



Robert W. Kortmann, Ph.D.

1974 B.S. Cook College - Rutgers University –High Honors/ Cook Scholar
Environmental Science and Education; Comprehensive Science Teaching Certificate
1977 M.S. University of Connecticut - Limnology - Plant Ecology
1981 Ph.D. University of Connecticut - Limnology - Ecology

Dr. Kortmann is the founder and principal investigator of E.C.S., Inc. and directs all research, consulting and implementation projects. His undergraduate training included a comprehensive environmental science curriculum, advanced biological sciences, and education certification. While at Rutgers, Dr. Kortmann conducted an honors research project dealing with the chemistry of aquatic systems in agricultural watersheds, research regarding intertidal zonation as effected by navigation, and coral reef research at the East Indies Laboratory, St. Croix. Dr. Kortmann was a George H. Cook Scholar and graduated with high honors from Cook College-Rutgers University in 1974.

Dr. Kortmann completed his graduate training at the University of Connecticut. His master's and doctorate programs were interdisciplinary, with work in the Department of Biological Sciences, School of Engineering, and Natural Resources. Dr. Kortmann's research focused on the chemistry of lake-watershed ecosystems, mathematical models, and eutrophication.

Dr. Kortmann and E.C.S., Inc. have conducted cooperative research projects with Environmental Engineering Companies, Water Utility Companies, University of Connecticut, Kent State University, Canada Ministry for the Environment, and Regulatory Agencies. Dr. Kortmann has been an invited participant at AWWA-RF Workshops, AWWA-WQTC Sunday Seminars, and has received several research publication awards. Dr. Kortmann taught aquatic biology and chemistry at the Hartford Graduate Center (R.P.I.), published a handbook on lake management (IWR- US Department of the Interior) and a variety of journal articles, and made presentations at numerous international professional meetings. Dr. Kortmann and ECS, Inc. have performed lake and reservoir restoration projects throughout the United States, Canada, and as far away as Sao Paulo, Brazil.

Innovations:

- Invented a dialysis method to analyze the chemical content of sediment-interstitial water
- Invented/developed Hydrologic Flow Routing technologies (U.S. Patent)
- Invented/Developed Layer Aeration Technology (U.S. Patent) (Environmental Technology Innovation Award for Layer Aeration from the EPA)
- Invented/Developed DownFlow Oxygenation Technology (U.S. Patent)
- Winter Thermal Treatment Techniques (Patent Pending)
- Non-Chemical Disinfection Technology (Patent Application in prep)
- Pneumatic Diffuser Apparatus (Patent Application in prep)

ECS, Inc. received the Lake Restoration Project Award for innovative restoration techniques employed at Lake Waramaug, CT (Hypolimnetic Nutrient Inactivation with no chemical addition).

Selected Publications:

- Kortmann, R.W. 1980. Benthic and atmospheric contributions to the nutrient budgets of a soft-water lake. *Limnology and Oceanography* 25(2): 229-33.
- Kortmann, R.W. 1981. Functional relationships between nutrient dynamics, oxidation-reduction capacity, and eutrophication in a soft-water lake. *University of Connecticut. Ph.D. Dissertation.*
- Kortmann, R.W., G.W. Knoecklein, C.H. Bonnell, 1994. Aeration of Stratified Lakes: Theory and Practice. *Lake and Reservoir Management Journal*, 8(2):99-120.
- Kortmann, R.W. and P.H. Rich, 1994. Lake Ecosystem Energetics: The missing management link. *Lake and Reservoir Management Journal*, 8(2):77-97.
- Kortmann, R.W., "Managing Reservoir/Watershed Systems", *WaterSearch*, Vol. 5. Summer, 1987. AWWA.
- Kortmann, R.W. 1988. Utility of Layer Aeration for Reservoir and Lake Management. *Lake and Reservoir Management Journal* 4(2):35-50.
- Kortmann, R.W. "Raw Water Quality Control: An Overview of Reservoir Management Techniques". *Journal New England Water Works Association*, April 1989.
Awards: Dexter Brackett Meritorious Paper Award, *New England AWWA*
Quaternary Transatlantic Award-1990 *Institution of Water and Env. Management* (England).
- Kortmann, R.W. 1990. Thermal Stratification in Reservoirs: Causes, Consequences, Management Techniques. Proceedings *AWWA-WQTC*, San Diego, November 1990. Invited Contribution to AWWA Sunday Seminar.
- Kortmann, R.W. Lake ecosystem energetics: The ecology of raw water quality management. *AWWA-1994 WQTC*, Nov. 6-10, 1994. pp. 1897-1925. San Francisco, CA.
- Kortmann, R.W. 1994. Oligotrophication of Lake Shenipsit by Layer Aeration. *Lake and Reservoir Management Journal*, 9(1):94-97.
- Kortmann, R.W. 1984. The utility of a hydrograph flowstage phosphorus loading model. *Lake and Reservoir Management - Practical Applications. Lake and Reservoir Management Journal* pp. 173-179.
- Jokinen, E.H., J. Guerette, and R.W. Kortmann, 1982. The natural history of an ovoviviparous snail, *Viviparus georgianus* (Lea), in a soft-water eutrophic lake. *Freshwater Invertebrate Biology* 1(4): 2-17.
- Kortmann, R.W., D.E. Henry, A. Kuether, and S. Kaufman. 1982. Epilimnetic nutrient loading by metalimnetic erosion and resultant algal responses in Lake Waramaug, Conn. *Hydrobiologia* 92: 501-10.
- Kortmann, R.W. and D.D. Henry, 1987. "Mirrors of the Landscape: An Introduction to Lake Management". Conn. *Institute of Water Resources*, US Dept. of the Interior, Univ. of Conn., Storrs, CT. 103 pp.
- Kortmann, R.W. 1988. Utility of Layer Aeration for Reservoir and Lake Management. *Lake and Reservoir Management Journal* 4(2):35-50.
- Kortmann, R.W. 1989. Putting Stormwater to Maximum Use. *LakeLine* April 1988

- Kortmann, R.W. 1994. Lake Waramaug 1975-1993...What we've learned. *Lake and Reservoir Management Journal*, 9(1):65-71.
- Kortmann, R.W. 1994. Oligotrophication of Lake Shenipsit by Layer Aeration. *Lake and Reservoir Management Journal*, 9(1):94-97.

Research Grants Awarded

Institute of Water Resources - University of Connecticut *In vitro* florimetry for water supply reservoir monitoring. Research Participants: University of Connecticut, Regional Water Authority, Ecosystem Consulting Service, Inc. Grant co-Authoring by: Peter H. Rich, Ph.D. and R.W. Kortmann, Ph.D

USEPA Research Grant: Section 314: Clean Water Act: Phase III Mechanisms of Restoration at Lake Waramaug, CT, Innovative Hypolimnetic Management Approaches. Research Participants: Kent State University, University of Connecticut, ECS, Inc.

Grant Authored by: R.W. Kortmann, Ph.D

EPA Region I Clean Lakes Project Award 1992

Selected Major Projects

- Annual Management of Source Water Reservoirs- Connecticut Water Company 1982-present
- Annual Management of Source Water Reservoirs- Aquarion Water Company 1994-present
- Oklahoma Water Resources Board- Consultant for Reservoir Management and Restoration
- Projecto Guarapiranga- Limnological Consultant to the World Bank Project, Sao Paulo, Brazil
- Lake Waramaug Restoration Project 1979-present
- Hypolimnetic Aeration- City of Norfolk, VA Reservoirs; Hodgson Reservoir, Revenna, OH
- Layer Aeration: Lake Oswego, Oregon; Wanaque Reservoir, North Jersey District Water Supply Commission; Glendola Reservoir, NJ American Water Company; Brick Township NJ Reservoir; Oradell Reservoir, United Water Company; Pennichuck Water Supply Reservoirs, NH; Ledyard Reservoir, Groton, CT; Bear Creek Reservoir, Lakewood, CO; City Lake, Tuscon, AZ; Culver Lake, NJ; Lake Rockwell Reservoir, Akron, OH; Glen Reservoir, SCCRWA, CT; Third Lake, IL; Minersville Reservoir, PA; Truro Reservoir, Nova Scotia, Canada.
- Flow Routing Projects: Lake Rockwell Reservoir, Akron; Pennichuck Water Supply Reservoirs; Coos Bay Reservoirs, Coos Bay, Oregon; Reservoir 6, MDC, CT;

Professional Memberships

American Water Works Association (AWWA)

AWWA Sections: Connecticut, New England, NY, Chesapeake, Virginia, New Jersey

North American Lake Management Society (NALMS)

American Society of Limnology and Oceanography (ASLO)

American Fisheries Society

Past Member: **State Advisory Board - Institute of Water Resources – CT**