
QUALIFICATIONS

Mitchell Swanson has over *eighteen years* of experience in hydrology, hydraulic studies, geologic hazards, and geomorphology related to restoration and resource management in rivers, streams, coastal estuaries, and wetlands. This experience includes the development, management and completion of comprehensive technical and planning studies for a full range of private and public sector clients. Mr. Swanson specializes in the development of technically and environmentally sound management and restoration plans for *rivers, estuaries and watersheds*. These studies often involve the coordination of many disciplines by including biological sciences, hydraulic engineering, land use planning, economics, landscape architecture and environmental planning. In the present era of conflict between environmental regulation and society's need for flood control and utilization of water resources, Mr. Swanson has become a recognized expert in conflict resolution between governmental agencies, and public and private interests. Mr. Swanson has first hand knowledge of international management techniques used by public water resource agencies in England and Germany to help resolve problems faced by flood control engineers and resource agencies.

Mr. Swanson has extensive expert witness experience having appeared before the *California State Water Resources Control Board, California Superior Court, and the U. S. Congress*. Mr. Swanson has testified with regards to hydrology, flood control, reservoir operations, hydraulics, geomorphology, and environmental impacts.

Mr. Swanson's technical expertise includes historical geomorphic and hydrologic studies for geologic hazards assessments (landslides, seismic, erosion, sedimentation, sediment transport and flooding) and in determining the causes and effects of human modification on hydrologic and geomorphic systems. He has extensive field experience in hydrologic and sediment transport measurement, geomorphic mapping and surveying in rivers, watersheds and estuaries. Mr. Swanson has conducted hydraulic and hydrologic analyses using the *HEC-RAS, HEC-6 and HEC-1* computer simulation programs.

RECENT SWANSON HYDROLOGY PROJECTS

Mitchell Swanson has served as the Principal Manager of the following projects:

ORCUTT FLAP GATE, 2002

Client: L.C. Lee & Associates

Swanson Hydrology has been retained to assess the hydraulic conditions related to road crossing, pump and flap gate system on Orcutt Creek and provide expert witness testimony in a U.S. Department of Justice lawsuit. The work involves topographic analysis of existing channel conditions, development of hydrologic data from an existing USGS stream gage, and simple water balance modeling.

NAPA GEOMORPHIC REVIEW, 2002-2003

Client: MBK Engineers

Swanson Hydrology has performed a geomorphic review to assess the outcome of increasing flood capacity through excavation of terrace adjacent to the Napa River upstream of the City of St Helena. Work focuses on the fluvial geomorphology and implications for sediment transport and river ecology, as well as the identification of specific measures to help improve the ecological success of the project.

BLACKWOOD CREEK STREAM RESTORATION, 2001-2003

Client: Lake Tahoe Basin Management Unit, Tahoe National Forest

Swanson Hydrology is leading an interdisciplinary team in an assessment of conditions in the watershed and along the channel and floodplain to identify feasible strategies to offset impacts from logging, grazing and gravel mining. Other tasks include the redesign of an existing but damaged fish ladder and an eroded road

crossing. The focus of the project involves restoring conditions that contribute to the dynamic processes that sustain channel morphology and create diverse and productive habitats.

LAKE TAHOE BASIN WETLAND NUTRIENT REMOVAL EFFICIENCY STUDY, 2000-2003

Client: Tahoe Regional Planning Agency

Swanson Hydrology was retained to provide oversight on project design to assess the efficiency of existing wetlands at removing nutrients from storm runoff prior to discharge of the waters into Lake Tahoe. The project addresses both the relative nutrient contribution from various land types and from different types of runoff events in order to prioritize future use of wetlands as nutrient filters within the Tahoe Basin.

UPPER TRUCKEE RIVER RESTORATION PROJECT, 2001-2003

Client: Tahoe Resource Conservation District

Swanson Hydrology is developing a plan describing management and enhancement alternatives for nearly 5 miles of channel. The project involves identifying target dimensions for restored and newly constructed channel, multiple treatments types to stabilize eroding banks, enhance overflow onto the floodplain, and improve in-channel habitat and excavate terrace to create floodplain areas, restoring the meander belt of the river.

DRY CREEK GEOMORPHIC ASSESSMENT, 2002

Client: Department of Water Resources via Restoration Resources, Inc.

Swanson Hydrology is developing recommendations for bank protection that address the hydraulic forces at work and geomorphic adjustments occurring at erosions sites and incorporate environmental enhancement features such as suitable fish habitat for salmonids and riparian vegetation. SH&G will also review four proposed bank protection and floodplain enhancement projects in order to integrate the geomorphic assessment into the designs.

CITY OF SANTA CRUZ WATERSHED MANAGEMENT PLAN, 2000-2002

Client: City of Santa Cruz Water Department

Swanson Hydrology was retained to develop a management plan for land owned by the City of Santa Cruz to protect primary surface water sources for municipal uses. SH&G completed hydrology, geomorphology and fisheries section of the report.

WATSONVILLE SLOUGHS WATERSHED CONSERVATION AND ENHANCEMENT PLAN, 2000-2002

Client: Coastal Conservancy, County of Santa Cruz

Swanson Hydrology was retained to conduct an initial watershed assessment and to identify and implement habitat restoration projects that would benefit natural resource quality while satisfying the needs of local agricultural landowners and the surrounding urban community.

MINERS RAVINE RESTORATION PROJECT, 1999-2002

Client: Placer County via EDAW, Inc.

Swanson Hydrology designed plans to reduce bank erosion and enhance habitat in the Miners Ravine Nature Reserve by excavating terrace and restoring floodplain. SH&G collected geomorphic data from streams in the region to determine the appropriate dimensions and characteristics of the design.

SALMONID ENHANCEMENT PLAN FOR THE SAN LORENZO RIVER, 1999-2002

Client: County of Santa Cruz Environmental Health Department

Swanson Hydrology is currently working on a project for Santa Cruz County to develop a plan to improve population and habitat conditions on the San Lorenzo River for steelhead trout and coho salmon. In addition to assessing current conditions and determining the limiting factors for salmonid production, there is also a significant component to develop erosion control and restoration projects. These projects would be developed to a level that would allow the County to bid on grant proposals to fund the work.

TROUT CREEK RESTORATION, 1997-2001

Client: City of South Lake Tahoe

Swanson Hydrology led the interdisciplinary team to research and design over 10,000 feet of newly constructed channel through meadow replacing the existing eroding and impaired channel. The project was designed and built in three phases and has succeeded in improving in channel habitat for fisheries and enhanced geomorphic process for the restoration of meadow plant diversity and benefits to water quality inputs to Lake Tahoe.

THIRD AND INCLINE CREEK WATERSHED ASSESSMENT FOR SEDIMENT REDUCTION, 1999-2000

Client: Tahoe Regional Planning Agency

Swanson Hydrology was retained to develop a GIS database of erosion potential for roads and stream channels in the Incline and Third Creek watersheds in Incline Village, Nevada. The work included: 1) field measurements of erodible road features (shoulders, road cuts, ditches) and stream channel stability factors (channel geometry, stratigraphy, vegetation cover), 2) compilation into a GIS database, 3) calculations of sediment yield using USDA methodology, and 4) development of sediment reduction measures for urban runoff pollution to Lake Tahoe.

INCLINE CREEK RESTORATION, 1998-2000

Client: Incline Village General Improvement District

Swanson Hydrology lead the team conducting the research, design, modeling and construction of over 1,000 feet of restored channel less than a half-mile from the Tahoe lakeshore. The project features in-channel habitat enhancements for fisheries, an overflow channel to reduce erosion and hydraulic force during flood events, riparian vegetation plantings, and a detention basin to capture high-nutrient runoff from adjacent sports fields. SH&G received the "Best in the Basin" award for a restoration project in 1999.

ZAYANTE AREA SEDIMENT SOURCE STUDY, 1998-2000

Client: County of Santa Cruz Public Health Department

Swanson Hydrology developed sediment load allocation and recommendations to reduce chronic fine sediment inflow as a basis for a Total Maximum Daily Load (TMDL) for the San Lorenzo River Watershed in Santa Cruz County. Erosion rates developed for the Soquel Demonstration Forest by California Department of Forestry were adapted to sediment yields. The project aimed to improve impaired fisheries conditions for listed steelhead and coho salmonids.

PESCADERO CREEK ROAD / BUTANO CREEK HYDRAULIC STUDY, 1999

Client: County of San Mateo Public Works

Swanson Hydrology was retained to develop a computer simulation model of Butano Creek within a 3,000 foot long reach that includes the Pescadero Creek Road Crossing in order to document existing conditions and evaluate options to reduce flooding. The work included field surveys, computer simulations (HEC-RAS) of proposed projects, assessment of hydraulic conditions, examination of historical assessment of environmental conditions and sediment hydraulics.

PESCADERO MARSH RESTORATION PROJECT EVALUATION, 1999

Client: California Department of Parks and Recreation

Swanson Hydrology was retained to review California Department of Parks and Receptions' Resource Management and Restoration Project in Pescadero Marsh. Work includes field evaluation of current marsh, stream and habitat conditions, review of restoration projects performance, development of issues and recommendations for CDPR resource managers.

EDUCATION

- M.S.** UNIVERSITY OF CALIFORNIA AT SANTA CRUZ; June 1983
Earth Science Department. Thesis and study emphasis in geomorphology and hydrology.
- B.A.** UNIVERSITY OF CALIFORNIA AT SANTA CRUZ; June 1981
Earth Science Department. Study emphasis on geologic hazards and sedimentary geology.
- UNIVERSITY OF CALIFORNIA AT SANTA BARBARA, 1980
Studies in Geological Sciences.
- SANTA BARBARA CITY COLLEGE, 1977-1979
Studies in Earth Sciences.

PREVIOUS EXPERIENCE

- 1985-1988 SENIOR ASSOCIATE: *Philip Williams & Associates*
Responsibilities included: designing and conducting technical studies in hydrology, geomorphology, hydraulics and environmental planning; project management; marketing management. Projects included: design of environmental restoration of streams and coastal wetlands integrated with flood control and erosion control; management plans for wildlife habitat; technical analyses for preparation of expert testimony, development of field techniques for mapping and monitoring.
- 1984-1985 PRINCIPAL: *Williams, Kondolf and Swanson Hydrology*
Responsibilities included: Proposal preparation for technical and environmental studies; development of field research programs in sediment transport and hydrology; project management and marketing. Projects included: A plan for the study of sediment transport on the Tuolumne River, California for the proposed Clavey-Wards Ferry Project (1984); a plan for Preparation of a Master assessment for Gravel Extraction on the upper Russian River near Ukiah, California (1984-1985).
- 1984 WATERSHED ANALYST II: *County of Santa Cruz, California*
Responsibilities included: preparation of timber harvest plan reviews in Santa Cruz County, planning and supervision of log jam removal crew, assessment of stream erosion problems.
- 1984 GEOLOGIC TECHNICIAN: *U.S. Geological Survey, Menlo Park, California*
Responsibilities included: preparation and lab processes of samples for Potassium Argon dating, compilation of maps, aerial photographs and literature for geologic mapping project in North Cascades National Park in Washington State; petrographic studies; statistical analyses of K-Ar.
- 1983 GEOLOGIST: *U.S. Department of Agriculture Soil Conservation Service, Aptos, California*
Responsibilities included: Mapping and describing geology, landslides, hydrology, fluvial geomorphology of the Soquel Creek Watershed in Santa Cruz County California; analyses and description of watershed conditions that lead to flooding along Soquel Creek; data analysis, report preparation; preparation and delivery of presentations at public meetings; development of a watershed management plan.
- 1981-1983 GRADUATE TEACHING ASSISTANT: *University of California, Santa Cruz*
Prepared and conducted laboratory and field exercises in geologic field techniques, stratigraphy and sedimentation, groundwater and geomorphology.

LECTURESHIPS

UNIVERSITY OF CALIFORNIA AT DAVIS - 1982

"Progress toward understanding soil piping and subsurface erosion in gully development"
Geomorphology seminar

UNIVERSITY OF CALIFORNIA AT SANTA CRUZ - 1984

"An introduction to hill slope hydrology and erosion"
Geomorphology class

UNIVERSITY OF CALIFORNIA AT BERKELEY - 1988

"The history of flood control projects on the San Lorenzo River in Santa Cruz, California"
Hydrology class

UNIVERSITY OF CALIFORNIA AT BERKELEY - 1989

"Important technical and policy considerations in stream restoration projects in California"
Environmental Geology class.

UNIVERSITY OF CALIFORNIA AT DAVIS - 1989, 1990, 1991 and 1992

"The importance of geomorphic analysis and multiple objective planning in designing flood control projects"
Geology Department, Rivers of California class

PUBLICATIONS

JOURNAL PAPERS

KONDOLF, G. M., AND M. L. SWANSON.

Channel Adjustments to Reservoir Construction and Gravel Extraction along Stony Creek, California, *Environmental Geology and Water Science*, 21:259-269.

SWANSON, M. L., G. M. KONDOLF, AND P. J. BOISON.

An example of rapid gully initiation and extension by subsurface erosion, coastal San Mateo County, California. *Geomorphology*, 2 (1989) 393-403.

PUBLISHED PAPERS AND ABSTRACTS IN SYMPOSIA PROCEEDINGS

SWANSON, M. L. - 1983

Soil piping and gully erosion along the San Mateo County Coast in central California. *Proceedings from the second field conference of the American Geomorphological Research Field Group*, Chaco Canyon, New Mexico, October 7 - 10, 1983.

SWANSON, M. L. - 1985

Subsurface erosion and gully development along coastal San Mateo County, California. *EOS* 67:955-956 (abs)

SWANSON, M. L. - 1988

Riparian restoration and flood control planning on the Lower San Lorenzo River in Santa Cruz, California. in *Proceedings of the California Riparian Systems Conference*, Davis California, September 22 - 24, 1988.

WILLIAMS, P. B. AND SWANSON, M. L. - 1988

A new approach to flood protection design and riparian management. In *Proceedings of The California Riparian Systems Conference*, Davis, California, September 22 - 24, 1988

LIST OF UNPUBLISHED TECHNICAL REPORTS

SINGER, S. AND M. L. SWANSON – 1983

The Soquel Creek storm damage recovery plan with recommendations for reduction of geologic hazards in Soquel Village, Santa Cruz County, California. Unpublished USDA Soil Conservation Service report to the *Santa Cruz County Board of Supervisors (69 pp)*.

SWANSON, M. L. – 1983

Soil Piping and gully erosion along the San Mateo County Coast. Unpublished Master of Science thesis, *University of California at Santa Cruz Earth Sciences Board*.

KONDOLF, G. M., SWANSON, M. L., AND WILLIAMS, J. G. - 1984

Plan for study of sediment transport on the Tuolumne River and the effects of the proposed Clavey-Wards Ferry Project, Tuolumne County California. Report submitted to the *Turlock and Modesto Irrigation Districts*.

SWANSON, M. L. – 1985

Contributing causes to the history of flooding along Soquel Creek in the reach near the Highway 1 crossing; a report to *Robert Ludlow, Attorney at Law*, Santa Cruz, California

WATSON, C., SWANSON, M. L., HOLLAND, R., WADE, D. AND SMITH, T. - 1985

Conceptual floodway treatment and landscape management plan for the proposed Laguna Creek Business Park, Sacramento County, California. Report prepared for *McCuen & Steele, Developments and Investments* and submitted to the *Sacramento County Planning Department*.

SWANSON, M. L. AND WILLIAMS, P. B. - 1986

Watershed processes and wetland sedimentation in five coastal basins in Sonoma County, California. Report submitted to the *California Coastal Conservancy*.

SWANSON, M. L. - 1986

Riparian enhancement and sediment management plan for Lower Willow Creek in Sonoma County, California. Report prepared for the *California Department of Parks and Recreation*.

SWANSON, M. L. AND VANDIVERE, W. - 1986

San Mateo Creek Feasibility Study - hydrology and flooding. Report prepared for the *City of San Mateo Parks and Recreation Department*.

WILLIAMS, P. B. AND SWANSON, M. L. - 1987

Tijuana Estuary

Enhancement Hydrologic Analysis, a report prepared for the *San Diego State University Foundation* and the *California State Coastal Conservancy*.

WILLIAMS, P. B., SWANSON, M. L. AND THIEKE, R. - 1987

Tidal hydrodynamics of the Tijuana Estuary, technical report submitted to the *San Diego State University Foundation* and the *California State Coastal Conservancy*.

SWANSON, M. L. - 1987

Analysis of proposed channelization of Mission Creek in Santa Barbara. Report prepared for the *Mission Creek Task Force* and the *California State Coastal Conservancy*.

SWANSON, M. L. - 1987

Proposed revision to the FEMA floodway designation in downtown Santa Cruz, California. Report submitted with technical appendices to the *Federal Emergency Management Agency* on behalf of the *City of Santa Cruz*.

SWANSON, M. L. AND FISHBAIN, L. 1987

Analysis of possible flood control solutions on San Mateo Creek, California. Report prepared for the *City of San Mateo Public Works Department*.

SWANSON, M. L. AND KRAFT, S. - 1988

Subsurface geophysical investigation of bedrock below the mouth of Pescadero Creek, San Mateo County, California; report prepared for the *California Department of Parks and Recreation*.

SWANSON, M. L. AND WILLIAMS, J. G. - 1988

Field survey report on the Pescadero Marsh Natural Preserve; a report for *California Department of Parks and Recreation*.

SWANSON, M. L. AND WILLIAMS, P. B. - 1988

San Mateo Creek feasibility study channel treatment alternatives; a report prepared for the *City of San Mateo*.

SWANSON, M. L. - 1988

Preliminary assessment of wetlands management for three central valley natural preserve sites, a report prepared for the *Romburg Tiburon Center for Environmental Studies* under contract with the *California Department of Fish and Game Region II office*.

SWANSON, M. L. - 1988

The Soquel Creek flood protection alternatives study, a report prepared for the *Santa Cruz County Planning Department*.

STANLEY, S. AND SWANSON, M. L. - 1989

The Mission Creek feasibility study: natural channel alternatives, Santa Barbara, California; a report submitted to the *Mission Creek Alternatives Task Force*, the *City of Santa Barbara*, and the *California Resources Agency - Department of Water Resources*.

SWANSON, M. L., BRADLEY, N. E., LYONS, K. AND J. STANLEY - 1989

The San Lorenzo River Enhancement Plan. Plan submitted to the *City of Santa Cruz River Restoration Committee* and the *California State Coastal Conservancy*.

SWANSON, M. L. AND MARANGIO, M. - 1989

The Pajaro River - Santa Cruz Long-toed Salamander Survey. Report submitted to the *County of Santa Cruz*.

SWANSON, M. L. - 1989

Geomorphology and hydrology impacts of routine stream maintenance practices in Santa Barbara County, California; a report submitted to the *County of Santa Barbara Department of Environmental Review* as part of the administrative program environmental impact report.

SWANSON, M. L. - 1989

The San Lorenzo River Enhancement Plan. Plan for biological enhancement on the Lower San Lorenzo River, a report prepared for the *City of Santa Cruz* and the *California State Coastal Conservancy*.

SWANSON, M. L. - 1991

The Pajaro River Corridor Enhancement Plan; a report submitted to the *Santa Cruz County Board of Supervisors* and the *California State Coastal Conservancy*.

SWANSON, M. L. AND HART, J. – 1994

The Cosumnes River Preserve Hydrologic Analysis of Planned Restoration from Interstate 5 to Twin Cities Road Crossing. Report prepared for *The Nature Conservancy*.

SWANSON, M. L. – 1994

Moro Cojo Slough Management and Enhancement Plan: Hydrology and Geomorphology of Existing Conditions Report. Report prepared for the *Monterey County Planning Department and the California State Coastal Conservancy*.

SWANSON, M. L. - 1994

Hydrologic Enhancement Plan for a Portion of Kirker Creek, Contra Costa County. Report prepared for application Corps File No. 200784E76.

HANES, W. T. AND SWANSON, M. L. - 1996

Upper Truckee River and Wetlands Restoration Project Hydrology and Geomorphology Sections. Report prepared for the *California Tahoe Conservancy*.

SWANSON, M. L. – 1997

Gaviota Creek Geomorphic Monitoring and Riparian Restoration Study, a report submitted to the *California Department of Parks and Recreation*, Channel Coast District, Santa Barbara, California.