

Erin Hague is Tetra Tech's National Practice Lead for Coastal Restoration and Infrastructure and Coastal Resiliency Co-Lead. She is a Certified Environmental Professional with nearly 30 years of experience, specializing in coastal resiliency design solutions and strategies using nature-based solutions (NBS) for asset protection against SLR, storm surge and wave runup. She has served as a subject matter expert for numerous small and large-scale projects in the coastal US and Caribbean and is proficient in managing multi-disciplinary projects involving geotechnical and biological field investigations, coastal planning, engineering design, stakeholder coordination and permitting.

### PROJECT EXPERIENCE

#### **Brickell Bay Design Criteria Package, City of Miami, FL**

Coastal Engineering and Environmental Discipline Lead. The City of Miami is revitalizing, renewing and enhancing its waterfront along Brickell Bay Drive. The City will be implementing its vision to adapt Brickell Bay Drive and protect it from future storm surge and SLR while encouraging waterfront connectivity, creating open space, and improving the natural environment and local ecosystem. Under contract with the City of Miami, Tetra Tech is developing a 30% design solution for the reconstruction of the seawall and roads, including pedestrian, recreational and vehicular waterfront access. The candidate alternative will be detailed through the 30% design phase of development and a design criteria package will be prepared to guide the project implementation through final design and construction. Ms. Hague is leading the regulatory coordination, marine resource investigation, and 1,500 ft seawall design alternatives that include considerations for green and grey infrastructure. Discipline Fee: \$119k

**Coastal Engineering Handbook, Puerto Rico Department of Natural and Environmental Resources (DNER), Puerto Rico.** Senior Scientist. Identified critical and vulnerable coastal areas of Puerto Rico using the Coastal Hazard Wheel (CHW) decision support system as the analysis tool supported by input from the Puerto Rico DNER Coastal Inventory GIS database and associated references. The analysis included consideration of the wave exposure, tidal range, flora/fauna characteristics, sediment transport, and storm climate. The CHW analysis yielded hazard evaluations with respect to five hazards that include: 1) ecosystem disruption; 2) gradual inundation; 3) saltwater intrusion; 4) erosion; and 5) flooding.

#### **Miami Harbor Construction Dredging Phase III, USACE Jacksonville District, Miami, FL**

Quality Control Officer. This is the first project in the southeastern United States to prepare for the arrival of post-Panamax cargo ships through dredging. For the first time, USACE awarded a contract that held the dredging contractor directly accountable for the environmental

#### EDUCATION

Duke Environmental Leadership (DEL) Program, Duke University, Durham, North Carolina (2015)

MS, Coastal Zone Management, Concentration in Marine Biology, Nova Southeastern University (2007)

Geology Field Camp, Indiana University (1995)

BS, Geology, Minor in Marine Science, Northeastern University (1995)

#### REGISTRATION/CERTIFICATION

ABCEP Certified Environmental Professional: License No. 08040407 (2008) Exp. 12/2023

Envision Sustainability Professional (9/2019) Exp. 12/2023

#### PROFESSIONAL AFFILIATION

Coastal Zone Foundation, Director (2019, 2020, 2021, 2022, 2023)

Society of American Military Engineers (SAME) Active Member in Mobile, Panama City and Jacksonville Posts

American Shore and Beach Preservation Association

American Academy of Underwater Scientists, Voting Member (2005)

#### YEARS OF EXPERIENCE

30+ Years

#### YEARS WITH TETRA TECH

15 Years

#### OFFICE LOCATION

Boynton Beach, FL

#### AREAS OF EXPERTISE

Coastal Protection Planning & Design

Coastal Resiliency and Shoreline Stabilization

Coastal and Marine Habitat Characterization, Monitoring, and Restoration

Regulatory Coordination and Permitting

management, comprehensive monitoring, and quality control of the dredging project. As Environmental Task Manager and Quality Control Officer, Ms. Hague was responsible for overseeing coral transplantation; hard-bottom, coral reef habitat, and seagrass monitoring during construction to ensure that all facets of these activities were conducted in compliance with the permits.

**Import Terminal Project Natural Resource Report, Excelerate GasPort LNG, Aguirre, Puerto Rico (2011)**

Senior Scientist. Senior Scientist and Primary Author of the project's Phase I feasibility assessment natural resource report. The report evaluated and presented detailed information on the potentially affected environment and resources in the project area including a preliminary environmental impact analysis with design, construction, and regulatory considerations to be evaluated as the project advances through the Federal Energy Regulatory Commission (FERC) and Puerto Rico regulatory review process. The project area is located within the 13.4 km<sup>2</sup> Jobos Bay National Estuarine Research Reserve (NERR) with mangrove forests, salt flats, seagrass beds, macroalgal beds, beach dunes, and coral reefs.

**Marine Habitat Assessment Services, Town of Palm Beach, FL**

Project Manager, Technical Lead, Senior Scientist. As Senior Scientist on the 2009 through 2016 monitoring efforts, Ms. Hague conducts nearshore and offshore reef monitoring and scientific reporting associated with three beach nourishment projects in the Town of Palm Beach. These efforts specifically involve surf-zone and nearshore hardbottom community characterization, impact analyses, and sufficiency of the artificial mitigation reefs. Primary responsibilities include: field operations and data analysis; implement quality control measures and manage 5 years of biological monitoring data using Microsoft Access®; conduct statistical analyses using ANOVA and PRIMER-E; conduct aerial time-series analyses and support ArcGIS development; co-author on biological monitoring reports and summary assessments.

**Condado Lagoon Water Quality Improvement and Seagrass Restoration EA, San Juan Bay National Estuary Program, San Juan, Puerto Rico**

Task Manager. Senior scientist and primary author on the research and development of the project EA prepared in accordance with NEPA. The EA evaluates environmental resources and considerations involved in restoring seagrass habitat in Condado Lagoon. The proposed action involved 1) restoring seven artificial depressions in the lagoon to an approximate depth of -12.00 feet Puerto Rico State Plan NAD83 by using approximately 159,000 cubic yards of compatible material to rehabilitate seagrass beds; and 2) using dredge material from the shoal formed at the southern end of La Esperanza Peninsula to allow for tidal flushing between San Juan Bay and the peninsula. Consultation with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) for potential impacts to listed species and their habitat from dredging and restoration activities. Primary author on the development of the baseline investigations report, which included an analysis of bathymetric, benthic community, and sediment compatibility of field investigations conducted in 2011; as well as the development of the EA.

**Gulf Stream Energy Project, Florida Hydro Inc, Location, FL**

Senior Scientist. As Senior Scientist, Ms. Hague was involved with identifying submerged lands located between 3 and 20 nautical miles offshore of southeast Florida for the installation of mid-water Energy Production Units (EPU) in the outer continental shelf. The EPUs (turbines) were proposed for anchoring in approximately 328 to 1,640 ft (100 to 500 m) of water. Individual transmission cables were proposed for attachment to a grid system for transmission of energy to a shore-based receiving station.

Planning and project team coordination involved addressing concerns associated with the installation and maintenance of the EPUs, specifically biofouling and maintaining the mechanical integrity of the EPUs. Other issues considered

involved the potential impacts associated with pelagic fish and benthic environments, possible offshore impacts on trawling for shrimp and pot fisheries for crab, and migratory routes for large marine mammals and sea turtles. Laser airborne depth sounding (LADS) was used during the planning stage to minimize and avoid impacts to the Florida reef track from the placement of the transmission cables. Baseline studies proposed for the project involved benthic surveys, such as sidescan sonar, sled-mounted video camera, seafloor-mounted Acoustic Doppler Current Profiling (ADCP), and/or remote operated vehicles (ROV).

Agency coordination included the Florida Department of Environmental Protection and US Army Corps of Engineers, Minerals Management Service, Department of Energy and the Federal Energy Regulatory Commission (FERC). Prepared and submitted a Declaration of Intent and Preliminary Permit with the Department of Energy and FERC in April 2004 and January 2005, respectively.

## EMPLOYMENT HISTORY

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Tetra Tech Inc., National Practice Lead – Coastal Restoration & Infrastructure, 2022–2023

Tetra Tech Inc., Regional Manager/Senior Coastal Ecologist/Bioengineer, 2018–2022

Tetra Tech Inc., Senior Coastal Ecologist, 2012–2018

Tetra Tech Inc., NEPA Specialist/Environmental Planner, 2008–2012

Coastal Planning & Engineering Inc, Senior Marine Scientist/Environmental Planner, 2002–2008

EarthTech Inc, Environmental Scientist, 2000–2002

MassHighway Department, Wetland Scientist, 1997–1999

US Geological Survey, Hydrologic Technician, 1993–1997

## AWARDS

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- Leadership Academy Graduate, Tetra Tech (2016)
- Outstanding Collaboration Award, Florida Association of Environmental Professionals (2015)

## PAPERS AND PRESENTATIONS

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Hague, E.A., B. Murphy, N. Roth. 2022. Restore America's Estuary 2023 Summit. Session Program Lead: *What do you want your NEP to be?* New Orleans, LA. December 5, 2022.

Hague, E. A. 2022. The Association of State Floodplain Managers 2022 Conference. Presenter: *Natural and Nature-Like Design Enhancements for Wave Attenuation and Storm Surge Mitigation*. Orlando, FL. May 18, 2022.

Hague, E.A., J. Stribling, S. Anghera, K. Plourde, and P. Choy. 2020. Certified Coastal Practitioner Credentialing Program - Water Quality Training Module. Developed by the Coastal Zone Foundation in cooperation with the American Shore & Beach Preservation Association. October 21, 2020.

Hague, E. A. 2019. American Shore and Beach Preservation Association. 2019 National Coastal Conference "Where the Coasts and Rivers Meet". Presenter: *Shoreline Stabilization to Liven up the Banks of New York*. Myrtle Beach, SC. October 24, 2019.

Hague, E. A. 2019. Restore America's Estuaries and North Carolina Coastal Federation, 2019 Living Shoreline Tech Transfer Workshop. Poster Presentation: *Living Shorelines from New York to the Gulf of Mexico....one size does not fit all*. Beaufort, NC. October 8-9, 2019.

Bernstein, D.J. E.A. Hague, B.W. Summers, and C.W. Freeman. 2018. Building Coast Resilience Through Salt Marsh Restoration: Survey and Analysis within a Dynamic Geospatial Framework. ESRI Partner Conference, Palm Springs, CA. March 3-5, 2018.