DSN038-STOR-1 (KC) or WDUW-Term 115-KC-STOR

Alternative DSN038-STOR-1 (KC) controls King County's Terminal 115 CSOs by building a storage pipe on the west side of the Duwamish River. This alternative is an independent alternative and only controls King County CSOs.

Design Criteria

- King County Storage Volume Requirement: 0.05 MG (Terminal 115)
- King County CSO Peak Flow Rate for Sizing Conveyance to Storage: 4.6 MGD (Terminal 115)
- Storage pipe is required to drain within 12 hours of event.

Description

Alternative DSN038-STOR-1 (KC) consists of a storage pipe to control King County Terminal 115 CSOs. A CSO control volume of approximately 0.05 MG is required to reduce overflows at the Terminal 115 CSO Outfall to an average of one untreated discharge per year. Storage of this volume could be provided with an offline storage pipe located in rights of way or existing easements immediately adjacent to the selected diversion point on the West Duwamish Interceptor, thereby minimizing conveyance to storage (see Figure G.6.2-1).

The main components of this alternative would include:

- 0.05-MG offline storage pipe with pumps to empty the storage pipe.
- Facilities building(s) to house electrical/control/odor control equipment and a standby generator.
- A regulator station (diversion structure).
- Approximately 100 ft of 8-inch-diameter force main, depending on the location selected for the diversion point and offline storage pipe.
- Approximately 100 ft of 21-inch-diameter influent gravity sewer, depending on the location selected for the diversion point and offline storage pipe.

Storage Pipe

The CSO control volume for King County could be stored in a buried 12-ft-diameter pipe, approximately 65 feet long. For storage of this volume, it may be more cost-effective to install a smaller-diameter pipe, and the sizing of the storage pipe will be refined during preferred alternative development.

Flows would enter the storage pipe during a wet-weather event. The storage pipe may be configured with equipment for flushing and self-cleaning and cast-in-place access and flushing structures located at the upstream and downstream ends of the storage pipe. A valve vault could house control valves and a common header for the drain pumping system. Control of odors and sediment in the storage pipe 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. This alternative assumes that private property would be acquired for the facilities building.

Flow Diversion and Discharge

It is assumed that the storage pipe can be located in rights of way or existing easements immediately adjacent to the diversion point for this alternative. Further study and evaluation will be completed prior to selection of a preferred location for the diversion point and storage pipe along the West Duwamish Interceptor.

One regulator station will be required to divert King County flows (Terminal 115 CSOs) from the West Duwamish Interceptor to the storage pipe. Diverted King County flow would discharge to the location of the storage pipe via a 21-inch-diameter influent gravity sewer. For this alternative, it is assumed that the influent gravity sewer is approximately 100 feet in length; however, the length of the influent gravity sewer will vary depending on the selected location of the diversion point and storage pipe, which will be evaluated during preferred alternative development.

After a wet-weather event, the storage pipe would drain to a common sump. Submersible pump(s) would transfer stored sewage from the sump back into the King County West Duwamish Interceptor through an 8-inch-diameter force main that is assumed to be approximately 100 feet in length. However, the length of the force main will vary depending on the selected location of the diversion point and storage pipe, which will be evaluated during preferred alternative development.

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.