

Peter Shanahan
Hydroanalysis, Inc.

Education

1982	Ph.D.	Environmental Engineering	Massachusetts Institute of Technology
1974	M.S.	Environmental Earth Sciences	Stanford University
1973	B.S.	Civil Engineering	Massachusetts Institute of Technology
1973	B.S.	Earth and Planetary Sciences	Massachusetts Institute of Technology

Professional Experience

1988-date	HydroAnalysis, Inc.
2004	Tufts University
1996-date	Massachusetts Institute of Technology
1981-1988	ERT, Inc. (now ENSR Corporation)
1980	International Institute for Applied Systems Analysis, Laxenburg, Austria
1978-1981	Massachusetts Institute of Technology
1976-1979	Resource Analysis/Camp Dresser & McKee Inc.
1974-1976	Bechtel, Inc.

Dr. Shanahan has directed or been a major contributor to a wide variety of projects involving analysis and computer modeling of environmental water quality, hydrology, and hydraulics. These studies have included engineering analysis and design of water-pollution controls, hazardous waste site remedial actions, flooding and drainage controls, and water-resources development. Dr. Shanahan is an experienced expert witness and has represented clients in courtroom testimony, administrative hearings, negotiations with regulatory agencies, and public meetings. Dr. Shanahan is currently a Senior Lecturer in the Department of Civil and Environmental Engineering at the Massachusetts Institute of Technology, teaching undergraduate and graduate classes and serving as co-leader of the Master of Engineering Program project course.

Ground-Water Hydrology

Dr. Shanahan's experience includes a wide variety of projects involving the assessment and modeling of ground-water hydrology and quality, as well as using models to design remediation measures for contaminated ground water. Example projects include:

Reilly Tar & Chemical Superfund Site, St. Louis Park, Minnesota	Modeled ground-water flow in multiple aquifers affected by coal-tar compounds; developed model for design of gradient and source control wells.
Burkeville, Alabama	Modeled the hydrologic impacts of planned industrial supply well
Baltimore, Maryland	Modified USGS MOC ground-water contaminant transport model to assess DNAPL transport from manufactured gas plant site

Brainerd, Minnesota	Modeled contaminant transport to design ground-water remedy at Superfund site
More than twenty Massachusetts municipalities	Employed ground-water flow models to delineate Massachusetts aquifer protection Zone II

Dr. Shanahan also authored the section on modeling inactive hazardous waste sites in the Handbook on Manufactured Gas Plant Sites published by the Edison Electric Institute.

Hazardous Waste Site Consultation

Dr. Shanahan has served as a consultant on the investigation, remediation, and regulation of Superfund, RCRA, and other hazardous waste sites. Typical assignments include critical review of RI/FS documents, technical evaluation of hydrogeologic and modeling studies, and oversight of technical contractors. Representative past projects include:

Low-Level Radioactive Waste Site, Clark County, Illinois	Served as principal hydrologist for site characterization
Stringfellow Acid Pits, California	Provided consultation to attorney for one of the named site generators
Wells G&H, Woburn, Massachusetts	Managed ground-water remediation task for site Remedial Design/Remedial Action program
Slatersville and Forestdale Reservoirs, Rhode Island	Evaluated potential impact of Superfund sites on proposed water-supply development
Koppers Superfund Site, Galesburg, Illinois	Managed ground-water remediation task for site Remedial Design/Remedial Action program
Reilly Tar & Chemical, Indiana	Developed and negotiated RI/FS work plan

In other project assignments, Dr. Shanahan has assisted industrial groups and trade associations in critically reviewing and submitting comments to government agencies on proposed regulations governing Natural Resource Damage Assessments under CERCLA and Hazardous Waste Characterization under RCRA.

Water Quality

Dr. Shanahan's water-quality experience includes academic research to develop modeling approaches and engineering experience analyzing information and using models in practical applications. Project experience includes a wide range of contaminants in rivers, lakes, and coastal environments. Representative examples include:

Lake Balaton, Hungary	Eutrophication model development
Mississippi River, Mississippi	Model of dissolved solids plume
Wateree River, South Carolina	Permit application for paper mill discharge
Conowingo Reservoir, Pennsylvania	Model of power plant thermal plume
Fishkill Creek, New York	Permit application for industrial discharge
East Machias River, Maine	Model of fish hatchery discharge
Westfield River, Massachusetts	Model of paper mill discharge
Ohio River, West Virginia	Model of phenol and ammonia plume

Strait of Malacca, Indonesia	Analysis of LNG plant thermal discharge
Fort Point Channel, Boston, Massachusetts	Model of cooling water discharge
Lake Galena, Pennsylvania	Model of lake eutrophication
Lake North Anna, Virginia	Model of cooling lake
Snake River, Idaho and Washington	Model of temperature and dissolved oxygen
Worcester, Massachusetts	Model of nonpoint source pollution and runoff

Dr. Shanahan has also served as a consultant to the U.S. Environmental Protection Agency, and the American Petroleum Institute advising on technical procedures for wasteload allocation.

Hydrology and Hydraulics

Dr. Shanahan has completed technical analyses and developed and applied models to a wide variety of hydrologic and hydraulic problems. Past projects include:

Cumberland River, Kentucky and Tennessee	Developed computer code to model rainfall runoff, reservoir operation, and flood flow
Oahe Dam, South Dakota	Modeled hydropower plant hydraulic transients
Fitchburg, Massachusetts	Developed stormwater management model for combined sewer system
Henrico County, Virginia	Managed comprehensive drainage and flooding model development project
Lake Balaton, Hungary	Developed model of wind-driven circulation
Development sites in Massachusetts	Applied the SCS TR-20 model for stormwater analysis and design
Nuclear waste repository, Texas	Served as principal investigator for water resources site study

Dr. Shanahan is also a co-author of the U.S. Army Corps of Engineers generalized model for hydraulic transients in hydropower systems, WHAMO (Water Hammer and Mass Oscillation).

Publications

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