



DATE: October 3, 2024
TO: Environmental Services Commission
FROM: Eric LaFrance, Utilities Planning Manager
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SUBJECT: Lake Washington Wastewater Lake Line Management Plan

ACTION REQUIRED

No action required – this presentation is for informational purposes only.

BACKGROUND / ANALYSIS

The Environmental Services Commission has seen presentations on the Lake Washington Wastewater Lake Line Management Plan (LWLLMP) four previous times since 2020, with the most recent presentation in November of 2022. This memo and presentation presents the completed LWLLMP and will detail next steps in addressing the repair and replacement of the lake lines moving forward.

The City of Bellevue's (City) Lake Washington wastewater lake line system is aging and faces many challenges associated with operations, maintenance, and repair. The lake line system was mostly constructed in the 1950s and 1960s, and it is understood that the system will need to be replaced or repaired over time. To navigate these challenges, consultants were commissioned to develop a management strategy for the Lake Washington lake line system. To that end, the LWLLMP offers an evaluation of the existing system, system alternatives and operational strategies to address these challenges, contextualized policy considerations, service area plans for the specific locations being addressed, and a strategic final implementation plan.

The City owns and operates the existing lake line system which serves customers in six jurisdictions: the City, the Town of Beaux Arts Village, the City of Medina, the Town of Hunts Point, the Town of Yarrow Point, and Unincorporated King County. The lake line system includes approximately 14 miles of lake lines along the Lake Washington shoreline⁽¹⁾, 15 pump stations and 8 flush stations. The lake lines are wastewater pipes that are in the lake or on shoreline-adjacent land. These lines are composed of differing materials including approximately 9 miles of cast iron, 3 miles of asbestos cement, and 1.5 miles of unknown and miscellaneous material types. Wastewater enters the lake line through City-owned collectors and numerous private laterals that discharge directly to the lake line.

The lake line system has many unique challenges in contrast with a traditional wastewater system. Much of the current system's condition is unknown due to limited access and the resultant challenge to regularly clean and inspect it. The system is vulnerable to blockages caused by flat pipe slopes and debris buildup in the lines. Most of the system is in a sensitive habitat that would result in impacts to important fish and wildlife species if the system requires repair or replacement.

Strategies for lake line system management include system alternatives and other system improvements. System alternatives are defined as a capital improvement that will reconstruct an equivalent of the existing lake line system that maintains sewer service to existing customers. Specific rehabilitation or replacement methods have been organized into four programmatic system alternative categories: 1) in-water, 2) on-shore,

- (1) Additionally, there are 4.5 miles of lake lines on Lake Sammamish, and while this plan does not address them directly; lessons learned can be applied to the replacement of the newer lake lines on Lake Sammamish when replacement is needed.

3) upland, and 4) no action. Other system improvements are designed to maintain operation of the existing lake line system until the system alternative is implemented. Other system improvements have been organized into five categories: 1) operations procedure review, 2) cleaning and inspection, 3) access improvements, 4) data collection, and 5) emergency repair planning.

Service area plans were developed to summarize the key characteristics, preferred system alternative, other system improvements, and regulatory considerations for each service area. The management plan recommends implementation by service area where the highest risk-based areas are prioritized first, for efficiency in system function, design permitting, and outreach. The preferred system alternative (of in-water, onshore, or upland) was determined based on seven evaluation factors: permitting, environmental impact, right-of-way and easement, performance / operations & maintenance, constructability, cost, and local community and interested parties. The preferred alternative is a preliminary selection that provides a basis for planning and budgeting. Additional data, such as topographic survey, geotechnical investigations, real property analysis, conveyance system analysis and/or public outreach may result in a different system alternative being implemented in a given service area (or portion of an area).

The service areas were prioritized based on an overall risk score calculated from the likelihood and consequence of failure of the existing lake line. Based on the risk score, the preferred system alternative's implementation was categorized as near-term, medium-term, and long-term; however, in all service areas, focused capital and other system improvements of high-risk assets are recommended to extend the estimated useful life of the existing system until the system alternative is implemented. The preferred system alternative and implementation period by service area is summarized in Table 1.

Table 1

Service Area	Preferred System Alternative	Estimated Cost	Implementation Period
Meydenbauer Bay	Upland	\$197,100,000	Near-term
Newport South	Upland	\$205,600,000	Medium-term
Hunts Point and Yarrow Point	On Shore, Trenchless	\$234,700,000	Medium-term
Killarney	Upland	\$174,700,000	Medium-term
Evergreen Point	On Shore, Trenchless	\$127,400,000	Medium-term
Medina South	Upland	\$199,700,000	Long-Term
Total		\$1,139,200,000	

The implementation plan provides a roadmap to apply the service area plans. The implementation plan provides a detailed breakdown of activities recommended in the near-term and associated costs for all the planning periods.

Next Steps - Implementation

The sequence and timing of the improvements may change as additional data is collected and service area risk is reassessed. Future analysis phases will be required at a project-focused level. During the implementation process, community outreach will be conducted proactively to keep residents and other stakeholders informed.

This LWWLLMP serves as an overall guide for managing the lake line system and is intended to be a living document which will evolve as additional data is collected, future studies and analysis are completed, priorities adapt to changing regulations, and funding is designated by the City.

The first step is to start work on the implementation plan. This work will include development of financial funding strategies and policy work to enable lake line projects as proposed. This work will start in late 2024.

POLICY ISSUES

Much of the existing City sewer lake line system was constructed before many of the City's policies and codes were developed. Bellevue also has sewer system agreements in place with neighboring communities and King County. A review of these existing City policies, codes, and agreements yielded identified modifications or additions that may be required to implement each sewer lake line alternative at the service area level. Policies and/or codes that may require modifications or additions include the Shoreline Master Program, Sewer Code, and real property policies. The relevance of specific codes and policies will vary depending on the selected system alternative. Additionally, Utilities will need to modify the Bellevue Utilities Sewer Code and update the Bellevue Utilities Wastewater System Plan. A follow-on project with a specific focus on implementing the necessary policy changes identified as part of the LWWLLMP development is needed. It is anticipated that this project will begin in late 2024.

FISCAL IMPACT

The size and scope of replacing the lake lines is unprecedented for Bellevue Utilities. Addressing the need will require a lot of financial considerations. That work was started in this plan but will need to continue to be refined and developed.

The financial analysis in this plan estimated the potential impacts to the capital requirements of different funding strategies to pay for the implementation of the LWWLLMP. The information was used to estimate the potential impact on the utility's overall revenue requirements and rates based on the different possible funding mechanisms. Funding alternatives were developed as a basis to illustrate the range of funding scenarios for the project and the potential impacts on customers. Subsequent analysis may include additional scenarios or strategies, and the necessary supporting financial policies for payment structure, to fund implementation of the LWWLLMP. A follow-on project that will include a more detailed financial analysis, including potential special service districts, rate impacts, revisions to debt policies, and alternate funding strategies as described in Chapter 6 is needed. It is anticipated that this project will begin in late 2024.

ATTACHMENTS & AVAILABLE DOCUMENTS

- A. [Lake Washington Wastewater Lake Line Management Plan \(bellevuewa.gov\)](http://bellevuewa.gov)