

## EXECUTIVE SUMMARY

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The Boston Harbor Navigation Improvement Project (BHNIP) was an infrastructure improvement project sponsored jointly by the New England District (NAE) of the U.S. Army Corps of Engineers and the Massachusetts Port Authority (MassPort) between 1997 and 2001. Under the BHNIP, estuarine sediments defined as unsuitable for unconfined open water disposal were removed from the navigation channels in Boston Harbor and placed in a series of confined aquatic disposal (CAD) cells constructed in the bottom of the Mystic and Chelsea Rivers, as well as the Inner Confluence. These sediments were then capped with a layer of sand to isolate the unsuitable dredged material from the environment.

Cell M19 is one of seven CAD cells constructed in the Mystic River and was one of the final cells completed under the BHNIP. Capping of M19 was completed in summer of 2000 with the placement of a sand cap layer ranging in thickness from 2.5 to 4 feet (0.8 to 1.2 m). Follow-on monitoring performed in 2001 revealed the continued presence of an intact sand cap and benthic recolonization progressing as anticipated one year after the placement of cap. In the winter of 2002, isolated shoals adjacent to Cell M19 were dredged. The material generated from this dredging activity was placed within M19, over the intact sand cap. Supplemental monitoring activity sponsored by the US Environmental Protection Agency, Region 1 (EPA) in spring of 2002 suggested that portions of the sand cap may have been compromised. As a result, the Disposal Area Monitoring System (DAMOS) initiated an investigation over Cell M19 in the summer of 2002 to examine the distribution of sediments and cap integrity within this CAD cell.

The 2002 survey included the use of single-beam bathymetry, side-scan sonar, towed video, and the collection of surface sediment grab samples. The results from the initial survey effort indicated the presence of new sediment deposits consisting primarily of Boston Blue Clay (BBC) and oxidized silty clay along the southern boundary of the cell. In addition, a strong linear bottom feature and two seafloor depressions were detected within the confines of the cell. Based on these results, a secondary survey was performed over the eastern portion of Cell M19 to further investigate these features to determine if their formation had impacted the thickness or composition of the cap.

The strong linear feature present in the southeastern quadrant of the cell appeared in side scan sonar records as a change in both surface sediment texture and topography. This feature was oriented parallel to the long axis of the CAD cell and located 10 to 15 m north of the new sediment deposit. Bathymetry data indicated this feature was 110 m long and 10 to 25 m wide with depths 1 to 2 m deeper than the majority of the cell. Grab samples indicated the surface sediments along the center of the linear feature were not cap material, while a mixture of sand and silty clay existed adjacent to this feature. The cause of the linear feature is indeterminate, and additional monitoring was recommended to further define the feature.

## EXECUTIVE SUMMARY (continued)

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In addition to the linear feature, the summer 2002 survey also indicated the presence of two roughly circular topographic depressions within Cell M19. One depression, located in the northeast corner of the CAD cell, displayed a homogenous surface comprised of sand and shell hash indicating that the cap layer remains intact. The second localized bottom depression was noted in the southeastern quadrant of M19, and displayed a surface composed of BBC and oxidized silty clay, which was attributable to the recent placement of sediment dredged from the shoals surrounding the CAD cell. Consolidation of the sediments placed within M19 during its original construction is likely a factor in the formation of both of these depressions. However, it is unknown whether the recent placement of dense BBC along the southern margin of the cell has expedited the formation of the bottom depression within the southeastern quadrant.

With the exception of the area immediately surrounding the linear feature in the southeastern quadrant of M19, the capped surface of the cell appeared to be maintaining its integrity. Various marine organisms have colonized the seafloor within M19 and the surrounding area. The presence of tubicolous worms, finfish, crabs, lobster and lobster fishing gear within the cell suggests this area of seafloor is relatively productive.