

the Carmel River near Carmel Valley Village. District staff worked with the University of California at Santa Cruz, Big Creek Lumber Company, the Monterey Peninsula Regional Park District and the CDFG to install the structures, which will improve habitat for steelhead trout and other aquatic species. The District contributed survey work, design, permit and right-of-way acquisition, and managed the construction. District biologists surveyed California red-legged frogs and relocated steelhead during construction.

Lectures and Field Trips

Highlight River Restoration Projects

District staff and local educators led field trips to the Carmel River and explained District-sponsored restoration projects. The District organized tours with Professor G. Mathias Kondolf of the University of California at Berkeley, Associate Professor Doug Smith of California State University at Monterey Bay, and Dave Rosgen of Wildland Hydrology, a leading U.S. expert in river restoration.

The Overall Condition of the Carmel River Inspected Annually

District staff routinely inspects the river every spring and summer to assess the overall condition of the river. Staff determined that an overgrowth of vegetation was constricting many areas of the river, especially upstream of the Quail Lodge Golf Course. Several large trees had fallen into the river and were threatening to block high flows. District staff received permission from state and federal regulators before removing the most critical blockage at the Boronda Road Bridge.

Native Plants Maintained Along the Riverfront

District staff maintains native vegetation along the Carmel River both for erosion protection and habitat enhancement. The staff collects seeds from native streamside trees and shrubs, which are then propagated by a local nursery. The seedlings are transplanted in restoration sites along



Baby buckeye tree, part of the District's streamside restoration program

the Carmel River to help diversify the restoration projects. Willow and cottonwood trees are also planted from cuttings. Altogether, District staff planted 890 natives such as willow, cottonwood, sycamore, gooseberry, box elder, buckeye and elderberry in 2002.

Native streamside vegetation is an important factor in maintaining a healthy, vigorous riparian corridor. The District's restoration approach uses all available technology to minimize the need for supplemental irrigation and mimic natural river environments. This approach includes designing low-lying floodplains adjacent to the river bottom, thus reducing the need for irrigation since plants are closer to the water table. Also, trees such as willows and cottonwoods are planted deeply with a backhoe, which allows the plants to tap into the water table.

Streamside Vegetation Monitored for Effects of Groundwater Pumping

District staff monitors the effect of seasonal drawdown of the water table by

measuring leaf and soil moisture during the dry season, determining moisture stress in riparian vegetation, and irrigating as necessary. District staff applied 7.3 AF of water through nine District irrigation systems to streamside vegetation in 2002 to offset impacts associated with groundwater pumping.

Staff also documents the height, growth rate and survival of plants at District restoration project sites. Trees at District restoration sites had an excellent survival rate during 2002. The close-to-normal rainfall of the past four years (1999-2002) and better management practices have helped protect the river environment from significant moisture stress during the dry months.

River Channel Cleared of Debris

District staff removed about 1,400 pounds of trash and debris from the river channel in 2002. The trash included plastic, metal, and auto parts.

Birds Monitored Along the Carmel River

The District's Carmel River Avian Monitoring Program documents the number and type of birds using the Carmel River riparian habitat for nesting, foraging, and cover. The information collected measures the performance of the District's restoration projects based on the principle that greater species diversity is a function of quality habitat. Results from the District's Avian Monitoring



Turkey vulture near Carmel River Lagoon