



- **8-ft-diameter tunnel** – As part of the Ship Canal Water Quality Project, an 8-ft tunnel will be built that runs under the Ship Canal between Queen Anne and Fremont. This tunnel will bring stormwater and sewage flows from Queen Anne to Fremont. From there, flows will be able to travel into the storage tunnel before being sent to be treated at King County's Wastewater Treatment Plant in Magnolia.
- **18-ft storage tunnel** – A 2.7-mile long, 18-ft, 10-in interior-diameter tunnel that extends between Ballard and Wallingford. During a heavy storm, the tunnel will capture more than 29 million gallons of untreated stormwater and sewage from six different overflow pipes and temporarily store it until the treatment plant is ready to manage it. The tunnel will drain by gravity towards the pump station in Ballard. The eastern end of the tunnel, in Wallingford, will be about 40-ft below the ground. The western end of the tunnel, in Ballard, will be about 100-ft below the ground.
- **Adit** – Short, horizontal tunnel segments that connect vertical shafts to a tunnel.
- **Basin** – An area of land where stormwater collects and drains into a common outlet.
- **Combined sewer overflow (CSO)** - Sewer pipes in Seattle carry sewage away from homes and buildings to be treated at King County's treatment plants, before being discharged into the Puget Sound. In some neighborhoods, the same sewer pipes also carry untreated stormwater (rainwater) from roofs, drains, and streets. During heavy rains, if the amount of sewage and stormwater exceeds the system's capacity, the untreated excess overflows into nearby bodies of water, and can harm fish, wildlife, and swimmers. This is called a combined sewer overflow (CSO).
- **Conveyance pipes or connecting pipes** – Pipes that connect existing combined sewer system pipes to vertical shafts. In broader terms, these pipes connect the existing sewer network to the storage tunnel.
- **Diversion structure** – An underground structure that diverts excess untreated sewage and stormwater from the existing pipes to the storage tunnel during heavy rains. Without the diversion structure in place, the excess untreated flows would get released into a nearby body of water.
- **Effluent** – Liquid waste or sewage discharged into a body of water.
- **Guide walls** – Small walls that outline wall construction to help accurately place slurry walls or secant piles. Guide walls are about 3-ft deep and 2-ft thick.



- **Outfall** – A pipe that discharges sewer and stormwater flows into a body of water during heavy rain events. The Ship Canal Water Quality Project targets six outfalls along the Ship Canal. After the storage tunnel is complete, there should be an average of no more than one overflow event per outfall per year.
- **Pump station** – A structure that pumps sewage and stormwater flows from a lower elevation to a higher elevation. For the Ship Canal Water Quality Project, the pump station will be in Ballard. It will pump flows from the storage tunnel to a pipe that will carry them to King County's Wastewater Treatment Plant in Magnolia.
- **Secant pile wall** – A construction system used to support underground excavations. A secant pile wall is made up of overlapping vertical concrete piles, which together hold back surrounding dirt to allow for excavation and underground construction. Secant pile walls will be used to construct the vertical shafts in Fremont, Queen Anne, and Wallingford.
- **Sewage** – Also known as wastewater, sewage is the “used water” produced from homes and businesses, such as by flushing toilets, washing clothes, or turning on a shower.
- **Screen wall** – A tall plywood wall that surrounds a construction site on several sides. It helps to dampen construction noise, reduce the spread of dust and debris, and keeps the public at a safe distance. Screen walls were installed at the Ballard and Wallingford shaft sites.
- **Slurry wall** – A thick, circular ring of reinforced concrete used to support underground excavation. For the Ship Canal Water Quality Project, slurry walls allow for excavation of interior soils while keeping the excavation from collapsing. Size example: In Ballard, the slurry wall has an inside diameter of 87-ft, is 210-ft deep, and is 4-ft thick.
- **Soil remediation** – A construction technique used to prepare a construction site for excavations. The contractor removes contaminated soil from the construction site, disposes of it safely, and replaces the removed soil with clean soil.
- **Soil stabilization** – A construction technique in which unconsolidated, loose soil is strengthened to prepare for underground construction. During soil stabilization, the contractor may inject different materials into the soil or freeze it to make the consistency better able to handle heavy equipment and excavation.
- **Stormwater** – Any form of water that originates from rain, including snow and ice melt. Stormwater can pick up and carry numerous pollutants into our waterways.
- **Tiebacks** – A horizontal rod or heavy-duty cable used to support retaining walls during construction of underground structures. One end of the tieback is secured to a retaining wall and the other is anchored to the ground horizontally. Often tiebacks extend into the road right of way. Usually tiebacks are kept in place and disconnected (or de-tensioned) after the



- permanent wall or building structure is completed.
- **Tunnel boring machine** – A machine used to excavate tunnels. The machine digs through soil, breaking it up and conveying the tunnel spoils out of the tunnel for removal. For this project, tunnel boring will start in Ballard and end in Wallingford.
- **Tunnel spoils** – Dirt, soil, or other debris that are excavated during the tunneling process. The storage tunnel spoils will be removed via the vertical shaft in Ballard.
- **Utility relocation** – During construction projects it may be necessary to relocate or adjust existing utilities to accommodate construction activities. This may include street lighting, traffic signal facilities, water, sewer, and drainage mains.
- **Vent shaft** – A vertical shaft to allow air to release from the storage tunnel as water fills the tunnel. The vent shaft is connected to a facility that removes odor from the vented air.
- **Vertical shaft** – Large, underground structures holding vertical drop pipes that carry sewage and stormwater from the combined sewer system into the storage tunnel. Vertical shafts also provide maintenance access to the storage tunnel. Size example: In Ballard, the vertical shaft will be approximately 100-ft deep and 90-ft wide.