



City of Antioch – Witness Statement of Qualifications

PHILLIP L. HARRINGTON

Director of Capital Improvements and Water Rights, City of Antioch

Years of Experience: 29

Education

Degree of Bachelor of Science, University of California, Berkeley, College of Engineering

Professional Affiliations

Professional Engineer in Civil Engineering, State of California, No. 38215

Past President, American Public Works Association, Northern California Chapter

Related Experience

Mr. Harrington has worked for over 29 years as an Civil Engineer in various Public Works agencies including: Alameda County Flood Control and Water Conservation District, Contra Costa County Flood Control and Water Conservation District, and presently with the City of Antioch as the former Director of Public Works and now Director of Capital Improvements and Water Rights. Mr. Harrington has represented the City of Antioch recently in the Delta Vision Blue Ribbon Task Force process, Senator Simitian's Delta work groups (SB 12), Bay Delta Conservation Plan, and the Delta Protection Commission.



SUSAN C. PAULSEN

Vice President and Senior Scientist, Flow Science Incorporated

Years of Experience

16

Education

Ph.D. Environmental Engineering Science, California Institute of Technology, 1997

M.S. Civil Engineering, California Institute of Technology, 1993

B.S. Civil Engineering (with honors), Stanford University, 1990

Professional Affiliations

Registered Professional Engineer in California (C66554)

Key Qualifications

Dr. Paulsen has been employed at Flow Science since 1997, where she has project responsibility for work involving environmental fate and transport. Dr. Paulsen has particular expertise in the analysis of fate, transport, and water quality in estuarine systems, including the San Francisco Bay-Delta system, where she developed a unique fingerprinting method for the analysis of mixing patterns and the sources of salinity in the Delta. At Flow Science she has been involved in projects combining hydrodynamics, aquatic chemistry, and the environmental fate of various constituents. Dr. Paulsen also oversees water quality regulatory and policy analysis for Flow Science.

Experience

Dr. Paulsen has designed and implemented field studies in reservoir, river, estuarine, and ocean environments using both dye and elemental tracers to evaluate the impact of treated wastewater, thermal, and agricultural discharges on receiving waters and drinking water intakes. Dr. Paulsen has expertise designing and managing modeling studies to evaluate transport and mixing, including the siting and design of diffusers, and she has conducted water quality analyses for storm water runoff, NPDES permitting, irrigation, and wastewater and industrial process water treatment facilities.

Dr. Paulsen has designed studies utilizing the Fischer Delta Model (FDM), three-dimensional CFD modeling, longitudinal dispersion modeling, and Monte Carlo modeling to evaluate water quality impacts, to develop proposed NPDES permit limits, and to analyze and develop TMDLs. She has designed and implemented tracer and/or modeling studies for a number of agencies including Contra Costa Water District, CALFED, DWR, Irvine Ranch Water District, and the Sacramento Regional County Sanitation District. Dr. Paulsen has also managed and designed studies to investigate the disposal of brines from salt production and reverse osmosis (RO) facilities, and she has participated in several intensive multi-disciplinary studies of the fate and transport of both organic and inorganic pollutants, including DDT, copper, and selenium, in surface and ground waters and sediments. Dr. Paulsen has also studied the use of indicator bacteria as water quality objectives and the behavior of bacteria in the environment.

Dr. Paulsen has extensive expertise with water quality regulation in California and served as primary author for a comprehensive review of the administrative record of the Los Angeles Basin Plan. She has worked on temperature compliance models, NPDES permitting, permit compliance, master planning and EIR/EIS processes, and TMDL development. She has expertise regarding the importance of atmospheric deposition, soil erosion, and wildfires on storm water quality, the development of numeric limits for storm flows, and the use of indicator bacteria as a measure of water quality. Dr. Paulsen has also provided testimony to the California State Water Resources Control Board and Regional Boards in water rights and permitting issues, has spoken extensively on regulatory issues, and currently serves on the State Board's Sediment Quality Objective Advisory Committee.

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Matthew L. Emrick (Attorney)

Matthew Emrick has practiced law in California for 19 years. He is presently a principle in the law firm of The Law Offices of Matthew Emrick.

Matthew has broad expertise in both water rights and water quality. Matthew has represented both public agency and private clients on water rights and water quality matters throughout California for over 18 years. Matthew is a frequent lecturer on water rights and water-related issues.

Matthew's experience and knowledge relevant to this proceeding includes the following:

- Special water counsel to the City of Antioch. Matthew has participated in the Delta Vision process and is involved on the City's behalf in the Bay-Delta Conservation Plan process. Matthew has also assisted the City regarding Delta related projects such as the Frank's Tract and Two-Gates Projects.
- Matthew has extensive knowledge of historic water diversions from the Delta and its tributaries as well as knowledge of historic salinity conditions in the Delta. Matthew has conducted extensive research into the historic salinity conditions in the Delta from 1860 to 1930.
- Matthew contributed to Contra Costa Water District's "Historical Fresh Water and Salinity Conditions in the Western Sacramento-San Joaquin Delta and Suisan Bay."

Matthew is admitted to the California Bar (1990). His education includes a B.A. with great distinction San Jose State University and a J.D. from the University of California, Hasting College of Law (1990). Matthew practices in both State and Federal Court.



ERICSON JOHN LIST

Principal Consultant, Flow Science Incorporated and *Emeritus* Professor of Environmental Engineering Science, California Institute of Technology, Pasadena, California.

Years of Experience

45

Education

Ph.D. Applied Mechanics and Mathematics - California Institute of Technology, 1965

M.E. (Civil Engineering) - University of Auckland, New Zealand, 1962

B.Sc. (Mathematics) - University of Auckland, New Zealand, 1962

B.E. (First Class Honors) – University of Auckland, New Zealand, 1961

Professional Affiliations

Professional Civil Engineer in the States of California (C 36791), South Carolina (20646)

Florida (57786), North Carolina (027270), Nevada (015627), Georgia (028604)

Life Member and Fellow of American Society of Civil Engineers

Consulting Engineers and Land Surveyors of California and ACEC South Carolina

U.S. National Science Foundation Award for Special Creativity, 1982

Who's Who in America and Who's Who in Engineering

Key Qualifications

Dr. List was Professor of Environmental Engineering Science at the California Institute of Technology between 1969 and 1997. He joined the faculty at Caltech in 1969 as an Assistant Professor, after spending three years as a lecturer and senior lecturer at the University of Auckland. For the period of 1980-1985, he was Executive Officer of Environmental Engineering Science at Caltech. He also held the position of editor of the *Journal of Hydraulic Engineering*, American Society of Civil Engineers, from 1984 to 1989. Since 1997 he has been Principal Consultant at Flow Science Incorporated.

Related Experience

Professor List has consulted with more than 800 industrial organizations, consulting engineers and governmental agencies, including Southern California Edison, Chevron, IBM, Exxon, AstraZeneca, City and County of San Francisco, City of Los Angeles, City of Seattle, City of San Diego, City and County of Honolulu, Southern California Metropolitan Water District, Southern Nevada Water Authority, Los Angeles, Orange County and Sacramento Sanitation Districts. He has authored reports in the following areas of work: brine disposal, coastal ocean mixing, ICP-MS tracer analysis, power plant cooling systems, wastewater diffusers, dredge spoil disposal, river dispersion, reservoir modeling, reservoir destratification and mixing, well testing, renovation and failure analysis, pulsation control and waterhammer protection, pipeline failure, groundwater mass balance, pump wetwell design, acoustic resonance in piping systems, particle coagulation and sedimentation, fate and transport of DDT, arsenic, chromium and perchlorate.

Professor List is co-author of the texts *Mixing in Inland and Coastal Waters* (Academic Press, 1979), *Turbulent Buoyant Jets and Plumes* (Pergamon Press, 1983), and the award-winning *Handbook of Ground Water Development* (Wiley, 1990). He is the author or co-author of 40 scientific publications. Since its establishment in 1983 by Dr. List, Flow Science Incorporated has successfully completed more than 1,000 contracts.