

***David D. McGehee, P.E., M.Oc.E.***

**Key Qualifications:**

David McGehee is a coastal engineer with over 35 years experience in providing innovative solutions to research, design, informational, & operational challenges in the coastal, marine, and submarine environments. Mr. McGehee's experience includes research, forensic analysis, design, project management, technical review/assessment, and technology transfer/education. He has carried out field research and laboratory studies in a variety of topic areas, but his specialty is measurement, analysis, characterization, and prediction of ocean waves, currents, long wave oscillations, storm surge and their impacts on coastal systems.

**Education:**

B.S. Ocean Engineering, Florida Atlantic University, 1973  
Master of Ocean Engineering, Oregon State University, 1997

**Professional Affiliations:**

Registered as a Professional Engineer in Florida, Alabama, Mississippi, and Louisiana

Member: American Society of Civil Engineers (ASCE)  
Association of Coastal Engineers (ACE)  
Coasts, Oceans, Ports and Rivers Institute (COPRI)  
American Shore and Beach Preservation Association (ASBPA)  
American Geophysical Union  
Marine Technology Society (MTS)  
Master SCUBA Diver, Professional Association of Diving Instructors (PADI)  
Surfriders Foundation

Board Member: Watershed Assessment and Management Institute, Inc.

Diving Supervisor/Inspector, U.S. Army COE

Commercial Vessel Operator License, USCG

**Professional Experience:**

1998-Present: *Coastal Engineering Consultant & Manager, Emerald Ocean Engineering LLC, Pensacola, FL*  
Research, design, and review of various coastal and ocean engineering systems and projects. Model and evaluate Hurricane Katrina impacts to structures on MS and LA coast. Captured the only nearshore wave data during the peak conditions of both Hurricanes Ivan and Katrina. Design and implement wave, surge, water level and current data collection systems. Design and manage construction of coastal habitats and shore protection/hurricane protection projects. Model extreme wave impacts to Los Angeles Harbor. Clients include: Allstate Insurance Company, the US Army Corps of Engineers, the US Air Force, the US Navy, the US Environmental Protection Agency, the FL Department of Environmental Protection, the FL Department of Transportation, Escambia County, FL, and the Town of Seaside, FL.

1986 - 1998: *Research Coastal Engineer/Program Manager, COEC Coastal Eng. Res. Center, Vicksburg, MS*  
Develop/implement new research initiatives. Manage the Field Wave Gaging Program, a cooperative Fed/State effort to collect and disseminate information a global, real-time network of ocean and coastal wave and surge measurement platforms. Produced the COE's Wave Data Analysis Standard and Wave Climate Analysis Standard. Monitor and evaluate Corps of Engineers coastal projects. Research included: wave measurement theory and application, near-shore and inlet hydrodynamics, harbor oscillation/circulation, moored ship dynamics, wave-structure interactions, coastal erosion, coastal protection.

1980 - 1986: *Coastal Engr./Operations Mgr., Coastal & Ocean Engineering Lab, Univ. of Fla. Gainesville, FL*  
Plan, design, and execute field and laboratory experiments. Manage the Florida Coastal Data Network, a real-time, statewide array of wave and hurricane surge gages.

1971 - 1980: *Field Engineer, various marine construction/dredging firms worldwide*  
Supervision, quality control, surveying, inspection and documentation activities for construction of offshore platforms, bridges, submarine pipelines, ports, and navigation channels.

## **Project Locations & Duties**

Choctawhatchee Bay, FL – Design, permit, and manage construction of a “living shoreline” revetment using flexible marine mattresses for Eglin Air Force Base

Northern Gulf Coast – expert witness; develop site-specific time histories of Hurricane Katrina wind, wave, and surge impacts on structures using measured data and hydrodynamic numerical models

Pensacola Bay, FL - Design and manage construction of Project Greenshores, a 40-acre award-winning urban saltmarsh habitat reconstruction.

Perdido Key, FL - Design and manage construction of post-Ivan emergency shore protection

New Orleans, LA - Design and implement system for capturing hurricane wave and surge levels on Lake Pontchartrain

Seaside, FL – Design and permit innovative coastal dune hurricane protection system

Cape San Blas, FL – Conduct tidal hydraulic measurement and analysis to evaluate potential impacts of new inlet formation into St Andrews Bay

Escambia County, FL - Advise on development of local ordinance on characteristics of allowable beach sediments

Pascagoula, MS – Multibeam, sidescan, magnetometer, and cultural survey prior to expansion of Pascagoula Naval Station

Escambia Bay, FL - Design shore protection for critically eroded property and pool structure

Choctawhatchee Bay, FL - Design remediation/repair plan for shore protection of a condominium

Sabine Bay, FL - Expert opinion in channel dredging contract dispute

NW Florida - Environmental permitting, incl. circulation, sediment, and water quality studies/ of proposed developments (various)

Navarre Beach, FL - Develop design conditions and concepts for underwater marine sanctuary

Los Angeles/Long Beach Harbor, CA - Physical model study of nonlinear wave transformation due to overtopping of breakwater

Ventura Harbor, CA – design, install, and train local personnel in use of episodic wave measurement system

Panama City, FL – Expert testimony on compliance with regulations of a challenged CCCL environmental permit

Gulf of Mexico - Evaluate and summarize shore protection laws and policies of states bordering the Gulf

US Nationwide -

Program Manager, Field Wave Gaging Program, the world's largest network of wave, tide, surge and current monitoring stations

Principal Investigator, Episodic Events Research Work Unit for joint federal effort into hurricane and northeaster impacts

Principal Investigator, Monitoring Completed Coastal Projects Program to assess and evaluate the performance of Corps' projects

Columbia River, OR - Determine wave, current, and suspended sediment concentration on the Columbia River Bar during winter storms

Kahului, HI - Evaluate performance of breakwaters and their impacts on adjacent coral reefs and interior shorelines

Agat Harbor, Guam - Investigate typhoon processes on a coral reef flat and their unusual effects on a small harbor

Kaunaloa, HI - Document wave transformation and breakwater stability

Hongzhou Bay, PRC- Document waves, tides, currents, and suspended sediment concentration; related to expansion of the Port of Shanghai

Burns Harbor, IN - Investigate causes for unanticipated degradation of a deep-water breakwater

Fishermen's Wharf, San Francisco, CA - Evaluate effects of a new breakwater on tidal currents and flushing inside the harbor

Ocean City, MD - Document inlet hydrodynamics and determine sediment pathways

Panama City, FL - Study of sand wave formation and mitigation in an inlet

East Pass, FL - Evaluate performance and recommend changes to a jetty system

Los Angeles/Long Beach Harbor, CA - Investigate circulation within the harbor complex

Indian River, DE - Determine extent and causes of scour of bridge and jetty

Mobile, AL - Determine processes, fate, and performance of nearshore, engineered structures ("feeder mounds") made from dredged material

Los Angeles/Long Beach Harbor, CA - Measure input to and response of moored vessels to long-period waves

Grays Harbor, WA - Investigate inlet hydrodynamics and scour of interior shorelines

Siuslaw, OR - Document effects of spur jetties on littoral processes

Florida Statewide –  
 Manage the Coastal Data Network, a network of real-time wave & surge gages  
 Implement the Florida Hurricane Surge effort to capture accurate storm surge levels

NW Gulf of Mexico - Design, build, and install the BETA Tower, a unique hurricane and collision-proof instrumented platform for a long-term monitoring of a remote offshore site.

Jupiter Inlet, FL - Document inlet processes (waves, tides, and currents, bathymetry)

Jacksonville, FL – expert witness testimony & forensic analysis in wrongful death suit due to defective SCUBA equipment

Gulf of Mexico – Commercial diver, ROV inspection filed engineer for various platforms & pipelines

Jebel Ali, United Arab Emirates – Field engineer for dredging of harbor & entrance channel

Dunedin, FL - Field engineer for construction of railroad bridge

Isla Aves, Venezuela – Field engineer for construction of offshore platform

Pensacola Bay, FL - Field engineer/commercial diver for construction of submarine pipeline

Punta Arenas, Costa Rica - Oversee construction of a shark processing plant

**Patents and Inventions:**

- Buoyant Elastically Tethered Articulated (BETA) Tower (patented 1985)
- Anti-fouling Port for Underwater Pressure Sensors (now std. equipment on all COE gages)
- Dynamic Pressure Test Apparatus (received COE “Invention of the Year” award)
- Pressurized Breakwater (tested under Dept. of Army’s Rapidly Installed Breakwater Program)
- Continuous Uptake Trawling System (in review by NOAA National Marine Fisheries Service)
- Tensile Curtain Revetment (designed for Town of Seaside, FL)

**Languages:** English (Excellent proficiency in speaking, reading and writing).

Spanish (Moderate proficiency in speaking, reading).