

## Ship Canal Water Quality Project Seattle Public Utilities and King County

**Location:** Seattle, USA

**Date:** 2021 – Present

**Structure:** Main Storage Tunnel (TBM)  
Five Shafts  
One Microtunnel (MTBM)  
Two Connection Adits (SEM)

**Length:** 2.65 miles (4.27 km)

**Cross-Section:** 18.83 ft (5.74 m) inner diameter bored tunnel

**Geology:** Glacial and non-glacial sediments deposited during the Quaternary period over Tertiary volcanic and sedimentary bedrock. Only the late Quaternary and Holocene deposits are exposed in the project area at ground surface.

**Cost:** US\$ 255 million

**Client:** The Lane Construction Corporation

**Owner:** Seattle Public Utilities and King County

chamber to carry the necessary repair works of the damage caused to the cutterhead by the boulder.

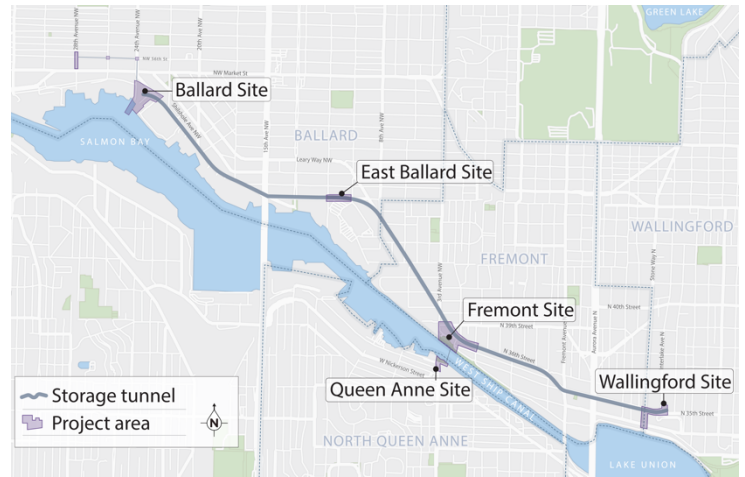


Figure 1. Location map of the Ship Canal.

### Design and On-Site Support Services:

Seattle Public Utilities and King County Wastewater Treatment division have an objective of reducing polluted stormwater (rain) and the sewage which flows into Lake Washington Ship Canal. After heavy rain, the untreated sewage and stormwater flows into the Ship Canal which needs to be contained. The Ship Canal Water Quality Project (SCWQP) consists of the construction of a 2.6-mile bored tunnel for combined sewer overflow (CSO) storage. SCWQP is located in north Seattle and spans the neighborhoods of Ballard, Fremont, and Wallingford. The bored tunnel alignment runs generally from west to east. Five Shafts will be constructed along the alignment, and a microtunnel will be bored beneath the Lake Washington Ship Canal between the Fremont Shaft on the northeast side of the ship canal and the 3rd Avenue W Shaft on the southwest side of the ship canal.

Gall Zeidler Consultants (GZ) is responsible for the detailed design of the excavation and support of the two adit tunnels which connect the drop shafts at 11th Ave. and Fremont, to the bored tunnel. The design scope includes the temporary support measures for the openings in the segmental lining. GZ has also provided technical support as expert geotechnical/tunnel consultant, regarding a large boulder encountered by the TBM and the design of an intervention

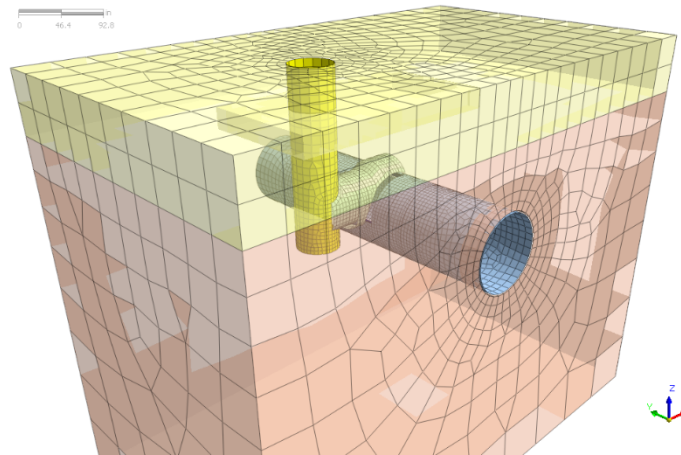


Figure 2. Analysis model of tunnel adit at East Ballard.