

ANTICIPATED ENVIRONMENTAL IMPACTS

THIN LAYER CAP PILOT

This fact sheet was prepared by Greenfield Penobscot Estuary Remediation Trust LLC, Trustee of the Penobscot Estuary Mercury Remediation Trust

Greenfield Penobscot Estuary Remediation Trust LLC (Greenfield), Trustee of the Penobscot Estuary Mercury Remediation Trust (Remediation Trust), is planning a small-scale pilot test to demonstrate that a thin layer cap (TLC) of sand will effectively reduce exposure to mercury in intertidal flat sediments and enhance recovery of the Estuary. Information from the TLC Pilot will inform potential future planning, design, and permitting for the capping of ± 130 acres of sediments in Orrington Reach coves, as required by a Consent Decree entered by the U.S. District Court for the District of Maine that settled a 22-year lawsuit over mercury contamination in the Penobscot River Estuary.

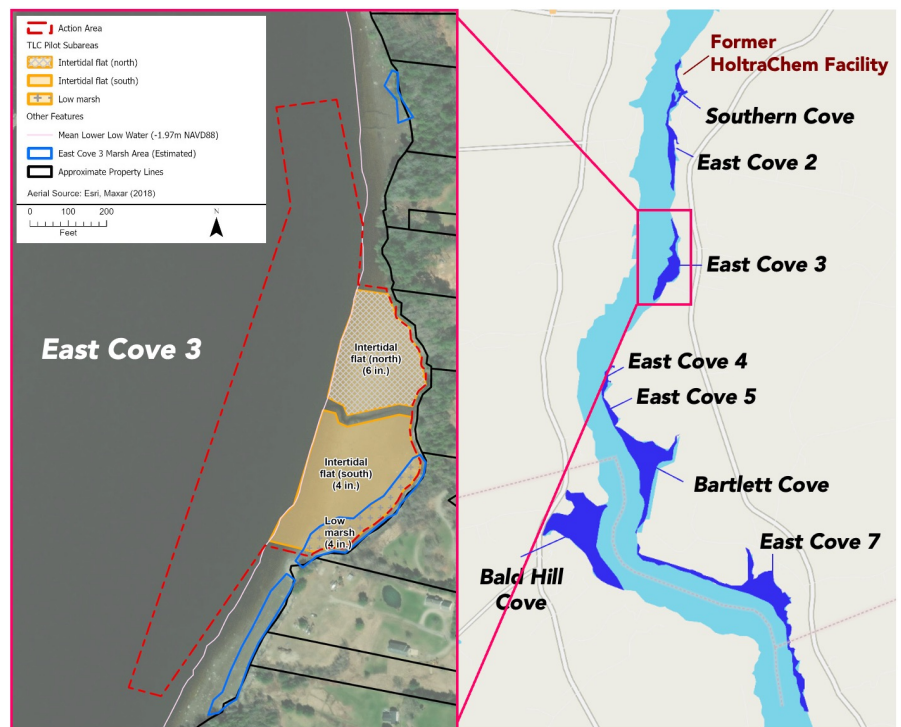
Protection and enhancement of natural resources are crucial to the success of all work proposed to address mercury contamination in the Penobscot Estuary.

This fact sheet provides the public with information about anticipated environmental impacts that must be addressed to secure permits for the TLC Pilot project under the Natural Resources Protection Act (NRPA) and federal Clean Water Act (CWA) from the two lead regulatory agencies—the Maine Department of Environmental Protection (DEP) and the U.S. Army Corps of Engineers (USACE).

What is the TLC Pilot?

The proposed TLC Pilot will involve placing a 4-to-6-inch layer of clean sand over ± 6.3 acres of mercury-contaminated intertidal sediment in East Cove 3 in Orrington. The project is expected to be implemented in 3 phases over 4 to 6 years.

- **Phase 1** includes investigations, design, and submittal of draft permit applications.
- **Phase 2** entails placing the ± 6.3 -acre TLC and monitoring during construction.
- **Phase 3** will involve monitoring: TLC stability, the mercury concentrations in surface sediments, and potential impacts from the TLC on adjacent marsh areas, organisms, fish, and wildlife.



The TLC Pilot in East Cove 3 (figure on left) will inform potential future planning, design, and permitting for the capping of ± 130 acres of tidal sediments in Orrington Reach coves (royal blue areas on right).

Potential Environmental Impacts Were Identified and Evaluated in Phase 1

The Remediation Trust identified and evaluated natural resources known, or likely, to be present in and around the TLC Pilot area based on information from:

- Field investigations, preliminary wetland surveys, and a preliminary biological assessment
- Existing studies and documentation about natural resources in the [Penobscot River Estuary](#) and case studies about the effects of thin layer capping
- Regulatory agency documentation and communications
- Observations provided by individuals familiar with the Estuary

Anticipated Environmental Impacts

The Remediation Trust anticipates environmental impacts due to cap construction and/or the completed cap's presence. Steps will be taken to avoid or minimize potential impacts caused by barge-mounted equipment in the River and placement of the TLC. The Remediation Trust will monitor environmental conditions in the TLC Pilot area and surrounding area for 2 to 5 years after construction to confirm TLC effectiveness and to identify impacts.



- Water Quality. Anchoring the equipment barges will disturb sediment, and placing clean sand will suspend fine particles in the water. The resulting “turbidity” in and near the TLC Pilot area will be temporary and will rapidly dissipate in the high-velocity river. Water quality will be closely monitored and, as needed, turbidity control measures will be implemented to protect water quality.
- Benthic Community and Foraging Habitat. Covering the intertidal flat with a thin layer of sand will deprive worms and other sediment-dwelling “benthic” organisms of food, and disrupt foraging by fish and birds that feed on benthic organisms. Studies of thin layer caps show some benthic communities have reestablished in 12 to 18 months after cap placement. Over time, the new benthic community will provide fish and birds with a food source containing lower mercury concentrations.
- Low Marsh Vegetation. A 0.4-acre area of low marsh will be temporarily impacted when covered with 4 inches of clean sand. Based on studies of other thin layer caps, vegetation is expected to grow through the 4-inch-thick sand cap in the spring following the construction work proposed for the fall.
- Protected Species. Three species present in the TLC Pilot area are protected by state and federal laws. Atlantic salmon and shortnose sturgeon are listed as endangered species, and Atlantic sturgeon is listed as a threatened species. The Remediation Trust proposes to construct the TLC Pilot between September 1 to November 30 to avoid the spawning season and reduce the likelihood that these protected species will be present.
- Protected Habitat. The TLC will be placed in an area designated critical habitat for Atlantic salmon and Atlantic sturgeon and in an area classified as Essential Fish Habitat for species managed under Fishery Management Plans. A preliminary biological assessment determined that impacts to such habitat will be temporary and limited to the 2-to-4-month construction period.
- Shoreline Erosion and Tidal Effects. The TLC will raise the intertidal flat surface by 4 to 6 inches. Based on modeling of the Estuary, the TLC will not significantly change river flow, river velocity, or tidal influence. The increase in surface elevation is not expected to noticeably impact shoreline erosion or the time that the intertidal flat will be covered by the tide.

During the NRPA permitting process, DEP, USACE, and other state and federal agencies will make the final determinations regarding anticipated environmental impacts and whether the proposed plans to avoid or minimize such impacts are acceptable.