A case study for Geophysics in Difficult Environments: Advanced Geophysical Classification at the Former Vieques Naval Training Range With a focus on Lessons learned

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In 2020, Jacobs and USA Environmental conducted a Time-Critical Removal Action (TCRA) to address potential munitions and explosives of concern (MEC) at two public beaches within the former Vieques Naval Training Range (VNTR) in Vieques, Puerto Rico. The TCRA was completed on behalf of Naval Facilities Engineering Systems Command (NAVFAC) Atlantic. The specific objective of the TCRA was to reduce potential explosive hazards associated with continued public use of two beaches where potential MEC may have been present due to past military training activities. Advanced Geophysical Classification (AGC) was utilized throughout areas where potential contact with MEC would be highest, comprising the beaches themselves, as well as the adjacent parking areas and access trails. Based on intrusive investigation of 1,169 targets of interest, the TCRA determined no MEC were present, and that non-munitions-related debris accounted for 78 percent of the items recovered. This information was used to support continued public use of the beaches.

Although the TCRA met its objective, with AGC successfully reducing the number of intrusive investigations required by over 2,500 digs, a number of lessons learned were realized as a result of the challenging environment associated with the beaches as well as elements of project execution. The challenging conditions at the site are: 1) coordinating continued public access with implementation of the TCRA, 2) the dynamic nature of the near-shore environment and the sandy conditions of the beaches, 3) the beaches being a nesting area for endangered sea turtles, and 4) geologic conditions that resulted in localized areas of elevated ground response that mimicked the response to potential targets of interest. The challenging project execution elements included: 1) utilizing a library that included all the munitions items used at the VNTR during historic military training, 2) implications of field-made changes on the TCRA approach, 3) variations in the interpretation of the number of verification and validation digs required, 4) intermittent noise spikes associated with the AGC sensor, and 5) variations in dig result documentation.