

EM-1110-2-1003 Hydrographic Surveying

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ENGINEERING AND DESIGN

Hydrographic Surveying

ENGINEER MANUAL

This manual provides technical guidance for specifying requirements and performing hydrographic surveys of USACE river and harbor navigation projects, water control projects, and shore protection projects.

Hydrographic surveys are performed to provide underwater site plan data for nearly all USACE civil works activities. These projects primarily include channel condition, measurement, payment, and clearance surveys of coastal Federal navigation channels, inland river and intra-coastal navigation projects, reservoirs, and underwater structural surveys at locks and dams. Also included are surveys for various coastal engineering projects, beach re-nourishment and restoration projects, shoreline protection structure construction (breakwaters and jetties), and river stabilization structures.

Hydrographic survey systems developed during the past decade have become increasingly complex, requiring the integration of acoustic multibeam sonar systems with differential GPS positioning systems and inertial vessel orientation/alignment systems. Acoustic depth measurements now utilize sophisticated beam forming phase detection, interferometric, synthetic

aperture, and backscatter signal processing methods. The quality control and quality assurance guidance in this manual is intended to increase the overall confidence in reported navigation project clearances and the measured elevations of water control and shore protection projects.