EXECUTIVE SUMMARY

A monitoring survey was conducted in September and October 2012 at the Massachusetts Bay Disposal Site (MBDS) as part of the Disposal Area Monitoring System (DAMOS) Program. The 2012 monitoring effort involved a high-resolution acoustic survey to characterize seafloor topography and dredged material distribution, as well as sediment-profile imaging (SPI) and plan-view imaging (PV) surveys to provide additional physical characterization and to assess benthic recolonization. The results of the 2012 surveys were used to document changes at MBDS since the previous survey in 2007 and the subsequent placement of over 1.5 million m^3 of dredged material at the site.

The high-resolution acoustic survey consisted of multibeam bathymetric, acoustic backscatter and side-scan sonar data acquisition. The survey was conducted over a 2,000 $\times$ 3,000 m area that incorporated the portion of MBDS including the active mounds (G, H, and I) and a capping demonstration area. The bathymetric data revealed three features on the seafloor: the MBDS-G mound increased in height from 3 m to 8 m but retained a similar footprint to that seen in 2007; the MBDS-H mound accumulated less than 1 m in height and had a small footprint detectable in backscatter (ca. 125 m in diameter); the MBDS-I mound accumulated less than 1 m in height but had a large footprint detectable in backscatter (ca. 1000 $\times$ 750 m). The size and extent of the MBDS-G mound was similar to that expected from placement of nearly 1.5 million m^3 of dredged material in 90-m water depths. The limited height of the MBDS-H and MBDS-I mounds were attributed to placement of small volumes (ca. 100,000 m^3 and 50,000 m^3 respectively) of dredged material with high water content that formed thin layers surrounding the placement locations. The high-resolution acoustic data were used to support selection of SPI/PV station locations in areas of active placement of dredged material.

SPI and PV images were collected from MBDS and three reference areas. Evidence of Stage 3 successional status was present in most replicate images from all survey stations. These findings suggest that the benthic community at the disposal site had recovered and was equivalent to reference area benthic communities. Evidence of deep deposit-feeding infauna was present throughout the disposal site, and the aRPD depths within the disposal site boundary were similar and statistically equivalent compared to those found in the ambient areas.

In summary, the placement of approximately 1.5 million m^3 of dredged material created one mound with the size and extent expected from placement of this volume in 90-m water depths and two smaller deposits with minimal bathymetric signatures. In addition, MBDS has experienced full recovery of the benthic community in the year and a half since cessation of dredged material placement activities. Given the complete recovery of the benthic infaunal community, it is predicted that the effects from any future disposal operations at MBDS would be transient and the infaunal community would quickly re-establish itself within a time frame of 12-18 months following completion of disposal operations.