# Technical Announcement

MMS

U. S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region

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## *Feasibility of Using Remote-Sensing Techniques for Shoreline Delineation and Coastal Habitat Classification for Environmental Sensitivity Index (ESI) Mapping*

### OCS Study MMS 2005-047

The Minerals Management Service (MMS), Gulf of Mexico OCS Region, announces the availability of a new study report, *Feasibility of Using Remote-Sensing Techniques for Shoreline Delineation and Coastal Habitat Classification for Environmental Sensitivity Index (ESI) Mapping.*

ESI mapping refers to a shoreline classification and sensitivity ranking system that has been a vital component of oil-spill contingency planning and marine environmental assessment programs nation-wide for 25 years. The complex, rapidly changing shoreline of Louisiana, however, has made ESI mapping difficult using traditional techniques.

Several methods, including satellite image acquisition, land/water interface delineation from the satellite imagery, *in situ* data collection, satellite image classification, vector shoreline transfer, validation overflights, and accuracy assessment, were employed for ESI mapping. The spatial and spectral resolutions of IKONOS imagery captured four broad habitat classes but did not extract the same level of detail as traditional ESI mapping methods, which use existing digital shoreline, overflight classification on topographic quads, field classification accuracy assessment, and on-screen ESI attributing of the digital shoreline. Ten ESI habitat types were observed during the field work and overflights. The IKONOS imagery easily identified scrub-shrub habitats, salt marsh habitats, and mud and tidal flats (when acquired at low tide). The IKONOS imagery was least accurate at identifying beaches and manmade structures. Gravel and sand beaches, urban infrastructure, riprap, and seawalls all exhibit similar reflectance values.

For oil-spill response, the relatively current satellite imagery provides a valuable base map, especially important for coastal areas experiencing rapid shoreline change. Creating a map of the actual shoreline at the time of the spill is also valuable because miles of shoreline oiled is a common measure of the spill impact on linear shoreline types and to track cleanup progress.

This report is available only in compact disc format from the Minerals Management Service, Gulf of Mexico OCS Region, at a charge of $15.00, by referencing OCS Study MMS 2005-047. The report may be ordered through the Minerals Management Service's on-line ordering system at http://www.gomr.mms.gov/WebStore/front.asp. You will be able to obtain this report also

from the National Technical Information Service in the near future. Here are the addresses. You may also inspect copies at selected Federal Depository Libraries.

Minerals Management Service
Gulf of Mexico OCS Region
Public Information Office (MS 5034)
1201 Elmwood Park Boulevard
New Orleans, Louisiana 70123-2394
Telephone requests may be placed at
(504) 736-2519, 1-800-200-GULF, or
FAX: (504) 736-2620

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161
703) 487-4650 or FAX: (703) 321-8547
Rush Orders: 1-800-336-4700

**MMS Main Website: www.mms.gov**
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