

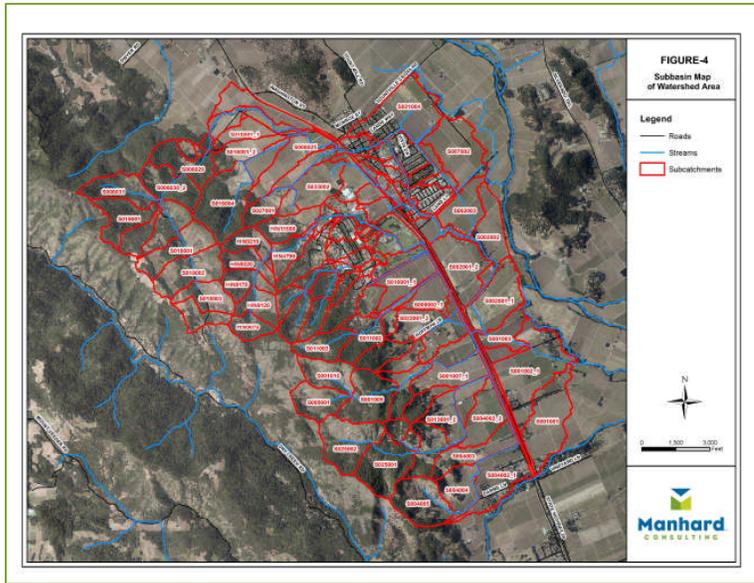
STORMWATER MASTER PLANNING & SUPPORT SERVICES

Yountville, California



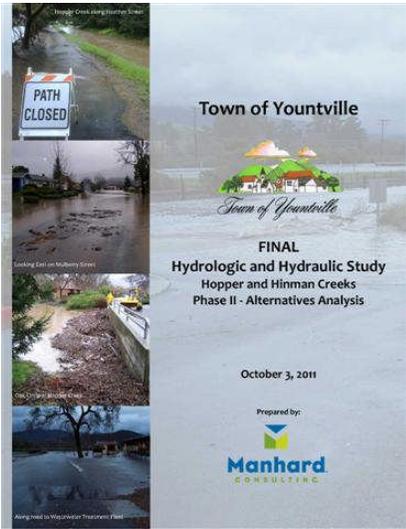
CLIENT
Town of Yountville

SCOPE OF SERVICES
H&H Study
GIS Modeling
Physically-based Modeling
Model Calibration
Alternatives Development
Presentations
Final Report Preparation



In 2009, the Town of Yountville (Town) retained Manhard Consulting to conduct grant screening for potential flood hazard mitigation at deficient crossings on Hopper Creek. Following the results of this work, Manhard was tasked to conduct a Hydrologic and Hydraulic Study of Hopper and Hinman Creeks, both of which have flooding problems. The study area is approximately 8.5 square miles. Advanced GIS-based methods combined with physically-based modeling (e.g., Green & Ampt Infiltration) were used to develop a model using SWMM5, a lumped-parameter, dynamic rainfall-runoff simulation model used for single event or long-term simulations. The model was successfully calibrated and validated to the observed peak stage and stage hydrographs recorded on Hopper Creek using precipitation from three storms. Hypothetical 24-hour, 2-year and 100-year design storms were developed using the most recent NOAA Atlas 14 grids within ArcGIS to calculate area-weighted averages for each sub-basin.

Manhard developed and tested alternatives for recommendation as part of the Town's Capital Improvement Program (CIP). To assist the Town in understanding the level of protection and costs associated with alternatives were evaluated using the calibrated SWMM5 model for the 100-year design storm. Fifteen alternatives were evaluated to determine the effects on reducing peak flows through Town. Each alternative was ranked based on cost per total reduction in peak outflow. Manhard prepared a report of the findings and presented the results to the Town Council.



Additionally, Manhard has been working with agency staff at the Department of Fish and Game and the San Francisco Regional Water Quality Control Board to obtain permit approval for routine maintenance activities in Hopper Creek. The activities include sediment removal for flood control. This has been complicated by the fact that the San Francisco District of the Army Corp of Engineers declined to take jurisdiction since the work is performed when Hopper Creek is dry. As a result, the State requires an individual permit for the project. This work is ongoing.