



King County's Sunset/Heathfield Pump Station and Force Main Upgrade Project Earns an Envision Silver Award for Sustainable Infrastructure

The Sunset and Heathfield Pump Stations and related force main pipes send sewage from Sammamish, Issaquah, and Bellevue to be cleaned at King County Wastewater Treatment Division's (WTD) South Treatment Plant in Renton, Washington. For nearly 50 years, these stations served the area reliably but were reaching their operational limits. The goal of the project was to upgrade the Sunset and Heathfield pump stations and the connected force main pipe to ensure WTD can continue serving a growing population for many more years to come.

WTD designed the upgrades to allow the system to convey a peak capacity of 30 million gallons per day. The design included the installation of four new higher capacity vertical, extended shaft pumps, associated electrical upgrades, new roofs (including a green roof at Sunset Pump Station), and new [variable refrigerant flow](#) heating, ventilating, and air conditioning (HVAC) systems at both the Sunset and Heathfield Pump Stations. Additionally, a novel oxygen injection [odor and corrosion control system](#) was installed at Heathfield Pump Station. Another aspect of this project is that Heathfield Pump Station is located between single family homes, in a dense residential area, and Sunset Pump Station is on a popular lake, adjacent to a highly used waterfront recreational park resort, where pipe was installed.

Other key parts of the project included:

- Installation of a new 24-inch force main pipe to replace an old 12-inch pipe.
- Restoration of the Lake Sammamish shoreline below the Sunset Pump Station.
- Habitat restoration and rain garden installation at Heathfield Pump Station.
- Enhancement of wetland and drainage features throughout the project area.



King County selected the Envision framework for this project due to its comprehensive nature and relevance to an industrial infrastructure project. The Envision rating system encourages sustainable, equitable, and resilient design, construction, operations, and maintenance processes and practices throughout a project's lifecycle.

King County WTD staff led the Envision submission for this project and worked closely with Stantec Consulting, the prime architecture and engineering firm.

KEY SUSTAINABILITY ACHIEVEMENTS

Contributing to local skills development. Before beginning construction, WTD staff conducted an Equity and Social Justice analysis. Using this analysis, they identified actions that could be taken by the project team to address equity. One of these opportunities was providing nearby residents with

education and job-training during construction. The project team worked with King County's Business Development and Contract Compliance (BDCC) group to determine how to provide opportunities for small/minority/women-owned businesses and to encourage priority hiring. BDCC helped the County establish a Community Workforce Agreement (CWA) for the project to support the development of a skilled workforce through apprenticeship and training organizations, prioritizing minorities, women, and other workers facing significant employment barriers. As part of the CWA for this project, the contractor was required to hire one in five apprentices from a state-recognized pre-apprenticeship program that serves residents meeting the identified needs.

Improving public health and safety. This project was designed to enhance the continued reliability, health, and safety of the sewage treatment system for decades to come. As part of the project, an oxygen injection system, developed by ECO Oxygen Technologies, LLC, for odor and corrosion control was installed at the Heathfield Pump Station. This new technology required additional planning and risk analysis before it could be successfully incorporated into the project design. The new system will reduce conveyance system (piping) corrosion, thus deferring pipe rehabilitation and extend the life of the carbon bed odor control units at the pump stations.

Implementing a robust sustainability management system. King County's WTD has a dedicated sustainability team that leads sustainability efforts on all capital projects. The sustainability team led the project through the Envision and WTD sustainability processes, starting with educating the project team on the Envision rating system and including a sustainability eco-charrette during preliminary design. The team made decisions based on how sustainability would impact the project's outcomes. As part of the construction application process, manufacturers were asked to submit their company sustainability policy, and commit to WTD's focus on supply chain sustainability. Annual sustainability reports were required to ensure success. An internal sustainability scorecard was completed, and a social equity and justice plan for the project was developed. A tracking system is used by WTD to evaluate project sustainability. It is regularly reviewed and adjusted to hold the entire project team accountable for sustainability outcomes.

Involving stakeholders and responding to their needs. More than 250 neighbors and community members were surveyed during design so the project team could learn about their and concerns. WTD learned that neighbors wanted to maintain the look and feel of the project area and reduce traffic impacts during construction. WTD hosted an open house, inviting community members to share their preferences on fencing, landscaping, and lighting at the Sunset Pump Station. Community input is reflected in the final design. Additionally, WTD remained in close contact with neighbors directly impacted by design decisions and construction throughout the project.

Protecting the natural world. The project protects the natural world in many ways, including the following:

- Restoring riparian forest at the Heathfield Pump Station location and shoreline habitat at the Sunset Pump Station.

- Maintaining pre-development floodplain infiltration and water quality.
- Preserving undeveloped land by limiting the project to the existing developed footprint of both pump stations.
- Restoring habitats by creating bat houses, root wads, brush piles, snags, and additional drainage swales, implementing a green roof and a rain garden, and using only native vegetation for landscaping.
- Removing nonnative, invasive species in the project area, including Himalayan blackberry, reed canary grass, and English ivy, and replacing them with non-invasive ornamental plants and grass. Maintenance activities at the project site include monitoring the site for invasive species and removing them for a period of at least five years after project completion.

SOUNDBITES

Jacob Sheppard, King County environmental planner: “Using Envision on the Sunset/Heathfield project gave us opportunities to improve high-value habitat on County property, opportunities that we otherwise wouldn’t have had.”

Rebecca Gauff, King County project engineer: “Though WTD’s design and construction processes are holistically thoughtful, Envision provided a framework for this unique project (dual pump station and force main upgrade in a dense residential area) to further innovate WTD’s design and construction activities. Envision encouraged sustainability conversations with the local jurisdiction, stretched the design team to implement innovative HVAC, odor/corrosion, and building component (green roof) upgrades, identified and resulted in even greater environmental improvements, and informed the contracting community of WTD’s wider sustainability implementation lens. ”

Melissa Peneycad, ISI managing director: “All types and sizes of infrastructure projects have plenty of opportunities to be sustainable by using the Envision framework as a guide. Congratulations to King County Wastewater Treatment Division and its project partners on successfully deploying Envision to deliver a project that is beneficial to both the community and the environment over the long-term. The Envision Silver award for the Sunset/Heathfield Pump Station project is testament to the County’s leadership in sustainability.”

Project Details At-a-Glance

Envision-verified project:	Sunset/Heathfield Pump Station and Force Main Upgrade
Location:	Bellevue, Washington
Lead Envision Firm:	King County Wastewater Treatment Division (owner-led)
Envision Rating:	Silver
Award Date:	Monday, September 13, 2021
Project Owner:	King County Wastewater Treatment Division
Project Phase:	Under construction
Project Delivery Model:	Design Bid Build

For more information: Visit the project website at <https://kingcounty.gov/depts/dnrp/wtd/capital-projects/active/sunset-heathfield.aspx> or contact Heidi Sowell (heidi.sowell@kingcounty.gov)

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