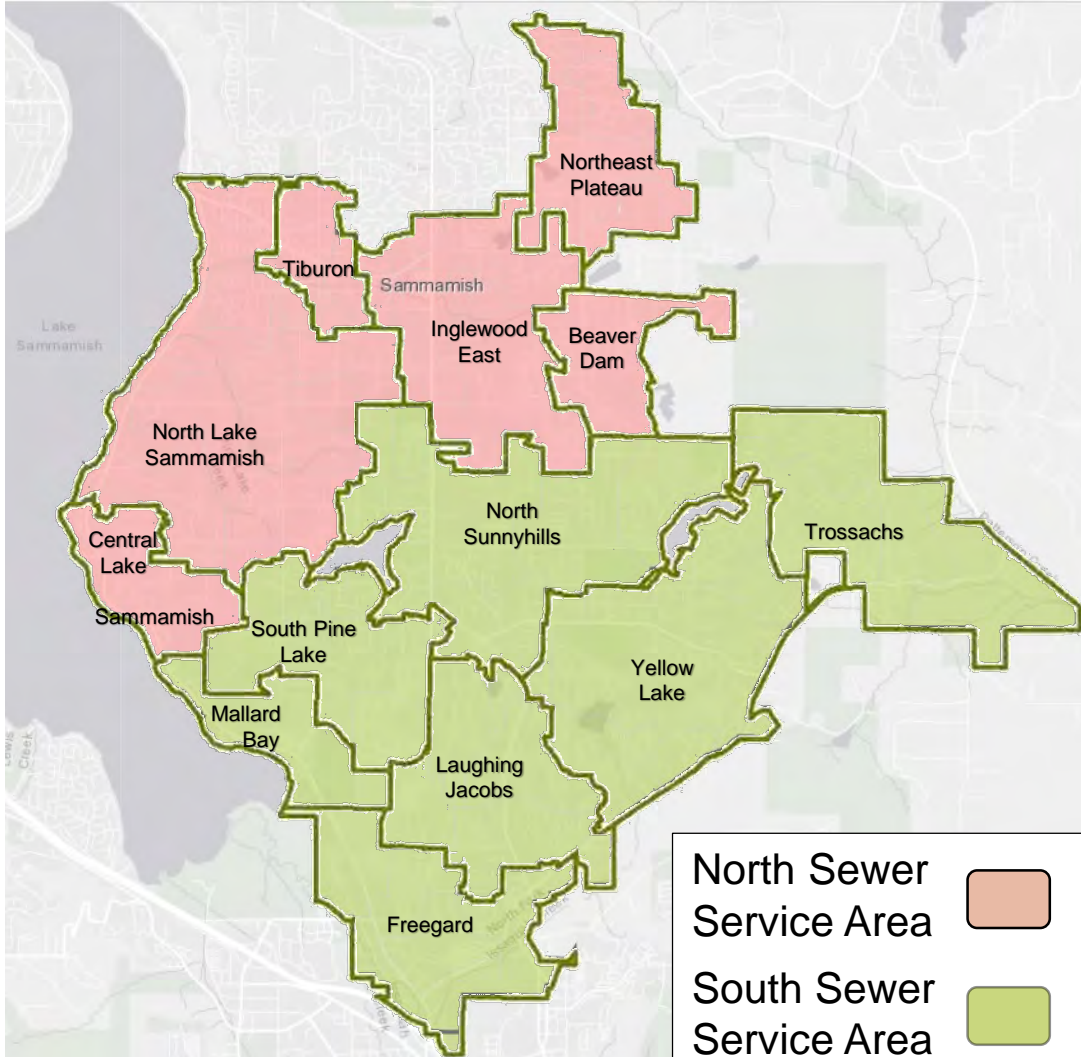


2021: King County (Isaacson and Constantine) state the District's capacity needs are a local problem, unrelated to prior SPD decisions.





# North Sewer Service Area – Moratorium



## North Sewer Service Area

2/22/2021: District's Board of Commissioners declares a 90-day moratorium.

**Not Allowed**

### New Certificates of Sewer Availability

- Building a new house
- Remodeling an existing house
- New development

### New Connections

- Existing house on septic

**Allowed**

### New Certificates of Sewer Availability







- If you have pre-paid connection charges

### 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.*

# Sammamish Plateau Diversion Planning Chronology

1950	1960	1970	1980	1990	2000	2010	2020	2030	2040	2050
1959 Metropolitan Seattle Sewerage and Drainage Survey										
		1973 District/METRO Agreement for Sewage Disposal								
District Comprehensive Wastewater Plans - Northern Diversion Recognized in all Plans, <b>Highlighted in 2013 Plan</b>										
								Plan In Progress		
		1970	1983	1987	2003	2013	2020/2021			
					Conveyance System Improvement Program					
					2007	2017				
		Sammamish Plateau Diversion			High Priority Low Priority - Funding Removed, Deferred 2050-2070					
						2016 North Diversion Interim Improvement Evaluation				
<div>“... 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</div>				King County Positions		2016 Sammamish Plateau Diversion is funded				
						2017 Initial Project Charter underway				
						2018 Project deferred, funding removed				
						2021 Position “It’s a Local Problem”				
						2019 North Diversion 2 <sup>nd</sup> Interim Improvement Analysis				

# Sammamish Plateau Diversion – King County Estimated Installation Dates

2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
	2005 Report			2020						
	2007 CSI Program				2025					
		2016 Evaluation			2028					
		2017 CSI Program								Undefined
		2019 Letter						2040 Plus		
			2021 Analysis			2030				

## North Sewer Service Area – Growth Factors and Challenges

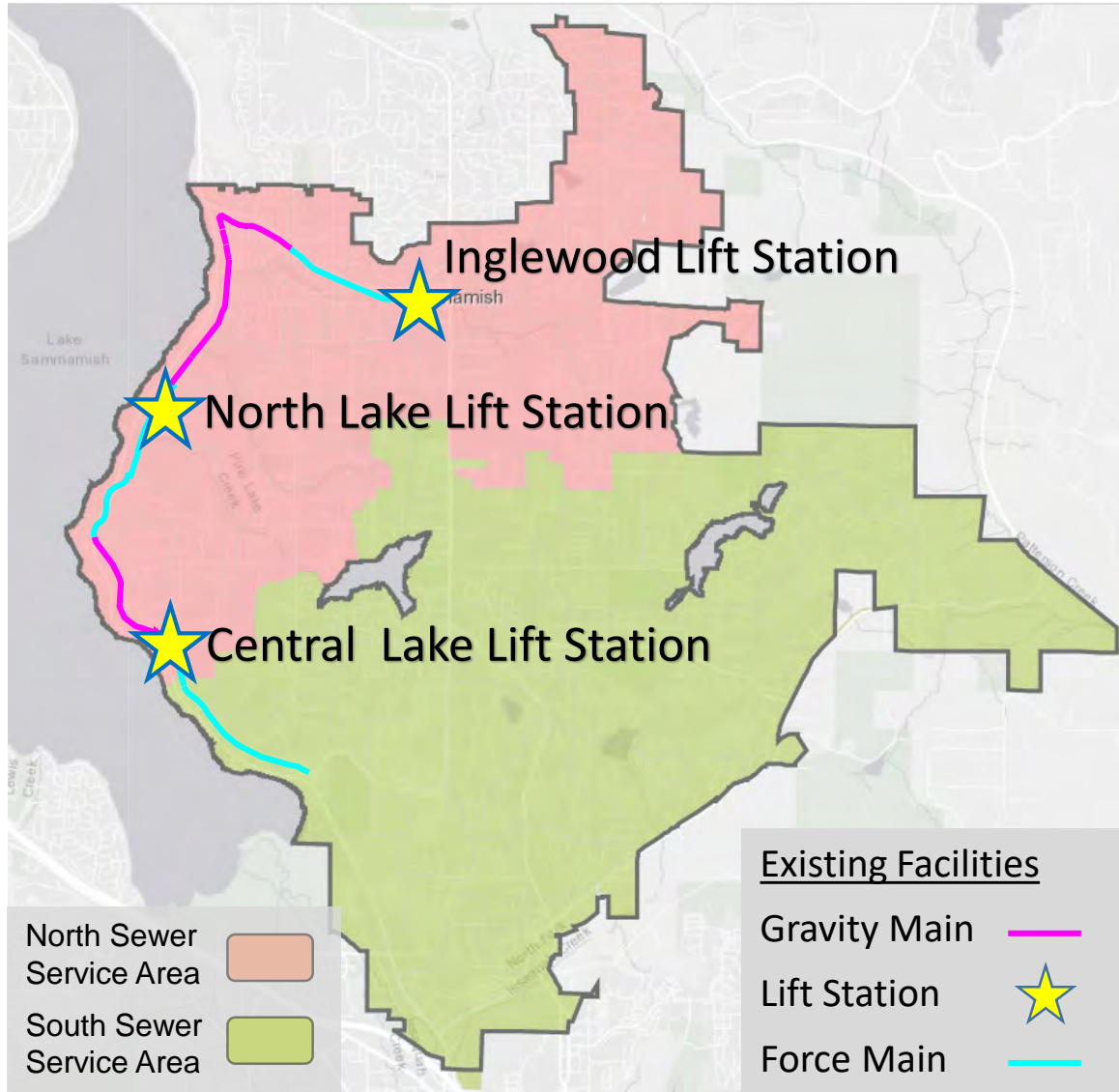
Domestic Flow Factors	Customers (ERUs)*
2011	3,693
Estimated Growth	956
Actual Growth	1,368
Percent above Estimate	43%
2020	5,061

Infiltration & Inflow Factors	Sewer Main (in Miles)	Manholes	Service Area (in Acres)
2011	47	1,567	1,285
2020	57	1,952	2,222
Percent Growth	21%	25%	73%

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



# Sammamish Plateau Water – Recent Events



## 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

# Sammamish Plateau Water – Recent Events Continued

## 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

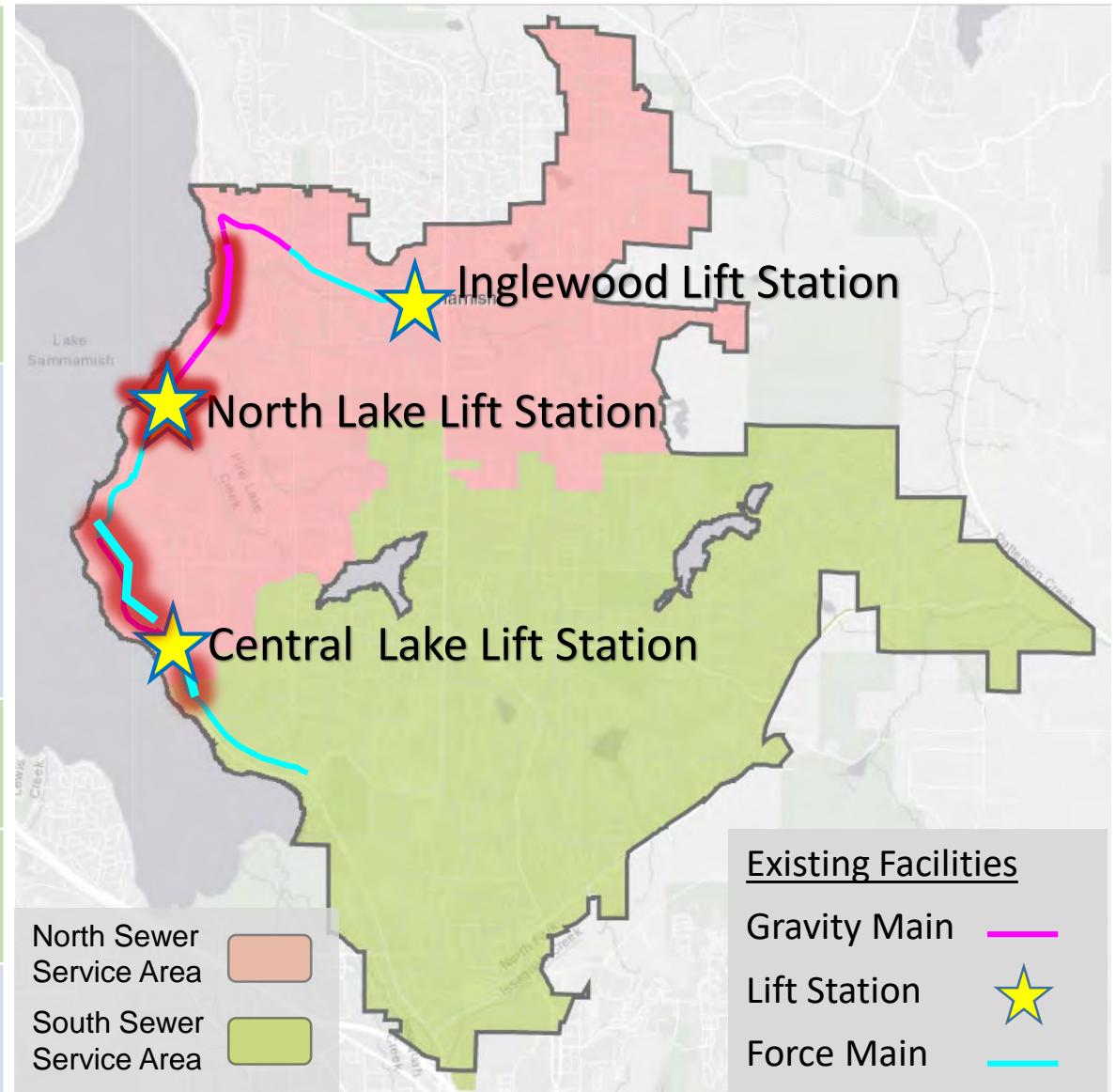
## Resolution 5018: 90-Day Moratorium 2/22/2021–5/24/2021

## 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?

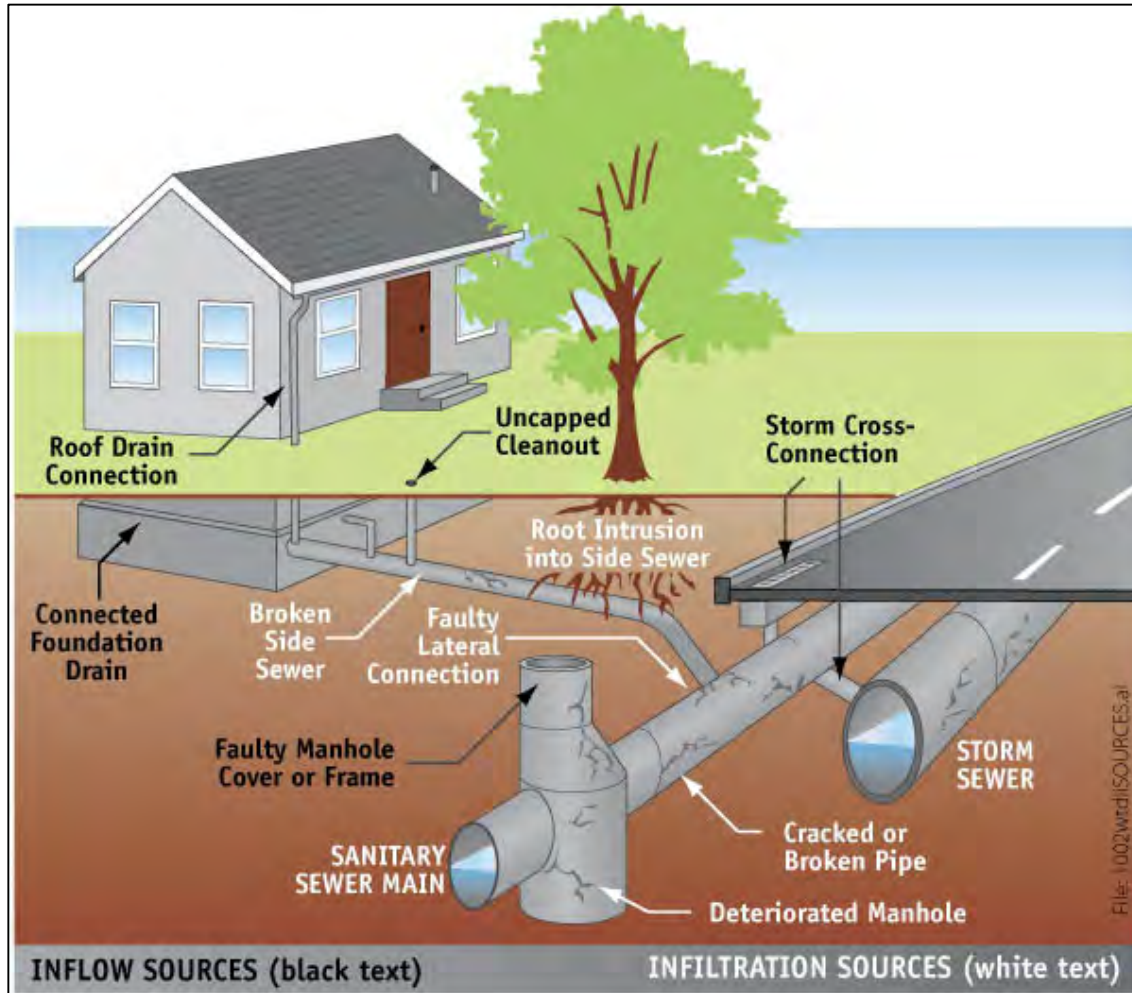


Image source: kingcounty.gov – I/I resources

## Infiltration

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

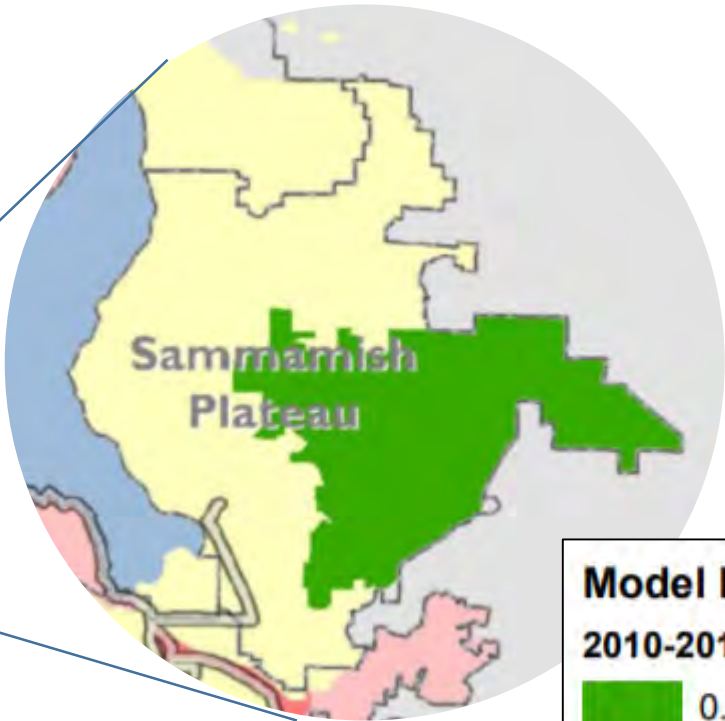
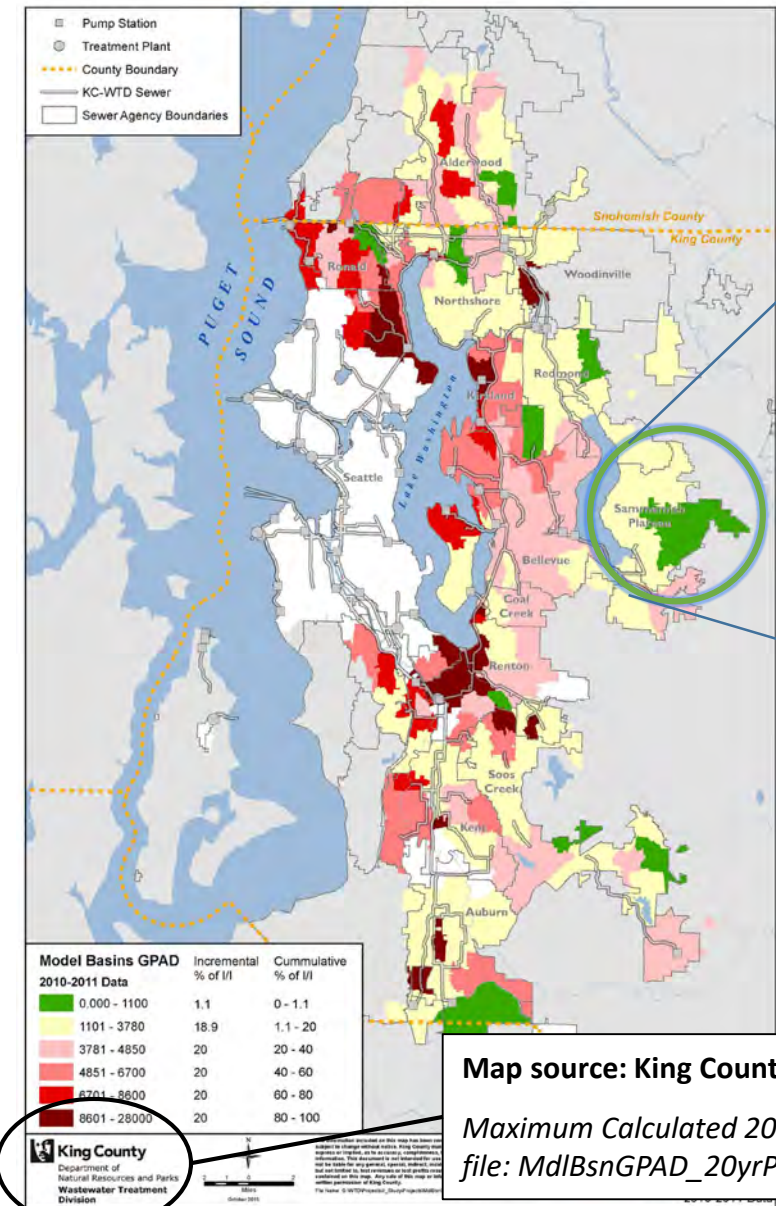
## Inflow

- 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.**



# 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**.

Model Basins GPAD	Incremental % of I/I	Cummulative % of I/I
2010-2011 Data		
0.000 - 1100	1.1	0 - 1.1
1101 - 3780	18.9	1.1 - 20
3781 - 4850	20	20 - 40
4851 - 6700	20	40 - 60
6701 - 8600	20	60 - 80
8601 - 28000	20	80 - 100

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

# Sammamish Plateau Water – Infiltration & Inflow (I&I) Dashboard

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.

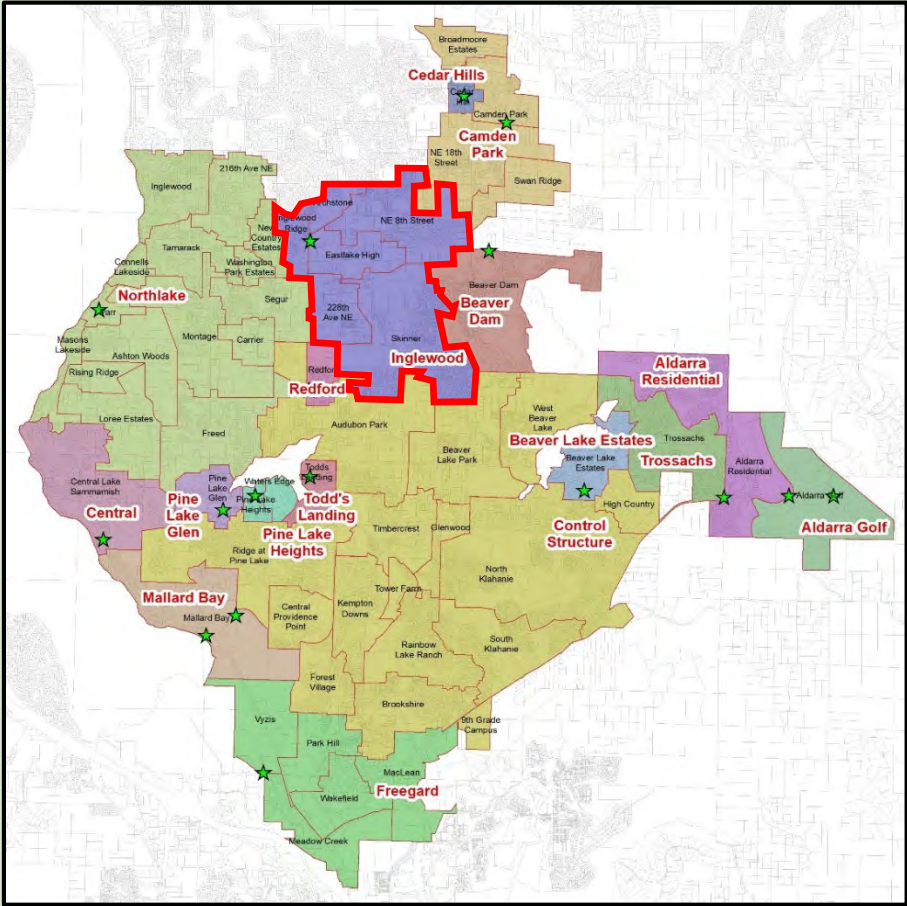
➤ *It is anticipated the proposed Dashboard will be operational in the second quarter of 2021.*



# Sammamish Plateau Water – Infiltration & Inflow (I&I) Dashboard

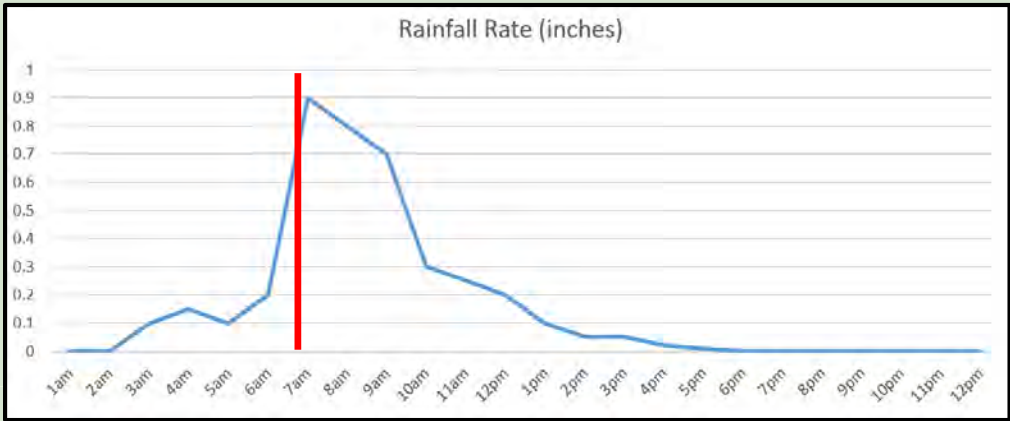
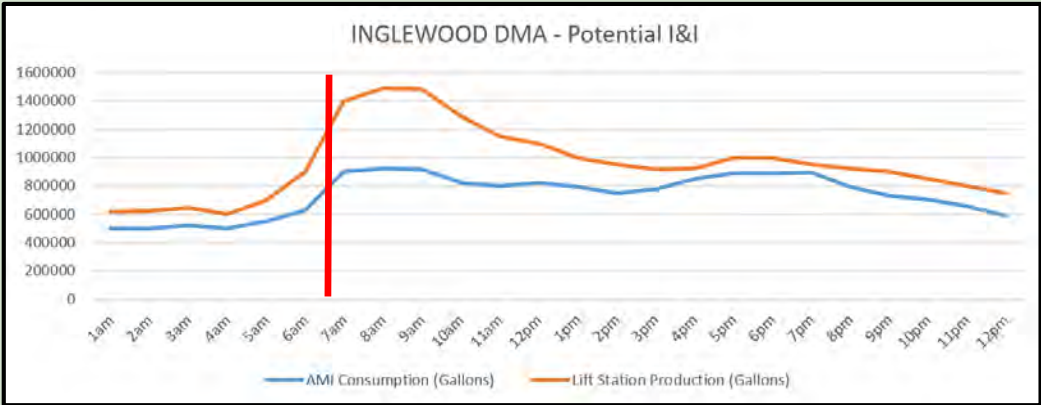
## Demand Management Areas (DMAs)

### INGLEWOOD DMA



Pick Start/End Date and Time

### Customer Demands + Potential I&I vs. Rainfall



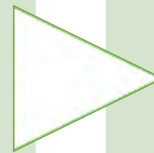
Date/Time Selected: January 14, 2021 – 7:00am

# 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

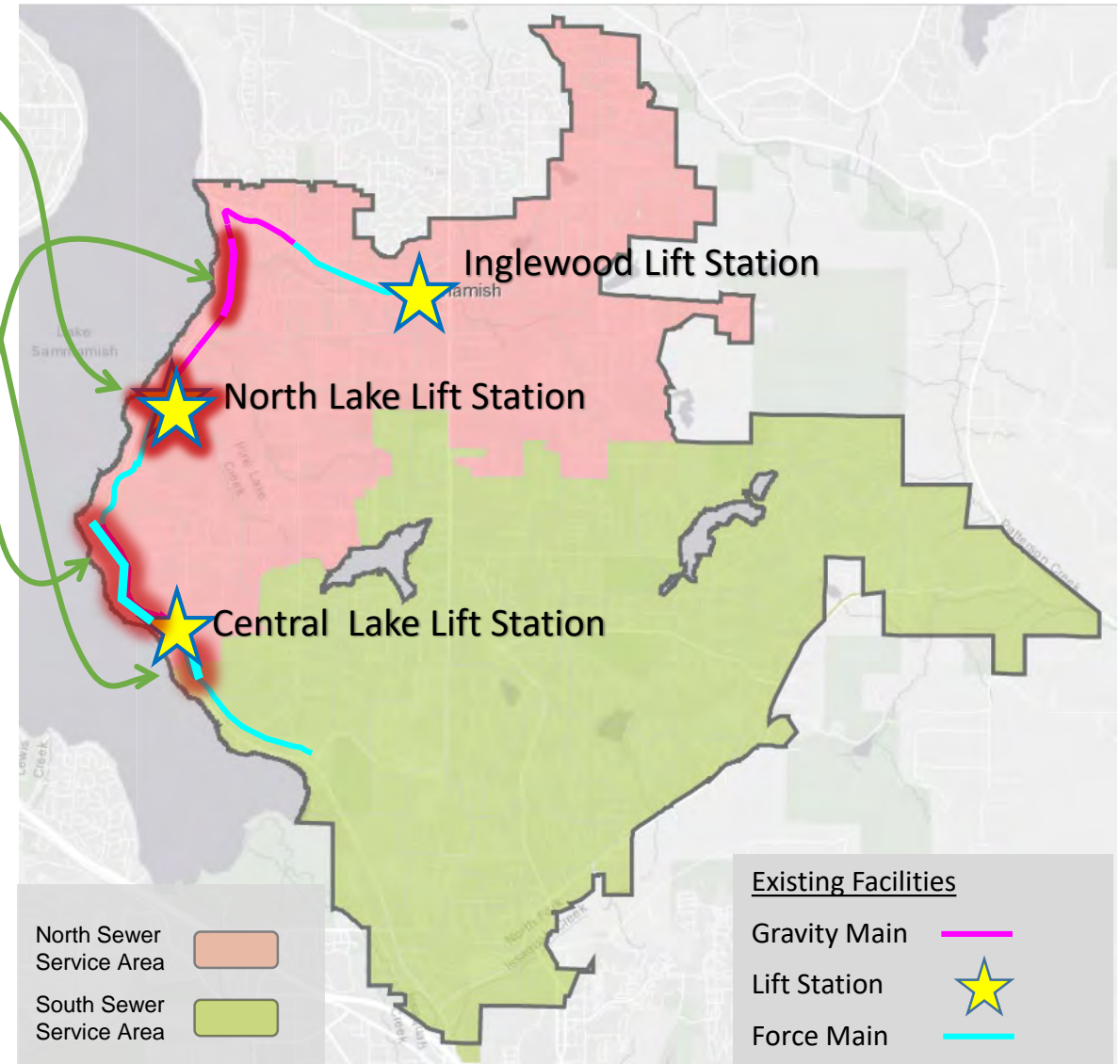
- 2023-2025 TBD

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:

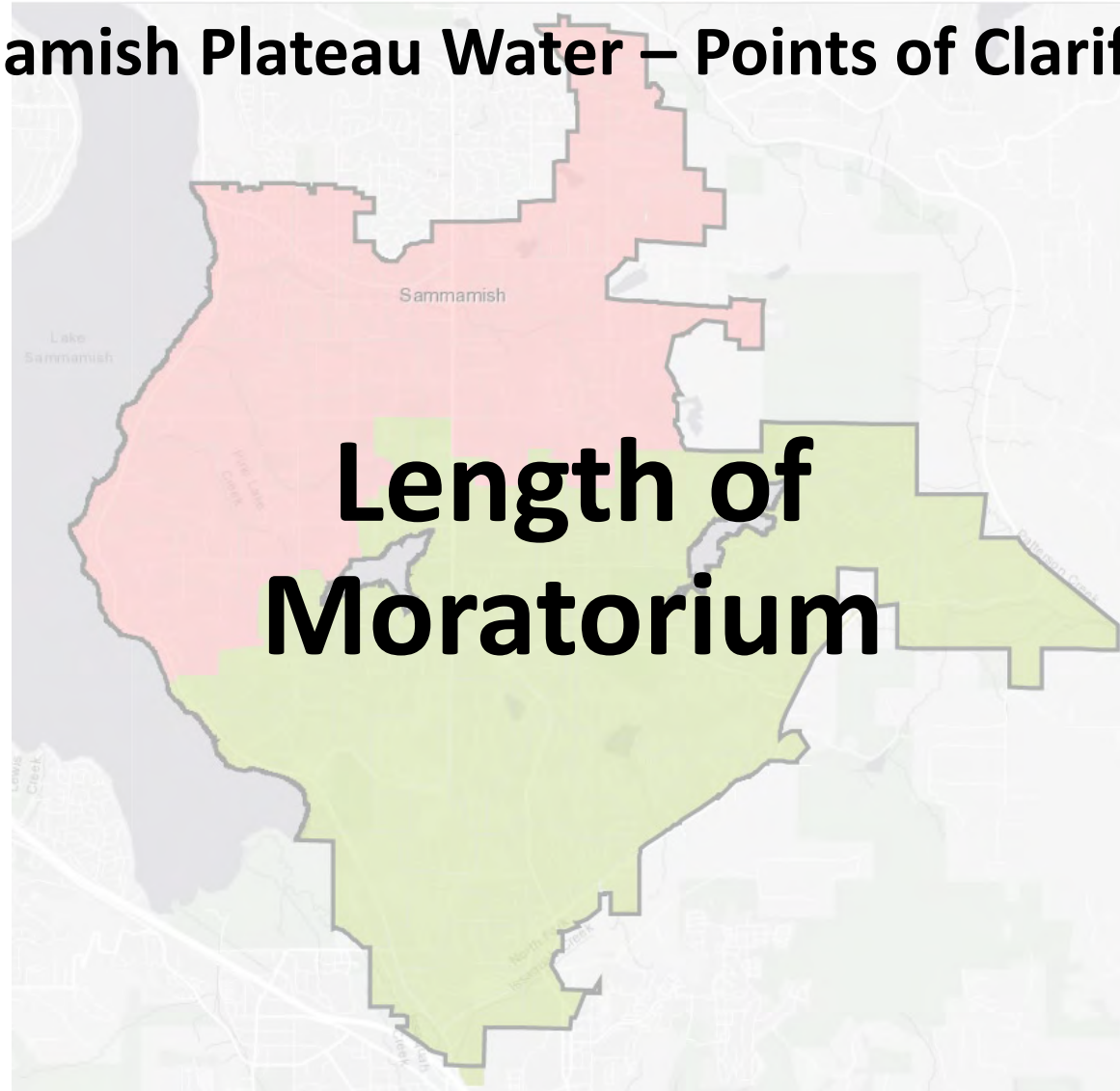
\$524 → \$4,867 per ERU

### Rate Impacts

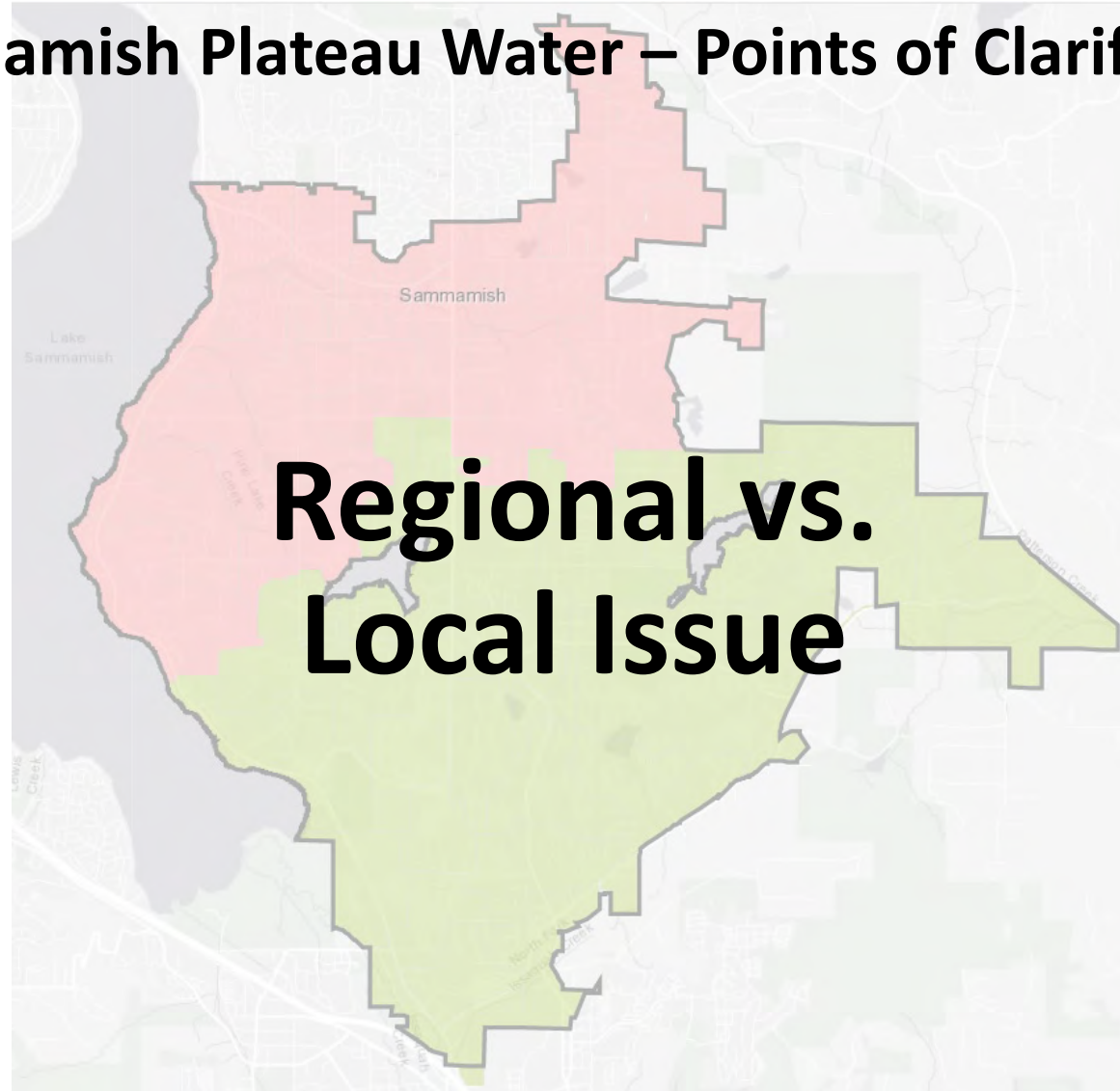
25.4% increase:

\$9.64 → \$47.60/month

## **Sammamish Plateau Water – Points of Clarification**

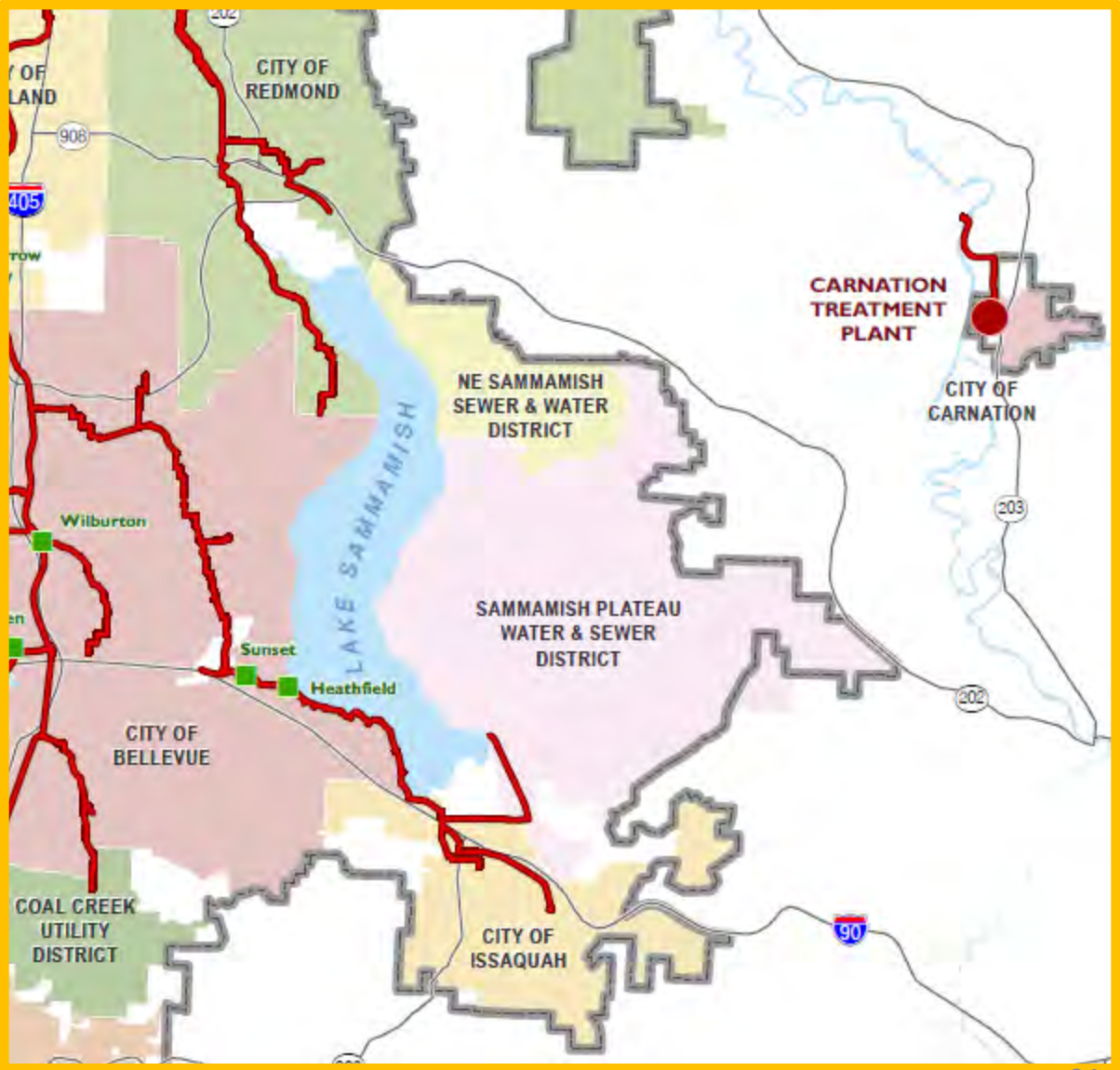
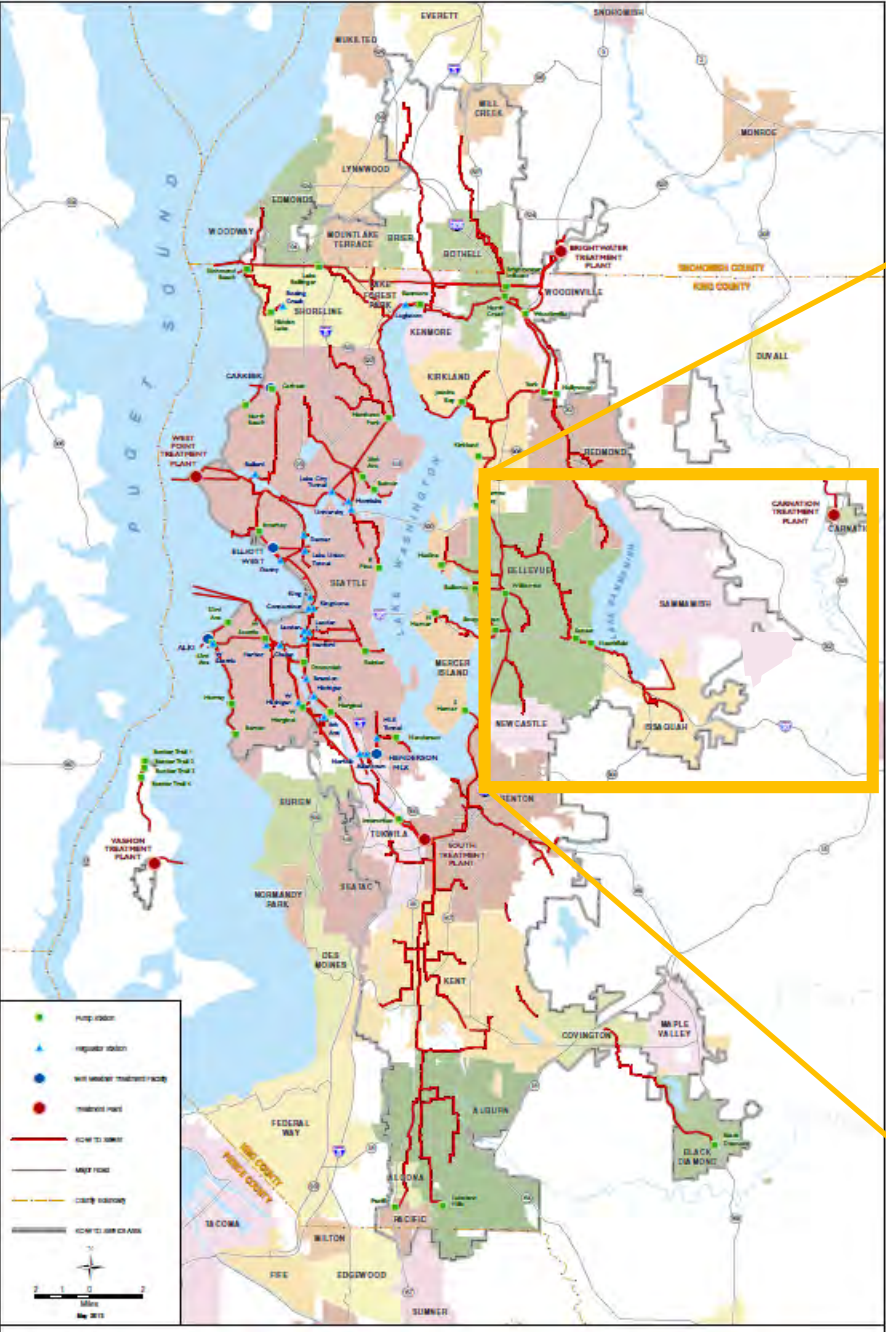


## Sammamish Plateau Water – Points of Clarification

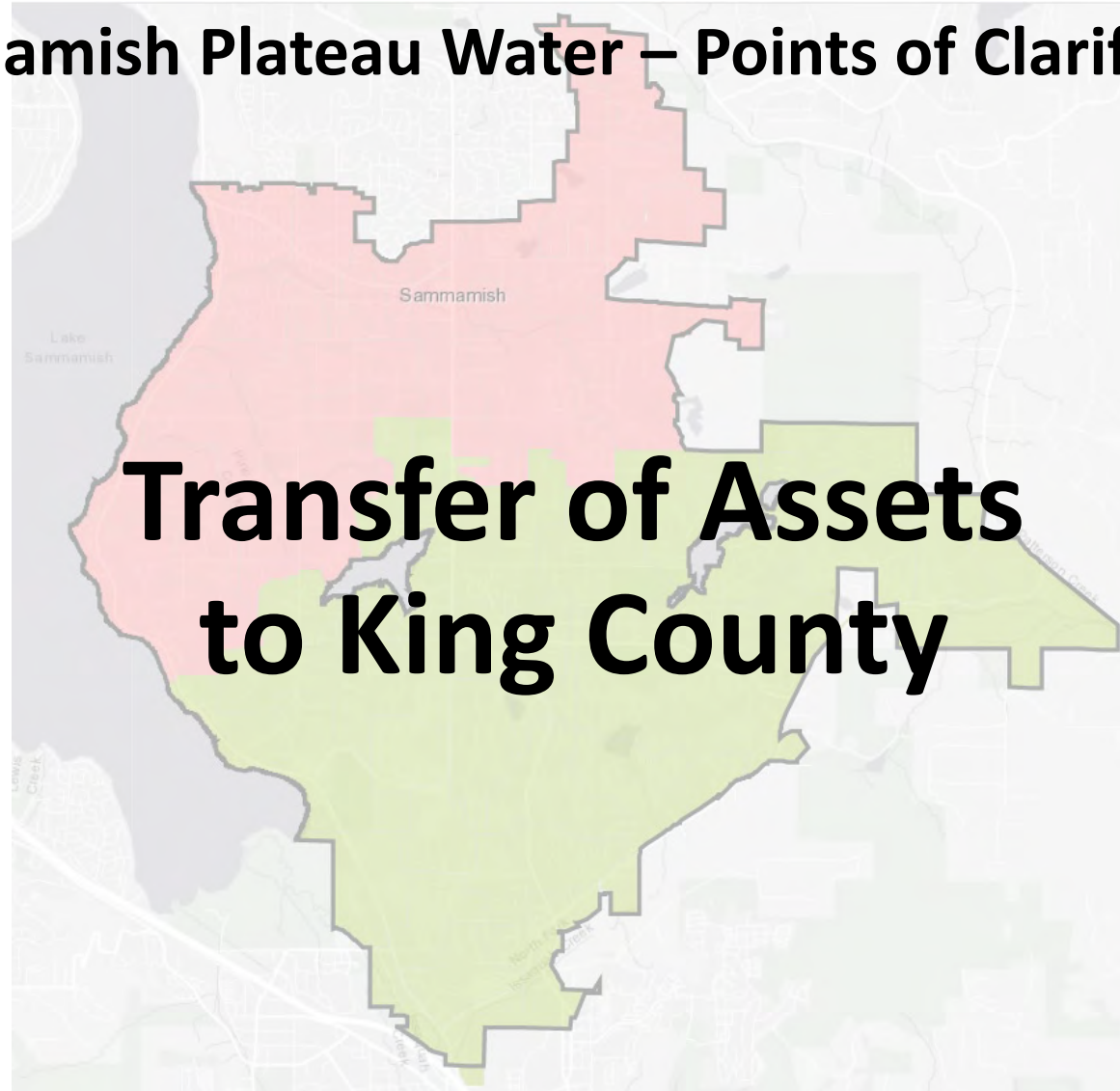




# King County Regional Conveyance System



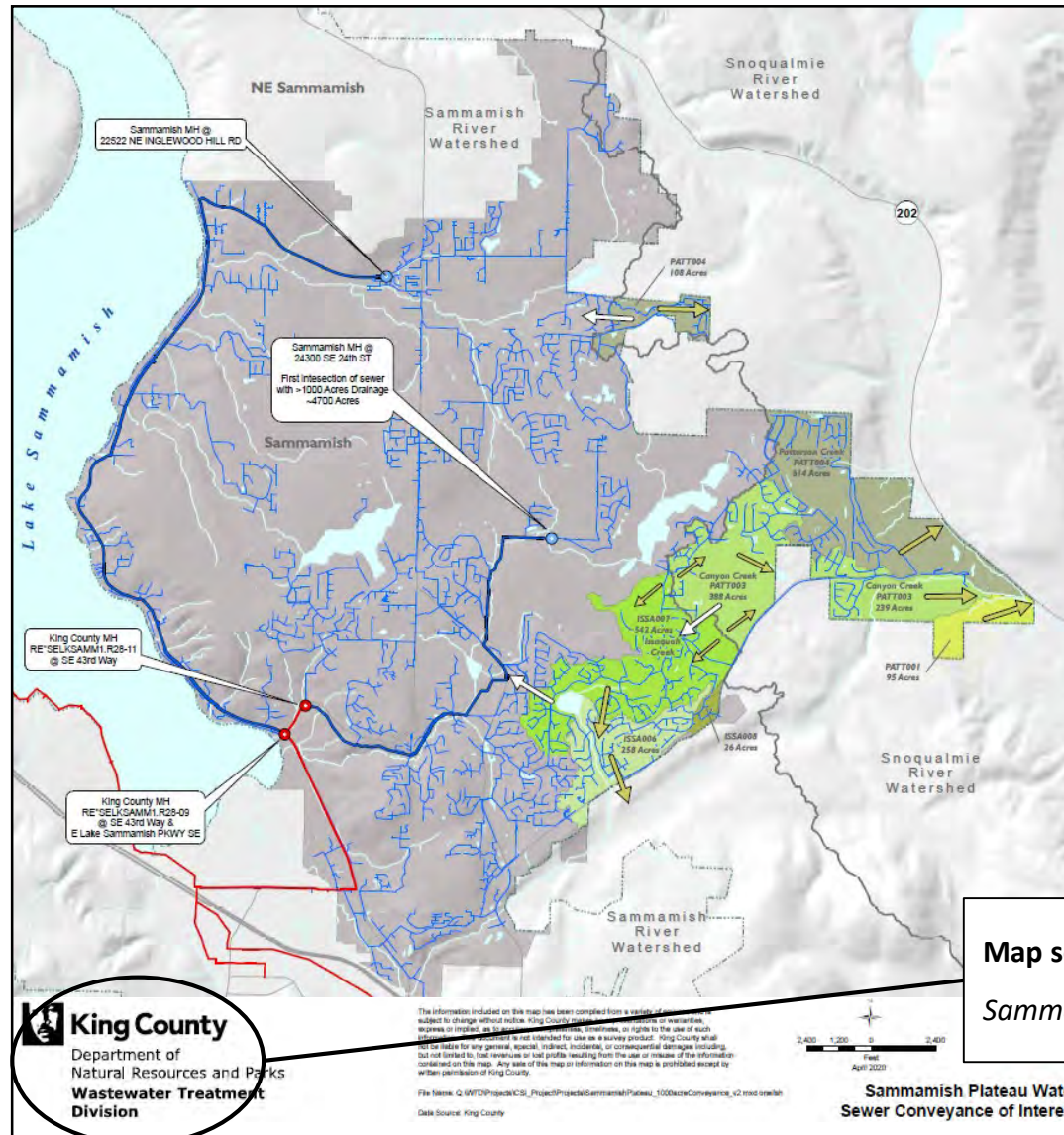
## **Sammamish Plateau Water – Points of Clarification**





# Sammamish Plateau Water – Points of Clarification

## Transfer of Assets to King County





# **Sammamish Plateau Water – Pathway Out of the Moratorium**

**Establish metrics to evaluate system capacity**

**Determine basis for lifting moratorium**

**Design and implement system improvements**

**Initiate long-term improvements**

# Sammamish Plateau Water – Integrated Work Plan

Sewer System Improvement Work Plan																																				
Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep							
2021									2022												2023															
Quarter 2			Quarter 3			Quarter 4			Quarter 1			Quarter 2			Quarter 3			Quarter 4			Quarter 1			Quarter 2			Quarter 3									
DESIGN PHASE - Central Lake LS FM												CONSTRUCTION PHASE Central Lake LS FM																								
DESIGN PHASE - N. Lake LS Capacity																																				
						CONSTRUCTION PHASE - N. Lake LS Capacity																														
DESIGN PHASE - North Lake LS Forcemain																																				
															CONSTRUCTION PHASE - North Lake LS Forcemain																					
I&I Dashbord			Review Options and Feasibility for Advanced I&I Tool																																	
			I&I Dashboard Trends & Results inform investigation																																	
				I&I Flow Monitor Placement and Reading Based on Dashboard Analysis																																
															I&I Consultant Analysis																					
I&I Abatement (On going maintenance practices and more detailed private sewer investigation)																																				

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