

EXECUTIVE SUMMARY

Monitoring surveys were conducted at the Central Long Island Sound Disposal Site (CLDS) in December 2013, January 2014, and August 2014 as part of the Disposal Area Monitoring System (DAMOS) Program. The December 2013 and January 2014 efforts included multibeam bathymetric surveys and the collection of sediment grab samples at recently used portions of the site. The August 2014 survey consisted of a multibeam bathymetric survey of the entire site and the collection of sediment-profile imaging (SPI), plan-view imaging (PV), and benthic grab samples of recently used portions of the site and three reference areas.

The last DAMOS survey of CLDS was conducted in 2011 and found two of three recently formed disposal mounds to be physically stable and progressing towards full benthic recovery with a prevalence of Stage 3 infauna (AECOM 2013). The one exception was the CLIS-08 mound that exhibited signs of slightly delayed benthic recovery (AECOM 2013).

Since the 2011 survey over one million cubic meters of dredged material has been placed at CLDS. 116,000 m³ (151,700 yd³) of the material was placed at the CLIS-10 mound that was initially formed in the 2009–2010 dredging season and had remaining capacity through 2013. The remainder of the material was generated in the 2013–2014 dredging season and included material from New Haven Harbor, CT; Norwalk Harbor, CT; and multiple private projects. Although only dredged material deemed suitable for open water placement by the USEPA can be placed at CLDS, the State of Connecticut required sequential placement of the material from the various projects as part of the long term management strategy for the site. Material from Norwalk Harbor and several of the private projects was placed first followed by placement of material from the much larger New Haven Harbor project. Given the large volume of material to be placed during the dredging season, DAMOS Program managers utilized a modified management strategy and directed scows to a series of target grids, rather than a single point, to optimize the sequential placement approach.

The December 2013 bathymetric survey documented the initial placement of material from Norwalk Harbor into a series of target cells referred to as the NHAV14-S management grid; and material from New Haven Harbor and several private projects into a northern management grid (NHAV14-N). Depth difference analysis of the new target grid areas showed an accumulation of 1–2 m of material, 3.5 m at the previously used CLIS-10 mound, and expected consolidation of the older CLIS-09 mound. There was also an accumulation of material in an area just outside of the NHAV14-N grid as the result of multiple off-target placements from a single project.

The January 2014 bathymetric survey was performed to track the ongoing placement of New Haven Harbor material in the NHAV14-N and NHAV14-S grids. Both grids showed substantial accumulation in the period between surveys, including the area just outside of the NHAV14-N grid that had received off-target placements.

The final survey in this sequence took place in August 2014 after the completion of both New Haven and Norwalk projects and multiple private projects. This survey documented the final distribution of material in the two target grids. This acoustic survey extended beyond the active placement area to record the bottom conditions at the entire CLDS

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site. Since the last survey of the whole site in 2005, the dredged material features at CLDS have continued to show the physical stability evidenced in previous work at the site. With the exception of expected areas of accumulation associated with recent placement activity, and expected areas of consolidation of dredged material mounds after initial placement, there was no evidence of significant surface sediment transport beyond the site boundaries or even within the site. The high level of accuracy of seafloor mapping attained by the multibeam technology coupled with USACE's system to record the track of each scow using the site have resulted in a greater understanding of how individual placement events affect existing seafloor topography and further the confidence in the stability of dredged material deposits at this site.

Sediment-profile and plan-view images of recently used disposal mound CLIS-09 as well as the older MQR mound showed well-developed infaunal communities with a prevalence of Stage 3 taxa, and both mounds had successional stages that were statistically similar to reference within 0.5 ranks. The CLIS-10 mound showed delayed benthic recovery that was statistically lower than reference areas, but there was evidence of a benthic infaunal community transitioning between Stage 2 and Stage 3 at every station. The CLIS-08 mound continued to show somewhat delayed benthic recovery (also observed in 2011), but every station showed some evidence of an infaunal community transitioning between Stage 2 and Stage 3. All of the recently used disposal mounds, CLIS-08, CLIS-09, and CLIS-10, had mean apparent redox potential discontinuities (aRPDs) that were statistically lower than the mean aRPD at reference areas; only the MQR mound had mean aRPD values that were statistically similar to reference areas within 1 cm.

As expected, the biological conditions at the NHAV14-N and NHAV14-S grid areas were in a transitional state just four months after dredged material placement activities had been completed. A mixture of Stage 1, 2, and 3 successional stages were present along with a relatively shallow aRPD that was statistically less than the reference areas. Benthic samples collected from both grids were dominated by pioneering amphipods in comparison to the well-developed and stable infaunal communities observed in reference area samples. These two target grid areas are expected to progress to full benthic recovery with additional time for recolonization and sediment reworking.

The DAMOS surveys of CLDS, including the 2013/2014 effort described in this report, serve to fulfill the monitoring requirements established in the USEPA's Site Management and Monitoring Plan and provided data to inform the ten-year revision of the plan. Given the recent designation of CLDS by USEPA for continued long-term use as an ocean disposal site for dredged material placement, DAMOS monitoring of CLDS will be expanded to include a comprehensive survey of surficial sediment quality at CLDS to aid in long term management of the site.