Samuel McWilliams, E.I.T.
Senior Scientist

Education and Credentials

M.S., Ocean Engineering, Florida Institute of Technology, Melbourne, Florida, 2013

B.S., Ocean Engineering, Florida Institute of Technology, Melbourne, Florida, 2010

Engineer-in-Training, Florida (License No. 1100014902)

Continuing Education and Training

Hazardous Waste Operations and Emergency Response 40-Hour Certification (2013; refreshers 2014)

Professional Profile

Mr. Sam McWilliams has 5 years of experience assisting in the development of solutions to client issues regarding the marine environment. His focus is on utilizing empirical and numerical models to analyze spatial and temporal variations in hydrodynamic and water quality parameters to support a complete understanding of a marine system. Mr. McWilliams actively participates in field data collection to support analysis of estuarine, riverine, and coastal systems and address project needs.

Relevant Experience

Marine and Sediment Science

Contaminated Sediment Transport Evaluation, Berry's Creek Study Area, New Jersey—Supporting the RI/FS process to characterize fate and transport of sediment-bound contaminants. Responsibilities include calibration and validation of hydrodynamic and sediment transport model results with respect to measured data sets regarding hydrodynamic conditions, sedimentation rates, and anthropogenic developments.

Marine Renewable Energy Support, Sandia National Laboratories—Supporting the development of tools and techniques to improve performance, lower costs, and accelerate the deployment of marine and hydrokinetic energy technologies. Participated in the assessment of potential alterations to the marine environment due to the deployment of these devices as well as optimization of array configurations.

Suspended Sediment Plume from Underwater Blast, San Francisco Bay, California—Performed a modeling study after the removal of the eastern span of the Bay Bridge in San Francisco Bay, potentially posing threats from suspension of sediments to environmentally sensitive areas. The modeling results yielded a theoretical path and residence time estimate for the sediment plume near the environmentally sensitive areas. Assisted in developing monitoring and mitigation plans to track and reduce the potential for harm within the bay.

Estuarine Larval Transport, Mosquito Lagoon, Florida—Developed assessment techniques utilizing hydrodynamic models to determine

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optimal locations for submerged artificial oyster reefs. Oyster reefs are a bioindicator of a healthy estuarine ecosystem acting as nurseries, food source, and contaminant sink through their filter feeding processes.

Instrumentation

Instrumentation Monitoring for Newtown Creek Hydrodynamic and Sediment Transport Modeling, New York—Deployed an array of sensors to collect real-time data regarding free stream and near bed currents, water quality parameters, and suspended sediments concentrations. Data collected will be used to evaluate remediation techniques.

SEDflume Sediment Erosion Rate Study, Mozambique—Analyzed samples to support deep-water drilling efforts. Application of pre-determined shear stresses to relatively undisturbed sediment cores allowed for the determination of critical shear stresses for erosion with depth. Sediment properties such as vane shear, bulk density, and particle size distribution, in conjunction with the critical shear stress information help to ascertain potential issues when working with these sediments in their natural environment.

Publications

Jones, C., G. Chang, A. Dallman, J. Roberts, K. Raghukumar, and S. McWilliams. 2019. Assessment of wave energy resources and factors affecting conversion. B. Carrier and D. Ball (eds), Offshore Technology Conference, Houston, TX. doi:10.4043/29570-MS

Raghukumar, K., S. McWilliams, G. Chang, J. Roberts, and C. Jones. 2019. Wave energy converter arrays: Optimizing power production while minimizing environmental effects. C. Jones and J. Chitwood (eds), Offshore Technology Conference, Houston, TX. doi:10.4043/29658-MS

Jones, C., G. Chang, K. Raghukumar, S. McWilliams, A. Dallman, and J. Roberts. 2018. Spatial Environmental Assessment Tool (SEAT): A modeling tool to evaluate potential environmental risks associated with wave energy converter deployments. *Energies* 11(8):2036. doi:10.3390/en11082036.

Presentations/Posters

Jones, C., S. McWilliams, K. Raghukumar, G. Chang, and J. Roberts. 2020. Optimization of wave energy converter array deployments while minimizing potential environmental risks. Oral presentation at the 2020 Ocean Sciences Meeting. Co-sponsored by the American Geophysical Union, the Association for the Sciences of Limnology and Oceanography, and The Oceanography Society, San Diego, CA. February 16–21.

McWilliams, S., K. Scheu, C. Jones, and D. Revell 2019. Matilija Dam ecosystem restoration—A comprehensive modeling approach. Poster presentation at Localizing California Waters: Ventura to SLO. Ojai, CA. April 29–30.

Raghukumar, K., S. McWilliams, C. Jones, and J. Roberts. 2019. Marine hydrokinetic energy assessment: Balancing efficiency and environmental concerns. Poster presentation at 6th Annual Marine Energy Technology Symposium. Washington, DC. April 1–3.