

FORMER TIE TREATING FACILITY (CREOSOTE)

CLIENT	Union Pacific Railroad
LOCATION	Escanaba, MI
VALUE	\$7.0 M
DATE	August 2015 - December 2015
SAFETY	Zero OSHA Recordables
CLIENT REP	Geoff Reeder (281) 350-7197



Cutoff Wall | Sediment | Dredging

NorthStar performed this remediation project at a former tie treating facility located in Escanaba, Michigan. The scope of services consisted primarily of removing 10,525 cubic yards (cy) of impacted sediment from Lake Michigan and installation of a combination a 78,740 square foot (sf) Soil Bentonite Cutoff Wall (SBCW) and 17,280 sf Steel Sheet Pile Cutoff Wall (SSP). The dredge area extended up to 170 feet from the shore and was mechanically dredged from constructed riprap finger piers with a hydraulic clam shell bucket. Backfilling occurred from barges and from shore using a 105-foot truck-mounted telescoping conveyor belt (telebelt). SBCW and SSP installation occurred concurrently to complete the project in a short window before the onset of winter. The work performed consisted of the following:

- Site preparation included installing erosion controls, constructing lined dewatering pads, constructing decontamination and fuel storage pads, assembling a Waste Water Treatment Plant (WWTP), setting up support and contamination reduction zones, installing temporary access roads, installing temporary vinyl shoring in the lake, and oil boom/turbidity curtain at the outer limits of the dredge area. NorthStar performed waste characterization sampling and analysis of the sediment using a small boat and sampling tools to collect samples of the impacted sediment and obtain disposal approval in advance of the work.
- Dredging was completed by constructing finger piers from riprap obtained on-site from a previous Interim Remedial Action. The finger piers were spaced so all of the dredge area was within the reach of a 330 long-reach excavator equipped with a 1 cy level cut hydraulic clam shell bucket with RTK GPS positioning. Sediment was transported via articulating dump trucks to a dewatering pad



and allowed to gravity drain prior to stockpiling for disposal. Over 190,000 gallons of water was collected, treated and tested in 21,000-gallon frac tank batches, then was used for dust control.

- The SBCW was installed by the One Pass method using a large trencher to mix the slurry wall to depths as specified in the project drawings which ranged from approximately 65 feet to 35 feet. The alignment of the wall was leveled to create a working platform and staked every 25 feet along the alignment. The wall was sampled daily and met the hydraulic conductivity specified for the project. The wall was also cored to confirm it was tied-in to the underlying clay confining layer.
- The SSP barrier wall was installed along the shore of Lake Michigan and tied into the SBCW at three upland locations to complete the groundwater cutoff wall. This included PZC-18 sheet piles driven to depths up to 65 feet using a vibratory hammer and impact hammer where required. The sheets were delivered to the site with Wadit installed in the interlocks to form a sealed sheeting system.
- Capping of the dredged area was completed by using a combination of a 105-foot Telebelt and started with a 3 to 6-inch leveling layer of sand, a 3 to 6-inch layer of Aquablok followed by a 4-foot layer of sand placed in a tiered process. The telebelt was required to work both from the barge and from the shore. A diffuser was installed on the end of the conveyor belt to spread out the capping layers in a wide and even pattern. The telebelt was fed material using excavators to load the hopper. A bag cutter was installed in the hopper when using supersacks of Aquablok to “break” the bags and safely feed the hopper.
- Sediment from dredging and swell from SBCW installation were stabilized with 2% cement kiln dust and/or 2% Portland Cement using excavators prior to transportation and disposal at the local Subtitle D landfill. A total of 30,000 tons of stabilized sediment and swell along with existing rip rap and debris was handled and loaded off site.
- A new 24-inch HDPE water line was installed through a vault on the existing pumphouse out to Lake Michigan to replace an old deteriorated line. The reinforced concrete walls of the vault were cored and a directional drill was used to drill through the vault out to Lake Michigan. The pipe was pulled back to the vault and grouted before removing the inflatable plug in the pipe. A weight fabricated out of two concrete bin blocks and a spreader bar was placed over the HDPE pipe to keep it from floating in the future.
- Site restoration included SBCW trench restoration using bentonite chips, non-woven fabric and geogrid, installation of a road crossing culvert, demolishing dewatering and decontamination pads, removing temporary shoring and turbidity controls, seeding, mulching and installation of 12 recovery wells. The project completed with nearly 21,000 safe working hours.



The key to the success of this project was the coordination of the activities and completion of the work prior to the onset of winter weather in Escanaba. Subcontracted services, dredging, sediment management and disposal were performed congruently and capping operations were performed as the SSP was completed.



Additionally crews worked extended hours to expedite the completion of the project. NorthStar mobilized to the site in late August and all site work and equipment were off site by the third week of December.