Sediment Removal at Outfall 005 in Dark Head Cove - 2014-2015

Project Photo Tour

Background: The sediment removal at Outfall 005 project is described in a Project Bulletin available on this website. To avoid disrupting fish spawning, a winter work window from October 15, 2014 – February 15, 2015 is imposed and all efforts were made to complete in-water (i.e., dredging) work within that timeframe, in spite of extreme winter weather. All permits were received allowing the project to begin, and site preparations were underway on November 20, 2014. Cleanout of the two 005 outlets occurred initially. Dredging operations began December 10, 2014 and completed February 11, 2015, within the allowable "in-water work window." Offloading from the barge and upland work continued thereafter. The final steps to clean and leave the site were completed on March 23, 2015.

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Approximately 5300 cubic yards of sediment was removed, containing approximately 400 pounds of polychlorinated biphenyls (PCBs).

Updated April 9, 2015

Location where Higher Polychlorinated Biphenyls (PCB) Concentrations were found near Outfall 005.

First, storm drain lines leading to the cove were cleaned out: outfalls were plugged, lines were pressure washed and then vacuumed.

Materials from storm drains were vacuumed into trucks and transported offsite for proper disposal.

Temporary asphalt curbing was installed to create a barrier preventing sediment from leaving work areas.

Reinforced super silt fence separated upland work areas and cove, preventing erosion and maintaining sediments upland.

Monitoring was performed before work began to establish what the turbidity level was during "normal" conditions. After work began, the turbidity levels were monitored regularly both inside and outside the work area. This was done to assess what effects the dredge operations might create, and to confirm that water quality requirements were met.

Arrival of first dredge barge and crane.

A silt curtain (interior) was placed near the dredge equipment to restrict movement of sediments during the dredging; a second, exterior curtain further restricted silt from leaving the work area; as needed, a third, interior curtain was used.

A lined spill apron was installed to capture any spillage of sediments that might occur when sediments were moved from the dredge barge to dump trucks, which then carried the sediments to the dewatering pads. Spillage and eventually the liner were properly disposed in a permitted landfill.

A thick plastic liner was installed as part of the sediment dewatering pad.

Rock was added on top of the sediment dewatering pad. Water separated out of the sediment and percolated through the rock, then was collected and pumped out for treatment. A smaller amount of water was collected than had been expected.

Constructing sediment dewatering pad.

Dredging operations began December 10, 2014 and completed February 10, before February 15, 2015, the end of the allowable in-water dredging work window.

Transferring sediment from barge to dump truck.

Transferring sediment from dump truck to dewatering pad.

Portland cement amendment arrived onsite in sacks and was stored on pallets. Calciment was stored in a temporary structure.

Sediment was mixed with Calciment and Quicklime in the dewatering pad. These additives reduced the moisture, and provided strength and body to the sediment, allowing it to be safely transported and properly disposed in a licensed landfill.

Portland cement amendment, loaded in a super sack, was added to provide strength and body to the sediment in preparation for proper landfill disposal.

As the dredging equipment moved from area to area, the silt curtains were moved to continue surrounding work zones. Icing within the work area was managed by dredge equipment movement.

The cold winter created complete icing within the entire cove.

Monitoring showed that the silt curtain was in need of replacement.

Replaced silt curtain

A fully loaded sediment dewatering pad with cement and Calciment amendments added was tested, confirmed to have strength and body, and ready for loading onto dump trucks to leave the site.

When sediment met landfill disposal criteria, it was loaded into lined dump trucks and covered for transportation.

Trucks were weighed before leaving the site to haul sediment to the landfill. 9,928 tons, or 421 truckloads, were transported to the landfill as part of this project.

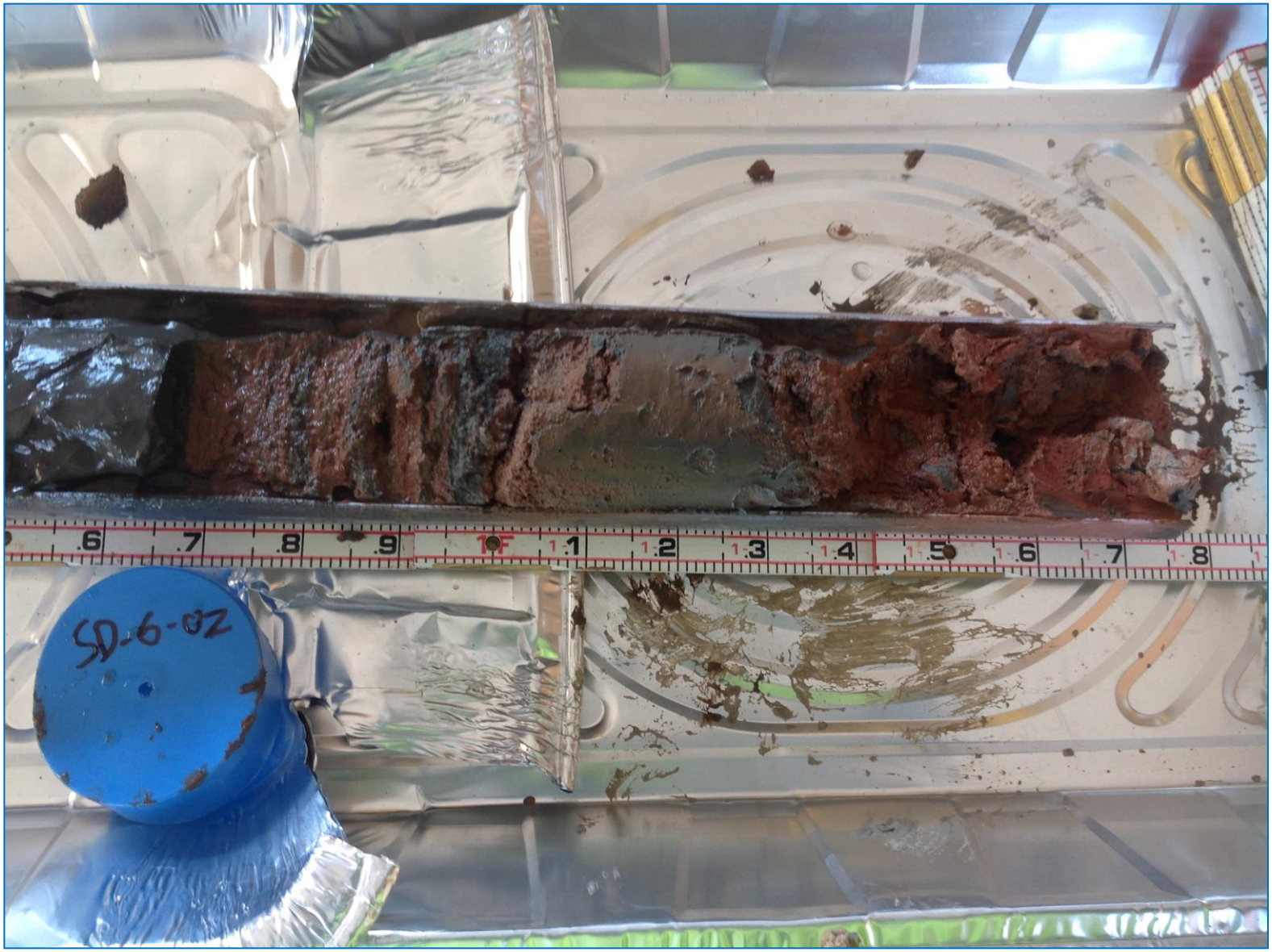
Once water was removed from sediment, it was pumped through water treatment vessels, shown in red.

After treatment, the water was stored in tanks, shown in blue, where it was sampled to confirm that the water could be discharged to the sewer system in compliance with applicable regulations.

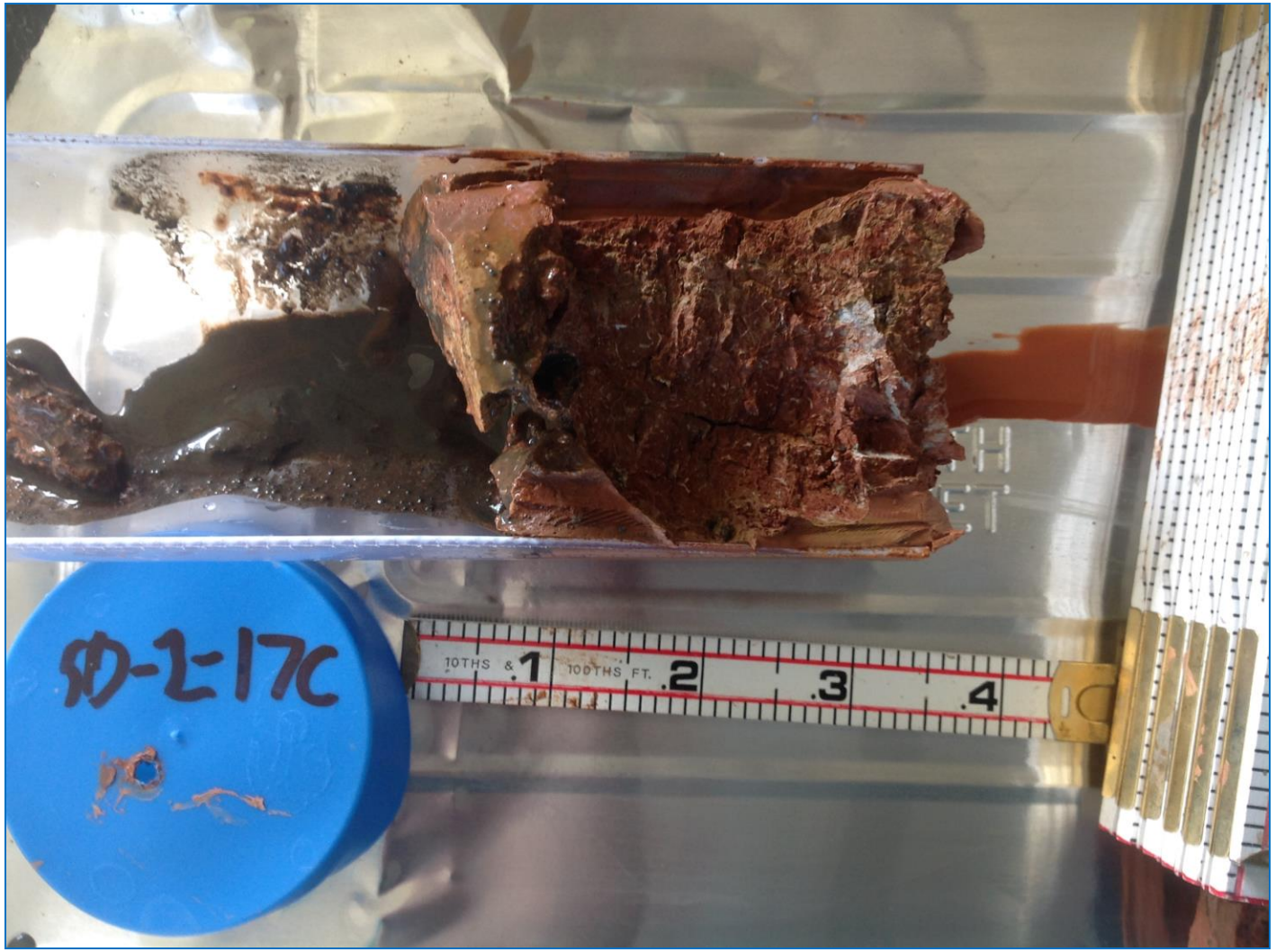
After confirming that treated water met all required criteria, it was pumped from holding tanks into a transport truck, to pump to the sanitary sewer system, which was allowed by permit.

A second, larger barge (seen in the background) arrived January 21, 2015 to store 5-6 times more dredged material than the first barge, while upland activities continued. Slower dewatering and increased need for amendments slowed the ability to transport sediments offsite. With the larger barge, dredging was completed by February 15th, the end of the allowable dredging work window. Upland work continued several weeks longer than in-water work.

After dredging in an area, confirmation samples were collected to confirm the contaminated sediment had been removed.



Samples were taken to confirm project goals were met. Clay indicates all sediments were removed at this location, since clay would have been the top layer when the cove was originally dredged in the 1940s before sediments began accumulating.



A survey vessel is shown – monitoring of turbidity and surveying for dredging completion were ongoing throughout the project and sampling results were reported to regulators.

Throughout the project, visits were routinely made by representatives of the U.S. Environmental Protection Agency (EPA) and Maryland Department of the Environment (MDE). They regularly expressed satisfaction with the project, as it met or exceeded their expectations, and responded to their guidance and input with adjustments to dredging activities.

As final dredged material was being worked, bins began to decrease in size.

As drying bins were eliminated, the process of removing materials began, continuing to further reduce bin sizes.

The final loading from Bin #1 is shown.

After all dredging was finished, and icy conditions allowed, the silt curtain began to be disassembled.

The silt curtain was removed by crane.

After ice thaw occurred, the larger barge was pushed by tow boat out of the cove.

A final site walk with regulators and project workers confirmed the job was completed satisfactorily.

The last piece of equipment to leave the site was the crane.

The site was left as it was found following the completion of all sediment removal activities (although it was still icy!).

An example is shown of how icy the 2014-2015 winter was – ice fisherman are in the cove, and silt curtains are shown in the foreground.

Lockheed Martin wishes to thank the contractors, the regulators and permitting authorities, and the community for its cooperation, helping to make this project a success.

For questions, comments, concerns please contact:
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