David L. Mayer, Ph.D.

President / Principal Scientist

Education

Ph.D. Fisheries and Quantitative Sciences, University of Washington, 1973
M.S.C. Environmental Biology, California State University, Hayward, 1970
B.A. Biology and Chemistry, California State University, San Jose, 1965

Experience

Dr. Mayer has extensive experience in marine, estuarine, and freshwater environmental studies. He directed and provided overview of entrainment studies for two full-scale (100 mgd) desalination projects in Southern California and one pilot desalination project in San Francisco Bay. Dr. Mayer provided expert witness testimony before the Santa Ana and San Diego Regional Water Quality Control Board hearings during the National Pollutant Discharge Elimination System (NPDES) permit process for the Southern California desalination facilities. He also provided expert witness testimony before the cities of Huntington Beach and Carlsbad throughout the CEQA process. Both projects were approved by the cities. He directed and provided overview of entrainment and source water studies to assess the effects of candidate desalination projects located in the San Francisco Bay Area. He is currently directing ongoing entrainment studies of the Bay Area Regional Desalination Facility and the recently initiated entrainment and intake screen studies for the Santa Cruz and Soquel Water Districts' pilot desalination facility. NPDES permits were granted to both facilities. Dr. Mayer is assisting West Basin Water District in their efforts to design and permit a demonstration desalination facility in Redondo Beach; and his recently completed research plan to investigate the benefits of wedgewire screen intakes to eliminate impingement and reduce entrainment effects is in the final stages of agency review and comment.
Dr. Mayer specializes in aquatic temperature and flow regimes and their effects on ecological systems beginning with his doctoral research analyzing and modeling the relationships of water temperatures and hydrodynamics in northern Puget Sound aquatic communities. He has participated in the San Francisco Bay/Delta's Interagency Ecological Program's estuarine ecology work team since the group's founding. Dr. Mayer has devoted a majority of his professional career and expertise to studies of the thermal and hydraulic discharge effects of the majority most of California's major utility companies. He has also applied his expertise and experience in research the assessment and problem solving of issues related to the entrainment and impingement effects of marine, estuarine and freshwater water intakes and the location and screening technologies associated with these water intakes.

Dr. Mayer's project results and conclusions, several involving multiple years of research, have been submitted to the State and Regional Water Resources Boards and the California Energy Commission (CEC). In addition to his testimony before the Santa Ana and San Diego Regional Water Quality Control Boards, he has also provided professional testimony before Central Coast, San Francisco, and Los Angeles Water Boards in formal hearings and workshops on the results of aquatic resources impact studies, water quality, and thermal and ecological modeling. He appeared as an expert witness on the biological effects resulting from expansion of the Moss Landing Power Plant.

1975 – Present ***President,*** **Tenera Environmental Inc. Lafayette, California**

Poseidon Resources - Intake and Discharge Effects of the Huntington Beach and Carlsbad Desalination Project

Dr. Mayer designed and directed the yearlong entrainment abundance and entrainment survival studies for the Poseidon's Huntington Beach and Carlsbad Desalination Projects. He collaborated with Scripps professors Drs. Jenkins and Graham and the potential effects of the facilities' hypersaline discharges. He provided expert witness

testimony, which ultimately led to the issuance of NPDES permits and project approvals by cities of Huntington Beach and Carlsbad.

Marin Municipal Water District – Entrainment Effects of a Pilot Desalination Plant

Dr. Mayer designed and directed studies for determining entrainment effects of a pilot desalination facility to be used to estimate effects of a full-scale facility. He also designed source water studies, mainly for assessing effects to Pacific herring.

Moss Landing, Morro Bay, Huntington Beach, Encina, Diablo Canyon, Potrero, South Bay, Scattergood, Haynes, Alamitos, Redondo Beach, El Segundo, Harbor, San Onofre, Honolulu, Kahe, Waiau, Cabras (Guam) power plant entrainment and impingement investigations.

Dr. Mayer designed and directed entrainment and impingement studies at the majority of California's power plants, and power plants in Hawaii and Guam in response to the recent Clean Water Act 316(b) Phase II Rule and the California Energy Commission's Application for Certification of new generating units.

Diablo Canyon, San Luis Obispo County, PG&E Diablo Canyon Power Plant

Dr. Mayer designed and directed the ongoing Diablo Canyon thermal effluent studies of discharge water effects on natural populations and habitats of the surrounding area. These studies incorporate *in situ* temperature recording instruments; the construction of a preliminary predictive mathematical model; a 1:75 scale hydraulic model at the University of California, Richmond Hydraulic Field Station; a final three-dimensional computer simulation of the operating prototype; and intertidal and subtidal observations of the distribution and abundance of fishes, invertebrates, and algae.

The study represents California's longest and most comprehensive study of discharge effects on marine organisms. In addition to this ongoing study that began in 1975, he is currently directing discharge effects studies for ConocoPhillips in San Pablo Bay, Mirant Corporation in Antioch, Pittsburg and Potrero California, and recently completed a highly detailed study of Dynergy's South San Diego Bay Power Plant for the San Diego Regional Water Quality Control Board. In conjunction with other studies of repowering this facility, Dr. Mayer consulted with the power plant's former owner Duke Energy of North America on the feasibility and potential impacts of using the offshore international discharge located at the Mexican American border to discharge to rerouting the plant's in-San-Diego-Bay discharge to the offshore diffuser.

Expert Witness Testimony

Dr. Mayer conducted water quality modeling efforts in assessment of EBMUD's planned water diversions and prepared expert testimony of the plaintiff's water quality modeling evidence. The water contract was upheld and environmental assessments were continued under the authority of a court-appointed Special Master. Dr. Mayer provides expert witness testimony as part of the NPDES permit renewal process, the California Energy Commission's Application for Certification process, and during hearings before city councils. He has also received additional EPA training and certification in the use and interpretation of the EPA's QUAL-2e and is familiar with other commonly employed thermal and hydraulic models, including USFWS IFIM series models and the Better model.

1973 – 1975 ***Senior Biologist,*** **Marine Biological Consultants, Costa Mesa, California**

Designed and conducted studies for compliance with California State Thermal Plan for the Control of Temperature in Inland and Marine Waters – Southern California Edison

Selected Publications and Technical Reports

Steinbeck, J., J. Hedgepeth, P. Raimondi, G. Cailliet, and David Mayer. 2007. Assessing power plant cooling water intake system entrainment impacts. California Energy Commission Consultant Report, CEC-700-2007-010, 130 pages.

Tenera Environmental. 2006. Draft Marin Municipal Water District Desalination Facility Intake Effects. Prepared for URS Corporation, Oakland, CA. **Contributor.**

Tenera Environmental. 2006. ConocoPhillips Technology Installation and Operation Plan. Prepared for ConocoPhillips, Rodeo, CA. **Contributor.**

Tenera Environmental. 2005. Huntington Beach Desalination Facility Intake Effects Assessment. Prepared for Poseidon Resources Corporation. August 2005. **Contributor.**

Tenera Environmental. 2005. Carlsbad Desalination Facility Feedwater Intake Effects Assessment. Prepared for Poseidon Resources Corporation. November 2005. **Contributor.**

Professional Affiliations

Estuarine Ecology Team of the Sacramento/San Joaquin Interagency Ecological Program, American Society of Naturalists, Western Society of Naturalists, Pacific Fisheries Biologists, American Institute of Fisheries Research Biologists