

Appendix I

within the SCVWD channel is shown as Zone A. No base flood elevations are shown in the Zone A area within the channel.

Hydrology

Schaaf & Wheeler has completed a review of the available backup data for the FEMA Flood Insurance Study (FIS) (Upper Penitencia Creek Flood Plain Management Study, Hydrology Volume 2, Soil Conservations Service, January 1985). More recent flood related analyses for the Elmwood area development projects from 2005, and the SCVWD Lower Penitencia Creek levee recertification, completed in 2009, were also considered to estimate the 100-year base flood flow through the area between Highway 880 and Lower Penitencia Creek.

Based on the prior studies, the flood flows in the California Circle area between Highway 880 and Lower Penitencia Creek are due to overflows from Lower Penitencia Creek south of Great Mall Parkway, due in part to overflows from Berryessa Creek and Upper Penitencia Creek which exceed the capacity of the Lower Penitencia Creek channel.

Schaaf & Wheeler's review of the available studies indicate that a total of 900 cfs flows in a northerly direction along California Circle in the vicinity of the site toward the Highway 880 crossing of Lower Penitencia Creek. This is consistent with the FEMA FIS published flows for Lower Penitencia Creek. The FIS flow rates are 2600 cfs downstream of the Berryessa Creek confluence, and 3500 cfs at the Highway 880 crossing. The difference is due to sheetflow flowing over the channel bank levee from the California Circle area.

Hydraulic Model

A HEC-RAS hydraulic computer model was created to determine whether the Waterstone development would impact the floodplain between Highway 880 and Lower Penitencia Creek from Lower Penitencia Creek south to Calaveras Boulevard. The model was prepared to estimate the existing condition flood elevations based on current land use, topography and buildings in the area. The model was then modified to include the proposed Waterstone development project and related grading and improvements.

The cross section geometry used for the model was built using the 2006 Santa Clara County LiDAR data supplied by the United States Geological Survey. Figure 1 shows an aerial view of the modeled area. Cross Sections were created in the model extending to Highway 880 on the west and eastward towards Lower Penitencia Creek to represent the floodplain caused by a 900 cfs overbank flow during the 100-yr storm event. The hydraulic model calculations were prepared using the NGVD29 topographic datum to be consistent with the project topography and design plans.

The cross sections used in the model are also shown in Figure 1.

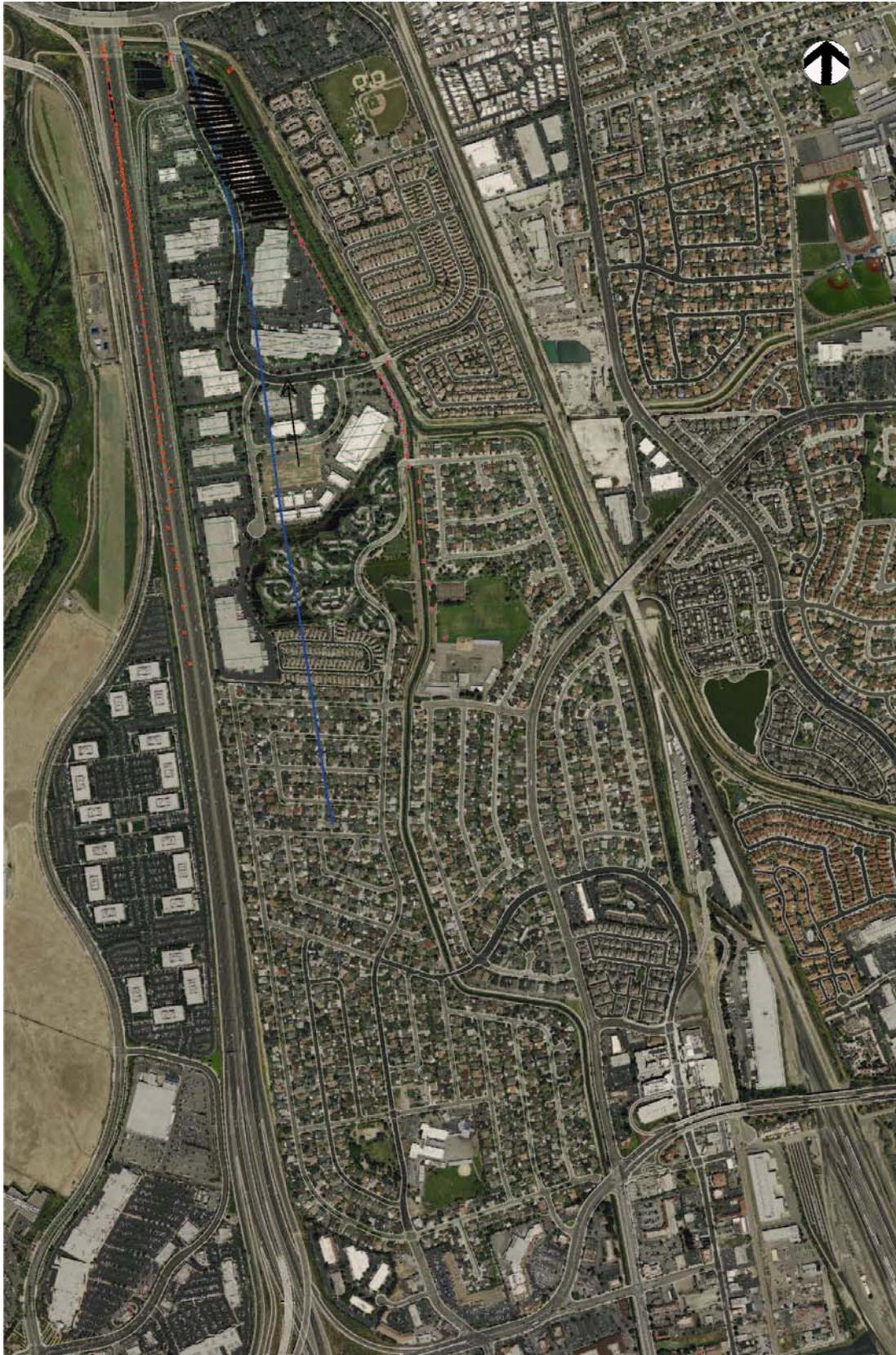


Figure 1. Aerial View of Hydraulic Model for California Circle

DRAFT

Under existing conditions, flow spills from Lower Penitencia Creek south of Great Mall Parkway, and flows northward over Calaveras Boulevard and into the California Circle area. This flow continues north between Interstate 880 and the Lower Penitencia Creek before it ponds south of the Lower Penitencia Creek levee east of Highway 880 near the intersection of California Circle and Dixon Landing Road. Based on the HEC-RAS model, it was found that most of this water flows to the west of California Circle, spilling into the California Circle stormwater pump station detention basin before overtopping the southern levee of Lower Penitencia Creek. The model included cross sections to consider weir flow over the creek levee and weir flow over the Highway 880 ramp on the south side of the pump station detention basin. The highway ramp elevation is above the top of the creek levee and therefore acts as an additional constriction on the flow toward the creek channel. The median barrier separating the 880 on- and off-ramps was also included in the model as shown by the trapezoidal protrusion in the cross section of Figure 2.

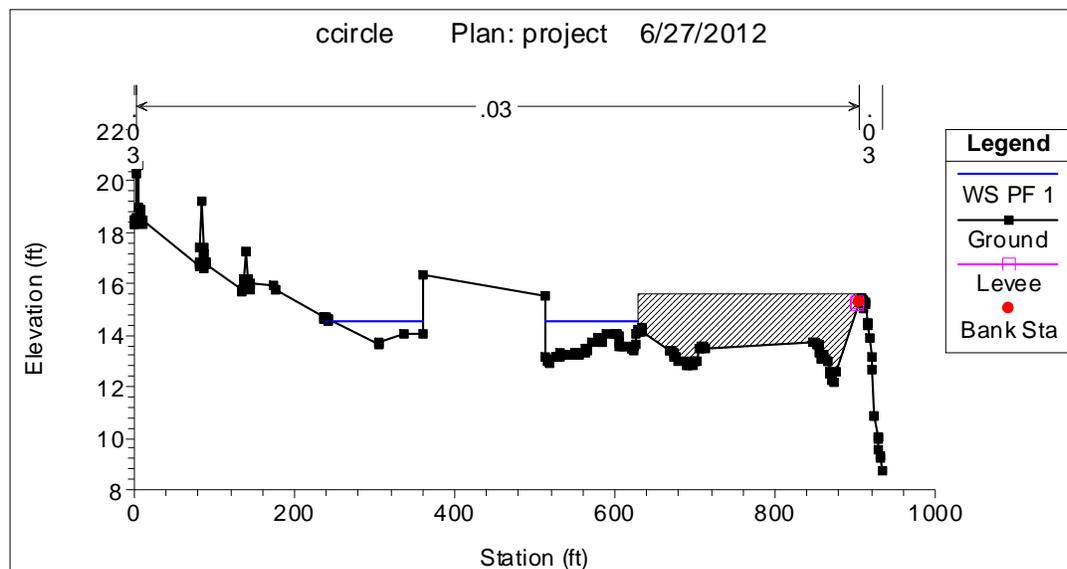


Figure 2. Highway 880 Ramp Cross Section - Project Conditions

To represent project conditions, the California Circle development area was padded up to an elevation above the existing conditions water surface. This was done by blocking the portion of the cross sectional area lying within the proposed development. These blocked areas are represented by the hatched area shown in Figure 2. The existing conditions scenario also included blocked area representing the buildings that are currently located within the development as well as ineffective area (shaded green) as shown in Figure 3. Ineffective areas are used to model portions of a cross section that contain water which is not actively being conveyed. Water will pond within these areas, but the velocity of the water in the downstream direction is close to or equal to zero.

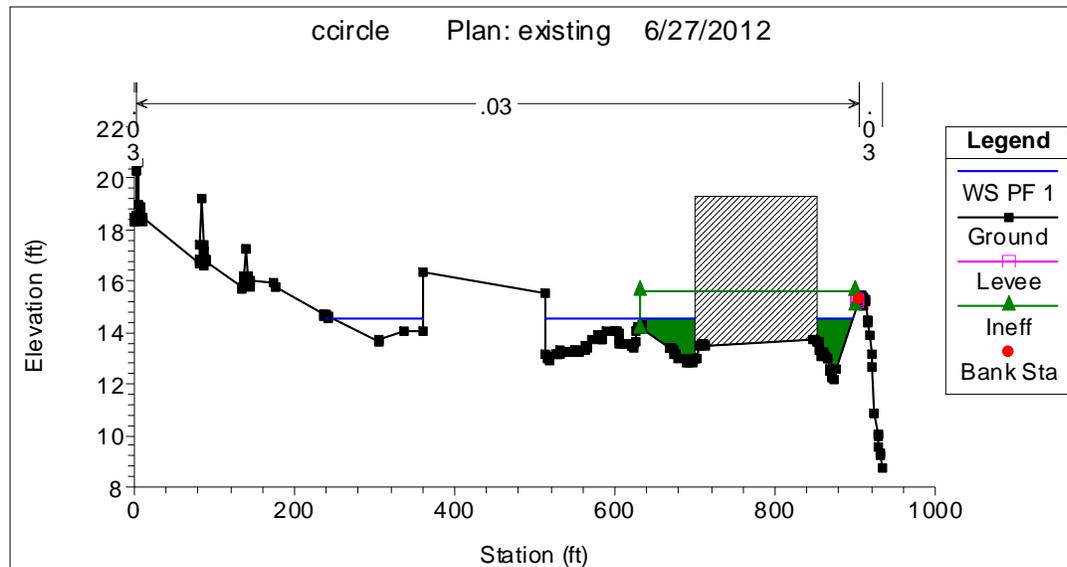


Figure 3. California Circle Development - Existing Conditions

The resulting project and existing conditions water surfaces were then compared. Figure 4 shows the resulting water surface profiles. The profiles show that water ponds upstream of the median barrier between the 880 on- and off-ramps. Upstream of the highway ramp, the water surface is virtually level, reaching a maximum elevation of 15.0 ft at the upstream extent of the hydraulic model. The estimated change in the water surface elevation from the highway ramp to the residential subdivision 4000 feet to the south is less than 0.01 feet. The project condition model estimated the same 100-year water surface elevation as the existing conditions model.

Effective Base Flood Elevation

Based on the hydraulic model for the 100-year flood conditions, the base flood elevation is 15.0 feet on the NGVD29 datum, consistent with the project design plans. However, this is significantly higher than the base flood elevation shown on the effective FEMA FIRMs due to the difference in datum. The FIS flood elevation of 15 on the NAVD88 datum feet corresponds to an elevation of approximately 12 feet on NGVD29. The fact that both result a base flood elevation of elevation 15 feet is entirely coincidence. A detailed review of the original work maps for the 1985 floodplain study which was the original basis for the effective FIRMs shows that the original flood elevation was 12 feet on NGVD29, and that the analysis was based on topography prior to the completion of the Lower Penitencia Creek levee at Highway 880 and the Highway 880 ramp to California Circle. It does not appear that the effective FIRM was ever updated to consider those facilities. It appears that the FIRM maps may have become effective after the projects were completed, but did not consider the projects.

FEMA Map Revision

The project site is located in the FEMA 100-year floodplain and the project will require a Letter of Map Revision (LOMR) to remove the site or at least the new structures from the floodplain to avoid the need for the future homeowners to buy flood insurance. The project would normally apply to FEMA for a Conditional Letter of Map Revision (CLOMR) to obtain FEMA

concurrence that the proposed project would be able to be removed from the floodplain. FEMA would review the proposed project fill elevations based on the effective base flood elevations.

Because the hydraulic study has identified a problem with the existing effective flood elevation, FEMA would review the updated hydraulic conditions analysis establish the new flood elevations. The CLOMR process would then require that the City notify all of the properties which would be affected by the change in the base flood elevation. There would be a public appeals process period to allow the affected property owners to appeal the change. The appeals process would require approximately four months. The FEMA review before the appeals period would add another three to four months. Therefore the minimum time for the CLOMR process would be six months or more.

However, the VTA is in the process of preparing a LOMR for the area which will proceed to FEMA within the next year. The VTA has identified issues with the effective FIRMs for San Jose and Milpitas as part of the planning and design for the BART extension to San Jose. The VTA is updating the hydrology and hydraulics for the Upper Penitencia and Lower Penitencia Creek watersheds. Due to the complex channel capacity restrictions and overflows, large areas upstream may be affected by changes in the channel hydraulics and development in the floodplain. The draft revised flood analysis is scheduled to be completed in February, with the LOMR application to be submitted in the spring. The VTA is intending to use the revised effective floodplain to evaluate design conditions, project impacts, and potential flood mitigation measures for the BART trackway and stations.

At this point in the process, the potential change in the existing conditions floodplain and flood elevations at the project site due to the VTA LOMR evaluation is uncertain. However, the flood elevations in the project area are most effected by the roadway elevation at the highway ramp and the creek levees. The final elevations may change slightly due to the flow rate through the area due to the upstream overflows. The proposed revised VTA study flood elevations would be available in the spring before the project could proceed to construction.

Therefore, there is no advantage for the project to proceed with a CLOMR separately from the VTA LOMR. The project CLOMR would either be in review or the approval process when the VTA LOMR is filed. At that point, the project CLOMR would need to be withdrawn or updated to conform to the VTA LOMR. It is possible that the project CLOMR could proceed separately from the VTA LOMR at that point since it may not need to modify the effective flood elevations and could avoid the appeals process. The appeals process would be part of the VTA LOMR.

Conclusions

Based on the hydraulic analysis of the flood conditions in the project area, the effective FEMA FIRM base flood elevations are not consistent with existing conditions in the area. The FIRM base flood elevation of 12 feet based on the project datum of NGVD29 should be higher, at 15 feet. The base flood elevation associated with the FIRM does not include facilities constructed by the SCVWD and Caltrans for Lower Penitencia Creek and Highway 880. The creek levee and highway ramp cause the flood water in the overbank area to pond to a higher elevation before flowing into the creek.

DRAFT

The analysis of the project conditions for the Phase 1 Waterstone development project show that fill on the entire project site from the creek levee to the California Circle right of way would not affect the flood elevations in the area or upstream.

The project will require a LOMR after construction to remove the majority of the site from the FEMA floodplain to avoid the requirement for flood insurance for the homeowners. Due to the ongoing VTA flood study to prepare a LOMR for Lower Penitencia Creek, it does not appear practical to proceed to a CLOMR for the project. The project floodplain conditions may be affected by the VTA study and any CLOMR in process would be delayed by the VTA LOMR review. In addition, other properties which would be affected and notified of a flood elevation change as part of the project CLOMR would then be notified again for the VTA LOMR. The project CLOMR cannot be approved prior to the VTA LOMR submittal if the VTA LOMR stays on schedule.

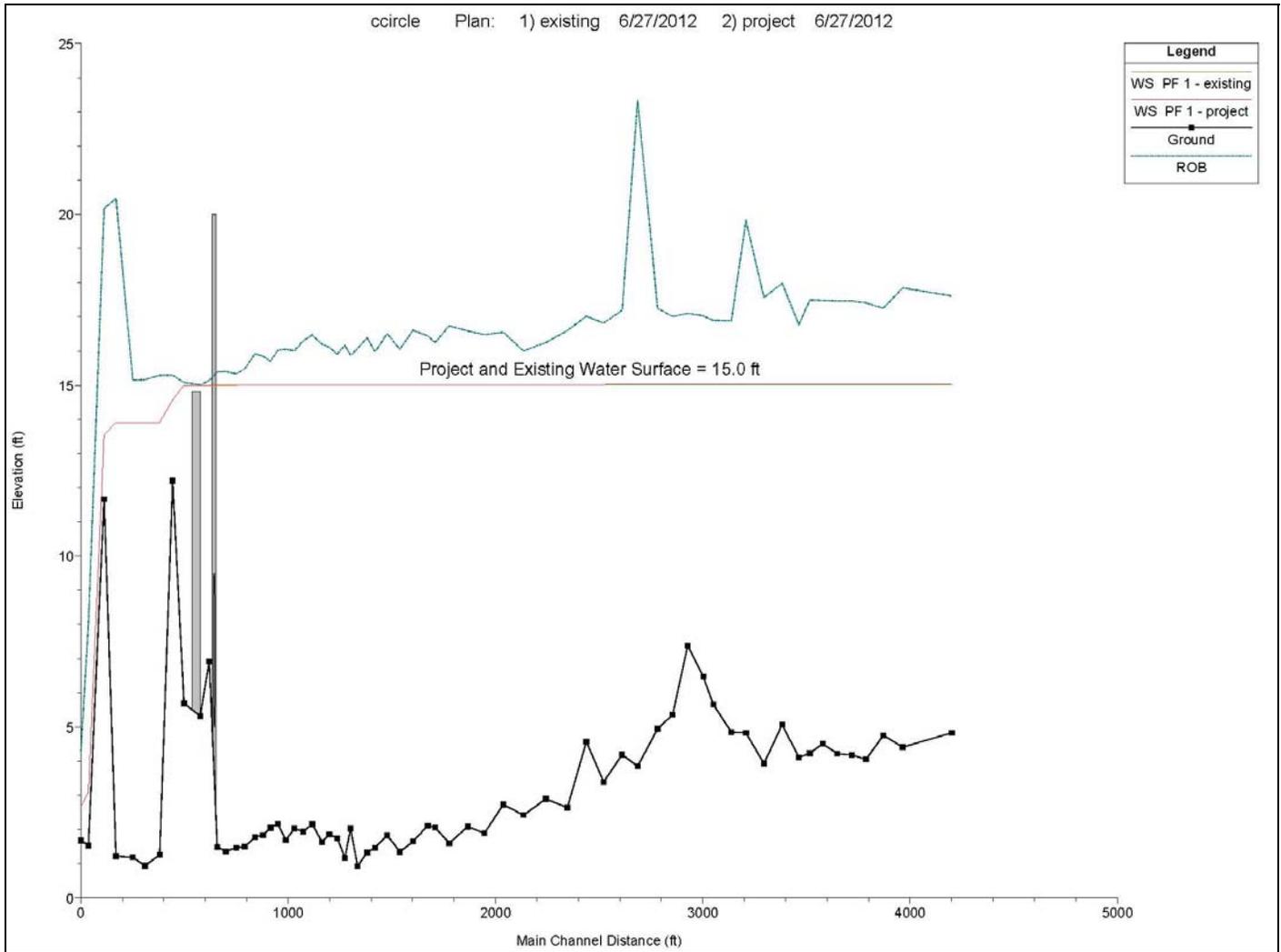


Figure 4. Project and Existing Water Surface