

Video Narrative-Conceptual Design for Sunnyside Nursery Flood Storage and Diversion Basin **04/12/18**

This narrative provides a short overview of how the Nursery Basin would operate during a flood event. The basin represented in the video is the proposed project currently being analyzed as part of the draft San Anselmo Flood Risk Reduction Project EIR. The proposed project basin would temporarily store approximately 31-acre feet of flood water.

To create a flood diversion and storage (FDS) basin at the Nursery Site, the ground surface would be lowered to an elevation only slightly higher than the adjacent Fairfax Creek channel bed, recreating a portion of its abandoned floodplain. Floodwaters would enter the basin via an armored low portion of a new perimeter road that separates the basin from the creek. This opening or “side-weir” allows high creek flows to safely spill into the basin during a flood event. An eight-foot high levee would be built on the downstream or east side of the property and a lower one to two-foot high levee would be built on the upstream side. These two levees would make the top of the basin level around its perimeter. A gravel-covered perimeter road would provide full-time maintenance and emergency vehicle access around the basin.

A flow diversion and overflow structure constructed across Fairfax Creek would control how and when water is diverted into the basin. The diversion structure would contain two openings or culverts. The larger gated culvert would be closed when overbank flooding is imminent in downtown Fairfax to immediately reduce Fairfax Creek flow passing downstream. Reduced creek flow would continue to pass through the smaller always open culvert. During a flood event, the channel upstream from the diversion and overflow structure would fill and begin to spill over via the side-weir into the basin. After the basin fills up to the level of the side-weir (228 feet), the channel and basin would have the same water surface elevation, and the water surface would continue to rise as one contiguous body of water. Should the water surface rise 7 feet higher to the 235-foot level of the concrete spillway on the top of the diversion and overflow structure, the basin would begin spilling over the structure into Fairfax Creek. Model simulations of 10, 25 and 100-year flood events show that it would take about four hours for the reservoir to rise to near the diversion structure crest after the larger gated culvert is closed. Should it continue to rain intensely after the basin is full and spilling over the spillway, the spillway is low and wide enough to pass a very large flood (1,000-year estimate peak flow) without the water surface elevation rising higher than 236.5 ft. or 1.5 feet below the top of the eastern and western levees.

When the threat of downstream overbank flooding has subsided, the larger gated culvert would be opened and the basin would drain back to Fairfax Creek via both diversion structure openings or culverts and the storm drain inlet at the southeast corner of the basin floor. Model simulations show that it would take about eight hours for the basin to completely drain.

The Nursery basin incorporates numerous safety measures including:

- setbacks from the east and west property boundaries to the levees;
- providing 1.5 feet of residual freeboard or buffer during flood events;
- making the levees and berms around the basin wide enough to accommodate maintenance and emergency vehicle access;
- basin side slopes that are gradual for added stability and safety and naturalistic aesthetics;
- the basin floor was made only 6-8 feet below the former nursery ground surface to avoid groundwater impacts and to gravity drain the basin back to Fairfax Creek;

- the basin floor is sloped from 226 at the northeast corner to 224 feet at the southeast corner drain inlet for adequate and timely drainage to sustain a seasonal drainage;

Note: All elevations given in feet (ft) NAVD88 vertical datum which is the official vertical datum in the United States.