

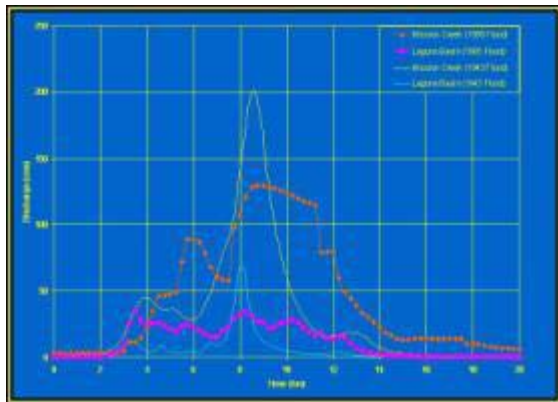
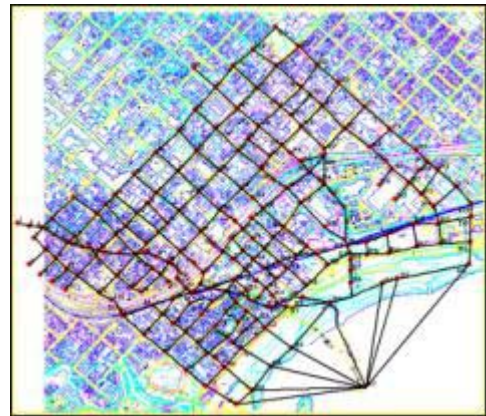
Mission Creek Flood Reduction Study



Mission Creek flows out of the Santa Ynez Mountains of the California Coastal Range, and through downtown Santa Barbara to the Pacific Ocean. The lower creek has seen frequent flooding (e.g., Feb. 1998), which has intensified with the urban development of Santa Barbara. During the January 1995 flood, considered to be the 50-year event, approximately 10 bridges in the last mile of the creek were subject to pressure flow. Water overflowed to nearby streets and the downtown railway track, and flowed east to the adjacent Laguna Channel where they overloaded a

series of under-freeway culverts causing ponding and extensive flooding upstream in the upper Laguna Basin north of the 101 Freeway.

The Los Angeles District, U.S. Army Corps of Engineers, studied improvements to the Mission Creek system to reduce overbank flooding. To model the combined Mission Creek and Laguna systems, a link-node model, WDWB, developed for the Waterways Experiment Station, was set up and calibrated to high-water marks following the January 1995 flood event. The link-node grid was readily able to resolve the complex system of waterways, the network of streets, and numerous hydraulic structures, including bridges, culverts, and tidal gates at the downstream end of the Laguna Channel.



The calibrated model was used to evaluate the extent of flooding during synthetic storms representing the 25, 50, 100 and 500-year events. Inflows to Mission Creek and the upper Laguna Basin were developed using HEC-1 with historic-synthetic rainfall distributions, and a “typical” tide was specified downstream. The results were used by the District’s staff to determine flood damage costs associated with the various return-interval events. Finally, the model was used to evaluate the reduction in overbank flooding, and subsequently the reduction in flood damage costs, for various potential system improvements. Alternatives evaluated included

channel widening and reshaping, and replacing many of the existing bridges with larger structures.

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