Appendix B-1
Results From Previous Spill Modeling
Applicable to the Shore Marine Terminal

Background of Previous Spill Modeling

In 1994, the EIR prepared for the Consideration of a New Lease for the Unocal Marine Terminal (now ConocoPhillips, Rodeo), extensively analyzed the potential consequences of oil spills on the environment. No previous Bay-wide area oil modeling was available at that time. The analysis was conducted to estimate the probability of spills and fate of the spilled material (e.g., where the oil would go if a spill occurred) for transit lanes within the greater Bay Area as well as the outer coast. Modeling specific to the Unocal Marine Terminal also was conducted. Spill trajectory modeling was used to evaluate (1) the effectiveness of existing response capabilities of Unocal and supporting Bay Area oil spill response organizations, (2) impacts on future response capability (since the Unocal lease was to be for a 40-year period), and (3) assessment of impacts of spills on biological, water quality, commercial and recreational fisheries, shoreline uses, recreational users, and visual resources.

Modeling included a combination of the hydrodynamics of tidal and current conditions throughout the Bay, into Carquinez Strait, and outer coast combined with a complex program of simulated oil spills. These data were overlain via GIS with mapped sensitive resources that occur to help determine the potential for impacts and thus, determine mitigation to be applied. The hydrodynamic simulation modeling was conducted by the Center for Environmental and Water Resources Engineering of the University of California at Davis, California, and the oil spill modeling was conducted by Ecological Consulting, Inc., Portland, Oregon.

Resource mapping was undertaken by the CSLC, the Center for Environmental Design Research at the University of California at Berkeley, Ecological Consulting, Inc., and Chambers Group, Inc., Irvine. In all cases, resource mapping involved a map-based delineation of relevant features of ecological interest or related importance, and the conversion of those features to digital form. At CSLC, and Chambers Group, maps were developed onto standard base maps (USGS 1:24,000 quadrangles) and digitized. As a separate effort, the CSLC digitized the entire California and San Francisco Bay shoreline at 1:24,000 scale. Resource maps were merged with this standard shoreline to ensure geographic consistency across data sets.

Oil spill model results were combined with the resources data base to produce a GIS based, synthesized map coverage that displayed the interaction between oil spill scenarios and vulnerable resources, over time, to the maximum extent of the spread of the oil. These coverages were used in the analysis of potential impacts in the EIR. The areal extent of impact was able to be produced in both mapped and tabular formats. Maps showed a resource or grouping of resources with either probabilistic or scenario oil spill spread information overlain. Tables were produced, showing the amount of a resource that was affected by modeling in either miles (for shoreline) or acres (areal extent, such as a wetland). In this manner, potential impacts could be both visually assessed and quantified.