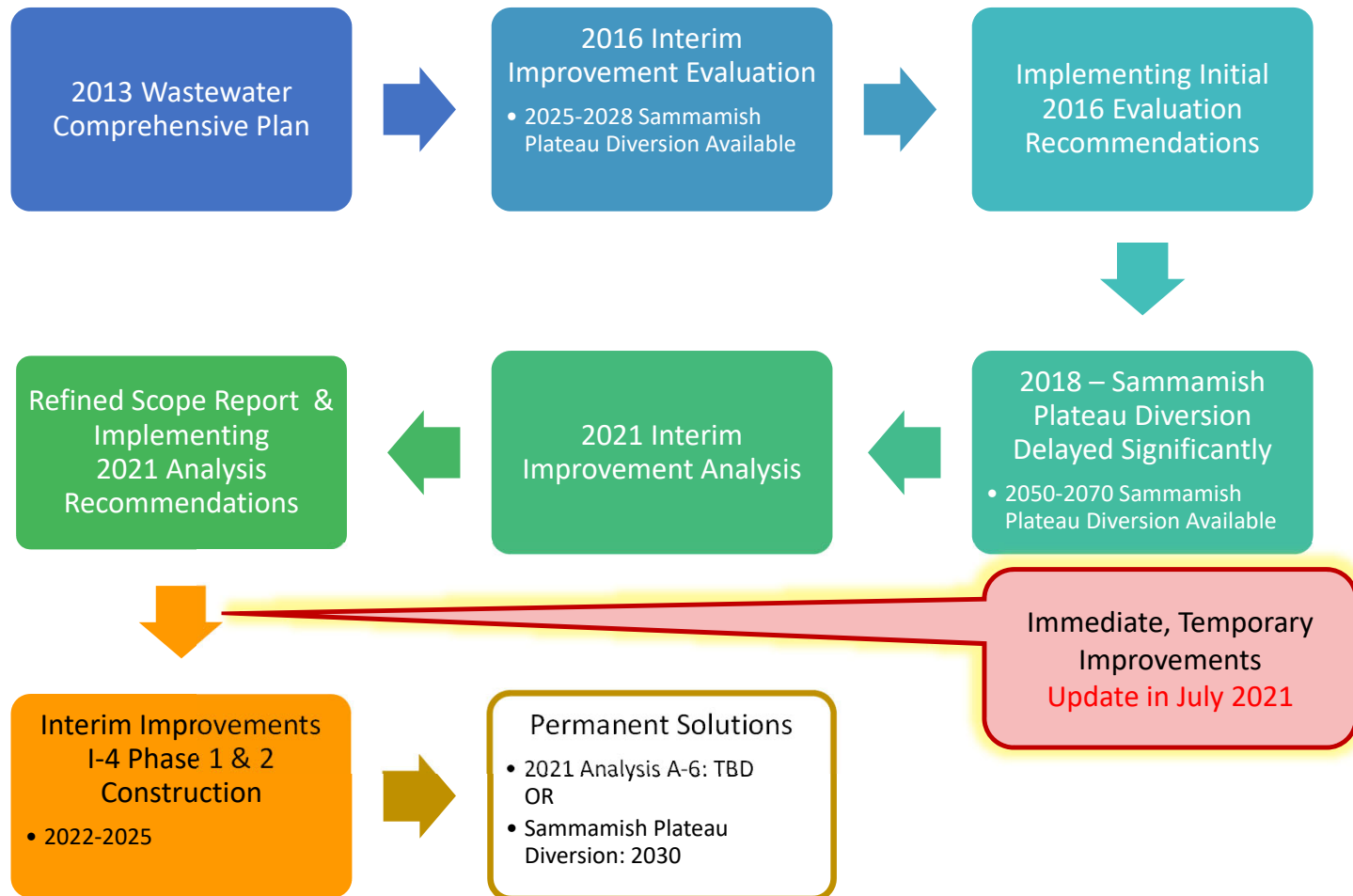




North Sewer Service Area Immediate Temporary Improvements

July 26, 2021

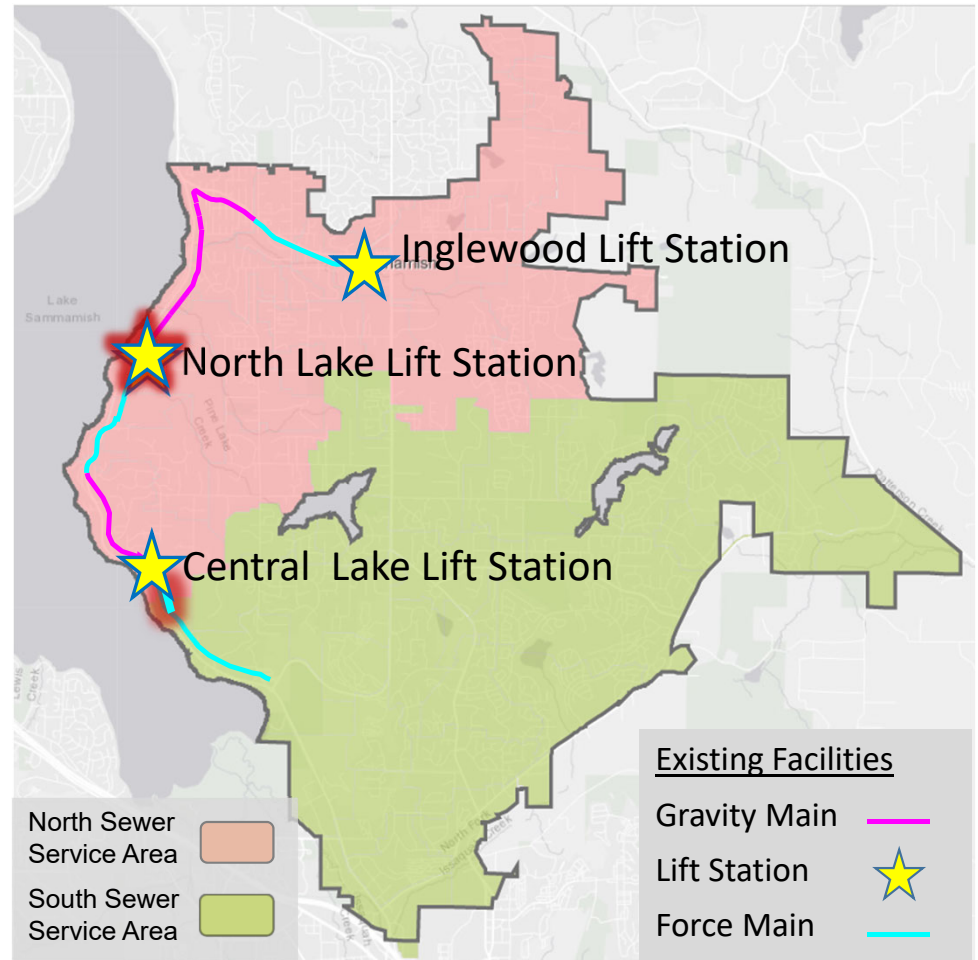
Path to NSSA Improvements



Sammamish Plateau Water – Measured Storm Flows

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

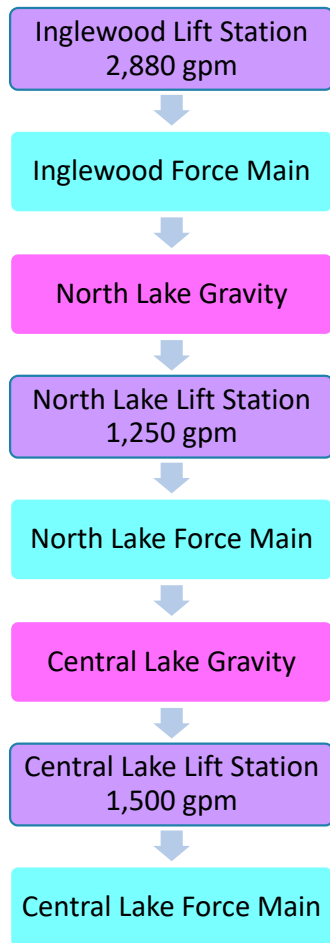
12/20/2019	2/5/2020 to 2/7/2020	1/3/2021	1/13/2021
4.2"	3.25"	2.72"	4.2"
1,305 gpm	1,300 gpm	1,227 gpm	1,437 gpm



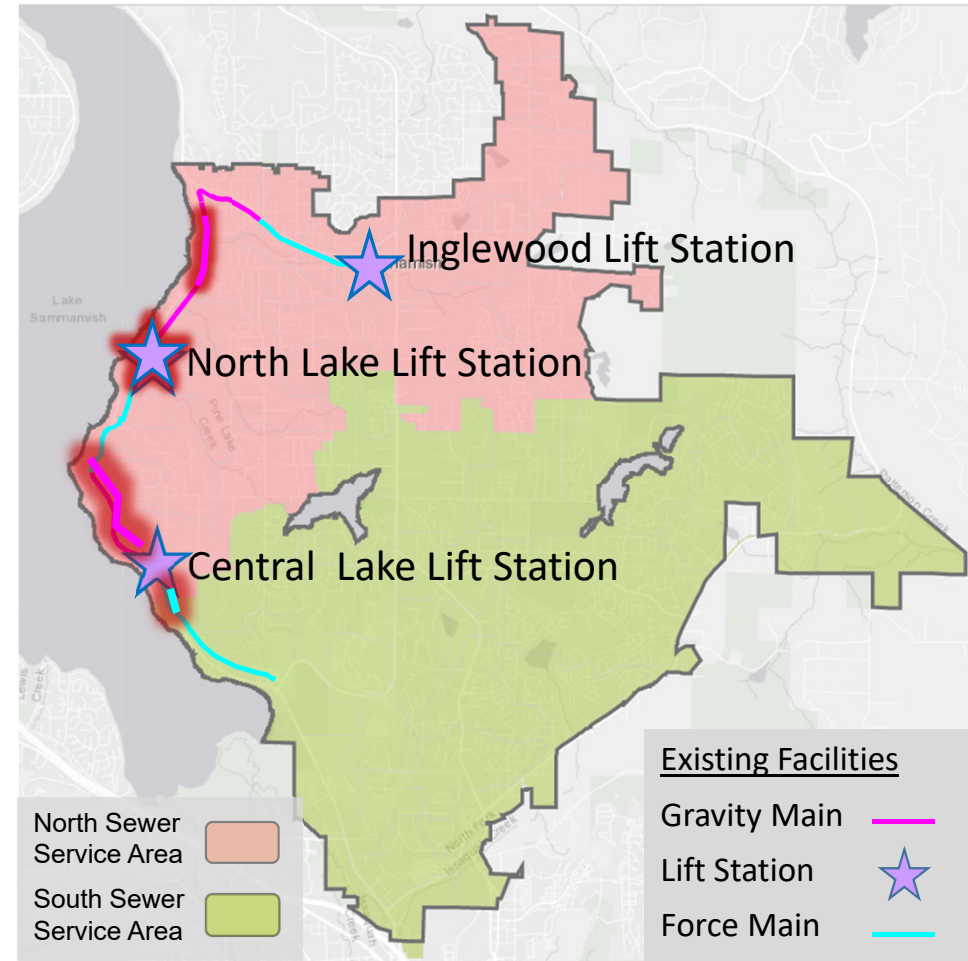
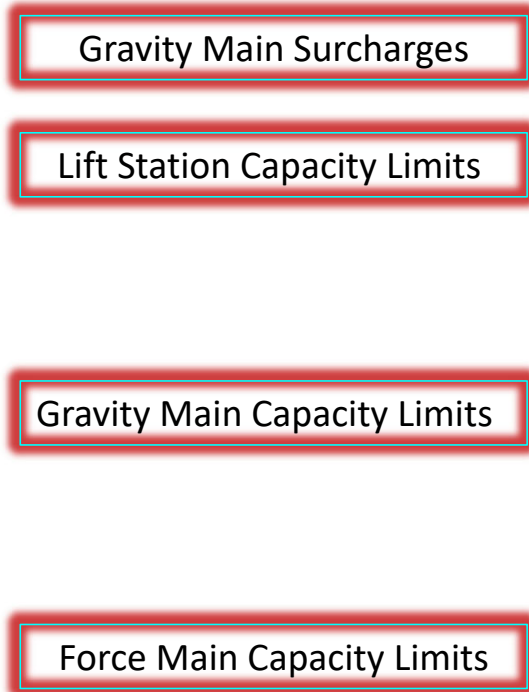
Existing Pipeline of 388 ERUs representing 140 gpm

Existing System

Existing System Flow



Limitations



Temporary Options

- Reduce Pumping At Inglewood Lift Station
- By-pass Pump at North Lake Lift Station to Increase Capacity
- Provide Temporary Storage at Inglewood Lift Station
- Provide Temporary Storage at Central Lake Lift Station

North Lake Lift Station By-pass Pump

- Diesel Powered Pump
- Requires construction of a by-pass connection to the force main
- Existing pumps will have to be turned off to operate
- Requires on-site monitoring
- Operations prefers purchase over rental options



Central and Inglewood Lift Station Temporary Storage

- Baker Tanks are common
- Holds 21,000 gallons
- Can reduce peak hourly flows by up to 350 gpm
- Provides approximately 1.5 hours of peak hourly storage
- Requires pumping out of a manhole or wet well to utilize.
- Requires on-site monitoring
- Needed at both Inglewood and Central Lake Lift Stations



Central Lake Lift Station Temporary Storage



7/26/2021

Inglewood Lift Station Temporary Storage



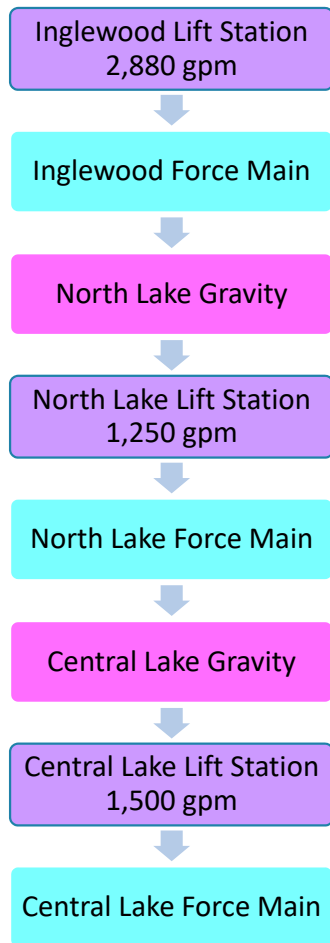
7/26/2021

Recommendations

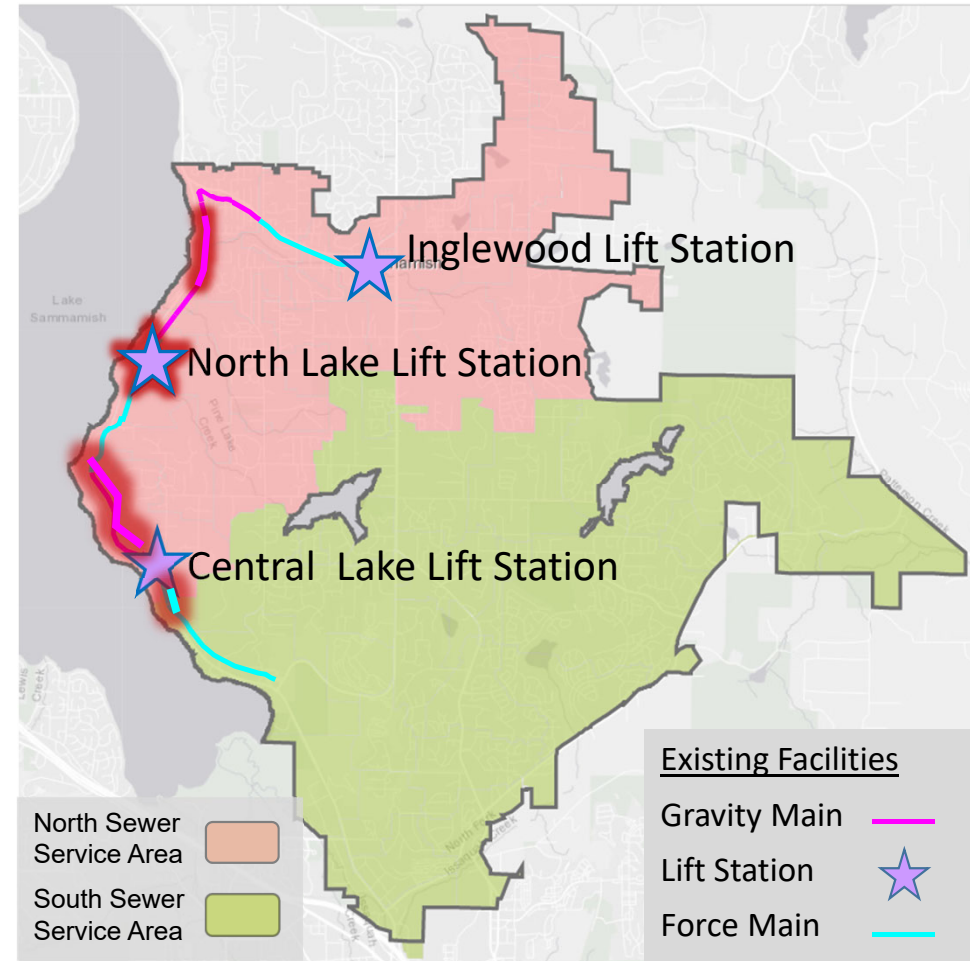
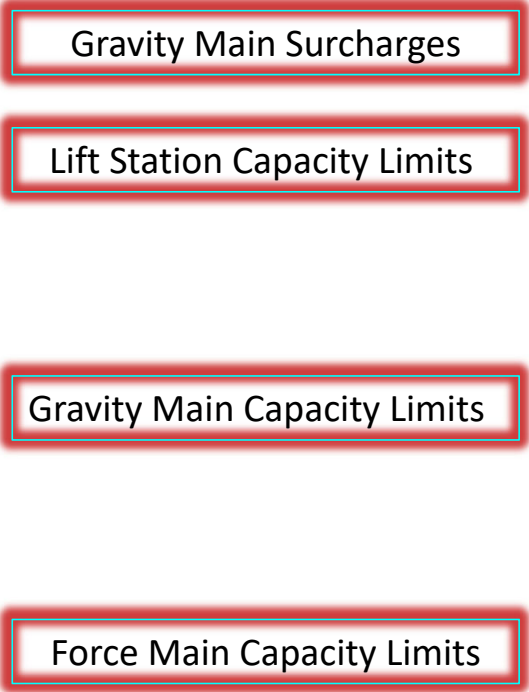
- Purchase a 1,750 gpm Portable By-pass Sewage Pump for North Lake Lift Station
 - Due to supply chain issues, purchase of pump will need to be soon to ensure arrival before wet peak season.
- Rental of two 21,000 gallon Baker Tanks, with submersible by-pass pumps.
- During peak events, reduce pumping at Inglewood Lift Station temporarily utilizing existing smaller pumps.
- Develop SOP for implementation of Temporary Improvements.
- Test and train recommended improvements prior to peak season.

Existing System & Interim Improvements

Existing System Flow

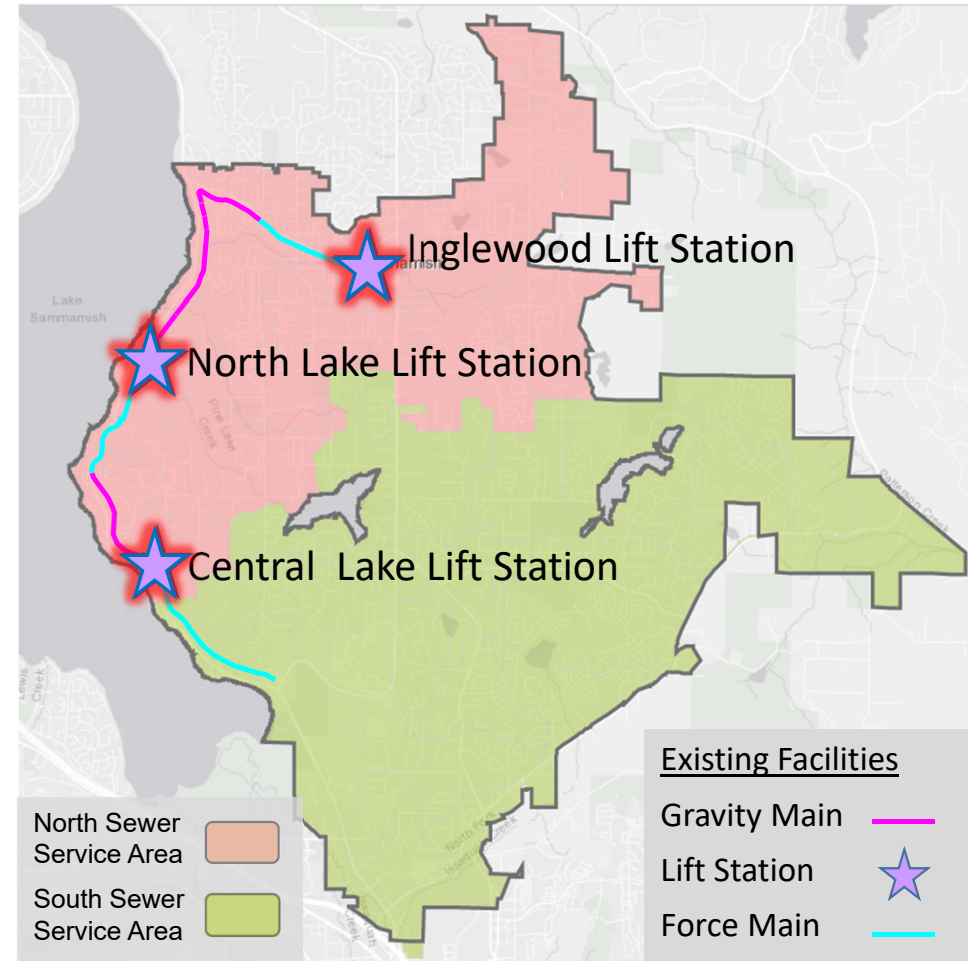


Limitations



Existing System & Interim Improvements

Existing System Flow Temporary Improvements



Operational Considerations

- Proposed various readiness levels that will be triggered by specific events
- Examples of five levels of escalating readiness
 - Level 0 – Summer Flow Conditions
 - Level 1 – Normal Winter Flow Conditions
 - Level 2 – Winter Storm Anticipated
 - Level 3 – High Flow Conditions
 - Level 4 – High Flow Conditions Continues

Temporary Improvement Costs

Item	Cost
North Lake Lift Station By-pass Pump (Purchase)	\$145,800
North Lake Lift Station By-Pass Connection (Construct)	\$10,000
Central Lake Lift Station Emergency Storage (Rental)	\$38,800
Inglewood Lift Station Emergency Storage (Rental)	\$38,800
Total:	\$233,400

Schedule

3/29/2021	Approve Design Contract
5/2021	Refined Scope Report Completed
7/2021	Finalize Immediate Temporary Improvements
8/2021	Smoke Testing of NSSA

Construction Project Board Touches	Phase 1 Central Lake Force Main	Phase 1 North Lake Lift Station	Phase 2 North Lake Force Main
Initiate Project	4/2021	4/2021	4/2021
30% Design	8/2021	8/2021	11/2021
90% Design	1/2022	1/2022	6/2022
Bid Project	4/25/2022	4/11/2022	10/3/2022
Complete Construction	9/2022	2/2023	6/2023

Moratorium Assessment

- Immediate improvements will add a 1,750 gpm pump to North Lake Lift Station.
 - Reliability, redundancy and automation standards are not met by Immediate Improvements.
 - Central Lake Lift Station is still limited to 1,500 gpm due to the force main.
- Baker Tanks provide 1.5 hours of equalizing storage, but does not really improve capacity of the system.
- Running the lower flow pumps at Inglewood Lift Station can help mitigate flows to North Lake and Central Lake.
- Findings of smoke testing could improve I/I rates.

Moratorium Assessment

- Lifting moratorium is a policy decision regarding risk assessment of adding connections versus risk of overflow.
- Potential Risk Factors:
 - Storm intensities and frequencies have been increasing in recent years. This is out of our control.
 - Changing multiple operational schemes and procedures.
 - Manual operation of facilities during storms creates a burden on O&M staff.
 - Connections are already in the pipeline and will be coming online.
- Lifting the moratorium will increase the risk of overflow during winter storms.

Moratorium Assessment Summary

- Difference in pumping between North Lake and Central Lake Lift Stations after Immediate Improvements is 250 gpm.
 - 250 gpm = 694 ERU (at 0.36 gpm/ERU)
 - There are 388 ERUs in the pipeline, adding 140 gpm into the system
 - Anticipate 42 Septic Conversions over 2 years, adding 15 gpm into the system.
- If Immediate Temporary are successful and an acceptable risk there may be **264 ERUs** potentially available, adding 95 gpm into the system.

