

Qualifications Summary

- Over 23 years of experience in multi-jurisdictional environmental studies
- Specializes in environmental studies of coastal and marine projects, including resource and existing conditions surveys, impact analyses, and mitigation/restoration planning
- Experience with field data collection of sediments, water, plants, fish, and benthic infauna for environmental studies, and with laboratory services required to analyze such samples
- Skilled at utilizing GIS and database technology to display and analyze spatially related data for coastal and marine projects
- Extensive experience with local, state, and federal permitting of coastal projects
- Strong written, communication, and organizational skills, including expert testimony

M. LESLIE FIELDS, M.S., B.S.

Coastal Geologist/Marine Environmental Analyst

Professional Affiliations

Marine Outreach Guidance Group, Woods Hole Oceanographic Institution Sea Grant Program (1999-2004)

Member Falmouth Conservation Commission (1990-1997)

Fields of Expertise

Environmental impact analyses, dredged materials management, coastal planning and management studies, shoreline change analyses, coastal hazard evaluations, GIS development, coastal wetland delineations, scientific and technical reporting, and permitting at local, state, and federal levels.

Higher Education

M.S., Geology-Rutgers University (1984)

B.S., Geology-Southern Methodist University (1981)

Employment History

1989-Present Woods Hole Group, Inc.

2003-2004 Massachusetts Coastal Zone Management

1984-1989 U.S. Army Corps of Engineers, CERC

1981-1984 Rutgers University

1980-1981 Sun Energy and Development Co.

Key Projects

Beach Management Plan for Town of Falmouth Public Beaches; Office of the Town Manager and Falmouth Beach Committee - Project Manager/Coastal Scientist

Managed and prepared a comprehensive Beach Management Plan for 10 public beaches in the Town of Falmouth. The project involved collection of beach profile data, sediment analyses, resource area delineations, and infrastructure assessments. Dominant coastal processes, directions of sediment transport, historical shoreline change, and history of human alterations were all addressed. Recommended management activities were provided for infrastructure maintenance, beach monitoring, routine maintenance, restoration activities,

Key Projects (continued)

education, enforcement, and fund raising. Results from the Beach Management Plan were used to file for and secure a local permit from the Falmouth Conservation Commission for a number of the recommended management activities.

Coordination, Design, and Permitting for the Menauhant Beach and Dune Restoration Project, East Falmouth, MA; Town of Falmouth - Project Manager/Regulatory Specialist

Coordinated, designed, and permitted a beneficial reuse dune and beach restoration project at Menauhant Beach in East Falmouth. Through extensive interagency coordination and cooperation, the Town of Falmouth was able to secure sand from a nearby dredging project that created a deepwater port in Great Harbor Woods Hole for a new NOAA research vessel. Dredged sand was dumped at a temporary, nearshore rehandling site offshore of Menauhant Beach, and then hydraulically pumped to Menauhant public beach to form a protective dune. The project required the full range of environmental permits from local, state, and federal agencies. Coordination between local Town of Falmouth representatives, DEP regulatory officials, the Barnstable County Dredge office, NOAA, and USACE project managers was required to construct this beneficial reuse project.

Risk and Vulnerability Assessment for the Martha's Vineyard Hospital, Oak Bluffs, MA; Board of Trustees MV Hospital and MV Commission - Project Manager/Floodplain Analyst

Managed and conducted an extensive risk and vulnerability assessment for reconstruction of the Martha's Vineyard Hospital. The analysis considered risks of the existing hospital site to various natural hazards including storm surge, flooding, wind, snowfall, wildfire, coastal erosion, sea-level rise, and earthquakes. Vulnerability of the site and impacts to critical hospital services were considered. Results from the risk and vulnerability analysis were used to provide recommendations for reconstruction of the hospital facilities.

Environmental Impact and Risk Assessments for Proposed Natural Gas Pipelines Offshore of Trinidad and Tobago; National Gas Company of Trinidad and Tobago Limited - Project Manager/Environmental Analyst

Managed a large-scale environmental impact and risk assessment project for two proposed natural gas pipelines offshore of Trinidad and Tobago. The work involved extensive field data collection and laboratory analysis of oceanographic, coastal, and terrestrial data. Detailed descriptions of the projects were provided along with alternatives analyses, existing conditions reports, and environmental impact analyses. Recommendations were provided to the project applicant and the regulatory agencies of Trinidad and Tobago for minimizing adverse impacts and for long-term monitoring.

Nitrogen Loading Analysis for Forest Cove Housing Development, Falmouth, MA; Abby Real Estate Development, LLC - Project Manager/Coastal Geologist

Managed and conducted a detailed nitrogen loading assessment and regulatory review for the proposed 36-unit Forest Cove housing development in Falmouth, MA. The project involved a quantitative assessment of nitrogen loading from all sources including wastewater, runoff from impervious surfaces, lawns and landscaped areas, atmospheric deposition, and natural areas. Nitrogen contributions to 3 different waterbodies were considered; one a public water supply and

Key Projects (continued)

two nitrogen sensitive coastal embayments. Resulting nitrogen loadings were compared with state determined total maximum daily loads (TMDLs) for nitrogen.

Analysis of Historical Shoreline Change and Management Alternatives for Nauset Beach, Orleans, MA; Orleans Parks and Beaches Department - Project Manager/GIS Analyst

Managed and performed a comprehensive analysis of shoreline change and management alternatives for Town of Orleans public beach areas located on Nauset Beach. The project involved a quantitative analysis of historical shoreline change using ArcGIS, as well as an analysis of barrier breaching and inlet formation. Results from the study were utilized to develop recommendations for short- and long-term management of the public beach facilities and the extensive off-road vehicle trails and barrier spit to the south.

Design, Environmental Impact Analysis and Permitting for Chapoquoit Beach Replenishment, West Falmouth, MA; Chapoquoit Associates - Project Manager/Coastal Geologist

Managed a large private/public partnership project to replenish eroding beaches along the Chapoquoit Beach section of West Falmouth, MA using sand dredged from the Cape Cod Canal by the US Army Corps of Engineers. The project involved detailed design computations for the replenishment, as well as wave and sediment transport modeling to evaluate spreading and potential impacts of the project. Extensive project management was required to facilitate permitting on a fast track basis and to coordinate construction with the USACE's schedule.

Design, Environmental Impact Analysis and Permitting for the Centerville River Dredging Project, Centerville, MA; Town of Barnstable - Project Manager/Coastal Geologist

Managed a large-scale municipal project to dredge the Centerville River for the purposes of improving navigation. This project involved extensive field investigations of the physical environment, biology, wetland resources, and sediments within the river. The nature of the sediments required identification of two types of reuse sites for the dredged material. The design included beach replenishment at the adjacent barrier beach for the sand sized material, and a variety of upland reuse sites for the fine-grained sediments. The project required the full range of environmental permits from local, state, and federal agencies.

Design, Environmental Impact Analysis, and Permitting for the Mashpee River Dredging Project, Mashpee, MA; Town of Mashpee - Project Manager/Coastal Geologist

Managed a large-scale municipal project to dredge the Mashpee River for the purposes of improving navigation. This project involved extensive field investigations of the physical environment, biology, wetland resources, and sediments within the river. A detailed alternatives analysis was performed to identify potential dewatering and beneficial reuse sites. The fine-grained nature of the proposed dredge sediments coupled with the lack of nearby staging sites for dewatering and storage has presented a number of unique and difficult challenges to this project. The WHG is currently working with the Town of Mashpee to identify and scope several alternative technologies for dredging and dewatering the sediments.

Key Projects (continued)

Federal Emergency Management Agency (FEMA) Flood Insurance Restudy for the Town of Hampton, NH; FEMA - Project Manager/Coastal Geologist

Performed and managed a Flood Insurance Restudy (FIS) for the Town of Hampton, NH. This project involved updating the FEMA Flood Insurance Rate Maps (FIRM) for the Town of Hampton by re-establishing the flood zone boundaries. Numerical models were utilized to simulate nearshore wave transformation and wave runup, and were combined with estimates of erosion to determine the location of the flood zones. The FIRMs were updated using quantitative information on waves, wave runup, and flooding, and were graphically displayed within a GIS.

Environmental Impact Statement (EIS) Preparation for LNG Deepwater Port and Pipeline, Massachusetts Bay - US Coast Guard, Marine Mammal Specialist

Developed detailed information on existing uses of Massachusetts Bay by marine mammals and sea turtles as required for the proposed LNG project. The analysis covered all aspects of marine mammal behavior, including seasonal distribution, feeding and foraging, vocalization, population, mating, and threats. A thorough impact analysis on marine mammals and sea turtles from the proposed construction and operation of the project was also conducted. A wide range of impacts was considered including the following: physical harassment, vessel strikes, alteration to habitat, acoustic harassment, alteration of prey species abundance and distribution, entanglement, ingestion of marine debris, fuel spills, impingement and entrainment, and bioaccumulation. Recommendations for minimization and/or mitigation of impacts were included as part of the EIS document.

Historical Shoreline Change Analysis: Western Town Line to Horton Point, Southold, NY; Town of Southold - Project Manager/Coastal Geologist

Managed and performed a comprehensive historical analysis of a 10-mile segment of shoreline within the western portion of the Town of Southold. The analysis was performed using historical T-sheets, traditional aerial photography, and low-altitude, high-resolution digital photography. Rates of shoreline change were computed at 100-ft intervals throughout the study area. The impacts of shoreline protection structures and storms on the historical rates of shoreline change were evaluated. Estimates of longshore transport rates were obtained from the shoreline data.

Assessment of Sand Resources in Northern and Central San Francisco Bay, CA; Hanson Aggregates - GIS Analyst

Worked with a team of WHG professionals to assess sand resources in Northern and Central San Francisco Bay, and to evaluate Hanson Aggregate and RMC leased sand borrow regions to determine their viability as a renewable sand resource. The work was accomplished using available hydrodynamic, geophysical, sediment, and geological data as well as digital terrain modeling tools available with the GIS software ArcInfo. Historical changes in bottom topography were evaluated using an acoustic survey of the bedrock surface, coupled with NOS bathymetric surveys and a high-resolution multibeam survey collected by the USGS. Isopach maps showing changes in sediment thickness were generated and used to compute variations in sediment volume within specified borrow sites.

Publications, Presentations and Reports

Journal Publications **12**

Technical Reports **41**