

## DSN036-STOR-1 (KC) or WDUW-Chelan-KC-STOR 1

Alternative DSN036-STOR-1 controls King County's Chelan Ave CSOs by building a storage tank near the Chelan Ave Regulator 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 (Chelan Ave)
- King County CSO Peak Flow Rate for Sizing Conveyance to Storage: 38.4 MGD (Chelan Ave)
- Storage tank is required to drain within 12 hours of event.

### Description

Alternative DSN036-STOR-1 (KC) consists of a storage tank and modifications to the Alki Trunk to control King County Chelan Ave CSOs.

A CSO control volume of approximately 3.85 MG 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 an offline storage tank located within or adjacent to the approximate boundary shown in Figure G.7-1. See Section 6.1 Planning-Level Sizing Assumptions for criteria and assumptions used in establishing the approximate boundary.

The main components of this alternative would include:

- 3.85-MG offline storage tank with pumps to empty the storage tank.
- Facilities building(s) to house electrical/control/odor control equipment and a standby generator.
- Modifications to Chelan Ave Regulator Station.
- Up to approximately 775 ft of 24-inch-diameter force main, depending on the location selected for the offline storage tank within or adjacent to the approximate boundary shown in Figure G.7-1.
- Up to approximately 1,550 ft of 42-inch-diameter influent gravity sewer, depending on the location selected for the offline storage tank within or adjacent to the approximate boundary shown in Figure G.7-1.
- 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.

### Storage Tank

The CSO control volume for King County could be stored in a buried, rectangular structure, approximately 290 feet long and 110 feet wide with a sidewater depth of approximately 20 feet.

Flows would enter the storage tank during a wet-weather event. The tank may be configured with multiple chambers, so that only those chambers required to store the volume of the wet-weather event would be used. Storage of flows would start in the first chamber and as that chamber fills and reaches capacity, flows would be transferred into subsequent chambers until

either the wet-weather event ends or the capacity of the storage tank is reached. Each chamber would contain equipment for flushing and self-cleaning, and only chambers used in a wet-weather event would require flushing. Control of odors and sediment in the storage chambers may require regularly-scheduled cleaning between events.

#### 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.7-1 for this alternative locates the facilities buildings adjacent to the storage tank for conservative purposes; however, the facilities buildings could be located above the storage tank to minimize space requirements.

#### Flow Diversion and Discharge

One regulator station will be required to divert King County flows (Chelan Ave CSOs) from the Chelan Ave Regulator Station to the storage tank. For this planning phase, it is assumed that the diversion would occur at the Chelan Ave Regulator Station. Evaluation of whether flows can be diverted upstream of the regulator will be completed during preferred alternative development. Diverted King County flow would discharge to the location of the storage tank via a 42-inch-diameter influent gravity sewer. The length of the influent gravity sewer will vary depending on the selected location of the offline storage tank, which will be evaluated during preferred alternative development. The influent gravity sewer can be up to 1,550 feet long based on the criteria and assumptions listed in Section 6.1.

After a wet weather event, the chambers inside the storage tank would drain to a common sump. Submersible pump(s) would transfer stored sewage back into the King County West Duwamish Interceptor through a 24-inch-diameter force main that is up to approximately 775 feet in length. The length of the force main will vary depending on the selected location of the offline storage tank, which will be evaluated during preferred alternative development.

#### 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.