ORGANOCLAY Permable Reactive Barrier Utilized to Control NAPL Contamination

The groundwater at a former creosote wood treating site was contaminated by non-aqueous phase liquid (NAPL). The contaminated groundwater was a threat to the nearby fresh water bay when NAPL and soluble organics were showing on the surface of the bay.

PROJECT DETAILS

Bay Project – Union Pacific Railroad

Engineer: Ch2M Hill

Contractor: Ch2M Hill Construction

Subcontractor: DeWind Dewatering

LOCATION

Escanaba, MI

PRODUCTS USED

BULK ORGANOCLAY®

REACTIVE CORE MAT®

Approximately 15 ft (5 m) up gradient of the RCM a permeable reactive barrier wall was installed. One part organoclay was mixed with 3 parts of ¼ inch (6 mm) pea gravel by volume in a stockpile. A continuous trenching machine placed the organoclay-gravel mix in an 18 inch (45 cm) wide by 10 ft (3 m) deep by 240 ft (80 m) long trench. The organoclay PRB was completed in one day.

CHALLENGE:

As part of the remediation strategy, the use of an permeable reactive barrier was included in the design utilizing bulk ORGANOCLAY® filled REACTIVE CORE MAT® (RCM).

SOLUTION:

To stop the pollution from spreading through the bay and into Lake Michigan, an interim measure was taken which consisted of installing a permeable reactive barrier (PRB) containing ORGANOCLAY® media and CETCO REACTIVE CORE MAT® (RCM) along the affected stretch of beach and a permeable reactive wall behind the RCM.

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RESULT:

The sheen dissipated from the fresh water bay as soon as the RCM and PRB was installed and brought online. The installed cost for mobilization/demobilization, RCM installation, PRB installation, site restoration, and waste disposal was approximately $220,000. The organoclay RCM and PRB have worked successfully for three years. Piezometers were installed upstream and downstream of the PRB. The piezometers indicate that there is no mounding of the upstream groundwater. There is DNAPL present the central upstream piezometer, but no DNAPL in the respective downstream piezometer. Also, no sheen has been observed emanating from the RCM.

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