

## Item #1b

### **KENNETH C. SCHIFE, Deputy Director**

#### **EDUCATION:**

MS, Biology, California State University, Long Beach, 1988

BS, Biology, California State University, San Diego, 1984

#### **AREAS OF EXPERTISE:**

Mr. Schiff is SCCWRP's Deputy Director and is responsible for helping manage the day-to-day operations, as well as developing the long-term vision of the research agency. His duties include supervision of senior level staff, some of which comprise the Senior Scientists retained for SCCWRP's Emerging Research Department that focuses on exploring the newest elements of the agency's research plan. His duties also include management of large projects that cut across several scientific disciplines and agency departments, such as southern California Regional Monitoring, Total Maximum Daily Loads (TMDLs), and watershed research. Regional Monitoring is a collaborative, integrated study consisting of more than 60 organizations whose goal is to assess the environmental health of the southern California Bight. More than 1,000 samples are collected from Point Conception past the US-Mexico International Border periodically and include elements of coastal ecology (sediment chemistry, sediment toxicity, fish and invertebrate communities, fish tissue bioaccumulation), shoreline microbiology (fecal indicator bacteria, human viruses), and water quality (physical water column structure, wastewater and stormwater plume dynamics).

Ken has worked on numerous TMDL-related projects throughout southern California. These projects cover a variety of constituents and waterbodies including bacteria, nutrients, trace metals, and pesticides in freshwater, estuarine, and marine habitats. All of these projects have been used by watershed stakeholders and regulators to develop more technically rigorous TMDLs by quantifying pollutant sources, assessing impacts to beneficial uses, improving linkage analysis and deriving appropriate numeric targets.

Ken has also been instrumental in developing watershed-based research and creating the Watershed Department within SCCWRP. In large part because of his extensive experience and focused research over the last 15 years, SCCWRP has developed a regional, statewide, and national reputation for studies on urban dry and wet weather runoff. Recent studies include assessing efficient and effective runoff monitoring designs for estimating stormwater concentrations and loadings, measuring fate and transport of stormwater plumes and their toxicants in receiving waters, and assessing the impacts of stormwater discharges to habitat and biota. Ken was essential in the formation of the Southern California Stormwater Monitoring Coalition, a partnership of the 11 largest municipal stormwater permittees and regulatory agencies throughout Southern California. The mission of the Stormwater Monitoring Coalition is to conduct the research necessary to improve stormwater monitoring and develop the tools and information necessary to make informed decisions regarding stormwater management.

Before coming to SCCWRP, Ken spent time teaching marine biology and assisting graduate students and interns at the State University. He has also served on project teams with the California Department of Fish and Game, National Marine Fisheries Service/Scripps Institute of Oceanography, Channel Islands National Park Service, University of Southern California, and the Southern California Ocean Studies Consortium, in addition to consulting in private industry.

## Item #1b

### **PROFESSIONAL EXPERIENCE:**

Deputy Director, Southern California Coastal Water Research Project

1995 to Present

Instructor, California State University, San Marcos

1995 to 1996

Senior Scientist, Kinnetic Laboratories, Incorporated

1991 to 1995

Assistant Environmental Specialist, Southern California Coastal Water Research Project

1988 to 1991

Marine Biologist, Channel Islands National Park Service

1987 to 1988

Teaching Assistant/Intern Coordinator, California State University, Long Beach

1985 to 1988

Biologist Intern, State of California Department of Fish and Game

1984 to 1985

Independent Marine Technician, 1984 to 1988

Scripps Institute of Oceanography/National Marine Fisheries Service

USC/Harbors Environmental Project

Los Angeles County Sanitation Districts

Southern California Ocean Studies Consortium

Molecular Ecology Institute

### **HONORS AND AWARDS:**

Water Quality Award for Research – Los Angeles Regional Water Quality Control Board

Academic Scholarship - Southern California Ocean Studies Consortium

Academic Research Grant - Los Angeles County Department of Fish and Game

Academic Honors - California State University, Long Beach

Deans' List - California State University, Long Beach and San Diego

Outstanding Intern Award - California State University, Long Beach

### **PROFESSIONAL SOCIETIES:**

Water Environment Federation

National Society of Environmental Toxicology and Chemistry

Southern California/Southwest Chapter

Southern California Association of Marine Invertebrate Taxonomists

Southern California Academy of Sciences

### **PUBLICATIONS:**

Schiff, Kenneth, D. Diehl and A. Valkirs. 2004. Copper emissions from antifouling paint on recreational vessels. *Marine Pollution Bulletin* 48:371-377.

Schiff, K. and M. Sutula. 2004 Organophosphorus Pesticides in Stormwater Runoff from Southern California (USA) *Environmental Toxicology and Chemistry*. 23:1815-1821

## Item #1b

- Kamer, Krista, P. Fong, R. Kennison and K. Schiff. 2004. Nutrient limitation of macroalga *Enteromorpha intestinalis* collected along a resource gradient in a highly eutrophic estuary. *Estuaries* 27:201-208.
- Kamer, K., P. Fong, R. Kennison, and K. Schiff. 2004. The relative importance of sediment and water column supplies of nutrients to the growth and nutrient content of the green macroalga *Enteromorpha intestinalis* along an estuarine resource gradient. *Aquatic Ecology* 38:45-56
- Ackerman, D. and K. Schiff. 2003. Modeling stormwater mass emissions to the southern California Bight. *Journal of the American Society of Civil Engineers* 129:308-323
- Bay, S., B. Jones, K. Schiff, and L. Washburn. 2003. Water quality impacts of stormwater discharges to Santa Monica Bay. *Marine Environmental Research* 56:205-223
- Schiff, K. and S. Bay. 2003. Impacts of stormwater discharges on the nearshore benthic environment of Santa Monica Bay. *Marine Environmental Research* 56:225-243
- Schiff, K., J. Morton, and S. Weisberg. 2003. Retrospective evaluation of shoreline water quality along Santa Monica Bay beaches. *Marine Environmental Research* 56:245-253
- Lu, R., R. Turco, K. Stolzenbach, S. Friedlander, C. Xiong, K. Schiff, and L. Tiefenthaler. 2003. Dry deposition of airborne contaminants on the Los Angeles Basin and adjacent waters. *Journal of Geophysical Research* 108, No. D2, 4074.
- Schiff, K., S. Bay, and D. Diehl. 2003. Stormwater toxicity in Chollas Creek and San Diego Bay. *Environmental Monitoring and Assessment* 81:119-132.
- Ackerman, D., K. Schiff, H. Trim, and M. Mullin. 2003. Characterization of water quality in the Los Angeles River. *Bulletin of the Southern California Academy of Sciences* 102:17-25
- Schiff, K., S. Weisberg, and V. Raco-Rands. 2002. Inventory of ocean monitoring in the Southern California Bight. *Environmental Management* 29:871-876
- Schiff, K., S. Bay, and C. Stransky. 2002. Characterization of stormwater toxicants from an urban watershed to freshwater and marine organisms. *Urban Water* 4:215-227
- Leecaster, M., K. Schiff, and L. Tiefenthaler. 2002. Assessment of efficient sampling designs for urban stormwater monitoring. *Water Research* 36:1556-1564
- Schiff, K. and P. Kinney. 2001. Tracking sources of bacterial contamination in stormwater discharges from Mission Bay, California. *Water Environment Research* 73:534-542
- Schiff, K., S. Bay, M. J. Allen, and E. Zeng. 2001. Southern California. *Marine Pollution Bulletin* 41:76-93
- Schiff K., J. Dorsey, and S. Weisberg. 2001. Marine microbiological monitoring in the southern California Bight. *Environmental Management* 27:149-157
- Schiff, K., S. Bay, M. J. Allen, and E. Zeng. 2000. Chapter 24. Southern California. Pp 385-404 *In: C. Sheppard (ed.) Seas at the Millennium.* Elsevier Press, London, UK

## Item #1b

- Schiff, K. and M. J. Allen. 2000. Chlorinated hydrocarbons in livers of flatfishes from the southern California Bight. *Environmental Toxicology and Chemistry* 191:559-1565
- Schiff, K. 2000. Sediment chemistry on the mainland shelf of the Southern California Bight. *Marine Pollution Bulletin*. 40:267-276
- Noble, R., J. Dorsey, M. Leecaster, V. Orozco-Borbon, D. Reid, K. Schiff, and S. Weisberg. 2000. A regional survey of the microbiological water quality along the shoreline of the southern California bight. *Environmental Monitoring and Assessment* 64:435-447
- Schiff, K. and S. Weisberg. 1999. Iron as a reference element for determining trace element enrichment in Southern California coastal shelf sediments. *Marine Environmental Research* 48:161-176
- Skinner, L., A. dePeyster, and K. Schiff. 1998. Developmental effects of urban stormwater in San Diego County, California in medaka (*Oryzias latipes*) and inland silverside (*Menidia beryllina*). *Archives of Environmental Toxicology* 37:227-235
- Bay, S., K. Schiff, D. Greenstein, and L. Tiefenthaler. 1998. Stormwater runoff effects in Santa Monica Bay: Toxicity, sediment quality, and benthic community impacts. Pp. 900-921. In: Magoon, O., H. Converse, B. Baird, and M. Miller-Henson (eds.), California and World Ocean 97. American Society of Civil Engineers, Reston, VA
- Schiff, K. and M. Stevenson, 1996. San Diego Regional Storm Water Monitoring Program; Contaminant inputs to coastal wetlands and bays. *Bulletin Southern California Academy of Sciences* 95: 7 -16.
- Schiff, K., J. Anderson, D. Reish, and S. Bay, 1992. A comparative evaluation of produced water toxicity. Pp 199 - 207, In: J.P. Ray and F.R. Engelhardt (eds.), Produced Water: Technical/Environmental Issues and Solutions. Plenum Press, New York, NY..
- Schiff, K. 1989. The effect and accumulation of sediment-adsorbed DDT in the polychaete, *Capitella capitata*. *Bulletin of Marine Science* 48:594
- Schiff, K., 1998. The effect and accumulation of sediment-adsorbed DDT in the polychaete, *Capitella capitata*. Thesis, California State University, Long Beach, CA.

### TECHNICAL REPORTS:

- Cooper, L., K. Schiff and R. Smith. 2004. [Standardized data exchange formats for the stormwater monitoring coalition](#). Technical Report No. 421. Southern California Coastal Water Research Project, Westminster, CA.
- Gossett, R., D. Renfrew and K. Schiff. 2004. [Stormwater monitoring coalition laboratory guidance document](#). Technical Report No. 420. Southern California Coastal Water Research Project, Westminster, CA.

## Item #1b

Bernstein, B. and K. Schiff. 2004. [Model monitoring program for municipal separate storm sewer systems in southern California](#). Technical Report No. 419. Southern California Coastal Water Research Project, Westminster, CA.

Stein, E., D. Ackerman and K. Schiff. 2003. [Watershed-based sources of contaminants to San Pedro Bay and Marina del Rey: Patterns and trends](#). Technical Report No. 413. Southern California Coastal Water Research Project, Westminster, CA.

Schiff, K., D. Diehl, A. Valkirs. 2003. Copper emissions from antifouling paint on recreational vessels. Technical Report No. 405. Southern California Coastal Water Research Project, Westminster, CA.

Kamer, Krista, K.C. Schiff, R.L. Kennison, P. Fong. 2002. Macroalgal nutrient dynamics in Upper Newport Bay. Technical Report No. 365. Southern California Coastal Water Research Project, Westminster, CA.

Bernstein, B., and K. Schiff. 2001. Stormwater research needs in Southern California. Southern California Coastal Water Research Project Technical Report No. 358. Southern California Coastal Water Research Project, Westminster, CA

Schiff, K., J. Brown and S. Weisberg. 2001. Model monitoring program for large ocean discharges in southern California. Southern California Coastal Water Research Project Technical Report No. 357. Southern California Coastal Water Research Project, Westminster, CA

Stolzenbach, K., R. Lu, C. Xiong, S. Friedlander, R. Turco, K. Schiff, L. Tiefenthaler. 2001. Measuring and modeling of atmospheric deposition on Santa Monica Bay and the Santa Monica Bay Watershed. Southern California Coastal Water Research Project Technical Report No. 346. Southern California Coastal Water Research Project, Westminster, CA

Tiefenthaler, L., K. Schiff, S. Bay, D. Diehl. 2001. Characteristics of parking lot runoff produced by simulated rain. Southern California Coastal Water Research Project Technical Report No. 343. Southern California Coastal Water Research Project, Westminster, CA

Schiff, K., Bay, S., Diehl, D. 2001. Stormwater toxicity in Chollas Creek and San Diego Bay. Southern California Coastal Water Research Project Technical Report No. 340. Southern California Coastal Water Research Project, Westminster, CA.

Leecaster, M., K. Schiff, and L. Tiefenthaler. 2001. Assessment of efficient sampling designs for urban stormwater monitoring. Pp 45-51. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1999-2000. Southern California Coastal Water Research Project, Westminster, CA.

Tiefenthaler, L., K. Schiff, and M. Leecaster . 2001. Temporal variability patterns of stormwater concentrations in urban stormwater runoff. Pp 52-62. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1999-2000. Southern California Coastal Water Research Project, Westminster, CA.

Schiff, K. and L. Tiefenthaler. 2001. Anthropogenic versus natural mass emissions from an urban watershed. Pp 63-70. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1999-2000. Southern California Coastal Water Research Project, Westminster, CA.

## Item #1b

Schiff, K., S. Bay, and C. Stransky. 2001. Characterization of stormwater toxicants from an urban watershed to freshwater and marine organisms. Pp 71-84. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1999-2000. Southern California Coastal Water Research Project, Westminster, CA.

Schiff, K. and P. Kinney. 2001. Tracking sources of bacterial contamination in stormwater discharges from Mission Bay, California. Pp 85-93. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1999-2000. Southern California Coastal Water Research Project, Westminster, CA.

Schiff, K., S. Weisberg, and V. Raco-Rands. 2001. Inventory of ocean monitoring in the Southern California Bight. Pp 212-217. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1999-2000. Southern California Coastal Water Research Project, Westminster, CA.

Noble, T., J. Dorsey, M. Leecaster, V. Orozco-Borbon, D. Reid, K. Schiff, and S. Weisberg. 2001. A regional survey of the microbiological water quality along the shoreline of the Southern California Bight. Pp 218-225. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1999-2000. Southern California Coastal Water Research Project, Westminster, CA.

Noble, R., M. Leecaster, D. Moore, K. Schiff, and S. Weisberg. 2001. Relationships among bacterial indicators during a regional survey of microbiological water quality along the shoreline of the Southern California Bight. Pp 241-247. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1999-2000. Southern California Coastal Water Research Project, Westminster, CA.

Schiff, K., J. Morton, and S. Weisberg. 2001. Retrospective evaluation of shoreline water quality along Santa Monica Bay beaches. Pp 248-252. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1999-2000. Southern California Coastal Water Research Project, Westminster, CA.

Schiff, K., D. Ackerman, J. Davis, and R. Fairey. 2000. Pollutant mass emissions to the coastal ocean of California: Initial Estimates and Recommendations to Improve Stormwater Emission Estimates. Final Report to the State Water Resources Control Board, Sacramento, CA. Southern California Coastal Water Research Project Technical Report No. 335. Southern California Coastal Water Research Project, Westminster, CA.

Schiff, K., and K. Kamer. 2000. Nutrient Comparison of Nutrient Inputs, Water Column Concentrations, and Macroalgal Biomass in Upper Newport Bay, California. Final Report to the Santa Ana Regional Water Quality Control Board, Riverside, CA. Southern California Coastal Water Research Project Technical Report No. 332. Southern California Coastal Water Research Project, Westminster, CA.

Schiff, K., S. Bay, and C. Stransky. 2000. Characterization of stormwater toxicants from Chollas Creek, San Diego. Southern California Coastal Water Research Project Technical Report No. 333. Final Report to the San Diego Regional Water Quality Control Board, San Diego, CA. Southern California Coastal Water Research Project, Westminster, CA.

## Item #1b

Schiff, K., J. Brown, M. Leecaster, and S. Weisberg. 1999. Model Monitoring Program: Evaluation of existing monitoring designs. Southern California Coastal Water Research Project Technical Report No. 316. Southern California Coastal Water Research Project, Westminster, CA.

Schiff, K. 1999. Sediment chemistry on the mainland shelf of the Southern California Bight. Pp 76-88. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1997-1998. Southern California Coastal Water Research Project, Westminster, CA.

Schiff K., J. Dorsey, and S. Weisberg. 1999. Marine microbiological monitoring in the southern California Bight. Pp 179-186. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1997-1998. Southern California Coastal Water Research Project, Westminster, CA.

Schiff, K. and R. Gossett. 1998. Southern California Bight 1994 Pilot Project: III Sediment Chemistry. Southern California Coastal Water Research Project. Westminster, CA

Allen, M.J., S. Moore, K. Schiff, S. Weisberg, D. Deiner, J. Stull, A. Groce, J. Mubarak, C. Tang, and R. Gartman. 1998. Southern California Bight 1994 Pilot Project: IV Demersal Fishes megabenthic invertebrates. Southern California Coastal Water Research Project. Westminster, CA

Schiff, K. 1997. Review of existing stormwater monitoring programs for estimating bight wide mass emissions from urban runoff. Pp 44-56. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1996. Southern California Coastal Water Research Project, Westminster, CA.

Schiff, K. and M. J. Allen. 1997 Bioaccumulation of chlorinated hydrocarbons in livers of flatfishes from the southern California Bight. Pp 57-67. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1996. Southern California Coastal Water Research Project, Westminster, CA.

Schiff, K. and S. Weisberg. 1997. Iron as a reference element for determining trace element enrichment in Southern California coastal shelf sediments. Pp 68-78. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1996. Southern California Coastal Water Research Project, Westminster, CA.

Bay, S., and K. Schiff. 1997. Impacts of stormwater discharges on the nearshore environment of Santa Monica Bay. Pp. 105-121. In: S. Weisberg and D. Hallock (eds.), Southern California Coastal Water Research Project Annual Report 1996. Southern California Coastal Water Research Project, Westminster, CA.

Jones, B, L, Washburn, S. Bay, and K. Schiff, 1996. Study of the Impacts of stormwater discharges on the beneficial uses of Santa Monica Bay, 1995-96 Annual Report. Prepared for the Los Angeles County Department of Public Works and the National Resources Defense Council.

Schiff, K. and M. Bergen, 1996. Impact of wastewater on reproduction of *Amphiodia urtica*. pp. 78-84 In: Allen, M. and C. Francisco (eds.), Southern California Coastal Water Research Project 1994-95 Annual Report. Southern California Coastal Water Research Project, Westminster, CA. 144 pp.

## Item #1b

Schiff, K. and P. Kinney, 1996. Mission Bay bacteria contamination study; Wet weather testing and source tracking program. Prepared for the California Coastal Commission and the San Diego County Department of Public Health Services. 39 pp.

Kinnetic Laboratories, Incorporated, 1995. Regional storm water monitoring for San Diego, 1994-1995 wet season. Prepared for the Regional Water Quality Control Board, San Diego Region.

Kinney, P. and K. Schiff, 1995. Evaluation of contaminated sediments from Naval Station Coronado. Prepared for United States Navy, United States Army Corps of Engineers, and the United States Environmental Protection Agency.

Schiff, K., 1995. Evaluation of dredged materials from Marine Corps Base Camp Pendleton, California for beach nourishment. Prepared for United States Navy, United States Army Corps of Engineers, and the United States Environmental Protection Agency.

Schiff, K., P. Kinney, and M. Savoie, 1994. Toxicity reduction evaluation work plan at nine sewage treatment plants, Marine Corps Base Camp Pendleton, California. Prepared for the Regional Water Quality Control Board, San Diego Region.

Schiff, K., 1994. Biological effects of the water-soluble fractions of petroleum products on aquatic organisms. Kinnetic Laboratories Technical Report Series #201-204. Prepared for the Occupational Safety and Health Association, Washington, DC.

Schiff, K., 1994. Mission Bay bacteria contamination study. Prepared for the California Coastal Commission and the San Diego County Department of Public Health Services. 67 pp.

Kinnetic Laboratories, Incorporated, 1994. Regional storm water monitoring for San Diego, 1993-1994 wet season. Prepared for the Regional Water Quality Control Board, San Diego Region.

Schiff, K., 1994. Dewatering effluent characterization program; Santa Clara Pump Station, Mission Bay. Prepared for the Regional Water Quality Control Board, San Diego Region. 10 pp.

Shrake, J. and K. Schiff, 1994. UNOCAL Receiving Water Ocean Monitoring for 1993. For Submission to the State Water Resources Control Board, San Luis Obispo Region. 49 pp.

Kinney, P. and K. Schiff, 1993. Testing Program for Port-Wide Maintenance Dredging. Submitted to the Port of Los Angeles. Kinnetic Laboratories, Incorporated, Carlsbad, CA 247 pp.

Schiff, K. and J. Cross, 1993. Estimates of Ocean Disposal Inputs to the Southern California Bight. Southern California Coastal Water Research Project, Annual Report 1990-1991 and 1991-1992. Long Beach, CA. pp 39-48.

Cross, J., K. Schiff, and H. Schaffer, 1993. Surface Runoff to the Southern California Bight. Southern California Coastal Water Research Project, Annual Report 1990-1991 and 1991-1992. Long Beach, CA. pp 19-28.



## Item #1b

Kinnetic Laboratories, Incorporated, 1993. Environmental design criteria. In: Pier 400 Design Consultants, eds., Pier 400 Dredging and Landfill Project; Design Criteria Report. San Pedro, CA. pp 61-71.

Shrake, J. and K. Schiff, 1993. San Diego Gas and Electric; San Diego South Bay Power Plant Receiving Water Monitoring for 1992-1993. For Submission to the State Water Resources Control Board, San Diego Region. 49 pp.

Cross, J., K. Schiff, and H. Schafer, 1992. Concentrations and mass emissions from the Los Angeles River. Southern California Coastal Water Research Project Annual Report, 1989-1990. Long Beach, CA. pp 25 - 36

Schiff, K. and J. Shrake, 1992. San Elijo Water Pollution Control Facility Intensive Ocean Monitoring Program; 1992 Annual Report. For submission to the State Water Resources Control Board, San Diego Region. 21 pp.

Shrake, J. and K. Schiff, 1992. San Diego Gas and Electric; Encina Power Plant Receiving Water Monitoring for 1991 - 1992. For Submission to the State Water Resources Control Board, San Diego Region. 38 pp.

Anderson, J., K. Schiff, S. Bay, R. Eganhouse, and D. Reish, 1991. An evaluation of produced water toxicity methods. Final Report to the American Petroleum Institute. Southern California Coastal Water Research Project, Long Beach, CA. 61 pp

### **LICENSES AND CERTIFICATES**

U.S. Coast Guard Small Boat Handler  
NAUI Scuba Diver, Research Scuba Diver  
OSHA Enclosed Space Entry Training  
IWSSA Senior Windsurf Instructor  
American Red Cross (CPR, Adv First Aid, Adv Lifesaving, WSI, Offshore Survival)