US Army Corps of Engineers®
Engineer Research and Development Center

Eau Galle Aquatic Ecology Laboratory (EGAEL)

Purpose

The Eau Galle Aquatic Ecology Laboratory (EGAEL) provides unique field and experimental research capabilities that are critical for understanding complex ecological processes and solving water quality-related problems. Located near Spring Valley, Wisconsin, the EGAEL offers customers extensive experience and expertise in analyzing ecological and water quality processes, both in the field and in the laboratory. EGAEL's expertise is essential in managing and rehabilitating various types of aquatic systems. Areas of expertise include:

- Watershed nutrient transport and fate.
- Nutrient dynamics and recycling.
- Eutrophication diagnostics and modeling.
- Sedimentation and sediment resuspension.
- Sediment-water interactions.
- Macrophyte ecology and control.
- Rehabilitation and environmental management of aquatic systems.

Specifications

- 3000-ft^2 fully equipped chemistry and experimental field laboratory and office.
- Automated and discrete field sampling and monitoring equipment.
- Outdoor macrophyte growth facility.
- Chambers and incubators for examination of sediment nutrient fluxes and sediment oxygen demand.
- Personnel with 18 to 25 years of experience in aquatic ecology research and development and problem-solving.

Benefits

Research conducted at the EGAEL results in substantial savings of time and money for managers of aquatic systems. Water quality issues and ecological problems can be efficiently addressed with the EGAEL's extensive field research capabilities and on-site analytical expertise. In particular, the EGAEL specializes in research and problem-solving for complex aquatic ecological issues and problems using unique field experimental techniques and approaches, many of which are developed at EGAEL.

Success Stories

- Research on Lake Pepin and the Upper Mississippi River provided federal, state, and local agencies with a better understanding of important phosphorus sources and sinks and the importance of sediment phosphorus recycling to the system.
- Eutrophication diagnostics of urban Halfmoon Lake, an important recreational and aesthetic resource for the City of Eau Claire, Wisconsin, has led to practical management alternatives to reduce phosphorus loading and improve water quality.
- Studies on Lake St. Clair diagnosed sources of coliform bacteria contamination on swimming beaches and helped local officials to address the issue to reduce beach closures.
- Work on Lake Champlain, Vermont-New York, helped state officials to evaluate the impacts of aquatic plant control techniques on water quality.
- Research on Houghton Lake, the largest inland lake in Michigan, provided state agencies with important water quality information that was used to monitor changes as a result of whole-lake milfoil control.
- Studies on Peoria Lake, a mainstem impoundment on the Illinois River, were used to identify the role that submersed macrophytes can play in reducing sediment resuspension and turbidity in that system.
- Watershed research on the Redwood River Basin, a tributary of the Minnesota River, was used by state and local agencies to evaluate the contribution of biologically available phosphorus to overall loading during runoff periods.
- An innovative dosage assay was used to provide local agencies with alum concentration requirements to control internal phosphorus loading in Squaw Lake, WI.
- Watershed nutrient loading analysis of the Yellow River basin, WI, provided state agencies with information for future TMDL development.
- Research on Marsh Lake, an impoundment of the Minnesota River, MN, guided the St. Paul District in the development of a management plan to reduce future sediment resuspension and improve habitat for water fowl.
- Winter research on hydropower operations was used to evaluate the effects of pool level fluctuations on winter dissolved oxygen conditions and young of the year fish habitat availability in backwater bays of Holcombe Lake, WI.
- Research on backwaters of the Upper Mississippi River led to the development of flow optimization techniques to improve winter fish habitat.
- Work conducted on nitrate uptake in backwaters of the Upper Mississippi River led to a better understanding of the role these floodplain components can play in regulating nitrate transport to the Gulf of Mexico.
- Research on phosphorus loading and dynamics in the Lower Minnesota River led to a better understanding of phosphorus sources and sinks in the system and processes regulating soluble concentrations and transport to the Mississippi River. Information was used by state agencies in Minnesota to develop management plans for the river.

Point of Contact

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