

Lawrence E. McCrone, Ph.D.
Managing Scientist

Professional Profile

Dr. Lawrence McCrone is a Managing Scientist in Exponent's EcoSciences practice. He specializes in the analysis of the effects of pollution on aquatic organisms. Early in his career, Dr. McCrone focused on assessing the impacts of municipal sewage effluent discharges at more than 100 sites throughout the United States, including the Atlantic and Pacific coasts, Alaska, Hawaii, Puerto Rico, and the Virgin Islands. More recently, his expertise has expanded to evaluating the effects of sediment contamination in marine, estuarine, and freshwater habitats from industrial sources such as pulp and paper mills, wood treatment facilities, chemical processing facilities, mines, smelters, manufacturing facilities, and military bases. He has participated in the conduct of remedial investigations/feasibility studies (RI/FSs) at both aquatic and terrestrial sites, and is well versed in the application of ecological risk assessment methods, especially in the evaluation of ecological effects in aquatic environments through the interpretation of sediment chemistry and toxicity tests. Chemicals that have figured prominently in many of these projects have included polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), dioxins/furans, metals, and organochlorine pesticides. Dr. McCrone has participated in the defense of private clients responding to natural resource damage claims at sites throughout the United States. He has also successfully managed large, multidisciplinary technical support contracts for EPA's Oceans and Coastal Protection Division and Great Lakes National Program Office.

Dr. McCrone has an outstanding reputation as a technical writer. In addition to numerous reports for private clients, he has authored or co-authored guidance documents for both EPA and the Washington State Department of Ecology. Included were several guidance documents on the analysis of the effects of marine sewage discharges on biological communities, a technical scoping document to be used as a guide in developing procedures for implementation of Section 403 ocean discharge permits, a guidance document to be used by agency permit writers in implementing Washington State's Sediment Management Standards, and a guidance document on the design of monitoring plans for sediment investigations.

Dr. McCrone has also served as an expert witness on the effects of bark deposits on marine organisms in the vicinity of log transfer facilities (LTFs) in Alaska.

Academic Credentials and Professional Honors

Ph.D., Biological Oceanography, University of Washington, 1981
M.S., Biological Oceanography, University of Washington, 1974
B.S., Phi Beta Kappa, Zoology, Duke University, 1971

Licenses and Certifications

Hazardous Waste Operations and Emergency Response 40-hour training and 8-hour management and supervisor training; basic first aid and CPR training

Publications

McCrone LE. Effluent disposal without disinfection, Section 301(h) permits as case studies. pp. 35–52. Proceedings, National Science Foundation, Disinfection of Wastewater Effluents and Sludges, State of the Art and Research Needs Conference, Miami, FL, May 7–9, 1984.

Bigham GN, Ginn TC, Soldate AM, McCrone LE. Evaluation of ocean disposal of manganese nodule processing waste and environmental considerations. Prepared for the National Oceanic and Atmospheric Administration, Office of Ocean Minerals and Energy, and the U.S. Environmental Protection Agency, Criteria and Standards Division, Tetra Tech, Inc., Bellevue, WA, 1982.

Project Experience

Remedial Investigation/Feasibility Study (RI/FS)

Participating in the preparation of an RI/FS for the Lower Duwamish Waterway Superfund site in Washington. Included are meetings with a group of potentially responsible parties, negotiations with the regulatory agencies, scoping of field and laboratory studies, and technical review of documents prepared by other consultants.

Managed the sediment investigations conducted as part of an RI/FS at a former pesticide manufacturing facility situated on the lower Willamette River in Oregon. Key issues were defining the nature and extent of sediment contamination, estimating the magnitude of the human health and ecological risks, discriminating historical from ongoing sources, and determining an appropriate remedy.

Provided technical support on various sediment issues to a group of potentially responsible parties conducting an RI/FS for the Portland Harbor Superfund site in Oregon. Key issues were the evaluation of sediment quality using existing data, the design of additional investigations, and commenting on draft guidance documents developed by the Oregon Department of Environmental Quality on the topics of sediment evaluation procedures and source control strategy.

Coordinated production of a remedial investigation report for the area surrounding a former zinc smelter in Oklahoma.

Designed a comprehensive field and laboratory investigation of sediment contamination for an RI/FS of a waterfront timber creosoting facility in Olympia, Washington.

Provided technical guidance to EPA on appropriate sampling and analysis of marine sediments and biota for RI/FSs at three U.S. Navy bases on Puget Sound, Washington.

Ecological Risk Assessment

Evaluated the potential for ecological risks associated with sediment contamination within two creeks and the Delaware River in southeastern Pennsylvania, in an area with numerous industrial facilities.

Evaluated the potential for ecological risks associated with sediment contamination that resulted from releases from a former wood treatment facility on Lake Washington in Renton, Washington.

Analyzed the impacts of municipal sewage effluent discharges at more than 100 sites in the United States, including the Atlantic and Pacific coasts, Alaska, Hawaii, Puerto Rico, and the Virgin Islands.

Provided technical support for an ecological risk assessment at a Superfund site in Montana. Analyzed effects of metals on both aquatic and terrestrial ecosystems.

Analyzed the potential impacts of metals from acid mine drainage on salmonid populations in the Sacramento River, California.

Evaluated the available cause/effect data and models to predict water quality and biological impacts in Puget Sound, Washington.

Evaluated the biological impacts of ocean disposal of manganese nodule processing wastes off the Pacific and Gulf coasts of the United States and off Hawaii.

Sediment Assessment

Provided technical support to a group of public and private entities that were working with the Oregon Department of Environmental Quality to develop a sediment management plan for Portland Harbor on the lower Willamette River.

Provided technical support on contaminated sediment issues at the site of a steel mill situated on the Lower Willamette River in Oregon. Assessments of ecological and human health risks, as well as investigations of the likely sources of the sediment contaminants were included.

Managed the development of a sediment characterization study required by EPA at the site of a chemical manufacturing facility on the Grand Calumet River in East Chicago, Indiana. This multidisciplinary study was designed to investigate links between environmental contamination and impaired beneficial uses, as well as to apportion responsibility for existing conditions in the river among a great diversity of past and present potential sources.

Managed an investigation of sediment quality conditions in the vicinity of a closed kraft pulp mill on Puget Sound, Washington. Supported negotiations with the Washington State Department of Ecology to achieve a no further action determination for this site. In addition, a separate investigation was conducted of the sediments offshore from a former sawmill and wood

treatment facility on an adjacent portion of the site, in anticipation of a pending property transfer. Sediment contamination was shown to be minimal, and the property was successfully transferred to the new owner.

Assessed the likelihood that an industrial client had contributed to sediment contamination within the East Waterway portion of the Harbor Island Superfund site in Seattle, Washington. Also evaluated the need for an expensive dredging project that had been proposed for the area, and the potential for the client's chemical releases to have contributed to the need for sediment remediation.

Managed an investigation of sediment quality conditions in the Duwamish River in Washington in preparation for a maintenance dredging operation.

Evaluated the effects of contaminant releases from chemical processing at a Superfund site in Washington on the water quality and sediment quality of a nearby creek.

Natural Resource Damage Assessment

Managing a contract providing technical support to a major industrial client on natural resource damage issues related to sediment contamination in the Lower Duwamish Waterway in Washington. Field and laboratory investigations have been conducted, and meetings with the natural resource trustees are ongoing to determine an equitable allocation of damages and to scope potential habitat restoration projects.

Analyzed the National Oceanic and Atmospheric Administration's (NOAA's) application of habitat equivalency analysis (HEA) to the assessment of natural resource damages in Commencement Bay and the Lower Duwamish Waterway in Washington.

Compiled data on contaminant concentrations in fish and wildlife, on fish consumption advisories, and on adverse effects in birds for a private client faced with a natural resource damage suit in Michigan.

Participated in the planning for field sampling and laboratory analyses to support an RI/FS conducted in response to a natural resource damage claim at a contaminated lake in upstate New York.

Interpreted concentrations of dioxins in the sediments of Commencement Bay, Washington, in light of regulatory criteria, for a private client faced with a natural resource damage suit.

Compiled biological resource data for a natural resource damage assessment at a Superfund site in Montana.

Contaminated Site Cleanup

Managed a contract providing technical support for the cleanup of a former sawmill and wood treatment facility in Longview, Washington, under Washington State's Model Toxics Control

Act. This project involved both review of historical records regarding past practices as well as field sampling and laboratory investigations of a number of sites at the facility.

Property Assessment

Designed field sampling and laboratory studies of industrial properties fronting on the Duwamish River in Seattle, Washington, and Commencement Bay in Tacoma, Washington. In both cases, the clients were considering the properties for purchase, and the legacy of past practices onsite was a key consideration in the decision on whether to proceed with the transaction. In one case, the investigation revealed numerous environmental problems that had not been detected by the seller's consultant, saving the client from assuming substantial liability.

Conducted an environmental assessment of a 600-acre industrial property considered for purchase by a port in western Washington. Responsible for agency document review, data synthesis, and interpretation.

Analyzed potential contaminant releases from a log-sort yard in Commencement Bay, Washington, by reviewing available sediment and storm water monitoring data.

Regulatory Agency Experience

Served as an environmentalist for the Washington State Department of Ecology in a liaison position in EPA's Office of Puget Sound. Supervised the EPA technical support contractor on the Urban Bay Action Programs, including those in Elliott Bay, Everett Harbor, and Bellingham Bay, Washington. Also served as water quality standards coordinator responsible for revisions to water quality regulations and for drafting new mixing zone guidelines.

Managed projects that provided EPA with technical oversight of remedial design, remedial action, and postremedial action monitoring activities for the Commencement Bay Superfund site in Washington.

Served as project manager for a contract providing technical support to EPA's Oceans and Coastal Protection Division. The work focused on contaminated sediment investigations and remediation, and on regulatory support.

Managed a multidisciplinary program for EPA for 3 years, providing technical assistance on various issues related to Section 301(h) of the Clean Water Act.

Served as deputy project manager for a contract that provided technical support to EPA's Office of Marine and Estuarine Protection. Work focused on issues related to data management, estuarine program support, bioaccumulation analysis, and quality assurance reviews.

Guidance Documents

Co-authored a guidance document for the Washington State Department of Ecology on monitoring plans for sediment investigations.

Managed a project for the Assessment and Remediation of Contaminated Sediments (ARCS) program of EPA's Great Lakes National Program Office. The work focused on providing technical support for the production of a series of guidance documents on contaminated sediments issues and a report to Congress on the ARCS program.

Co-authored several technical guidance documents for EPA on subjects related to analysis of the effects of marine sewage discharges on biological communities.

Co-authored a technical scoping document to be used as a guide in developing procedures for implementation of the Section 403 ocean discharge permitting process, using Puget Sound, Washington, case studies.

Co-authored a guidance document to be used by permit writers in implementing Washington's Sediment Management Standards.

Expert Testimony

Provided expert testimony before representatives of three Alaskan natural resource agencies on the ecological effects of bark deposits in the immediate vicinity of log transfer facilities (LTFs), in support of the permitting of a proposed LTF in Southeast Alaska.