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***Bear Creek Water Quality Study, 1999–2002, Woodside, San Mateo County, California***

Understanding existing surface water quality can assist local efforts to improve conditions for fish and other aquatic biota. From October 1999 through September 2002, Balance Hydrologics conducted a study of flows and water quality in the Bear Creek subwatershed, which forms the northwestern headwaters of San Francisquito Creek, where restoration of steelhead habitat has been the focus of substantial efforts over the past decade. Balance staff established three continuous-record stations and also monitored five partial-record stations in the Bear Creek subwatershed. We measured streamflows and collected water quality samples during both wet- and dry-weather conditions. Laboratory analyses showed only a single detection of the organophosphate pesticide, diazinon. Of the four metals analyzed (cadmium, copper, lead and zinc), dissolved copper concentrations exhibited a strong "first-flush" pattern, while dissolved lead was detected repeatedly only in Dry Creek, which receives large volumes of highway runoff. Nitrogen was detected primarily as nitrate, not ammonia, and varied spatially within the watershed. Suspended sediment discharge measured during high and intermediate flow conditions was typical of creeks in the San Francisquito Creek watershed. Water temperatures at all stations were regularly below the upper temperature threshold for optimal steelhead habitat. Balance staff continue to monitor streamflows and water quality at the downstream-most station on Bear Creek at Sand Hill Road, as part of the joint Stanford University-City of Palo Alto long-term monitoring and assessment program (LTMAP) network.