Environmental Response Management Application (ERMA)
Contracting Agency: NOAA/CRRC
Estimated Completion: October 2009

ERMA is an open source web-based GIS tool designed for decision-makers during spills and other hazards. It was created by scientists and practitioners from NOAA's Office of Response and Restoration and the University of New Hampshire under the auspices of the Coastal Response Research Center (CRRC). ERMA integrates and synthesizes various real time and static datasets into a single interactive map, thus providing easy and fast visualization of the area under consideration, improving communication and coordination among stakeholders. ERMA captures base data and incorporates high resolution data relevant to site-specific decision-making. These data can include real time weather and ocean observations, restoration projects, multi-jurisdictionally managed areas and priorities defined by local stakeholders. ERMA allows users to interact directly to upload/download relevant data on the fly. ERMA allows users with diverse abilities to create graphic overlays, special labels, and areas of interest. ERMA can link to documents and plans and to temporal queries to ESI data. All data layers and tool functionalities meet open source compatibility standards enabling users to leverage ERMA data in Google Earth or ArcGIS. ERMA was developed for Portsmouth Harbor, NH as a prototype and is being expanded to support SONS 2010. The second generation of ERMA was developed for the US Caribbean and will be operational Oct 1, 2009.

Effect of Particle Size, Oil Contamination, and Water Table Level on the Effectiveness of Sorbents in Wicking Oil from the Subsurface
Contracting Agency: EPA/NRMRL
Completed: 2008
In this study, use of a cellulose-based sorbent was investigated as a remediation strategy for crude oil contaminated intertidal wetlands. Effectiveness of sorbent as a wicking agent was evaluated in microcosms under simulated intertidal wetlands conditions. Microcosms were designed to impose 3 different oil penetration depths (0.25, 0.5 and 1.0 cm), 2 different tidal amplitudes (5 cm and 10 cm above and below the oil contaminated surface) and 2 different types of sorbents (raw bagasse and hydrophobic treated bagasse). Each microcosm was composed of a clean sand layer, an oil penetrated layer, and an overlain sorbent layer. Oil wicking experiments were performed in airtight microcosms with semidiurnal tide for 6 weeks. At the end of the experiments, each layer of the microcosm was separated and samples were taken. Samples were extracted with dichloromethane and quantified by GC-MS. Effectiveness was calculated as the amount of biomarker recovered in the sorbent layer after 6 weeks normalized to the initial amount of biomarker.

The results indicated that the use of sorbent was beneficial not only in removing oil but also in preventing further contamination. 30~40% of added oil contaminated the underlying clean sand layer in the absence of the sorbent (control) while less than 12% (for untreated sorbent) and 8% (for treated sorbent) in the presence of the sorbent. Effectiveness of the raw bagasse was 68~80% and that of treated bagasse was 74~83%. Oil penetration depth and tidal amplitude both turned out to negatively affect the effectiveness of the sorbent. Effectiveness of the hydrophobic treated sorbent was always higher than the untreated one at any oil penetration depth and a tidal amplitude. Furthermore, the difference in effectiveness between untreated and treated sorbent increased as the level of the variable increased. Thus, hydrophobic treatment was useful to