



## Lake Michigan Field Station ~ Muskegon, MI



Fully restored Lake Michigan Field Station, 2005.

The Lake Michigan Field Station serves as NOAA's base of operations for Great Lakes research and the home port for GLERL's research vessels, which operate throughout the Great Lakes.

The Lake Michigan Field Station now includes research vessel docking and several buildings that provide for wet and dry laboratories, small vessel storage and repair, a meeting room, dormitories, the Vessel Operations Office, researcher office space, and equipment storage.

Presently, three full-time scientists, six ship crew, a marine superintendent, and administrative support staff are based at the field station. During the active field season, ranks swell to include numerous GLERL researchers, visiting scientists, and student fellows.

The Field Station also houses NOAA National Ocean Services Coast Survey's navigation response team. They are responsible for charting issues and hydrographic surveys on the Great Lakes.

### Restoring an Historic Building

The Lake Michigan Field station occupies an historic site on the Muskegon Channel. The primary building was constructed in 1905 to serve the U.S Life Saving Service and housed boat rescue crews and lighthouse keeper. In 1915, the grounds and buildings were transferred to the U.S. Coast Guard. For 85 years the site served rescue operations and stood prominent in the rich maritime heritage of the region. It is the oldest NOAA facility in operation and qualifies for the National Historic Register.

In 1990, the facilities were transferred to the National Oceanic and Atmospheric Administration's Great Lakes Environmental Research Laboratory (GLERL), part of the U.S. Department of Commerce, and its mission changed to supporting scientific research throughout the Great Lakes. A renovation project was completed in 2005 on the 100th anniversary of the building. Great care was taken to recreate the exterior architecture and maintain the historic details of its original design. While modern materials were utilized, this prominent building appears just as it did to the lumber schooners in the last days of sail. Much of the interior spaces, mechanical, and utilities were upgraded but maintain the color schemes and layout of its early days in the Life Saving Service.



Prior to renovations, 1999.

## Supporting GLERL Lake Michigan Research

The Lake Michigan Field Station is GLERL's primary platform for research in Lake Michigan. Current and recent GLERL research projects based in Lake Michigan include:

- Ecology of harmful algae blooms.
- Changes in the pelagic food web of southern Lake Michigan.
- Long-term changes in daphnid responses to Great Lakes contaminants.
- Trait-mediated effects of invasive predatory cladocerans.
- Long-term trends in benthic populations in Lake Michigan.
- Salmonid spawning stock abundance, recruitment, and exploitation in the Muskegon River.
- Ontogenetic and seasonal variation of young non-native fish energy densities in Lake Michigan.
- Does infrared light inhibit the attachment of zebra mussels?
- Watershed - Great Lakes interactions: ecological footprint of the Muskegon River watershed.
- An evaluation of bioenergetics modeling for lake whitefish in Lake Michigan.
- Effects of *Diporeia* declines on fish diet, growth, and food web dynamics in southeast Lake Michigan.
- Real-time Environmental Coastal Observation Network (RECON).



LMFS Chief Scientist Gary Fahnenstiel gives a tour to the 4th place National Ocean Science Bowl Team from Albany, CA.

## Promoting Educational Outreach

The Lake Michigan Field Station has a strong commitment to supporting education and outreach. Each year the station hosts a variety of programs such as open houses, tours, cruises, classes, and workshops for diverse audiences including Congressional staff, reporters, teachers, students, and the general public.

## Innovations in Vessel Operations

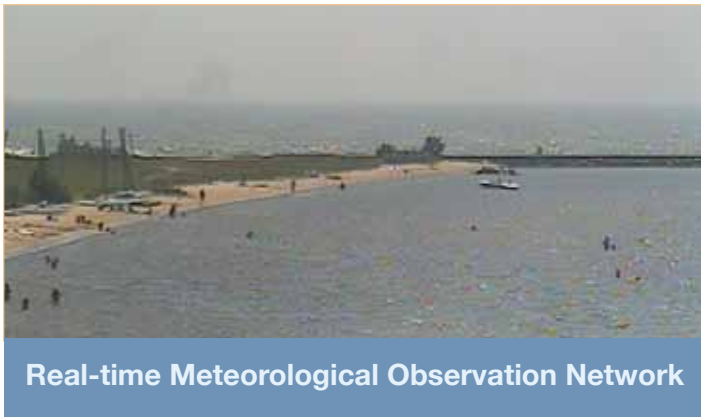
The Lake Michigan Field Station serves as home port for all of GLERL's research vessels throughout the Great Lakes. NOAA is committed to innovative ways to improve operations and to stewardship of the environment that we research.

As of May 2006, all three of GLERL's large research vessels operate petroleum-free, thanks to the innovations put in place by LMFS marine superintendent Dennis Donahue. The ships are the first in the U.S. fleet to operate petroleum-free. The ships use 100 percent soy biodiesel for engine fuel, canola-based motor oil and rapeseed-based hydraulic oil for its deck crane, winches, transmission, and steering gear.

The change to non-petroleum products results in operating improvements as well as dramatic reductions in emissions, particularly in older diesel engines. The crew greatly prefer the smell of 'french fries' over diesel fumes. The biodegradable vegetable oils also offer an additional level of environmental protection in case of a spill or leak.

**For more information about the Lake Michigan Field Station, vessel operations, and the research activities centered there, please contact:**

**Dennis Donahue, Marine Superintendent  
NOAA/GLERL - Lake Michigan Field Station  
1431 Beach Street  
Muskegon, MI 49441-1098  
Phone: 231-755-5173 Fax: 231-759-2414  
Dennis.Donahue@noaa.gov**



## Real-time Meteorological Observation Network

Ann Arbor-based GLERL scientists working in Lake Michigan need to have up-to-date information on weather and sea conditions in Muskegon to plan for their research projects. This need led to development of a web-based capacity for remotely monitoring weather conditions in real-time. Today, GLERL's Real-Time Meteorological Observation Network has eight stations throughout southern Lake Michigan, western Lake Erie, and Lake Huron. The backbone of the system still includes the weather station and four webcams at the Lake Michigan Field Station.

[www.glerl.noaa.gov/metdata/](http://www.glerl.noaa.gov/metdata/)