

## DSN036-STOR-2 (KC) or WDUW-Chelan-KC-STOR 2

Alternative DSN036-STOR-2 (KC) controls King County's Chelan Ave CSOs by building two 90-ft-diameter caissons adjacent to the West Seattle Pump Station and modifying the Alki Trunk. This alternative is an independent alternative and only controls King County CSOs.

### Design Criteria

- King County Storage Volume Requirement: 3.85 MG<sup>1</sup> (Chelan Ave)
- King County CSO Peak Flow Rate for Sizing Conveyance to Storage: 38.4 MGD<sup>1</sup> (Chelan Ave)
- Storage is required to drain within 12 hours of event.

### Description

Flows from the Chelan Ave CSO Basin would be diverted from the Delridge Trunk to two caissons located adjacent to the West Seattle Pump Station. Alternative DSN036-STOR-2 (KC) consists of conveyance improvements, two caissons, and modifications to the Alki Trunk to control King County Chelan Ave CSOs.

A CSO control volume of approximately 3.85 MG<sup>1</sup> is required to reduce overflows at the Chelan Ave CSO Outfall to an average of one untreated discharge per year. Storage of this volume could be provided with two 90-ft-diameter caissons located immediately adjacent to the West Seattle Pump Station, as shown in Figure G.7-2.

The main components of this alternative would include:

- Two 90-ft-diameter caissons that provide 3.85 MG of storage with pumps to empty the caissons.
- Facilities building(s) to house electrical/control/odor control equipment and a standby generator.
- Three new regulator stations (diversion structures) referred to as the Diversion Structure, Delridge Diversion Structure, and Diversion Structure to Storage in Figure G.7-2.
- One drain structure to allow draining of the 36-inch-diameter pressure pipe after wet-weather events when not in use.
- Modifications to the Harbor Ave Regulator Station.
- Approximately 530 ft of 12-inch-diameter pipe to convey flows from Delridge Way SW to the new 36-inch-diameter pressure pipe located parallel to the Delridge Trunk (see Figure G.7-2 for proposed alignment).
- Approximately 3,270 ft of 36-inch-diameter pressure pipe to convey flows from the Delridge Diversion Structure to the Harbor Ave Regulator Station (see Figure G.7-2 for proposed alignment).

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<sup>1</sup> This alternative assumes that flows are diverted upstream of the Chelan Ave Regulator Station along the Delridge Trunk. It has not been confirmed by modeling that diverting from this location would control Chelan Ave CSOs. Refined modeling may indicate an increase in storage volume and conveyance size to control Chelan Ave CSOs.

- Approximately 200 ft of 42-inch-diameter influent gravity sewer to convey CSOs from the Harbor CSO Pipeline to the two new caissons located immediately adjacent to the West Seattle Pump Station (see Figure G.7-2 for proposed alignment).
- Approximately 250 ft of 24-inch-diameter force main to drain the two caissons after a wet-weather event (see Figure G.7-2 for proposed alignment).
- Modifications upstream in the Alki Trunk to control flows from the Alki CSO Basin to the West Seattle Tunnel. Modifications would include a sluice gate and flow meter.

### Caisson Structures

The CSO control volume for King County could be stored in two 90-ft-diameter caissons with a sidewater depth of approximately 42 feet. The two caissons would be approximately 70 feet deep. For this alternative, it is assumed that the two caissons are located immediately adjacent to the West Seattle Pump Station on property owned by the King County Wastewater Treatment Division.

### Facilities Building(s)

Facilities building(s) would be located above or below ground level and would contain an odor control system, electrical controls, and a standby generator. The actual contents of the building(s) will be determined during preferred alternative development. The representative footprint shown in Figure G.7-2 for this alternative locates the facilities buildings adjacent to the caissons for conservative purposes; however, the facilities buildings could be located above the caissons to minimize space requirements.

### Flow Diversion and Discharge

The caissons are located immediately adjacent to the West Seattle Pump Station on property owned by the King County Wastewater Treatment Division.

Three regulator stations, along with approximately 530 ft of 12-inch-diameter pipe and 3,270 ft of 36-inch-diameter pressure pipe, will be required to divert King County flows (Chelan Ave CSOs) from the Delridge Trunk and existing sanitary sewer on Delridge Way SW to the Harbor CSO Pipeline at the Harbor Ave Regulator Station during wet-weather events as shown in Figure G.7-2. A new drain structure will also be required on the pressure pipe near the intersection of the Delridge Trunk and SW Spokane St to allow the pressure pipe to be drained after a wet-weather event when not in use. CSOs would then be conveyed to the new diversion structure (Diversion Structure to Storage) at the West Seattle Pump Station site via the existing Harbor CSO Pipeline. The new diversion structure will be required near the West Seattle Pump Station to divert King County flows (Chelan Ave CSOs) to the two caissons. Diverted King County flow would discharge to the location of the two caissons via a 42-inch-diameter influent gravity sewer that is approximately 200 ft in length, as shown in Figure G.7-2.

After a wet-weather event, the two caissons would drain to a common sump. Submersible pump(s) would transfer stored sewage back into the King County system through approximately 250 ft of 24-inch-diameter force main as shown in Figure G.7-2.

### Alki Trunk Modifications

The West Seattle Tunnel receives flows from the Alki and Harbor Ave CSO Basins. Modifications are required upstream of the West Seattle Tunnel in the Alki Trunk to limit flows

from the Alki CSO Basin to the West Seattle Tunnel to approximately 19 MGD. These modifications would allow the West Seattle Tunnel to operate as originally intended, providing capacity in the West Seattle Tunnel for Harbor Ave CSO Basin flows while also providing conveyance up to 19 MGD from the Alki CSO Basin to the West Seattle Pump Station. The modifications would include replacement of a modulating sluice gate and flow meter in the Alki Trunk. Restricting flows from the Alki CSO Basin will result in increased frequency of operation for the Alki Treatment Facility.

#### Construction Assumptions

King County's Tabula cost estimating program was used to develop a Class 5 estimate for this alternative. The attached documentation lists the construction assumptions used.