

BELLEVUE UTILITIES
2021-2027 CAPITAL INVESTMENT PLAN (CIP)
WASTEWATER (SEWER) FUND
PROPOSED BUDGET BY PROGRAM



S- 16 Sewer Pump Station & Force Main Improvements

Description and Scope

This ongoing program funds rehabilitation of the 36 pump and 10 flush stations and associated force mains in Bellevue's wastewater system. Stations are prioritized based on the risk and consequence of failure, maintenance and operations experience, age of pump station, and coordination with other projects.

Project Need: System Renewal and Replacement

Proposed Budget (includes inflation)

S-16	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$1,307,000	\$815,000							
Proposed			\$5,260,000	\$2,010,000	\$600,000	\$1,800,000	\$3,340,000	\$1,230,000	\$1,060,000

Types of Projects and Program Highlights

- 14 pressure system projects are proposed to be worked on in the 7 years. Pump Station rehabilitation projects proposed for 2021 include: Cedar Terrace, Lake Heights, Lake Hills #17 #18 #19, South Ridge, Force Main along NE 2nd Place, and Wilburton
- Force Main replacement or rehabilitation has been added to the scope.
- A Pump Station Condition Assessment Update is proposed to review each pump station and update the 2015 Pump Station Assessment.

S-24 Sewer System Pipeline Repairs

Description and Scope

This program funds major repairs to sewer pipes where there is a cost-effective solution to extend the pipe's service life. Most defects are identified from the Utility's infrastructure condition assessment (video) program. Pipes are prioritized for repair based on risk of failure (likelihood and consequence), failure history, and to coordinate with other construction such as planned street overlays, which reduces restoration costs.

Project Need: System Renewal and Replacement

S-24 Proposed Budget (includes Inflation)

S-24	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$0	\$689,000							
Proposed			\$2,720,000	\$3,310,000	\$3,480,000	\$3,310,000	\$3,180,000	\$4,540,000	\$5,170,000

Types of Projects and Program Highlights

- CIP Plan S-24 and S-66 are proposed to be combined in the future to streamline the programs and avoid confusion due to the similar nature of both existing programs and increase efficiency in project delivery.
- Additional funds have been added to the annual programs in S-24 for the Sanitary Sewer Defect Repair, Transportation Overlay and Utility Overlay Programs to increase the amount of defective sewer mains being repaired.
- Six new projects have been added:
 - Three projects to address utilities needing replacement or relocation due to WSDOT projects: Bellevue Way HOV, WSDOT I-405 Ramps (Downtown Access) and WSDOT I-90 Franchise Consolidation,
 - Three projects to address defects identified by the Operations staff as projects to meet level of service and operational needs: Bellefield office Sewer Siphon Alternatives Analysis and Sewer Lateral Replacement on 152nd and Federal Little League Ball Field Exposed Sewer.
- One post-construction monitoring project, Woodridge Sewer Replacement, has been added.

S-32 Minor (Small) Sewer Capital Improvement Projects

Description and Scope

This ongoing program pays for minor improvements to Bellevue's sewer system to resolve deficiencies, improve efficiencies, or resolve maintenance problems, often in conjunction with other programs such as the Transportation overlay program. The program also investigates the feasibility of possible sewer extensions. Projects are prioritized based on criteria including public safety/property damage, maintenance frequency, operator safety, environmental risk, reliability and efficiency gains, coordination with other city projects or development activity, and level of service impact.

Project Need: System Renewal and Replacement

Proposed Budget *(includes inflation)*

S-32	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$0	\$0	\$6,000	\$137,000	\$142,000	\$144,000	\$147,000		
Proposed			\$40,000	\$0	\$0	\$0	\$0	\$0	\$20,000

Types of Projects and Program Highlights

- Continuation of one project (2 Enatai project) which is providing maintenance access to facilitate the cleaning of the Lake Line.

S-58 Lake Washington Sewer Lake Line Management Plan

Description and Scope

This program will be used for the development of the Lake Line Management Plan that will analyze the condition assessment and other available data on the Lake Washington lake lines, to develop a strategy for the rehabilitation, replacement, or continued condition assessment of the Lake Washington Lake Lines. This management plan will also perform alternatives analysis and evaluation of pilot projects for the 14.5 miles of Bellevue Utilities sewer pipe along Lake Washington shoreline.

Project Need: System Renewal and Replacement

Proposed Budget (includes inflation)

	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$156,000	\$0							
Proposed			\$250,000	\$0	\$0	\$0	\$0	\$0	\$0

Project Details and Program Highlights

- This program combines former (2019-2025 CIP) S-58 (Lake Washington Sewer Line Assessment Program) and S-71 (Sewer Lakeline Alternative Analysis) programs due to similar scope.
- The plan will programmatically identify new investment projects in a phased and prioritized approach which will likely be added to this program in the next CIP budget in 2022.

S-60 Wilburton Sewer Capacity Upgrade

Description and Scope

This project will replace approximately 2,000 feet of 12-inch diameter pipe with larger diameter pipe to provide sufficient capacity for anticipated upstream development.

Project Need: Capacity for Growth/System Expansion

Proposed Budget *(includes inflation)*

S-60	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$211,000	\$48,000							
Proposed			\$0	\$20,000	\$0	\$0	\$0	\$0	\$0

Project Details and Program Highlights

- Construction is complete. Permit-required post-construction monitoring will extend through 2022.
- Program will sunset when monitoring is complete.

S-61 Midlakes Pump Station

Description and Scope

This project will increase the capacity of Midlakes Pump Station for planned growth in the Bel Red Corridor.

Project Need: Capacity for Growth/System Expansion

Proposed Budget *(includes inflation)*

S-60	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$4,050,000	\$11,000							
Proposed			\$50,000	\$0	\$0	\$0	\$0	\$0	\$0

Project Details and Program Highlights

- Project is scheduled for completion in 2020
- Proposed budget reflects warranty-work associated with construction of the project.

S-66 Sewer Pipeline Replacement

Description and Scope

This program replaces poor condition sewer pipe throughout the service area. The current budget is estimated to replace sewer pipe at a rate of 0.5 to 0.75 miles per year. Pipes are replaced when life cycle cost analysis indicates replacement is more economical than continuing to make point repairs. Replacement methods may include trenchless rehabilitation techniques such as cured-in-place pipe, and pipe bursting, and/or open trench replacement. This program compliments S-24, Sewer System Pipeline Repair, which repairs pipes to extend their service life. This program implements Bellevue's asset management program strategy to meet expected and required customer service levels at the lowest life cycle cost.

Project Need: System Renewal and Replacement

S-66 Proposed Budget (includes Inflation)

S-66	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$3,378,000	\$1,784,000							
Proposed			\$2,920,000	\$650,000	\$1,030,000	\$1,120,000			

Types of Projects and Program Highlights

- CIP Plan S-24 and S-66 are proposed to be combined in the future to streamline the programs due to the similar nature of both existing programs.
- The following projects will be completed in S-66 by 2024: Aqua Vista, Newport Shore Sewer Line Investigation, and Sewer 19-10 Bog line.

S-111 Maintenance and Operations Yard

Description and Scope

As the City of Bellevue continues to grow, there is a critical need for long range operational facilities planning to ensure that the Utilities Department (Utilities) can meet the community’s current and future needs in an efficient and timely manner. The current service locations are functioning at or near capacity, and there is significant risk that they will not be sufficient to meet Utilities’ growing operational needs. To address this, Utilities initiated the development of a long range Operations and Maintenance (O&M) Facilities Plan.

Based on the alternatives analysis within the O&M Facilities Plan, property acquisition was recommended in the 2019-2025 CIP as a first step to site the maintenance facility. While a specific site has not been determined, the site acquisition is funded by available year-end 2017 operating reserves in the water (\$5.3M) and sewer utilities (\$2.7M).

Project Need: Service Enhancement

Proposed Budget *(includes inflation)*

S-111	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$2,667,000	\$0							
Proposed			\$0	\$0	\$2,667,000	\$2,667,000	\$0	\$0	\$0

Project Details and Program Highlights

- Design and construction of the facility has been added (2023-2024). Previous scope was only for land acquisition.
- Property transaction has been delayed to 2022.
- Estimated costs are split evenly between Water and Sewer Funds (W-111 and S-111).

S-112 Sewer Planning Program *(New Program)*

Description and Scope

This program is for sewer planning projects, condition assessments of the sewer facilities and systems, alternatives analyses and programmatic planning for the overall sewer system.

Project Need: System Renewal and Replacement

Proposed Budget *(includes inflation)*

S-112	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Sewer Planning Program	\$0	\$0	\$360,000	\$370,000	\$0	\$0	\$0

Types of Projects and Program Highlights

- This is a new program for sewer planning projects to identify system resiliency improvements
- For 2021-2027, one project, the Collection System Seismic Vulnerability Assessment project is proposed. This project will perform an assessment of wastewater collection system seismic vulnerabilities, develop post-event level of service goals, and recommend mitigation actions.

S-115 SCADA System Upgrade (New Program)

Description and Scope

The City of Bellevue Utilities Department utilizes a supervisory control and data acquisition (SCADA) system to control and monitor the potable water, wastewater and storm water systems. Since the initial installation in the 1970s, this system has utilized leased copper telephone lines as the SCADA communications media. With age, the copper phone lines used for communicating vital control logic and retrieving precious data have become increasingly unreliable. As the telecommunication providers transition their core business away from copper telephone lines towards fiber-optic cable and cellular networks, the City faces increasing communications outages. Any break in communications within our SCADA network increases the risk and cost of providing essential Utility services to our customers. More than ever, it is incumbent upon the Utility to modernize our SCADA communications network to a more reliable medium.

The family of projects under the SCADA Infrastructure Upgrades program will improve the reliability and security of the SCADA system across 32 potable water sites, 48 wastewater sites and 11 storm water sites. These projects will install a private, secure cellular and fiber-optic communications network and optimize the operation of the cities three utilities. Additionally, these upgrades will allow SCADA operators to leverage cutting-edge technology to improve the quality of service and reduce risks to the environment.

Project Need: System Renewal and Replacement

Proposed Budget (includes inflation)

S-115 (New)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
SCADA Upgrade	\$1,500,000	\$210,000	\$1,000,000	\$0	\$1,200,000	\$950,000	\$0

Project Details and Program Highlights

This program includes four parts:

- SCADA Visualization Software: This program will upgrade to SCADA Visualization software for increased functionality, including remote access, trending, reporting, machine learning, and decision modeling.
- Upgrade SCADA communications network from existing copper analog phone lines to digital cellular/fiber network. Includes cellular transmitters and servers on the backend
- Installation of field sensors at wastewater pump/lift/flush stations, to include flow and pressure sensors, as well as smart motor controllers.
- Upgrading the Remote Telemetry Unit (RTU) at 35 wastewater pump stations and 10 flush stations to ensure continued compatibility with City of Bellevue 'Smart Cities' initiatives. The new RTU will include new programmable logic controller (PLC), human machine interface (HMI), digital communications module, and emergency power supply. This upgrade is required in order to utilize digital communications (cellular or fiber) as well as install local smart motor controllers for increased efficiency and eventual machine learning.