

TECHNICAL MEMORANDUM

DATE: 7/3/25
TO: Hallie Richard (CSLRCD)
FROM: Scott Smith, P.E. (Stillwater Sciences)
SUBJECT: Floodplain Resilience Project - Morro Bay City Property (Site 7A)

The CSLRCD contemplates a site for the Chorro Creek Floodplain Resilience Project (FPRP) at the confluence of San Bernardo and Chorro Creek on the City of Morro Bay property (APN 073-131-010). The creek channels are currently confined at this location by berms/levees which are intended to protect communities immediately to the north along Chorro Creek road.

This area is subject to frequent flooding due to several areas of berm/levee erosion due to aging inadequate sizing and channel migration. During the January 9th 2023 storm, this area flooded significantly resulting in structure and agricultural property damage in the areas to the east and north of this site.

In the context of the larger Chorro Creek FPRP, this area would be numbered Site 7A. Site 7A proposes a levee setback and floodplain enhancement in a 3 acre area to increase storm flow conveyance and reduce flooding of the adjacent properties to the north and east. Figure 1 shows the proposed concept design of Site 7A. As part of the Chorro Creek FPRP, Stillwater developed a 2-Dimensional Hydraulic model in the vicinity of the Lower Chorro Creek watershed. Stillwater created a coarse terrain representing proposed conditions and ran model simulations understand the benefits of improvements at Site 7A. Figure 2 shows a plan view of water surface elevation differences, in feet, between existing vs. proposed conditions at Site 7A.

See Figures.

Figures 1, 2, and 3 show that the conceptual levee setbacks and a widened floodplain improvements at Site 7A can have benefits beyond the extent of the graded footprint. We conducted a simple desktop calculation using the results shown in Figure 2 and found that the effects of Site 7A reduced flood water elevations by 0.3 feet or more across approximately 45 acres of lands adjacent to the site, with some areas seeing up to 1.5 feet in flood water elevation reductions, as shown in Figure 3.

Stillwater and CSLRCD are in support of incorporating Site 7A into the Chorro Creek FPRP and look forward to working with the City of Morro Bay with planning and permitting for improvements at this location.

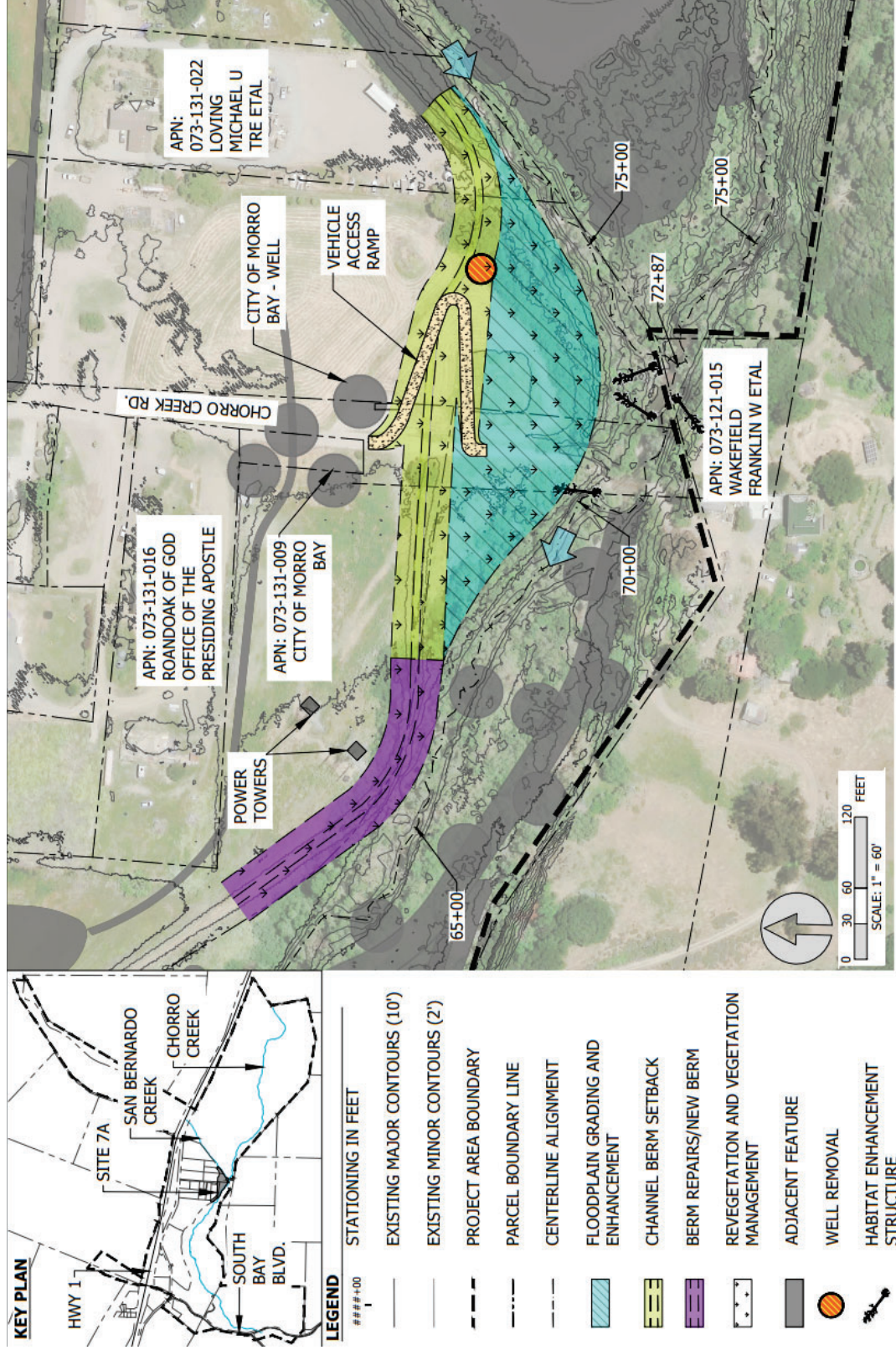


Figure 1. Chorro Creek FPRP - Site 7A - Proposed Improvements on Morro Bay City Parcel

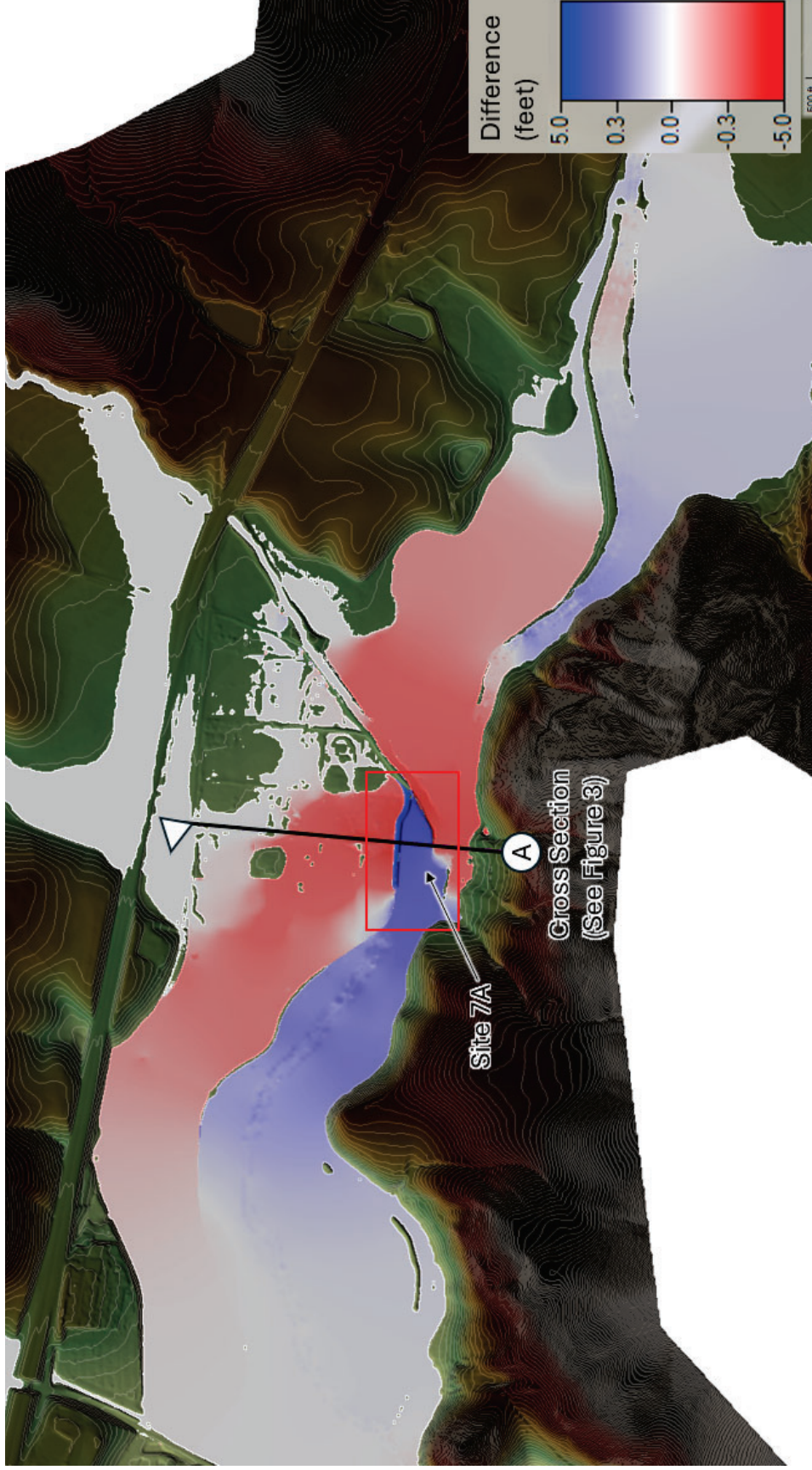


Figure 2. Chorro Creek FPRP - Plan View - Changes in Water Surface Elevation between existing conditions and proposed conditions during 100 year flood event showing the effects of implementing conceptual designs at Site 7A.

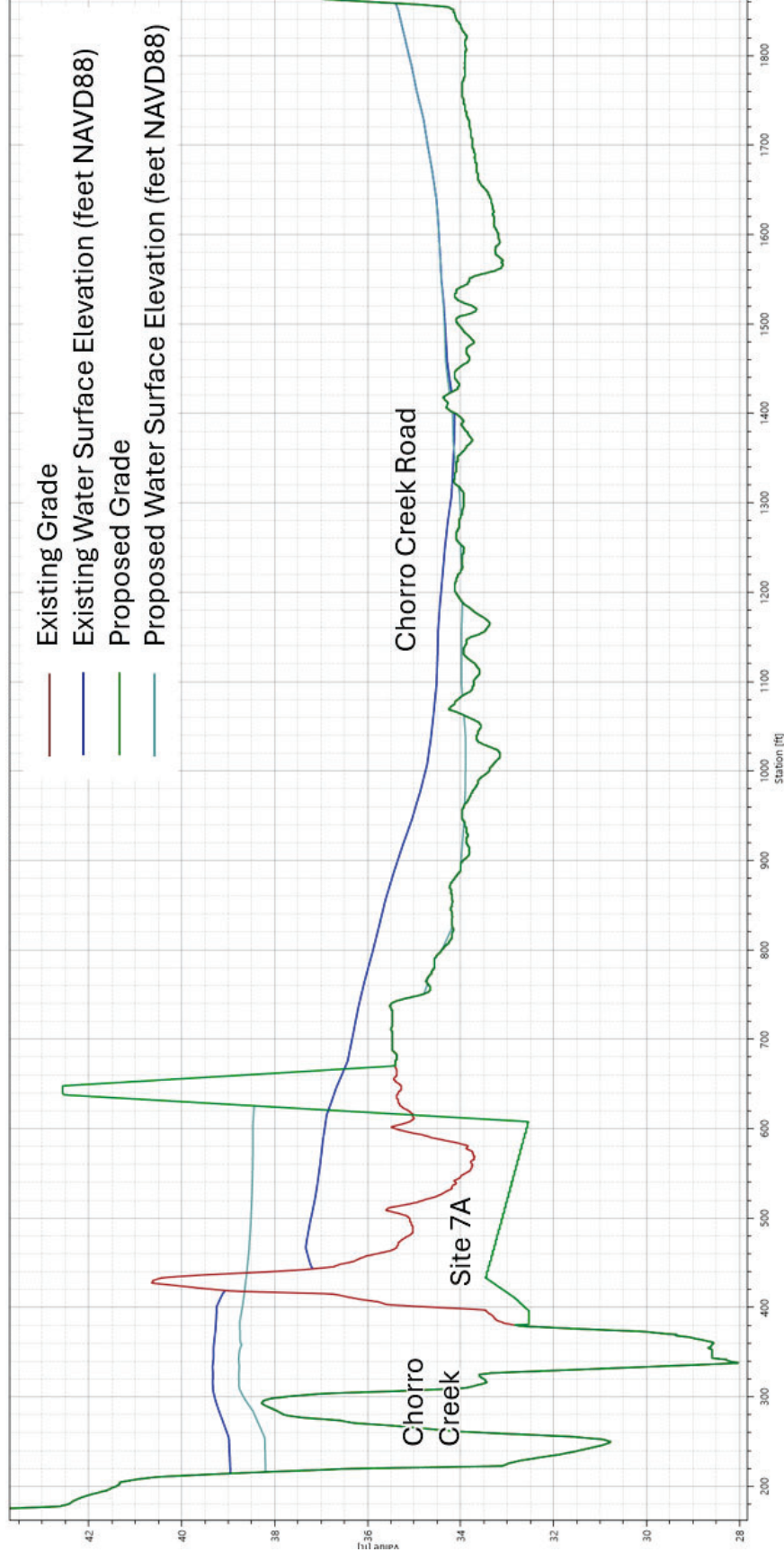


Figure 3. Chorro Creek FRRP - Section View - Water Surface Elevations (feet NAVD88) for existing conditions and proposed conditions showing the effects of implementing Conceptual designs at Site 7A.

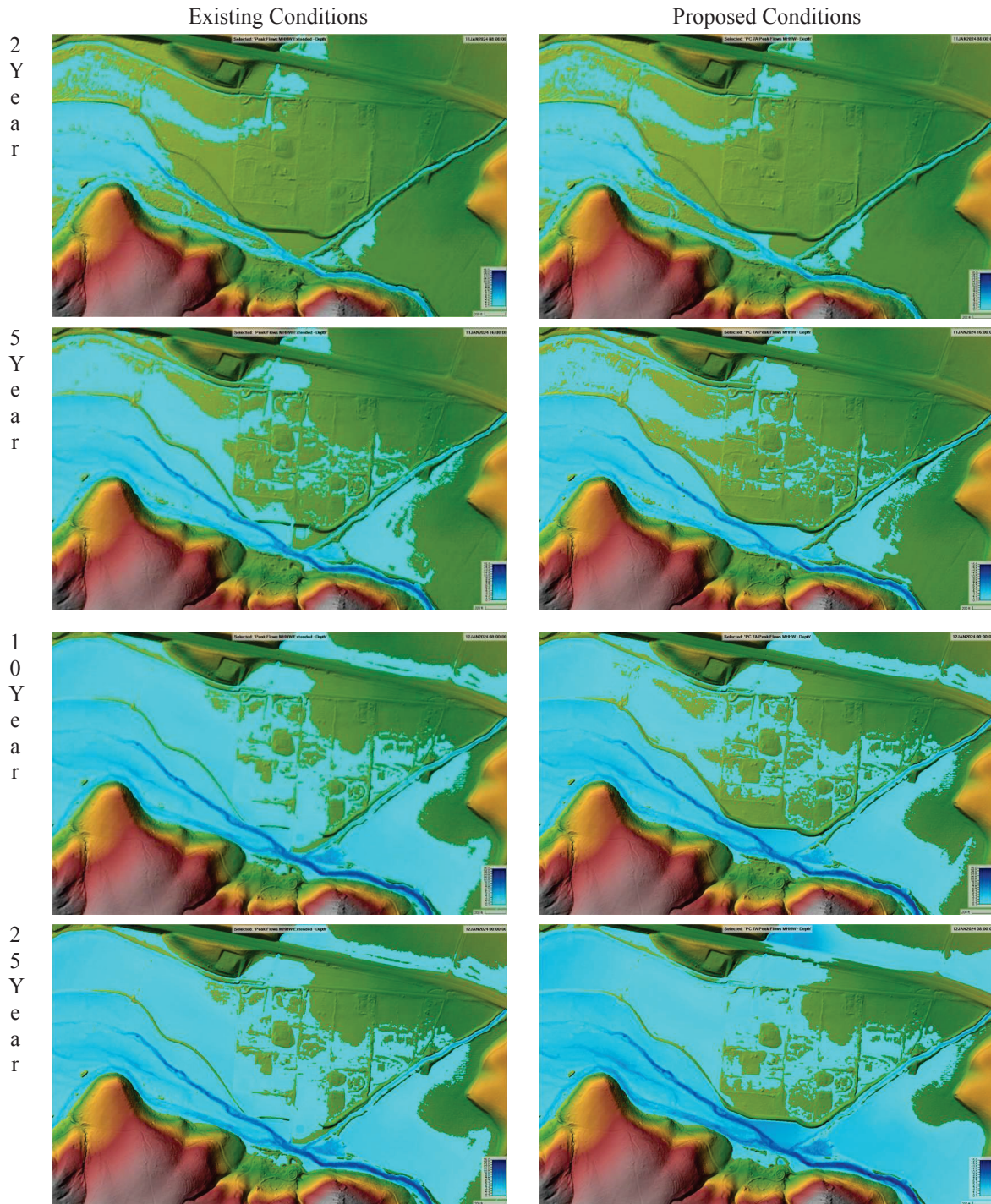


Figure 4. Chorro Creek FPRP Conceptual Design—Plan view of changes in inundation extents between existing conditions and proposed conditions during 2-, 5-, 10-, and 25-year flood events, showing the effects of implementing conceptual designs at Site 7A.

Figure 2, 3 and Figure 4 show that the conceptual levee setbacks and widened floodplain improvements at Site 7A would provide benefits beyond the extent of the graded footprint. Stillwater Sciences calculated the area difference in flooding greater than 1 inch in depth between existing and proposed conditions using a comparison of output rasters from the 2D model results. Table 1 shows additional details for flood inundation area reductions for given return interval flows.

Table 1. Chorro Creek FPRP Conceptual Design—Area reduction in flood inundation between existing and proposed (Site 7A only) conditions.

Flow Return Interval (years)	Area Decrease in Flood Inundation (acres)
2	0.4
5	13.0
10	17.7
25	13.8